DS #: 4938

APN: 138.05-801-065 & 066

PROJECT: Elk Ridge Estates IV

SUBMITTAL: 1st

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS NEVADA

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: December 14, 2017
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Elk Ridge Estates IV** (Project in Clark County for City of Las Vegas Concurrence)			**COPIES TO:** Slater Hanifan Group
Cross Streets:	SWC of Durango Drive & Hickam Avenue			Pinnacle Homes
File Number:	F:\Depot\DSMemos\DS4938A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	138-05-801-065 & -066			CCPW
Zoning Action:	N/A			
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	11/30/2017	12/14/2017	Approved	$400.00	491852: $400
			TOTAL FEES (LDDRS):	**$400.00**	**----**

REMARKS:

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 the Addendum #1 and Supplement #1 for the subject development "***Elk Ridge Estates IV***" within the jurisdiction of the ***Clark County***. ***City of Las Vegas*** concurs with the acceptance of the drainage study by the ***Clark County Public Works Department***. The review of this project was limited to issues of flood control significance to the ***City of Las Vegas***.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas Flood Control Section*. Additionally, conditional acceptance of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

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

jkn

T/R/S: T20S/R60E/05

AREA L-05

TRANSMITTAL

To: **Albert Sung, P.E.**
City of Las Vegas
333 N. Rancho Drive
Las Vegas, NV 89106

Date: November 30, 2017
Project No.: PIN1702.000

From: Caitlyn Alcantara

Subject: **Technical Drainage Study for Elk Ridge Estates IV – TDS, ADD, ADD SUPP**

CC: Stanley Okey Amadi, P.E. -SHG
CC: Mark Failla, P.E., CFM, - SHG
CC:
CC: Kevin Bross, P.E. -SHG
CC:
CC:

Transmitting Via:
- ☐ Mail
- ☒ Messenger / MDS
- ☐ Federal Express
- ☐ Pickup

For:
- ☒ Review & Comment
- ☐ Per your Request
- ☐ Information/File

Acknowledgement of Receipt:
- ☐ Not Required
- ☒ Acknowledgement Required

Received By:
Date: Time:

Copies	Description
1	Technical Drainage Study for Elk Ridge Estates IV
1	Technical Drainage Study for Elk Ridge Estates IV Addendum
1	Technical Drainage Study for Elk Ridge Estates IV Addendum Supplement Letter
1	Review Fee Check - $400 (#2734 from L2D2 LLC)
1	CD with PDF of Subject Study & Clark County Approval Letter
1	CLV Standard Form 2 Checklist Supplement

Comments:

Signed:
Caitlyn Alcantara, E.I.

CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA
STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

The following checklist is intended as a supplemental guide for the engineer preparing a Technical Drainage Study submittal to the City of Las Vegas. This supplement focuses on requirements specific to the City of Las Vegas. The requirements presented are in addition to the Clark County Regional Flood Control District (CCRFCD) Manual Standard Form 2. The listed items are the minimum information required prior to the City performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the CCRFCD Hydrologic Criteria and Drainage Design Manual (Design Manual).

An appointment must be made to preview this checklist in conjunction with CCRFCD Standard Form 2 prior to the City accepting a new drainage study for review. The engineer must contact the Flood Control Section at (702) 229-6541 to schedule a submittal appointment.

If items are not applicable for the subject site, provide N/A.

I. GENERAL REQUIREMENT		
Yes	No	
-	N/A	A notarized letter from the adjacent property owner(s) allowing off-site grading. (A copy of the letter must be received prior to final acceptance of the drainage study.)
X	-	Copies of all conditions of approval for development related to this property. (e.g. zoning, use permit, tentative map, etc.) Verify compliance with conditions.
X	-	An electronic copy of the complete submittal is required to be submitted with one original hard copy of the study. Electronic documents should be on a universal computer-readable digital output device replicating your submittal. An Indexed Portable Document Format (PDF) or Print Ready CAD file formats with a minimum of 300dpi are the desired formats. If figures are in color, they must be scanned in color and saved as a separate file. _____ by initial here, the engineer on record acknowledges that the electronic copy is an identical replicate of the original hard copy submitted to the City of Las Vegas.

II. GRADING PLAN INFORMATION		
Yes	No	
X	-	(1) 24" X 36" copy of the Grading Plan, (including all Detail Sheets) sealed by the engineer.
X	-	Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street. Note: Proposed top of curb elevations must be provided for both sides of roadways even if only half street construction is required.
X	-	Label existing topography at a minimum 5 foot elevation interval including adjacent developments, finished floor elevations of existing buildings and top of existing curbs extending 100 feet* around the perimeter of the site. (*Measured from the centerline of the adjacent roadway.)

II. GRADING PLAN INFORMATION		
Yes	No	
X	-	Proposed on-site and off-site storm drains and other flood control facilities with plan and profile sheets for public storm drains showing the class of pipe, (Class III, IV, V, etc.), design hydraulic grade line, (HGL) and 100 year storm flow. A public drainage easement must be provided over on-site storm drains conveying off-site flows. An overflow path must be provided over all storm drains.
X	-	All existing and "to be constructed" walls with cross-sections showing wall type, (e.g. block wall, retaining wall, flood wall, etc.), with limits clearly defined, adjacent ground elevations. Wall heights must meet current ordinances and in no case exceed 14 feet above the adjacent property.
X	-	Street slopes for both interior and perimeter streets. Note: The minimum slope for a roadway is 0.4 percent, a minimum 18-inch storm drain must be provided where minimum slopes cannot be met.
X	-	Back of lot elevations and lot drainage pattern for all lots including common lots.
X	-	Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
-	N/A	On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners. (The project must pass flows through the site every 600 feet where the project is blocking flow paths.)
-	X	This project uses a solid grouted stem wall (or approved alternate) at the back of sidewalk to provide erosion protection for landscaped areas where the depth of flow in the roadway exceeds the back of walk elevation. A corresponding cross-section detail is included.
X	-	Commercial and Common Lot Landscape areas are not allowed to drain over the sidewalk. The grading plans show flow lines with grades and sidewalk under drains for all landscape areas draining to the public ROW.

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
-	N/A	Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.
-	N/A	Ten-foot wide public drainage easements to be privately maintained are allowed for flow less than 20 cfs. The depth of flow entering the easement must be checked using the submerged weir calculation.
-	N/A	The limits of the flood zones and the base flood elevations (BFE) must be shown on all grading plans for all developments within a Special Flood Hazard Zone A, AO, AE, etc.
X	-	Minimum finish floor elevation is 6 inches above highest adjacent top of curb. Finish floor calculations must include allowances for super elevations on curves and velocity head for tee intersections.
X	-	Finished floor elevations for buildings adjacent to public drainage easements must be a minimum of 18 inches above the Q100 weir of submerged weir elevation, whichever is greater.

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
-	N/A	Lots with “B and C Type Drainage” that drain from one lot to another through a drainage easement shall be required to install an underground nuisance drainage system or a 2-foot valley gutter. 16” x 24” minimum block wall openings are required for both options.
-	N/A	Bubblers are required across 80 foot and greater ROW streets. When flows exceed 10 cfs, bubblers larger than 18 inches will be required up to a maximum of 36”. Inlets must be sized to match the pipe size provided.

- Contact the Flood Control Section regarding the drainage study review fee. These fees are payable at the time of submittal.
- The Drainage Study must be conditionally approved prior to submitting improvement plans to the Civil and Planning Development of the Department of Building and Safety for review.

This document is intended as an **aid** in preparing Technical Drainage Studies for the City of Las Vegas. Each study submitted is reviewed for compliance with local and regional criteria. This form is not intended to be all-inclusive and does not limit the extent of the information, calculations or exhibits which may be necessary to properly evaluate the intended land use.

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 Approval Letter

Date: November 15, 2017
Firm: Slater Hanifan Group
Engineer: Stanley Okey Amadi, P.E.
Address: 5470 S. Arville Street, Suite 216, Las Vegas, NV 89118
Phone: (702) 284-5300
Fax: (702) 284-5399
E-mail: samadi@shg-inc.com

Subject: Technical Drainage Study for Elk Ridge Estates
Location: SWC of Hickam Avenue and Durango Drive
APN: 138-05-801-065, -066 & -039
Sec, Township, Range: S05, T20S, R60E
Flood Zone & Panel: Zone X, 2135F, Dated November 16, 2011
Application Number: 17-41829

Submittals	Date Received	Date Returned	Reviewer	Miscellaneous
Technical	09/08/2017	10/04/2017	CR	
Addendum 1	10/17/2017	11/13/2017	CR	
Supplement 1	11/13/2017	11/15/2017	CR	Emailed and delivered

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

BOARD OF COUNTY COMMISSIONERS
STEVE SISOLAK, Chairman • CHRIS GIUNCHIGLIANI, Vice Chair
SUSAN BRAGER • LARRY BROWN • JAMES B. GIBSON • MARILYN KIRKPATRICK • LAWRENCE WEEKLY
YOLANDA T. KING, County Manager

17-41829

The referenced **Technical Drainage Study** 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.

The site shall be graded with respect to drainage as shown on "**Elk Ridge Estates IV**", grading plan sheets C-1, C-2, C-3, G-1, G-2, G-4, G-5, D-1, D-2 and PP-1 through PP-8, signed and sealed by Kevin M. Bross, P.E., on October 19, 2017 and grading plan sheets G-3 and PP-9, signed and sealed by Kevin M. Bross, P.E., on November 13, 2017.

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.
X	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.
	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.
	Any previously approved drainage easements that are not being used must be vacated.
	Per *Regional Flood Control District policies and Procedures manual, Section VIII. D. 13. Uniform Regulations for the Control of Drainage*, 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.

17-41829

Additional Conditions:

1. Sheets G-3 and PP-9 have been revised to show the proposed drop inlet in Durango added to mitigate the flow depth in Durango. Verify all sheets, such as PP-1 and PP-3, have been updated to show the proposed storm drain added in Durango.

2. Any improvements not depicted on the above mentioned grading plans will require an Update to this Technical Drainage Study.

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.

Crissy Riland, E.I.
Associate Engineer
Development Review
crissy@ClarkCountyNV.gov

W. Layne Weber, P.E., CFM
Principal Engineer
Development Review
wlweber@ClarkCountyNV.gov

PIN1702.000

November 13, 2017

W. Layne Weber, P.E., CFM – Principal Engineer
Development Review
Clark County Public Works
500 S. Grand Central Parkway – Box 554000
Las Vegas, Nevada 89155-4000

Subject: Supplement to the Addendum to the Technical Drainage Study for Elk Ridge Estates (HTE #17-41829)

Dear Mr. Weber:

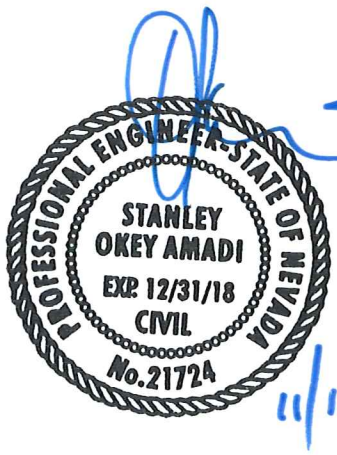
This letter is submitted in response to the supplemental information request from you and Ms. Crissy Riland over our telephone conversation of November 13, 2017. As discussed, the following revisions have been made;

- The existing 18" RCP lateral in Durango Drive that currently connects to a field inlet at the northeast corner of the site has been extended and will now connect to a proposed 10-ft Type CM2 inlet on grade.
- Inlet capacity calculation for the 10-ft Type CM2 indicates that approximately 16 cfs can be intercepted during the 100-year storm event. However, the available head above the 18" RCP lateral (from invert to top-of-curb) is 3.20-ft and will only allow the storm drain to convey 13 cfs as demonstrated by the inlet control nomograph.
- A revised street section for Durango Drive downstream of the inlet (based on the bypass flow) indicates a 100-year flow depth of 0.63-ft.

Copies of the drop inlet capacity and street calculation as well as the inlet control nomograph has been emailed for your records. Two stamped and signed copies of the revised plans (Sheets G-3 & PP-9) will be hand delivered to you for your records. If you have any questions or require additional information, please do not hesitate to contact us at (702) 284-5300.

Respectfully Submitted,

SLATER HANIFAN GROUP



Stanley Okey Amadi, P.E. – SHG

cc: Mark Failla, P.E., CFM – SHG
Caitlyn Alcantara, E.I. – SHG
Kevin Bross, P.E. – SHG

TECHNICAL DRAINAGE STUDY
ADDENDUM

Elk Ridge Estates IV

Unincorporated Clark County, Nevada

Job No.: PIN1702.000
Date: October 2017

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:
Pinnacle Homes
9225 W. Flamingo Road, Suite 190
Las Vegas, Nevada 89147
Phone: 702-228-0720

10/17/17

Stanley Okey Amadi, P.E.
NV Professional Engineer No. 21724

Assisted By: Caitlyn Alcantara, E.I.

Department of Public Works

Development Review Division

500 S Grand Central Pky | Box 554000 | Las Vegas NV 89155-4000
(702) 455-4600 | Fax (702) 388-2550
www.ClarkCountyNV.gov/PubWorks

Drainage Study Submittal Sheet

(Each Submittal must have a separate sheet and check)

HTE # _____ **Date Submitted:** October 2017

Previous HTE Number _____

Type of Submittal: ☐ **Initial** ■ **Addendum** ☐ **Supplement**

Number of Acres: ☐**up to 5 acres** ■**up to 40 acres** ☐**up to 320 acres** ☐**over 320 acres**

Project Name: Elk Ridge Estates IV - Addendum

Assessor's Parcel Numbers (APN's): 138-05-801-065 & -066

Street Location: East/West Hickam Ave **North/South** Durango Drive

Land Use Applications: Residential

Project Type: (Check any that apply)
☐ **Update** **List previous Tracking Number** _____
☐ **Concurrence Review**
☐ **Grading Plan Review**
☐ **Structural Review**

Engineering Firm/Responsible Engineer Slater Hanifan Group Stanley Okey Amadi, P.E. **Phone number** 702-284-5300
Address 5470 S. Arville Street, Suite 216 **Fax number** 702-284-5399
City/State/Zip Las Vegas NV 89118
E-mail Address *(Required)* samadi@shg-inc.com

Owner/Developer Pinnacle Homes **Phone number** (702) 228-0720
Address 9225 W. Flamingo Road, Suite 190 **Fax number** (702) 228-5895
City/State/Zip Las Vegas NV 89147
E-mail Address *(Required)* frank@pinnaclelv.com

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Elk Ridge Estates IV - Addendum Date: October 2017

Location of Development:
a) Descriptive (Cross Streets): North/South: Durango Drive
East/West: Hickam Ave
b) Section: 5 Township: 20 South Range: 60 East
c) APN: 138-05-801-065 & -066

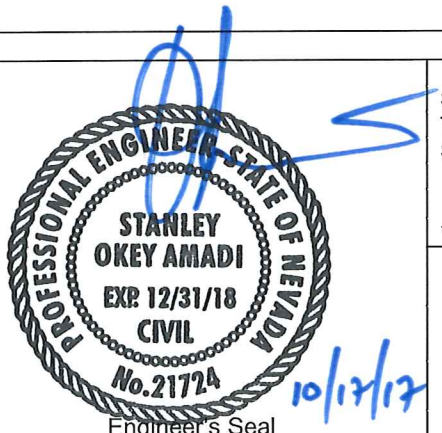
Name of Owner: Pinnacle Homes
Telephone No.: (702) 228-0720 Fax No.: (702) 228-5895 E-mail Address: frank@pinnaclelv.com
Address: 9225 W. Flamingo Road, Suite 190 Las Vegas NV 89147

Contact Person – Name: Stanley Okey Amadi, P.E. Telephone No.: 702-284-5300
*E-mail Address: samadi@shg-inc.com Fax No.: 702-284-5399
Firm: Slater Hanifan Group
Address: 5470 S. Arville Street, Suite 216 Las Vegas NV 89118

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 10.79 +/- acres Being Developed/Disturbed: 10.79+/- acres
2. Is a portion or all of the subject property located in a FEMA Flood Hazard Area? ☐ Yes** ☒ No
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ Yes** ☐ No
4. Proposed type of development (Residential, Commercial, Etc.): Residential
5. Approximate upstream land area which drains to the subject site: 0 cfs
6. Has the site drainage been evaluated in the past? ☐ Yes** ☒ No If yes, please identify documentation:
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: West to Durango Drive via Drainage Easement and North to Hickam Drive to be conveyed West toward Durango Drive
8. Briefly describe your proposed schedule for the subject project: ASAP



10/17/17

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

Revision	Date

Local Entity File No.

REFERENCE: STANDARD FORM 1

Updated 05/01/2008

PIN1702.000

October 17, 2017

W. Layne Weber, P.E., CFM – Principal Engineer
Development Review
Clark County Public Works
500 S. Grand Central Parkway – Box 554000
Las Vegas, Nevada 89155-4000

Subject: Addendum to the Technical Drainage Study for Elk Ridge Estates
HTE #17-41829

Dear Mr. Weber:

This letter is submitted in response to comments contained in the October 4, 2017 review memorandum regarding the above referenced project. A copy of the CCPW drainage study comment letter is included in Appendix A. The comments have been individually addressed in this letter.

1. **Comment:** *The Zoning Conditions say the site plan depicts 23 lots which takes into account Parcel 138-05-801-039. This site shows 22 lots. Explain why your Tentative Map (TM) and study do not match. Review and revise accordingly.*

   Response: Lot 23 (APN 138-05-801-039) on the tentative map was included in the land sale with parcels 138-05-801-065 & -066. This parcel is not being developed at this time. Thus, the existing drainage conditions will remain unchanged with this project.

2. **Comment:** *There appears to be an access easement from Parcel 138-05-801-066 to Parcel 138-05-801-039. Address how you would gain access across the existing channel.*

   Response: An access easement must be provided to parcel 138-05-801-039 to allow future access. The parcel is not being developed at this time; thus, nothing is being constructed to provide access.

3. **Comment:** *Section E on sheet D1 does not match Section C on the TM. It appears Section C on the TM was not drawn correctly. There are several sections that do not match the TM. Explain. Verify all cross-sections match the New Final Map (NFM).*

   Response: Acknowledged. The improvement plan sections will match the Final Map.

4. **Comment:** *There are no topo labels on the drainage maps provided in the study. Label the topo on these three exhibits and provide with the next submittal.*

   Response: Noted. All the drainage exhibits have been annotated with contour labels. Please refer to the revised exhibits provided with this submittal in Appendix B.

5. **Comment:** *When referencing figures showing basin flows, provide the corresponding HEC-1 models that show what the flows are. The tables on the figures can be wrong. Circle what you are referencing.*

   Response: Acknowledged. However, the referenced drainage maps were provided for informational purposes only and to show conformance in drainage patterns as detailed hydrologic analysis of the offsite areas were provided by the subject study. Since the flow rates are not being referenced, the associated HEC-1 models are not necessary and were not provided.

6. **Comment:** *The HEC-1 model for the existing condition shows 23/7 cfs at CP1. Revise the table on the figure accordingly.*

   Response: The table on the existing condition drainage map (Exhibit E) has been corrected as noted.

7. **Comment:** *The Standard Form 4 shows an initial length of 100 feet and a slope of 1% for Basin ON2D. The basin boundary is shown at the beginning of the 27-ft street. It appears this initial length would be about half the street not 100 feet and the slope istypically 2%. Reviewand revise accordingly.*

   Response: The initial length and travel length for basin ON2D has been revised. Please see the response to Comment #8 below.

8. **Comment:** *The plans show a proposed block wall opening conveying flow from south of Cobalt Canyon Street into Basin ON2D. It appears this area should be delineated with Basin ON2D. If this area is included with Basin ON2D the initial length would be about 100 feet, but the slope shows 0.75%, not 1%. Review and revise accordingly.*

   Response: Acknowledged. The subject area is approximately 3600 square foot which is less 0.10 acre and was considered insignificant in the previous submittal. Nonetheless, the initial length and slope of basin OND2 have been adjusted to 110-ft and 0.75% and the basin delineation has been updated on Exhibits F and G. The areas for basins OND1 and OND2 have also been adjusted accordingly. Note that the adjustment results in a higher lag time for basin OND2 from 0.138 hours in comparison to the 0.141 hours in the previous submittal. The Curve Number, Standard Form 4 and HEC-1 models have been updated to reflect the changes in initial length and slope for OND2 and basin areas for both OND1 and OND2. Please refer to Appendix C for the updated computations.

9. **Comment:** *It is unclear what Cross-section DUR3 is for. Where does the 75 cfs come from? Explain.*

   Response: Please refer to Section 4.5 of the original report provided with the las submittal for the discussion of Section DUR3. The section is a capacity calculation for the western half of Durango Drive that conveys flows to the intersection of Hickam Road. This capacity calculation is overly conservative but was utilized in lieu of analyzing additional offsite areas that do not directly impact the site. However, basin OFF5/OFF5D has been analyzed with this submittal and Section DUR3 is no longer necessary and has been removed. Please refer to Appendix B for the revised exhibits and Appendix C for the revised calculations.

10. **Comment:** *The area north of the intersection of Hickam and Durango is not completely analyzed. It appears flows will discharge south in Durango to the intersection. Provide an offsite basin north of the intersection of Hickam and Durango showing the flow that would be conveyed to this intersection.*

    Response: Please refer to the response to Comment #9 above. The subject area has been analyzed as basin OFF5/OFF5D.

11. **Comment:** *Address any additional redlined comments on the grading plans. Provide highlighter marks and responses on plans to show the issues are addressed. Do not use post-it notes to reply.*

    Response: Acknowledged. Highlighter marks and written responses on the plans have been provided where necessary to show that comments have been addressed.

The revised improvement plans adopting the revisions addressed in this letter and the redlined comments from the Clark County redlined check prints have been included in Appendix D. The Clark County redlined check prints have been returned for your reference. We believe that the above responses and revisions provided on the plans have adequately addressed your concerns as presented in the review memorandum. If you have any questions or require additional information, please do not hesitate to contact us at (702) 284-5300.

Respectfully Submitted,

SLATER HANIFAN GROUP

Stanley Okey Amadi, P.E. – SHG

cc: Mark Failla, P.E., CFM – SHG
Caitlyn Alcantara, E.I. – SHG
Kevin Bross, P.E. – SHG

APPENDIX CONTENTS

Appendix A: CCPW Comment Letter

Appendix B: Revised Drainage Exhibits

Appendix C: Update Curve Number, Revised Standard Form 4 & HEC-1 Models

Appendix D: Revised Improvement Plans

APPENDIX A

CCPW Comment Letter

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 Comment Letter

Date: October 4, 2017
Firm: Slater Hanifan Group
Engineer: Stanley Okey Amadi, P.E.
Address: 5470 S. Arville Street, Suite 216, Las Vegas, NV 89118
Phone: (702) 284-5300
Fax: (702) 284-5399
E-mail: samadi@shg-inc.com

Subject: Technical Drainage Study for Elk Ridge Estates
Location: SWC of Hickam Avenue and Durango Drive
APN: 138-05-801-065, -066 & -039
Sec, Township, Range: S05, T20S, R60E
Flood Zone & Panel: Zone X, 2135F, Dated November 16, 2011
Application Number: 17-41829

Submittals	Date Received	Date Returned	Reviewer	Miscellaneous
Technical	09/08/2017	10/04/2017	CR	

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

BOARD OF COUNTY COMMISSIONERS
STEVE SISOLAK, Chairman • CHRIS GIUNCHIGLIANI, Vice Chair
SUSAN BRAGER • LARRY BROWN • JAMES B. GIBSON • MARILYN KIRKPATRICK • LAWRENCE WEEKLY
YOLANDA T. KING, County Manager

Responses to the following comments must be addressed and provided with the next submittal. Incomplete responses may result in further review and time delays to the drainage study approval. CCPW Development Review will not be held responsible for project delays due to incomplete responses.

CCPW – Development Review Comments:

1. The Zoning Conditions say the site plan depicts 23 lots which takes into account Parcel 138-05-801-039. This site shows 22 lots. Explain why your Tentative Map (TM) and study do not match. Review and revise accordingly.

2. There appears to be an access easement from Parcel 138-05-801-066 to Parcel 138-05-801-039. Address how you would gain access across the existing channel.

3. Section E on sheet D1 does not match Section C on the TM. It appears Section C on the TM was not drawn correctly. There are several sections that do not match the TM. Explain. Verify all cross-sections match the New Final Map (NFM).

4. There are no topo labels on the drainage maps provided in the study. Label the topo on these three exhibits and provide with the next submittal.

5. When referencing figures showing basin flows, provide the corresponding HEC-1 models that show what the flows are. The tables on the figures can be wrong. Circle what you are referencing.

6. The HEC-1 model for the existing condition shows 23/7 cfs at CP1. Revise the table on the figure accordingly.

7. The Standard Form 4 shows an initial length of 100 feet and a slope of 1% for Basin ON2D. The basin boundary is shown at the beginning of the 27-ft street. It appears this initial length would be about half the street not 100 feet and the slope is typically 2%. Review and revise accordingly.

8. The plans show a proposed block wall opening conveying flow from south of Cobalt Canyon Street into Basin ON2D. It appears this area should be delineated with Basin ON2D. If this area is included with Basin ON2D the initial length would be about 100 feet, but the slope shows 0.75%, not 1%. Review and revise accordingly.

9. It is unclear what Cross-section DUR3 is for. Where does the 75 cfs come from? Explain.

10. The area north of the intersection of Hickam and Durango is not completely analyzed. It appears flows will discharge south in Durango to the intersection. Provide an offsite basin north of the intersection of Hickam and Durango showing the flow that would be conveyed to this intersection.

11. Address any additional redlined comments on the grading plans. Provide highlighter marks and responses on plans to show the issues are addressed. Do not use post-it notes to reply.

The drainage/grading plans have been red-lined and require modifications prior to the next submittal. Failure to resubmit the red-lined grading plan will require an additional $400 review fee.

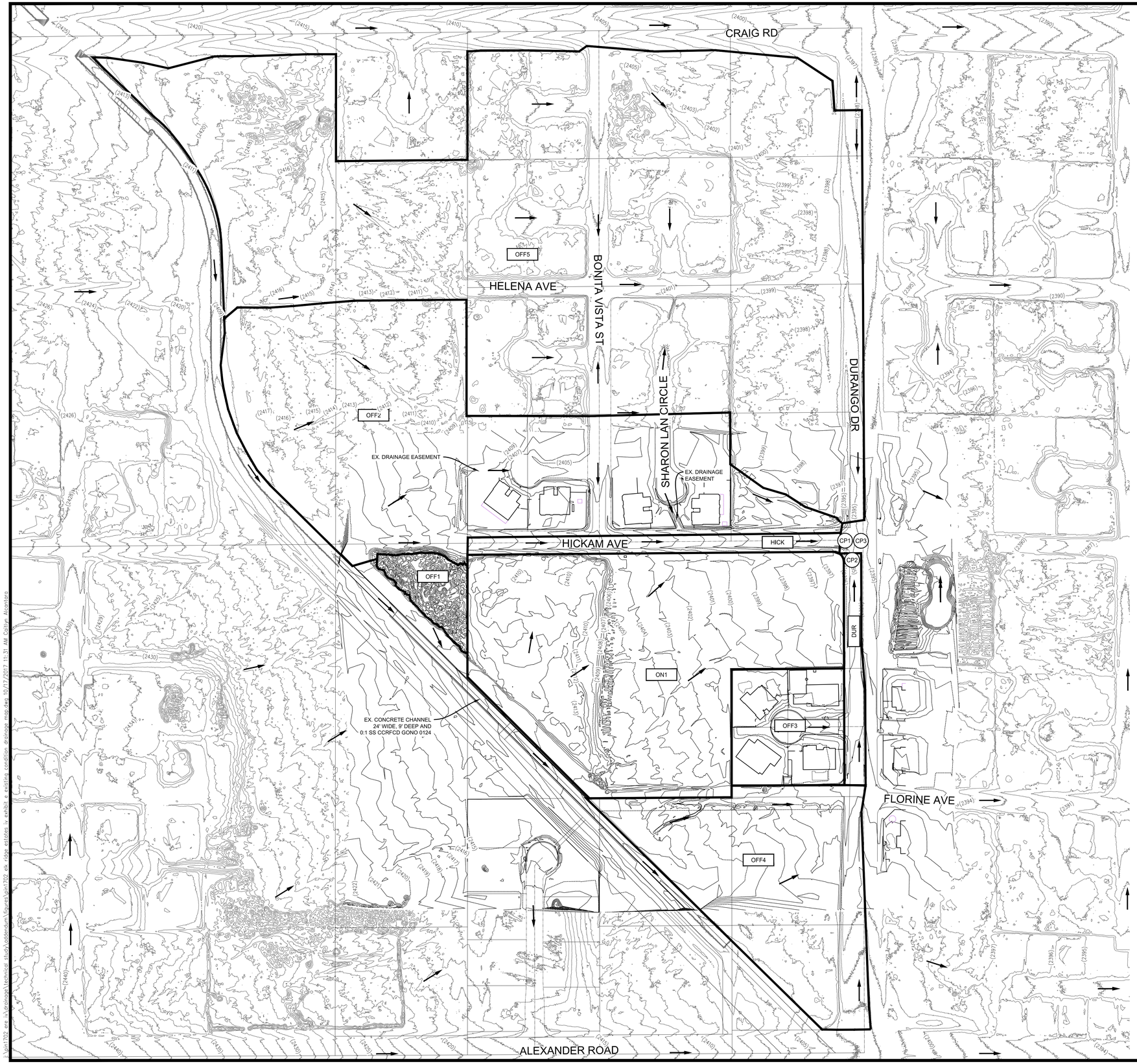
The County's review is solely based on the information submitted by the Engineer of Record. The County's review is strictly limited to compliance with minimum County Codes and Standards. The Engineer of Record is responsible for researching and addressing situations that may require designs above and 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.

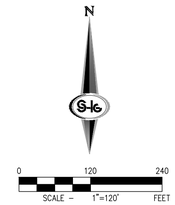
Crissy Riland, E.I.
Associate Engineer
Development Review
crissy@ClarkCountyNV.gov

W. Layne Weber, P.E., CFM
Principal Engineer
Development Review
wlweber@ClarkCountyNV.gov

APPENDIX B

Revised Drainage Exhibits





LEGEND

- BASIN BOUNDARY
- ID — BASIN ID
- (ID) — CONCENTRATION POINT ID
- FLOW DIRECTION

Existing Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
ON1	10.79	15	5
OFF1	0.76	1	<1
OFF2	13.60	4	<1
OFF3	2.01	1	<1
OFF4	10.10	22	9
OFF5	31.98	9	1
HICK	1.31	5	3
DUR	0.69	2	1
CP1 Q = ON1 + OFF1 + OFF2 + HICK	26.5	23	7
CP2 Q = OFF3 + OFF4 + DUR	12.8	25	11
CP3 Q = CP1 + CP2 + OFF5	71.2	52	17

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

PINNACLE HOMES

ELK RIDGE ESTATES IV

EXISTING CONDITION DRAINAGE MAP

S5, T20S, R68E

DATE: OCT 2017
DRAFTER: CAA
DESIGNER: CAA
CHECKED: SOA
PROJECT NO. PIN1702.000

EXHIBIT E
SHEET 1 OF 1

J:\pin1702 ere is\drainage\technical study\addendum\figures\pin1702 elk ridge estates iv exhibit e existing condition drainage map.dwg 10/17/2017 11:31 AM Collyn Alcantara

LIMITS OF OFFSITE BASINS

REFER TO EXISTING CONDITION DRAINAGE MAP (EXHIBIT E) FOR

OFF1

OFF2

OFF3

OFF4

OFF5

ON1D

ON2D

HICKAM AVE

HICK

SENTINEL PEAK AVE

CARBON CANYON AVE

BONITA VISTA ST

SHARON LAN CIRCLE

COBALT CANYON ST

DURANGO DRIVE

EX. DRAINAGE EASEMENT

EX. DRAINAGE EASEMENT

WSE =2409.5-FT

HICK1

HICK2

HICK3

CP1

CP2

CP3

DE1

DUR

DUR1

DUR2

1

2

Q= 44 CFS WIER

EX. CONCRETE CHANNEL 24" WIDE, 8" DEEP, AND 0.1' SIDE SLOPES FOUND ON 01/14

EX. CONCRETE CHANNEL 24" WIDE, 8" DEEP, AND 0.1' SIDE SLOPES FOUND ON 01/14

138-05-701-052
USA
ZONING: U(RNP)

138-05-711-002
MEAGAN & ERIC MAYNARD
ZONING:R-E

138-05-710-003
TAXPAYER
ZONING:R-E

138-05-710-004
ECHOLS M & P TRUST
ZONING:R-E

138-05-710-005
KEITH ALVIN S LIVING TRUST
ZONING:R-E

138-05-701-038
ANTHONY & NANCY ETAL FAMILY TRUST
ZONING:R-E

138-05-801-039
BURBANK LLC
APPROVED ZONING:R-D

138-05-814-005
TOUCHSTONE LONE MOUNTAIN LLC
ZONING:R-E

138-05-801-047
ISAACMAN REVOCABLE TRUST
ZONING:R-E

138-05-801-031
WALTER BYRON JONES
ZONING:R-E

138-05-801-032
MORRIS WENDLING JR
ZONING:R-E

138-05-801-034
AMERICAN LEBANESE SYRIAN ASSOCIATED CHARITIES INC
ZONING:R-E

138-05-801-033
RAYMOND & NANCY FELMLEE LIVING TRUST
ZONING:R-E

138-05-801-001
EDGEWORTH-BAY FAMILY TRUST
ZONING:R-E

REFER TO EXHIBIT E FOR LIMITS OF OFFSITE BASINS

Ultimate Condition Drainage Easement Hydraulic Summary

Section ID	Q_{100} (cfs)	Width (ft)	Type of Analysis	Depth (ft)	Velocity (fps)
DE1 (Q = ON2D)	2.0	5	Normal Depth	0.15	3.23
			Weir	0.26	1.56

Proposed Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
ON1D	8.54	5	<1
ON2D	2.25	2	<1
OFF1	0.76	1	<1
OFF2	13.60	4	<1
OFF3	2.01	1	<1
OFF4	10.10	22	9
OFF5	31.98	9	1
HICK	1.31	5	3
DUR	0.69	2	1
CP1 Q = ON1D + OFF1 + OFF2 + HICK	24.2	12	3
CP2 Q = ON2D + OFF3 + OFF4 + DUR	15.1	27	11
CP3 Q = CP1 + CP2 + OFF5	71.2	44	13

Proposed Condition 100-Year Street Flow Summary

Section ID	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	DxV
1 (Q = ON1D)	5	1.75	0.27	3.0	0.8
		0.77	0.30	2.1	0.6
2 (Q = ON2D)	2	1.85	0.22	2.4	0.5
DUR1 (Q = OFF4)	22	0.60	0.66	2.8	1.8
DUR2 (Q = CP2)	27	0.54	0.71	2.9	2.1
		0.36	0.75	2.6	1.9
HICK1 (Q = CP1)	12	1.98	0.57	4.1	2.3
		1.45	0.61	3.6	2.2
HICK2 (Q = CP1)	12	1.90	0.29	3.2	0.9
		1.36	0.30	2.8	0.8
HICK3 (Q = CP1)	12	1.98	0.50	5.1	2.6
		1.45	0.53	4.6	2.4

Proposed Condition 10-Year Street Flow Summary

Section ID	Q_{10} (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	DxV	Dry Lane (ft)
DUR2 (Q = CP2)	11	0.54	0.56	2.3	1.3	16.5
		0.36	0.59	2.0	1.2	15.0

N

0 50 100
SCALE – 1"=50' FEET

LEGEND

- BASIN BOUNDARY
- ID — BASIN ID
- ID — CONCENTRATION POINT ID
- FLOW DIRECTION
- ID — FLOWMASTER SECTION
- Q= CFS / WIER — WEIR

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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

PINNACLE HOMES

ELK RIDGE ESTATES IV

PROPOSED CONDITION DRAINAGE MAP

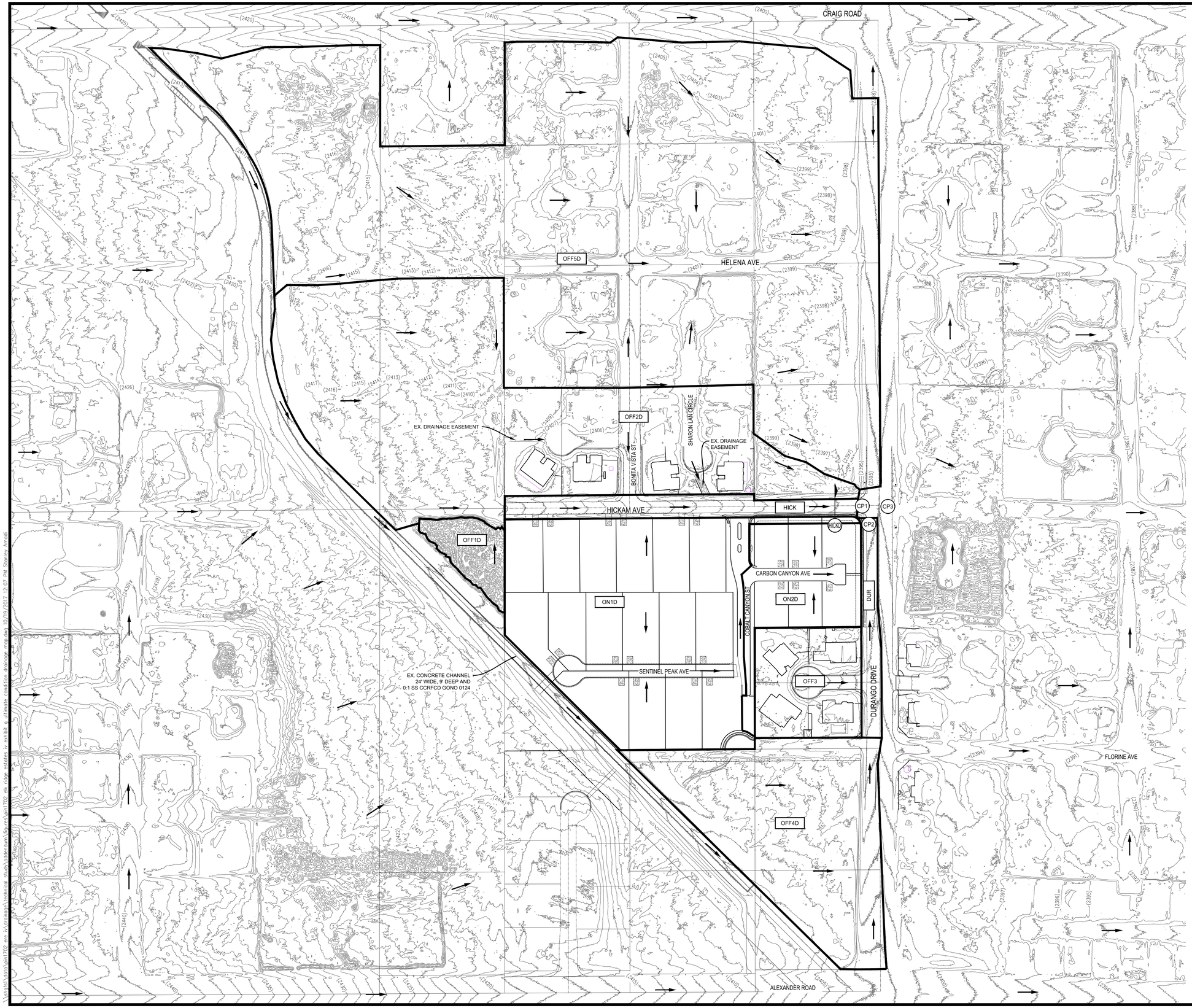
S 5 T 20 S R 60 E

DATE: OCT 2017
DRAFTER: CAA
DESIGNER: CAA
CHECKED: SOA

PROJECT NO.
PIN1702.000

EXHIBIT F
SHEET 1 OF 1

\\shgfs1\data\pin1702 ere (A)\drainage\technical study\addendum\figures\pin1702 elk ridge estates iv exhibit f proposed condition drainage map.dwg 10/19/2017 11:59 AM Stanley Amadi



LEGEND

- BASIN BOUNDARY
- ID — BASIN ID
- ID — CONCENTRATION POINT ID
- FLOW DIRECTION
- ID — FLOWMASTER SECTION

Ultimate Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
ON1D	8.54	5	<1
ON2D	2.25	2	<1
OFF1D	0.76	<1	<1
OFF2D	13.60	1	<1
OFF3	2.01	1	<1
OFF4D	10.10	6	1
OFF5D	31.98	4	<1
HICK	1.31	5	3
DUR	0.69	2	1
CP1 Q = ON1D + OFF1D + OFF2D + HICK	N/A	9	3
CP2 Q = ON2D + OFF3 + OFF4D + DUR	N/A	12	2
CP3 Q = CP1 + CP2 + OFF5	N/A	22	4

Ultimate Condition 100-Year Street Flow Summary

Section ID	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	DxV
HICKD (Q = CP1)	12	1.98	0.38	3.9	1.5
		1.36	0.40	3.4	1.3

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NO.	DESCRIPTION	DATE	BY	APP DATE	APP

PINNACLE HOMES

ELK RIDGE ESTATES IV

ULTIMATE CONDITION DRAINAGE MAP

S5 T20S R60E

DATE: OCT 2017
DRAFTER: CAA
DESIGNER: CAA
CHECKED: SOA

PROJECT NO.
PIN1702.000

EXHIBIT G
SHEET 1 OF 1

\\vdsfs1\data\pin1702 ere v\drainage\technical study\addendum\figures\pin1702 elk ridge estates iv exhibit g ultimate condition drainage map.dwg 10/19/2017 12:07 PM Stanley Arnold

APPENDIX C

Curve Number, Standard Form 4, HEC-1 Models & Weir Calc.

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS

Soil Data & Curve Number Computation

Project Name & Number: PIN1702: Elk Ridge Estates IV
Date: 10/16/2017
By: CAA

Data:

Reference:
Exhibit D
NRCS Soil Data

Soil Type - Soil Survey Area & Version, Soil Description				A	B	C	D
LV	190	Las Vegas Valley 2016	Dalian very gravelly fine sandy loam, 2 to 4 percent slopes	100%	0%	0%	0%
LV	502	Las Vegas Valley 2016	Canutio-Cave gravelly fine sandy loams, 2 to 8 percent slopes	60%	0%	0%	40%

Land Use	A	B	C	D
Residential (20,000 sf)	54	70	80	85
Residential (10,000 sf)	61	75	83	87
Newly Graded	77	86	91	94
Desert Shrub (good)	49	68	79	84

*Commercial land use per Note 3

EXISTING CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON1	LV	190	1.8%	Newly Graded	100%	0%	0%	0%	77	86	91	94	0.19	1.38
	LV	502	41.2%	Newly Graded	60%	0%	0%	40%	77	86	91	94	4.45	34.56
	LV	502	57.0%	Desert Shrub (poor)	60%	0%	0%	40%	63	77	85	88	6.15	41.58
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									10.79	77.5

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF1	LV	190	68.5%	Newly Graded	100%	0%	0%	0%	77	86	91	94	0.52	52.78
	LV	502	31.5%	Newly Graded	60%	0%	0%	40%	77	86	91	94	0.24	26.36
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									0.76	79.1

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF2	LV	190	66.0%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	8.98	41.60
	LV	190	33.9%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	4.61	18.30
	LV	502	0.1%	Desert Shrub (poor)	60%	0%	0%	40%	63	77	85	88	0.01	0.05
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									13.60	60.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF3	LV	502	100.0%	Residential (20,000 sf)	60%	0%	0%	40%	54	70	80	85	2.01	66.40
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									2.01	66.4

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF4	LV	502	36.0%	Desert Shrub (poor)	60%	0%	0%	40%	63	77	85	88	3.64	26.31
	LV	502	15.4%	Newly Graded	60%	0%	0%	40%	77	86	91	94	1.56	12.94
	LV	502	48.5%	Roadway	60%	0%	0%	40%	98	98	98	98	4.90	47.54
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									10.10	86.8

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF5	LV	190	57.3%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	18.33	36.11
	LV	190	3.4%	Roadway	100%	0%	0%	0%	98	98	98	98	1.10	3.37
	LV	190	39.2%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	12.55	21.19
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									31.98	60.7

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
HICK	LV	190	51.1%	Roadway	100%	0%	0%	0%	98	98	98	98	0.67	50.12
	LV	502	48.9%	Roadway	60%	0%	0%	40%	98	98	98	98	0.64	47.88
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									1.31	98.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
DUR	LV	502	100.0%	Roadway	60%	0%	0%	40%	98	98	98	98	0.69	98.00
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									0.69	98.0

PROPOSED CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON1D	LV	190	2.3%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	0.19	1.23
	LV	502	97.7%	Residential (20,000 sf)	60%	0%	0%	40%	54	70	80	85	8.35	64.89
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									8.54	**66.1**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON2D	LV	502	100.0%	Residential (10,000 sf)	60%	0%	0%	40%	61	75	83	87	2.25	71.40
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									2.25	**71.4**

ULTIMATE CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF1D	LV	190	68.5%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	0.52	37.01
	LV	502	31.5%	Residential (20,000 sf)	60%	0%	0%	40%	54	70	80	85	0.24	20.89
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									0.76	**57.9**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF2D	LV	190	99.9%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	13.59	53.96
	LV	502	0.1%	Residential (20,000 sf)	60%	0%	0%	40%	54	70	80	85	0.01	0.05
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									13.60	**54.0**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF4D	LV	502	100.0%	Residential (20,000 sf)	60%	0%	0%	40%	54	70	80	85	10.10	66.40
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									10.10	**66.4**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF5D	LV	190	96.6%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	30.88	52.14
	LV	191	3.4%	Roadway	100%	0%	0%	0%	98	98	98	98	1.10	3.37
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									31.98	**55.5**

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Ph. 702-284-5300 - Fx. 702-284-5399

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL
TIME OF CONCENTRATION

Project Name & Number: Elk Ridge Estates IV: PIN1702
Description: Existing, Proposed, and Ultimate Condition
By: CAA
Date: 10/16/2017

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc Check Urbanized Basins		Tlag
DESIG:	DEV./EX. (D or E)	CN	K [1]	AREA Ac	AREA Mi^2 [2]	INITIAL LENGTH Feet	SLOPE %	Ti Min [3]	TRAVEL LENGTH Feet	SLOPE %	V1 VELOCITY FPS [4]	V2 VELOCITY FPS [5]	Tt Min [6]	Tc Calc. [7]	Total Length Feet [8]	Tc Check [9]	Tlag Hours [10]
EXISTING CONDITION																	
ON1	D	77.5	0.633	10.79	0.0169	240	3.75	8.38	670	1.49	2.47	3.74	4.13	12.52	910	15.056	0.125
OFF1	E	79.1	0.654	0.76	0.0012	15	10.00	1.44	230	0.87	1.38	2.74	2.78	4.22			0.100
OFF2	D	60.0	0.402	13.60	0.0213	250	2.20	15.27	1320	0.98	2.00	3.04	8.66	23.93	1570	18.722	0.187
OFF3	D	66.4	0.486	2.01	0.0031	210	0.71	17.90	210	1.67	2.61	3.95	1.34	19.24	420	12.333	0.123
OFF4	E	86.8	0.756	10.10	0.0158	75	1.33	4.88	610	0.66	1.20	2.38	7.72	12.60			0.126
OFF5	D	60.7	0.411	31.98	0.0500	450	1.33	23.89	2350	0.98	2.00	3.03	14.36	38.25	2800	25.556	0.256
HICK	D	98.0	0.904	1.31	0.0020	20	2.00	1.25	955	1.68	2.61	3.96	5.10	6.36	975	15.417	0.064
DUR	D	98.0	0.904	0.69	0.0011	40	2.00	1.77	590	0.51	1.44	2.18	6.47	8.25	630	13.500	0.082
PROPOSED CONDITION																	
ON1D	D	66.1	0.483	8.54	0.0133	188	2.80	10.81	693	1.30	2.30	3.49	4.54	15.35	881	14.894	0.149
ON2D	D	71.4	0.552	2.25	0.0035	110	0.75	11.38	625	1.48	2.45	3.72	3.95	15.33	735	14.083	0.141
ULTIMATE CONDITION																	
OFF1D	D	57.9	0.374	0.76	0.0012	15	10.00	2.35	230	0.87	1.88	2.85	2.04	4.38	245	11.361	0.050
OFF2D	D	54.0	0.323	13.60	0.0213	250	2.20	17.01	1320	0.98	2.00	3.04	8.66	25.66	1570	18.722	0.187
OFF4D	D	66.4	0.486	10.10	0.0158	75	1.33	8.69	610	0.66	1.64	2.48	5.83	14.52	685	13.806	0.138
OFF5D	D	55.5	0.343	31.98	0.0500	450	1.33	26.28	2350	0.98	2.00	3.03	14.35	40.62	2800	25.556	0.256

[1] K = 0.0132 (CN) - 0.39
[2] A = Area/640
[3] Ti = (1.8 (1.1-K) L^0.5)/S^0.33
[4] For Existing Conditions: V1 = 14.8 * (S/100)^0.5
For Developed Conditions: V1 = 20.2 * (S/100)^0.5
[5] For Existing Conditions: V2 = 29.4 * (S/100)^0.5
For Developed Conditions: V2 = 30.6 * (S/100)^0.5
[6] Tt = L/(60*V)
[7] Tc = Ti + Tt
[8] Total L = Initial L + Travel L
[9] Tc = (L/180) + 10
[10] Tlag = (0.6*Tc)/60
[11] Min Tlag =0.05
Note: For Travel Time Calcs: V1 applies to first 500 feet and V2 applies to remaining distance.

REFERENCE :

STANDARD FORM 4

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE   16OCT17  TIME  11:32:50   *
*                                       *
*****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   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     ELK RIDGE ESTATES IV
    3         ID     EXISTING CONDITION
    4         ID
    5         ID     RETURN PERIOD ------- 100-YR & 10-YR
    6         ID     DISTRIBUTION -------- 6-HOUR SDN3
    7         ID     PROJECT NO. --------- PIN1702.000
    8         ID     FILENAME ------------ EX.H1
    9         ID     DATE ---------------- SEPT 2017
   10         ID     MODELED BY ---------- CAA
   11         ID
   12         ID        PRECIPITATION STORM EVENT RATIOS
   13         ID        STORM EVENT             RATIO
   14         ID        10-YR                    0.59
   15         ID        100-YR                      1
   16         ID
   17         IT       5       0       0     300
   18         IO       5       0       0
   19         IN       5       0       0
   20         JR    PREC    1.00    0.59
              *
   21         KK     ON1
   22         BA  0.0169
   23         PB    2.86
   24         PC       0   0.020   0.057   0.070   0.087   0.108   0.124   0.130   0.130   0.130
   25         PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
   26         PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
   27         PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
   28         PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
   29         PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
   30         PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
   31         PC   0.998   0.999       1
   32         LS       0    77.5
   33         UD   0.125
              *
   34         KK    OFF1
   35         BA  0.0012
   36         LS       0    79.1
   37         UD   0.100
              *
   38         KK    OFF2
   39         BA  0.0213
   40         LS       0    60.0
   41         UD   0.187
              *
```

1 HEC-1 INPUT PAGE 2

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

   42         KK    HICK
   43         BA  0.0020
   44         LS       0    98.0
   45         UD   0.064
              *
   46         KK     CP1
   47         HC       4
              *
   48         KK    OFF3
   49         BA  0.0031
   50         LS       0    66.4
   51         UD   0.123
```

```
                    *

            52      KK    OFF4
            53      BA  0.0158
            54      LS       0    86.8
            55      UD   0.126
                    *

            56      KK     DUR
            57      BA  0.0011
            58      LS       0    98.0
            59      UD   0.082
                    *

            60      KK     CP2
            61      HC       3
                    *

            62      KK    OFF5
            63      BA  0.0500
            64      LS       0    60.7
            65      UD   0.256
                    *

            66      KK     CP3
            67      HC       3
                    *

            68      ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK

 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    21        ON1
                .
                .
    34          .        OFF1
                .           .
                .           .
    38          .           .        OFF2
                .           .           .
                .           .           .
    42          .           .           .        HICK
                .           .           .          .
                .           .           .          .
    46        CP1...................................
                .
                .
    48          .        OFF3
                .           .
                .           .
    52          .           .        OFF4
                .           .           .
                .           .           .
    56          .           .           .         DUR
                .           .           .          .
                .           .           .          .
    60          .         CP2.........................
                .           .
                .           .
    62          .           .        OFF5
                .           .           .
                .           .           .
    66        CP3.........................

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
 *                                      *
 *    FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *              JUN   1998              *
 *           VERSION 4.1                *
 *                                      *
 *  RUN DATE   16OCT17  TIME  11:32:50   *
 *                                      *
 ****************************************

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

                        SLATER HANIFAN GROUP
                        ELK RIDGE ESTATES IV
                        EXISTING CONDITION

                        RETURN PERIOD ------- 100-YR & 10-YR
                        DISTRIBUTION -------- 6-HOUR SDN3
                        PROJECT NO. --------- PIN1702.000
                        FILENAME ------------ EX.H1
                        DATE ---------------- SEPT 2017
                        MODELED BY ---------- CAA

                           PRECIPITATION STORM EVENT RATIOS
                           STORM EVENT            RATIO
                           10-YR                  0.59
                           100-YR                    1


   18 IO          OUTPUT CONTROL VARIABLES
                        IPRNT          5  PRINT CONTROL
                        IPLOT          0  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
```

IDATE	1	0	STARTING DATE
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 .59

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 .59
HYDROGRAPH AT						
+	ON1	.02	1	FLOW	15.	5.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OFF1	.00	1	FLOW	1.	0.
				TIME	3.50	3.58
HYDROGRAPH AT						
+	OFF2	.02	1	FLOW	4.	0.
				TIME	3.75	4.92
HYDROGRAPH AT						
+	HICK	.00	1	FLOW	5.	3.
				TIME	3.50	3.50
4 COMBINED AT						
+	CP1	.04	1	FLOW	23.	7.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OFF3	.00	1	FLOW	1.	0.
				TIME	3.58	3.75
HYDROGRAPH AT						
+	OFF4	.02	1	FLOW	22.	9.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	DUR	.00	1	FLOW	2.	1.
				TIME	3.50	3.50
3 COMBINED AT						
+	CP2	.02	1	FLOW	25.	11.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OFF5	.05	1	FLOW	9.	1.
				TIME	3.83	5.00
3 COMBINED AT						
+	CP3	.11	1	FLOW	52.	17.
				TIME	3.58	3.58

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

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998                *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   16OCT17  TIME  11:32:54   *
*                                       *
*****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   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     ELK RIDGE ESTATES IV - Addendum
    3         ID     PROPOSED CONDITION
    4         ID
    5         ID     RETURN PERIOD -------- 100-YR & 10-YR
    6         ID     DISTRIBUTION --------- 6-HOUR SDN3
    7         ID     PROJECT NO. ---------- PIN1702.000
    8         ID     FILENAME ------------- PRO.H1
    9         ID     DATE ----------------- SEPT 2017
   10         ID     MODELED BY ----------- CAA
   11         ID
   12         ID        PRECIPITATION STORM EVENT RATIOS
   13         ID        STORM EVENT             RATIO
   14         ID        10-YR                    0.59
   15         ID        100-YR                      1
   16         ID
   17         IT       5       0       0     300
   18         IO       5       0       0
   19         IN       5       0       0
   20         JR    PREC    1.00    0.59
              *

   21         KK    ON1D
   22         BA  0.0133
   23         PB    2.86
   24         PC       0   0.020   0.057   0.070   0.087   0.108   0.124   0.130   0.130   0.130
   25         PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
   26         PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
   27         PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
   28         PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
   29         PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
   30         PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
   31         PC   0.998   0.999       1
   32         LS       0    66.1
   33         UD   0.149
              *

   34         KK    OFF1
   35         BA  0.0012
   36         LS       0    79.1
   37         UD   0.100
              *

   38         KK    OFF2
   39         BA  0.0213
   40         LS       0    60.0
   41         UD   0.187
              *
```

1 HEC-1 INPUT PAGE 2

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

   42         KK    HICK
   43         BA  0.0020
   44         LS       0    98.0
   45         UD   0.064
              *

   46         KK     CP1
   47         HC       4
              *

   48         KK    ON2D
   49         BA  0.0035
   50         LS       0    71.4
   51         UD   0.141
```

```
                    *

              52          KK    OFF3
              53          BA  0.0031
              54          LS       0    66.4
              55          UD   0.123
                          *

              56          KK    OFF4
              57          BA  0.0158
              58          LS       0    86.8
              59          UD   0.126
                          *

              60          KK     DUR
              61          BA  0.0011
              62          LS       0    98.0
              63          UD   0.082
                          *

              64          KK     CP2
              65          HC       4
                          *

              66          KK    OFF5
              67          BA  0.0500
              68          LS       0    60.7
              69          UD   0.256
                          *

              70          KK     CP3
              71          HC       3
                          *
              72          ZZ
1
                  SCHEMATIC DIAGRAM OF STREAM NETWORK

 INPUT
  LINE       (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

    NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

     21        ON1D
               .
               .
     34        .        OFF1
               .          .
               .          .
     38        .          .        OFF2
               .          .          .
               .          .          .
     42        .          .          .        HICK
               .          .          .          .
               .          .          .          .
     46        CP1.....................................
               .
               .
     48        .        ON2D
               .          .
               .          .
     52        .          .        OFF3
               .          .          .
               .          .          .
     56        .          .          .        OFF4
               .          .          .          .
               .          .          .          .
     60        .          .          .          .          DUR
               .          .          .          .            .
               .          .          .          .            .
     64        .         CP2.....................................
               .          .
               .          .
     66        .          .        OFF5
               .          .          .
               .          .          .
     70        CP3.....................
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             JUN   1998                *
 *          VERSION 4.1                  *
 *                                       *
 *  RUN DATE   16OCT17  TIME  11:32:54   *
 *                                       *
 *****************************************
```

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

SLATER HANIFAN GROUP
ELK RIDGE ESTATES IV - Addendum
PROPOSED CONDITION

RETURN PERIOD ------- 100-YR & 10-YR
DISTRIBUTION -------- 6-HOUR SDN3
PROJECT NO. --------- PIN1702.000
FILENAME ------------ PRO.H1
DATE ---------------- SEPT 2017
MODELED BY ---------- CAA

PRECIPITATION STORM EVENT	RATIOS
STORM EVENT	RATIO
10-YR	0.59
100-YR	1

```
   18 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                        NMIN           5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       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       .59
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

                                                                  RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN                  RATIO 1  RATIO 2
                                                              1.00      .59

 HYDROGRAPH AT
+                  ON1D       .01     1   FLOW                 5.       0.
                                           TIME              3.58     3.83

 HYDROGRAPH AT
+                  OFF1       .00     1   FLOW                 1.       0.
                                           TIME              3.50     3.58

 HYDROGRAPH AT
+                  OFF2       .02     1   FLOW                 4.       0.
                                           TIME              3.75     4.92

 HYDROGRAPH AT
+                  HICK       .00     1   FLOW                 5.       3.
                                           TIME              3.50     3.50

   4 COMBINED AT
+                   CP1       .04     1   FLOW                12.       3.
                                           TIME              3.58     3.50

 HYDROGRAPH AT
+                  ON2D       .00     1   FLOW                 2.       0.
                                           TIME              3.58     3.67

 HYDROGRAPH AT
+                  OFF3       .00     1   FLOW                 1.       0.
                                           TIME              3.58     3.75

 HYDROGRAPH AT
+                  OFF4       .02     1   FLOW                22.       9.
                                           TIME              3.58     3.58

 HYDROGRAPH AT
+                   DUR       .00     1   FLOW                 2.       1.
                                           TIME              3.50     3.50

   4 COMBINED AT
+                   CP2       .02     1   FLOW                27.      11.
                                           TIME              3.58     3.58

 HYDROGRAPH AT
+                  OFF5       .05     1   FLOW                 9.       1.
                                           TIME              3.83     5.00

   3 COMBINED AT
+                   CP3       .11     1   FLOW                44.      13.
                                           TIME              3.58     3.58


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

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN  1998                *
*          VERSION 4.1                 *
*                                      *
*  RUN DATE   16OCT17  TIME  11:32:59  *
*                                      *
****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   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     ELK RIDGE ESTATES IV
    3         ID     ULTIMATE CONDITION
    4         ID
    5         ID     RETURN PERIOD ------- 100-YR & 10-YR
    6         ID     DISTRIBUTION -------- 6-HOUR SDN3
    7         ID     PROJECT NO. --------- PIN1702.000
    8         ID     FILENAME ------------ ULT.H1
    9         ID     DATE ---------------- SEPT 2017
   10         ID     MODELED BY ---------- CAA
   11         ID
   12         ID        PRECIPITATION STORM EVENT RATIOS
   13         ID        STORM EVENT             RATIO
   14         ID        10-YR                    0.59
   15         ID        100-YR                      1
   16         ID
   17         IT       5       0       0     300
   18         IO       5       0       0
   19         IN       5       0       0
   20         JR    PREC    1.00    0.59
              *

   21         KK    ON1D
   22         BA  0.0133
   23         PB    2.86
   24         PC       0   0.020   0.057   0.070   0.087   0.108   0.124   0.130   0.130   0.130
   25         PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
   26         PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
   27         PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
   28         PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
   29         PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
   30         PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
   31         PC   0.998   0.999       1
   32         LS       0    66.1
   33         UD   0.149
              *

   34         KK   OFF1D
   35         BA  0.0012
   36         LS       0    57.9
   37         UD   0.050
              *

   38         KK   OFF2D
   39         BA  0.0213
   40         LS       0    54.0
   41         UD   0.187
              *
```

1 HEC-1 INPUT PAGE 2

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

   42         KK    HICK
   43         BA  0.0020
   44         LS       0    98.0
   45         UD   0.064
              *

   46         KK     CP1
   47         HC       4
              *

   48         KK    ON2D
   49         BA  0.0035
   50         LS       0    71.4
   51         UD   0.141
```

```
                  *
             52           KK    OFF3
             53           BA  0.0031
             54           LS       0    66.4
             55           UD   0.123
                  *
             56           KK   OFF4D
             57           BA  0.0158
             58           LS       0    66.4
             59           UD   0.138
                  *
             60           KK     DUR
             61           BA  0.0011
             62           LS       0    98.0
             63           UD   0.082
                  *
             64           KK     CP2
             65           HC       4
                  *
             66           KK   OFF5D
             67           BA  0.0500
             68           LS       0    55.5
             69           UD   0.256
                  *
             70           KK     CP3
             71           HC       3
                  *
             72           ZZ
1
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    21        ON1D
                 .
                 .
    34           .       OFF1D
                 .          .
                 .          .
    38           .          .       OFF2D
                 .          .          .
                 .          .          .
    42           .          .          .        HICK
                 .          .          .          .
                 .          .          .          .
    46         CP1..................................
                 .
                 .
    48           .        ON2D
                 .          .
                 .          .
    52           .          .        OFF3
                 .          .          .
                 .          .          .
    56           .          .          .       OFF4D
                 .          .          .          .
                 .          .          .          .
    60           .          .          .          .         DUR
                 .          .          .          .          .
                 .          .          .          .          .
    64           .         CP2.................................
                 .          .
                 .          .
    66           .          .       OFF5D
                 .          .          .
                 .          .          .
    70         CP3.......................

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
 *                                       *
 *    FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *              JUN   1998               *
 *           VERSION 4.1                 *
 *                                       *
 *  RUN DATE   16OCT17  TIME  11:32:59   *
 *                                       *
 *****************************************

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

 SLATER HANIFAN GROUP
 ELK RIDGE ESTATES IV
 ULTIMATE CONDITION

 RETURN PERIOD ------- 100-YR & 10-YR
 DISTRIBUTION -------- 6-HOUR SDN3
 PROJECT NO. --------- PIN1702.000
 FILENAME ------------ ULT.H1
 DATE ---------------- SEPT 2017
 MODELED BY ---------- CAA

    PRECIPITATION STORM EVENT RATIOS
    STORM EVENT             RATIO
    10-YR                  0.59
    100-YR                    1
```

```
   18 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                        NMIN           5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       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       .59
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

                                                                  RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN                 RATIO 1  RATIO 2
                                                             1.00      .59

 HYDROGRAPH AT
+                  ON1D       .01     1   FLOW              5.       0.
                                           TIME            3.58     3.83

 HYDROGRAPH AT
+                 OFF1D       .00     1   FLOW              0.       0.
                                           TIME            3.50     4.83

 HYDROGRAPH AT
+                 OFF2D       .02     1   FLOW              1.       0.
                                           TIME            3.83      .00

 HYDROGRAPH AT
+                  HICK       .00     1   FLOW              5.       3.
                                           TIME            3.50     3.50

   4 COMBINED AT
+                   CP1       .04     1   FLOW              9.       3.
                                           TIME            3.58     3.50

 HYDROGRAPH AT
+                  ON2D       .00     1   FLOW              2.       0.
                                           TIME            3.58     3.67

 HYDROGRAPH AT
+                 OFF3        .00     1   FLOW              1.       0.
                                           TIME            3.58     3.75

 HYDROGRAPH AT
+                 OFF4D       .02     1   FLOW              6.       1.
                                           TIME            3.58     3.75

 HYDROGRAPH AT
+                   DUR       .00     1   FLOW              2.       1.
                                           TIME            3.50     3.50

   4 COMBINED AT
+                   CP2       .02     1   FLOW             12.       2.
                                           TIME            3.58     3.58

 HYDROGRAPH AT
+                 OFF5D       .05     1   FLOW              4.       0.
                                           TIME            3.83     5.17

   3 COMBINED AT
+                   CP3       .11     1   FLOW             22.       4.
                                           TIME            3.58     3.50


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

Hickam - Durango Weir
Worksheet for Generic Weir

Project Description	
Worksheet	Hickam - Durango Weir
Type	Generic Weir
Solve For	Headwater Elevation

Input Data		
Discharge	44.00	cfs
Crest Elevation	2,395.21	ft
Discharge Coefficient	3.00	US
Crest Length	110.82	ft

Results		
Headwater Elevation	2,395.47	ft
Headwater Height Above Crest	0.26	ft
Flow Area	28.8	ft^2
Velocity	1.53	ft/s
Wetted Perimeter	111.34	ft
Top Width	110.82	ft

Notes: Q = CP3

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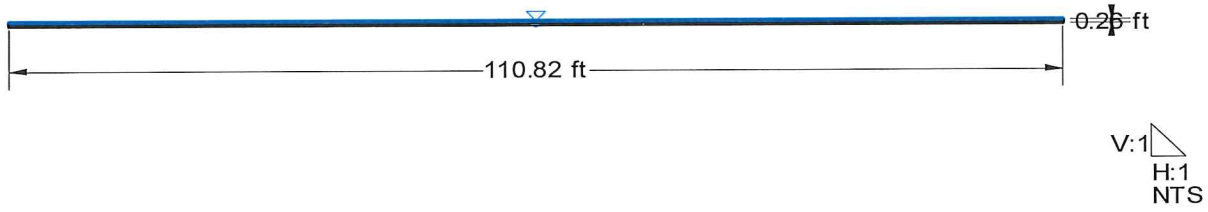
Slater Hanifan Group
37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Hickam - Durango Weir
Cross Section for Generic Weir

Project Description	
Worksheet	Hickam - Durango Weir
Type	Generic Weir
Solve For	Headwater Elevation

Section Data		
Discharge	44.00	cfs
Headwater Elevation	2,395.47	ft
Crest Elevation	2,395.21	ft
Discharge Coefficient	3.00	US
Crest Length	110.82	ft

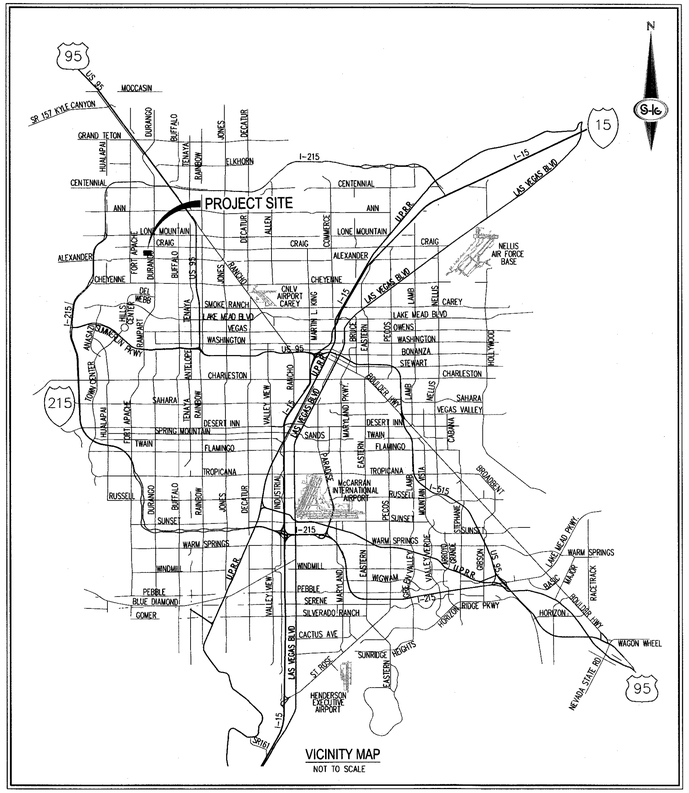


© Haestad Methods, Inc.

Slater Hanifan Group
37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

APPENDIX D

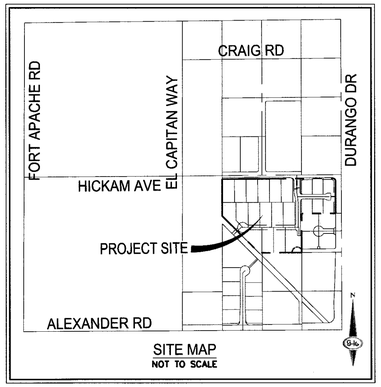
Revised Improvement Plans



PINNACLE HOMES

IMPROVEMENT PLANS FOR ELK RIDGE ESTATES IV

CLARK COUNTY, NEVADA
RESIDENTIAL SUBDIVISION
APN: 138-05-801-065, AND -066



SHEET INDEX

SHEET NUMBER	SHEET DESCRIPTION	SHEET TITLE
1	C-1	COVER SHEET
2	C-2	GENERAL NOTES
3	C-3	QUANTITIES AND ABBREVIATIONS
4	G-1	GRADING PLAN I
5	G-2	GRADING PLAN II
6	G-3	GRADING PLAN III
7	G-4	GRADING PLAN IV
8	G-5	GRADING PLAN V
9	D-1	DETAIL SHEET I
10	D-2	DETAIL SHEET II
11	PP-1	PLAN AND PROFILE – DURANGO DRIVE
12	PP-2	PLAN AND PROFILE – HICKAM AVENUE I
13	PP-3	PLAN AND PROFILE – HICKAM AVENUE II
14	PP-4	PLAN AND PROFILE – COBALT CANYON STREET I
15	PP-5	PLAN AND PROFILE – COBALT CANYON STREET II
16	PP-6	PLAN AND PROFILE – CARBON CANYON COURT
17	PP-7	PLAN AND PROFILE – SENTINEL PEAK COURT I
18	PP-8	PLAN AND PROFILE – SENTINEL PEAK COURT II
19	PP-9	PLAN AND PROFILE – SD LATERAL

APPROVALS

CLARK COUNTY FIRE DEPARTMENT — DATE

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE, COUNTY LAWS AND/OR SPECIFICATIONS.

2,250 GPM 20 PSI

CITY ENGINEER–ALLEN PAVELKA PE, #9029 — DATE

APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED OF 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.

CENTRAL TELEPHONE CO. DBA CENTURYLINK — DATE

THE AFFIXED CENTURYLINK 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 STATUES AND / OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. ##### DATE:
LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL
SHEETS: ##

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM LAS VEGAS VALLEY WATER DISTRICT.

NV ENERGY — DATE

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 CORPORATION — DATE

COX COMMUNICATIONS LAS VEGAS, INC. — DATE

OWNER/DEVELOPER	ENGINEER
PINNACLE HOMES 9225 W FLAMINGO RD SUITE #190 LAS VEGAS, NV 89147 PH: 702-228-9720 CONTACT: FRANK WYATT	SLATER HANIFAN GROUP, INC. 5740 S. ARVILLE STREET, SUITE 216 LAS VEGAS, NV 89118 PH: (702) 284-5300 FX: (702) 284-5399 CONTACT: KEVIN M. BROSS

LEGAL DESCRIPTION

LYING WITHIN THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA

BENCHMARK

BENCHMARK NUMBER: OLVOO 45WW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2,395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

PROJECT INFORMATION

OVERALL PROJECT INFORMATION

ACREAGE (GROSS):	= 10.8 AC
ACREAGE (NET):	= 9.3 AC
DENSITY (LOTS/GROSS ACRE):	= 2.0 DU/GROSS AC
TOTAL NO. OF RESIDENTIAL LOTS	= 22
TOTAL NO. OF COMMON ELEMENTS	= 1
MINIMUM LOT SIZE	= 11,436 SF±
MAXIMUM LOT SIZE	= 22,635 SF±
PROVIDED OPEN SPACE	= 8,994 SF±

APN 138-05-801-065

PROPOSED ZONING	= R-D
ACREAGE (GROSS):	= 2.0 AC
ACREAGE (NET):	= 1.6 AC
DENSITY (LOTS/GROSS ACRE):	= 3.0 DU/GROSS AC
TOTAL NO. OF RESIDENTIAL LOTS	= 6
TOTAL NO. OF COMMON ELEMENTS	= 0
MINIMUM LOT SIZE	= 11,436 SF±
MAXIMUM LOT SIZE	= 11,754 SF±
PROVIDED OPEN SPACE	= 0 SF±

APN 138-05-801-066

PROPOSED ZONING	= R-E
ACREAGE (GROSS):	= 8.8 AC
ACREAGE (NET):	= 7.7 AC
DENSITY (LOTS/GROSS ACRE):	= 1.8 DU/GROSS AC
TOTAL NO. OF RESIDENTIAL LOTS	= 16
TOTAL NO. OF COMMON ELEMENTS	= 1
MINIMUM LOT SIZE	= 19,584 SF±
MAXIMUM LOT SIZE	= 22,635 SF±
PROVIDED OPEN SPACE	= 8,994 SF±

EARTHWORK SUMMARY (UNADJUSTED)

CUT	15,270 CY.
FILL	15,416 CY.
NET	146 CY. FILL

DEVIATIONS FROM STANDARDS

NONE

PRE-DEVELOPMENT NOTE

A PRE-DEVELOPMENT MEETING WITH THE DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW DIVISION, OFF-SITE INSPECTOR IS REQUIRED. PLEASE CONTACT INSPECTOR AT 702-455-4610

SWPPP 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 PROJECTS THAT DISTURB MORE THEN ONE ACRE OF LAND MUST SUBMIT TO NDEP A "NOTICE OF INTENT" FOR INCLUSION UNDER STORMWATER PERMIT NO. NVR100000 ALONG WITH THE APPROPRIATE FILLING FEE.

GEOTECHNICAL ENGINEER

PREPARED BY: WRIGHT ENGINEERS
ADDRESS: 5275 ARVILLE STREET, SUITE 108, LAS VEGAS, NEVADA 89118
PHONE: 702-323-6000
PROJECT No. 171083
DATED: 06/30/2017

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
COVER SHEET

S5 T20 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
NO. 24572
9/19/17

C-1
SHEET 1 OF 19

J:\pin1702 ere ix\dwg\improv\pin1702 cvr.dwg 10/17/2017 3:22 PM Emily Hoy

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT # ADD FIELD (REVISED 01/09/2017)

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. THE BUSINESS DAY 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.
4. 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 ABUTTING 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.

15. NO LEAD COMPLIANCE NOTE:
TO COMPLY WITH THE FEDERAL SAFE DRINKING WATER ACT, ALL WATER WORKS BRASS PRODUCTS PROPOSED TO BE RELOCATED, OR INSTALLED AS NEW MUST BE INSTALLED WITH THE LEAD FREE APPROVED PRODUCT. THE OLD LEADED PRODUCT MAY NOT BE USED.

GRADING NOTES

1. INDICATED GRADES OTHER THAN T.C., F.G. & GUTTER F.L. ARE ROUGH GRADES.
2. THE ROUGH GRADING PLANS SHALL BE ON THE JOB SITE AT ALL TIMES. THE ROUGH GRADING SHALL BE FINISHED IN CONFORMANCE WITH THE LINES AND GRADES SHOWN ON THE PLANS. THE GRADING QUANTITIES ARE BASED ON THE ELEVATION AND DETAILS SHOWN ON THE PLANS. ANY DEVIATIONS FROM THE PLANS WILL RESULT IN QUANTITY CHANGES.
3. CARE SHALL BE EXERCISED IN GRADING CORNER LOTS.
4. ROUGH PAD ELEVATIONS SHALL BE GRADED TO WITHIN 0.1' OF THE PAD ELEVATIONS SHOWN ON THE PLANS. WHEN GRADING IS COMPLETE PER THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE LOTS CAN BE INSPECTED. AT THAT TIME THE ENGINEER SHALL ALSO DECIDE IF ANY ADDITIONAL DITCHES OR BERMS ARE REQUIRED. THE CONTRACTOR IS REQUESTED NOT TO REMOVE ANY OF HIS ROUGH GRADING EQUIPMENT UNTIL HE RECEIVES GRADING APPROVAL FROM THE ENGINEER.
5. SOILS REPORT PREPARED BY WRIGHT ENGINEERS, PROJECT NO. 171083, DATED 06/30/2017.
6. EARTHWORK QUANTITIES (RAW):
    -CUT = 15,270 CUBIC YARDS.
    -FILL = 15,416 CUBIC YARDS.
    -NET = 146 CUBIC YARDS FILL.

    A) THE ABOVE QUANTITIES DO NOT REFLECT LOSSES DUE TO SUBSIDENCE OR SHRINKAGE.
    B) THE ABOVE QUANTITIES DO REFLECT USING NATIVE MATERIAL IN LIEU OF TYPE I GRAVEL BASE MATERIAL FOR STREET SECTIONS.
    C) THE ABOVE QUANTITIES DO NOT REFLECT ANY EARTHWORK WHICH MAY BE REQUIRED BY THE ENGINEER TO CONSTRUCT ADDITIONAL PROTECTIVE DITCHES OR BERMS NOT SHOWN ON THESE DRAWINGS.

CLARK COUNTY TRAFFIC NOTES

1. 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 HEREUNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
2. 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 GROUND MOUNTED STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING COUNTY STREETS IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
3. ALL CONSTRUCTION SIGNING, BARRICADING AND PAVEMENT MARKINGS SHALL CONFORM TO THE NEVADA WORK ZONE TRAFFIC CONTROL HANDBOOK - 1986 AND TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION.
4. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL, OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE COUNTY TRAFFIC MANAGER.
5. THE DEVELOPER SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL ALL PERMANENT SIGNS SHOWN ON THE PLANS. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CLARK COUNTY AREA STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGNPOSTS SHALL BE INSTALLED IN ACCORDANCE WITH CLARK COUNTY AREA STANDARDS. ALL SIGNS SHALL USE CLASS VI SHEETING.
6. IF A PROPOSED STREET LIGHT STANDARD IS FIELD LOCATED TO WITHIN FIVE (5) FEET OF ANY SIGN SHOWN HEREON TO BE MOUNTED ON A SIGN POST, CHANGE SIGN MOUNTING TO ONE ON THE STREETLIGHT STANDARD.
7. PRIOR TO CONSTRUCTION, THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE CURRENT PLANNING DIVISION OF THE DEPARTMENT OF COMPREHENSIVE PLANNING.
8. ALL TRAFFIC SIGNAL POLE ASSEMBLIES, STEEL PEDESTAL FOR CABINETS AND STREET LIGHT POLES SHALL BE GALVANIZED PER ASTM A.123.
9. ALL STREET LIGHTING INSTALLATIONS EXCEPT NOTED ON THE STREET LIGHTING PLANS SHALL CONFORM TO THE UNIFORM STANDARD DRAWINGS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA, NEVADA, LATEST EDITION OF EACH EXCEPT AS NOTED ON THE STREET LIGHTING PLANS AND LED LUMINAIRES. REFER TO CLARK COUNTY PUBLIC WORKS QUALIFIED PRODUCTS LIST "QPL" FOR LED LUMINAIRES. QPL CAN BE FOUND ONLINE AT HTTP://WWW.CLARKCOUNTYNV.GOV/PUBLICWORKS/PAGES/DEFAULT.ASPX
10. THE FOLLOWING CLARK COUNTY UNDERGROUND FACILITIES MAY BE LOCATED IN YOUR PROJECT AREA: STREET LIGHTING, TRAFFIC SIGNALS, AND FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.) INTERCONNECT CABLE. YOU MUST CONTACT CLARK COUNTY TRAFFIC MANAGEMENT DIVISION, OPERATIONS UNIT AT 455-6000 FOR LOCATIONS AT LEAST 48 HOURS PRIOR TO WORKING IN THE AREA. CLARK COUNTY IS NOT A MEMBER OF "CALL BEFORE YOU DIG" (UNDERGROUND SERVICE ALERT), AND A CALL TO THAT ORGANIZATION DOES NOT RELIEVE YOU OF LIABILITY FOR CLARK COUNTY FACILITIES.
11. F.A.S.T. INTERCONNECT CABLE POLICY IS IN EFFECT. INTERCONNECT CABLE MUST BE MAINTAINED AT ALL TIMES. DEVELOPER/CONTRACTOR SHALL PROVIDE TEMPORARY OVERHEAD INTERCONNECT CABLE WHILE PERMANENT CABLE IS BEING RELOCATED. TEMPORARY AERIAL INSTALLATION MUST BE ACCEPTABLE TO THE COUNTY TRAFFIC MANAGER AND TO F.A.S.T. ANY DAMAGE TO THIS CABLE IS DEEMED IN EMERGENCY BY F.A.S.T., CITY OF LAS VEGAS, CLARK COUNTY AND NDOT AND MUST BE REPAIRED IMMEDIATELY TO F.A.S.T. ACCEPTANCE. $2,500 PER DAY DAMAGES MAY BE ASSESSED AFTER 24 HOURS HAS ELAPSED FROM TIME OF BREAK OR DAMAGE.
12. ALL NEW OR REPLACEMENT TRAFFIC SIGNAL LOOPS SHALL BE INSTALLED USING CABLE-IN-DUCT WIRING, SHALL HAVE INDEPENDENT LEAD-IN WIRES FOR EACH LOOP FROM THE CONTROLLER TO THE PULL-BOX, AND EACH LEAD-IN SHALL BE INDIVIDUALLY TAGGED.
13. TRAFFIC SIGNAL PEDESTRIAN HEADS SHALL BE THE L.E.D. TYPE.
14. ELECTRICAL POWER SERVICE POINT LOCATION(S) FOR STREET LIGHTING AND TRAFFIC SIGNALS MUST BE INDICATED ON THE PLANS. IF CONNECTING TO AN EXISTING CIRCUIT, INDICATE LOCATION OF EXISTING SERVICE POINT FOR EACH CIRCUIT.
15. WHEN STREETLIGHTS ARE TO BE CONNECTED TO AN EXISTING CIRCUIT, THE ENGINEER MUST CERTIFY THAT THE EXISTING CIRCUIT IS CAPABLE OF HANDLING THE ADDITIONAL CIRCUIT LOAD.
16. CLARK COUNTY RESERVES THE RIGHT TO REJECT STREET LIGHT AND TRAFFIC SIGNAL POLES AND ASSEMBLIES WHICH HAVE A "STRIPED" APPEARANCE.
17. TWO WEEKS PRIOR TO BEGINNING OF CONSTRUCTION, MODIFICATION OR RELOCATION OF ANY TRAFFIC SIGNAL SYSTEM, WRITTEN NOTICE SHALL BE SUBMITTED TO THE CLARK COUNTY TRAFFIC MANAGEMENT DIVISION OF THE DATE THAT WORK WILL BEGIN.
18. THREE (3) NORMAL WORKING DAYS PRIOR TO TURN-ON OR COMPLETION OF MODIFICATION(S) TO A TRAFFIC SIGNAL SYSTEM, WRITTEN NOTICE SHALL BE SUBMITTED TO THE CLARK COUNTY TRAFFIC MANAGEMENT DIVISION THAT WORK IS BEING COMPLETED AND THE PROPOSED DATE OF COMPLETION.

FIRE DEPARTMENT NOTES

UNIFORM GUIDELINES - INSTALLATION AND SPECIFICATION OF FIRE HYDRANTS

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE CLARK COUNTY FIRE CODE AS AMENDED, AND THE 2007 EDITION OF NATIONAL FIRE PROTECTION ASSOCIATION PAMPHLET #24.
2. FIRE HYDRANTS AND WATER SUPPLIES FOR FIRE PROTECTION SHALL BE AND MADE SERVICEABLE PRIOR TO AND DURING THE TIME OF CONSTRUCTION IN ACCORDANCE WITH SECTION 1412 OF THE CLARK COUNTY FIRE CODE, AS AMENDED.
3. IF DURING CONSTRUCTION IT BECOMES NECESSARY TO CLOSE ANY CONTROL VALVE OR PLACE A HYDRANT OUT OF SERVICE, APPROVAL SHALL BE OBTAINED FROM THE FIRE DEPARTMENT PRIOR TO PLACING THE HYDRANT OUT OF SERVICE.
4. PAINTING OF CURBS AND/OR STRIPING OF ASPHALT AREAS AND PROTECTION OF HYDRANTS FROM PHYSICAL INJURY SHALL BE PER THE FIRE HYDRANT INSTALLATION SPECIFICATIONS OF THE FIRE PREVENTION DIVISION.
5. NO FIRE HYDRANT SHALL BE LOCATED WITHIN 25 FEET OF ANY STRUCTURE, OR 6 FEET OF A DRIVEWAY, POWER POLE, LIGHT STANDARD, OR ANY OTHER OBSTRUCTION. FOR WALL, FENCE AND PLANTER LOCATIONS, A PERIMETER AROUND THE HYDRANT MEASURING A MINIMUM OF 3 FEET FROM ITS EXTERIOR SHALL BE MAINTAINED CLEAR OF ALL OBSTRUCTION AT ALL TIMES.
6. FIRE APPARATUS ACCESS ROADS SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS, WITH A MINIMUM VEHICLE LOAD OF 33,000 POUNDS PER AXLE, AND SHALL BE SURFACED AND PAVED SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.

    EXCEPTION: TEMPORARY ACCESS ROADS SERVING ONLY BUILDINGS UNDER CONSTRUCTION SHALL NOT BE REQUIRED TO BE PAVED, BUT SHALL COMPLY WITH ALL OTHER REQUIREMENTS OF SECTION 503.2.3 OF THE CLARK COUNTY FIRE CODE.
7. PRIOR TO ACCEPTANCE OF ANY FIRE SERVICE MAIN, A SATISFACTORY HYDROSTATIC TEST WITH PIPING JOINTS UNCOVERED MUST BE CONDUCTED. APPROVED PLANS, AN INSTALLATION PERMIT AND A CONTRACTOR'S MATERIALS AND TEST CERTIFICATE MUST BE PROVIDED AT TIME OF INSPECTION. SCHEDULE INSPECTION AT WWW.CLARKCOUNTYNV.GOV/DEVELOPMENTSERVICES/FIREPREVENTION.
8. FIRE HYDRANTS SHALL BE LOCATED 4' TO 7' FROM BACK OF CURB AND A MINIMUM OF 6 FEET AWAY FROM TURNS.
9. BLUE REFLECTIVE MARKERS MUST BE INSTALLED BEFORE FINAL HYDRANT ACCEPTANCE CAN BE ATTAINED (SECTION C107 OF THE CLARK COUNTY FIRE CODE, AS AMENDED)
10. HYDRANTS THAT ARE PROPOSED FOR INSTALLATION IN PUBLIC WATER SYSTEMS SHALL BE IN ACCORDANCE WITH APPROVED FIRE HYDRANTS AS ALLOWED BY THE WATER PURVEYOR. HYDRANTS PROPOSED FOR INSTALLATION ON PRIVATE WATER SYSTEMS SHALL BE IN ACCORDANCE WITH APPROVED FIRE HYDRANTS AS ALLOWED BY THE FIRE DEPARTMENT.

SOUTHWEST GAS CONSTRUCTION NOTES

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6020
2. THERE SHALL BE A MINIMUM HORIZONTAL AND VERTICAL CLEARANCE OF 12-INCHES BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND FACILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRIC
3. FOR VALVE ADJUSTMENT CONTACT 702-668-6107 48 HOURS PRIOR TO CONSTRUCTION.
4. IN THE EVENT OF NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2099

CAUTION: HIGH PRESSURE GAS

CALL SOUTHWEST GAS AT 702-400-1789 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES 48 HOURS PRIOR TO CONSTRUCTION

GENERAL NOTES

1. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND OF INGRESS AND EGRESS TO SAID CONSTRUCTION. EXTENT OF TRANSITIONS TO BE DETERMINED BY THE COUNTY ENGINEER.
2. EXISTING UTILITIES ARE LOCATED ON PLANS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROTECTION OF UTILITIES AND THE ENGINEER BEARS NO RESPONSIBILITY FOR UTILITIES NOT SHOWN ON PLANS OR NOT IN THE LOCATION SHOWN ON THE PLANS. (CALL BEFORE YOU DIG 800-227-2600).
3. CONSTRUCTION SURVEY: GRADES ARE GIVEN FROM TOP OF STAKES OR NAILS. THE CONTRACTORS ARE CAUTIONED TO OBSERVE THE FOLLOWING RULE IN USING THE GRADE STAKES GIVEN BY THIS OFFICE. THREE CONSECUTIVE POINTS THAT ARE SHOWN TO BE ON THE SAME RATE OF SLOPE MUST BE USED IN COMMON IN ORDER THAT ANY VARIATION OUT OF A PERFECT STRAIGHT GRADE MAY BE DETECTED. IN CASE ANY SUCH DISCREPANCY IS FOUND, THE SAME MUST BE REPORTED OTHERWISE THIS OFFICE WILL NOT BE RESPONSIBLE FOR ANY ERROR IN THE GRADE OF THE FINISH WORK.
4. NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES OR STRUCTURES NOT SHOWN ON THE DRAWINGS. CONTRACTOR TO VERIFY THE EXACT LOCATION OF UTILITIES PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR'S RESPONSIBILITIES REGARDING UTILITIES SHALL BE AS REQUIRED UNDER SECTION 107.17 OF THE UNIFORM STANDARD SPECIFICATIONS FOR CLARK COUNTY AREA, NEVADA AND AS PROVIDED IN THE SPECIFICATIONS. THE CONTRACTOR SHALL USE EXTREME CARE WORKING OVER OR NEAR ANY EXISTING GAS MAINS.
5. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING IMPROVEMENTS, WHICH ARE TO REMAIN IN PLACE FROM DAMAGE. ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR RECONSTRUCTED TO THE SATISFACTION OF THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.
6. FENCES, SIGNS, STRUCTURES, LIGHTS AND OTHER EXISTING IMPROVEMENTS WITHIN STREET R/W SHALL BE REMOVED WHERE SHOWN ON THE CONTRACT DRAWINGS, AND AS REQUIRED BY THE ENGINEER.
7. REPLACEMENT, RELOCATION OR RECONSTRUCTION OF ALL EXISTING IMPROVEMENTS INCLUDING FENCES, WALL SIGNS, AND ALL OTHER ITEMS APPLICABLE TO THIS CONTRACT SHALL BE AS REQUIRED BY THE ENGINEER.
8. THE CONTRACTOR SHALL BACKFILL AND FINAL GRADE ALL CUT OR FILL SLOPES TO MATCH EXISTING CONDITIONS TO THE SATISFACTION OF THE ENGINEER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERTICAL ADJUSTMENT OF ALL EXISTING SANITARY, WATER AND STORM SEWER MANHOLES TO THE FINAL FINISH GRADES IN ACCORDANCE WITH THE DETAILS SHOWN ON THE CONTRACT DRAWINGS AND IN ACCORDANCE WITH SECTION 609 OF THE "STANDARD SPECIFICATIONS".
10. 48 HOURS PRIOR TO START OF CONSTRUCTION THE CONTRACTOR SHALL CONTACT:
    NV ENERGY PHONE - (702) 402-8400
    CENTURYLINK TELEPHONE COMPANY PHONE - (702) 244-7055
    SOUTHWEST GAS CORPORATION PHONE - (702) 400-1789
    LAS VEGAS VALLEY WATER DISTRICT PHONE - (702) 870-2011
11. PRIVATE STREETS, CURB & GUTTER AND VALLEY GUTTERS REFLECTED ON THESE PLANS ARE TO BE INSPECTED BY A CLARK COUNTY INSPECTOR.
12. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED AT ALL STREET INTERSECTIONS PER CLARK COUNTY STANDARD DRAWING 235 EXACT LOCATION OF RAMP TO BE DETERMINED IN FIELD BY A CLARK COUNTY INSPECTOR.
13. STANDARD STREET SECTIONS PER CLARK COUNTY STANDARD DRAWINGS UNLESS OTHERWISE NOTED.
14. CURB AND GUTTER WITH A GRADE OF LESS THAN FOUR TENTHS OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
15. VALLEY GUTTER WITH A GRADE OF FOUR TENTHS OF ONE PERCENT OR LESS SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE PROPER DRAINAGE ACROSS ALL VALLEY GUTTERS.
16. ALL BARRICADING AND TEMPORARY TRAFFIC CONTROL DEVICES OR METHODS USED DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE "NEVADA TRAFFIC CONTROL MANUAL, 1986 PUBLISHED BY THE STATE OF NEVADA, DEPARTMENT OF TRANSPORTATION, EXCEPT AS OTHERWISE PROVIDED IN THE CONTRACT DRAWINGS.
17. ALL GRADING SHALL BE IN ACCORDANCE WITH THE SPECIFICATION MANUAL AND THE SOILS REPORT AS PREPARED BY WRIGHT ENGINEERS. WHERE CONFLICTS OCCUR THE MOST RESTRICTIVE SHALL GOVERN.
18. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL OVERHEAD AND UNDERGROUND 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 OR UNDERGROUND FACILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COSTS AND LIABILITY IN CONNECTION THEREWITH.
19. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY ALTERATIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.
20. THE CONTRACTOR SHALL APPLY FOG SEAL ONLY AFTER ALL CORRECTIONS AND ADJUSTMENTS HAVE BEEN MADE.
21. THE CONTRACTOR SHALL NOT BACKFILL ANY TRENCHES IN WHICH WATERLINES HAVE BEEN UNCOVERED UNTIL THE WATERLINES HAVE BEEN INSPECTED BY THE LAS VEGAS VALLEY WATER DISTRICT.
22. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC. SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND VALLEY GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY.
23. TYPE V CEMENT SHALL BE USED IN ALL CONCRETE WORK.
24. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ALL MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.550.

CLARK COUNTY PUBLIC WORKS DEVELOPMENT REVIEW

1. INSPECTIONS ARE REQUIRED. CALL 24 HOURS IN ADVANCE, 455-4610. YOUR PERMIT, APPROVED PLANS, AND BARRICADE PLANS FOR THIS WORK MUST BE ON THE JOB SITE AT ALL TIMES.
2. EXACT LOCATION OF ALL SAW-CUT LINES SHALL BE DETERMINED IN THE FIELD BY A CLARK COUNTY INSPECTOR.
3. CURB AND GUTTER WITH A GRADE OF LESS THAT 4/10 OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
4. FINAL ASPHALTIC CONCRETE (AC) PAVEMENT SURFACES SHALL BE ONE-HALF (1/2") INCH ABOVE THE LIP OF THE GUTTER (INCLUDING OPEN GRADE).
5. ALL OFF-SITE IMPROVEMENT CONSTRUCTION SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS AND STANDARD DRAWINGS CLARK COUNTY AREA NEVADA AND CLARK COUNTY SUPPLEMENT TO UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS, LATEST REVISION EXCEPT FOR LUMINAIRES. REFER TO CLARK COUNTY PUBLIC WORKS QUALIFIED PRODUCTS LIST "QPL" FOR LED LUMINAIRES. QPL CAN BE FOUND ONLINE AT HTTP://WWW.CLARKCOUNTYNV.GOV/PUBLICWORKS/PAGES/DEFAULT.ASPX
6. PRIVATE STREETS, CURB & GUTTER AND VALLEY GUTTERS REFLECTED ON THESE PLANS ARE TO BE INSPECTED BY A CLARK COUNTY INSPECTOR.
7. WHEEL CHAIR RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS SHALL BE DETERMINED IN THE FIELD BY A CLARK COUNTY INSPECTOR.
8. PROPER SIGNS, BARRIERS, BARRICADES AND LIGHTS SHALL BE PLACED AND MAINTAINED IN ACCORDANCE WITH THE LATEST "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", TRAFFIC, SCHOOL, OR STREET SIGNS OF ANY KIND ARE NOT TO BE MOVED FOR ANY REASON WITHOUT FIRST COORDINATING WITH THE DEPARTMENT OF PUBLIC WORKS OFF-SITE INSPECTOR AT 702-455-4610.
9. THIS PLAN DOES NOT AUTHORIZE CLOSURE OF ANY ROAD OR STREET.
10. NO OPEN TRENCH SHALL BE ALLOWED ACROSS ANY STREET OR WITHIN TEN (10') OF ANY TRAVEL-WAY, EXCEPT WHEN WORK IS IN ACTUAL PROGRESS. AREAS COVERED BY ACCEPTABLE STEEL PLATE ARE NOT TO BE CONSTRUED AS A TRENCH. NO OPEN TRENCH IS PERMITTED IN EXCESS OF 500 FEET OR LENGTH NECESSARY TO ACCOMMODATE PIPE INSTALLATION IN A SINGLE DAY, WHICH EVER IS GREATER. ALL TRENCH CROSSINGS AND BACKFILL SHALL MEET THE STANDARD SPECIFICATION UNLESS OTHERWISE STATED.
11. A TEMPORARY PATCH IS TO BE IN PLACE AT THE END OF EACH WORK DAY WHERE THE BACKFILL IN THE TRENCH HAS BEEN COMPLETED AND PRIOR TO OPENING THE WORK AREA BACK TO TRAFFIC AND IS TO BE MAINTAINED BY THE PERMITTEE. A PERMANENT PATCH IS TO BE IN PLACE WITHIN THIRTY (30) DAYS AFTER THE INSTALLATION OF THE TEMPORARY PATCH.
12. COMPACTION TESTS ARE REQUIRED.

STORMWATER MANAGEMENT NOTES

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 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 CLARK COUNTY TITLE 24.40 AND THE 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 NVR100000, 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, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPS WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.12.
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.

2.2 CITY OF LAS

ABBREVIATIONS

AC	ASPHALTIC CONCRETE OR ACRE	FH	FIRE HYDRANT	PVC	POLYVINYL CHLORIDE
AGG	AGGREGATE BASE	FL	FLOWLINE	PVI	POINT OF VERTICAL INTERSECTION
APN	ASSESSORS PARCEL NUMBER	FT	FEET OR FOOT	QTY	QUANTITY
APPROX OR ~	APPROXIMATE	FUT	FUTURE	R	RADIUS
AVE	AVENUE	GRD	GRADE OR GROUND	RCA	REINFORCED CONCRETE ARCH
@	AT	GB	GRADE BREAK OR GRADE CHANGE	RCB	REINFORCED CONCRETE BOX
BC	BEGIN CURVE OR BACK OF CURB	GV	GATE VALVE	RCP	REINFORCED CONCRETE PIPE
BCR	BEGINNING OF CURB RETURN	HDPE	HIGH DENSITY POLYETHYLENE	RD	ROAD
BHW	BOTTOM OF HEADWALL	HOA	HOME OWNERS ASSOCIATION	RDWY ESMT	ROADWAY EASEMENT
BLDG	BUILDING	HORZ	HORIZONTAL	REQD	REQUIRED
BLVD	BOULEVARD	HP	HIGH POINT	REV	REVISION
BM	BENCHMARK	HWL	HIGH WATER LEVEL	RG	ROUGH GRADE
BVC	BEGIN VERTICAL CURVE	HDWL OR HW	HEADWALL	RT OR R	RIGHT
BWV	BACK WATER VALVE	HYD	HYDRAULIC OR HYDRANT	R/W, ROW	RIGHT OF WAY
CC	CLARK COUNTY	ID	INSIDE DIAMETER	S	SLOPE
CCAUSD	CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS	IN	INCH	SCH	SCHEDULE
CCPW	CLARK COUNTY PUBLIC WORKS	INT	INTERSECTION	SD	STORM DRAIN
CCRFCD	CLARK COUNTY REGIONAL FLOOD DISTRICT	INV	INVERT ELEVATION	SDDI	STORM DRAIN DROP INLET
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT	IP	IRON PIPE	SDMH	STORM DRAIN MANHOLE
CE	COMMON ELEMENT	IRRG	IRRIGATION	SEC	SECTION
CL,C/L,C	CENTERLINE	LF	LINEAR FEET	SF	SQUARE FEET
CLR	CLEAR OR CLEARANCE	LP	LOW POINT	SHT	SHEET
CLSM	CONTROLLED LOW STRENGTH MATERIAL	LT OR L	LEFT	SNWA	SOUTHERN NEVADA WATER AUTHORITY
CLV	CITY OF LAS VEGAS	LVVWD	LAS VEGAS VALLEY WATER DISTRICT	SPECS	SPECIFICATIONS
CMLAC	CEMENT MORTAR LINED AND COATED	LWL	LOW WATER LEVEL	ST	STREET
CMU	CONCRETE MASONRY UNIT	MAX	MAXIMUM	SSMH	SANITARY SEWER MANHOLE
CNLV	CITY OF NORTH LAS VEGAS	MECH	MECHANICAL	STA	STATION
COH	CITY OF HENDERSON	MH	MANHOLE	STD	STANDARD
CONC	CONCRETE	MIN	MINIMUM	STL	STEEL OR STREET LIGHT
CT	COURT	MISC	MISCELLANEOUS	SW	SIDEWALK
CY OR CU YD	CUBIC YARD	MUE	MUNICIPAL UTILITY EASEMENT	SWG	SOUTHWEST GAS
DCWCS	DESIGN AND CONSTRUCTION FOR WASTEWATER COLLECTION SYSTEMS	NDOT	NEVADA DEPARTMENT OF TRANSPORTATION	SWR OR SS	SANITARY SEWER
		NPC	NEVADA POWER COMPANY	SY	SQUARE YARD
DET	DETAIL	NTS	NOT TO SCALE	TAN	TANGENT
DI	DUCTILE IRON OR DRAIN INLET	NUE	NONEXCLUSIVE UTILITY EASEMENT	TC	TOP OF CURB
DIA, ø	DIAMETER	OC	ON CENTER	TF	TOP OF FLOOR OR TOP OF FOOTING
DIP	DUCTILE IRON PIPE	OD	OUTSIDE DIAMETER OR OVERALL DIMENSION	TG	TOP OF GRATE
DR	DRIVE	OFF	OFFSET	THRU	THROUGH
DWG(S)	DRAWING	ORIG	ORIGINAL	THW	TOP OF HEADWALL
DWY	DRIVEWAY	PAE	PUBLIC OR PEDESTRIAN ACCESS EASEMENT	TP	TOP OF PIPE
EA	EACH	PB	PULL BOX	TW	TOP OF WALL
ECR	END CURB RETURN	PC	POINT OF CURVE	TRW	TOP OF RETAINING WALL
EG	EXISTING GROUND	PCC	POINT OF COMPOUND CURVE	TSW	TOP OF SCREEN WALL
EL	ELEVATION	PDE	PUBLIC DRAINAGE EASEMENT	TYP	TYPICAL
ESMT	EASEMENT	℄ OR PL	PROPERTY LINE	UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS
EP	EDGE OF PAVEMENT	POB	POINT OF BEGINNING		
ERU	EQUIVALENT RESIDENTIAL UNIT	POC	POINT OF CURVATURE	VC	VERTICAL CURVE
EVC	END VERTICAL CURVE	POE	POINT OF ENDING	VERT	VERTICAL
EX OR EXIST	EXISTING	PRC	POINT OF REVERSE CURVATURE	VG	VALLEY GUTTER
FC	FACE OF CURB	PRELIM	PRELIMINARY	WI	WROUGHT IRON
FF	FINISHED FLOOR	PROP	PROPOSED	WL	WATER LINE
FG	FINISHED GRADE	PRV	PRESSURE REDUCING VALVE	WPZ	WATER PRESSURE ZONE
FGH	FINISHED GRADE, HIGH SIDE	PUE	PUBLIC UTILITY EASEMENT	WT	WEIGHT
FGL	FINISHED GRADE, LOW SIDE	PT	POINT OF TANGENT OR POINT	WTR	WATER LINE

SPECIAL NOTE

IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED WHICH IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CLARK COUNTY DEPT. OF PUBLIC WORKS. TEMPORARY CONSTRUCTION ITEMS INCLUDE: PAVEMENT TRANSITIONS, PROTECTIVE DITCHES AND BERMS, ROAD SIGNS AND BARRICADES, ETC.

NOTICE TO CONTRACTOR

-QUANTITIES SHOWN ARE ESTIMATES ONLY AND ARE INTENDED TO ILLUSTRATE SCOPE OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXACT QUANTITIES INVOLVED.

-EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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 OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS. CALL BEFORE YOU DIG: (800) 227-2600

LEGEND

EXISTING	PROPOSED	DESCRIPTION
(1900)	1900	5' CONTOUR
		1' CONTOUR
		STRIPING
		SEWER MANHOLE
		CURB AND GUTTER
EX 8" PVC SS	8" PVC SS	SANITARY SEWER PIPE AND FLOW ARROW
EX 8" PVC WTR	8" PVC WTR	WATER PIPE
		WATER GATE VALVE
		FIRE HYDRANT
		WATER BLOW-OFF
		WATER LATERAL W/ METER
		SANITARY SEWER LATERAL
		STREETLIGHT
		EDGE OF PAVEMENT
		TRAFFIC SIGN
PAD= XXX.X FF = XXX.X	PAD= XXX.X FF = XXX.X	PAD ELEVATION FINISHED FLOOR ELEVATION
(00.00) TC	00.00 TC	ELEVATION
		RETAINING WALL
		STORM DRAIN W/ MANHOLE

	EXISTING GAS GATE VALVE
@MH	EXISTING UNKNOWN MANHOLE
GAS	EXISTING GAS, SIZE PER PLAN
	EXISTING POWER POLE
	EXISTING TRAFFIC SIGNAL
	EXISTING WALL
	WATER PIPE FITTING
POC	WATER POINT OF CONNECTION
POC	SEWER POINT OF CONNECTION
	DAYLIGHT LINE
	STREET CENTERLINE
	RIGHT-OF-WAY
	MATCHLINE
	BOUNDARY LINE
	PHASE LINE
	PROPERTY LINE
	FLOWLINE
	SAWCUT
FILL / CUT	CUT/FILL TRANSITION LINE
	SIDEWALK
	EX STRIPING TO BE OBLITERATED
	GRADE BREAK LINE
	REFLECTIVE RAISED PAVEMENT MARKERS
BWV	BACK WATER VALVE
	WROUGHT IRON FENCE
	PONY WALL
	DECORATIVE PERIMETER WALL
	DECORATIVE PERIMETER RETAINING WALL
	PROPOSED CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
	EXISTING CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
	FUTURE CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
	PROPOSED SCARP AREA
	DRIVEWAY
	PROPOSED RIP RAP
	SIGHT VISIBILITY ZONE PER STD DWG NO. 201.2
	HANDICAP RAMP

QUANTITIES

			PRIVATE	PUBLIC
DRAINAGE				
1.	4.0' TYPE "C" DROP INLET	EA	–	1
2.	18" RCP CLASS III STORM DRAIN	LF	–	68
3.	8' WIDE CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	660	710
4.	SIDEWALK UNDER DRAIN	SF	–	1
5.	48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE	EA	–	1
6.				
SEWER SYSTEM				
1.	4" PVC SEWER LATERAL (PRIVATE)	LF	–	–
2.	8" PVC SEWER PIPE (PUBLIC)	LF	–	–
3.	STANDARD 48" SEWER MANHOLE (PUBLIC)	EA	–	–
4.	8" SEWER PIPE CAP	EA	–	–
5.	BACK WATER VALVE	EA	–	–
6.	8" C-900 WATER QUALITY SEWER PIPE (PUBLIC)	EA	–	–
7.				
WATER SYSTEM				
1.	FIRE HYDRANT ASSEMBLY W/6" GATE VALVE PER UDACS PLATE NO. 40	EA	–	–
2.	6" PVC WATER PIPE (CLASS 150)	LF	–	–
3.	8" PVC WATER PIPE (CLASS 150)	LF	–	–
4.	8" DIP WATER PIPE (CLASS 53)	LF	–	–
5.	8" GATE VALVE WITH VALVE BOX PER UDACS PLATE NO. 30 & 39	EA	–	–
6.	8" X 6" TEE PER UDACS PLATE NO. 31	EA	–	–
7.	8" X 8" TEE PER UDACS PLATE NO. 31	EA	–	–
8.	8" 5 DEGREE BEND WITH RESTRAINED JOINTS	EA	–	–
9.	8" 11.25 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
10.	8" 22.5 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
11.	8" 45 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
12.	8" 90 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
13.	CAP AND 2" BLOW-OFF ASSEMBLY W/CAP PER UDACS PLATE NO. 36	EA	–	–
14.	1" COPPER SERVICE W/ 3/4" METER PER UDACS PLATE NO. 2	EA	–	–
15.	1" COPPER SERVICE W/ 1" METER PER UDACS PLATE NO. 4	EA	–	–
16.	1" COPPER SERVICE W/ 3/4" METER & 1" RPPA PER UDACS PLATE NO. 4 & 8	EA	–	–
		EA	–	
STREET IMPROVEMENTS				
1.	2" A.C. PAVEMENT W/ 4" TYPE II OVER 6" TYPE I AGGREGATE BASE	SY	–	–
2.	STANDARD 18" TYPE "L" ISLAND CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
3.	STANDARD 8' TYPE "A" ISLAND CURB W/6" TYPE I AGGREGATE BASE	LF	–	–
4.	STANDARD 30" TYPE "ROLL" CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
5.	4' WIDE CONCRETE SIDEWALK W/4" TYPE II AGGREGATE BASE	SF	–	–
6.				–
7.				
TRAFFIC SIGNALS				
1.	30" STOP SIGN WITH POST (R1-1)	EA	–	–
2.	9" STREET NAME SIGN (D-3, BROWN W/ WHITE LETTERS)(6 POLES x 2 PER POLE=12)	EA	–	–
3.	BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKER	EA	–	–
4.	CROSSWALK MARKINGS	LF	–	–
5.				
6.				
7.				
8.				
DRY UTILITIES				
1.	100W H.P.S. LUMINAIRE STREET LIGHT W/DECORATIVE POLE	EA	–	–
2.	1-1/4" PVC STREET LIGHT CONDUIT WITH (2) #4 AND (1) #8 CONDUCTORS	LF	–	–
3.	NO. 3-1/2 PULL BOX W/METAL COVER	EA	–	–
4.	150 AMP SERVICE PEDESTAL (IRR)	EA	–	–
5.	200 AMP SERVICE PEDESTAL (STLT)	EA	–	–
6.				

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

QUANTITIES AND ABBREVIATIONS

S5 T20 R60

DATE: 9/1/17

DRAFTER: EMH

DESIGNER: EMH

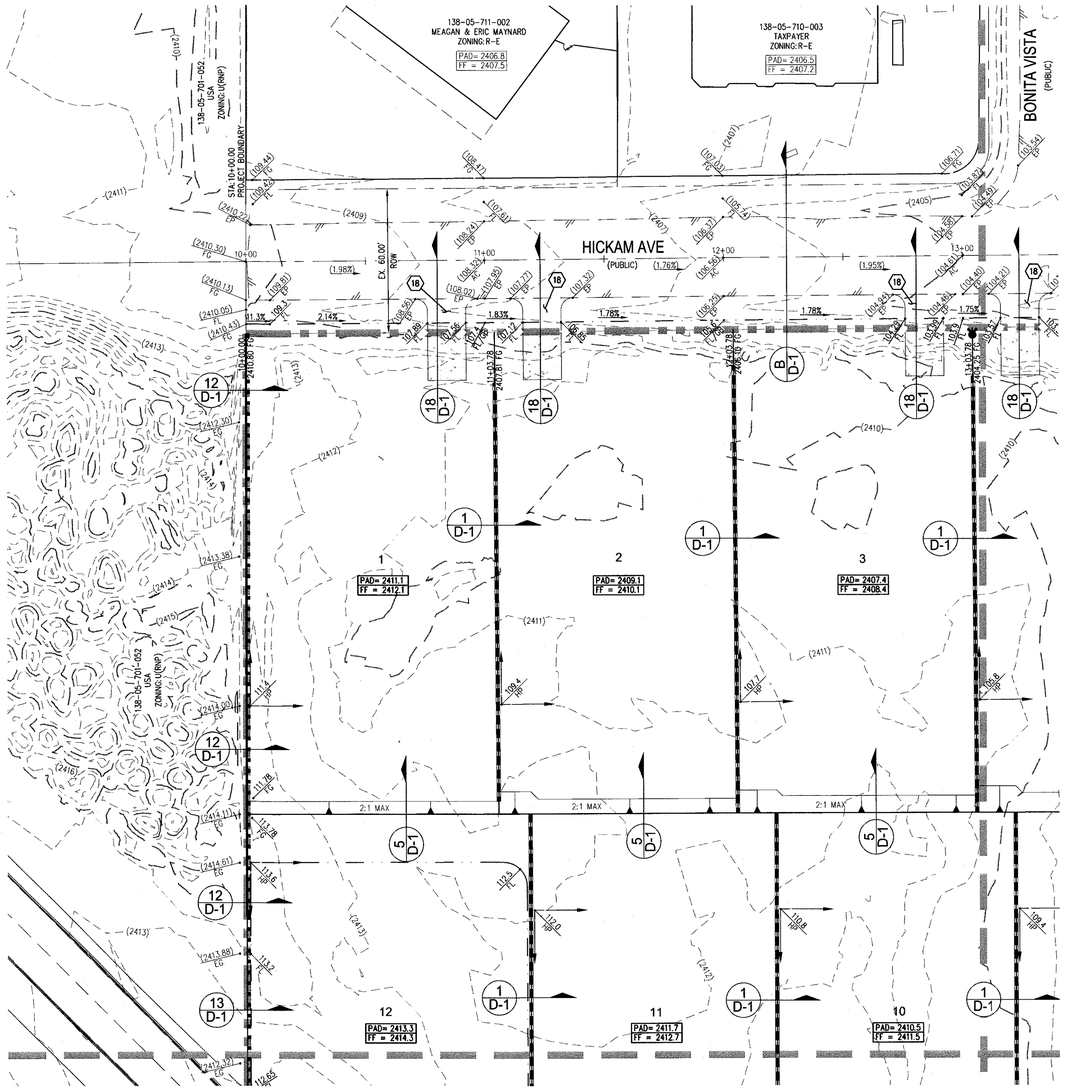
CHECKED: KMB

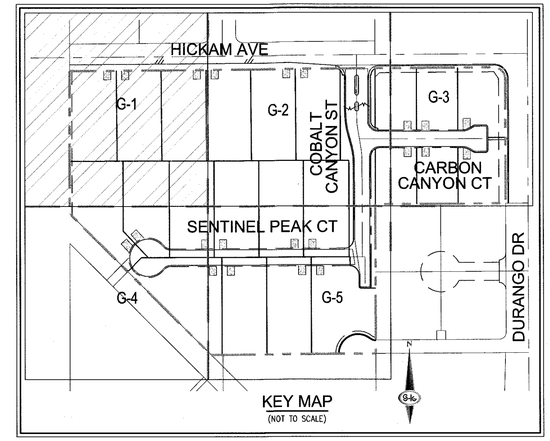
PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER – STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
10/19/17

C-3
SHEET 3 OF 19

J:\pin1702 ee iv\dwg\improv\pin1702_cvr.dwg, 10/17/2017 3:22 PM, Emily Hoy





N

0 30 60
SCALE - 1"=30' FEET

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
- 5.01% — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES

1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
10. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
11. INSTALL VALLEY GUTTER VALLEY GUTTER PER CCAUSD NO. 228
12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
18. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCPW
19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
22. EXISTING 24" CLASS III RCP STORM DRAIN
23. EXISTING 48" STORM DRAIN MANHOLE
24. EXISTING AREA DRAIN TO BE REMOVED
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE

1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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.

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES

1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.
10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY _____

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

DRAINAGE CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY HTE#17-41829 ON FILE AT CLARK COUNTY FOR THE SUBJECT PROJECT.

KEVIN M. BROSS, PE 24572 DATE

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

GRADING PLAN I

S 5 R 60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/1/17

G-1
SHEET 4 OF 19

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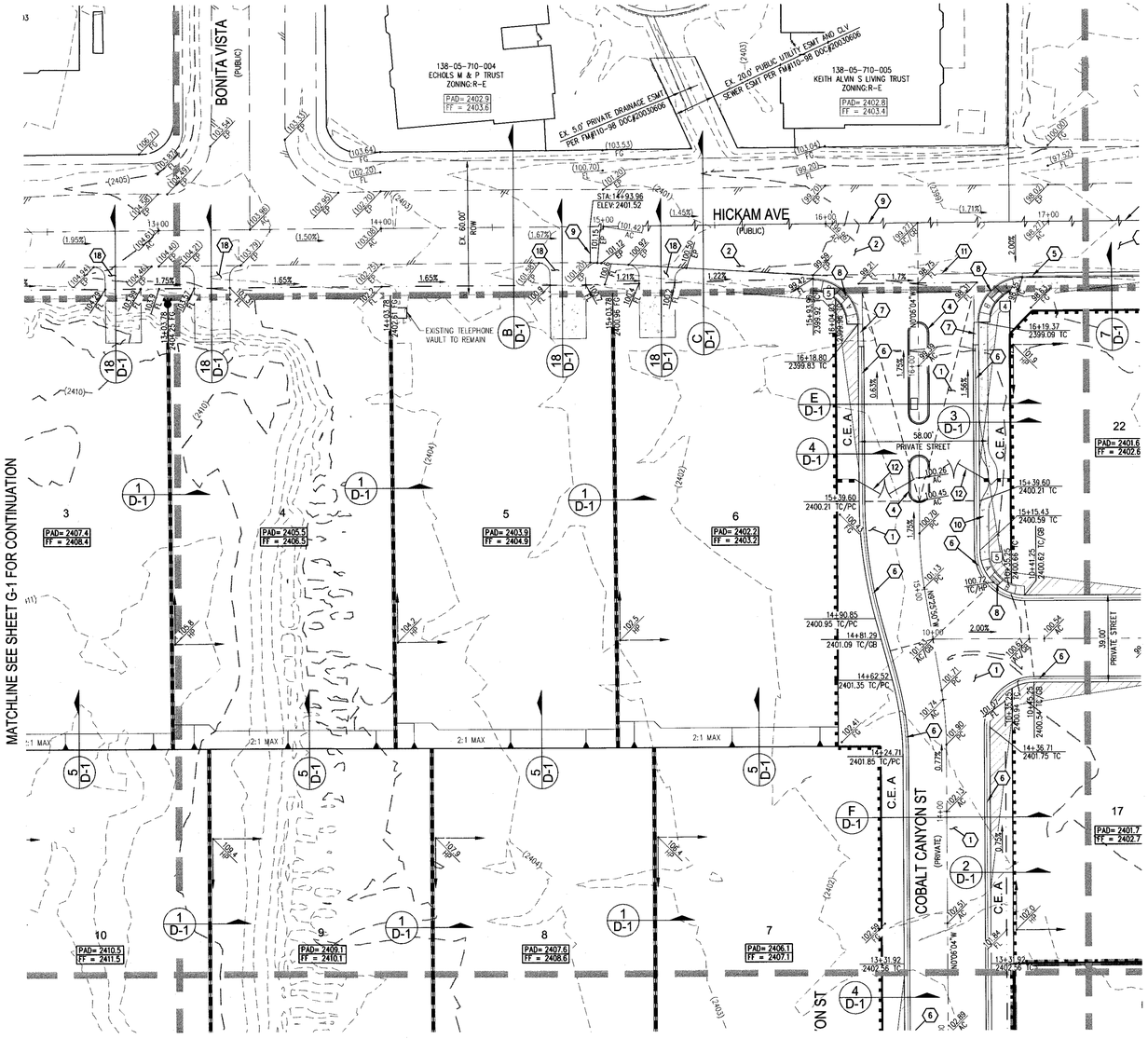

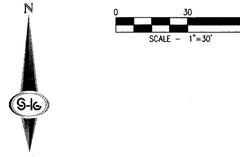

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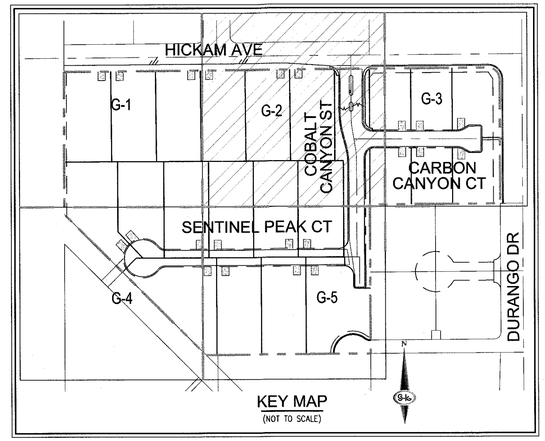
SCALE - 1"=30' FEET



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GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
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- (00.00) TC — EXISTING ELEVATION
- 5.01% — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

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FILL= 15,416 CU YDS

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2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
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13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
18. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCPW
19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
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23. EXISTING 48" STORM DRAIN MANHOLE
24. EXISTING AREA DRAIN TO BE REMOVED
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ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. '88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE

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DISCLAIMER NOTE

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GRADING NOTES

1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
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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.
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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.
10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY _____

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

DRAINAGE CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY HYE#17-41829 ON FILE AT CLARK COUNTY FOR THE SUBJECT PROJECT.

KEVIN M. BROSS, PE 24572 DATE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

GRADING PLAN II

S 5
T 20
R 60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

KEVIN M. BROSS — Exp. 12/31/2018 — CIVIL — No. 24572 — STATE OF NEVADA — PROFESSIONAL ENGINEER
10/4/17

G-2
SHEET 5 OF 19

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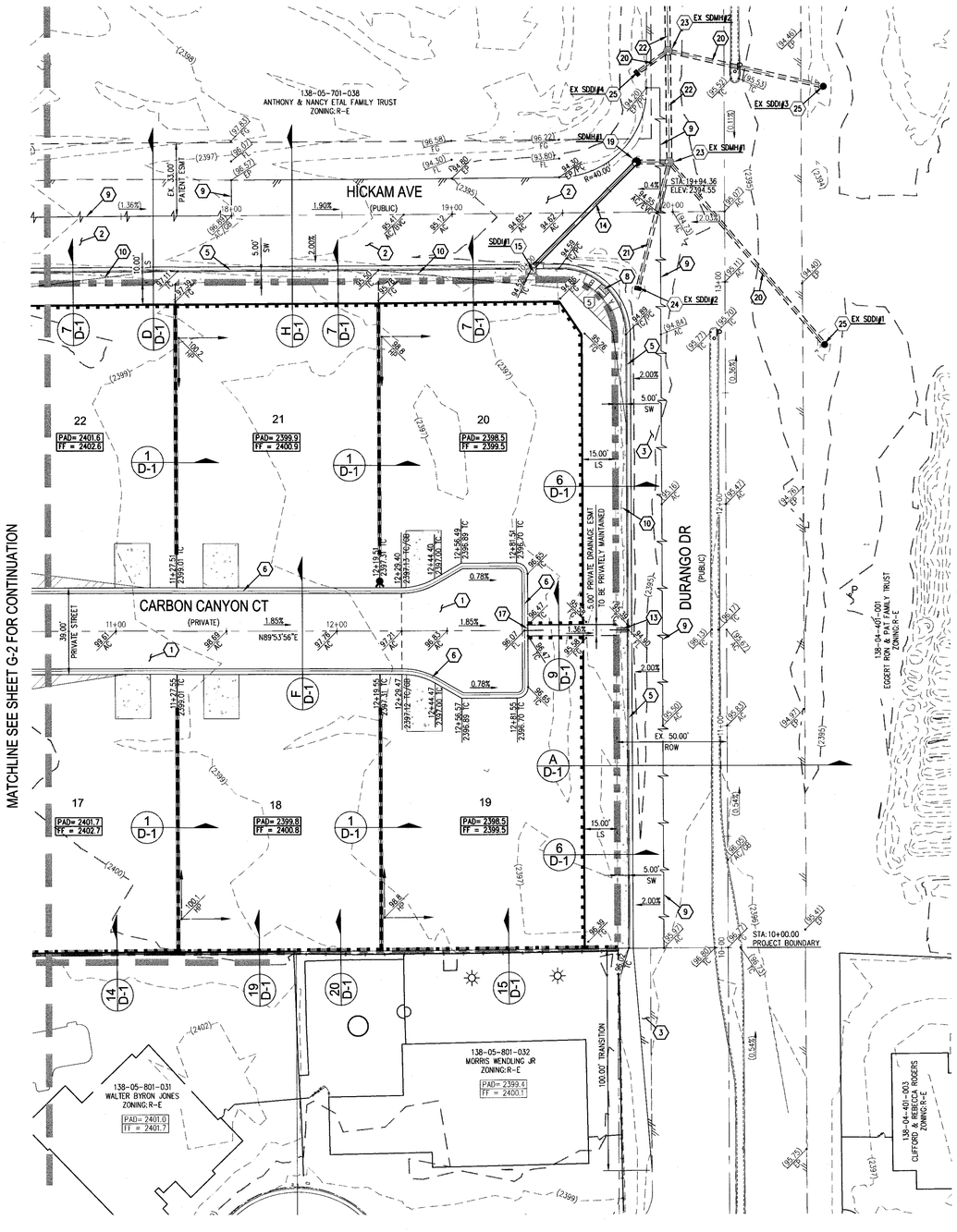

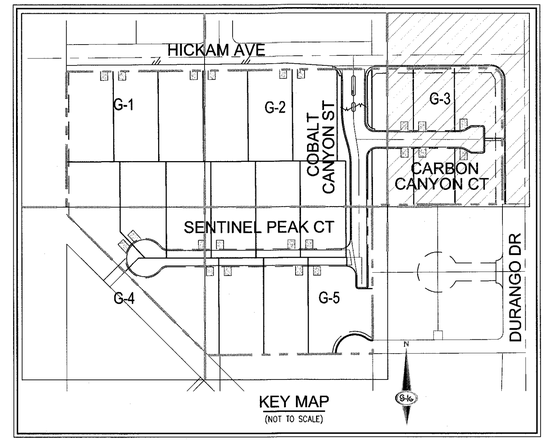

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
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- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES

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BENCHMARK

BENCHMARK NUMBER: OLVOO 45IWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

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CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY

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KEVIN M. BROSS, PE 24572 — DATE

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

GRADING PLAN III

S5, R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER - STATE OF NEVADA - KEVIN M. BROSS - Exp. 12/31/2018 - CIVIL - No. 24572 - 10/16/17

G-3
SHEET 6 OF 19

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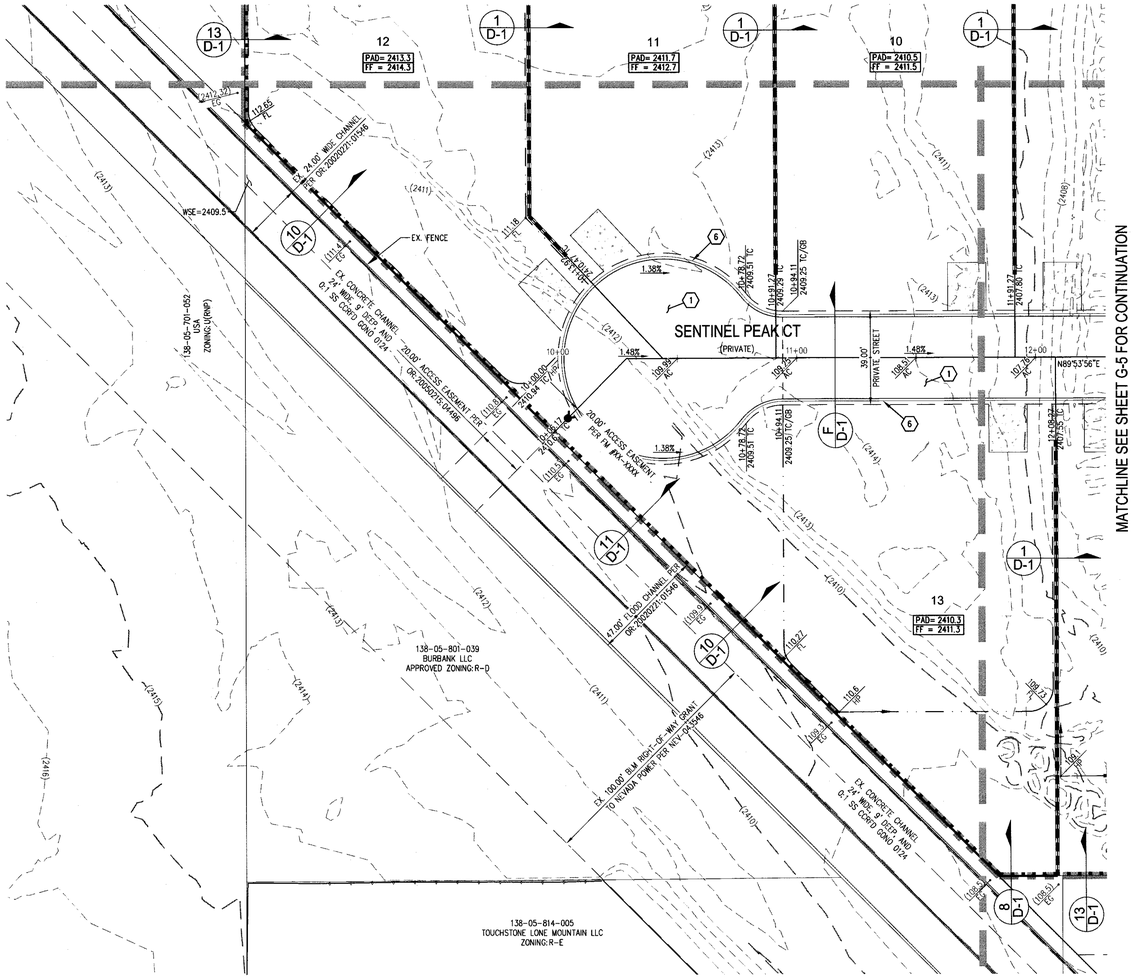

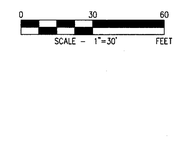

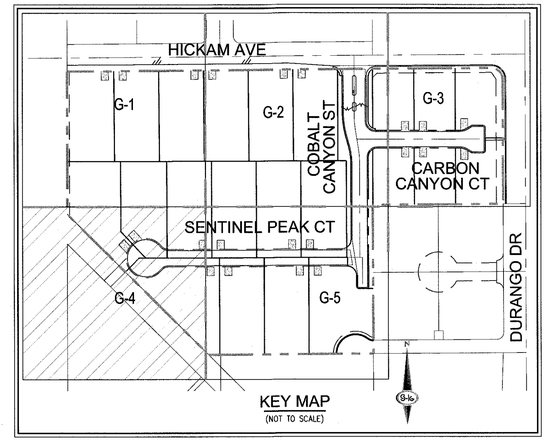

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- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

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BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

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N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

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2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES

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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.
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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.
10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

DRAINAGE CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY HYE#17-41829 ON FILE AT CLARK COUNTY FOR THE SUBJECT PROJECT.

KEVIN M. BROSS, PE 24572 DATE

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

GRADING PLAN IV

S 5
R 20
E 60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

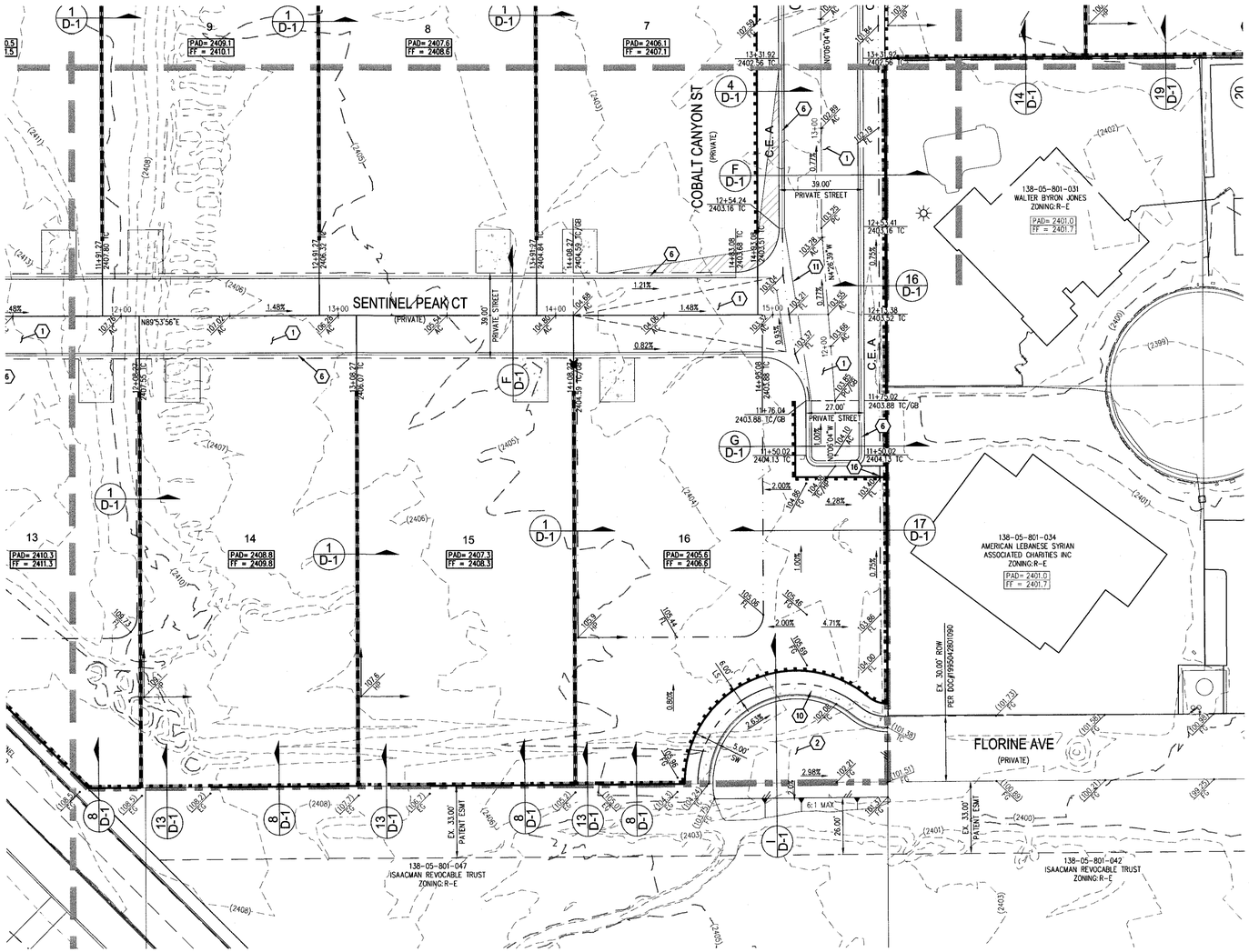
PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/1/17

G-4
SHEET 7 OF 19

J:\pin1702_ere ix\dwg\mmrox\pin1702_grd.dwg 10/17/2017 3:23 PM Emily Hoy

MATCHLINE SEE SHEET G-2 FOR CONTINUATION



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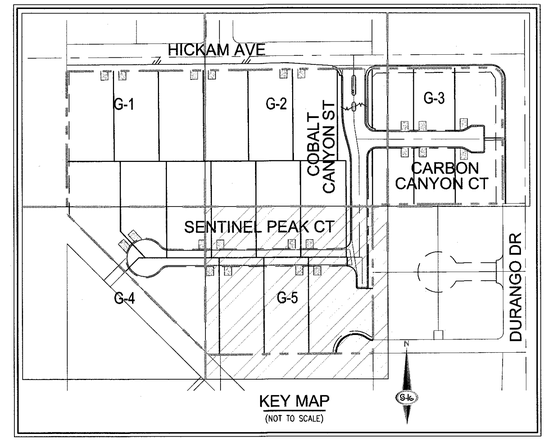
SCALE - 1"=30' (0, 30, 60 FEET)



CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
- 5.01% — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — OUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
OUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES

1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE 1 & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
10. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
11. INSTALL VALLEY GUTTER VALLEY GUTTER PER CCAUSD NO. 228
12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
18. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCPW
19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
22. EXISTING 24" CLASS III RCP STORM DRAIN
23. EXISTING 48" STORM DRAIN MANHOLE
24. EXISTING AREA DRAIN TO BE REMOVED
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SW66

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
GRADING PLAN V

S 5 T 20 R 60

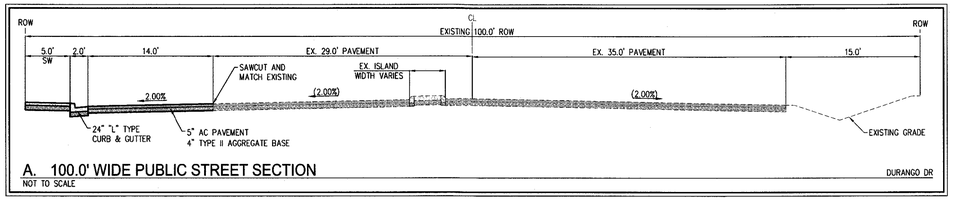
DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

10/9/17

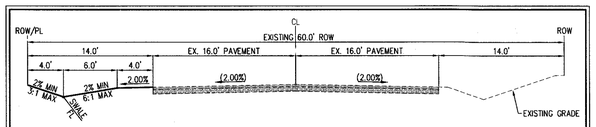
G-5
SHEET 8 OF 19

j:\pin1702 ere in\dwg\improv\pin1702 grd.dwg 10/17/2017 3:23 PM Emily Hoy



A. 100.0' WIDE PUBLIC STREET SECTION

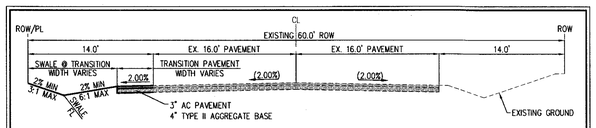
NOT TO SCALE



B. EXISTING 60.0' WIDE PUBLIC STREET SECTION

NOT TO SCALE

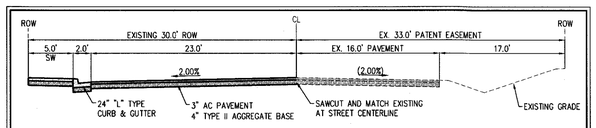
HICKAM AVE



C. 60.0' WIDE PUBLIC STREET SECTION

NOT TO SCALE

HICKAM AVE



D. 60.0' WIDE PUBLIC STREET SECTION

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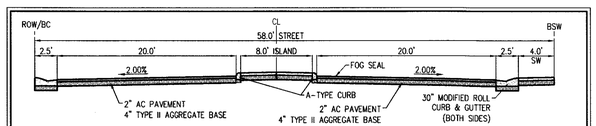
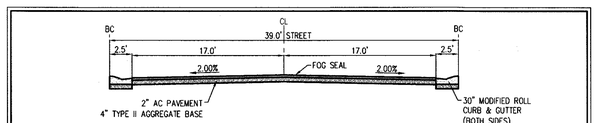
HICKAM AVE



E. 58.0' WIDE INTERIOR ENTRY PRIVATE STREET SECTION

NOT TO SCALE

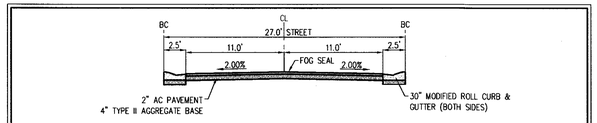
COBALT CANYON ST



F. 39.0' WIDE INTERIOR PRIVATE STREET SECTION

NOT TO SCALE

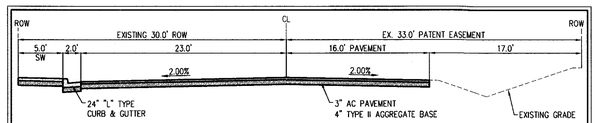
SENTINEL PEAK CT, CARBON CANYON CT & COBALT CANYON ST



G. 27.0' WIDE INTERIOR PRIVATE STREET STUB SECTION

NOT TO SCALE

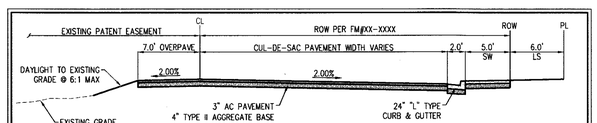
COBALT CANYON ST



H. 60.0' WIDE PUBLIC STREET SECTION

NOT TO SCALE

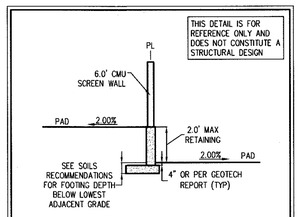
HICKAM AVE



I. 60.0' WIDE PUBLIC STREET SECTION

NOT TO SCALE

FLORINE AVE



1. WALL SECTION

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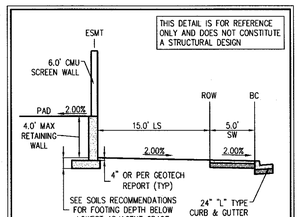

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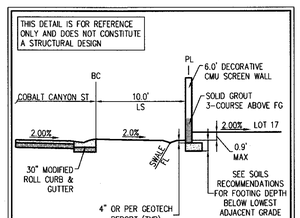

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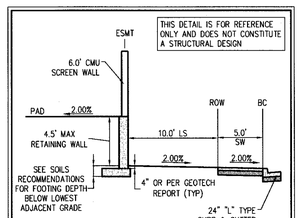

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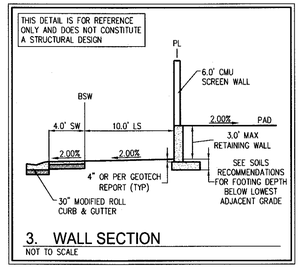

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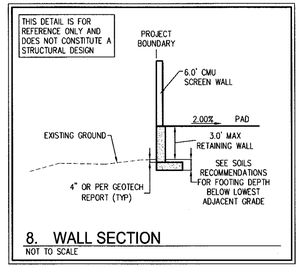

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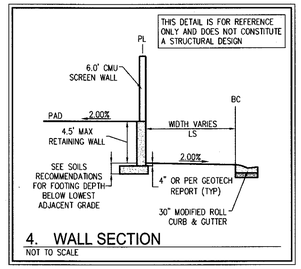

4. WALL SECTION

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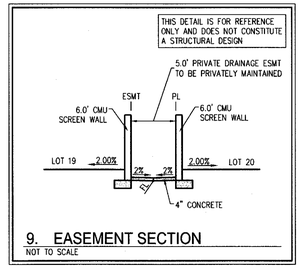

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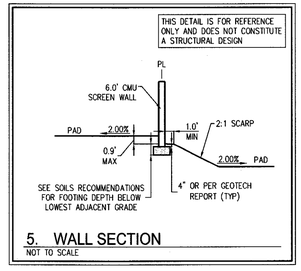

5. WALL SECTION

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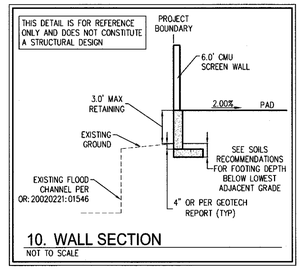

10. WALL SECTION

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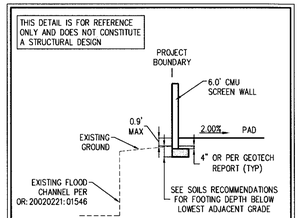
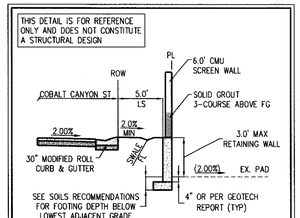


11. WALL SECTION

NOT TO SCALE



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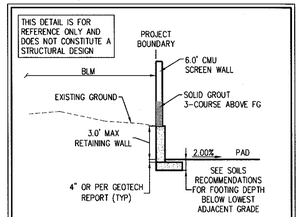
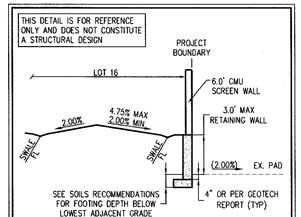


12. WALL SECTION

NOT TO SCALE



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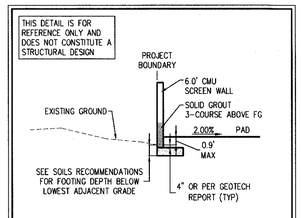

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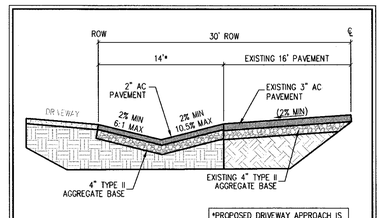
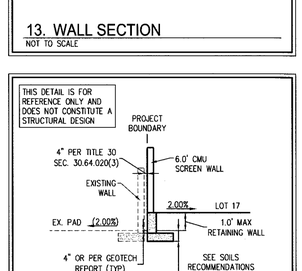


18. DRIVEWAY TRANSITION

NOT TO SCALE

HICKAM AVE



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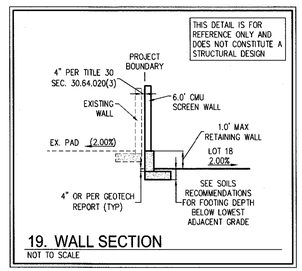

19. WALL SECTION

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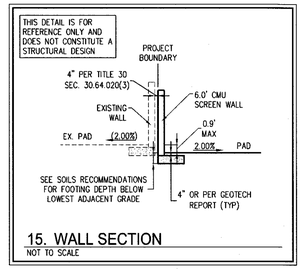

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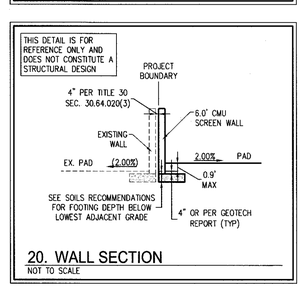

20. WALL SECTION

NOT TO SCALE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

DETAIL SHEET I

S35 T20 R60

DATE: 9/1/17

DRAFTER: EMH

DESIGNER: EMH

CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/1/17

D-1
SHEET 9 OF 19

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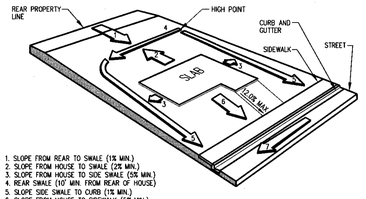
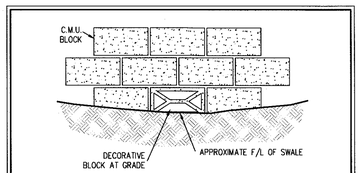


PERSPECTIVE

30. TYPE "A" LOT GRADING

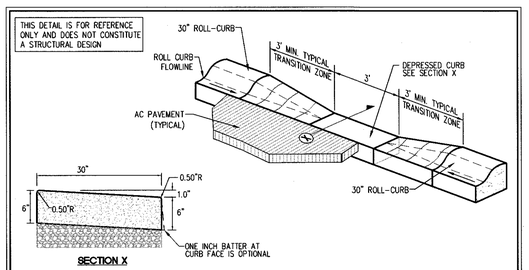
NOT TO SCALE



31

BLOCK WALL OPENING

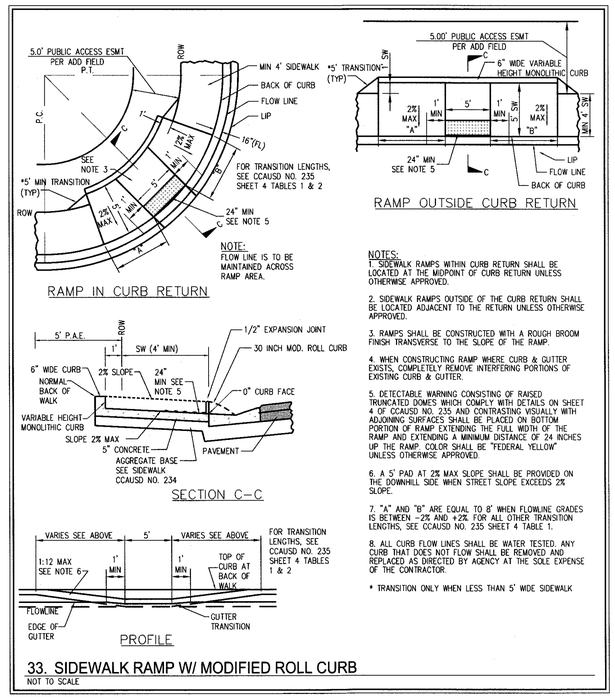
NOT TO SCALE



SECTION X

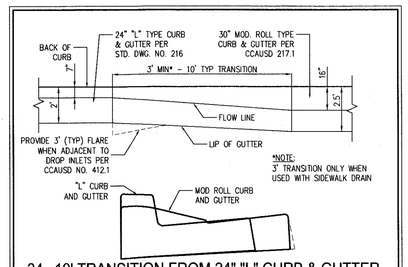
32. ROLL CURB TRANSITION TO DEPRESSED CURB "ZERO FACE"

NOT TO SCALE



33. SIDEWALK RAMP W/ MODIFIED ROLL CURB

NOT TO SCALE



34. 10' TRANSITION FROM 24" "L" CURB & GUTTER TO MODIFIED 30" ROLL CURB & GUTTER

NOT TO SCALE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

DETAIL SHEET II

S5 T20 R68

DATE: 9/1/17

DRAFTER: EMH

DESIGNER: EMH

CHECKED: KMB

PROJECT NO.
PIN1702

D-2

SHEET 10 OF 19

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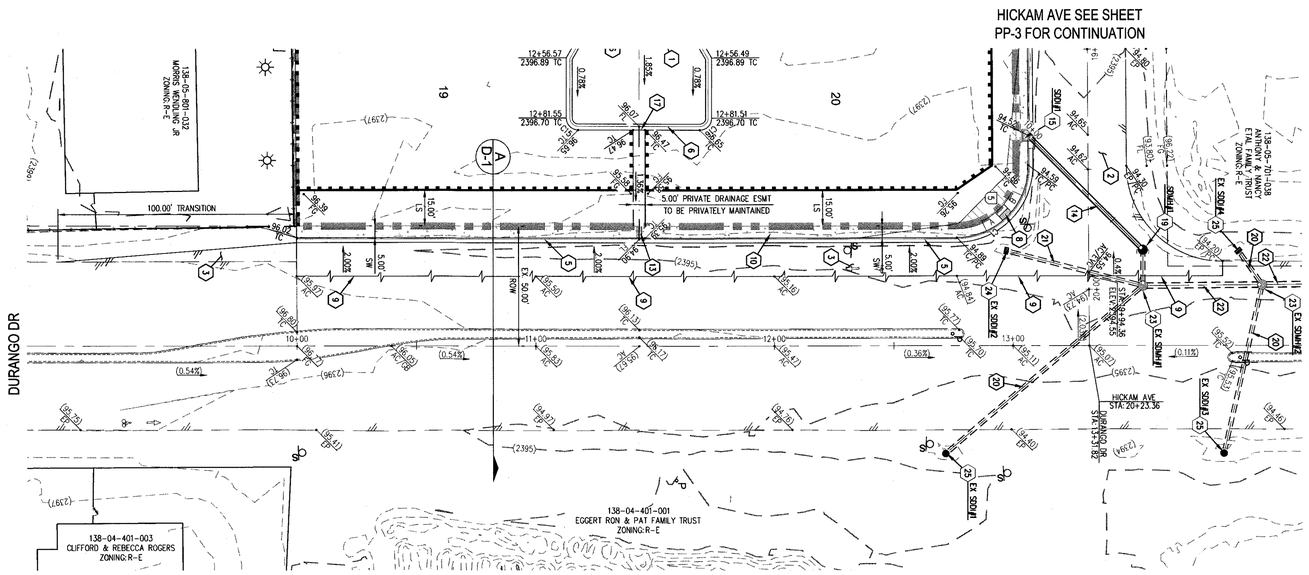
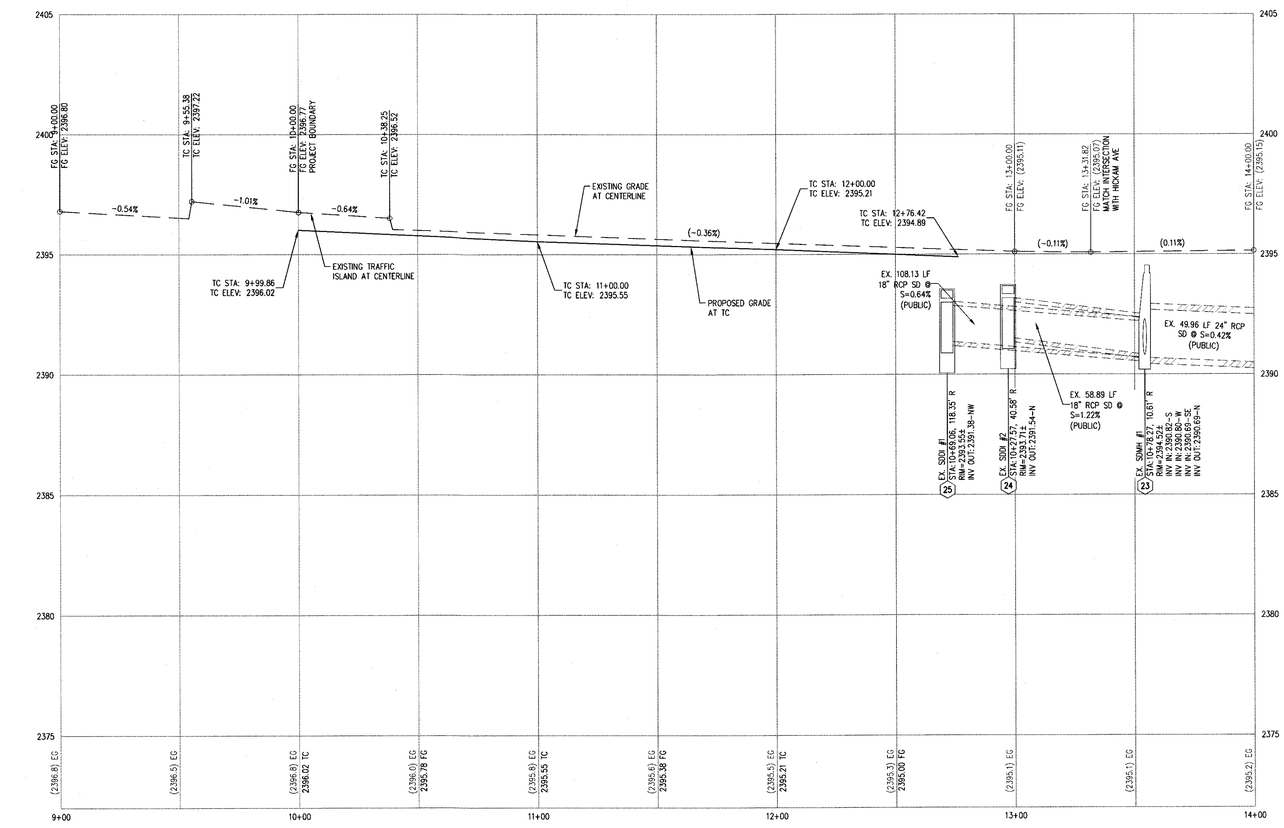


DURANGO DR - PLAN VIEW

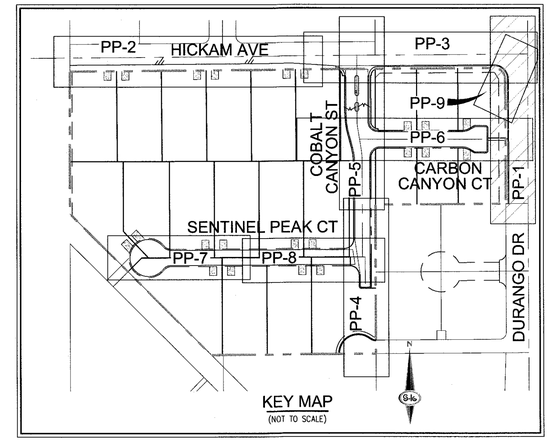
PUBLIC



DURANGO DR - PROFILE VIEW

HORIZ: 1" = 30'
VERT: 1" = 3'

SCALE - 1"=30' (0 30 60 FEET)



CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC (00.00) TC — PROPOSED ELEVATION
- (2800) — EXISTING ELEVATION
- [5.01%] — DESIGN SLOPE IN VERTICAL CURVE
- EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	47.29'	30.00'	90°18'28"	30.16'

GRADING NOTES

1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE 1 & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
10. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
11. INSTALL VALLEY GUTTER VALLEY GUTTER PER CCAUSD NO. 228
12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
18. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCP#
19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
22. EXISTING 24" CLASS III RCP STORM DRAIN
23. EXISTING 48" STORM DRAIN MANHOLE
24. EXISTING AREA DRAIN TO BE REMOVED
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE

1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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.

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES

1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
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/REPLEIRING 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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.
10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY _____

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

FAST — Call before you UnderGround 1-702-432-5300 FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T)

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

Call before you Dig. AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY. Call 811 OR 1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP'D DATE	APP

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
PLAN AND PROFILE - DURANGO DRIVE

S 5
R 60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER - STATE OF NEVADA - KEVIN M. BROSS Exp. 12/31/2018 CIVIL No. 24572 — 10/19/17

PP-1
SHEET 11 OF 19

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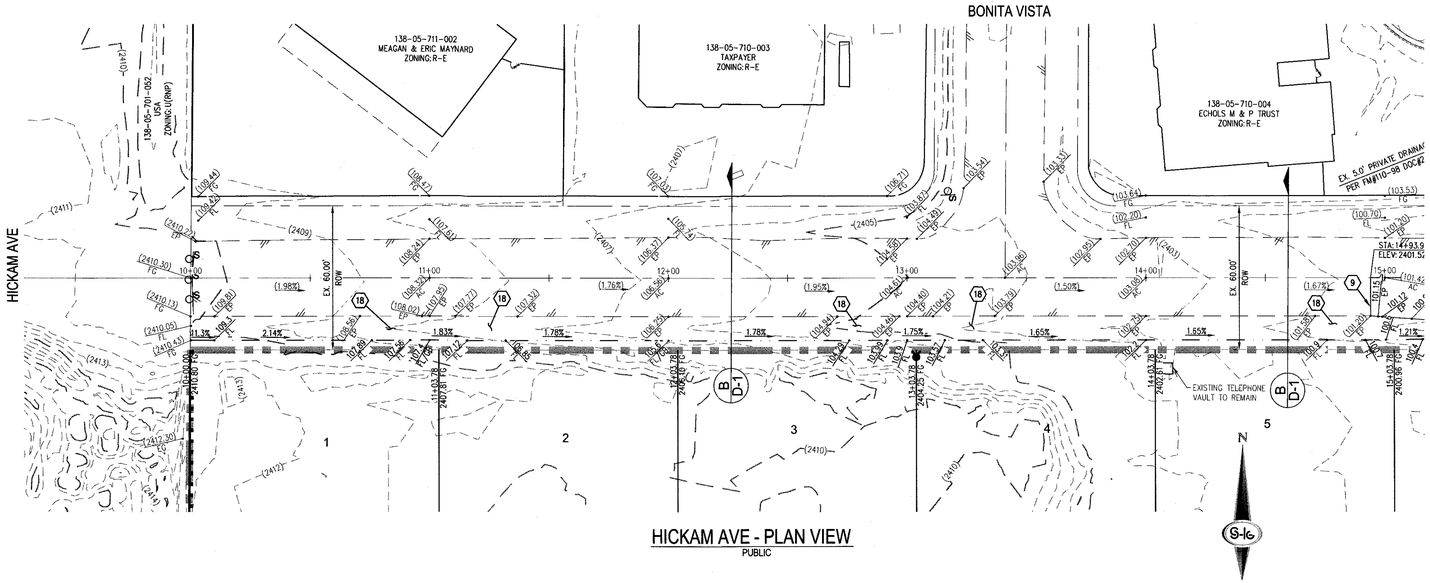
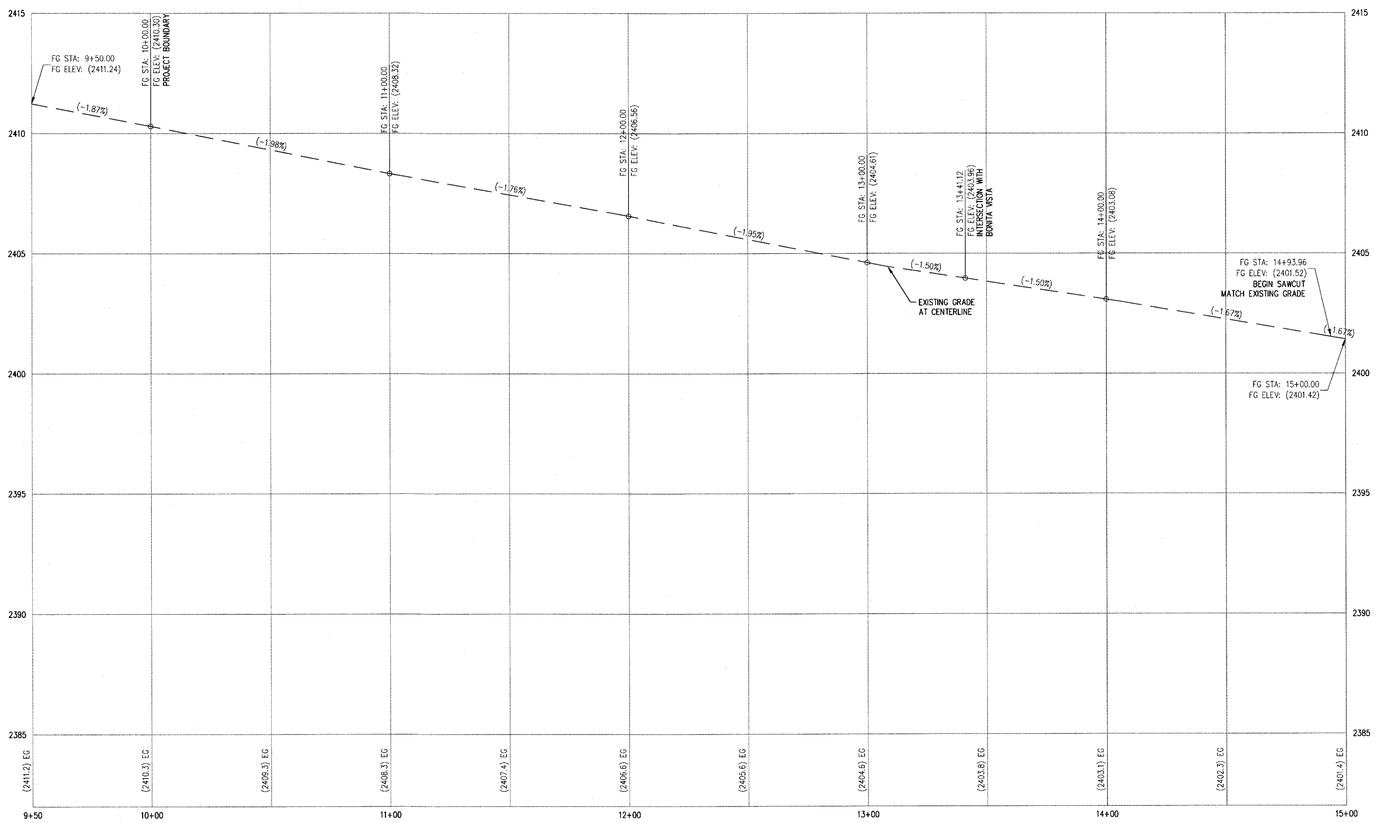
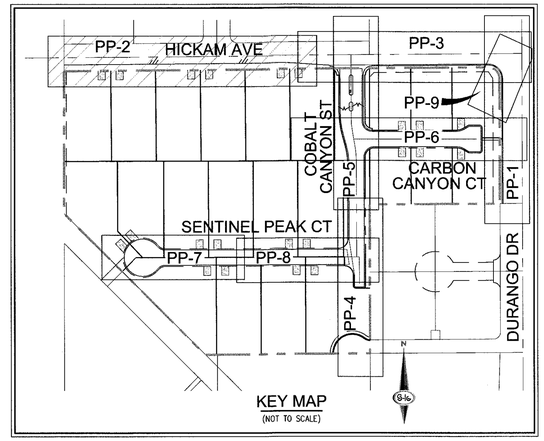


HICKAM AVE - PLAN VIEW
PUBLIC



HICKAM AVE - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

0 30 60
SCALE - 1"=30' FEET



KEY MAP
(NOT TO SCALE)

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 FG → PROPOSED ELEVATION
- (00.00) TC → EXISTING ELEVATION
- 5.01% → DESIGN SLOPE IN VERTICAL CURVE
- (2800) → EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT → CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES

1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
10. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
11. INSTALL VALLEY GUTTER VALLEY GUTTER PER CCAUSD NO. 228
12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
18. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCPW
19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 405
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
22. EXISTING 24" CLASS III RCP STORM DRAIN
23. EXISTING 48" STORM DRAIN MANHOLE
24. EXISTING AREA DRAIN TO BE REMOVED
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE

1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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.

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES

1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
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/REPLEPING 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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.
10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY _____

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T)

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

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Call 811
OR
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SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

NO.	DESCRIPTION	DATE	BY	APP.

CLARK COUNTY, NEVADA

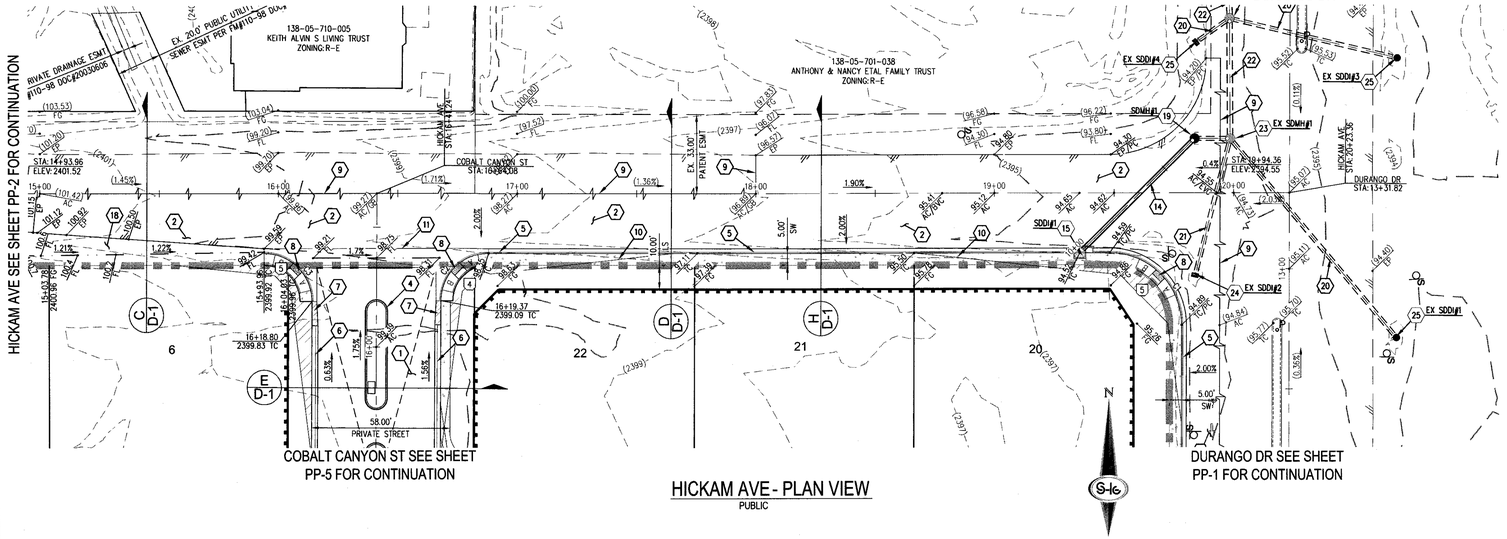
PINNACLE HOMES
ELK RIDGE ESTATES IV
PLAN AND PROFILE - HICKAM AVENUE I

S5 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO. PIN1702

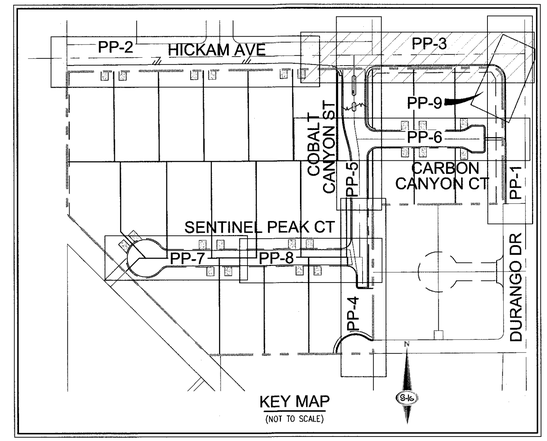
PP-2
SHEET 12 OF 19

J:\pin1702 ere ix\dwg\improv\pin1702 pnp.dwg 10/17/2017 3:24 PM Emily Hoy



HICKAM AVE - PLAN VIEW
PUBLIC

SCALE - 1"=30' (0, 30, 60 FEET)



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GRADING LEGEND

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- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
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- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC (00.00) TC — PROPOSED ELEVATION
- EXISTING ELEVATION
- [5.01%] — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMIETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
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FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

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6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
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14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
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CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

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BY _____

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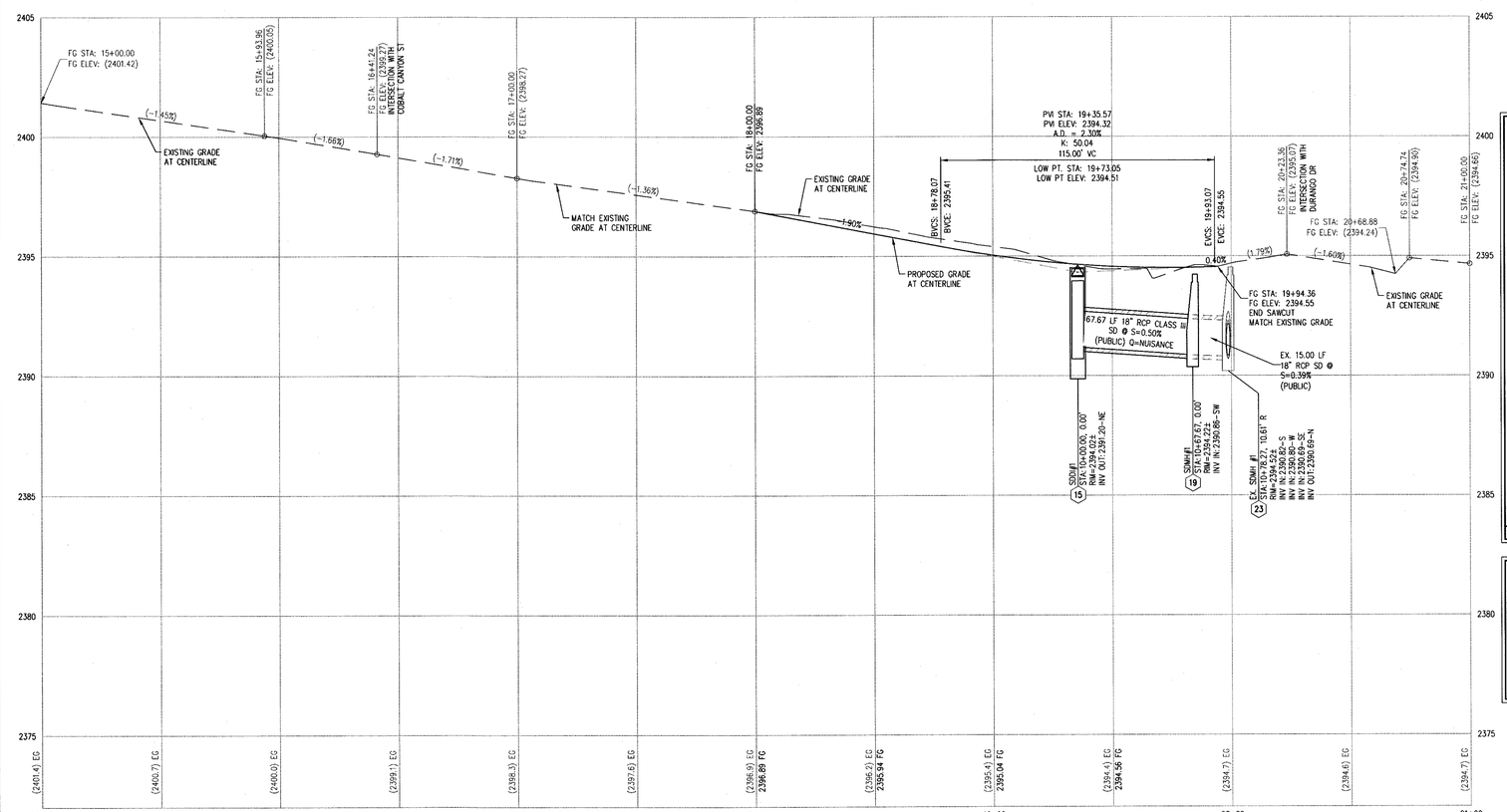
APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL



HICKAM AVE - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	47.29'	30.00'	90°18'28"	30.16'
C2	31.29'	20.00'	89°38'34"	19.88'
C3	31.53'	20.00'	90°19'19"	20.11'

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
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Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
PLAN AND PROFILE - HICKAM AVENUE II

S:5 T:20 R:60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

KEVIN M. BROSS Exp. 12/31/2018 CIVIL No. 24572 PROFESSIONAL ENGINEER STATE OF NEVADA
9/14/17

PP-3
SHEET 13 OF 19

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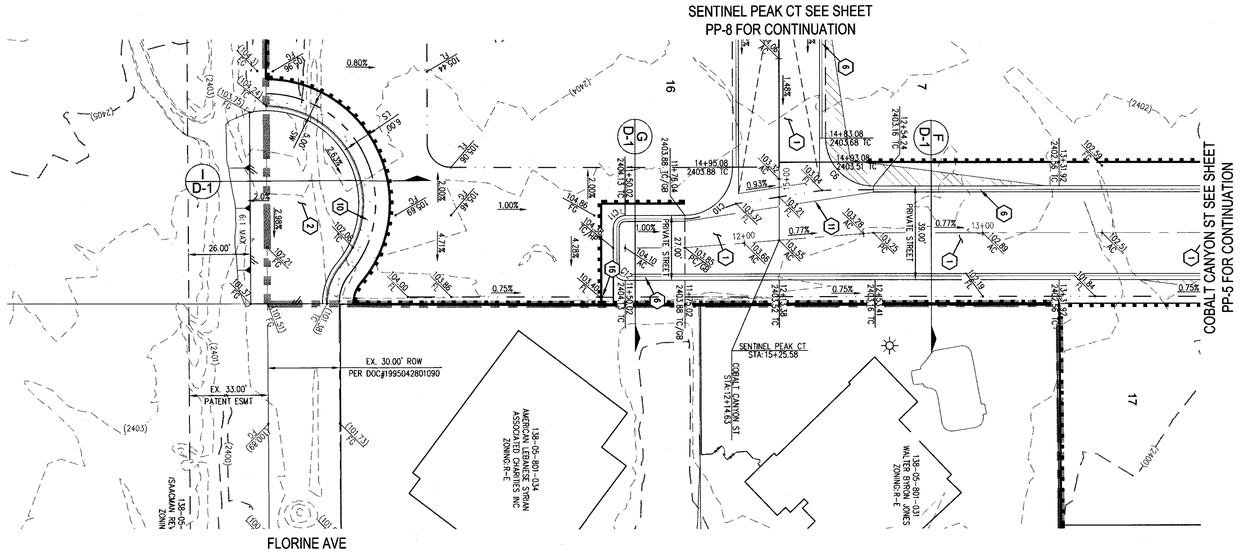
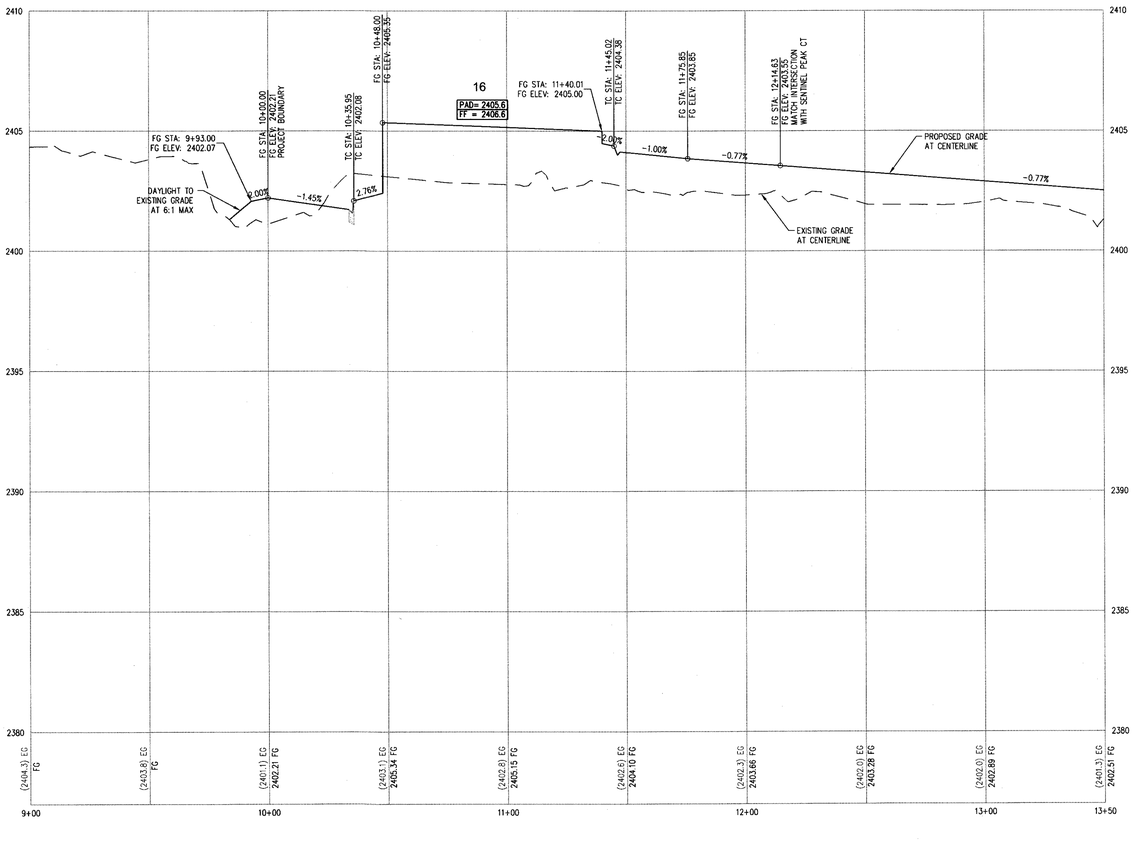
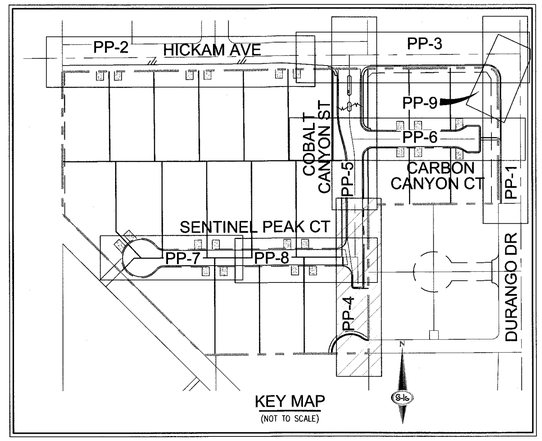


COBALT CANYON ST - PLAN VIEW
PRIVATE



COBALT CANYON ST - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

SCALE - 1"=30' (0, 30, 60 FEET)



CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C6	20.94'	20.00'	60°00'00"	11.55'
C10	31.42'	20.00'	90°00'00"	20.00'
C11	7.85'	5.00'	90°00'00"	5.00'
C12	7.85'	5.00'	90°00'00"	5.00'

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

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GRADING LEGEND

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- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC → PROPOSED ELEVATION
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- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

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SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

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EARTHWORK QUANTITIES (RAW):
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21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
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BENCHMARK NUMBER: OLVOO 4SIW6

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PER THE CLARK COUNTY VERTICAL CONTROL V.2003

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1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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.
2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES
1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
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/REPLEPING 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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.
10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW
ACCEPTANCE OF PLANS FOR FILING

BY _____
ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS. CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######
LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

FAST Call before you UnderGround 1-702-432-5300 FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY. Call 811 OR 1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
PLAN AND PROFILE - COBALT CANYON STREET I

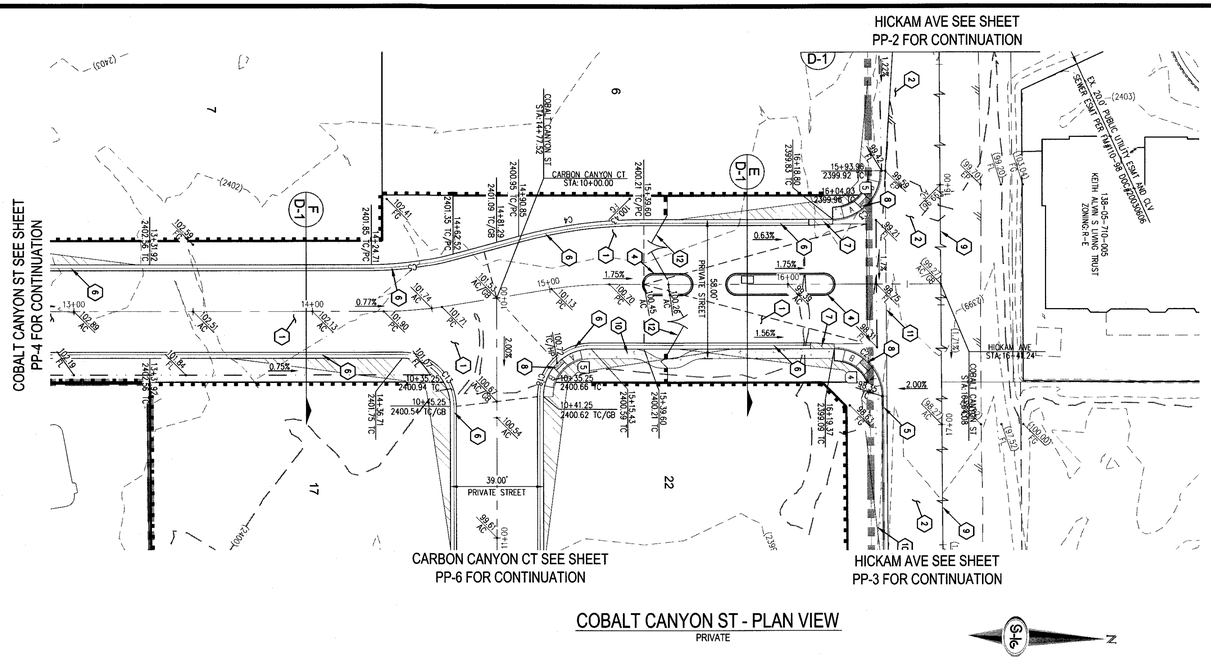
S5 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO. PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA KEVIN M. BROSS Exp. 12/31/2018 CIVIL No. 24572 — 10/9/17

PP-4
SHEET 14 OF 19

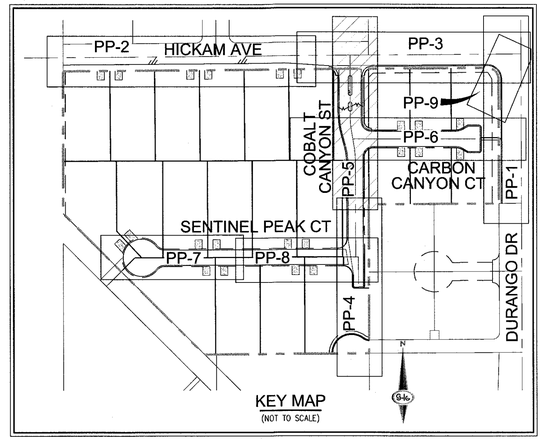
J:\pin1702 ere \\dws\micron\pin1702 prp.dwg 10/17/2017 3:24 PM Emily Hoy



COBALT CANYON ST - PLAN VIEW
PRIVATE

COBALT CANYON ST - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

SCALE - 1"=30' (0, 30, 60 FEET)



CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C2	31.29'	20.00'	89°38'34"	19.88'
C3	31.53'	20.00'	90°19'19"	20.11'
C4	53.01'	200.00'	15°11'09"	26.66'
C5	34.59'	130.50'	15°11'09"	17.40'
C13	31.42'	20.00'	90°00'00"	20.00'
C18	31.42'	20.00'	90°00'00"	20.00'

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
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7	3.01 TO 4	12.0	4.5
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GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
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- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES

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2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
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5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
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19. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
21. EXISTING 24" CLASS III RCP STORM DRAIN
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ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

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CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY _____

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

FAST — Call before you UnderGround 1-702-432-5300 FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T)

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

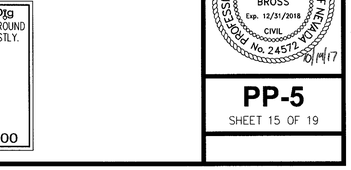
CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
PLAN AND PROFILE - COBALT CANYON ST II

S 5
R 60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702



PP-5
SHEET 15 OF 19

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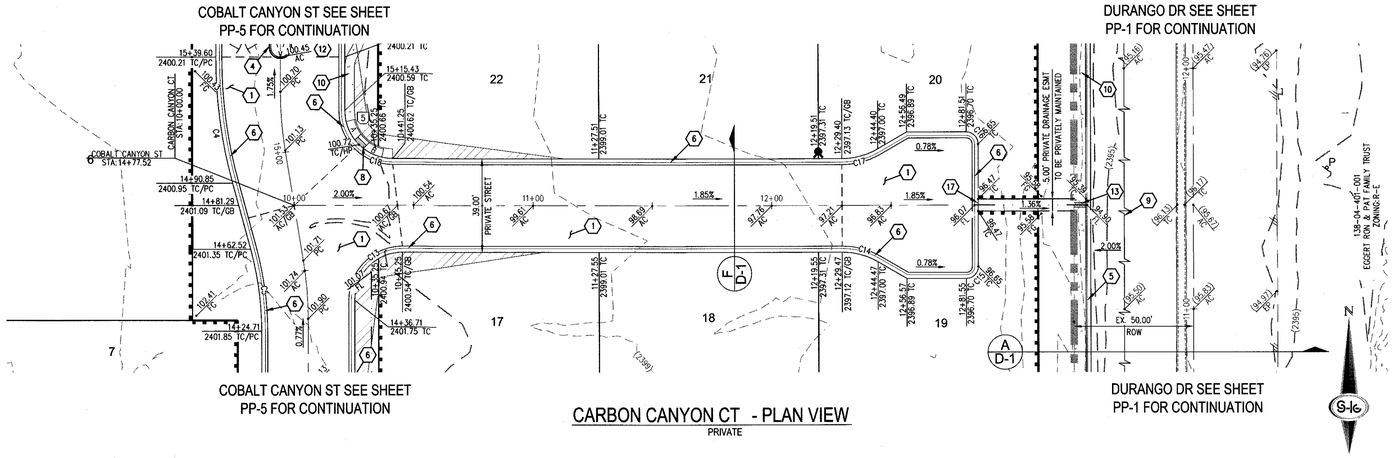
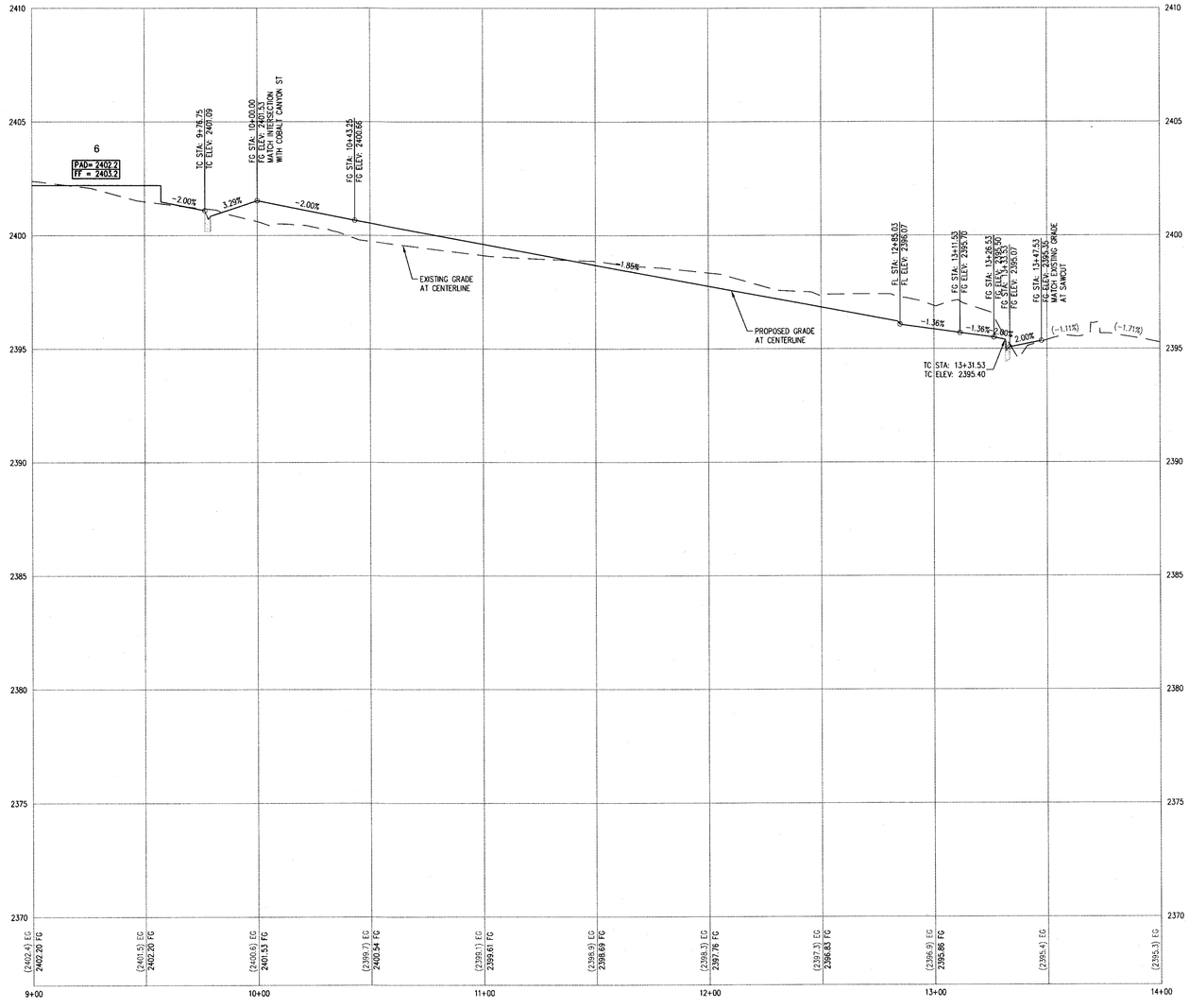


CARBON CANYON CT - PLAN VIEW
PRIVATE



CARBON CANYON CT - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

0 30 60
SCALE - 1"=30' FEET

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
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C5	34.59'	130.50'	15°11'09"	17.40'
C13	31.42'	20.00'	90°00'00"	20.00'
C14	15.71'	30.00'	30°00'00"	8.04'
C15	7.86'	5.00'	90°03'00"	5.00'
C16	7.85'	5.00'	89°57'00"	5.00'
C17	15.71'	30.00'	30°00'00"	8.04'
C18	31.42'	20.00'	90°00'00"	20.00'

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

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GRADING LEGEND

- MATCHLINE
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SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT
SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS
EARTHWORK QUANTITIES (RAW):
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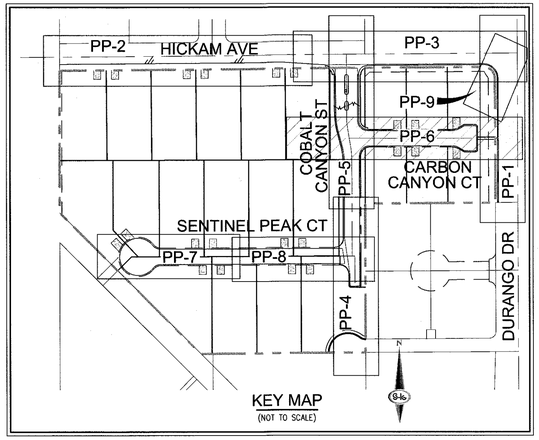
EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.



KEY MAP
(NOT TO SCALE)

GRADING NOTES
1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
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19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
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BENCHMARK
BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

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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.
10. SECTION 8 OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

SURVEY NOTE
OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE
1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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.
2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW
ACCEPTANCE OF PLANS FOR FILING

BY _____

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

PLAN AND PROFILE - CARBON CANYON COURT

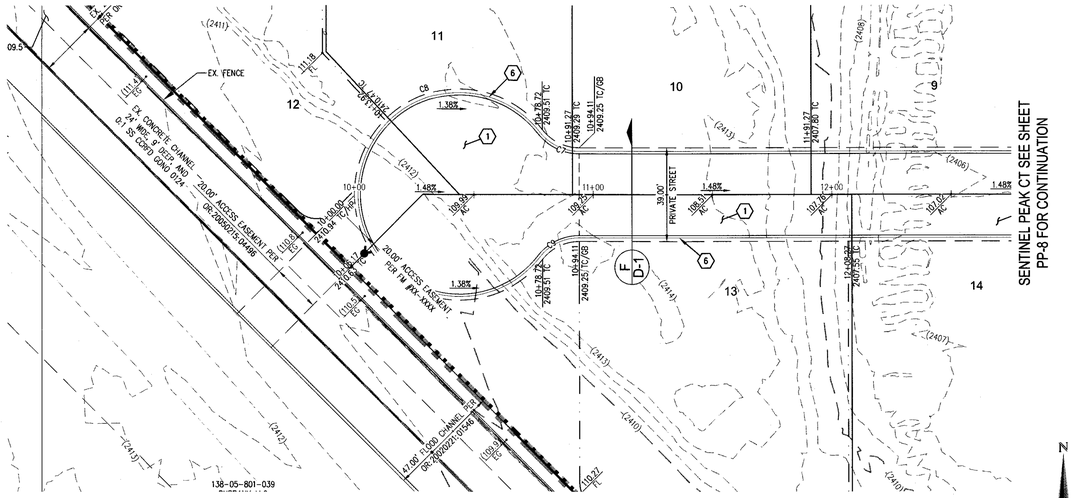
S 5
R 60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO.
PIN1702

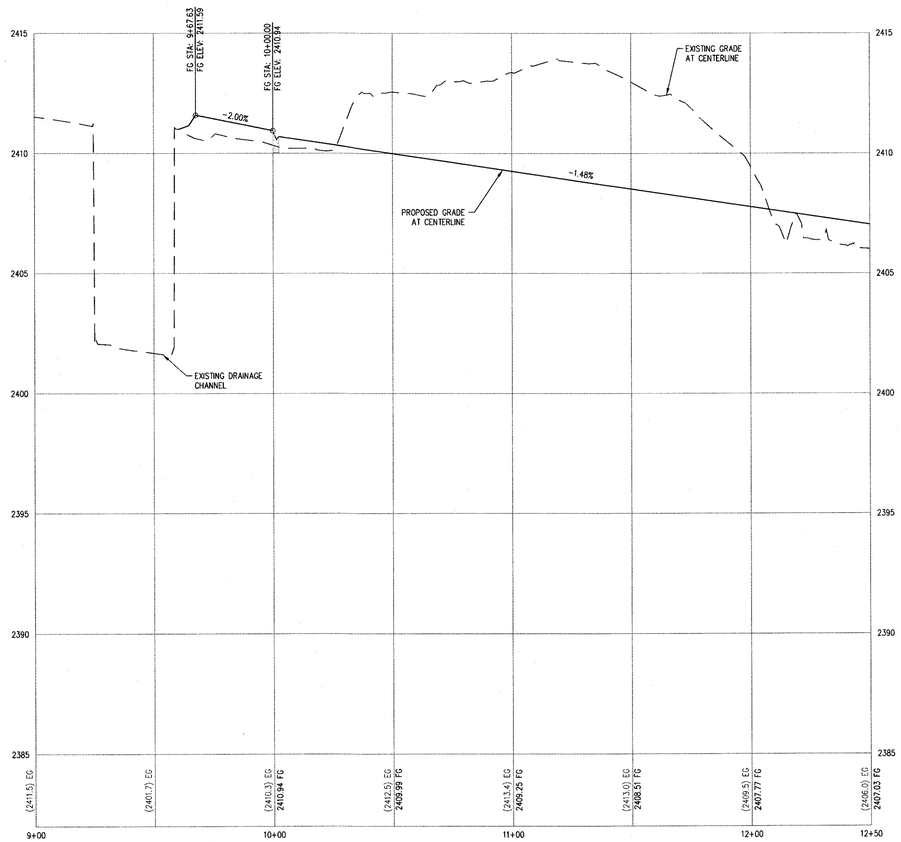
PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
10/9/17

PP-6
SHEET 16 OF 19

J:\pin1702 are ia\dwg\improv\pin1702_pp.dwg 10/17/2017 3:25 PM Emily Hoy

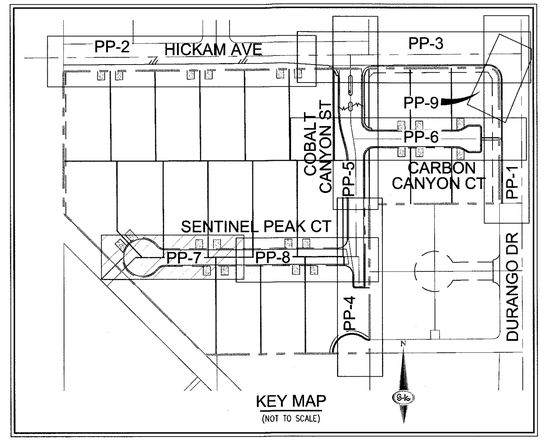


SENTINEL PEAK CT - PLAN VIEW
PRIVATE



SENTINEL PEAK CT - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

0 30 60
SCALE - 1"=30' FEET



CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
- 15.01% — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT
SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS
EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES
1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE 1 & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
10. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
11. INSTALL VALLEY GUTTER VALLEY GUTTER PER CCAUSD NO. 228
12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
18. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCPW
19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 405
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
22. EXISTING 24" CLASS III RCP STORM DRAIN
23. EXISTING 48" STORM DRAIN MANHOLE
24. EXISTING AREA DRAIN TO BE REMOVED
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE
ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK
BENCHMARK NUMBER: CLVOO 45WW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS
NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION
THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE
OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE
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2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES
1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
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/REPLEPING 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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.
10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW
ACCEPTANCE OF PLANS FOR FILING

BY _____
ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS. CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######
LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C7	17.73'	19.50'	52°06'29"	9.53'
C8	218.26'	44.00'	284°12'59"	34.24'
C9	17.73'	19.50'	52°06'29"	9.53'

FAST
Call before you
UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
PLAN AND PROFILE - SENTINEL PEAK COURT I

S 5
T 20
R 60

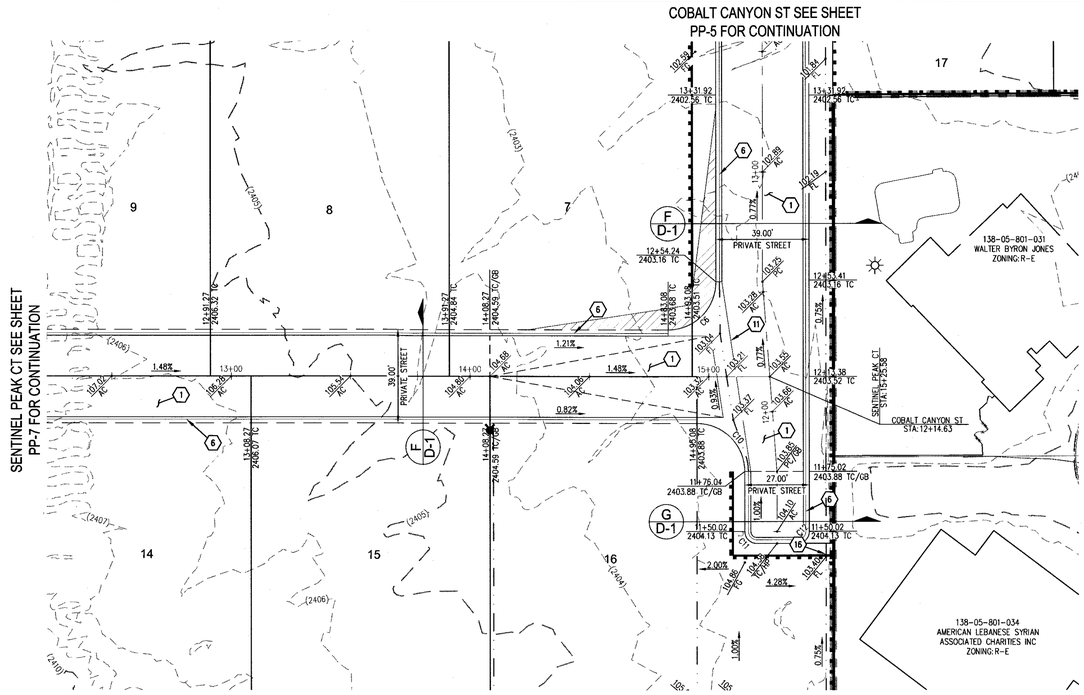
DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

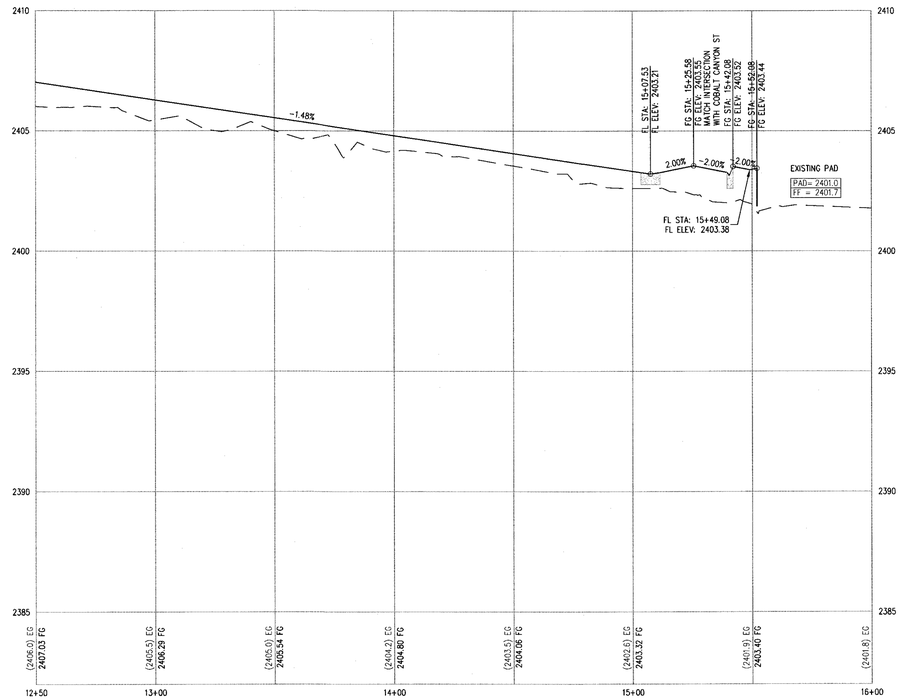
PROFESSIONAL ENGINEER - STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/14/17

PP-7
SHEET 17 OF 19

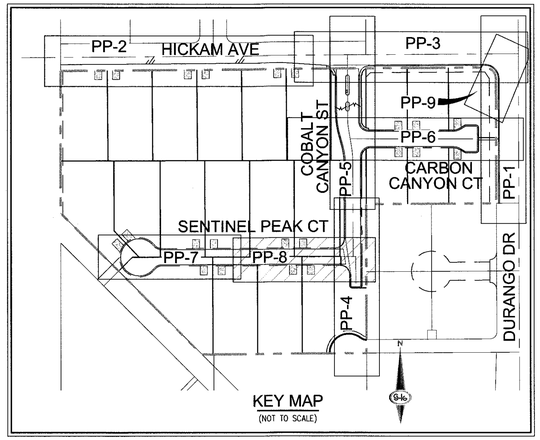
J:\pin1702 ere iv\dwg\improv\pin1702 prof.dwg 10/17/2017 3:25 PM Emily Hoy



SENTINEL PEAK CT - PLAN VIEW
PRIVATE



SENTINEL PEAK CT - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'



CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
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3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
- 5.01%1 — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVATIONS AND QUANTITIES

SOILS REPORT
SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS
EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES
1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM 'L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
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12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
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16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
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19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 408
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
22. EXISTING 24" CLASS III RCP STORM DRAIN
23. EXISTING 48" STORM DRAIN MANHOLE
24. EXISTING AREA DRAIN TO BE REMOVED
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE
ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK
BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS
NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

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GRADING NOTES
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CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW
ACCEPTANCE OF PLANS FOR FILING

BY _____

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C6	20.94'	20.00'	60°00'00"	11.55'
C10	31.42'	20.00'	90°00'00"	20.00'
C11	7.85'	5.00'	90°00'00"	5.00'
C12	7.85'	5.00'	90°00'00"	5.00'

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
PLAN AND PROFILE - SENTINEL PEAK COURT II

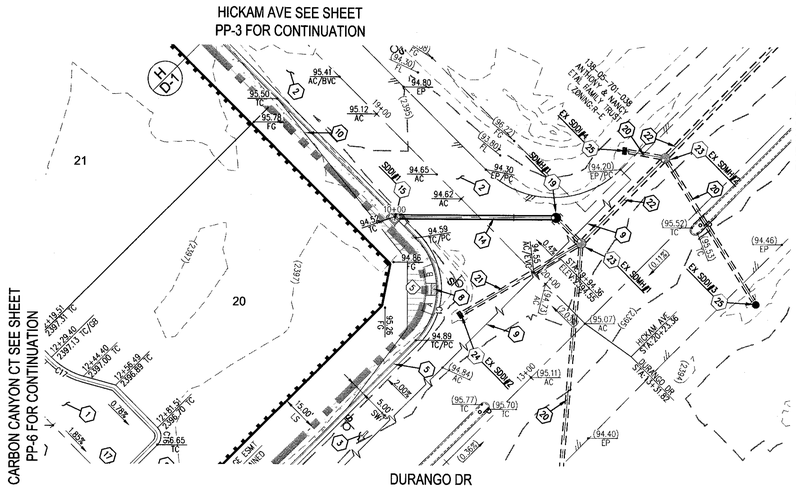
S5 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

PP-8
SHEET 18 OF 19

S:\pin1702 ere ia\dwg\improv\pin1702 pnp.dwg 10/17/2017 3:25 PM Emily Hoy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CARBON CANYON CT SEE SHEET PP-6 FOR CONTINUATION
DURANGO DR
DURANGO DR
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EX. SDMH
SDMH
SDMH
EX. SDMH
EX. SDMH
EX.

TECHNICAL DRAINAGE STUDY

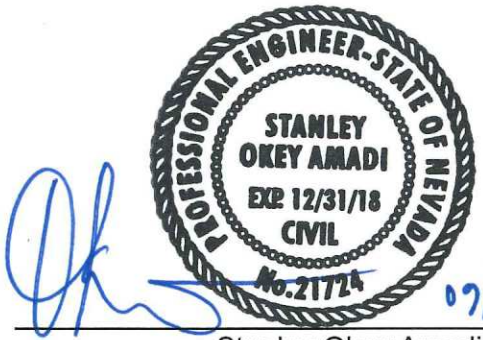
Elk Ridge Estates IV

Unincorporated Clark County, Nevada

Job No.: PIN1702.000
Date: September 2017

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:
Pinnacle Homes
9225 W. Flamingo Road, Suite 190
Las Vegas, NV 89147
Phone: 702-228-0720 ▪ Fax: 702-228-5895



09/08/17

Stanley Okey Amadi, P.E.
NV Professional Engineer No. 21724

Assisted by: Caitlyn Alcantara, EI

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Elk Ridge Estates IV Date: September 2017

Location of Development: a) Descriptive (Cross Streets): North/South: Durango Drive
East/West: Hickam Ave

b) Section: 5 Township: 20 South Range: 60 East

c) APN: 138-05-801-065 & -066

Name of Owner: Pinnacle Homes

Telephone No.: (702) 228-0720 Fax No.: (702) 228-5895 E-mail Address: frank@pinnaclelv.com

Address: 9225 W. Flamingo Road, Suite 190 Las Vegas NV 89147

Contact Person – Name: Stanley Okey Amadi, P.E. Telephone No.: 702-284-5300

*E-mail Address: samadi@shg-inc.com Fax No.: 702-284-5399

Firm: Slater Hanifan Group

Address: 5470 S. Arville Street, Suite 216 Las Vegas NV 89118

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 10.79 +/- acres Being Developed/Disturbed: 10.79+/- acres

2. Is a portion or all of the subject property located in a FEMA Flood Hazard Area? ☐ Yes** ☒ No

3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ Yes** ☐ No

4. Proposed type of development (Residential, Commercial, Etc.): Residential

5. Approximate upstream land area which drains to the subject site: 0 cfs

6. Has the site drainage been evaluated in the past? ☐ Yes** ☒ No If yes, please identify documentation:

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: West to Durango Drive via Drainage Easement and North to Hickam Drive to be conveyed West toward Durango Drive

8. Briefly describe your proposed schedule for the subject project: ASAP

PROFESSIONAL ENGINEER-STATE OF NEVADA
STANLEY OKEY AMADI
EXP. 12/31/18
CIVIL
No.21724

Engineer's Seal 09/08/17

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

Revision	Date

Local Entity File No.

REFERENCE: STANDARD FORM 1

Updated 05/01/2008

Department of Public Works

Development Review Division

500 S Grand Central Pky | Box 554000 | Las Vegas NV 89155-4000
(702) 455-4600 | Fax (702) 388-2550
www.ClarkCountyNV.gov/PubWorks

Drainage Study Submittal Sheet

(Each Submittal must have a separate sheet and check)

HTE # _____ **Date Submitted:** September 2017

Previous HTE Number _____

Type of Submittal: ■ **Initial** ☐ **Addendum** ☐ **Supplement**

Number of Acres: ☐ **up to 5 acres** ■ **up to 40 acres** ☐ **up to 320 acres** ☐ **over 320 acres**

Project Name: Elk Ridge Estates IV

Assessor's Parcel Numbers (APN's): 138-05-801-065 & -066

Street Location: East/West Hickam Ave **North/South** Durango Drive

Land Use Applications: Residential

Project Type: (Check any that apply)
☐ **Update** **List previous Tracking Number** _____
☐ **Concurrence Review**
☐ **Grading Plan Review**
☐ **Structural Review**

Engineering Firm/Responsible Engineer Slater Hanifan Group Stanley Okey Amadi, P.E. **Phone number** 702-284-5300
Address 5470 S. Arville Street, Suite 216 **Fax number** 702-284-5399
City/State/Zip Las Vegas NV 89118
E-mail Address *(Required)* samadi@shg-inc.com

Owner/Developer Pinnacle Homes **Phone number** (702) 228-0720
Address 9225 W. Flamingo Road, Suite 190 **Fax number** (702) 228-5895
City/State/Zip Las Vegas NV 89147
E-mail Address *(Required)* frank@pinnaclelv.com

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Elk Ridge Estates IV	Map ID:
Firm Name: Slater Hanifan Group	Engineer: Stanley Okey Amadi, P.E.
Address: 5470 S. Arville Street, Suite 216	
City: Las Vegas State: NV Zip: 89118	
Phone Number: 702-284-5300	Fax Number: 702-284-5399
Property Owner: Pinnacle Homes	
Address: 9225 W. Flamingo Road, Suite 190	
City: Las Vegas State: NV Zip: 89147	

Reviewed By:	Date Received:	Date Accepted for Review:

The following checklist is intended as a guide for the engineer preparing a Technical Drainage Study to submit to the local entity and Clark County Regional Flood Control District (if necessary). The listed items are the minimum information required prior to the entity performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the Clark County Regional Flood Control District (CCRFCD) Hydrologic Criteria and Drainage Design Manual (MANUAL).

This document is intended as an aid in preparing Technical Drainage Studies. Each study submitted is reviewed for compliance with local and regional criteria. This form is not intended to be all inclusive and does not limit the extent of the information, calculations or exhibits which may be necessary to properly evaluate the intended land use.

If items are not applicable for the subject site, provide N/A.

I. GENERAL REQUIREMENT

Yes	No	
X	-	Design Manual **Standard Form 1** with the engineer's seal and signature.
X	-	Design Manual **Standard Form 4**.
X	-	2 copies of the 24" x 36" Drainage Plan.
-	N/A	A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.

II. MAPS AND EXHIBITS

Yes	No	
X	-	A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.
X	-	A copy of the current CCRFCD Master Plan Update Figure, (F-x), for Flood Control Facilities and Environmental areas with the site delineated.

REFERENCE:	STANDARD FORM 2

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS (Continued)

Yes	No	
X	-	Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.
X	-	On-site drainage basin maps for existing and proposed conditions showing the existing topography, basin boundaries, concentration points, and on-site and off-site flows in cfs.
X	-	Vicinity Map with local and major cross streets identified and a north arrow.

III. DRAINAGE PLAN

Yes	No	
X	-	Sheet size: 24" x 36" sealed by a registered engineer in the State of Nevada.
X	-	Minimum scale: 1" = 60'.
X	-	Project name.
X	-	Vicinity Map with local and major cross streets.
X	-	Revision box.
X	-	North arrow and bar scale.
X	-	Engineer's/consultant's address and phone number.
X	-	Elevation datum and benchmark.
X	-	Legend for symbols and abbreviations.
X	-	Cut/fill scarps, where applicable.
X	-	Street names, grades, widths.
X	-	Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street.
X	-	Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where appropriate.
X	-	Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.
X	-	Proposed typical street sections.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
-	N/A	Streets with off-set crowns.
X	-	Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
X	-	Property lines.
X	-	Right-of-way lines and widths, existing and proposed.
X	-	Existing improvements and their elevations.
X	-	Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
X	-	Concentration points and drainage flow direction with Q_{100} and V_{100} and D_{100} in streets.
X	-	Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
X	-	Location and cross-section of street capacity calculations.
X	-	Cross-sectional detail for channels, including cutoff wall locations.
X	-	Existing and proposed drainage facilities, appurtenances, and connections (i.e., sidewalk, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, material, shape, and slope with plan and profile and HGL calculations.
X	-	Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
-	N/A	Location and detail of existing, proposed, and future block wall openings. Minimum size is 16" x 48". Wrought iron gate is required for flows > 10 cfs.
-	N/A	Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.
X	-	Perimeter retaining wall locations. All existing and proposed walls (retaining screen and flood) must be shown with adjacent ground elevations. Flood walls with 8-inch concrete masonry unit.
X	-	Building and/or lot numbers.
X	-	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
-	N/A	Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
-	N/A	For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table. Finish floor elevations must be a minimum of 18 inches above BFE.
-	N/A	Appropriately elevated "humps" 6 inches above the 100 year water surface elevation at site accesses where the intent is to protect the site from the Q_{100} flows.
-	X	Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent. Improvements into Durango Drive match existing slopes less than 0.4 percent.
-	N/A	Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).

IV. HYDROLOGIC ANALYSIS

Yes	No	
X	-	Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
X	-	Input and output information for existing conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
X	-	Input and output information for future conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
X	-	Use of correct precipitation values in and around the McCarran Airport rainfall area.
X	-	A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
X	-	A summary table of stormwater flows showing basin area, Q_{10} and Q_{100} for both individual basins and combined basin flows, where applicable.
X	-	Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.
X	-	On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners in accordance with current Nevada Drainage Law.
-	N/A	Calculation for impervious area for parking lots and LIDs (if required).

REFERENCE:	STANDARD FORM 2

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

Yes	No	
-	N/A	Flow split calculations and supporting documentation or reference for the method of flow split calculations used.
X	-	Normal depth street flow calculations and cross section diagrams for all interior and perimeter streets. Provide "d x v" products for the Q_{100} and Q_{10} flows representing the worst case for interior and all perimeter streets. Q_{100} d x v $\leq$ 8. Q_{10} d x v $\leq$ 6 and 12 foot dry lane for rights-of-way $\geq$ 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan.
X	-	A summary table of interior and exterior street capacity calculations showing the street name, Q_{100} flow, slope, depth of flow, velocity and depth times velocity product and streets needing to meet 12 foot dry lane criteria.
-	N/A	Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged.)
X	-	Appropriate hydraulic calculations at drainage easement entrance and discharge locations to set finish floor elevations. Hydraulic calculations must include submerged weir, superelevation and tee intersection losses, where appropriate.
X	-	Provide necessary freeboard requirements to set the finished floor elevations of all proposed buildings, 2 x depth of flow or depth of flow plus 18 inches of freeboard, whichever is less. The minimum requirement is 6 inches above adjacent upstream top of curb. Buildings adjacent to drainage easements must always be provided with 18 inches of freeboard above the Q_{100} weir height or flow depth, whichever is greater.
-	N/A	A complete water surface profile analysis (HEC-2, HEC-RAS, etc.) for channel flows and FEMA Zone A flood zones. • Field survey data. • Input and output information. • Plotted cross-sections based on survey with proper encroachments. • A map showing the location of the cross-sections. • Analysis of both sub and super-critical flow segments. • A summary table and a discussion of the results in the text of the report.
-	N/A	Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
-	N/A	Hydraulic calculations for culverts and storm drains. D-Load calculations must be provided for storm drain pipes in public rights-of-way, including headwater pool inundation.
X	-	The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.
-	N/A	Provide BMP type, size and supporting calculations for parking lots and LIDs (if required).

REFERENCE:	STANDARD FORM 2

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1 INTRODUCTION

1.1 Project Overview & Study Purpose

Pinnacle Homes is proposing a single-family residential development, identified as *Elk Ridge Estates IV h*ereinafter referred to as *ERE IV.* The project site is located within the limits of Clark County, Nevada. The proposed development is approximately 10.8 acres and is located southwest of the Hickam Avenue and Durango Drive intersection.

It is the intent of this study to provide a detailed hydrologic and hydraulic analyses for the project site to protect the property from onsite and offsite runoff in accordance with local storm water management criteria as well as to support the proposed finished floor elevations.

1.2 Description of Improvements

The project is located within Section 5 of Township 20 South and Range 60 East and is identified by Assessor's Parcel Numbers (APNs) 138-05-801-065 and 138-05-801-066. ERE IV is bound by Hickam Avenue to the north, Durango Drive and existing residential development to the east, undeveloped desert land to the south and west, and an existing flood channel, identified as part of the Gowan North System, to the southwest. The location map identifying the site in relation to major streets in the vicinity has been prepared as Exhibit A, included in Appendix A.

The project comprises of a single-family residential subdivision with average lot sizes of either 20,000 ft^2 or 11,000 ft^2 in area and includes all associated interior roadways and utilities. The project also proposes half street improvements to Hickam Avenue and Durango Drive. The typical onsite roadway is to be proposed as a 39-ft wide private street with modified roll curb. Curb for the proposed half street improvements to Durango Drive and Hickam Avenue is proposed to be "L" type curb.

Drainage improvements necessary to control storm runoff and satisfy local drainage criteria will be proposed by ERE IV.

1.3 FEMA Flood Zone Designation

The ERE IV site boundary has been delineated on the current FEMA FIRM Panel Map 32003C2135F, dated November 16, 2011. The FIRM Panel Map is provided as Exhibit B included in Appendix A. Per the FIRM Panel, the project site is located within a FEMA designated Zone 'X' (unshaded), defined as areas determined to be outside the 0.2% (500-year) annual chance floodplain. A Zone 'X' (unshaded) is located outside a FEMA designated Special Flood Hazard Area (SFHA).

1.4 CCRFCD Facility Information

The project site has been delineated on the current 2013 Clark County Regional Flood Control District (CCRFCD) Las Vegas Valley Flood Control Master Plan Update (2013 MPU) facility figure as Exhibit C1, included in Appendix A. Per the 2013 MPU, the site is bordered by the existing CCRFCD facility GONO 0141 and GONO 0124, a channel that has been noted to be a portion of the Gowan North System. The site will therefore require concurrence from CCRFCD.

1.5 Referenced Documents

The following documents have been utilized as reference materials in the preparation of this drainage study. The referenced documents have been reviewed and determined acceptable for reference. Slater Hanifan Group (SHG) concurs with all referenced and adopted hydrologic and hydraulic analyses from the studies and the results established therein.

1. *Technical Drainage Study for Hickam/Bonita Vista*, prepared by Wright Engineering (hereinafter referred to as the Hickam/Bonita Study), has technically designed the east half of the project site.
2. *Technical Drainage Study for Trovia Cove*, prepared by Baughman & Turner (hereinafter referred to as the Trovia Cove Study), has technically designed the west half of the project site.
3. *Technical Drainage Study and Update for Helena Estates,* prepared by Wright Engineers, (hereinafter referred to as the Helena Estates Study), has technically designed the existing residential development north of the project site.
4. *Technical Drainage Study for Stone Ridge Estates II*, prepared by Phase ONE Consulting Engineers (hereinafter referred to as the Stone Ridge Study), has established the flow pattern for the properties east of Durango contributing to Hickam Avenue downstream of the site.
5. *Gowan North Channel Phase III*, prepared by PBS&J (hereinafter referred to as the Gowan North Study or GN Study), has technically designed the channel bordering the southwest corner of the project site, establishing base water surface elevations.

Please note that besides the GN Study referenced for the channel water surface elevation(s), the rest of the above reference studies have been reviewed and only utilized to ensure conformance in drainage patterns for the tributary offsite basins which have been specifically reanalyzed by the subject study.

2 METHODOLOGY

2.1 Compliance

The methodologies utilized in the preparation of this study are in compliance with the Clark County Regional Flood Control District's Hydrologic Criteria and Drainage Design Manual (CCRFCD Manual, Reference 2).

2.2 Hydrologic Modeling

Modeling:

The SCS Unit Hydrograph Method (SCS Method) was utilized to determine peak flow rates. The SCS Method utilizes precipitation, drainage area, curve number and lag time parameters to determine peak flow rates. The SCS Method routine within the U.S. Army Corp of Engineers HEC-1 Flood Hydrograph Package program was utilized to model the drainage basins analyzed by this study.

Precipitation:

The site is located outside of the McCarran Airport Rainfall Area. Per the CCRFCD Manual precipitation exhibits, the precipitation values utilized in this study's HEC-1 models are 2.86 inches and 1.67 inches for the 100-year and 10-year storm events, respectively. No drainage area exceeds 8 square miles; therefore, the SDN 3 design storm distribution referenced from Table 503 of the CCRFCD Manual is used. Relevant tables and figures from the CCRFCD Manual have been included in Appendix B.

Curve Number:

The SCS curve number loss rate methodology was utilized to approximate infiltration for the drainage basins. The soils information within the watershed was obtained from the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey of the Las Vegas Valley Area, Nevada, Part of Clark County (Soil Survey). This study's drainage basins lie within the following soil type delineated on Exhibit D, included in Appendix A:

- Soil 190 – Dalian very gravelly fine sandy loam, 2 to 4 percent slopes. This soil is comprised of 100% Hydrologic Soil Group (HSG) 'A'.
- Soil 502 – Canutio-Cave gravelly fine sandy loams, 2 to 8 percent slopes. This soil is comprised of 60% Hydrologic Soil Group (HSG) 'A' and 40% HSG 'D'.

The curve number for the land use in this study's hydrologic analysis has been obtained utilizing the percentage identified above, and the computations are included in Appendix B.

Lag Time:

The lag time is defined as the time measured from the center of mass of excess rainfall to the time to peak of the outflow hydrograph. The lag time is related to the time of concentration as 0.6 times the time of concentration. The time of concentration is defined as the time required for runoff to flow from the hydraulically most distant point of a basin to the outlet point of the basin. Standard Form 4, as outlined in the CCRFCD Manual, was utilized to determine the lag times for basins modeled. The lag time computations have been included in Appendix B.

2.3 Hydraulic Modeling & Criteria

Street Flow & Drainage Easement:

Street flows and drainage easement computations have been analyzed utilizing the FlowMaster Version 7.0 software by Haestad Methods. In accordance with the CCRFCD Manual, the following street flow criteria apply:

- 10-year minor storm event: maximum flow depth of 1-ft from gutter flowline, and maximum depth times velocity factor (DxV) of 6.
- 100-year major storm event: maximum flow depth of 2-ft from gutter flowline, and maximum depth times velocity factor (DxV) of 8.

3 EXISTING DRAINAGE CONDITION

3.1 Definition of Existing Condition

The existing condition considers Helena Estates, PM 105-94, and the portion of Gowan North System channel southwest of the project site as fully developed. Hickam Avenue and Durango Drive are considered partially developed rural roads. The project site itself is considered a combination of newly graded and undeveloped desert land typical of Southern Nevada.

3.2 Discussion of Existing Condition

ERE IV's existing condition was analyzed with one onsite basin, ON1, two street basins for Hickam Avenue and Durango Drive, HICK and DUR respectively, and four offsite basins that contribute flow to either Durango Drive or Hickam Avenue, OFF1, OFF2, OFF3, and OFF4. The preceding basins and drainage patterns are defined as follows:

- Basin ON1 defines the boundary of the project site and the contributing flow that the project site currently generates. Flow in the basin generally travels north toward Hickam Avenue then continues east towards Durango Drive.
- Basin HICK delineates the flow generated in Hickam Avenue west of Durango Drive. Flow conveyed in Hickam Avenue travels east toward Durango.
- Basin DUR defines the flow generated in the west half of Durango Drive between Florine Avenue and Hickam Avenue. Flow from DUR is conveyed in Durango Drive toward the intersection of Hickam Avenue and eventually east along Hickam Avenue.
- Basin OFF1 is west of the project site and delineates a portion of an existing stockpile. The basin generally drains northeasterly impacting the western border of the project site before draining into Hickam Avenue.
- Basin OFF2 delineates the area north of Hickam Avenue that contributes flow to Hickam Avenue before the intersection with Durango Drive.
- Basin OFF3 defines the existing homes developed by the PM 105-94 Study and the contribution to Durango Drive.
- Basin OFF4 quantifies the contributing flow to west half of Durango Drive before the Florine Avenue and Durango Drive intersection. The basin was delineated to determine whether flows would overtop the crown at Florine Avenue.

The intersection of Hickam Avenue and Durango Drive is considered a low point in the alignment of Durango Drive where accumulated flows at the intersection weir over the

crown of Durango Drive and continue East on Hickam Avenue. Refer to Exhibit E, included in appendix A, for a detailed illustration of the existing condition drainage patterns and Exhibit F for a detailed illustration of the flow that weirs over Durango Drive.

3.3 Summary of Existing Condition Flows

A summary of the existing condition flows, as determined by HEC-1 analysis, has been presented in a summary table on Exhibit E in Appendix A. Refer to Appendix C for the applicable HEC-1 analysis.

4 PROPOSED DRAINAGE CONDITION

4.1 Definition of Proposed Condition

The proposed condition considers the surrounding residencies and facilities as existing and the ERE IV improvements as fully developed. ERE IV proposes 20,000 and 11,000 square foot lots and half street improvements to Durango Drive and Hickam Avenue. The ERE IV development also proposes a drop inlet and lateral connection to existing storm drain within Durango Drive to mitigate nuisance flows. Included in this project are the proposed drainage facilities required to collect and convey storm runoff produced by the entire ERE IV area.

4.2 Discussion of Proposed Condition

The ERE IV project site area is analyzed as two onsite basins in the proposed condition, identified as ON1D and ON2D and described as follows:

- Basin ON1D is defined as the area of the project site's onsite improvements draining through the main entryway toward Hickam Avenue before being conveyed to Durango Drive. The ON1D basin is also comprised of all proposed 20,000 square foot lots.
- Basin ON2D is defined as the area of the project site's onsite improvements draining to a proposed drainage easement at the northeast corner of the project site. The drainage easement conveys onsite flow east towards Durango Drive. The ON2D basin is comprised of all proposed 11,000 square foot lots.

Basins that define offsite street flows in Hickam Avenue and Durango Drive (HICK and DUR respectively) have also been delineated as described in the existing condition discussion (Section 3.2). Note that in both conditions Basins HICK and DUR utilize a fully developed roadway CN to define the most conservative flow. Also note that although half street improvements are proposed in both streets, factors affecting the SF4 and curve numbers remain unchanged; therefore, basins HICK and DUR do not change in the proposed condition from the existing condition. Offsite basins are as described in the existing condition (Section 3.2). Refer to Exhibit F, included in Appendix A, for a detailed illustration of the proposed condition drainage patterns.

4.3 Summary of Proposed Condition Flows

Large lot sizes proposed by the ERE IV development, greatly reduce runoff generated by the project site as compared to the existing condition. A summary of proposed condition flow, as determined by the HEC-1 analysis, has been presented in a summary table on Exhibit F provided in Appendix A. Refer to Appendix C for the applicable HEC-1 analysis. As discussed in the existing condition, accumulated flows at the intersection of Hickam avenue and Durango Drive is shown to weir over Durango Drive and continue east in Hickam Avenue as acknowledged by the Stone Ridge Study. Further discussion of the Hickam – Durango weir is provided in Section 6 of the report.

4.4 Summary of Drainage Facilities

The site proposes a 5-ft drainage easement to drain onsite flows generated by basin ON2D. The 5-ft triangular concrete channel easement contains onsite 100-year flow generated by basin ON2D. Note that a submerged weir computation as well as a normal depth section has been included to define the most conservative flow depth for finished floor design. A Drainage Easement summary table detailing the discussed drainage facilities is provided on Exhibit F in Appendix A.

A 4-ft Type C drop inlet and 18-inch lateral has been proposed to connect to existing storm drain within Durango Drive to mitigate nuisance flows at the intersection of Durango Drive and Hickam Avenue.

4.5 Summary of Proposed Condition Street Flows

Provided street section have been primarily categorized in three groupings: onsite, Hickam Avenue, and Durango Drive. Two sections (1 & 2) have been provided for onsite street section analysis, one for each of the two proposed onsite basins, ON1D and ON2D. An interior half street section with the larger and therefore more conservative flow of ON1D has been provided to ensure that flows will not overtop the crown of Cobalt Canyon Street. The section ensures that flow generated by basin ON1D does not influence ON2D or vice versa. An entry way section was not created since the common interior street section is more conservative.

Hickam Avenue sections are defined by the changing street geometry throughout Hickam Avenue. In the proposed condition, Hickam Avenue transitions from a rural street (HICK1), to a similar street section that includes the entry to a driveway (HICK3), and finally to a partially improved street with "L" type curb and gutter (HICK2). Section HICK 1 was provided to determine if flows were erosive for rural road ditches. Section HICK2 was provided to illustrate the effect of half street improvements and curb and gutter. HICK3 was provided as a more realistic interpretation of the depth of flow encountered when entering the driveway of a home. All Hickam Avenue sections used the more conservative flow of CP1 of the proposed condition.

Durango Drive sections are defined by the depth of flow generated by upstream properties, primarily, how much flow will be contained within the western half before overtopping the crown of Durango Drive. DUR1 was provided to check if the flow from Basin OFF4 would

overtop the crown at Florine Avenue or continue on Durango Drive to impact the project site. DUR2 is the most applicable cross section to analyze FF in relation to Durango considering the proposed & ultimate condition improvements. DUR3 is a capacity assessment to determine the maximum amount of flow that can be contained by the west half of Durango Drive north of Hickam Avenue that will impact the Hickam – Durango intersection. DUR3 is a conservative assessment of the amount of flow overtopping the crown. Further discussion of the Hickam – Durango weir is provided in Section 6 of the report.

A table summarizing the proposed condition street flows is provided on Exhibit F located in Appendix A.

5 ULTIMATE DRAINAGE CONDITION

5.1 Definition of Ultimate Condition

The ultimate condition considers the surrounding residencies contributing flow to the Hickam Avenue and Durango Drive intersection as developed. Delineated offsite basins, OFF1 – OFF4 are considered developed utilizing a 20,000 square-foot lot land use being consistent with the current assigned zoning. ERE IV improvements are also considered fully developed as described by the proposed condition (Section 4.1).

5.2 Discussion of Ultimate Condition Flows

The ultimate condition has been run primarily to ensure that the ultimate condition is not the controlling drainage condition in designing finished floors. Overall, ultimate condition flows are less than the existing and proposed condition flows. The decreased flows can be attributed to the change in land use and the reduction in curve number that is experienced when switching from desert shrub(poor) to 20,000 square foot lots. A summary of the ultimate condition flow, as determined by HEC-1 analysis, has been presented in a summary table on Exhibit F provided in Appendix A. Refer to Appendix C for the applicable HEC-1 analysis.

5.3 Summary of Ultimate Condition Street Flows

Two variations of a section detailing Hickam Avenue as fully built out (Section HICKD) have been provided with maximum and minimum slopes. Though Section HICKD is an ultimate condition section, proposed condition flows have been used in the assessment as the proposed condition flows are more conservative than ultimate condition flows.

Section DUR2 illustrates an ultimate condition section geometry with the most conservative proposed condition flows, therefore an additional section detailing ultimate condition drainage in Durango is not required. A table summarizing proposed condition street flows for the full built-out street section of Hickam Avenue is provided on Exhibit G located in Appendix A.

6 PROPOSED FINISHED FLOORS

All the proposed finished floors have been adequately flood protected above twice the depth of flow in the adjacent streets, up to a maximum of 18-inches above the water surface elevation and/or 18-inches above the street centerline elevation. A spreadsheet showing the finished floor analysis and the supplemental adjacent street assessments have been included in Appendix E. Reference material for the Gowan North Study (GN Study) in Appendix G show that a conservative water surface elevation for the portion of the GN Study channel adjacent to the project site is 2409.5-ft. Lots 12 and 13, bordered by the channel have finished floor elevations of 2414.3-ft and 2411.3-ft respectively, which are more than 18" above the water surface elevation in the channel. From this observation of both lots being nearly two feet or more, higher than the water surface elevation, the finished floors are adequately protected against flows within the GN channel. Note that the channel improvements include a freeboard of approximately 2.0-ft above the water surface elevation provided by the top of channel walls.

Weir computations for the Hickam – Durango Weir in Appendix D show that the weir depth is 0.49-ft. The highest grading tag at the Hickam – Durango weir is 2395.53-ft, making the water surface elevation at the weir 2496.02-ft. Lot 20, most affected by this weir has a finished floor of 2399.5-ft making Lot 20, 3.97-ft above the weir depth. Lot 20 is therefore adequately flood protected. Flow accumulated at the Hickam – Durango intersection is predicted to overtop the crown when the median is not present at the intersection.

For the ERE IV development, a portion of Florine Avenue has been vacated and the future Florine Avenue will end in a bulb at the southeast corner of the project site. Since the portion of Florine Avenue connecting the proposed bulb to Durango Drive is undeveloped, little to no channelized flow is present in Florine Avenue. Natural existing washes, cutoff by the GN Study channel, are present south of the project site but also contain little to no flow as well. Considering the project site is an estimated one to two feet higher than the existing ground, properties adjacent to the existing grade and the bulb of Florine Avenue are considered adequately flood protected. Since the drainage pattern of Basin OFF4's future development cannot yet be determined, the consideration of adequate flood protection is based on the assumption that a large deviation of contributing flow area will not occur with Basin OFF4's future development.

7 CONCLUSIONS & RECOMMENDATIONS

1. The proposed improvements are not located within a FEMA designated SFHA.

2. The proposed street flow and drainage facilities satisfy local and CCRFCD criteria.

3. The proposed finished floors are adequately flood protected.

4. The grading plans and detail sheets for this project have been included with this study in Appendix H. These plans support the drainage patterns and conclusions detailed in this study.

8 REFERENCES

1. *Las Vegas Valley Flood Control Master Plan Update.* PBS&J, Louis Berger Group and Parsons Brinckerhoff, 2013.

2. *Hydrologic Criteria and Drainage Design Manual.* Clark County Regional Flood Control District, 1999.

3. *Soil Survey of Las Vegas Valley Area, Nevada.* U.S. Department of Agriculture, Natural Resources Conservation Service, August 2016.

4. *Technical Drainage Study for Hickam/Bonita Vista*, Wright Engineering,

5. *Technical Drainage Study for Trovia Cove*, Baughman & Turner, February 2005.

6. *Technical Drainage Study and Update for Helena Estates,* Wright Engineers, December 2002.

7. *Technical Drainage Study for Stone Ridge Estates II*, Phase ONE, March 2006.

8. *Gowan North Channel Phase III*, PBS&J, January 2004.

LIST OF APPENDICES

Appendix A Drainage Exhibits
- Exhibit A – Location Map
- Exhibit B – FEMA FIRM Panel Map
- Exhibit C1 – CCRFCD 2013 MPU Facilities Map
- Exhibit C2 – CCRFCD 2013 MPU Facilities Inventory
- Exhibit C3 – CCRFCD 2008 MPU Hydrologic Facilities
- Exhibit D – Soils Map
- Exhibit E – Existing Condition Drainage Map
- Exhibit F – Proposed Condition Drainage Map
- Exhibit G – Ultimate Condition Drainage Map

Appendix B Hydrologic Data
- Precipitation Data
- Curve Number Data
- Lag Time Data

Appendix C HEC-1 Analysis
- Existing Condition HEC-1 Model
- Proposed Condition HEC-1 Model
- Ultimate Condition HEC-1 Model

Appendix D Hydraulic Computations
- Interior Street Flow Computations
- Hickam Avenue Street Flow Computations
- Durango Drive Street Flow Computations
- Drainage Easement Computations

Appendix E Finished Floor Analysis

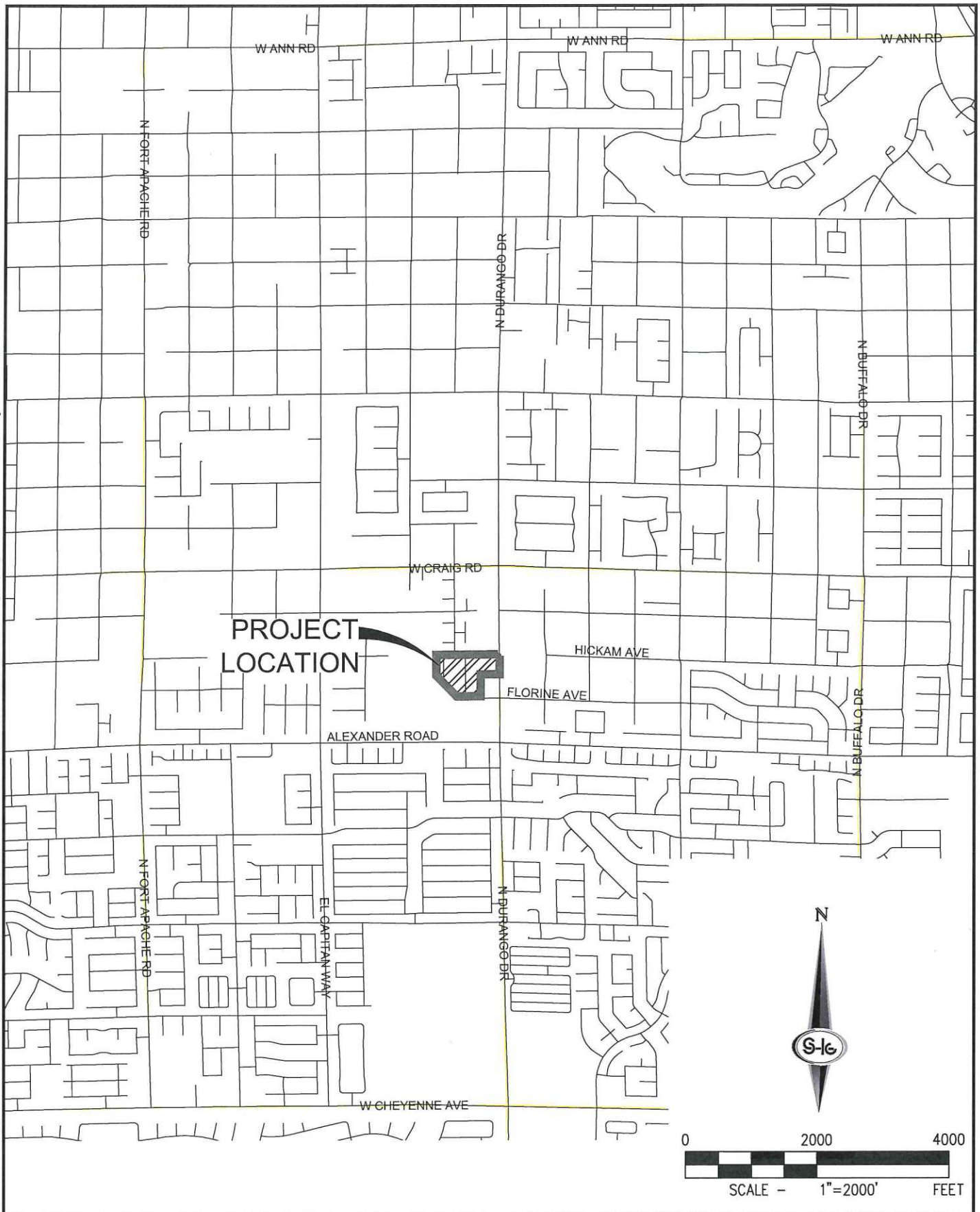
Appendix F Entitlement Information

Appendix G Reference Material
- *Technical Drainage Study and Update to the Technical Drainage Study for Helena Estates*
- *Technical Drainage Study for Hickam/Bonita Vista*
- *Technical Drainage Study for Trovia Cove*
- *Technical Drainage Study for Stone Ridge Estates II*
- *Gowan North Channel Phase III*

Appendix H Grading Plan & Detail Sheets

APPENDIX A

Drainage Exhibits



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PINNACLE HOMES

ELK RIDGE ESTATES IV

LOCATION MAP

DATE: SEPT 2017	PROJECT NO. PIN1702.000
DRAFTER: CAA	
DESIGNER: CAA	EXHIBIT A
CHECKED: SOA	SHEET 1 OF 1

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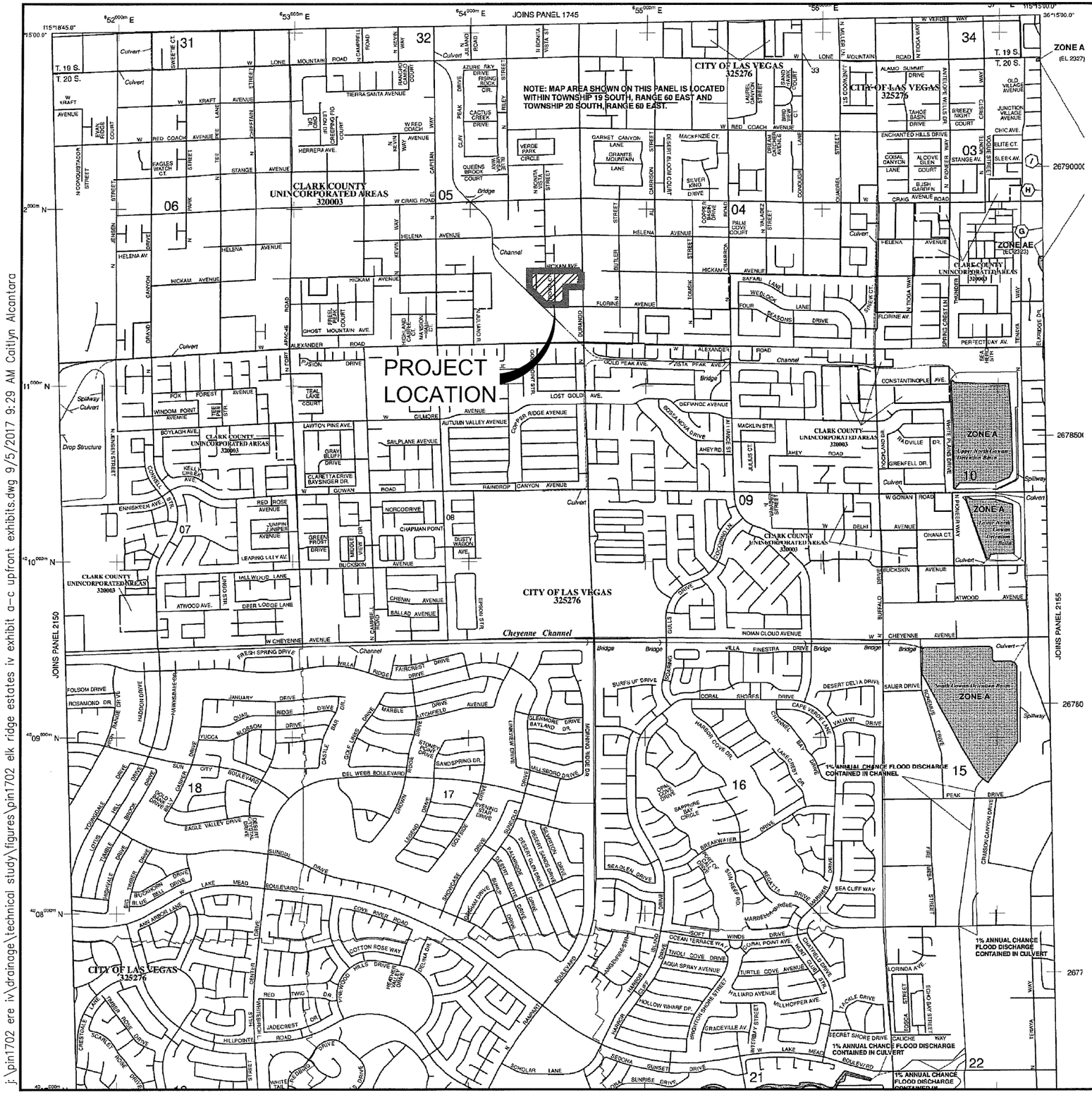

PANEL 2135F

FIRM

FLOOD INSURANCE RATE MAP

CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2135 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY	320003	2135	F
LAS VEGAS, CITY OF	325276	2135	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
32003C2135F

MAP REVISED
NOVEMBER 18, 2011

Federal Emergency Management Agency

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 11
- 6000000 FT — 5000-foot grid ticks: Nevada State Plane coordinate system, east zone (FIPSZONE 2701), Transverse Mercator
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 16, 1995

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 27, 2002
November 18, 2011 - to reflect updated topographic information, to change floodway, to add Base Flood Elevations, to update corporate limits, to change Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to delete Special Flood Hazard Areas, to change zone designations, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

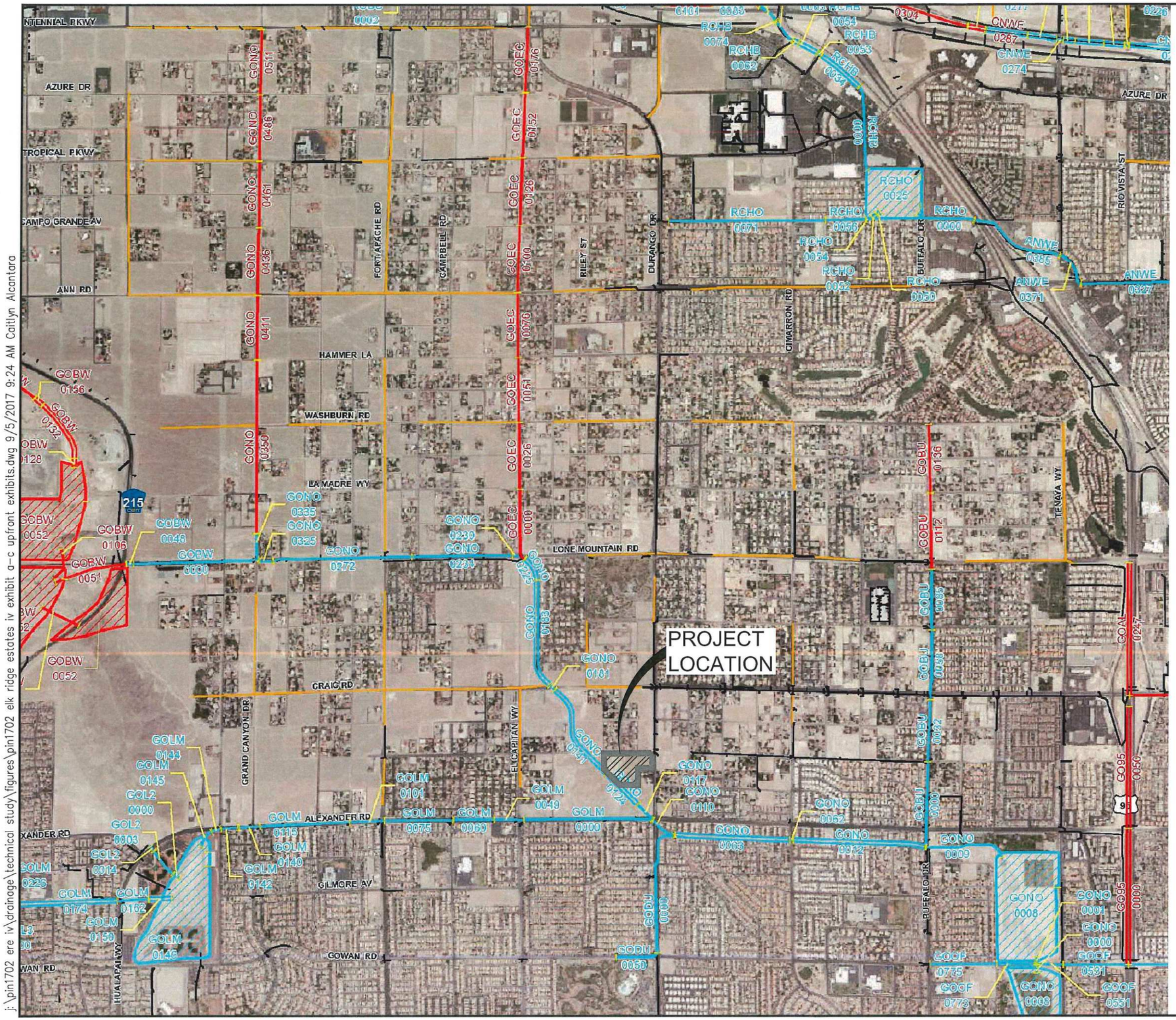
PINNACLE HOMES

ELK RIDGE ESTATES IV

FEMA FIRM PANEL MAP

DATE: SEPT 2017
DRAFTER: CAA
DESIGNER: CAA
CHECKED: SOA
PROJECT NO. PIN1702.000

EXHIBIT B
SHEET 1 OF 1



REGIONAL FLOOD CONTROL DISTRICT

2013
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F- 19
FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Stormdrain
- Lined Channel
- = = Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator

Remove & Replace/Parallel Facilities

Category A	Category B
Channel	Channel
Stormdrain	Stormdrain

N

0 500 1,000 2,000 3,000
Feet

Scale: 1 inch = 2,000 feet

Refer to Figure G-2 for Aerial Source(s)

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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

PINNACLE HOMES

ELK RIDGE ESTATES IV

CCRFCD 2013 MPU FACILITIES EXHIBIT

DATE:	SEPT 2017
DRAFTER:	CAA
DESIGNER:	CAA
CHECKED:	SOA
PROJECT NO.	PIN1702.000

EXHIBIT C1
SHEET 1 OF 1

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ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
ANRB		ANN ROAD CHANNEL WEST - RAINBOW						
0000	E	10' X 7' RCB	1320	721	CNW2B5-C	WEST3	0.99	0.40
ANWE		ANN ROAD CHANNEL WEST						
0245	E	10' X 9' RCB	1721	993	CNW2D1-C	WEST3	6.84	0.80
0279	E	10' X 9' RCB	553	743	2CNW2B5C	WEST3	6.37	0.80
0290	E	8' X 8' RCB	2050	743	2CNW2B5C	WEST3	6.37	0.70
0327	E	6' X 6' RCB	2360	161	RCHODB	WEST3	5.38	0.87
0371	E	6' X 6' RCB	760	161	RCHODB	WEST3	5.38	0.34
0385	E	54" RCP	1950	161	RCHODB	WEST3	5.38	1.17
CNWE		CENTENNIAL PKWY CHANNEL WEST						
0150	E	Conc Chnl 40'W 9.5'D 0:1 SS	2279	4233	CNW3B3-C	WEST3	5.64	0.42
0173	E	3: 18' X 8' RCBC @ Torrey Pines	200	4233	CNW3B3-C	WEST3	5.64	0.42
0176	E	Conc Chnl 40'W 9'D 0:1 SS	150	4233	CNW3B3-C	WEST3	5.64	0.41
0189	E	Conc Chnl 36'W 10'D 0:1 SS	1200	4067	CNW2D4-C	WEST3	5.15	0.42
0200	E	Conc Chnl 36'W 9'D 0:1 SS	2470	4067	CNW2D4-C	WEST3	5.15	1.00
0226	E	2: 18' X 8.5' RCBC @ Rio Vista	100	4067	CNW2D4-C	WEST3	5.15	0.51
0241	E	Conc Chnl 36'W 9.5'D 0:1 SS	405	3951	CNW2D3-C	WEST3	4.65	0.51
0251	E	Conc Chnl 36'W 9'D 0:1 SS	575	3951	CNW2D3-C	WEST3	4.65	0.51
0271	E	Conc Chnl 32'W 10'D 0:1 SS	229	3951	CNW2D3-C	WEST3	4.65	0.51
0274	E	32' X 10' RCBC @ Tenaya	142	3951	CNW2D3-C	WEST3	4.65	0.51
0277	E	Conc Chnl 32'W 9'D 0:1 SS	579	3951	CNW2D3-C	WEST3	4.65	0.64
0287	E	Conc Chnl 13'W 10'D 2:1 SS	605	3593	CNW2B2-C	WEST3	3.84	1.19
0301	P2	Conc Chnl 32'W 10'D 0:1 SS	235	3593	CNW2B2-C	WEST3	3.84	1.19
0304	P2	32' X 10' RCB	3259	3593	CNW2B2-C	WEST3	3.84	1.79
GO95		GOWAN OUTFALL - U.S. 95 CHANNEL						
0000	P1	Conc Chnl 12'W 4'D 2:1 SS	2640	299	GD17BG-C	ALLGOW3	0.36	0.30
0050	P1	Conc Chnl 12'W 4'D 2:1 SS	2450	299	GD17BG-C	ALLGOW3	0.36	0.30
GOA2		GOWAN OUTFALL - ALEXANDER BRANCH						
0000	P1	8' X 5' RCB	2281	523	CPT41-C	ALLGOW3	0.61	0.90
GOAL		GOWAN OUTFALL - ALEXANDER ROAD FACILITIES						
0111	P1	10' X 8' RCB	3000	880	CPT2B2	ALLGOW3	2.28	0.83
0168	P1	10' X 8' RCB	4200	880	CPT2B2	ALLGOW3	2.28	0.50
0247	P1	Conc Chnl 12'W 5.5'D 2:1 SS	2640	757	CGD20BMC	ALLGOW3	1.98	0.30
GOBU		GOWAN NORTH - BUFFALO BRANCH						
0000	E	2: 12' X 6' RCB	1705	961	CGD14CBC	ALLGOW3	2.53	0.20
0032	E	2: 12' X 5' RCB	1248	850	CGD14AAC	ALLGOW3	2.30	0.25
0058	E	2: 11' X 4' RCB	1398	745	CGD17AAC	ALLGOW3	1.90	0.25
0085	E	11' X 5' RCB	1266	614	CGD17ABC	ALLGOW3	1.52	0.25
0112	P1	8' X 6' RCB	1535	484	CGD20ABC	ALLGOW3	1.15	0.54
0136	P1	7' X 6' RCB	1400	344	CGD20AAC	ALLGOW3	0.76	0.36
GOBW		GOWAN BELTWAY WEST						
0000	E	48" RCP	2527	116	LMBWDB	ALLGOW4	10.68	4.37
0048	E	72" RCP	131	116	LMBWDB	ALLGOW4	10.68	2.21
0051	P1	72" RCP Outlet	1508	116	LMBWDB	ALLGOW4	10.68	0.30
0052	P1	589 ac-ft Lone Mountain-Beltway Detention Basin		5140	CLMBW1	GW3SC	3.50	
0082	P1	51,400 cfs PMF Spillway		51400	CLMBW1	GW3SC	3.50	
0096	P1	8' X 8' RCB Connector Pipe Under Beltway	639	5140	CLMBW1	GW3SC	3.50	0.30
0097	P1	54" RCP	394	525	UVB1-2	ALLGOW3	0.34	8.09
0100	P1	Energy Dissipator	143	525	UVB1-2	ALLGOW3	0.34	50.00
0106	P1	8' X 8' RCB Connector Pipe Under Lone Mountain	697	5140	CLMBW1	GW3SC	3.50	0.30
0128	P1	Conc Chnl 20'W 10'D 0:1 SS	190	3429	CWRBW1	ALLGOW3	6.06	25.00
0132	P1	Conc Chnl 14'W 10'D 0:1 SS	1286	2869	CHLBW1-C	GW3SC	1.84	5.00
0156	P1	Conc Chnl 16'W 10'D 0:1 SS	221	2869	CHLBW1-C	GW3SC	1.84	1.05
0160	P1	16' X 8' RCB	1230	2869	CHLBW1-C	GW3SC	1.84	1.05
GOBX		GOWAN BOX CANYON						
0000	P1	66" RCP	794	753	LWBW1	ALLGOW3	0.48	9.45
GODU		GOWAN NORTH - DURANGO BRANCH						
0000	E	12' X 6' RCB	2629	1150	CLV14-C	ALLGOW3	1.40	0.91
0050	E	9' X 6' RCB	665	835	CLV20-C	ALLGOW3	0.97	1.50

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
GOEC		GOWAN NORTH - EL CAPITAN BRANCH						
0000	P1	10' X 7' RCB	1445	1233	CLWFR-C	ALLGOW3	2.20	1.36
0026	P1	10' X 8' RCB	1320	1162	CWRJS-C	ALLGOW3	1.95	0.91
0051	P1	10' X 7' RCB	1320	1027	CHLFR-C	ALLGOW3	1.69	1.06
0076	P1	10' X 6' RCB	1320	894	CARFR-C	ALLGOW3	1.45	1.06
0100	P1	10' X 5' RCB	1320	745	CEAFR-C	ALLGOW3	1.21	0.76
0126	P1	10' X 7' RCB	1320	635	CTRFR-C	ALLGOW3	0.96	0.38
0152	P1	7' X 6' RCB	1320	485	CARFP-C	ALLGOW3	0.70	0.77
0176	P1	78" RCP	1320	363	CCPFR-C	ALLGOW3	0.46	1.15
GOL2		GOWAN LONE MOUNTAIN SYSTEM-BRANCH 2						
0000	E	5' X 4' RCB	150	461	CRBW	ALLGOW3	0.44	14.60
0003	E	66" RCP	607	461	CRBW	ALLGOW3	0.44	1.97
0014	E	84" RCPC @ Alexander	125	461	CRBW	ALLGOW3	0.44	4.00
GOLM		GOWAN LONE MOUNTAIN SYSTEM						
0000	E	78" RCP	2590	345	CLV15-C	ALLGOW4	11.88	1.80
0049	E	6' X 5' RCB	585	345	CLV15-C	ALLGOW4	11.88	1.87
0060	E	66" RCP	817	345	CLV15-C	ALLGOW4	11.88	2.40
0075	E	60" RCP	1385	345	CLV15-C	ALLGOW4	11.88	2.55
0101	E	54" RCP	701	190	LMTNDB	ALLGOW4	11.52	1.74
0115	E	48" RCP	1799	190	LMTNDB	ALLGOW4	11.52	3.08
0140	E	42" RCP	439	190	LMTNDB	ALLGOW4	11.52	1.60
0142	E	48" RCP	348	190	LMTNDB	ALLGOW4	11.52	2.14
0144	E	66" RCP	196	190	LMTNDB	ALLGOW4	11.52	5.44
0145	E	66" RCP Outlet	378	190	LMTNDB	ALLGOW4	11.52	0.90
0146	E	888 ac-ft Lone Mountain Detention Basin		7252	LMTNIN	GW3SC	6.13	
0147	E	36,000 cfs PMF Spillway		36000	LMTNIN	GW3SC	6.13	
0150	E	Drop Structure	481	6323	CGABW	GW3SC	5.12	
0162	E	2: 8' X 8' RCBC @ Hualapai	625	6323	CGABW	GW3SC	5.12	1.86
0174	E	Conc Chnl 28'W 8'D 0:1 SS	2715	6173	CCLMT5	GW3SC	4.92	3.20
GOLO		GOWAN OUTFALL - LONE MTN. ROAD BRANCH						
0275	E	8' X 6' RCB	3000	590	CPT3AA2	ALLGOW3	1.16	0.77
GONO		GOWAN NORTH SYSTEM						
0000	E	8' X 8' RCB Outlet	184	558	GWNNDB	ALLGOW5	68.49	0.51
0001	E	8' X 8' RCB Outlet	156	558	GWNNDB	ALLGOW5	68.49	0.63
0006	E	30,780 cfs PMF Spillway		30780	GWNNDB	ALLGOW5	68.49	
0008	E	921 ac-ft Gowan North Detention Basin		4937	CCLV43-C*	GW4SC	11.93	
0009	E	3: 13' X 8' RCB	1662	4563	CLV43-C	GW4SC	11.24	0.62
0012	E	Conc Chnl 30'W 8'-9.5'D 0:1 SS	2665	4117	CCLV36-C	GW4SC	8.54	1.18
0062	E	Bridge 30'W 8.5'D @ Cimarron	80	3844	CCLV15-C	GW4SC	8.03	0.30
0063	E	Conc Chnl 30'W 8.5'-10'D 0:1 SS	2302	3844	CCLV15-C	GW4SC	8.03	1.00
0110	E	2: 12' X 8' RCAC @ Alexander	547	3352	CCRSFR-C*	GW3SC	6.10	1.00
0117	E	2: 12' X 8' RCAP	424	3352	CCRSFR-C*	GW3SC	6.10	1.10
0124	E	Conc Chnl 24'W 9'D 0:1 SS	887	3352	CCRSFR-C*	GW3SC	6.10	1.36
0141	E	Conc Chnl 24'W 9'-10.5'D 0:1 SS	2064	3352	CCRSFR-C	GW3SC	6.10	0.59
0181	E	Bridge 30'W 7'D @ Craig	142	2846	CRSFR-C	GW3SC	5.20	0.65
0183	E	Conc Chnl 22'W 8'-10.6'D 0:1 SS	2193	2846	CRSFR-C	GW3SC	5.20	0.72
0225	E	Conc Chnl Width Varies Depth Varies 0:1 SS	508	2605	CCLWFR-C	GW3SC	4.54	1.05
0230	E	13' X 5' RCB	256	1486	CCWRHW-C	GW3SC	2.34	2.78
0234	E	12' X 6' RCB	2010	1486	CCWRHW-C	GW3SC	2.34	1.67
0272	E	10' X 6' RCB	2797	1486	CCWRHW-C	GW3SC	2.34	3.15
0325	E	15' X 7' RCB	291	1486	CCWRHW-C	GW3SC	2.34	1.79
0335	E	15' X 7' RCB	529	1486	CWRHW-C	ALLGOW3	2.34	1.79
0350	P1	10' X 9' RCB	3473	1486	CWRHW-C	ALLGOW3	2.34	0.88
0411	P1	10' X 9' RCB	1320	1404	CARHW-C	ALLGOW3	1.89	0.76
0436	P1	10' X 7' RCB	1320	1173	CEAHW-C	ALLGOW3	1.53	1.14
0461	P1	10' X 9' RCB	1320	959	CTRHW-C	ALLGOW3	1.22	0.38
0486	P1	8' X 7' RCB	1320	747	CADHW-C	ALLGOW3	0.90	0.76
0511	P1	7' X 6' RCB	1320	546	CCPHW-C	ALLGOW3	0.60	1.14

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
GOOF		GOWAN OUTFALL FACILITIES						
0511	E	8' X 5' RCB	8390	699	CPT6B-C	GW3SC	1.08	0.50
0531	E	8' X 5' RCB	1300	558	GWNNDB	ALLGOW5	68.49	0.50
0551	E	72" RCP	524	558	GWNNDB	ALLGOW5	68.49	0.62
0773	E	60" RCP	803	286	LV30-C	ALLGOW3	0.42	1.40
0775	E	60" RCP	1300	286	LV30-C	ALLGOW3	0.42	1.00
RCHB		RANCHO ROAD SYSTEM - BELTWAY						
0000	E	2: 12' X 8.5' RCAP	1700	2631	CNW1C-W	WEST3	4.68	0.53
0034	E	Conc Chnl 21'W 8'D 0:1 SS	1000	2631	CNW1C-W	WEST3	4.68	1.19
0053	E	2: 12' X 8' RCBC @ South Ramp Connector	85	2304	CDW1C1	WEST3	4.31	1.40
0054	E	Conc Chnl 21'W 8'D 0:1 SS	432	2304	CDW1C1	WEST3	4.31	1.51
0062	E	Transition Structure	130	2304	CDW1C1	WEST3	4.31	1.51
0065	E	24' X 7' RCB	480	2304	CDW1C1	WEST3	4.31	0.30
0074	E	24' X 6' RCB	50	2226	CNWBC6-C	WEST3	4.17	0.30
0075	E	20' X 6' RCBC @ Beltway	428	2226	CNWBC6-C	WEST3	4.17	2.81
0083	P1	20' X 6' RCB	950	2226	CNWBC6-C	WEST3	4.17	2.49
0101	P1	Conc Chnl 20'W 7'D 0:1 SS	980	2226	CNWBC6-C	WEST3	4.17	2.38
0120	E	20' X 6' RCBC @ Grand Montecito	120	2226	CNWBC6-C	WEST3	4.17	1.00
0122	P1	Conc Chnl 16'-20'W 6'D 0:1 SS	350	2226	CNWBC6-C	WEST3	4.17	1.84
0130	P1	Conc Chnl 16'W 6'D 0:1 SS	1012	2226	CNWBC6-C	WEST3	4.17	2.67
RCHO		RANCHO ROAD SYSTEM						
0000	E	60" RCP with 36" Orifice Plate	1183	161	RCHODB	WEST3	5.38	0.74
0025	E	321 ac-ft Rancho Road Detention Basin		3115	RCHOIN	WEST3	5.38	
0027	E	18,000 cfs PMF Spillway		18000	RCHOIN	WEST3	5.38	
0050	E	Energy Dissipator	65	402	CNW1A4-C	WEST3	0.51	
0052	E	Conc Chnl 10'W 10'D 0:1 SS	115	402	CNW1A4-C	WEST3	0.51	11.73
0054	E	10' X 5' RCB	115	402	CNW1A4-C	WEST3	0.51	0.50
0056	E	10' X 5' RCB	835	402	CNW1A4-C	WEST3	0.51	0.47
0071	E	72" RCP	3126	402	CNW1A4-C	WEST3	0.51	1.80

** The HEC-1 node shown identifies the controlling concentration point for the associated facility and is located upstream of this facility due to decreasing peak flow with increasing tributary area caused by storm distribution transitions, depth area reduction factors, or attenuation of flow from routing.*

*** As-built or design slopes were used when available. All other slopes are based on existing topography. The user should verify the facility slope listed prior to performing any facility specific analysis.*

^ For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e., HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).

REGIONAL FLOOD CONTROL DISTRICT

2013 LAS VEGAS VALLEY FLOOD CONTROL MASTER PLAN UPDATE

FACILITY INVENTORY FIGURE F - 19

LEGEND

ID (Facility Identifier) AABB
Parent Stream Name
Stream Name
River Mile 0000
Distance Above Confluence with Parent Stream (Miles)
Miles in Hundredths

Existing Facility..... E
Proposed or Modified Facility..... P
Contingency Level
Category B..... P0
Master Plan..... P1
Preliminary Design..... P2
Design..... P3

Bottom Width..... W
Depth..... D
Side Slope, H:V..... SS

Construction Features

Cast in Place Concrete Pipe..... CIPCP	Reinforced Concrete Arch Culvert..... RCAC
Corrugated Metal Arch Pipe Culvert..... CMAP	Reinforced Concrete Box..... RCB
Corrugated Metal Pipe Culvert..... CMPC	Reinforced Concrete Box Culvert..... RCBC
High Density Polyethylene..... HDPE	Reinforced Concrete Pipe..... RCP
Horizontal Elliptical Reinforced Concrete Pipe..... HERCP	Reinforced Concrete Pipe Culvert..... RCPC
Reinforced Concrete Arch Pipe..... RCAP	Storm Sewer Pipe..... SSP

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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

PINNACLE HOMES

ELK RIDGE ESTATES IV

CCRFCD 2013 MPU FACILITIES INVENTORY

DATE: AUG 2017
DRAFTER: CAA
DESIGNER: CAA
CHECKED: SOA
PROJECT NO. PIN1702.000

EXHIBIT C2
SHEET 1 OF 1

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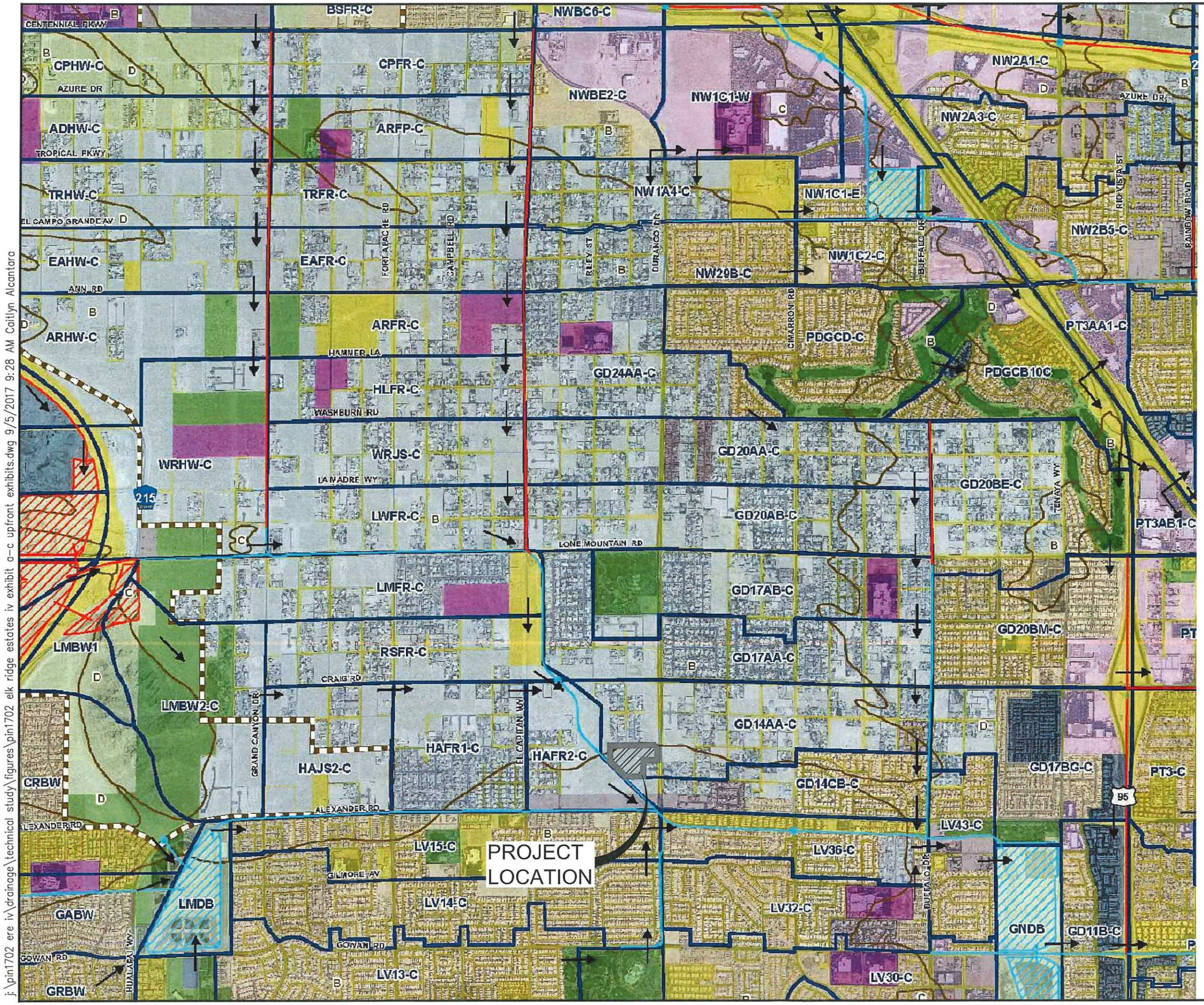

REGIONAL FLOOD CONTROL DISTRICT

2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE H- 19

HYDROLOGIC SUMMARY

LEGEND

- Ultimate Development Boundary
- Watershed Boundary
- Subbasin Boundary
- Drought Ordinance Boundary
- Flow Arrows

Flood Control Facilities

- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Category A Remove & Replace/ Parallel Facilities
- Category B Remove & Replace/ Parallel Facilities

Type Hydrologic Soil Groups

- A Low Runoff Potential
- B Moderately Low Runoff Potential
- C Moderately High Runoff Potentia
- D High Runoff Potential/Rock Outcrops

Typical Land Use

1	Undeveloped Land, Open Desert
2	Parks, Golf Courses
3	Rural
4 / 14*	Low Density Residential
5 / 15*	Medium Density Residential
6 / 16*	High Density Residential
7 / 17*	Public Facility, Residential
8 / 18*	Very High Density Residential
9 / 19*	Commercial, Retail, Casino, High Rise Condominiums
10 / 20*	Light Industrial
11 / 21*	Heavy Industrial
12 / 22*	Schools
13	Lakes

* Drought Ordinance Applied

N

0 500 1,000 2,000 3,000 Feet

Scale: 1 inch = 2,000 feet

Refer to Figure G-2 for Aerial Source(s)

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PINNACLE HOMES

ELK RIDGE ESTATES IV

CCRFCD 2008 MPU HYDROLOGIC FACILITIES

DATE:	SEPT 2017
DRAFTER:	CAA
DESIGNER:	CAA
CHECKED:	SOA
PROJECT NO.	PIN1702.000

EXHIBIT C3

SHEET 1 OF 1

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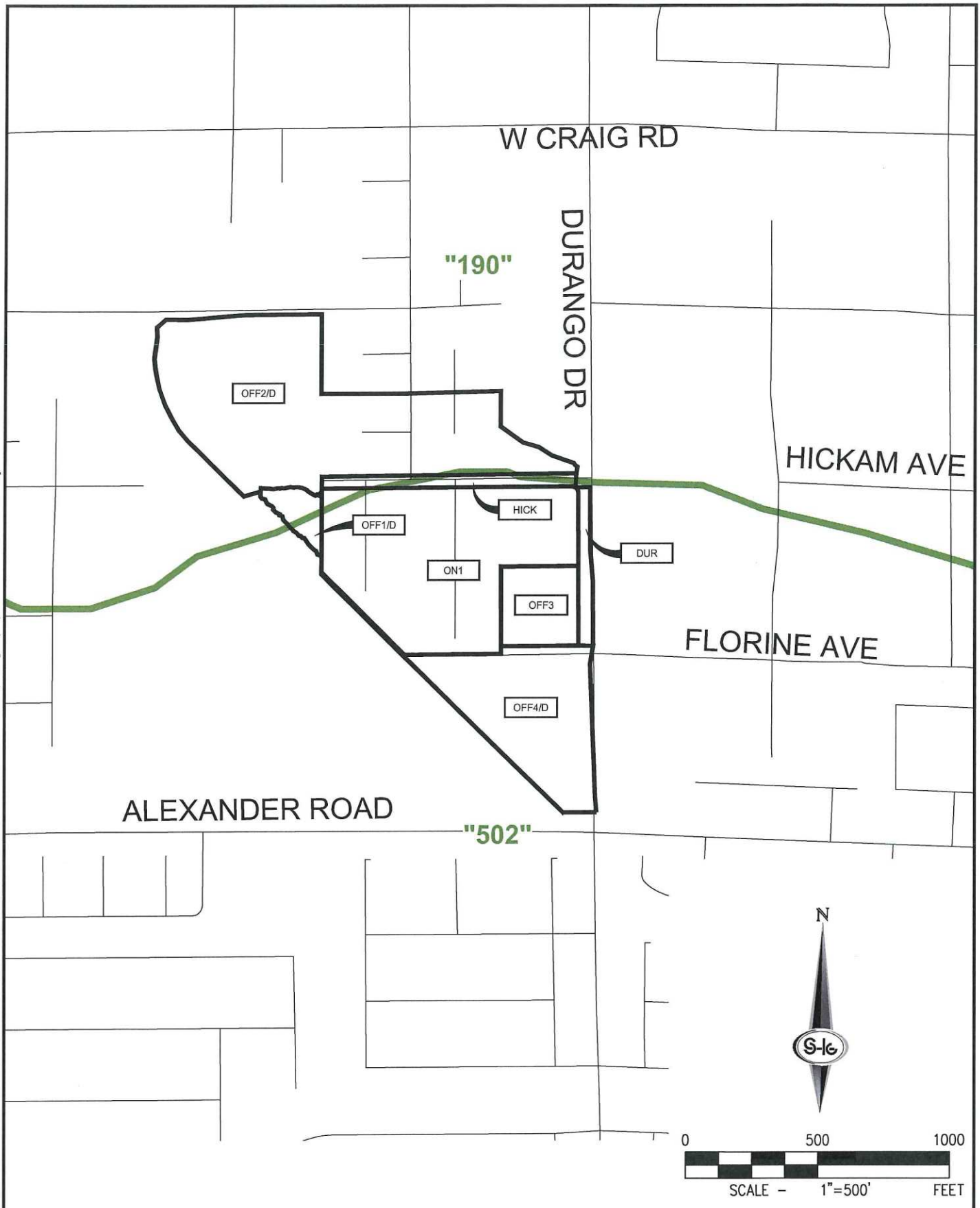

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PINNACLE HOMES

ELK RIDGE ESTATES IV

SOILS MAP

DATE: SEPT 2017	PROJECT NO. PIN1702.000
DRAFTER: CAA	
DESIGNER: CAA	EXHIBIT D
CHECKED: SOA	SHEET 1 OF 1

HELENA AVE

BONITA VISTA ST

DURANGO DR

HICKAM AVE

FLORINE AVE

ALEXANDER ROAD

OFF1

OFF2

OFF3

OFF4

ON1

HICK

DUR

CP1

CP2

CP3

N

0 100 200

SCALE – 1"=100' FEET

LEGEND

	BASIN BOUNDARY
ID	BASIN ID
(ID)	CONCENTRATION POINT ID
	FLOW DIRECTION

Existing Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
ON1	10.79	15	5
OFF1	0.76	1	<1
OFF2	13.60	4	<1
OFF3	2.01	1	<1
OFF4	10.10	22	9
HICK	1.31	5	3
DUR	0.69	2	1
CP1 Q = ON1 + OFF1 + OFF2 + HICK	N/A	22	7
CP2 Q = OFF3 + OFF4 + DUR	N/A	25	11
CP3 Q = CP1 + CP2	N/A	48	17

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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

PINNACLE HOMES

ELK RIDGE ESTATES IV

EXISTING CONDITION DRAINAGE MAP

S15 T20S R60E

DATE: SEPT 2017

DRAFTER: CAA

DESIGNER: CAA

CHECKED: SOA

PROJECT NO.
PIN1702.000

EXHIBIT E

SHEET 1 OF 1

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LIMITS OF OFFSITE BASINS

REFER TO EXISTING CONDITION DRAINAGE MAP (EXHIBIT E) FOR

REFER TO EXHIBIT E FOR LIMITS OF OFFSITE BASINS

OFF1

OFF2

OFF3

OFF4

ON1D

ON2D

HICKAM AVE

HICK

BONITA VISTA ST.

CARBON CANYON AVE

COBALT CANYON ST

DURANGO DRIVE

SENTINEL PEAK AVE

DUR

HICK1

HICK2

HICK3

CP1

CP2

CP3

CP4

DUR1

DUR2

DUR3*

DE1

1

2

WSE =2409.5-FT

Q= 115 CFS*

WIER

138-05-711-002 MEAGAN & ERIC MAYNARD ZONING:R-E

138-05-710-003 TAAFFE/ER ZONING:R-E

138-05-710-004 ECKELS W & F TRUST ZONING:R-E

138-05-710-005 KEITH ALAN S LIVING TRUST ZONING:R-E

138-05-701-038 ANTHONY & NANCY ETAL FAMILY TRUST ZONING:R-E

138-05-801-031 WALTER BYRON JONES ZONING:R-E

138-05-801-032 MORRIS WENDLING JR ZONING:R-E

138-05-801-034 AMERICAN LEBANESE SYRIAN ASSOCIATED CHARITIES INC ZONING:R-E

138-05-801-033 RAYMOND & NANCY FELMLEE LIVING TRUST ZONING:R-E

138-05-801-038 BURBANK LLC APPROVED ZONING:R-D

138-05-814-005 TOUCHSTONE LONE MOUNTAIN LLC ZONING:R-E

138-05-801-041 ISAACMAN REVOCABLE TRUST ZONING:R-E

138-05-711-001 ZONING:R-E

42" CONCRETE CHANNEL S.F. & MORE DEEP, SEE DTL

42" CONCRETE CHANNEL S.F. & MORE DEEP, SEE DTL

Ultimate Condition Drainage Easement Hydraulic Summary

Section ID	Q_{100} (cfs)	Width (ft)	Type of Analysis	Depth (ft)	Velocity (fps)
DE1 (Q = ON2D)	2.0	5	Normal Depth	0.15	3.23
			Weir	0.26	1.56

Proposed Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
ON1D	8.62	5	<1
ON2D	2.17	2	<1
OFF1	0.76	1	<1
OFF2	13.60	4	<1
OFF3	2.01	1	<1
OFF4	10.10	22	9
HICK	1.31	5	3
DUR	0.69	2	1
CP1 Q = ON1D + OFF1 + OFF2 + HICK	24.3	12	3
CP2 Q = ON2D + OFF3 + OFF4 + DUR	15.0	27	11
CP3 Q = CP1 + CP2	39.3	40	13
CP4 Q = CP1 + CP2 + Capacity of DUR3*	N/A	115	N/A

Proposed Condition 100-Year Street Flow Summary

Section ID	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	DxV
1 (Q = ON1D)	5	1.75	0.27	3.0	0.8
		0.77	0.30	2.1	0.6
2 (Q = ON2D)	2	1.85	0.22	2.4	0.5
DUR1 (Q = OFF4)	22	0.60	0.66	2.8	1.8
DUR2 (Q = CP2)	27	0.54	0.71	2.9	2.1
		0.36	0.75	2.6	1.9
DUR3* (Q = CP4)	75	0.36	1.04	3.24	3.4
HICK1 (Q = CP1)	12	1.98	0.57	4.1	2.3
		1.45	0.61	3.6	2.2
HICK2 (Q = CP1)	12	1.90	0.75	4.8	3.6
		1.36	0.80	4.2	3.4
HICK3 (Q = CP1)	12	1.98	0.50	5.1	2.6
		1.45	0.53	4.6	2.4

Proposed Condition 10-Year Street Flow Summary

Section ID	Q_{10} (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	DxV	Dry Lane (ft)
DUR2 (Q = CP2)	11	0.54	0.56	2.3	1.3	16.5
		0.36	0.59	2.0	1.2	15.0

N

0 50 100

SCALE – 1"=50' FEET

LEGEND

- BASIN BOUNDARY
- ID — BASIN ID
- ID — CONCENTRATION POINT ID
- FLOW DIRECTION
- ID — FLOWMASTER SECTION
- Q= CFS / WIER — WEIR

NOTES:

* FLOW RATE UTILIZED IS CONSERVATIVE. CROSS-SECTION "DUR3" IS ANALYZED AS THE MAXIMUM AMOUNT OF FLOW CONTAINED IN HALF OF DURANGO DRIVE, BEFORE FLOW OVERTOPS THE CROWN OF THE ROAD.

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PINNACLE HOMES

ELK RIDGE ESTATES IV

PROPOSED CONDITION DRAINAGE MAP

S5 T20S R60E

DATE: AUG 2017

DRAFTER: CAA

DESIGNER: CAA

CHECKED: SOA

PROJECT NO. PIN1702.000

EXHIBIT F

SHEET 1 OF 1

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N

0 100 200

SCALE – 1"=100' FEET

LEGEND

- BASIN BOUNDARY
- ID — BASIN ID
- ID — CONCENTRATION POINT ID
- FLOW DIRECTION
- ID — FLOWMASTER SECTION

Ultimate Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
ON1D	2.62	5	<1
ON2D	2.17	2	<1
OFF1D	0.76	<1	<1
OFF2D	13.60	1	<1
OFF3	2.01	1	<1
OFF4D	10.10	6	1
HICK	1.31	5	3
DUR	0.69	2	1
CP1 Q = ON1D + OFF1D + OFF2D + HICK	N/A	9	3
CP2 Q = ON2D + OFF3 + OFF4D + DUR	N/A	12	2
CP3 Q = CP1 + CP2	N/A	21	4

Ultimate Condition 100-Year Street Flow Summary

Section ID	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	DxV
HICKD (Q = CP1)	12	1.98	0.38	3.9	1.5
		1.36	0.40	3.4	1.3

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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

PINNACLE HOMES

ELK RIDGE ESTATES IV

ULTIMATE CONDITION DRAINAGE MAP

S5 T20S R60E

DATE: SEPT 2017

DRAFTER: CAA

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PROJECT NO.
PIN1702.000

EXHIBIT G
SHEET 1 OF 1

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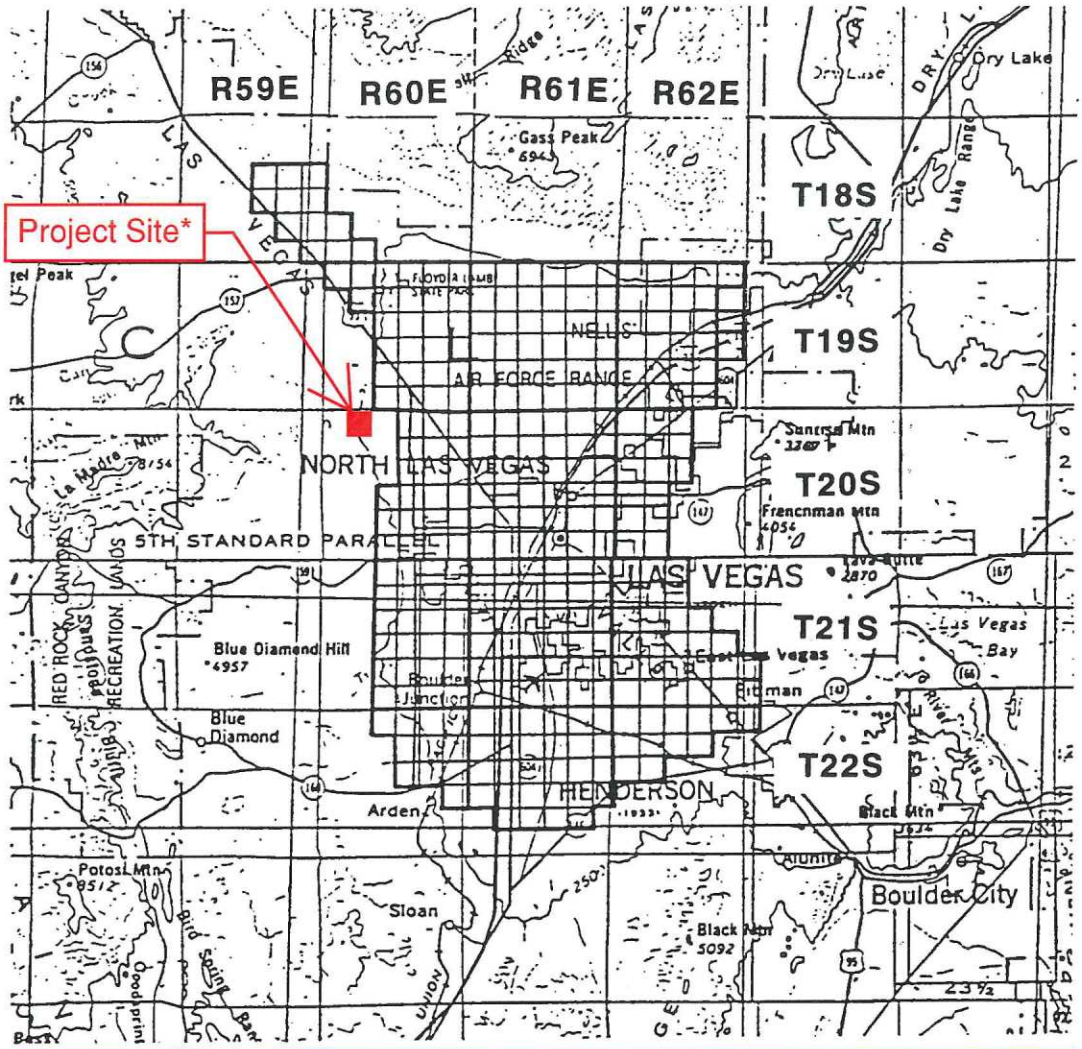
APPENDIX B

Hydrologic Data

Precipitation Data,

McCARRAN AIRPORT RAINFALL AREA



*Project site not located within the McCarran Rainfall area (T20-R60-S5)

TOWNSHIP	RANGE	SECTIONS	TOWNSHIP	RANGE	SECTIONS
18 South	59 East	13-15,22-26,36	20 South	62 East	4-9,16-20,29-32
18 South	60 East	30-32	21 South	60 East	1-4,9-16,21-28,33-36
19 South	60 East	1-6,8-16,21-28,33-36	21 South	61 East	ALL SECTIONS
19 South	61 East	ALL SECTIONS	21 South	62 East	4-9,15-23, 25-36
19 South	62 East	2-11,14-23,27-34	22 South	60 East	1-4,10-15,24
20 South	60 East	1-3,10-15,21-28,33-36	22 South	61 East	1-24,26-29
20 South	61 East	ALL SECTIONS	22 South	62 East	1-10,17-18

Notes:
1. Refer to Table 505 and Figure 516 Depth-Duration- Frequency values in the McCarran Airport Rainfall Area.
2. Refer to Table 506 and Figure 517 for Time-Intensity-Frequency values on the McCarran Airport Rainfall Area.

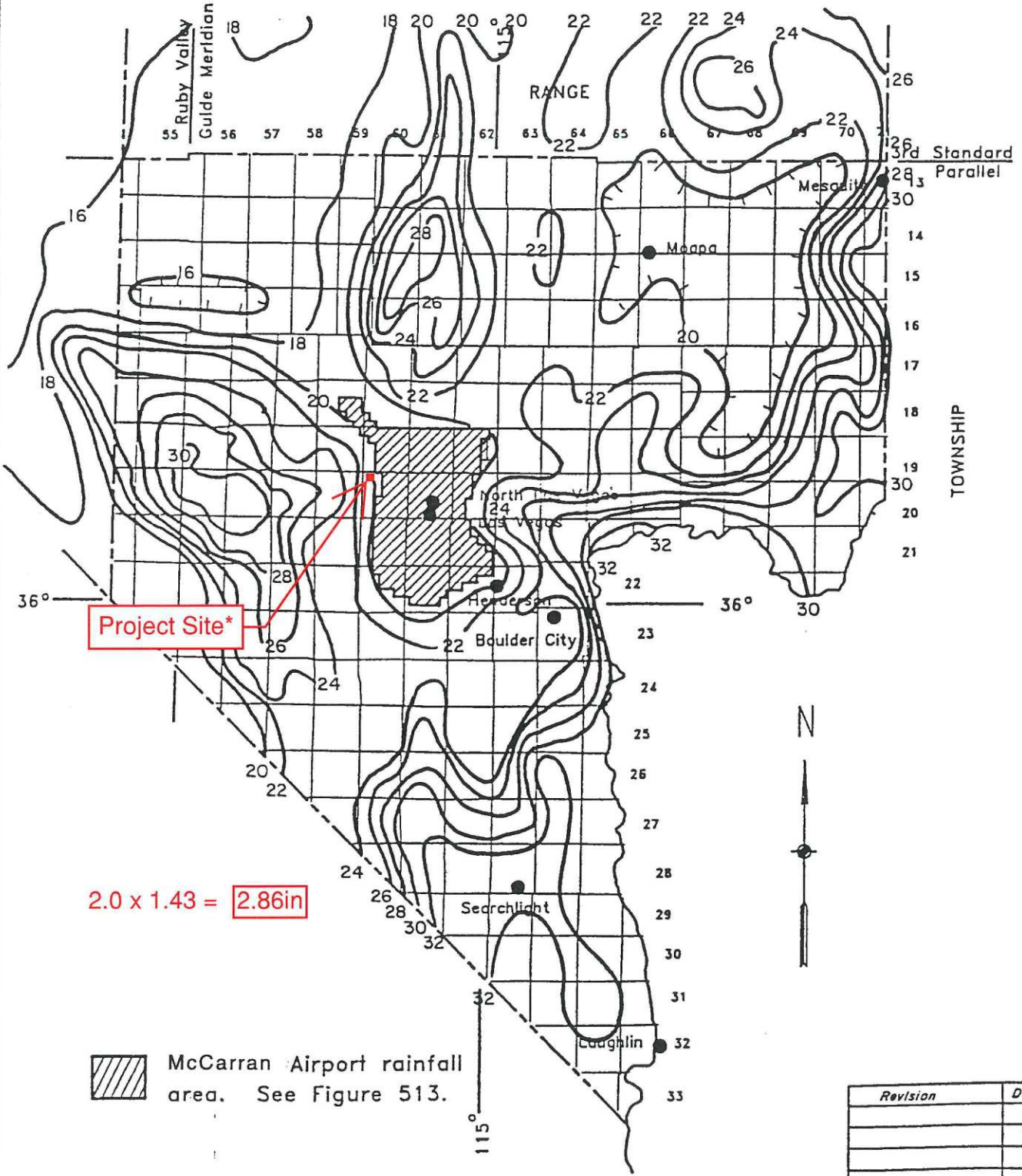
Revision	Date

WRC ENGINEERING

REFERENCE:
USACE, Los Angeles District, 1988

FIGURE 513

RAINFALL DEPTH-DURATION-FREQUENCY
100-YEAR, 6-HOUR
(DEPTHS IN TENTHS OF INCHES)



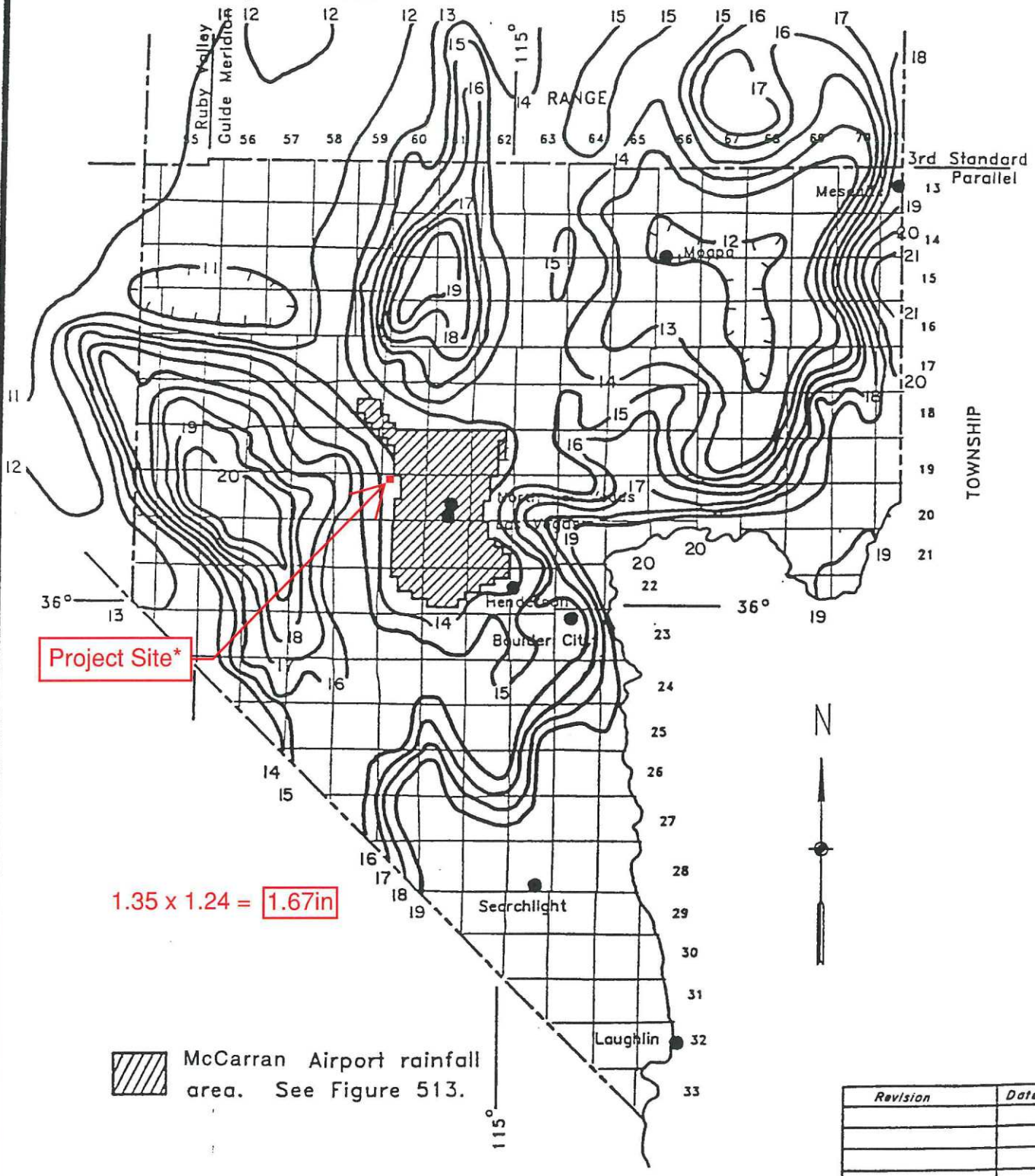
Revision	Date

WRC ENGINEERING

REFERENCE:
NOAA ATLAS 2, VOLUME VII NEVADA, 1973

FIGURE 506

RAINFALL DEPTH-DURATION-FREQUENCY
10-YEAR, 6-HOUR
(DEPTHS IN TENTHS OF INCHES)



Revision	Date

WRC ENGINEERING

REFERENCE:
NOAA ATLAS 2, VOLUME VII NEVADA, 1973

FIGURE 503

PRECIPITATION ADJUSTMENT RATIOS

Recurrence Interval	Ratio to NOAA Atlas 2
2-year	1.00
5-year	1.16
10-year	1.24
25-year	1.33
50-year	1.39
100-year	1.43

NOTE:
1. Multiply the values obtained from the NOAA Atlas 2 by the above ratios to obtain the adjusted precipitation values.
2. NOAA Atlas 2 values for use with TR-55 shall not be adjusted by the above ratios.
3. Tables 505 and 506 require no adjustments.

Revision	Date

SIX HOUR DEPTH-AREA REDUCTION FACTORS

Drainage Area (Square Miles)	Six-Hour Depth-Area Reduction Factor
0.0	1.00
0.5	0.98
1.0	0.97
2.0	0.93
4.0	0.91
6.0	0.90
8.0	0.88
10.0	0.86
20.0	0.79
30.0	0.74
50.0	0.68
100.0	0.60
150.0	0.55
200.0	0.51
300.0	0.46
400.0	0.42
500.0	0.39

NOTES: 1. A graphical representation of these factors is presented in Figure 514.

2. Consult with the local entity and/or the CCRFCD for guidance in using the Depth-Area Reduction Factors for drainage areas greater than 200 square miles.

Revision	Date

SIX-HOUR STORM DISTRIBUTIONS

Storm Time (In Minutes)	Percent of Total Storm Depth SDN3	SDN4	SDN5	Storm Time (In Minutes)	Percent of Total Storm Depth SDN3	SDN4	SDN5
0	0.0	0.0	0.0	185	32.2	37.6	43.0
5	2.0	2.0	2.0	190	35.2	41.5	47.7
10	5.7	5.8	5.9	195	40.9	46.2	51.4
15	7.0	7.5	8.0	200	49.9	53.0	56.1
20	8.7	9.9	11.0	205	59.0	61.0	63.0
25	10.8	12.6	14.4	210	71.0	71.0	71.0
30	12.4	13.7	15.0	215	74.4	73.2	72.0
35	13.0	14.5	16.0	220	78.1	75.6	73.1
40	13.0	14.9	16.8	225	81.2	78.2	75.2
45	13.0	15.1	17.1	230	81.9	79.9	77.9
50	13.0	15.5	18.0	235	83.5	81.3	79.0
55	13.0	15.6	18.2	240	85.1	82.3	79.5
60	13.0	15.9	18.7	245	85.6	83.0	80.4
65	13.3	16.2	19.0	250	86.0	83.5	81.0
70	14.0	16.9	19.7	255	86.8	84.4	82.0
75	14.2	17.2	20.2	260	87.6	85.1	82.6
80	14.8	17.9	21.0	265	88.8	86.4	84.0
85	15.8	18.9	22.0	270	91.0	88.5	85.9
90	17.2	20.1	23.0	275	92.6	90.8	88.9
95	18.1	21.1	24.1	280	93.7	92.4	91.0
100	19.0	22.0	25.0	285	95.0	94.4	93.8
105	19.7	22.8	25.9	290	97.0	96.8	96.6
110	19.9	23.2	26.5	295	97.6	97.3	97.0
115	20.0	24.0	28.0	300	98.2	97.8	97.4
120	20.1	24.6	29.0	305	98.5	98.2	97.9
125	20.4	25.2	30.0	310	98.7	98.4	98.1
130	21.4	26.0	30.5	315	98.9	98.6	98.3
135	22.9	26.9	30.9	320	99.0	98.8	98.5
140	24.1	27.6	31.0	325	99.3	99.1	98.9
145	24.9	28.3	31.7	330	99.3	99.2	99.0
150	25.1	28.6	32.1	335	99.4	99.3	99.2
155	25.6	29.2	32.7	340	99.5	99.4	99.3
160	27.0	30.2	33.3	345	99.8	99.7	99.6
165	27.8	31.2	34.6	350	99.8	99.8	99.7
170	28.1	32.1	36.1	355	99.9	99.9	99.9
175	28.3	33.2	38.1	360	100.0	100.0	100.0
180	29.5	35.2	40.8				

Notes
1. For drainage areas less than 8 square miles in size, use SDN 3.
2. For drainage areas greater than or equal to 8 square miles and less than 12 square miles in size, use SDN 4.
3. For drainage areas greater than or equal to 12 square miles, use SDN 5.
4. A graphical representation of these values is presented on **Figure 515**.

Revision	Date

REFERENCE:

TABLE 503

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS

Rainfall and Precipitation Computation

Project Name: Elk Ridge Estates IV
Date: 9/5/2017
File Name: PIN1702 Elk Ridge Estates IV Precipitation Calcs.xls
By: CAA

Data:

Reference:

Project is located in: Township: 20 S. Range: 60 E. Section: 5 — APN Map

Site is NOT located in the McCarran Airport Rainfall Area — Figure 513*

Rainfall Depth-Duration-Frequency 10-Year, 6-Hour: 1.35 inches — Figure 503*

Rainfall Depth-Duration-Frequency 100-Year, 6-Hour: 2.00 inches — Figure 506*

Precipitation Adjustment Ratios:

10-Year: 1.24 — Table 501*
100-Year: 1.43 — Table 501*

Six Hour Depth Area Reduction Factors (DARF):
Area (gross acres): 10.8 = 0.0169 square miles — Table 502*
DARF = 1.00

Calculations:

P_{10} = 1.67 10-Year Precipitation (in)
P_{100} = 2.86 100-Year Precipitation (in)

P10/P100= 0.59 HEC-1 Multiple Ratio Value

Equations:

P=(Rainfall)*(Precipitation Adjustment Ratio)*(Depth Area Reduction Factor)

* Equations taken from the Clark County Regional Flood Control District - Hydrologic Criteria and Drainage Desigr

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Curve Number Data

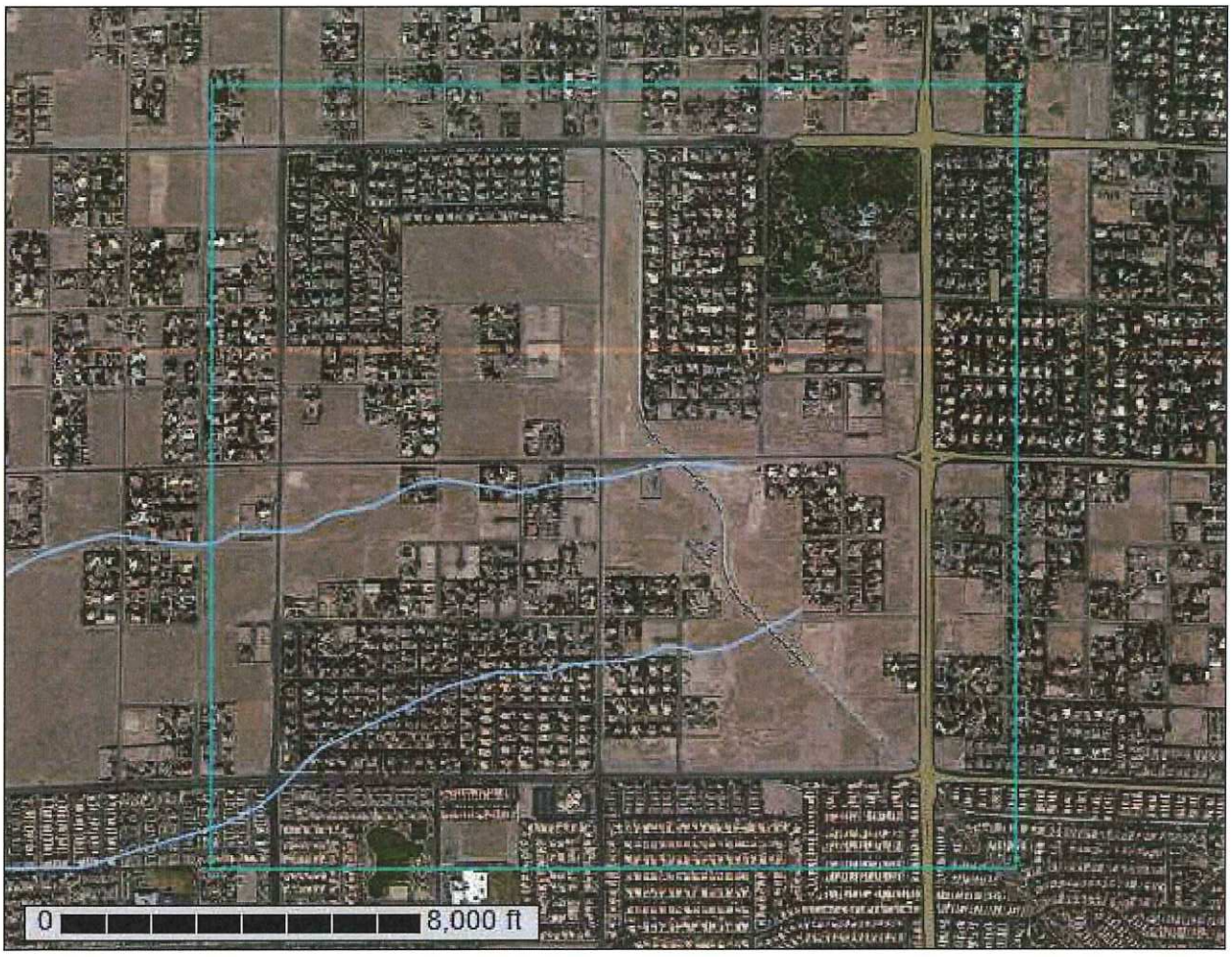
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Las Vegas Valley Area, Nevada, Part of Clark County



August 1, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

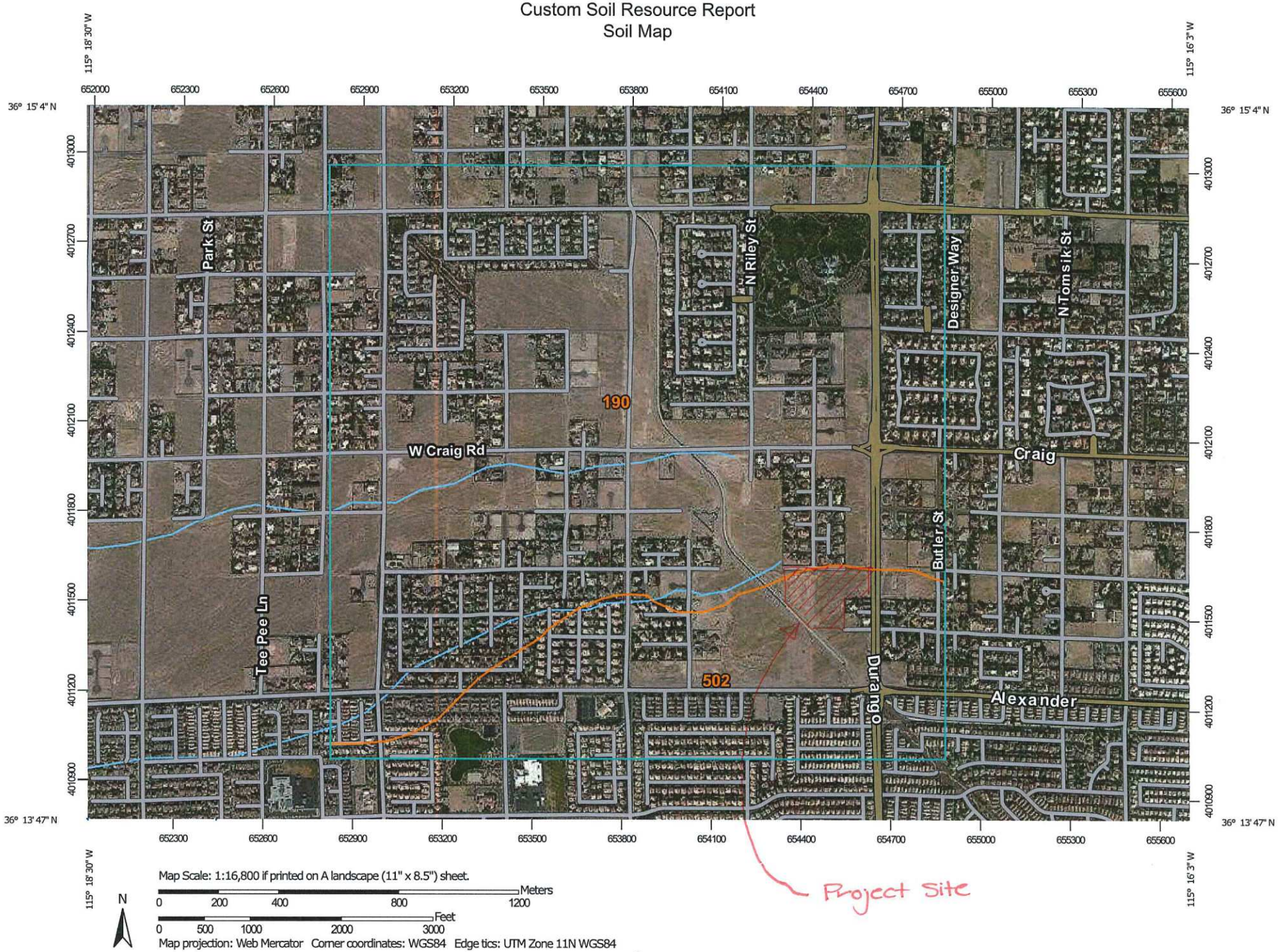
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Las Vegas Valley Area, Nevada, Part of Clark County
Survey Area Data: Version 11, Sep 16, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 7, 2011—Feb 25, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Las Vegas Valley Area, Nevada, Part of Clark County (NV788)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
190	Dalian very gravelly fine sandy loam, 2 to 4 percent slopes	793.1	78.3%
502	Canutio-Cave gravelly fine sandy loams, 2 to 8 percent slopes	219.7	21.7%
Totals for Area of Interest		**1,012.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Las Vegas Valley Area, Nevada, Part of Clark County

190—Dalian very gravelly fine sandy loam, 2 to 4 percent slopes

Map Unit Setting

National map unit symbol: hrb3
Elevation: 2,200 to 3,400 feet
Mean annual precipitation: 4 to 6 inches
Mean annual air temperature: 61 to 66 degrees F
Frost-free period: 210 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Dalian and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dalian

Setting

Landform: Fan skirts
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from limestone and dolostone

Typical profile

H1 - 0 to 4 inches: very gravelly fine sandy loam
H2 - 4 to 61 inches: extremely gravelly fine sandy loam

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 60 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

502—Canutio-Cave gravelly fine sandy loams, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: hrcf
Elevation: 1,700 to 4,800 feet
Mean annual precipitation: 4 to 12 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 180 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Canutio and similar soils: 55 percent
Cave and similar soils: 40 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canutio

Setting

Landform: Inset fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 9 inches: gravelly fine sandy loam
H2 - 9 to 60 inches: stratified extremely gravelly loamy coarse sand to gravelly loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: A
Other vegetative classification: LIMY 3-5" P.Z. (030XB019NV_3)
Hydric soil rating: No

Description of Cave

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 16 inches: gravelly fine sandy loam
H2 - 16 to 30 inches: indurated
H3 - 30 to 60 inches: very gravelly sandy loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: 4 to 20 inches to petrocalcic
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 12.0
Available water storage in profile: Very low (about 1.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Other vegetative classification: LIMY 3-5" P.Z. (030XB019NV_3)
Hydric soil rating: No

Minor Components

Arizo

Percent of map unit: 5 percent
Landform: Channels
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: VALLEY WASH (R030XB028NV)
Hydric soil rating: No

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Water Features

This folder contains tabular reports that present soil hydrology information. The reports (tables) include all selected map units and components for each map unit. Water Features include ponding frequency, flooding frequency, and depth to water table.

Hydrologic Soil Group and Surface Runoff

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or

soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

Report—Hydrologic Soil Group and Surface Runoff

Absence of an entry indicates that the data were not estimated. The dash indicates no documented presence.

Hydrologic Soil Group and Surface Runoff–Las Vegas Valley Area, Nevada, Part of Clark County			
Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
190—Dalian very gravelly fine sandy loam, 2 to 4 percent slopes			
Dalian	100	Very low	A
502—Canutio-Cave gravelly fine sandy loams, 2 to 8 percent slopes			
Canutio	55	Low	A
Cave	40	Very high	D
Arizo	5	Very low	A

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RUNOFF CURVE NUMBERS
(URBAN AREAS[1])

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size: **See Table 602A**					
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system. Impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using Figure 603.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using Figure 603 based on the impervious area percentage (CN #98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using Figure 603 based on the degree of development impervious area percentage) and the CN's for the newly graded pervious areas.

Revision	Date

RUNOFF CURVE NUMBERS
(SEMIARID RANGELANDS[1])

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition[2]	A[3]	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

[1]Average runoff condition, and $I_a = 0.2S$.

[2]*Poor:* <30% ground cover (litter, grass, and brush overstory).
Fair: 30 to 70% ground cover.
Good: >70% ground cover.

[3]Curve numbers for group A have been developed only for desert shrub.

Revision	Date

RUNOFF CURVE NUMBERS - RESIDENTIAL DISTRICTS

Average Lot Size or Usage[1]	Percent Impervious[2]	Curve Number for Hydrologic Soil Groups			
		A	B	C	D
Apartments/Condos	72	81	88	91	93
Townhouses/6,000 sq ft lots or less[3]	69	80	87	90	92
7,000 sq ft lots	63	76	84	89	91
8,000 sq ft lots	58	73	82	88	90
10,000 sq ft lots	38	61	75	83	87
14,000 sq ft lots	30	57	72	81	86
20,000 sq ft lots	25	54	70	80	85
40,000 sq ft lots	20	51	68	79	84
80,000 sq ft lots	12	46	65	77	82

1 Lot size should represent the size of the average lot and not the gross acreage divided by the number of lots.

2 Actual percent impervious value should be compared to selected land use type.

3 In cases where average residential lots are smaller than 6,000 sq ft, commercial/business/industrial land use should be used.

Revision	Date

REFERENCE:

TABLE 602A

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS

Soil Data & Curve Number Computation

Project Name & Number: PIN1702: Elk Ridge Estates IV
Date: 9/5/2017
By: CAA

Data:

Reference:
Exhibit D
NRCS Soil Data

Soil Type - Soil Survey Area & Version, Soil Description				A	B	C	D
LV	190	Las Vegas Valley 2016	Dalian very gravelly fine sandy loam, 2 to 4 percent slopes	100%	0%	0%	0%
LV	502	Las Vegas Valley 2016	Canutio-Cave gravelly fine sandy loams, 2 to 8 percent slopes	60%	0%	0%	40%

Land Use	A	B	C	D
Residential (20,000 sf)	54	70	80	85
Residential (10,000 sf)	61	75	83	87
Newly Graded	77	86	91	94
Desert Shrub (good)	49	68	79	84

*Commercial land use per Note 3

EXISTING CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON1	LV	190	1.8%	Newly Graded	100%	0%	0%	0%	77	86	91	94	0.19	1.38
	LV	502	41.2%	Newly Graded	60%	0%	0%	40%	77	86	91	94	4.45	34.56
	LV	502	57.0%	Desert Shrub (poor)	60%	0%	0%	40%	63	77	85	88	6.15	41.58
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									10.79	**77.5**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF1	LV	190	68.5%	Newly Graded	100%	0%	0%	0%	77	86	91	94	0.52	52.78
	LV	502	31.5%	Newly Graded	60%	0%	0%	40%	77	86	91	94	0.24	26.36
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									0.76	**79.1**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF2	LV	190	66.0%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	8.98	41.60
	LV	190	33.9%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	4.61	18.30
	LV	502	0.1%	Desert Shrub (poor)	60%	0%	0%	40%	63	77	85	88	0.01	0.05
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									13.60	**60.0**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF3	LV	502	100.0%	Residential (20,000 sf)	60%	0%	0%	40%	54	70	80	85	2.01	66.40
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									2.01	**66.4**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF4	LV	502	36.0%	Desert Shrub (poor)	60%	0%	0%	40%	63	77	85	88	3.64	26.31
	LV	502	15.4%	Newly Graded	60%	0%	0%	40%	77	86	91	94	1.56	12.94
	LV	502	48.5%	Roadway	60%	0%	0%	40%	98	98	98	98	4.90	47.54
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									10.10	**86.8**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
HICK	LV	190	51.1%	Roadway	100%	0%	0%	0%	98	98	98	98	0.67	50.12
	LV	502	48.9%	Roadway	60%	0%	0%	40%	98	98	98	98	0.64	47.88
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									1.31	**98.0**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
DUR	LV	502	100.0%	Roadway	60%	0%	0%	40%	98	98	98	98	0.69	98.00
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									0.69	**98.0**

PROPOSED CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON1D	LV	190	2.2%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	0.19	1.21
	LV	502	97.8%	Residential (20,000 sf)	60%	0%	0%	40%	54	70	80	85	8.43	64.91
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									8.62	**66.1**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON2D	LV	502	100.0%	Residential (10,000 sf)	60%	0%	0%	40%	61	75	83	87	2.17	71.40
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									2.17	**71.4**

ULTIMATE CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF1D	LV	190	68.5%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	0.52	37.01
	LV	502	31.5%	Residential (20,000 sf)	60%	0%	0%	40%	54	70	80	85	0.24	20.89
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									0.76	**57.9**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF2D	LV	190	99.9%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	13.59	53.96
	LV	502	0.1%	Residential (20,000 sf)	60%	0%	0%	40%	54	70	80	85	0.01	0.05
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									13.60	**54.0**

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF4D	LV	502	100.0%	Residential (20,000 sf)	60%	0%	0%	40%	54	70	80	85	10.10	66.40
	TOTAL PERCENT		100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									10.10	**66.4**

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Standard Form 4

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL
TIME OF CONCENTRATION

Project Name & Number: Elk Ridge Estates IV: PIN1702
Description: Existing, Proposed, and Ultimate Condition
By: CAA
Date: 9/8/2017

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc Check Urbanized Basins		Tlag
DESIG:	DEV./EX. (D or E)	CN	K [1]	AREA Ac	AREA Mi^2 [2]	INITIAL LENGTH Feet	SLOPE %	Ti Min [3]	TRAVEL LENGTH Feet	SLOPE %	V1 VELOCITY FPS [4]	V2 VELOCITY FPS [5]	Tt Min [6]	Tc Calc. [7]	Total Length Feet [8]	Tc Check [9]	Tlag Hours [10]
EXISTING CONDITION																	
ON1	D	77.5	0.633	10.79	0.0169	240	3.75	8.38	670	1.49	2.47	3.74	4.13	12.52	910	15.056	0.125
OFF1	E	79.1	0.654	0.76	0.0012	15	10.00	1.44	230	0.87	1.38	2.74	2.78	4.22			0.100
OFF2	D	60.0	0.402	13.60	0.0213	250	2.20	15.27	1320	0.98	2.00	3.04	8.66	23.93	1570	18.722	0.187
OFF3	D	66.4	0.486	2.01	0.0031	210	0.71	17.90	210	1.67	2.61	3.95	1.34	19.24	420	12.333	0.123
OFF4	E	86.8	0.756	10.10	0.0158	75	1.33	4.88	610	0.66	1.20	2.38	7.72	12.60			0.126
HICK	D	98.0	0.904	1.31	0.0020	20	2.00	1.25	955	1.68	2.61	3.96	5.10	6.36	975	15.417	0.064
DUR	D	98.0	0.904	0.69	0.0011	40	2.00	1.77	590	0.51	1.44	2.18	6.47	8.25	630	13.500	0.082
PROPOSED CONDITION																	
ON1D	D	66.1	0.483	8.62	0.0135	188	2.80	10.81	693	1.30	2.30	3.49	4.54	15.35	881	14.894	0.149
ON2D	D	71.4	0.552	2.17	0.0034	100	1.00	9.86	625	1.48	2.45	3.72	3.95	13.81	725	14.028	0.138
ULTIMATE CONDITION																	
OFF1D	D	57.9	0.374	0.76	0.0012	15	10.00	2.35	230	0.87	1.88	2.85	2.04	4.38	245	11.361	0.050
OFF2D	D	54.0	0.323	13.60	0.0213	250	2.20	17.01	1320	0.98	2.00	3.04	8.66	25.66	1570	18.722	0.187
OFF4D	D	66.4	0.486	10.10	0.0158	75	1.33	8.69	610	0.66	1.64	2.48	5.83	14.52	685	13.806	0.138

[1] K = 0.0132 (CN) - 0.39
[2] A = Area/640
[3] Ti = (1.8 (1.1-K) L^0.5)/S^0.33
[4] For Existing Conditions: V1 = 14.8 * (S/100)^0.5
For Developed Conditions: V1 = 20.2 * (S/100)^0.5
[5] For Existing Conditions: V2 = 29.4 * (S/100)^0.5
For Developed Conditions: V2 = 30.6 * (S/100)^0.5
[6] Tt = L/(60*V)
[7] Tc = Ti + Tt
[8] Total L = Initial L + Travel L
[9] Tc = (L/180) + 10
[10] Tlag = (0.6*Tc)/60
[11] Min Tlag =0.05
Note: For Travel Time Calcs: V1 applies to first 500 feet and V2 applies to remaining distance.

REFERENCE : STANDARD FORM 4

APPENDIX C

HEC-1 Analysis

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN  1998               *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   08SEP17  TIME  12:10:19  *
*                                      *
****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   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


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

              *DIAGRAM
    1         ID     SLATER HANIFAN GROUP
    2         ID     ELK RIDGE ESTATES IV
    3         ID     EXISTING CONDITION
    4         ID
    5         ID     RETURN PERIOD ------- 100-YR & 10-YR
    6         ID     DISTRIBUTION -------- 6-HOUR SDN3
    7         ID     PROJECT NO. --------- PIN1702.000
    8         ID     FILENAME ------------ EX.H1
    9         ID     DATE ---------------- SEPT 2017
   10         ID     MODELED BY ---------- CAA
   11         ID
   12         ID        PRECIPITATION STORM EVENT RATIOS
   13         ID        STORM EVENT            RATIO
   14         ID        10-YR                  0.59
   15         ID        100-YR                    1
   16         ID
   17         IT       5       0       0     300
   18         IO       5       0       0
   19         IN       5       0       0
   20         JR    PREC    1.00    0.59
              *

   21         KK     ON1
   22         BA  0.0169
   23         PB    2.86
   24         PC       0   0.020   0.057   0.070   0.087   0.108   0.124   0.130   0.130   0.130
   25         PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
   26         PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
   27         PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
   28         PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
   29         PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
   30         PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
   31         PC   0.998   0.999       1
   32         LS       0    77.5
   33         UD   0.125
              *

   34         KK    OFF1
   35         BA  0.0012
   36         LS       0    79.1
   37         UD   0.100
              *

   38         KK    OFF2
   39         BA  0.0213
   40         LS       0    60.0
   41         UD   0.187
              *
```



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

   42         KK    HICK
   43         BA  0.0020
   44         LS       0    98.0
   45         UD   0.064
              *

   46         KK     CP1
   47         HC       4
              *

   48         KK    OFF3
   49         BA  0.0031
   50         LS       0    66.4
   51         UD   0.123
```

```
                    *

            52      KK    OFF4
            53      BA  0.0158
            54      LS       0    86.8
            55      UD   0.126
                    *

            56      KK     DUR
            57      BA  0.0011
            58      LS       0    98.0
            59      UD   0.082
                    *

            60      KK     CP2
            61      HC       3
                    *

            62      KK     CP3
            63      HC       2
                    *
            64      ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    21        ON1
              .
              .
    34        .        OFF1
              .          .
              .          .
    38        .          .        OFF2
              .          .          .
              .          .          .
    42        .          .          .        HICK
              .          .          .          .
              .          .          .          .
    46        CP1.....................................
              .
              .
    48        .        OFF3
              .          .
              .          .
    52        .          .        OFF4
              .          .          .
              .          .          .
    56        .          .          .         DUR
              .          .          .           .
              .          .          .           .
    60        .         CP2.........................
              .          .
              .          .
    62        CP3.............

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *               JUN   1998              *
 *            VERSION 4.1                *
 *                                       *
 *  RUN DATE   08SEP17  TIME  12:10:19   *
 *                                       *
 *****************************************

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

                        SLATER HANIFAN GROUP
                        ELK RIDGE ESTATES IV
                        EXISTING CONDITION

                        RETURN PERIOD ------- 100-YR & 10-YR
                        DISTRIBUTION -------- 6-HOUR SDN3
                        PROJECT NO. --------- PIN1702.000
                        FILENAME ------------ EX.H1
                        DATE ---------------- SEPT 2017
                        MODELED BY ---------- CAA

                           PRECIPITATION STORM EVENT RATIOS
                           STORM EVENT             RATIO
                           10-YR                  0.59
                           100-YR                    1


  18 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN          5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       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       .59
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 .59
HYDROGRAPH AT						
+	ON1	.02	1	FLOW	15.	5.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OFF1	.00	1	FLOW	1.	0.
				TIME	3.50	3.58
HYDROGRAPH AT						
+	OFF2	.02	1	FLOW	4.	0.
				TIME	3.75	4.92
HYDROGRAPH AT						
+	HICK	.00	1	FLOW	5.	3.
				TIME	3.50	3.50
4 COMBINED AT						
+	CP1	.04	1	FLOW	23.	7.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OFF3	.00	1	FLOW	1.	0.
				TIME	3.58	3.75
HYDROGRAPH AT						
+	OFF4	.02	1	FLOW	22.	9.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	DUR	.00	1	FLOW	2.	1.
				TIME	3.50	3.50
3 COMBINED AT						
+	CP2	.02	1	FLOW	25.	11.
				TIME	3.58	3.58
2 COMBINED AT						
+	CP3	.06	1	FLOW	48.	17.
				TIME	3.58	3.58

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

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *               JUN  1998               *
 *            VERSION 4.1                *
 *                                       *
 *  RUN DATE   05SEP17  TIME  13:41:28   *
 *                                       *
 *****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   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     ELK RIDGE ESTATES IV
            3       ID     PROPOSED CONDITION
            4       ID
            5       ID     RETURN PERIOD ------- 100-YR & 10-YR
            6       ID     DISTRIBUTION -------- 6-HOUR SDN3
            7       ID     PROJECT NO. --------- PIN1702.000
            8       ID     FILENAME ------------ PRO.H1
            9       ID     DATE ---------------- SEPT 2017
           10       ID     MODELED BY ---------- CAA
           11       ID
           12       ID        PRECIPITATION STORM EVENT RATIOS
           13       ID        STORM EVENT            RATIO
           14       ID        10-YR                  0.59
           15       ID        100-YR                    1
           16       ID
           17       IT       5       0       0     300
           18       IO       5       0       0
           19       IN       5       0       0
           20       JR    PREC    1.00    0.59
                    *

           21       KK    ON1D
           22       BA  0.0135
           23       PB    2.86
           24       PC       0   0.020   0.057   0.070   0.087   0.108   0.124   0.130   0.130   0.130
           25       PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
           26       PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
           27       PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
           28       PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
           29       PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
           30       PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
           31       PC   0.998   0.999       1
           32       LS       0    66.1
           33       UD   0.149
                    *

           34       KK    OFF1
           35       BA  0.0012
           36       LS       0    79.1
           37       UD   0.100
                    *

           38       KK    OFF2
           39       BA  0.0213
           40       LS       0    60.0
           41       UD   0.187
                    *
```

1 HEC-1 INPUT PAGE 2

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

           42       KK    HICK
           43       BA  0.0020
           44       LS       0    98.0
           45       UD   0.064
                    *

           46       KK     CP1
           47       HC       4
                    *

           48       KK    ON2D
           49       BA  0.0034
           50       LS       0    71.4
           51       UD   0.138
```

```
                    *
             52     KK    OFF3
             53     BA  0.0031
             54     LS       0    66.4
             55     UD   0.123
                    *
             56     KK    OFF4
             57     BA  0.0158
             58     LS       0    86.8
             59     UD   0.126
                    *
             60     KK     DUR
             61     BA  0.0011
             62     LS       0    98.0
             63     UD   0.082
                    *
             64     KK     CP2
             65     HC       4
                    *
             66     KK     CP3
             67     HC       2
                    *
             68     ZZ
1
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE       (V) ROUTING          (--->) DIVERSION OR PUMP FLOW
   NO.       (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW
    21        ON1D
                 .
                 .
    34           .        OFF1
                 .          .
                 .          .
    38           .          .        OFF2
                 .          .          .
                 .          .          .
    42           .          .          .        HICK
                 .          .          .          .
                 .          .          .          .
    46         CP1..................................
                 .
                 .
    48           .        ON2D
                 .          .
                 .          .
    52           .          .        OFF3
                 .          .          .
                 .          .          .
    56           .          .          .        OFF4
                 .          .          .          .
                 .          .          .          .
    60           .          .          .          .         DUR
                 .          .          .          .           .
                 .          .          .          .           .
    64           .         CP2.....................................
                 .          .
                 .          .
    66         CP3.....
 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *             JUN  1998                *
 *          VERSION 4.1                 *
 *                                      *
 *  RUN DATE   05SEP17  TIME  13:41:28  *
 *                                      *
 ****************************************

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

                          SLATER HANIFAN GROUP
                          ELK RIDGE ESTATES IV
                          PROPOSED CONDITION

                          RETURN PERIOD ------- 100-YR & 10-YR
                          DISTRIBUTION -------- 6-HOUR SDN3
                          PROJECT NO. --------- PIN1702.000
                          FILENAME ------------ PRO.H1
                          DATE ---------------- SEPT 2017
                          MODELED BY ---------- CAA

                             PRECIPITATION STORM EVENT RATIOS
                             STORM EVENT            RATIO
                             10-YR                  0.59
                             100-YR                   1

  18 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                       NMIN           5  MINUTES IN COMPUTATION INTERVAL
```

```
                    IDATE      1    0  STARTING DATE
                    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       .59
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


                                                                        RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN                 RATIO 1  RATIO 2
                                                             1.00      .59

 HYDROGRAPH AT
+                   ON1D       .01     1   FLOW              5.       0.
                                           TIME            3.58     3.83

 HYDROGRAPH AT
+                   OFF1       .00     1   FLOW              1.       0.
                                           TIME            3.50     3.58

 HYDROGRAPH AT
+                   OFF2       .02     1   FLOW              4.       0.
                                           TIME            3.75     4.92

 HYDROGRAPH AT
+                   HICK       .00     1   FLOW              5.       3.
                                           TIME            3.50     3.50

   4 COMBINED AT
+                    CP1       .04     1   FLOW             12.       3.
                                           TIME            3.58     3.50

 HYDROGRAPH AT
+                   ON2D       .00     1   FLOW              2.       0.
                                           TIME            3.58     3.67

 HYDROGRAPH AT
+                   OFF3       .00     1   FLOW              1.       0.
                                           TIME            3.58     3.75

 HYDROGRAPH AT
+                   OFF4       .02     1   FLOW             22.       9.
                                           TIME            3.58     3.58

 HYDROGRAPH AT
+                    DUR       .00     1   FLOW              2.       1.
                                           TIME            3.50     3.50

   4 COMBINED AT
+                    CP2       .02     1   FLOW             27.      11.
                                           TIME            3.58     3.58

   2 COMBINED AT
+                    CP3       .06     1   FLOW             40.      13.
                                           TIME            3.58     3.58


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

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             JUN  1998                 *
 *           VERSION 4.1                 *
 *                                       *
 *  RUN DATE   05SEP17  TIME  13:54:19   *
 *                                       *
 *****************************************
```


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


```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   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


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

              *DIAGRAM
    1         ID     SLATER HANIFAN GROUP
    2         ID     ELK RIDGE ESTATES IV
    3         ID     ULTIMATE CONDITION
    4         ID
    5         ID     RETURN PERIOD ------- 100-YR & 10-YR
    6         ID     DISTRIBUTION -------- 6-HOUR SDN3
    7         ID     PROJECT NO. --------- PIN1702.000
    8         ID     FILENAME ------------ ULT.H1
    9         ID     DATE ---------------- SEPT 2017
   10         ID     MODELED BY ---------- CAA
   11         ID
   12         ID        PRECIPITATION STORM EVENT RATIOS
   13         ID        STORM EVENT             RATIO
   14         ID        10-YR                    0.59
   15         ID        100-YR                      1
   16         ID
   17         IT       5       0       0     300
   18         IO       5       0       0
   19         IN       5       0       0
   20         JR    PREC    1.00    0.59
              *
   21         KK    ON1D
   22         BA  0.0135
   23         PB    2.86
   24         PC       0   0.020   0.057   0.070   0.087   0.108   0.124   0.130   0.130   0.130
   25         PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
   26         PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
   27         PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
   28         PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
   29         PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
   30         PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
   31         PC   0.998   0.999       1
   32         LS       0    66.1
   33         UD   0.149
              *
   34         KK   OFF1D
   35         BA  0.0012
   36         LS       0    57.9
   37         UD   0.050
              *
   38         KK   OFF2D
   39         BA  0.0213
   40         LS       0    54.0
   41         UD   0.187
              *
```



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

   42         KK    HICK
   43         BA  0.0020
   44         LS       0    98.0
   45         UD   0.064
              *
   46         KK     CP1
   47         HC       4
              *
   48         KK    ON2D
   49         BA  0.0034
   50         LS       0    71.4
   51         UD   0.138
```

```
                    *
             52     KK    OFF3
             53     BA  0.0031
             54     LS       0    66.4
             55     UD   0.123
                    *
             56     KK   OFF4D
             57     BA  0.0158
             58     LS       0    66.4
             59     UD   0.138
                    *
             60     KK     DUR
             61     BA  0.0011
             62     LS       0    98.0
             63     UD   0.082
                    *
             64     KK     CP2
             65     HC       4
                    *
             66     KK     CP3
             67     HC       2
                    *
             68     ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK

 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    21        ON1D
                .
                .
    34          .       OFF1D
                .          .
                .          .
    38          .          .       OFF2D
                .          .          .
                .          .          .
    42          .          .          .        HICK
                .          .          .          .
                .          .          .          .
    46         CP1.................................
                .
                .
    48          .        ON2D
                .          .
                .          .
    52          .          .        OFF3
                .          .          .
                .          .          .
    56          .          .          .       OFF4D
                .          .          .          .
                .          .          .          .
    60          .          .          .          .         DUR
                .          .          .          .          .
                .          .          .          .          .
    64          .         CP2.....................................
                .          .
                .          .
    66         CP3.........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *              JUN  1998               *
 *            VERSION 4.1               *
 *                                      *
 *  RUN DATE   05SEP17  TIME  13:54:19  *
 *                                      *
 ****************************************
```

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

SLATER HANIFAN GROUP
ELK RIDGE ESTATES IV
ULTIMATE CONDITION

RETURN PERIOD ------- 100-YR & 10-YR
DISTRIBUTION -------- 6-HOUR SDN3
PROJECT NO. --------- PIN1702.000
FILENAME ------------ ULT.H1
DATE ---------------- SEPT 2017
MODELED BY ---------- CAA

PRECIPITATION STORM EVENT RATIOS

STORM EVENT	RATIO
10-YR	0.59
100-YR	1

```
  18 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                       NMIN           5  MINUTES IN COMPUTATION INTERVAL
```

```
                    IDATE      1    0  STARTING DATE
                    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       .59
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


                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION      AREA     PLAN                 RATIO 1  RATIO 2
                                                              1.00      .59

 HYDROGRAPH AT
+                   ON1D        .01     1   FLOW              5.        0.
                                             TIME            3.58      3.83

 HYDROGRAPH AT
+                   OFF1D       .00     1   FLOW              0.        0.
                                             TIME            3.50      4.83

 HYDROGRAPH AT
+                   OFF2D       .02     1   FLOW              1.        0.
                                             TIME            3.83       .00

 HYDROGRAPH AT
+                   HICK        .00     1   FLOW              5.        3.
                                             TIME            3.50      3.50

   4 COMBINED AT
+                    CP1        .04     1   FLOW              9.        3.
                                             TIME            3.58      3.50

 HYDROGRAPH AT
+                   ON2D        .00     1   FLOW              2.        0.
                                             TIME            3.58      3.67

 HYDROGRAPH AT
+                   OFF3        .00     1   FLOW              1.        0.
                                             TIME            3.58      3.75

 HYDROGRAPH AT
+                   OFF4D       .02     1   FLOW              6.        1.
                                             TIME            3.58      3.75

 HYDROGRAPH AT
+                    DUR        .00     1   FLOW              2.        1.
                                             TIME            3.50      3.50

   4 COMBINED AT
+                    CP2        .02     1   FLOW             12.        2.
                                             TIME            3.58      3.58

   2 COMBINED AT
+                    CP3        .06     1   FLOW             21.        4.
                                             TIME            3.58      3.50


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

APPENDIX D

Hydraulic Computations

Interior Street Flow Computations

Section 1: Interior Full Street (Max Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section 1: Interior Full Street (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.75	%
Discharge	5.00	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	0.013	
Water Surface Elevation	0.27	ft
Elevation Range	0.00 to 0.46	
Flow Area	1.7	ft²
Wetted Perimeter	18.23	ft
Top Width	18.04	ft
Actual Depth	0.27	ft
Critical Elevation	0.32	ft
Critical Slope	0.54	%
Velocity	3.00	ft/s
Velocity Head	0.14	ft
Specific Energy	0.41	ft
Froude Number	1.74	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+02.50	0.013
0+02.50	0+36.50	0.016
0+36.50	0+39.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+19.50	0.46
0+36.50	0.12
0+36.50	0.08
0+36.88	0.00

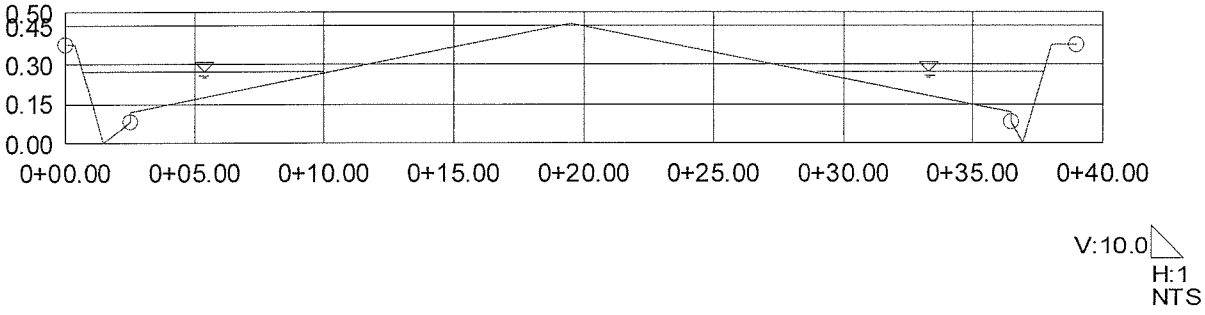
Section 1: Interior Full Street (Max Slope)
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+38.00	0.38
0+39.00	0.38

Section 1: Interior Full Street (Max Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section 1: Interior Full Street (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.013	
Channel Slope	1.75	%
Water Surface Elevation	0.27	ft
Elevation Range	0.00 to 0.46	
Discharge	5.00	cfs



Section 1: Interior Full Street (Min Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section 1: Interior Full Street (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.77	%
Discharge	5.00	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	0.014	
Water Surface Elevation	0.30	ft
Elevation Range	0.00 to 0.46	
Flow Area	2.3	ft²
Wetted Perimeter	21.87	ft
Top Width	21.67	ft
Actual Depth	0.30	ft
Critical Elevation	0.32	ft
Critical Slope	0.58	%
Velocity	2.13	ft/s
Velocity Head	0.07	ft
Specific Energy	0.38	ft
Froude Number	1.14	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+02.50	0.013
0+02.50	0+36.50	0.016
0+36.50	0+39.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+19.50	0.46
0+36.50	0.12
0+36.50	0.08
0+36.88	0.00

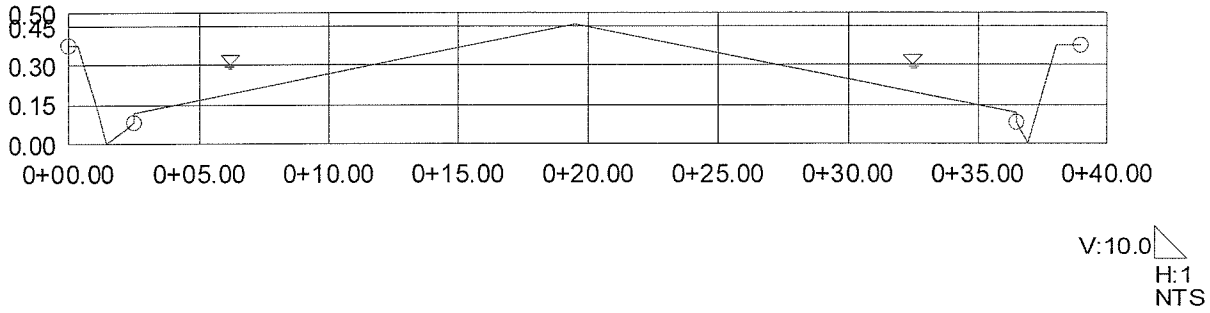
Section 1: Interior Full Street (Min Slope)
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+38.00	0.38
0+39.00	0.38

Section 1: Interior Full Street (Min Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section 1: Interior Full Street (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.014
Channel Slope	0.77 %
Water Surface Elevation	0.30 ft
Elevation Range	0.00 to 0.46
Discharge	5.00 cfs



Section 1: Interior Half Street
Worksheet for Irregular Channel

Project Description	
Worksheet	Section 1: Interior Half Street
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.60	%
Discharge	5.00	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	0.014	
Water Surface Elevation	0.38	ft
Elevation Range	0.00 to 0.46	
Flow Area	2.2	ft²
Wetted Perimeter	15.14	ft
Top Width	15.03	ft
Actual Depth	0.38	ft
Critical Elevation	0.38	ft
Critical Slope	0.56	%
Velocity	2.25	ft/s
Velocity Head	0.08	ft
Specific Energy	0.46	ft
Froude Number	1.03	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+02.50	0.013
0+02.50	0+19.50	0.016

Natural Channel Points

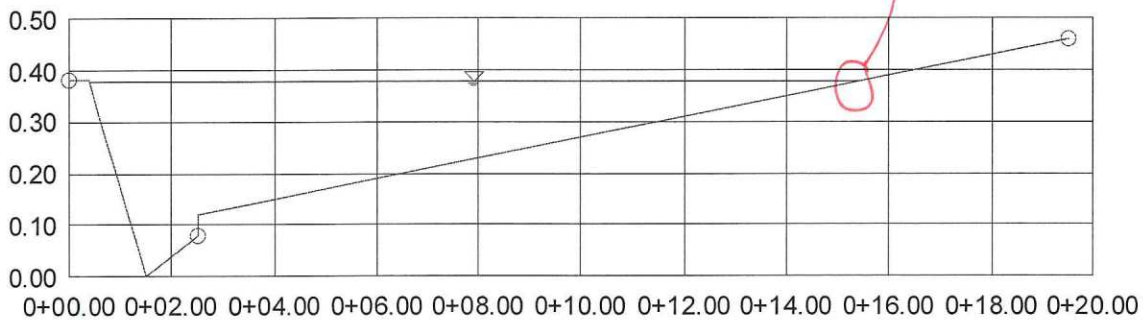
Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+19.50	0.46

Section 1: Interior Half Street
Cross Section for Irregular Channel

Project Description	
Worksheet	Section 1: Interior Half Street
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.014	
Channel Slope	0.60	%
Water Surface Elevation	0.38	ft
Elevation Range	0.00 to 0.46	
Discharge	5.00	cfs

Flow generated by Basin ON1D does not over-top the crown ∴ Flow generated by ON1D does not travel through the proposed drainage easement



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Section 2: Interior Full Street
Worksheet for Irregular Channel

Project Description	
Worksheet	Section 2: Interior Full Street
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.85	%
Discharge	2.00	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	0.013	
Water Surface Elevation	0.22	ft
Elevation Range	0.00 to 0.46	
Flow Area	0.8	ft²
Wetted Perimeter	12.38	ft
Top Width	12.21	ft
Actual Depth	0.22	ft
Critical Elevation	0.24	ft
Critical Slope	0.58	%
Velocity	2.39	ft/s
Velocity Head	0.09	ft
Specific Energy	0.30	ft
Froude Number	1.61	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+02.50	0.013
0+02.50	0+36.50	0.016
0+36.50	0+39.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+19.50	0.46
0+36.50	0.12
0+36.50	0.08
0+36.88	0.00

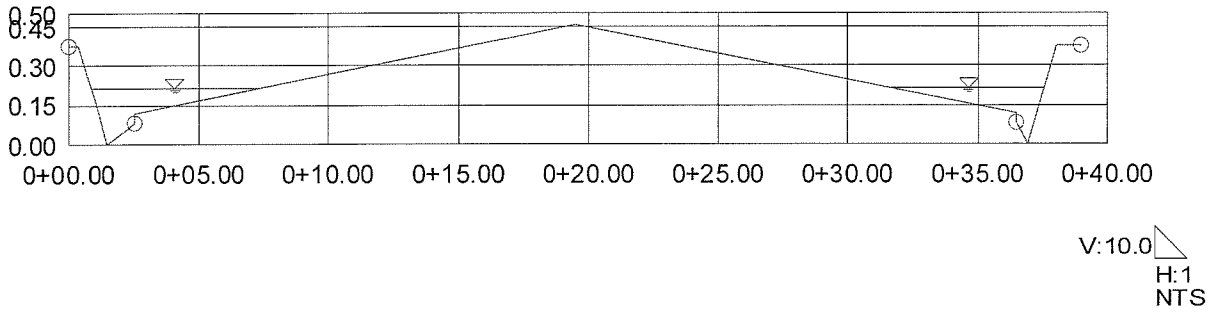
Section 2: Interior Full Street
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+38.00	0.38
0+39.00	0.38

Section 2: Interior Full Street
Cross Section for Irregular Channel

Project Description	
Worksheet	Section 2: Interior Full Street
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.013
Channel Slope	1.85 %
Water Surface Elevation	0.22 ft
Elevation Range	0.00 to 0.46
Discharge	2.00 cfs



Hickam Avenue Street Flow Computations

Section HICK1: Hickam Avenue - Rural Full Street (Max Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section HICK1: Hickam Avenue - Rural Full Street (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.98	%
Discharge	12.00	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	0.022	
Water Surface Elevation	0.57	ft
Elevation Range	0.00 to 1.44	
Flow Area	3.0	ft²
Wetted Perimeter	10.60	ft
Top Width	10.32	ft
Actual Depth	0.57	ft
Critical Elevation	0.64	ft
Critical Slope	1.07	%
Velocity	4.06	ft/s
Velocity Head	0.26	ft
Specific Energy	0.83	ft
Froude Number	1.34	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+10.00	0.022
0+10.00	0+50.00	0.016
0+50.00	0+60.00	0.022

Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	1.33
0+04.00	0.00
0+10.00	1.00
0+10.00	1.04
0+14.00	1.12
0+30.00	1.44
0+46.00	1.12
0+50.00	1.04
0+50.00	1.00

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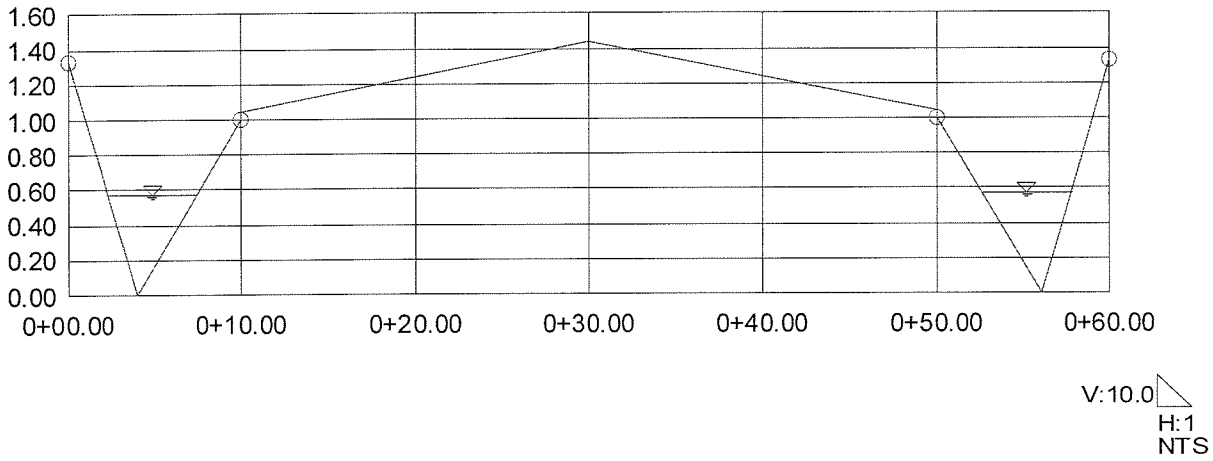
Section HICK1: Hickam Avenue - Rural Full Street (Max Slope)
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+56.00	0.00
0+60.00	1.33

Section HICK1: Hickam Avenue - Rural Full Street (Max Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section HICK1: Hickam Avenue - Rural Full Street (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.022
Channel Slope	1.98 %
Water Surface Elevation	0.57 ft
Elevation Range	0.00 to 1.44
Discharge	12.00 cfs



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Section HICK1: Hickam Avenue - Rural Full Street (Min Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section HICK1: Hickam Avenue - Rural Full Street (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.45	%
Discharge	12.00	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	0.022	
Water Surface Elevation	0.61	ft
Elevation Range	0.00 to 1.44	
Flow Area	3.3	ft²
Wetted Perimeter	11.24	ft
Top Width	10.94	ft
Actual Depth	0.61	ft
Critical Elevation	0.64	ft
Critical Slope	1.07	%
Velocity	3.61	ft/s
Velocity Head	0.20	ft
Specific Energy	0.81	ft
Froude Number	1.15	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+10.00	0.022
0+10.00	0+50.00	0.016
0+50.00	0+60.00	0.022

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	1.33
0+04.00	0.00
0+10.00	1.00
0+10.00	1.04
0+14.00	1.12
0+30.00	1.44
0+46.00	1.12
0+50.00	1.04
0+50.00	1.00

Section HICK1: Hickam Avenue - Rural Full Street (Min Slope)
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+56.00	0.00
0+60.00	1.33

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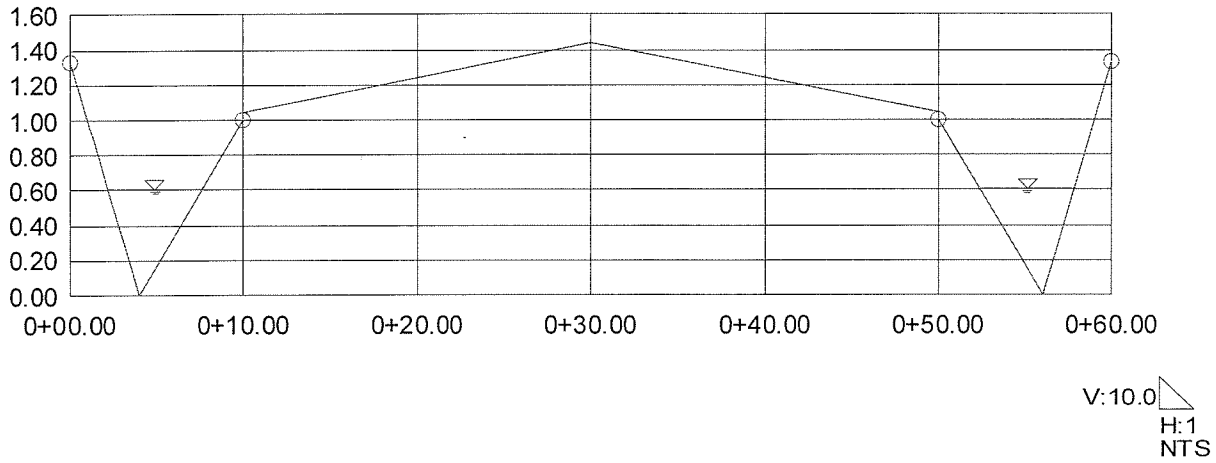
Section HICK1: Hickam Avenue - Rural Full Street (Min Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section HICK1: Hickam Avenue - Rural Full Street (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.022
Channel Slope	1.45 %
Water Surface Elevation	0.61 ft
Elevation Range	0.00 to 1.44
Discharge	12.00 cfs



Section HICK2: Hickam Avenue - Full Street, Partially Improved (Max Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section HICK2: Hickam Avenue - Full Street, Partially Improved (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.90	%
Discharge	12.00	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	0.017	
Water Surface Elevation	1.24	ft
Elevation Range	0.95 to 1.55	
Flow Area	3.8	ft²
Wetted Perimeter	29.15	ft
Top Width	28.76	ft
Actual Depth	0.29	ft
Critical Elevation	1.29	ft
Critical Slope	0.77	%
Velocity	3.16	ft/s
Velocity Head	0.16	ft
Specific Energy	1.39	ft
Froude Number	1.53	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+50.00	0.016
0+50.00	0+60.00	0.022

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	1.55
0+05.00	1.45
0+05.50	1.43
0+05.50	0.95
0+07.00	1.08
0+07.00	1.12
0+30.00	1.44
0+46.00	1.12
0+50.00	1.04

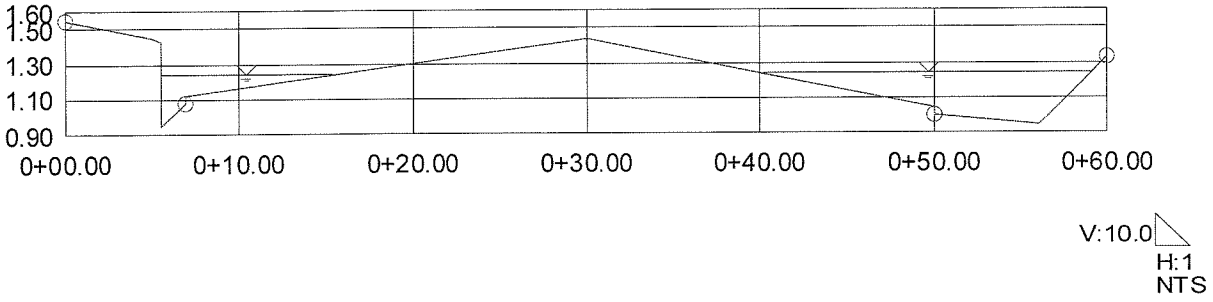
Section HICK2: Hickam Avenue - Full Street, Partially Improved (Max Slope)
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+50.00	1.00
0+56.00	0.95
0+60.00	1.33

Section HICK2: Hickam Avenue - Full Street, Partially Improved (Max Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section HICK2: Hickam Avenue - Full Street, Partially Improved (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.017
Channel Slope	1.90 %
Water Surface Elevation	1.24 ft
Elevation Range	0.95 to 1.55
Discharge	12.00 cfs



Section HICK2: Hickam Avenue - Full Street, Partially Improved (Min Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section HICK2: Hickam Avenue - Full Street, Partially Improved (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.36	%
Discharge	12.00	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	0.017	
Water Surface Elevation	1.25	ft
Elevation Range	0.95 to 1.55	
Flow Area	4.3	ft²
Wetted Perimeter	31.53	ft
Top Width	31.13	ft
Actual Depth	0.30	ft
Critical Elevation	1.29	ft
Critical Slope	0.77	%
Velocity	2.77	ft/s
Velocity Head	0.12	ft
Specific Energy	1.37	ft
Froude Number	1.31	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+50.00	0.016
0+50.00	0+60.00	0.022

Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	1.55
0+05.00	1.45
0+05.50	1.43
0+05.50	0.95
0+07.00	1.08
0+07.00	1.12
0+30.00	1.44
0+46.00	1.12
0+50.00	1.04

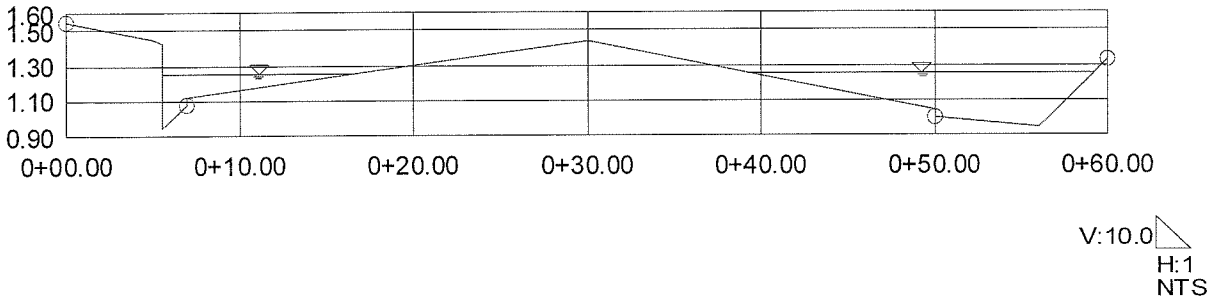
Section HICK2: Hickam Avenue - Full Street, Partially Improved (Min Slope)
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+50.00	1.00
0+56.00	0.95
0+60.00	1.33

Section HICK2: Hickam Avenue - Full Street, Partially Improved (Min Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section HICK2: Hickam Avenue - Full Street, Partially Improved (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.017
Channel Slope	1.36 %
Water Surface Elevation	1.25 ft
Elevation Range	0.95 to 1.55
Discharge	12.00 cfs



Section HICK3: Hickam Avenue - Rural Full Street Driveway (Max Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section HICK3: Hickam Avenue - Rural Full Street Driveway (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.98	%
Discharge	12.00	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	0.016	
Water Surface Elevation	0.50	ft
Elevation Range	0.00 to 3.00	
Flow Area	2.3	ft²
Wetted Perimeter	9.47	ft
Top Width	9.42	ft
Actual Depth	0.50	ft
Critical Elevation	0.63	ft
Critical Slope	0.55	%
Velocity	5.14	ft/s
Velocity Head	0.41	ft
Specific Energy	0.91	ft
Froude Number	1.82	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+46.00	0.016
0+46.00	0+60.00	0.022

Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	0.74
0+07.00	0.00
0+14.00	0.74
0+14.00	0.78
0+30.00	1.09
0+46.00	0.78
0+46.00	0.74
0+50.00	0.66
0+56.00	1.66
0+60.00	3.00

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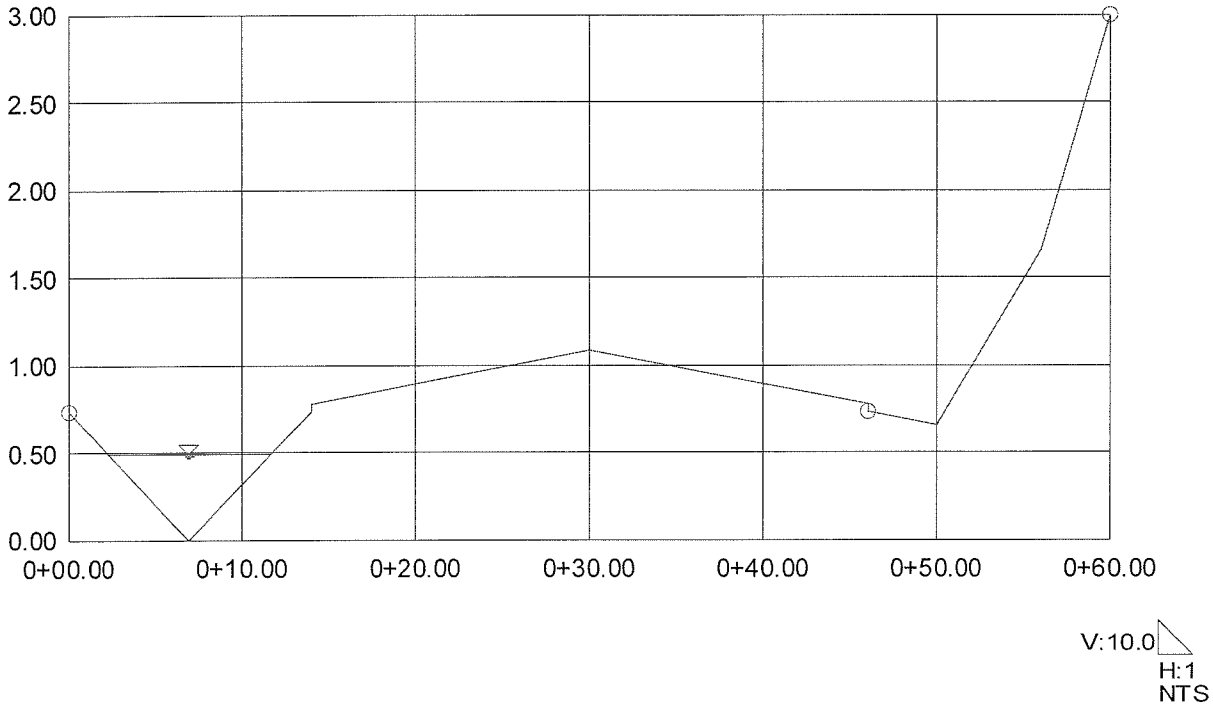
Section HICK3: Hickam Avenue - Rural Full Street Driveway (Max Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section HICK3: Hickam Avenue - Rural Full Street Driveway (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.016
Channel Slope	1.98 %
Water Surface Elevation	0.50 ft
Elevation Range	0.00 to 3.00
Discharge	12.00 cfs



Section HICK3: Hickam Avenue - Rural Full Street Driveway (Min Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section HICK3: Hickam Avenue - Rural Full Street Driveway (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.45	%
Discharge	12.00	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	0.016	
Water Surface Elevation	0.53	ft
Elevation Range	0.00 to 3.00	
Flow Area	2.6	ft²
Wetted Perimeter	10.04	ft
Top Width	9.98	ft
Actual Depth	0.53	ft
Critical Elevation	0.63	ft
Critical Slope	0.55	%
Velocity	4.57	ft/s
Velocity Head	0.32	ft
Specific Energy	0.85	ft
Froude Number	1.57	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+46.00	0.016
0+46.00	0+60.00	0.022

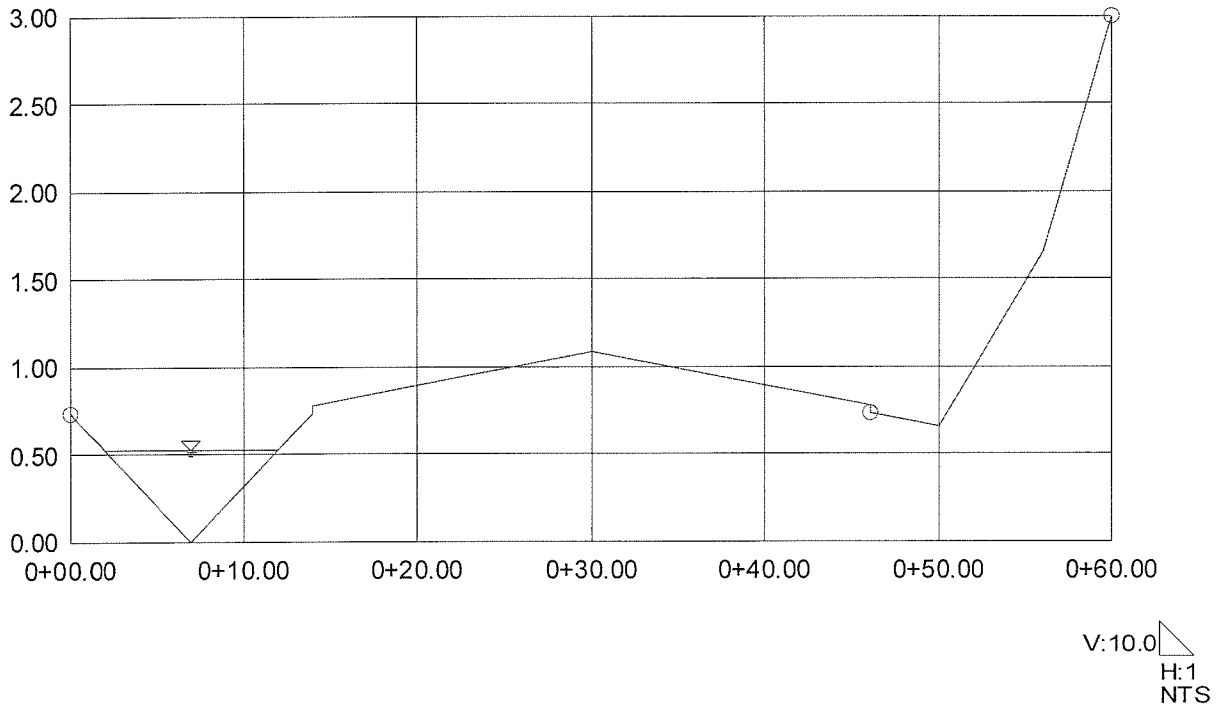
Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	0.74
0+07.00	0.00
0+14.00	0.74
0+14.00	0.78
0+30.00	1.09
0+46.00	0.78
0+46.00	0.74
0+50.00	0.66
0+56.00	1.66
0+60.00	3.00

Section HICK3: Hickam Avenue - Rural Full Street Driveway (Min Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section HICK3: Hickam Avenue - Rural Full Street Driveway (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.016
Channel Slope	1.45 %
Water Surface Elevation	0.53 ft
Elevation Range	0.00 to 3.00
Discharge	12.00 cfs



Section HICKD: Hickam Avenue - Full Build Out (Max Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section HICKD: Hickam Avenue - Full Build Out (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.98	%
Discharge	12.00	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	0.013	
Water Surface Elevation	0.38	ft
Elevation Range	0.00 to 0.63	
Flow Area	3.1	ft²
Wetted Perimeter	24.45	ft
Top Width	23.60	ft
Actual Depth	0.38	ft
Critical Elevation	0.45	ft
Critical Slope	0.49	%
Velocity	3.93	ft/s
Velocity Head	0.24	ft
Specific Energy	0.62	ft
Froude Number	1.92	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+53.00	0.016
0+53.00	0+60.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.48
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+30.00	0.63
0+53.00	0.17
0+53.00	0.13

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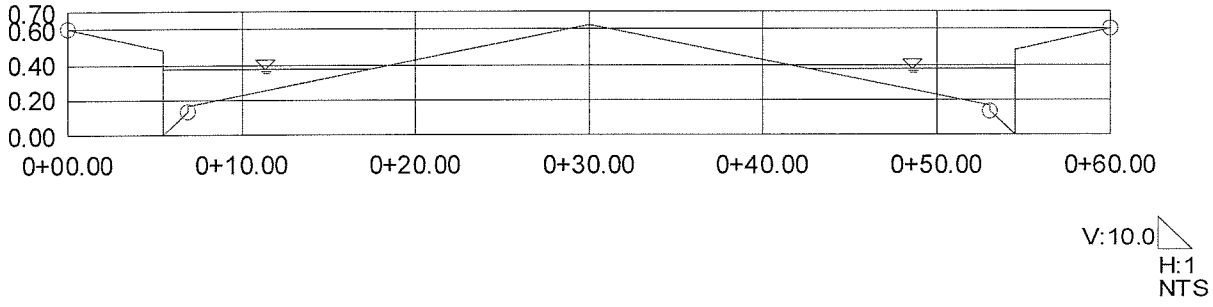
Section HICKD: Hickam Avenue - Full Build Out (Max Slope)
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+54.50	0.00
0+54.50	0.48
0+55.00	0.50
0+60.00	0.60

Section HICKD: Hickam Avenue - Full Build Out (Max Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section HICKD: Hickam Avenue - Full Build Out (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.013	
Channel Slope	1.98	%
Water Surface Elevation	0.38	ft
Elevation Range	0.00 to 0.63	
Discharge	12.00	cfs



Section HICKD: Hickam Avenue - Full Build Out (Min Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section HICKD: Hickam Avenue - Full Build Out (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.36	%
Discharge	12.00	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	0.014	
Water Surface Elevation	0.40	ft
Elevation Range	0.00 to 0.63	
Flow Area	3.6	ft²
Wetted Perimeter	26.63	ft
Top Width	25.74	ft
Actual Depth	0.40	ft
Critical Elevation	0.45	ft
Critical Slope	0.51	%
Velocity	3.35	ft/s
Velocity Head	0.17	ft
Specific Energy	0.57	ft
Froude Number	1.58	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+53.00	0.016
0+53.00	0+60.00	0.013

Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.48
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+30.00	0.63
0+53.00	0.17
0+53.00	0.13

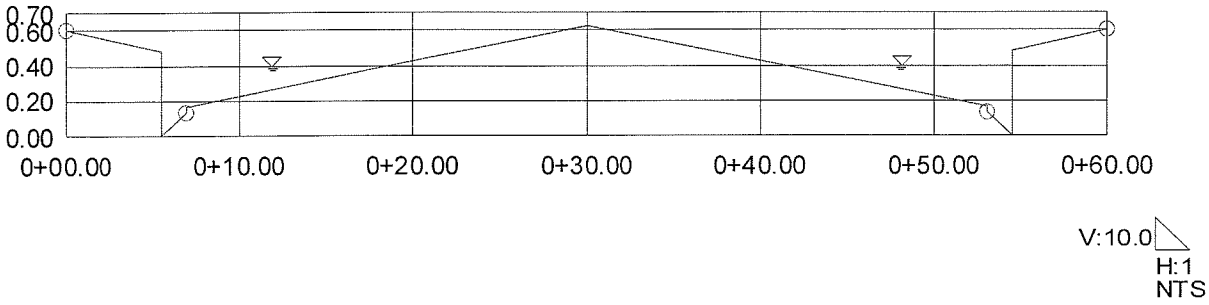
Section HICKD: Hickam Avenue - Full Build Out (Min Slope)
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+54.50	0.00
0+54.50	0.48
0+55.00	0.50
0+60.00	0.60

Section HICKD: Hickam Avenue - Full Build Out (Min Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section HICKD: Hickam Avenue - Full Build Out (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.014
Channel Slope	1.36 %
Water Surface Elevation	0.40 ft
Elevation Range	0.00 to 0.63
Discharge	12.00 cfs



Durango Drive Street Flow Computations

Section DUR1: Durango Drive - Half Street
Worksheet for Irregular Channel

Project Description	
Worksheet	Section DUR1: Durango Drive - Half Street
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.60	%
Discharge	22.00	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	0.018	
Water Surface Elevation	0.66	ft
Elevation Range	0.00 to 2.00	
Flow Area	7.9	ft²
Wetted Perimeter	28.84	ft
Top Width	28.77	ft
Actual Depth	0.66	ft
Critical Elevation	0.64	ft
Critical Slope	0.70	%
Velocity	2.77	ft/s
Velocity Head	0.12	ft
Specific Energy	0.78	ft
Froude Number	0.93	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+15.00	0.022
0+15.00	0+55.00	0.016

Natural Channel Points

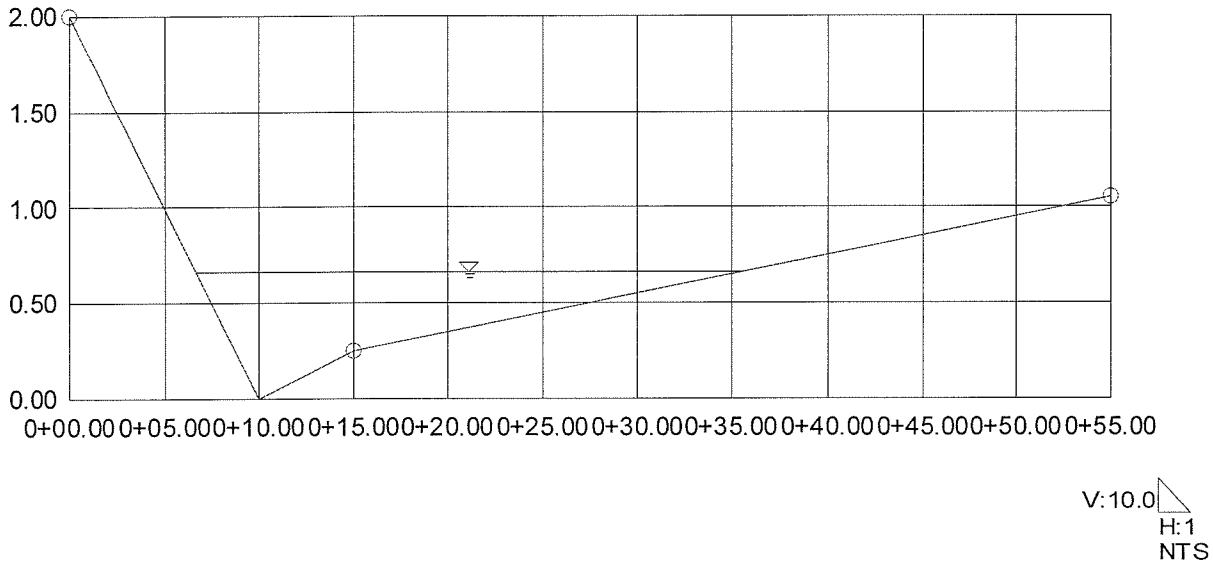
Station (ft)	Elevation (ft)
0+00.00	2.00
0+10.00	0.00
0+15.00	0.25
0+55.00	1.05

Notes: Slope is measured across existing contours.

Section DUR1: Durango Drive - Half Street
Cross Section for Irregular Channel

Project Description	
Worksheet	Section DUR1: Durango Drive - Half Street
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.018	
Channel Slope	0.60	%
Water Surface Elevation	0.66	ft
Elevation Range	0.00 to 2.00	
Discharge	22.00	cfs



Section DUR2: Durango Drive - 10-Year Half Street (Max Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 10-Year Half Street (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.54	%
Discharge	11.00	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	0.015	
Water Surface Elevation	0.56	ft
Elevation Range	0.00 to 1.03	
Flow Area	4.7	ft²
Wetted Perimeter	25.26	ft
Top Width	24.73	ft
Actual Depth	0.56	ft
Critical Elevation	0.55	ft
Critical Slope	0.62	%
Velocity	2.33	ft/s
Velocity Head	0.08	ft
Specific Energy	0.65	ft
Froude Number	0.94	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+50.00	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.48
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+21.00	0.45
0+50.00	1.03

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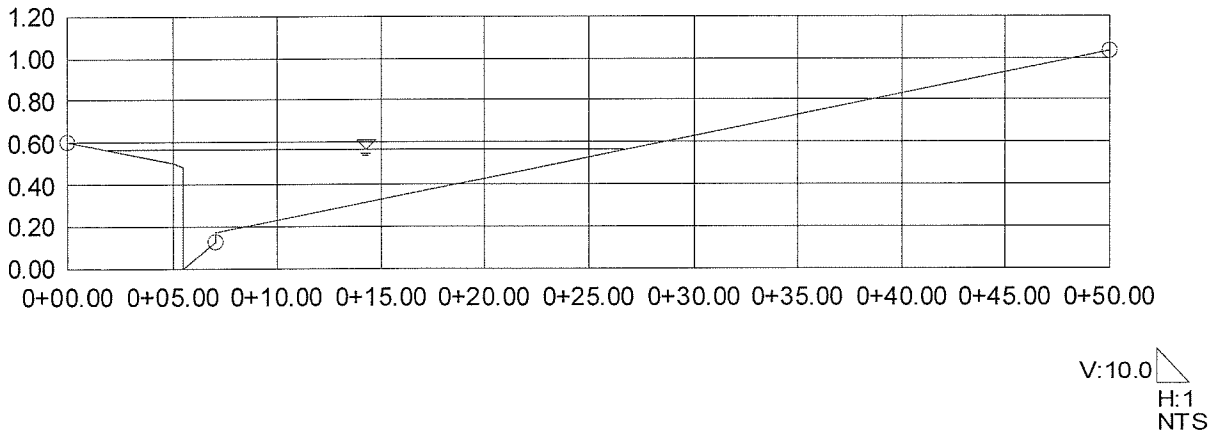
Section DUR2: Durango Drive - 10-Year Half Street (Max Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 10-Year Half Street (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.015	
Channel Slope	0.54	%
Water Surface Elevation	0.56	ft
Elevation Range	0.00 to 1.03	
Discharge	11.00	cfs



Section DUR2: Durango Drive - 10-Year Half Street (Min Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 10-Year Half Street (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.36	%
Discharge	11.00	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	0.015	
Water Surface Elevation	0.59	ft
Elevation Range	0.00 to 1.03	
Flow Area	5.6	ft²
Wetted Perimeter	28.52	ft
Top Width	27.99	ft
Actual Depth	0.59	ft
Critical Elevation	0.55	ft
Critical Slope	0.61	%
Velocity	1.97	ft/s
Velocity Head	0.06	ft
Specific Energy	0.66	ft
Froude Number	0.78	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+50.00	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.48
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+21.00	0.45
0+50.00	1.03

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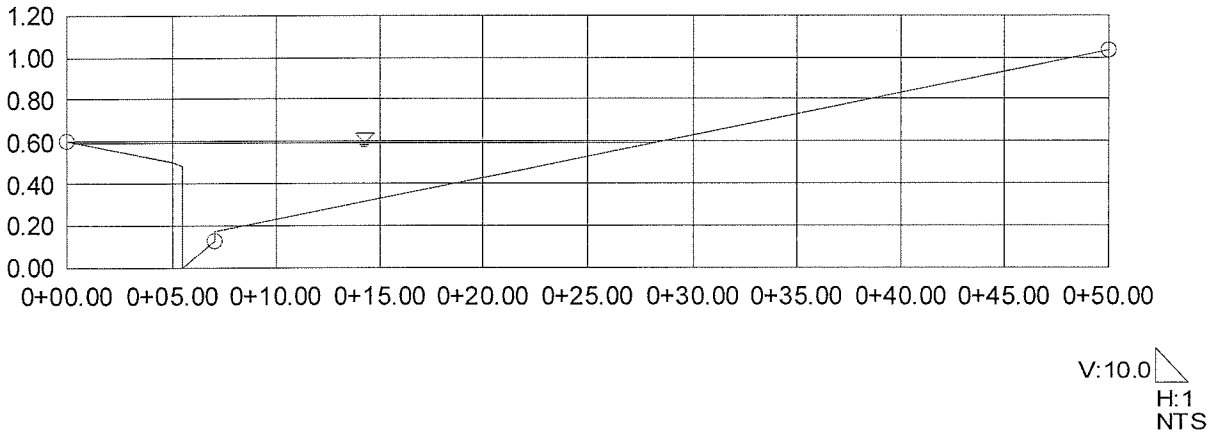
Section DUR2: Durango Drive - 10-Year Half Street (Min Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 10-Year Half Street (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.015
Channel Slope	0.36 %
Water Surface Elevation	0.59 ft
Elevation Range	0.00 to 1.03
Discharge	11.00 cfs



Section DUR2: Durango Drive - 10-Year Half Street (Max Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 10-Year Half Street (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.54	%
Discharge	11.00	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	0.015	
Water Surface Elevation	0.56	ft
Elevation Range	0.00 to 1.39	
Flow Area	4.7	ft²
Wetted Perimeter	25.26	ft
Top Width	24.73	ft
Actual Depth	0.56	ft
Critical Elevation	0.55	ft
Critical Slope	0.62	%
Velocity	2.33	ft/s
Velocity Head	0.08	ft
Specific Energy	0.65	ft
Froude Number	0.94	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+43.00	0.016
0+43.00	0+47.00	0.013
0+47.00	0+50.00	0.016

Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.48
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+43.00	0.89
0+43.00	1.39
0+47.00	1.39
0+47.00	0.89
0+50.00	0.95

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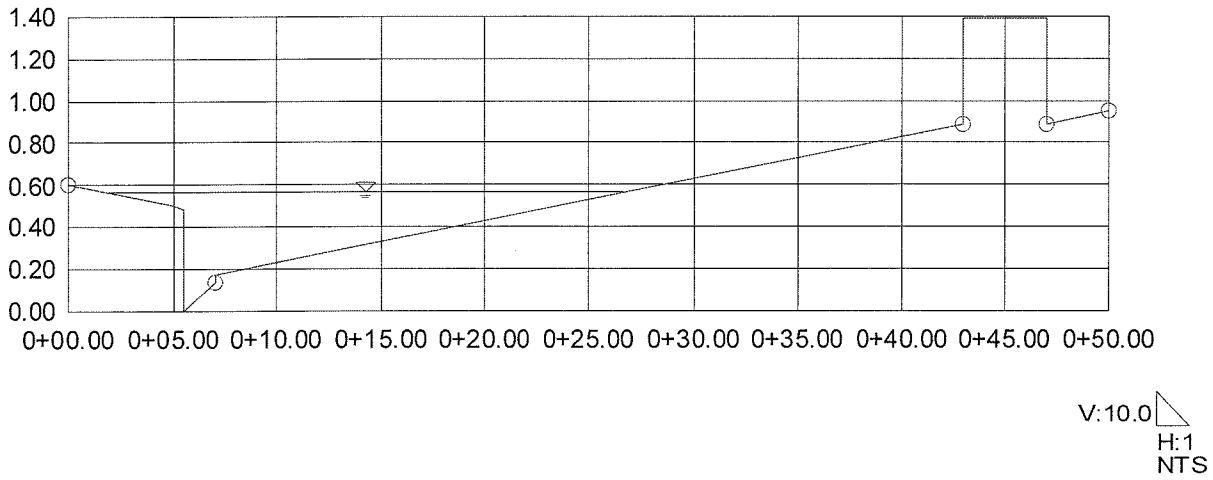
Section DUR2: Durango Drive - 10-Year Half Street (Max Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 10-Year Half Street (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.015
Channel Slope	0.54 %
Water Surface Elevation	0.56 ft
Elevation Range	0.00 to 1.39
Discharge	11.00 cfs



Section DUR2: Durango Drive - 10-Year Half Street (Min Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 10-Year Half Street (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.36	%
Discharge	11.00	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	0.015	
Water Surface Elevation	0.59	ft
Elevation Range	0.00 to 1.39	
Flow Area	5.6	ft²
Wetted Perimeter	28.52	ft
Top Width	27.99	ft
Actual Depth	0.59	ft
Critical Elevation	0.55	ft
Critical Slope	0.61	%
Velocity	1.97	ft/s
Velocity Head	0.06	ft
Specific Energy	0.66	ft
Froude Number	0.78	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+43.00	0.016
0+43.00	0+47.00	0.013
0+47.00	0+50.00	0.016

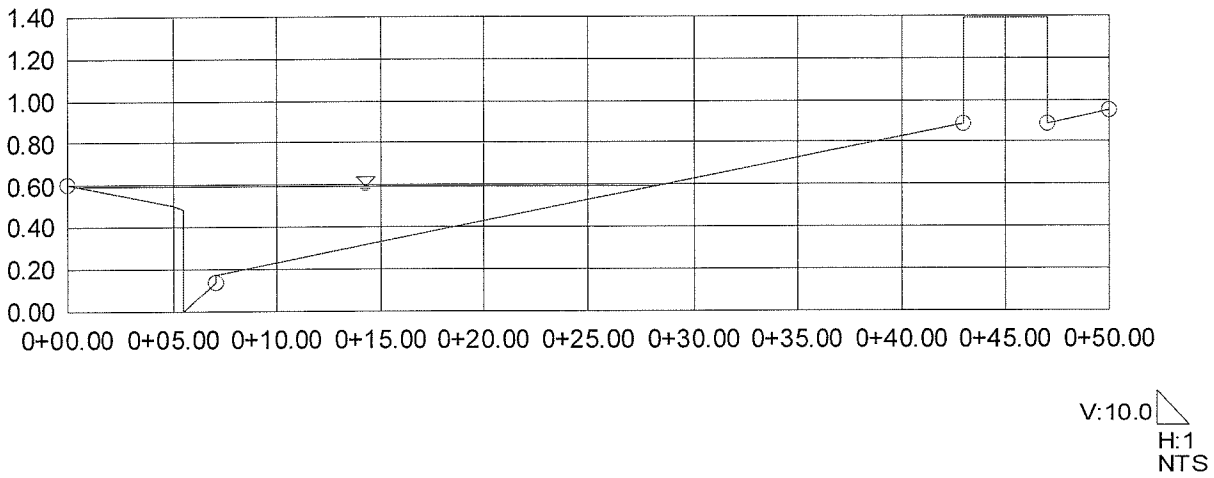
Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.48
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+43.00	0.89
0+43.00	1.39
0+47.00	1.39
0+47.00	0.89
0+50.00	0.95

Section DUR2: Durango Drive - 10-Year Half Street (Min Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 10-Year Half Street (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.015	
Channel Slope	0.36	%
Water Surface Elevation	0.59	ft
Elevation Range	0.00 to 1.39	
Discharge	11.00	cfs



Section DUR2: Durango Drive - 100-Year Half Street (Max Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 100-Year Half Street (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.54	%
Discharge	27.00	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	0.015	
Water Surface Elevation	0.71	ft
Elevation Range	0.00 to 1.39	
Flow Area	9.2	ft²
Wetted Perimeter	34.65	ft
Top Width	34.01	ft
Actual Depth	0.71	ft
Critical Elevation	0.71	ft
Critical Slope	0.54	%
Velocity	2.94	ft/s
Velocity Head	0.13	ft
Specific Energy	0.84	ft
Froude Number	1.00	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.11021165 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+43.00	0.016
0+43.00	0+47.00	0.013
0+47.00	0+50.00	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.48
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+43.00	0.89
0+43.00	1.39

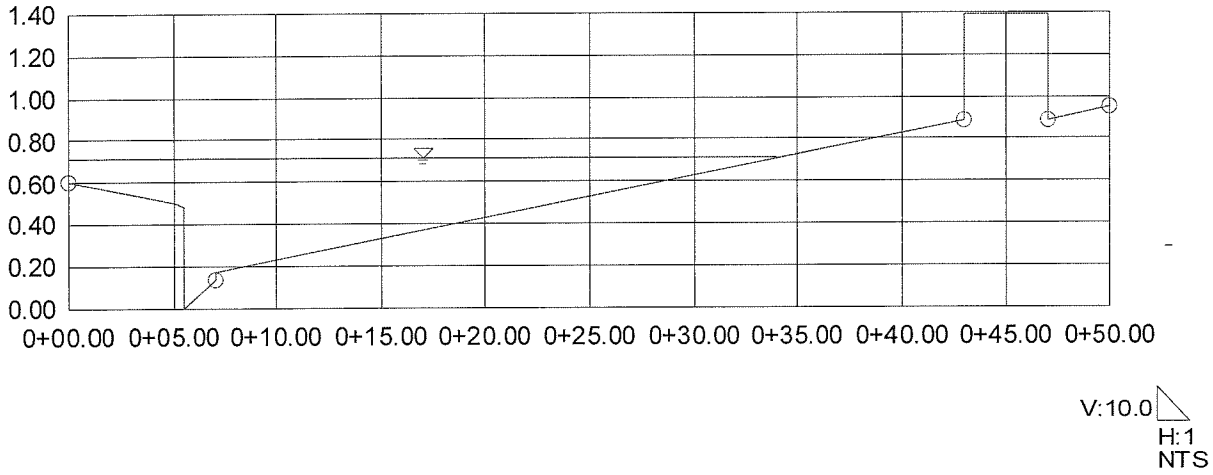
Section DUR2: Durango Drive - 100-Year Half Street (Max Slope)
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+47.00	1.39
0+47.00	0.89
0+50.00	0.95

Section DUR2: Durango Drive - 100-Year Half Street (Max Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 100-Year Half Street (Max Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.015	
Channel Slope	0.54	%
Water Surface Elevation	0.71	ft
Elevation Range	0.00 to 1.39	
Discharge	27.00	cfs



Section DUR2: Durango Drive - 100-Year Half Street (Min Slope)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 100-Year Half Street (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.36	%
Discharge	27.00	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	0.015	
Water Surface Elevation	0.75	ft
Elevation Range	0.00 to 1.39	
Flow Area	10.6	ft²
Wetted Perimeter	36.73	ft
Top Width	36.05	ft
Actual Depth	0.75	ft
Critical Elevation	0.71	ft
Critical Slope	0.54	%
Velocity	2.55	ft/s
Velocity Head	0.10	ft
Specific Energy	0.85	ft
Froude Number	0.83	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.15093135 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.013
0+07.00	0+43.00	0.016
0+43.00	0+47.00	0.013
0+47.00	0+50.00	0.016

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.48
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+43.00	0.89
0+43.00	1.39

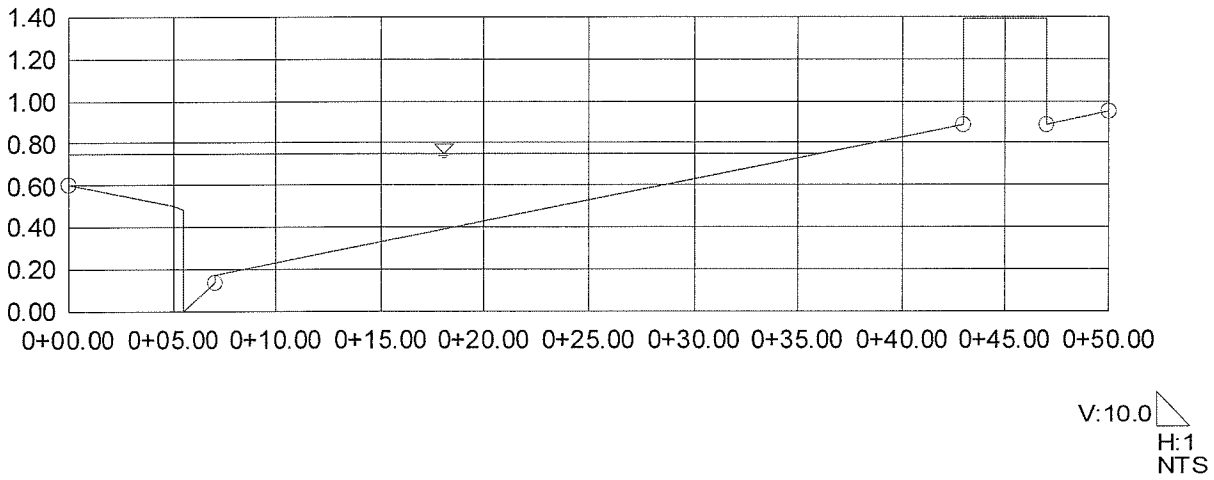
Section DUR2: Durango Drive - 100-Year Half Street (Min Slope)
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+47.00	1.39
0+47.00	0.89
0+50.00	0.95

Section DUR2: Durango Drive - 100-Year Half Street (Min Slope)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section DUR2: Durango Drive - 100-Year Half Street (Min Slope)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.015	
Channel Slope	0.36	%
Water Surface Elevation	0.75	ft
Elevation Range	0.00 to 1.39	
Discharge	27.00	cfs



Section DUR3: Durango Drive - Half Street Capacity
Worksheet for Irregular Channel

Project Description	
Worksheet	Section DUR3: Durango Drive - Half Street Capacity
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.40	%
Discharge	75.00	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	0.017	
Water Surface Elevation	1.04	ft
Elevation Range	0.00 to 2.00	
Flow Area	23.1	ft²
Wetted Perimeter	50.08	ft
Top Width	49.96	ft
Actual Depth	1.04	ft
Critical Elevation	0.98	ft
Critical Slope	0.58	%
Velocity	3.24	ft/s
Velocity Head	0.16	ft
Specific Energy	1.21	ft
Froude Number	0.84	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+15.00	0.022
0+15.00	0+55.00	0.016

Natural Channel Points

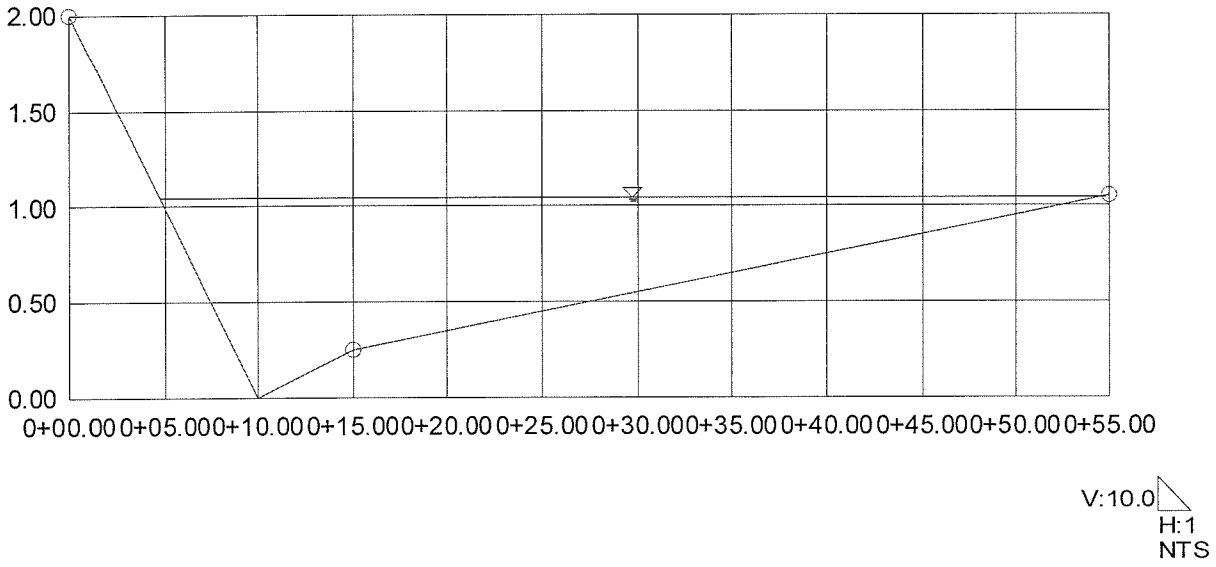
Station (ft)	Elevation (ft)
0+00.00	2.00
0+10.00	0.00
0+15.00	0.25
0+55.00	1.05

Notes: Slope is measured across existing contours.

Section DUR3: Durango Drive - Half Street Capacity
Cross Section for Irregular Channel

Project Description	
Worksheet	Section DUR3: Durango Drive - Half Street Capacity
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.017	
Channel Slope	0.40	%
Water Surface Elevation	1.04	ft
Elevation Range	0.00 to 2.00	
Discharge	75.00	cfs



Drainage Easement Computations

Section DE1: Drainage Easement (Normal Depth)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section DE1: Drainage Easement (Normal Depth)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.36	%
Discharge	2.00	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	0.013	
Water Surface Elevation	0.15	ft
Elevation Range	0.00 to 0.05	
Flow Area	0.6	ft²
Wetted Perimeter	5.20	ft
Top Width	5.00	ft
Actual Depth	0.15	ft
Critical Elevation	0.20	ft
Critical Slope	0.48	%
Velocity	3.23	ft/s
Velocity Head	0.16	ft
Specific Energy	0.31	ft
Froude Number	1.62	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.09891320 ft.

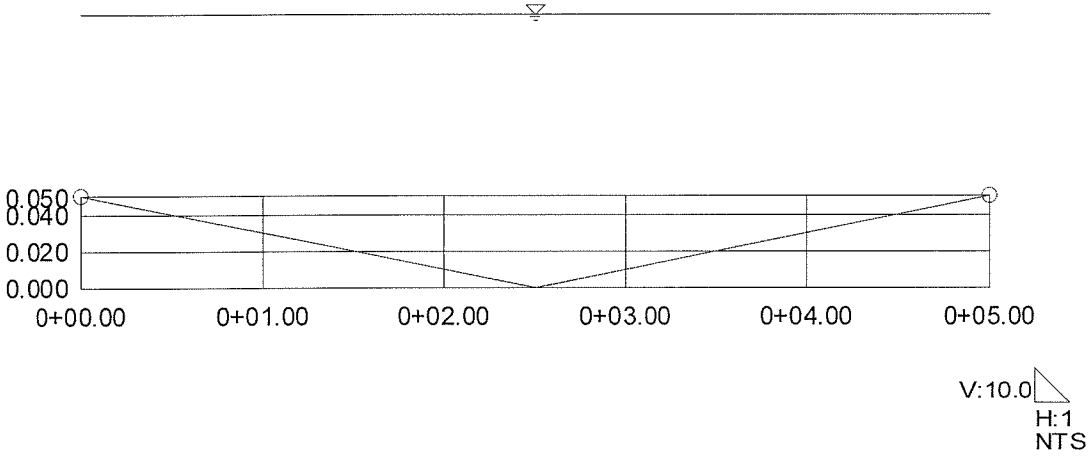
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+05.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.05
0+02.50	0.00
0+05.00	0.05

Section DE1: Drainage Easement (Normal Depth)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section DE1: Drainage Easement (Normal Depth)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.013
Channel Slope	1.36 %
Water Surface Elevation	0.15 ft
Elevation Range	0.00 to 0.05
Discharge	2.00 cfs



Section DE1: Drainage Easement (Weir)
Worksheet for Broad Crested Weir

Project Description	
Worksheet	Section DE1: Drainage Easement (Weir)
Type	Broad Crested Weir
Solve For	Headwater Elevation

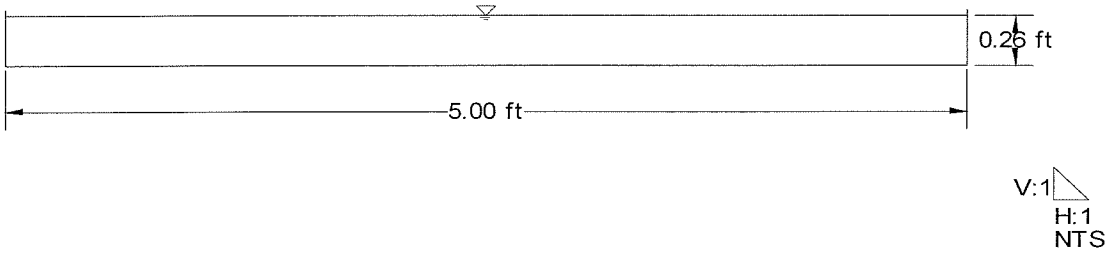
Input Data		
Discharge	2.00	cfs
Crest Elevation	2,396.47	ft
Tailwater Elevation	2,396.62	ft
Crest Surface Type	Paved	
Crest Breadth	0.38	ft
Crest Length	5.00	ft

Results		
Headwater Elevation	2,396.73	ft
Headwater Height Above Crest	0.26	ft
Tailwater Height Above Crest	0.15	ft
Discharge Coefficient	3.09	US
Submergence Factor	1.00	
Adjusted Discharge Coefficient	3.09	US
Flow Area	1.3	ft²
Velocity	1.56	ft/s
Wetted Perimeter	5.51	ft
Top Width	5.00	ft

Section DE1: Drainage Easement (Weir)
Cross Section for Broad Crested Weir

Project Description	
Worksheet	Section DE1: Drainage Easement (Weir)
Type	Broad Crested Weir
Solve For	Headwater Elevation

Section Data		
Discharge	2.00	cfs
Headwater Elevation	2,396.73	ft
Crest Elevation	2,396.47	ft
Tailwater Elevation	2,396.62	ft
Crest Surface Type	Paved	
Crest Breadth	0.38	ft
Crest Length	5.00	ft



Hickam – Durango Weir

Hickam - Durango Weir
Worksheet for Generic Weir

Project Description	
Worksheet	Hickam - Durango Weir
Type	Generic Weir
Solve For	Headwater Elevation

Input Data		
Discharge	115.00	cfs
Crest Elevation	2,395.21	ft
Discharge Coefficient	3.00	US
Crest Length	110.82	ft

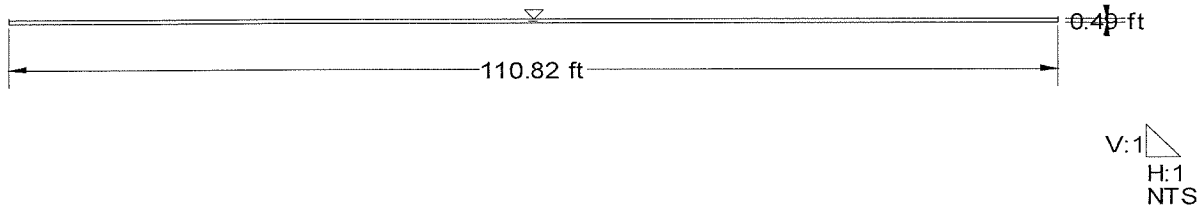
Results		
Headwater Elevation	2,395.70	ft
Headwater Height Above Crest	0.49	ft
Flow Area	54.6	ft²
Velocity	2.11	ft/s
Wetted Perimeter	111.81	ft
Top Width	110.82	ft

Notes: Q = CP3 + Capacity of DUR3

Hickam - Durango Weir
Cross Section for Generic Weir

Project Description	
Worksheet	Hickam - Durango Weir
Type	Generic Weir
Solve For	Headwater Elevation

Section Data		
Discharge	115.00	cfs
Headwater Elevation	2,395.70	ft
Crest Elevation	2,395.21	ft
Discharge Coefficient	3.00	US
Crest Length	110.82	ft



APPENDIX E

Finished Floor Analysis

PROJECT NAME FINISH FLOOR ANALYSIS - UNINCORPORATED CLARK COUNTY JURISDICTION											
INPUT INFORMATION						FINISHED FLOORS					NOTES
Lot Number	Hydraulic Section Utilized	Centerline Elevation (ft)	T/C[1] (ft)	F/L[2] (ft)	D_{100} (ft)	Flowline $F.F._{min}$[3] (ft)	Centerline (or T.C.) $F.F._{min}$[4] (ft)	$F.F._{Design}$ (ft)	Flowline Check	Centerline Check	See References on Last Sheet
1	HICK1	2409.12	2409.81	2408.72	0.61	2409.94	2410.62	2412.1	OK	OK	
2	HICK1	2407.27	2407.81	2406.72	0.61	2407.94	2408.77	2410.1	OK	OK	
3	HICK1	2405.49	2406.10	2405.01	0.61	2406.23	2406.99	2408.4	OK	OK	
4	HICK1	2403.74	2404.25	2403.16	0.61	2404.38	2405.24	2406.5	OK	OK	
5	HICK1	2402.10	2402.61	2401.52	0.61	2402.74	2403.60	2404.9	OK	OK	
6	HICK1	2400.77	2400.96	2399.87	0.61	2401.09	2402.27	2403.2	OK	OK	
7	1	2404.26	2404.84	2404.46	0.30	2405.06	2405.76	2407.1	OK	OK	
8	1	2405.66	2406.32	2405.94	0.30	2406.54	2407.16	2408.6	OK	OK	
9	1	2407.14	2407.80	2407.42	0.30	2408.02	2408.64	2410.1	OK	OK	
10	1	2408.63	2409.29	2408.91	0.30	2409.51	2410.13	2411.5	OK	OK	
11	1	2409.96	2410.47	2410.09	0.30	2410.69	2411.46	2412.7	OK	OK	
12	1	2410.79	2410.94	2410.56	0.30	2411.16	2412.29	2414.3	OK	OK	
13	1	2408.48	2409.25	2408.87	0.30	2409.47	2409.98	2411.3	OK	OK	
14	1	2406.89	2407.55	2407.17	0.30	2407.77	2408.39	2409.8	OK	OK	
15	1	2405.41	2406.07	2405.69	0.30	2406.29	2406.91	2408.3	OK	OK	
16	1	2404.32	2404.59	2404.21	0.30	2404.81	2405.82	2406.6	OK	OK	
17	2	2400.06	2400.94	2400.56	0.22	2401.00	2401.56	2402.7	OK	OK	
18	2	2398.24	2399.01	2398.63	0.22	2399.07	2399.74	2400.8	OK	OK	
19	2	2396.97	2397.31	2396.93	0.22	2397.37	2398.47	2399.5	OK	OK	
20	2	2396.97	2397.31	2396.93	0.22	2397.37	2398.47	2399.5	OK	OK	
21	2	2398.24	2399.01	2398.63	0.22	2399.07	2399.74	2400.9	OK	OK	
22	2	2399.92	2400.66	2400.28	0.22	2400.72	2401.42	2402.6	OK	OK	

Where:

1: Top of Curb at High Side of Lot

2: TC-0.38 (For Roll Curb), TC-0.5 (For L Curb)

3: Minimum Allowable Finished Floor Elevation above flowline elevation @ high side of lot = (2 x D_{100}) + F/L

4: Minimum Allowable Finished Floor Elevation above centerline (or T.C. whichever is higher) elevation = Centerline elevation (or Center T.C.) + 1.5'
Street centerline elevation measured at the center of the lot.

Clark County Finished Floor Criteria:

-The finished floor shall be set a vertical distance above the gutter flowline of at least twice the depth of flow in the gutter flowline up to a maximum of 18 inches above the WSEL in the street.

-The finished floor shall be set a vertical distance of at least 18-inches above the street centerline elevation. This shall be measured from the center of the lot.

Supplemental Finish Floor Checks

Drainage Easements Check							
Lot Number	High TC/FL[1]	Section	Flow Depth[2]	Min FF[3]	Design FF	Check	Solid Grout
19	2396.07	DE1	0.26	2397.83	2399.50	OK	No
20	2396.07	DE1	0.26	2397.83	2399.50	OK	No

1: High TC/FL is at the high side of the drainage easement flowline or the highest TC adjacent to the easement if flow is weiring over the curb.

2: Flow depth is either normal depth or weir depth (whichever is higher).

3: Min FF is the High TC/FL plus the Flow Depth plus 18 inches.

Adjacent/Perimeter Street Check									
Lot Number	Street	High TC/FG[1]	High FL[2]	Section	Flow Depth[3]	Min FF[4]	Design FF	Check	Solid Grout
6	Cobalt Canyon St	2401.85	2401.47	1	0.30	2402.07	2403.2	OK	No
7	Cobalt Canyon St	2403.16	2402.78	1	0.30	2403.38	2407.1	OK	No
16	Cobalt Canyon St	2404.13	2403.75	1	0.30	2404.35	2406.6	OK	No
17	Cobalt Canyon St	2402.56	2402.18	2	0.22	2402.62	2402.7	OK	No
19	Durango Dr	2396.39	2396.01	DUR1	0.66	2397.33	2399.5	OK	No
20	Durango Dr	2395.58	2395.20	DUR1	0.66	2396.52	2399.5	OK	No
20	Hickam Ave	2395.78	2395.40	HICK2	0.30	2396.00	2399.5	OK	No
21	Hickam Ave	2397.39	2397.01	HICK2	0.30	2397.61	2400.9	OK	No
22	Hickam Ave	2398.63	2398.25	HICK2	0.30	2398.85	2402.6	OK	No
22	Cobalt Canyon St	2400.59	2400.21	1	0.30	2400.81	2402.6	OK	No

1: High TC/FG is the elevation at the high side of the adjacent perimeter street

2: 0.38-ft is subtracted from the High TC to obain the High FL elevation

3: Flow depth is the normal depth in adjacent perimeter street

4: Min FF is the High FL plus twice the depth of flow.

SUPPLEMENTAL FINISH FLOOR ANALYSIS

(BASED ON ANALYSIS UTILIZING FUTURE CURB, GUTTER AND SIDEWALK 100-YR DEPTH OF FLOW)

INPUT INFORMATION						FINISHED FLOORS				
Lot Number	Hydraulic Section Utilized	Centerline Elevation (ft)	T/C[1] (ft)	F/L[2] (ft)	D_{100} (ft)	Flowline $F.F._{min}$[3] (ft)	Centerline (or T.C.) $F.F._{min}$[4] (ft)	$F.F._{Design}$ (ft)	Flowline Check	Centerline Check
1	HICKD	2409.31	2410.80	2408.68	0.40	2409.48	2410.81	2412.1	OK	OK
2	HICKD	2407.44	2407.81	2406.81	0.40	2407.61	2408.94	2410.1	OK	OK
3	HICKD	2405.59	2406.10	2404.96	0.40	2405.76	2407.09	2408.4	OK	OK
4	HICKD	2403.85	2404.25	2403.22	0.40	2404.02	2405.35	2406.5	OK	OK
5	HICKD	2402.25	2402.61	2401.62	0.40	2402.42	2403.75	2404.9	OK	OK
6	HICKD	2400.69	2400.96	2400.06	0.40	2400.86	2402.19	2403.2	OK	OK

Where:

1: TC at High Side of Lot

2: For 60' ROW: FL = CL - 0.63' ; For 80' ROW: FL = CL -0.83'

3: Minimum Allowable Finished Floor Elevation above flowline elevation @ high side of lot = (2 x D_{100}) + F/L

4: Minimum Allowable Finished Floor Elevation above centerline (or T.C. whichever is higher) elevation = Centerline elevation (or Center T.C.) + 1.5'
Street centerline elevation measured at the center of the lot.

5: These lots have an adjacent solid grouted wall that protects the FF.

Clark County Finished Floor Criteria:

-The finished floor shall be set a vertical distance above the gutter flowline of at least twice the depth of flow in the gutter flowline up to a maximum of 18 inches above the WSEL in the street.

-The finished floor shall be set a vertical distance of at least 18-inches above the street centerline elevation. This shall be measured from the center of the lot.

APPENDIX F

Entitlement Information

Department of Comprehensive Planning

500 S Grand Central Pky • Box 551741 • Las Vegas NV 89155-1741
(702) 455-4314 • Fax (702) 455-3271

Nancy A. Amundsen, Director

NOTICE OF FINAL ACTION

July 27, 2017

SLATER HANIFAN GROUP
5740 S. ARVILLE STREET #216
LAS VEGAS, NV 89118

REFERENCE: TM-0095-17

On the date indicated above, a Notice of Final Action was filed with the Clark County Clerk, Commission Division, pursuant to NRS 278.0235 and NRS 278.3195, which starts the commencement of the twenty-five (25) day limitation period specified therein.

The above referenced application was presented before the Clark County Board of County Commissioners at their regular meeting of **July 19, 2017** and was **APPROVED** subject to the conditions listed below. You will be required to comply with all conditions prior to the issuance of a building permit or a business license, whichever occurs first.

Time limits to commence, complete or review this approval, apply only to this specific application. A property may have several approved applications on it with each having its own expiration date. **It is the applicant's responsibility to keep the application current.**

CONDITIONS:

Current Planning

- **Applicant is advised that a substantial change in circumstances or regulations may warrant denial or added conditions to an extension of time; the extension of time may be denied if the project has not commenced or there has been no substantial work towards completion within the time specified; and that a final map for all, or a portion, of the property included under this application must be recorded within 4 years or it will expire.**

Public Works – Development Review

- **Drainage study and compliance;**
- **Traffic study and compliance;**
- **Right-of-way dedication to include a portion of the cul-de-sac for Florine Avenue;**
- **Applicant to improve frontage on Florine Avenue or apply to have Florine Avenue vacated from the cul-de-sac to Durango Drive;**
- **Full off-site improvements adjacent to the R-D zoned portion of the site.**

Current Planning Division – Addressing

- **Provide approved street names list;**
- **Street name suffixes shall be spelled out.**

Clark County Water Reclamation District (CCWRD)

- **Applicant is advised that CCWRD does not provide sanitary sewer service in this portion of the unincorporated county; and to please contact the City of Las Vegas or the Southern Nevada Health District with regards to sewage disposal.**

BOARD OF COUNTY COMMISSIONERS
STEVE SISOLAK, Chairman • CHRIS GIUNCHIGLIANI, Vice Chair
SUSAN BRAGER • LARRY BROWN • JAMES B. GIBSON • MARILYN KIRKPATRICK • LAWRENCE WEEKLY
YOLANDA T. KING, County Manager

Department of Comprehensive Planning

500 S Grand Central Pky • Box 551741 • Las Vegas NV 89155-1741
(702) 455-4314 • Fax (702) 455-3271

Nancy A. Amundsen, Director

NOTICE OF FINAL ACTION

July 27, 2017

SLATER HANIFAN GROUP
5740 S. ARVILLE STREET #216
LAS VEGAS, NV 89118

REFERENCE: ZC-0484-17

On the date indicated above, a Notice of Final Action was filed with the Clark County Clerk, Commission Division, pursuant to NRS 278.0235 and NRS 278.3195, which starts the commencement of the twenty-five (25) day limitation period specified therein.

The above referenced application was presented before the Clark County Board of County Commissioners at their regular meeting of **July 19, 2017** and was **APPROVED** subject to the conditions listed below. You will be required to comply with all conditions prior to the issuance of a building permit or a business license, whichever occurs first.

Time limits to commence, complete or review this approval, apply only to this specific application. A property may have several approved applications on it with each having its own expiration date. **It is the applicant's responsibility to keep the application current.**

CONDITIONS:

Current Planning

- **No resolution of intent and staff to prepare an ordinance to adopt the zoning;**
- **Lots 17, 18, and 19 shall be limited to 1 story homes.**

Public Works – Development Review

- **Drainage study and compliance;**
- **Traffic study and compliance;**
- **Right-of-way dedication to include a portion of the cul-de-sac for Florine Avenue;**
- **Applicant to improve frontage on Florine Avenue or apply to have Florine Avenue vacated from the cul-de-sac to Durango Drive;**
- **Full off-site improvements adjacent to the R-D zoned portion of the site;**
- **Drainage study must demonstrate that the proposed grade elevation differences outside that allowed by Title 30.32.040(a)(9) are needed to mitigate drainage through the site.**
- **Applicant is advised that approval of this application will not prevent Public Works from requiring an alternate design to meet Clark County Code, Title 30, or previous land use approvals.**

Clark County Water Reclamation District (CCWRD)

- **Applicant is advised that CCWRD does not provide sanitary sewer service in this portion of the unincorporated county; and to please contact the City of Las Vegas with regards to sanitary sewer service.**

BOARD OF COUNTY COMMISSIONERS
STEVE SISOLAK, Chairman • CHRIS GIUNCHIGLIANI, Vice Chair
SUSAN BRAGER • LARRY BROWN • JAMES B. GIBSON • MARILYN KIRKPATRICK • LAWRENCE WEEKLY
YOLANDA T. KING, County Manager

Department of Comprehensive Planning

500 S Grand Central Pky • Box 551741 • Las Vegas NV 89155-1741
(702) 455-4314 • Fax (702) 455-3271

Nancy A. Amundsen, Director

NOTICE OF FINAL ACTION

July 27, 2017

SLATER HANIFAN GROUP
5740 S. ARVILLE STREET #216
LAS VEGAS, NV 89118

REFERENCE: VS-0485-17

On the date indicated above, a Notice of Final Action was filed with the Clark County Clerk, Commission Division, pursuant to NRS 278.0235 and NRS 278.3195, which starts the commencement of the twenty-five (25) day limitation period specified therein.

The above referenced application was presented before the Clark County Board of County Commissioners at their regular meeting of **July 19, 2017** and was **APPROVED** subject to the conditions listed below. You will be required to comply with all conditions prior to the issuance of a building permit or a business license, whichever occurs first.

Time limits to commence, complete or review this approval, apply only to this specific application. A property may have several approved applications on it with each having its own expiration date. **It is the applicant's responsibility to keep the application current.**

CONDITIONS:

Current Planning

- **Satisfy utility companies' requirements.**
- **Applicant is advised that a substantial change in circumstances or regulations may warrant denial or added conditions to an extension of time; the extension of time may be denied if the project has not commenced or there has been no substantial work towards completion within the time specified; and that the recording of the order of vacation in the Office of the County Recorder must be completed within 2 years of the approval date or the application will expire.**

Public Works – Development Review

- **Drainage study and compliance;**
- **Right-of-way dedication to include a portion of the cul-de-sac for Florine Avenue;**
- **Vacation to be recordable prior to building permit issuance or applicable map submittal;**
- **Revise legal description, if necessary, prior to recording.**

BOARD OF COUNTY COMMISSIONERS
STEVE SISOLAK, Chairman • CHRIS GIUNCHIGLIANI, Vice Chair
SUSAN BRAGER • LARRY BROWN • JAMES B. GIBSON • MARILYN KIRKPATRICK • LAWRENCE WEEKLY
YOLANDA T. KING, County Manager

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

August 3, 2017

RE: Application Number VS-0485-17

Dear: Slater Hanifan Group

The above Vacation and Abandonment application has been approved at either the Planning Commission or Board of County Commission meeting, however, the application will not be approved to record until all the conditions stated in the enclosed Notice of Final Action letter have been satisfied. In addition to satisfying the conditions, all utility agencies must respond. It is your responsibility to make sure Clark County has the necessary responses in order to record the Order of Vacation. The agencies marked with an "X" have already responded to our request for a recommendation on this application. The remaining agencies have not responded, as of the above date, to our recommendations. You will need to contact them to obtain their responses.

The utility companies must provide a response within 90 days of approval of the vacation application. All utility responses will be included as part of the vacation and abandonment recording.

Clark County is only vacating their interest and any utility easement that is no longer needed will need to be relinquished with each individual utility company (contact information below).

If you have any questions contact at Clark County Public Works, Survey Division, Map Team 702-455-2100 or e-mail *rightofway@clarkcountynv.gov*

Please contact the agencies not marked below and request that they advise the Survey Division, Map Team in writing, any requirements they may have.

X	Clark County Water Reclamation District	Joe Damiani (jdamiani@cleanwaterteam.com)	702-668-8160
X	Las Vegas Valley Water District	Melody Yurasek (melody.yurasek@snwa.com)	702-862-3447
X	Nevada Power Company dba NV Energy	Sharon McShea (smcshea@nvenergy.com)	702-402-2360
___	Central Telephone Co dba CenturyLink	David Moreno (david.moreno@centurylink.com)	702-334-7757
X	Southwest Gas Company	SWGEngPlanSubmittal@swgas.com	702-365-2099
X	Southern Nevada Water Authority	Patrick Denison (patrick.denison@snwa.com)	702-862-3474
X	Regional Transportation Commission	Eric Traasdahl (transitamenities@rtcsnv.com)	702-676-1633

BOARD OF COUNTY COMMISSIONERS
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YOLANDA T. KING, County Manager

APPENDIX G

Reference Material

Reference Material

Technical Drainage Study and Update to the for Helena Estates

Department of Development Services
Civil Engineering Division

500 S Grand Central Pky 1st Fl • PO Box 551842 • Las Vegas NV 89155-1842
(702) 455-4600 • Fax (702) 388-2550

Phil Rosenquist, Director • Carla J. Pearson, Assistant Director

December 20, 2002

Wright Engineers, Inc.
Attn: Stephen F. Crevoiserat, P.E.
7310 Smoke Ranch Road, Suite P
Las Vegas, NV 89128

Re: Clark County Department of Development Services Plan Review Contract
Technical Drainage Study for Helena Estates
Study Dated: 8/28/02
Addendum #1 Dated: 10/14/02
Addendum #2 Dated: 11/18/02
Supplement to Addendum #2 Dated: 11/25/02
Supplement #2 Dated: 12/18/02
Location: Durango Drive and Hickam Avenue
(S05 T20S R60E)
HTE # 02-29983

The referenced Technical Drainage Study 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:

1. The site shall be graded with respect to drainage as shown on Sheets GP and D1 – Helena Estates Residential Subdivision Lots 024, 036, 037, signed and sealed by Stephen F. Crevoiserat, P.E., on December 18, 2002.

2. The following drainage facilities shall be constructed:

   a. A graded ditch per Detail 6 on sheet D1 on south property boundary line along Hickam Avenue.

   b. A 5-foot drainage easement with 3-foot valley gutter from the cul-de-sac located on the south side of the project site connected to Hickam Avenue.

   c. A 5-foot drainage easement with 3-foot valley gutter from the cul-de-sac located on the north side of the project site connected to Helena Avenue.

BOARD OF COUNTY COMMISSIONERS
DARIO HERRERA, Chairman • MYRNA WILLIAMS, Vice-Chair
YVONNE ATKINSON GATES • ERIN KENNY • MARY KINCAID-CHAUNCEY • CHIP MAXFIELD • BRUCE L. WOODBURY
THOM REILLY, County Manager

3. A bond estimate must be submitted to Clark County Civil Engineering Division for the above-mentioned stormwater management facilities, except item 2b.

4. Section 2 of the Clark County Building Office Operations Division Drainage Compliance Report must be completed by the engineer for the facilities listed in Item 2 above.

5. The minimum finished floor elevations for the proposed structures shall be constructed as shown on the above-mentioned grading plan.

6. The subject site is located within Zone X, as shown on FIRM Community Panel Number 32003C 2135E, revised September 27, 2002. Zone X is determined to be outside the 500-year flood plain

7. Clark County Regional Flood Control District (CCRFCD) concurrence is required since the project site is bordered by the Regional Facility (GONO 0117). As a condition of final approval, the applicant must submit a copy of the drainage study and any addenda to the CCRFCD. Permits will not be issued until concurrence is obtained from the CCRFCD.

8. As a condition of approval, the private drainage easement on Lot 2 cannot be vacated until the above-mentioned Regional Facility is significantly completed.

9. A Legal description of the drainage easements must be provided to Clark County Civil Engineering Division for review.

10. Mylars of the grading plan must be submitted to Clark County Plan Check department for approval signatures prier to permit issuance.

11. Right-of-way dedication must be verified.

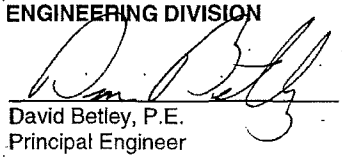
12. The project proposes a retaining/screen wall combination in excess of nine feet tall. As a condition of approval, a variance allowing the wall to exceed the current County criteria must be approved by the Planning Commission prior to submittal of the offsite plan set for the second review by Civil Engineering Division Plan Check. If the variance is not approved, an update or amendment to the drainage study will be required to address the removal of the wall(s) in question.

13. At the request of Clark County Development Services Department, drainage/grading plans for the proposed development have been reviewed for compliance to the requirements set forth in the "Minimum Drainage Study Criteria Checklist," "Drainage Plan Information," dated July 15, 1997. As a condition of final approval, the drainage/grading plans submitted for this project require the following modifications to meet the minimum standards outlined in the above referenced regulation:

    a. Shade text on lots 2 and 3 and label as "Future Phase II"

No liability is assumed by County for information, data, and conclusions of consulting engineer.

DEPARTMENT OF DEVELOPMENT SERVICES
CIVIL ENGINEERING DIVISION

By 
David Betley, P.E.
Principal Engineer

VPH/SC

Cc: RDP Construction
Development File

C L A R K C O U N T Y
REGIONAL FLOOD CONTROL DISTRICT

RECEIVED
MAY 2 9 2003
DEVELOPMENT SERVICES
CIVIL ENGINEERING

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

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City of Mesquite

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City of Henderson

Michael Mack
City of Las Vegas

Bryan A. Nix
City of Boulder City

Bruce L. Woodbury
Clark County

May 19, 2003

Mr. Dave Betley, P.E.
Department of Development Services
500 S. Grand Central Parkway
Las Vegas, NV 89155

DISTRICT CONCURRENCE: HELENA ESTATES (HTE #02-29983)
(RFCD NO. 03-5220)

Dear Mr. Betley:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated August 19, 2002, Addendum No. 1 dated October 10, 2002, Addendum No. 2 dated November 18, 2002, Supplement No. 1 dated November 22, 2002 and Supplement No. 2 dated December 18, 2002, for the above-mentioned project as submitted by Wright Engineers, Inc. In addition, District is in receipt of the Conditional Letter of Acceptance from Clark County Public Works dated December 20, 2002.

District concurs with acceptance of this Technical Drainage Study by Clark County Public Works.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage.*

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by Wright Engineers, Inc. may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

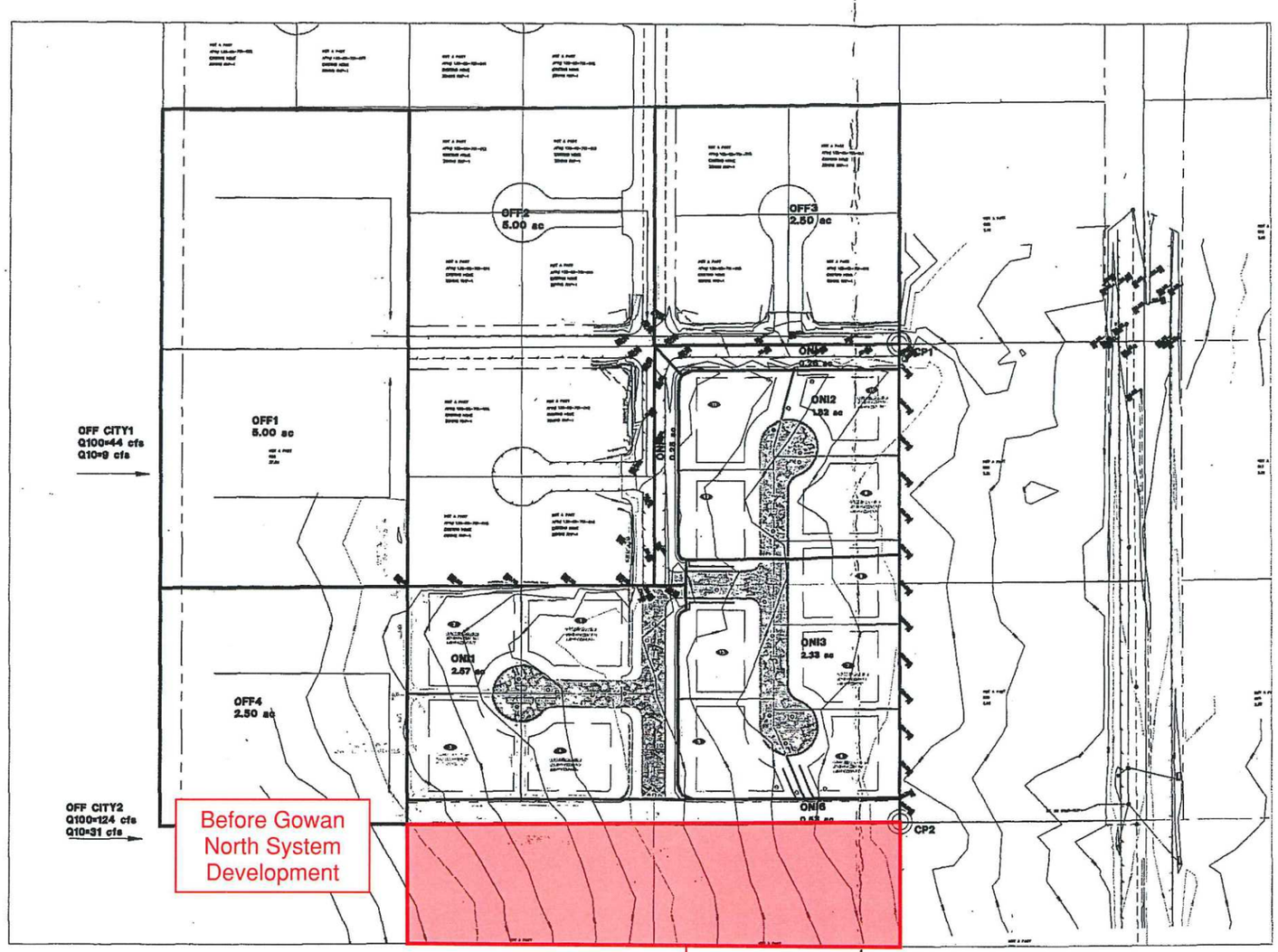
BY: _____
Andrew R. Trelease, P.E.
Senior Civil Engineer

ART:css

c: Stephen F. Crevoiserat, P.E., Wright Engineers, Inc.

File: 20-60-5.WRI

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 455-3139 • FAX: (702) 455-3870
Website: http://www.ccrfcd.org



GRAPHIC SCALE

170 0 85 170

(IN FEET)

1 inch = 170 ft.

DRAINAGE LEGEND

———	BASIN BOUNDARY
———→	FLOW PATH
ONX-1	ONSITE BASIN NAME
Q100	EXISTING 100-YR FLOW
Q10	EXISTING 10-YR FLOW
(1)	LOCATION OF HYDRAULIC SECTION

BASIN FLOW RATES

BASIN/ COMBINATION POINT	AREA (ACRES)	100-YEAR FLOW (CFS)	10-YEAR FLOW (CFS)	V100 (FT/S)	VxD100 (FT^2/S)
ON1	2.57	2	0	1.33	0.29
ON2	1.82	1	0	1.19	0.23
ON3	2.33	2	0	1.33	0.29
ON4	0.26	1	1	1.41	0.30
ON5	0.25	2	1	2.29	0.50
ON6	0.33	2	1	2.29	0.50
OFF CITY1	---	44	9	---	---
OFF CITY2	---	124	31	---	---
OFF1	5.00	6	2	2.17	0.93
OFF2	5.00	4	1	2.12	0.51
OFF3	2.50	2	0	1.77	0.35
OFF4	2.50	3	1	1.83	0.60
CP1	---	58	12	3.32	2.80
CP2	---	130	33	4.19	4.36

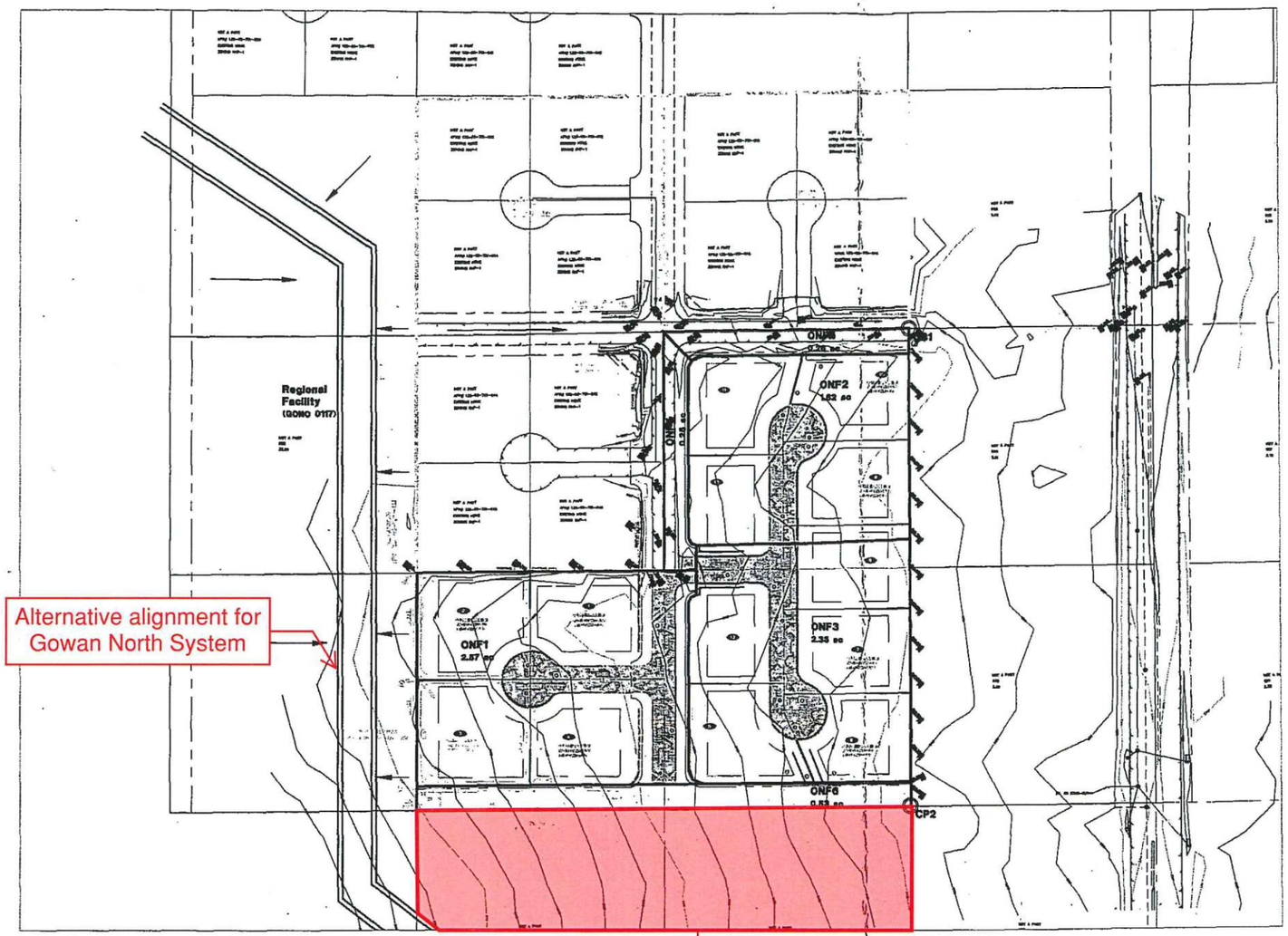
NOTE:

* OFFSITE FLOWS REFERENCED FROM THE CITY OF LAS VEGAS FLOOD CONTROL FACILITIES INVENTORY AND CITY WIDE HYDROLOGY ANALYSIS. DECEMBER 1997.

FIGURE 6

INTERIM OFFSITE/ONSITE DRAINAGE BASIN MAP

WRIGHT ENGINEERS, INC
7310 SMOKE RANCH ROAD, SUITE P
LAS VEGAS, NEVADA 89128
TEL (702) 233-6400 FAX (702) 233-1164



GRAPHIC SCALE

170 0 85 170

(IN FEET)

1 inch = 170 ft.

DRAINAGE LEGEND

———	BASIN BOUNDARY
———→	FLOW PATH
ONX–1	ONSITE BASIN NAME
Q100	EXISTING 100–YR FLOW
Q10	EXISTING 10–YR FLOW
①	LOCATION OF HYDRAULIC SECTION

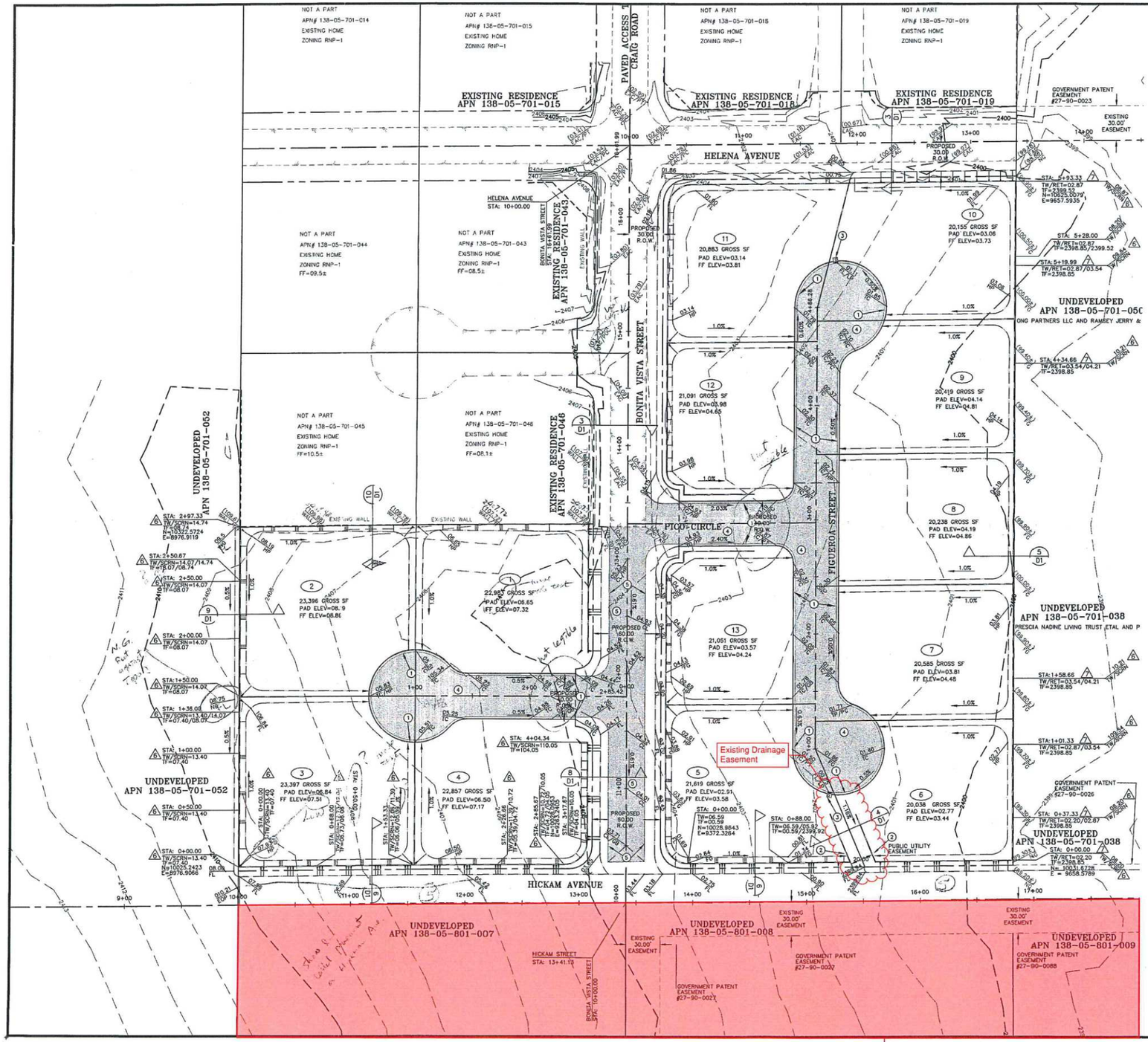
BASIN FLOW RATES

BASIN/ COMBINATION POINT	AREA (ACRES)	100–YEAR FLOW (CFS)	10–YEAR FLOW (CFS)	V100 (FT/S)	VxD100 (FT^2/S)
ONF1	2.57	2	0	1.33	0.29
ONF2	1.82	1	0	1.19	0.23
ONF3	2.33	2	0	1.33	0.29
ONF4	0.26	1	1	1.41	0.30
ONF5	0.25	2	1	2.29	0.50
ONF6	0.33	2	1	2.29	0.50
OFF2	5.00	4	1	2.12	0.51
OFF3	2.50	2	0	1.77	0.35
CP1	---	8	2	1.98	0.93
CP2	---	3	1	1.49	0.49

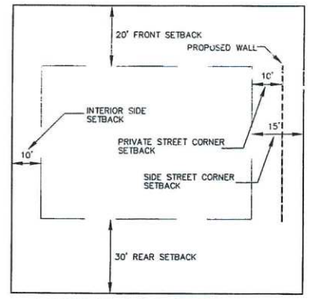
FIGURE 7

FUTURE OFFSITE/ONSITE DRAINAGE BASIN MAP

WRIGHT ENGINEERS, INC
7310 SMOKE RANCH ROAD, SUITE P
LAS VEGAS, NEVADA 89128
TEL (702) 233–6400 FAX (702) 233–1164



VICINITY MAP



TYPICAL LOT SETBACK

CONSTRUCTION NOTES:

1. CONSTRUCT 30" ROLL CURB PER C.C.A.U.S.D. #217A
2. PROVIDE A 8" X 16" OPENING IN BLOCK WALL AT GRADE
3. CONSTRUCT 4' TYPE "A" DROP INLET PER C.C.A.U.S.D. #411. TO BE PRIVATELY MAINTAINED ON-SITE.
4. CONSTRUCT STREET SECTION PER SECTION DETAIL # 1 ON SHEET D1.
5. CONSTRUCT STREET SECTION PER SECTION DETAIL # 2 ON SHEET D1.
6. CONSTRUCT 6' SPLIT FACE SCREEN WALL
7. CONSTRUCT CMU RETAINING WALL PER CLARK COUNTY STANDARD WALL B-101-2 W/ "W3" FOOTING; MAX RETAINING 5'-4".

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
1 inch = 40 ft.

N

SCALE: 1"=40'

BENCHMARK

CLARK COUNTY BENCHMARK 1C004W6 RIVET AND SQUARE ALUMINUM PLATE IN AN ELECTRICAL TRANSFORMER PAD 175 FEET WEST OF AL CARRISON STREET ON THE SOUTH SIDE OF CRAIG ROAD. WELL MONUMENT DURANGO DRIVE AND CRAIG ROAD.

ELEVATION = 726.815 METERS
(2384.56 U.S. SURVEY FEET) NAVD88 DATUM

METERS X $\left(\frac{3937}{1200}\right)$ = U.S. SURVEY FEET

1. THE ELEVATIONS SHOWN HEREON ARE BASED ON FEET.

BASIS OF BEARINGS

SOUTH 00°08'35" EAST BEING THE EAST LINE OF THE NORTHEAST QUARTERA (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA AS SHOWN IN MAP IN FILE 69, PAGE 22 OF PARCEL MAPS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

LEGAL DESCRIPTION

THE WEST HALF (W 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST (SE 1/4) OF SECTION 05, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY NEVADA. APN'S 138-05-701-24,-037.

THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST (SE 1/4) OF SECTION 05, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY NEVADA. APN 138-05-701-036.

Avoid cutting underground utility lines. It's costly. Call before you Dig 1-800-227-2600

SAFETY ALERT Call Before You Overhead 1-702-593-8111

* SEE "TRAFFIC AND ELECTRICAL NOTES" SHEET C-1, ITEM 10. CLARK COUNTY IS NOT A MEMBER OF CALL BEFORE YOU DIG.

RECEIVED
PARSONS BRINCKERHOFF

NO.	DATE	BY	REVISION

RDP CONSTRUCTION
3565 E. POST ROAD SUITE #P
Las Vegas Nevada, 89121
TEL (702) 838-0960 FAX (702) 838-6561

WRIGHT CIVIL ENGINEERS, INC
7310 SMOKE RANCH ROAD, SUITE P
LAS VEGAS, NEVADA 89128
TEL (702) 233-6400 FAX (702) 233-1164
CIVIL STRUCTURAL LAND SURVEYING

WRIGHT ENGINEERS

SHEET: PAVING & GRADING SHEET G1

TITLE: HELENA ESTATES RESIDENTIAL SUBDIVISION LOTS 024, 036, 037

DRAWN BY: JEP
DESIGNED BY: JEP
CHECKED BY: JEP
05/08/02
05/08/02
08/08/02
SCALE: 1" = 80'
PROJECT NO. CN2216101

Exp. 06-30-03
STEPHEN H. REVERSKI
No. 13689
REGISTERED PROFESSIONAL ENGINEER
CIVIL
STATE OF NEVADA
10-17-02

SHEET GP
4 OF 8 SHEETS
DRAWING NO.

TDS

05-3442up
1-27-05

WRIGHT ENGINEERS

Update to 02-24983
P/B App 5-20-03
TI/Layne
1st update
04-6719
3-16-04

UPDATE #1 TO THE TECHNICAL DRAINAGE STUDY FOR HELENA ESTATES: LOTS 2 AND 13

CLARK COUNTY
January 26, 2005

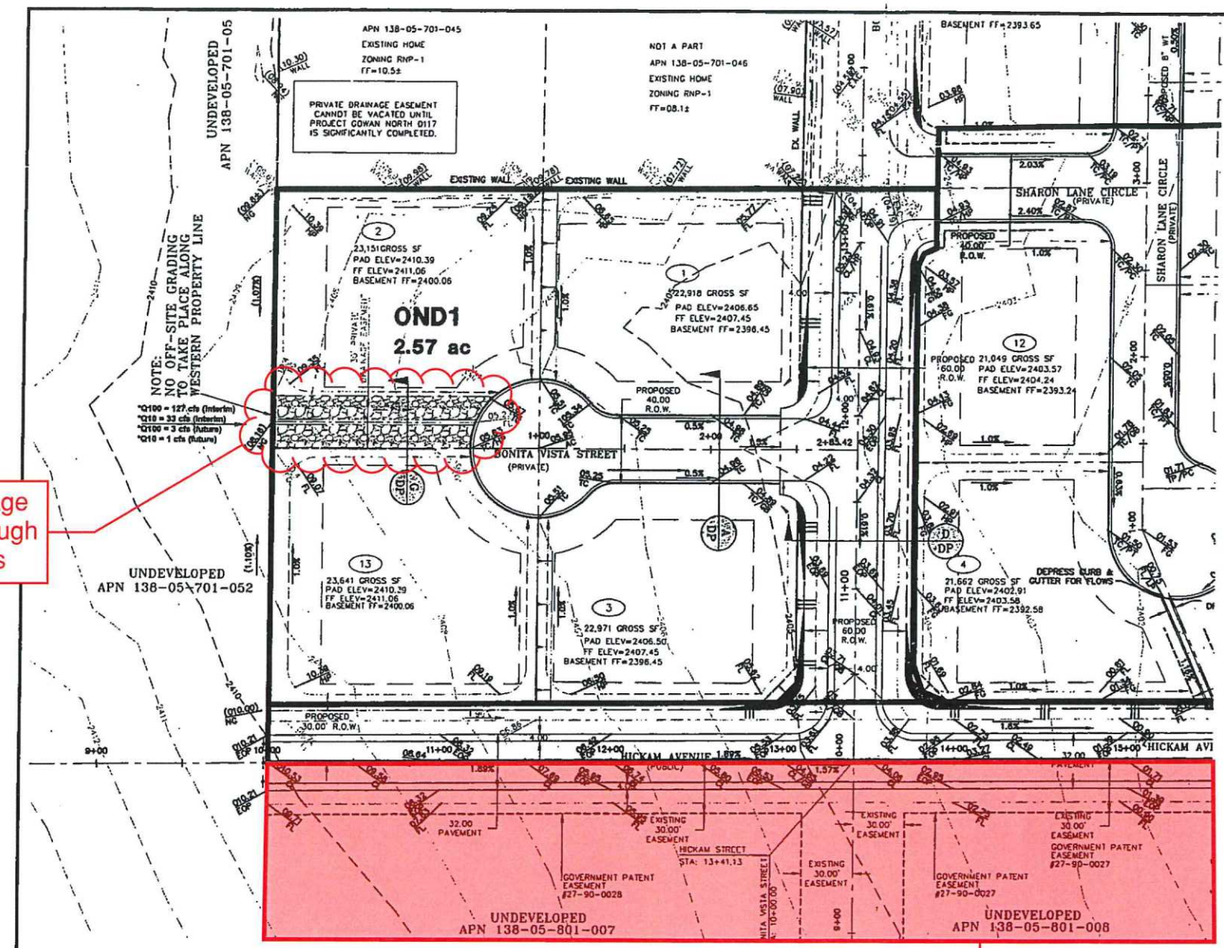
WRIGHT
ENGINEERS

PREPARED FOR:

RDP CONSTRUCTION
3565 EAST POST ROAD, SUITE 107
LAS VEGAS, NEVADA 89120

7425 Peak Drive • Las Vegas, NV 89128 • Ph. (702) 933-7000 • Fax (702) 933-7001

Existing drainage easement through Helena Estates



Project Site

BASIN / SECTION DATA

BASIN / SECTION	100-YEAR FLOW (cfs)	10-YEAR FLOW (cfs)	100-YEAR VELOCITY (fps)	100-YEAR DEPTH (ft)	100-YEAR VD PRODUCT (ft²/s)
OND1	3	0	1.33	0.22	0.29
G (interim)	129	33	6.80	0.86	5.83
G (future)	5	1	2.27	0.20	0.45
*A (interim)	129	33	4.53	0.81	3.67
A (future)	5	1	1.66	0.29	0.48

* HYDRAULIC SECTION A (INTERIM) HAS BEEN REFERENCED FROM THE TECHNICAL DRAINAGE STUDY FOR HELENA ESTATES (WTE2 02-29962) PERFORMED BY WRIGHT ENGINEERS, DECEMBER 20, 2002. ALL FLOWS REMAIN THE SAME DOWNSTREAM FROM HYDRAULIC SECTION A.

LEGEND

PROPERTY LINE
RIGHT-OF-WAY
STREET CENTER LINE
EXISTING BUILDING
SWALE LINE
PROPOSED BUILDING
EXISTING CURB & GUTTER
PROPOSED CURB & GUTTER
EXISTING EDGE OF A.C. PAVEMENT
SECTION / DETAIL SYMBOL
EXISTING 1' CONTOUR
EXISTING 5' CONTOUR
SLOPE & DIRECTION OF SLOPE
PROPOSED ELEVATION
EXISTING ELEVATION
OND1 WATERSHED BASIN LABELS
WATERSHED BASIN BOUNDARIES
Q100
Q10

BENCHMARK

CLARK COUNTY BENCHMARK HCOOHWS RIVET AND SQUARE ALUMINUM PLATE IN AN ELECTRICAL TRANSFORMER PAD 175 FEET WEST OF AL CAMPAGN STREET ON THE SOUTH SIDE OF CRAIG ROAD. WELL MONUMENT DURANGO DRIVE AND CRAIG ROAD.

ELEVATION = 720.815 METERS (2364.56 U.S. SURVEY FEET) NAVD88 DATUM

METERS X $\left(\frac{3937}{1200}\right)$ = U.S. SURVEY FEET

1. THE ELEVATIONS SHOWN HEREON ARE BASED ON FEET.

BASIS OF BEARINGS

SOUTH 00°06'25" EAST BEING THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA AS SHOWN IN MAP IN FILE 69, PAGE 72 OF PARCEL MAPS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

LEGAL DESCRIPTION

THE WEST HALF (W 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 05, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY NEVADA. APN'S 138-05-701-24,-037.

THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST (SE 1/4) OF SECTION 05, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY NEVADA. APN 138-05-701-031.

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

WRIGHT ENGINEERS, INC
1725 PEAK DRIVE
LAS VEGAS, NEVADA 89128
TEL (702) 933-7000
FAX (702) 933-7001
STRUCTURAL CIVIL MEP SURVEYING

REVISION | BY | DATE

ROP CONSTRUCTION
HELENA ESTATES
DRAINAGE PLAN

DRAWN BY: MSB | DATE: 01-11-04
DESIGNED BY: MSB | DATE: 01-11-04
CHECKED BY: ASK | DATE: 01-11-04
SCALE: 1"=30'
PROJECT NO: 2002261.001

STEPHANIE MYERS REVERE — No. 13689 — PROFESSIONAL ENGINEER — STATE OF NEVADA
FEB 2 4 2004

SHEET DP
1 OF 1 SHEETS
DRAWING NO.

Reference Material

Technical Drainage Study for Hickam/Bonita Vista

Department of Development Services
Civil Engineering Division

500 S Grand Central Pky 1st Fl • PO Box 551799 • Las Vegas NV 89155-1799
(702) 455-4600 • Fax (702) 388-2550

Phil Rosenquist, Director • Carla J. Pearson, Assistant Director

July 14, 2004

Wright Engineers, Inc.
7425 Peak Drive
Las Vegas, NV 89128

Re: **Technical Drainage Study** for Hickam/Bonita Vista MSM 141-04
Study Dated: May 24, 2004
Addendum #1 Dated: June 23, 2004
Location: Bonita Vista Street and Hickam Avenue
(Sec. 5, T. 20S., R. 60E.)
HTE # 04-27848

The referenced **Technical Drainage Study** 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.

1. The site shall be graded with respect to drainage as shown on "Hickam/Bonita Vista, (MSM 141-04)" grading plan sheets G1 and D1, signed and sealed by Jeremy S. McCay, P.E., on June 23, 2004.

2. The minimum finished floor elevations for the proposed structures shall be constructed as shown on the above-mentioned grading plan.

3. The subject site is located within Zone X, as shown on FIRM Community Panel Number 32003C 2135E, revised December 31, 2003. Zone X is determined to be outside the 0.2% annual chance flood plain

4. Clark County Regional Flood Control District (CCRFCD) concurrence is required since the project site borders regional facility (GONO 0117). As a condition of final approval, the applicant must submit a copy of the drainage study and any addenda to the CCRFCD. Permits will not be issued until concurrence is obtained from the CCRFCD;

5. Mylars of the grading plan must be submitted to the Clark County Civil Engineering Division Plan Check for approval signatures prior to map recordation.

6. Right-of-way dedication must be verified.

BOARD OF COUNTY COMMISSIONERS
CHIP MAXFIELD, Chairman • MYRNA WILLIAMS, Vice-Chair
YVONNE ATKINSON GATES • MARY KINCAID-CHAUNCEY • LYNETTE BOGGS McDONALD • RORY REID • BRUCE L. WOODBURY
THOM REILLY, County Manager

7. The drainage/grading plans for the proposed development have been reviewed for compliance to the requirements set forth in the "Minimum Drainage Study Criteria Checklist," "Drainage Plan Information," dated July 15, 1997. **As a condition of final approval, the drainage/grading plans submitted for this project require the following modifications to meet the minimum standards outlined in the above-referenced regulation:**

   a. Edit cross sections' sheet reference to sheet D1.

   b. Provide the Gowan Channel descriptions with the WSE.

   c. Revise Detail A/D1 to utilize 6:1 sideslopes per AASHTO.

No liability is assumed by County for information, data, and conclusions of consulting engineer.

DEPARTMENT OF DEVELOPMENT SERVICES

By _____

Todd Myers, P.E.
Senior Engineer
Civil Engineering Division

TM/SC

Cc: Post 2000 & Hickam Estates, LLC
Development File

LTR

C L A R K C O U N T Y
REGIONAL FLOOD CONTROL DISTRICT

04-27848
LTR

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

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Clark County

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City of North Las Vegas

Andy Hafen
City of Henderson

Michael Mack
City of Las Vegas

Mayor Bill Nicholes
City of Mesquite

Roger Tobler
City of Boulder City

Bruce L. Woodbury
Clark County

August 23, 2004

Mr. Dave Betley, P.E.
Department of Development Services
500 S. Grand Central Parkway
Las Vegas, NV 89155

DISTRICT CONCURRENCE: HICKAM/BONITA VISTA MSM 141-04 (HTE #04-27848) (RFCD NO. 04-5884)

Dear Mr. Betley:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated May 21, 2004 and Addendum No. 1 dated June 23, 2004, for the above-mentioned project as submitted by Wright Engineers, Inc. In addition, District is in receipt of the Conditional Letter of Acceptance from Clark County Department of Development Services dated July 14, 2004.

District concurs with acceptance of this Technical Drainage Study by Clark County Department of Development Services.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage.*

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by Wright Engineers, Inc. may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

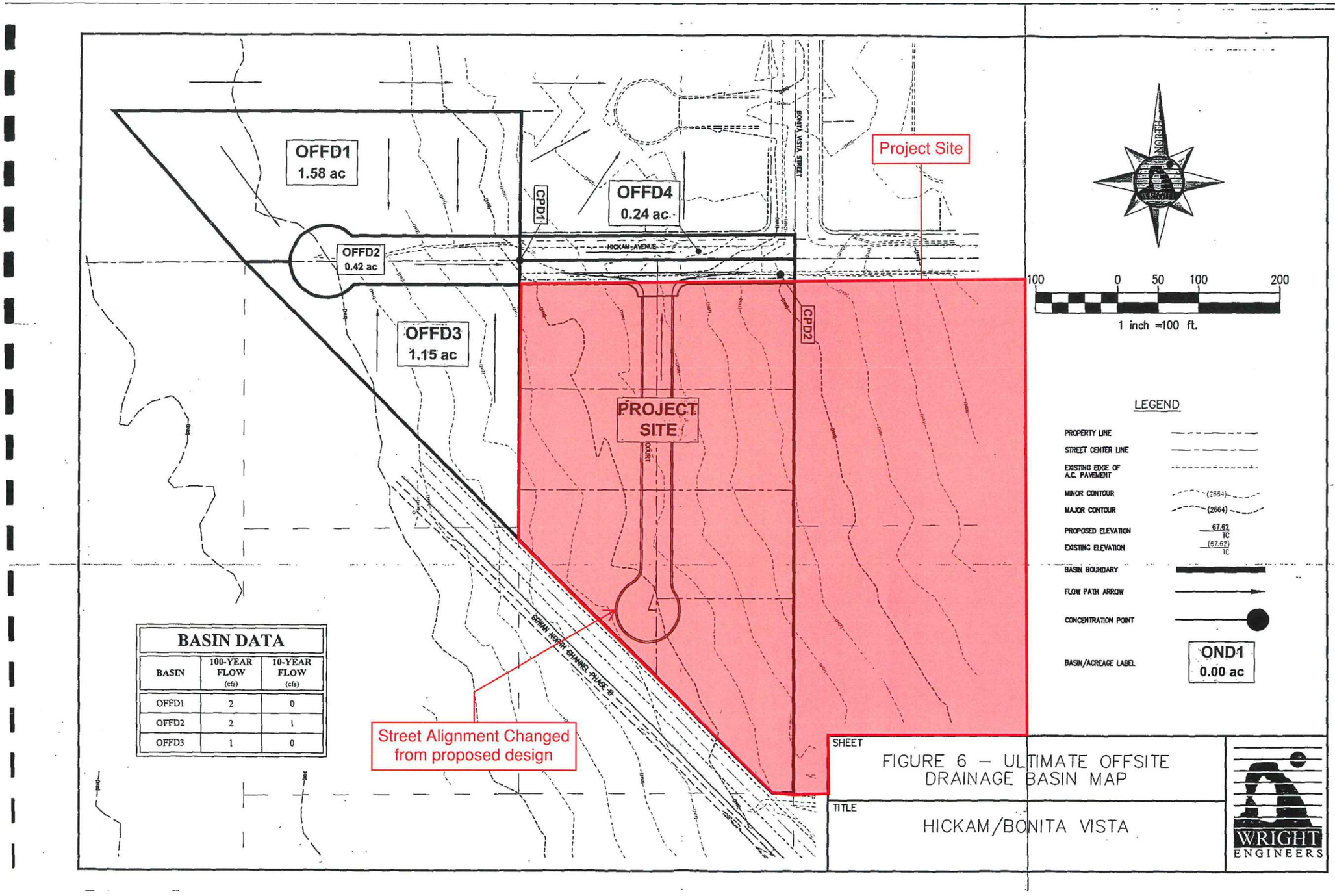
BY: _____
Andrew R. Trelease, P.E.
Senior Civil Engineer

ART:css

c: Jeremy S. McCay, P.E., Wright Engineers, Inc.

File: 20-60-5.WRI

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 455-3139 • FAX: (702) 455-3870
Website: *http://www.ccrfcd.org*



BASIN DATA

BASIN	100-YEAR FLOW (cfs)	10-YEAR FLOW (cfs)
OFFD1	2	0
OFFD2	2	1
OFFD3	1	0

SHEET

FIGURE 6 – ULTIMATE OFFSITE DRAINAGE BASIN MAP

TITLE

HICKAM/BONITA VISTA

WRIGHT ENGINEERS

Reference Material

Technical Drainage Study for Trovia Cove

LTR

Department of Development Services
Civil Engineering Division

500 S Grand Central Pky 1st Fl • PO Box 551799 • Las Vegas NV 89155-1799
(702) 455-4600 • Fax (702) 388-2550

Phil Rosenquist, Director

February 2, 2005

04-56559
LTR

Baughman & Turner
1210 Hinson Street
Las Vegas, Nevada 89102

SUBJECT: **Technical Drainage Study** for Trovia Cove MSM 164-04
Study Dated: November 30, 2004
Addendum #1 Dated: January 18, 2005
Location: Durango Drive and Hickam Avenue
(Sec. 05, T20S, R60E)
HTE # 04-56559

The referenced **Technical Drainage Study** 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.

1. The site shall be graded with respect to drainage as shown on "Trovia Cove MSM 164-04", grading plan sheets GP04 and DT03, signed and sealed by John R. Gustafson, P.E., on January 18, 2005.

2. The following drainage facilities shall be constructed:

   a. An 8-ft wide concrete valley gutter per Standard Drawing #228 located on the west side of Durango Drive crossing Hickam Avenue.
   b. An offsite graded V-ditch along the western property line to provide positive drainage to Hickam Avenue

3. A bond estimate must be submitted to Clark County Civil Engineering Division for the above-mentioned stormwater management facilities, except item 2(b) above;

4. Section 2 of the Clark County Building Office Operations Division Drainage Compliance Report must be completed by the engineer for facilities listed in Item 2 above;

5. The minimum finished floor elevations for the proposed structures shall be constructed as shown on the above-mentioned grading plans;

BOARD OF COUNTY COMMISSIONERS
CHIP MAXFIELD, Chairman • MYRNA WILLIAMS, Vice-Chair
YVONNE ATKINSON GATES • MARY KINCAID-CHAUNCEY • LYNETTE BOGGS McDONALD • RORY REID • BRUCE L. WOODBURY
THOM REILLY, County Manager

6. The subject site is located within Zone X, as shown on FIRM Community Panel Number 32003C 2135E, revised December 31, 2003. Zone X is determined to be outside the 0.2% annual chance flood plain;

7. Mylars of the grading plan must be submitted to the Clark County Civil Engineering Division Plan Check for approval signatures prior to map recordation;

8. Right-of-way dedication must be verified;

9. The drainage/grading plans for the proposed development have been reviewed for compliance to the requirements set forth in the "Minimum Drainage Study Criteria Checklist," "Drainage Plan Information," dated July 15, 1997. **As a condition of final approval, the drainage/grading plans submitted for this project require the following modifications to meet the minimum standards outlined in the above-referenced regulation**:

   a. On Detail B/DT03, show existing paving on Hickam.
   b. On Detail B/DT03, show 1 course of solid grouting above FG elevation for the blockwall.
   c. Add "MSM 164-04" to the grading plan title.
   d. Remove Construction Note 8 and the sidewalk underdrain on Durango.
   e. Extend contours and spot elevations a minimum of 100-ft past the site on Durango and Hickam.
   f. Revise grading on Hickam at Durango to ensure the minimum 0.5% flowline slope is provided.
   g. Revise the onsite cul-de-sac radius to a minimum of 45-ft per criteria.

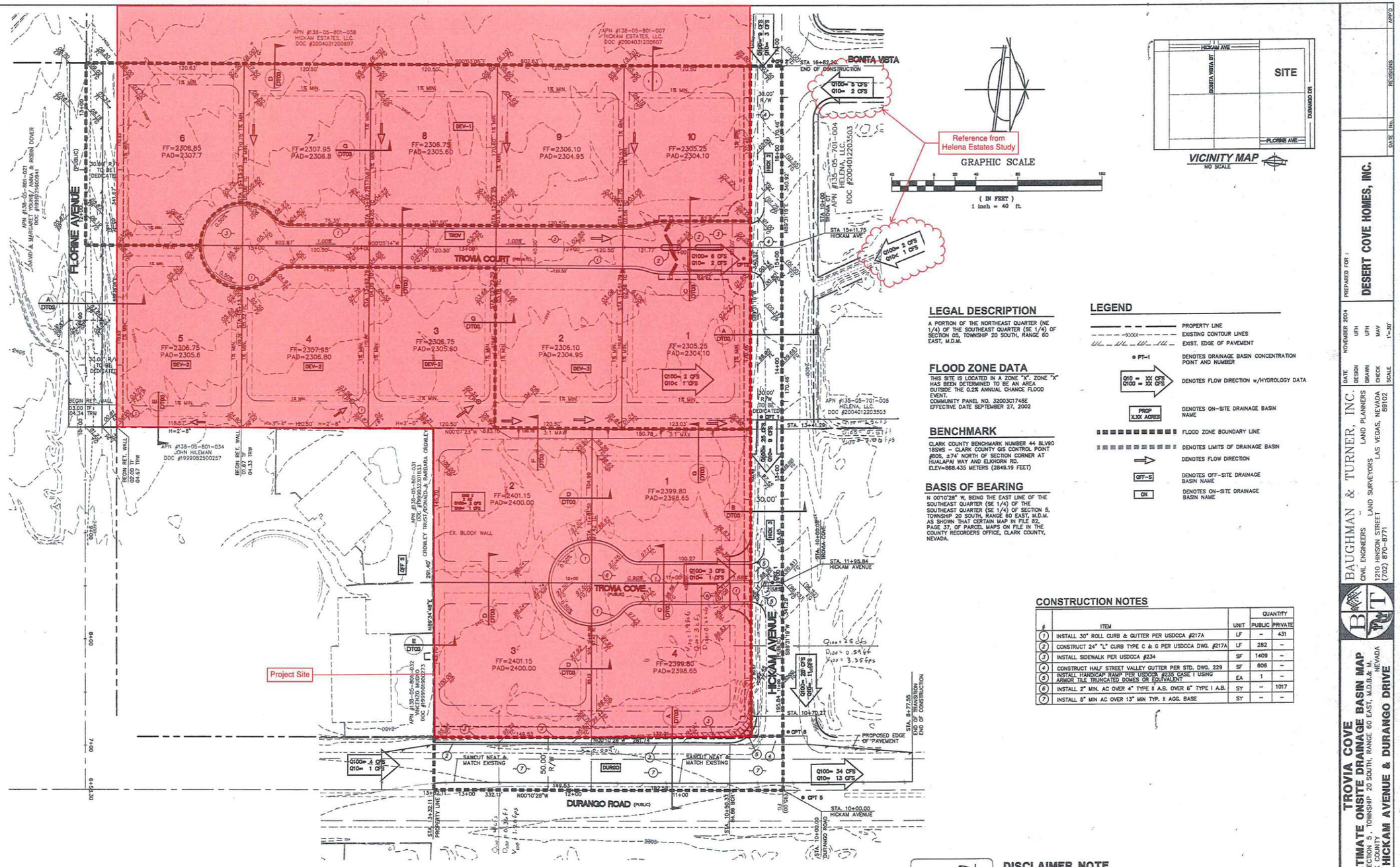
No liability is assumed by the County for information, data, and conclusions of the consulting engineer.

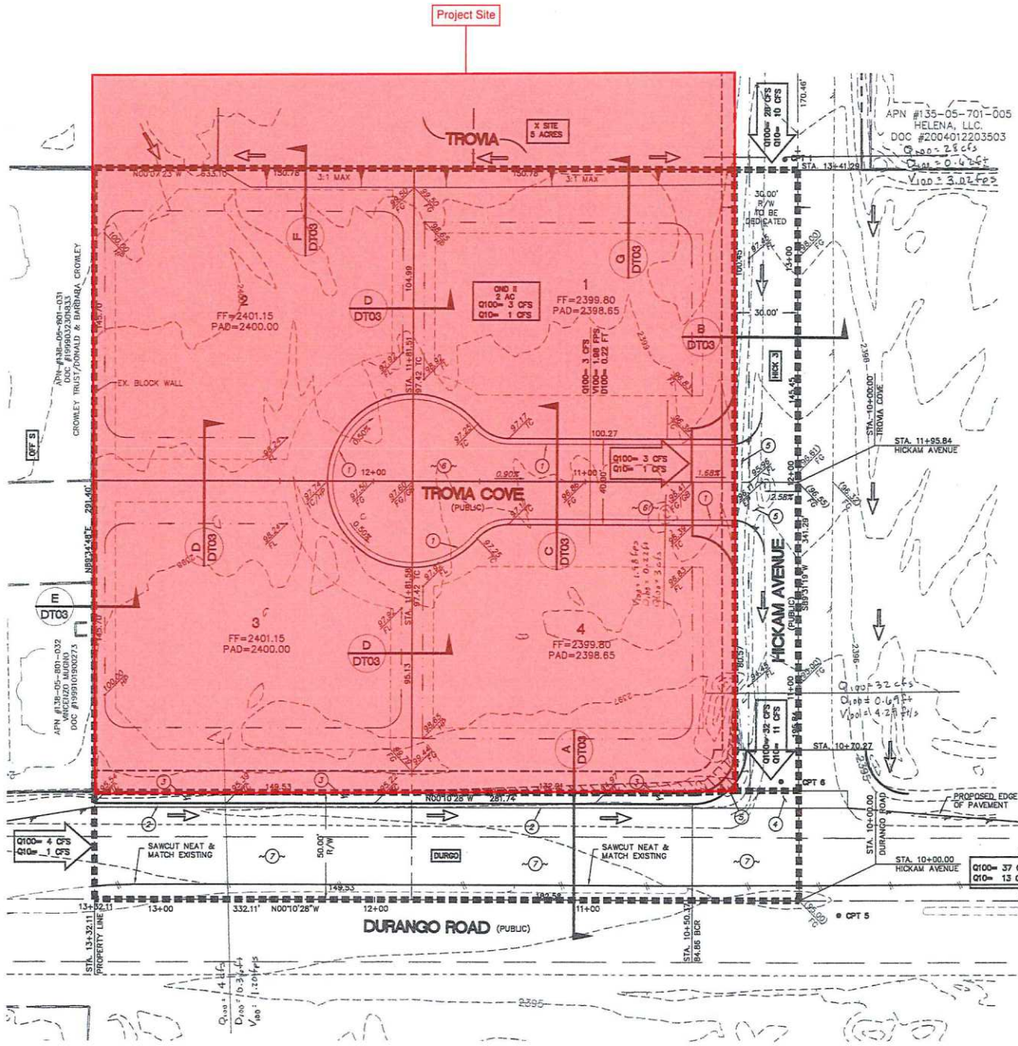
DEPARTMENT OF DEVELOPMENT SERVICES

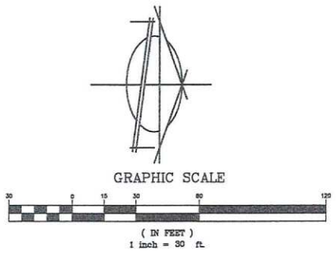
BY: _____
Jeffery J. Jensen, P.E.
Senior Engineer
Civil Engineering Division

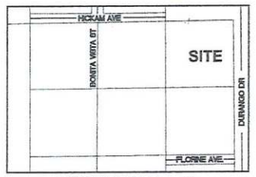
JJ/wg

cc: Baughman & Turner, Inc.
Development File


TROVIA COURT (PRIVATE)
FLORINE AVENUE (PUBLIC)
TROVIA COVE (PUBLIC)
DURANGO ROAD (PUBLIC)
HICKAM AVENUE
BONITA VISTA
Project Site
Reference from Helena Estates Study
GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.
VICINITY MAP
NO SCALE
SITE
HICKAM AVE
BONITA VISTA ST
DURANGO DR
FLORINE AVE
LEGAL DESCRIPTION
A PORTION OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 05, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M.
FLOOD ZONE DATA
THIS SITE IS LOCATED IN A ZONE "X". ZONE "X" HAS BEEN DETERMINED TO BE AN AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD EVENT.
COMMUNITY PANEL NO. 32003C1745E
EFFECTIVE DATE SEPTEMBER 27, 2002
BENCHMARK
CLARK COUNTY BENCHMARK NUMBER 44 BLV90 18SW5 – CLARK COUNTY GIS CONTROL POINT #505, ±74' NORTH OF SECTION CORNER AT HUALAPAI WAY AND ELKHORN RD.
ELEV=868.435 METERS (2849.19 FEET)
BASIS OF BEARING
N 00°10'28" W, BEING THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M. AS SHOWN THAT CERTAIN MAP IN FILE 82, PAGE 37, OF PARCEL MAPS ON FILE IN THE COUNTY RECORDERS OFFICE, CLARK COUNTY, NEVADA.
LEGEND
PROPERTY LINE
EXISTING CONTOUR LINES
EXIST. EDGE OF PAVEMENT
PT-1 DENOTES DRAINAGE BASIN CONCENTRATION POINT AND NUMBER
Q10 = XX CFS Q100 = XX CFS DENOTES FLOW DIRECTION w/HYDROLOGY DATA
PROP XXX ACRES DENOTES ON-SITE DRAINAGE BASIN NAME
FLOOD ZONE BOUNDARY LINE
DENOTES LIMITS OF DRAINAGE BASIN
DENOTES FLOW DIRECTION
OFF-S DENOTES OFF-SITE DRAINAGE BASIN NAME
ON DENOTES ON-SITE DRAINAGE BASIN NAME
CONSTRUCTION NOTES
| ITEM | UNIT | QUANTITY PUBLIC | QUANTITY PRIVATE
1 | INSTALL 30" ROLL CURB & GUTTER PER USDCCA #217A | LF | – | 431
2 | CONSTRUCT 24" "L" CURB TYPE C & G PER USDCCA DWG. #217A | LF | 282 | –
3 | INSTALL SIDEWALK PER USDCCA #234 | SF | 1409 | –
4 | CONSTRUCT HALF STREET VALLEY GUTTER PER STD. DWG. 229 | SF | 606 | –
5 | INSTALL HANDICAP RAMP PER USDCCA #235 CASE 1 USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT | EA | 1 | –
6 | INSTALL 2" MIN. AC OVER 4" TYPE II A.B. OVER 6" TYPE I A.B. | SY | – | 1017
7 | INSTALL 5" MIN AC OVER 13" MIN TYP. II AGG. BASE | SY | – | –
DISCLAIMER NOTE
UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD 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 OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.
Call before you UNDERGROUND 1-702-455-7511 1-702-229-6611
Avoid cutting underground utility lines. It's costly. Call before you Dig 1-800-227-2600
Avoid overhead power line contact Call before you OVERHEAD 1-702-227-2929
BAUGHMAN & TURNER, INC.
CIVIL ENGINEERS – LAND PLANNERS – LAND SURVEYORS
1210 HINSON STREET LAS VEGAS, NEVADA 89102 (702) 870-8771
PREPARED FOR: DESERT COVE HOMES, INC.
DATE NOVEMBER 2004
DESIGN UTH
DRAWN UTH
CHECK MAY
SCALE 1"=30'
TROVIA COVE
ULTIMATE ONSITE DRAINAGE BASIN MAP
SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.B.& M.
CLARK COUNTY NEVADA
HICKAM AVENUE & DURANGO DRIVE
SHEET FIG8A OF =
PROJ. NO. TROVIA COVE
APP'D
REVISIONS
DATE
No.







VICINITY MAP
NO SCALE

LEGAL DESCRIPTION

A PORTION OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 05, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M.

FLOOD ZONE DATA

THIS SITE IS LOCATED IN A ZONE "X", ZONE "X" HAS BEEN DETERMINED TO BE AN AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD EVENT.
COMMUNITY PANEL NO. 32003C1745E
EFFECTIVE DATE SEPTEMBER 27, 2002

BENCHMARK

CLARK COUNTY BENCHMARK NUMBER 44 BLV90 18SW5 – CLARK COUNTY GIS CONTROL POINT #606, ±74' NORTH OF SECTION CORNER AT HUALAPAI WAY AND ELKHORN RD.
ELEV=868.435 METERS (2849.19 FEET)

BASIS OF BEARING

N 00°10'28" W, BEING THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M. AS SHOWN THAT CERTAIN MAP IN FILE 82, PAGE 37, OF PARCEL MAPS ON FILE IN THE COUNTY RECORDERS OFFICE, CLARK COUNTY, NEVADA.

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR LINES
- EXIST. EDGE OF PAVEMENT
- PT-1 — DENOTES DRAINAGE BASIN CONCENTRATION POINT AND NUMBER
- Q10 = XX CFS, Q100 = XX CFS — DENOTES FLOW DIRECTION w/HYDROLOGY DATA
- PROP XXX ACRES — DENOTES ON-SITE DRAINAGE BASIN NAME
- DENOTES LIMITS OF DRAINAGE BASIN
- DENOTES FLOW DIRECTION
- OFF-S — DENOTES OFF-SITE DRAINAGE BASIN NAME
- ON — DENOTES ON-SITE DRAINAGE BASIN NAME

CONSTRUCTION NOTES

#	ITEM	UNIT	QUANTITY PUBLIC	QUANTITY PRIVATE
1	INSTALL 30" ROLL CURB & GUTTER PER USDCCA #217A	LF	–	431
2	CONSTRUCT 24" "L" CURB TYPE C & G PER USDCCA DWG. #217A	LF	282	–
3	INSTALL SIDEWALK PER USDCCA #234	SF	1409	–
4	CONSTRUCT HALF STREET VALLEY GUTTER PER STD. DWG. 229	SF	606	–
5	INSTALL HANDICAP RAMP PER USDCCA #235 CASE 1 USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT	EA	1	–
6	INSTALL 2" MIN. AC OVER 4" TYPE II A.B. OVER 6" TYPE I A.B.	SY	–	1017
7	INSTALL 5" MIN AC OVER 13" MIN TYP. II AGG. BASE	SY	–	–

ENGINEERS CERTIFICATE

I CERTIFY THAT THIS GRADING PLAN IS IN ACCORDANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT CLARK COUNTY FOR THIS PROJECT.

JOHN R. GUSTAFSON, P.E. DATE

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD 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 OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

		DATE	NO.	REVISIONS	APP'D

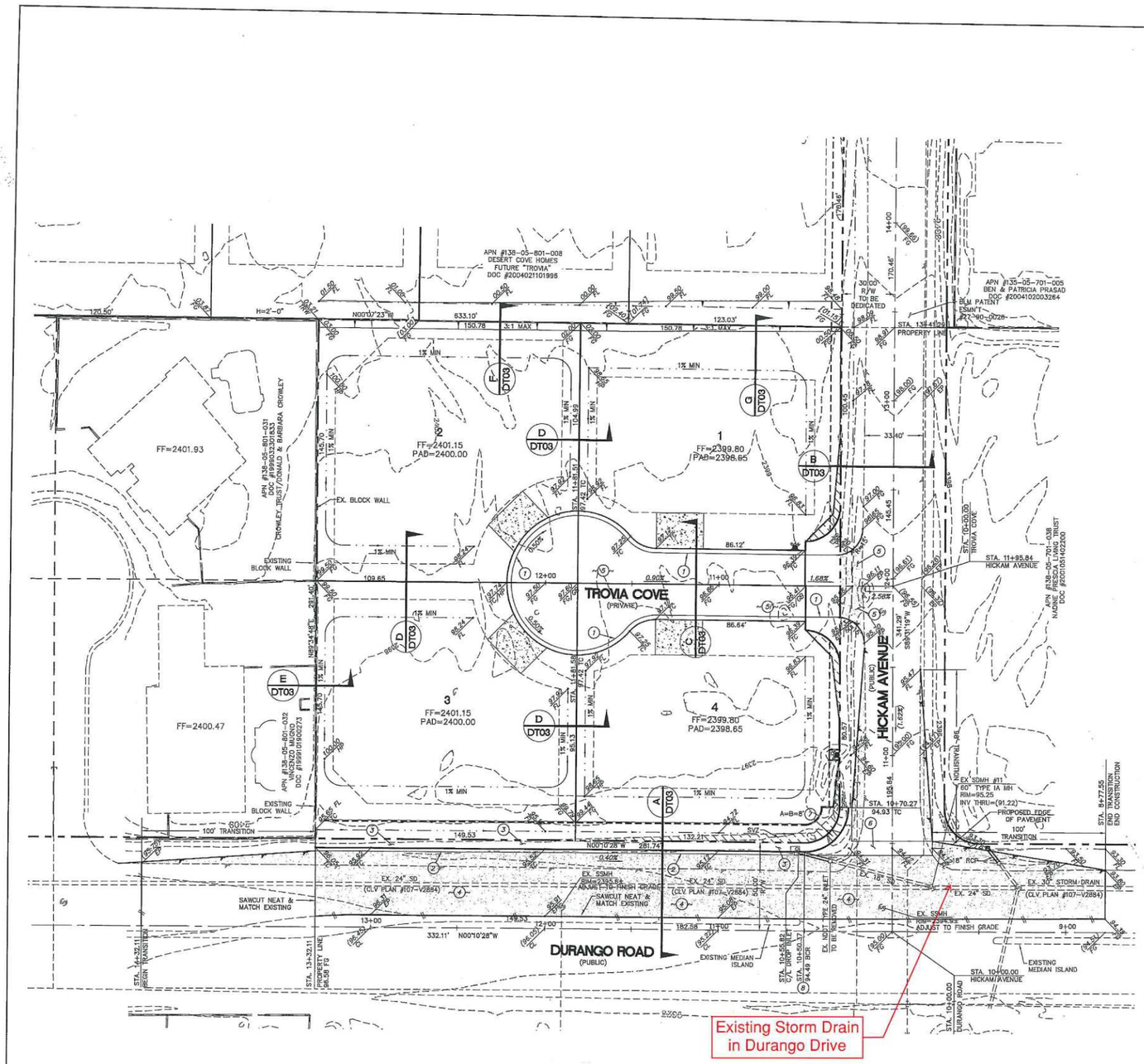
PREPARED FOR :
DESERT COVE HOMES, INC.

DATE	NOVEMBER 2004
DESIGN	UFH
DRAWN	UFH
CHECK	MAY
SCALE	1"=30'

BAUGHMAN & TURNER, INC.
CIVIL ENGINEERS LAND PLANNERS LAND SURVEYORS
1210 HINSON STREET LAS VEGAS, NEVADA 89102
(702) 870-5771

TROVIA COVE
INTERIM ONSITE DRAINAGE BASIN MAP
SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.B.& M.
CLARK COUNTY, NEVADA
HICKAM AVENUE & DURANGO DRIVE

SHEET
FIG 7
OF
PROJ. NO.
TROVIA COVE



Improvements proposed in offsites have not been built out

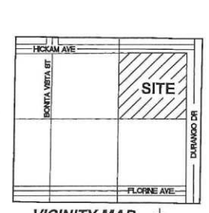
CONSTRUCTION NOTES

#	ITEM	UNIT	QUANTITY PUBLIC	QUANTITY PRIVATE
1	INSTALL 30" ROLL CURB & GUTTER PER USDCCA #217A	LF	–	434
2	CONSTRUCT 24" "L" CURB TYPE C & G PER USDCCA DWG. #216	LF	282	–
3	INSTALL SIDEWALK PER USDCCA #234	SF	1409	–
4	INSTALL 5" MIN AC OVER 13" MIN TYP. II AGG. BASE	SY	2244	–
5	INSTALL 2" MIN. AC OVER 4" TYPE II A.B. OVER 8" TYPE I A.B.	SY	–	1017
6	CONSTRUCT HALF STREET VALLEY GUTTER PER STD. DWG. 228	SF	606	–
7	INSTALL HANDICAP RAMP PER USDCCA #235 CASE I USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT	EA	1	–

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.



VICINITY MAP
NO SCALE

CLARK COUNTY BENCHMARK NUMBER 47 7C10 36SSW6
1997–RIVET AND ROUND ALUMINUM PLATE IN CONCRETE MONUMENT, NORTHEAST CORNER OF SUNSET ROAD AND DUNEVILLE STREET 50' WEST AND 50' NORTH OF THE INTERSECTION.
ELEVATION= 722.002 METERS (2368.77 FEET)
NAVD 88

LEGAL DESCRIPTION

THE NORTHWEST QUARTER (NE ¼) OF THE NORTHEAST QUARTER (NE ¼) OF THE SOUTHEAST QUARTER (SE ¼) OFTHE SOUTHEAST QUARTER (SE ¼) OF SECTION 05, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M.

FLOOD ZONE DATA

THIS SITE IS LOCATED IN A ZONE "X", ZONE "X" HAS BEEN DETERMINED TO BE AN AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD EVENT.
COMMUNITY PANEL NO. 32003C1745E
EFFECTIVE DATE SEPTEMBER 27, 2002

BENCHMARK

CLARK COUNTY BENCHMARK NUMBER 52
OLVOO 5SEE6 – CITY OF LAS VEGAS RIVET AND ALUMINUM PLATE IN TOP OF CURB, NAVD 88
320' NORTH OF FLORINE AVE.
ELEV = 730.541 METERS (2396.78 FEET)

BASIS OF BEARING

N 00°10'28" W, BEING THE EAST LINE OF THE SOUTHEAST QUARTER (SE ¼) OF THE SOUTHEAST QUARTER (SE ¼) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., AS SHOWN THAT CERTIAN MAP IN FILE 82, PAGE 37, OF PARCEL MAPS ON FILE IN THE COUNTY RECORDERS OFFICE, CLARK COUNTY, NEVADA.

GEOTECHNICAL REPORT

GEOTECHNICAL EVALUATION FOR A 10± ACRE RESIDENTIAL DEVELOPMENT LOCATED ON THE NORTHWEST CORNER OF ARVILLE STREET AND ROBINDALE ROAD IN CLARK COUNTY, NEVADA" BY GEOTEK, INC., DATED JUNE 11, 2003 W.O. 4627–LV6

UPDATE OF THE GEOTECHNICAL EVALUATION FOR A 10± ACRE RESIDENTIAL DEVELOPMENT LOCATED ON THE NORTHWEST CORNER OF ARVILLE STREET AND ROBINDALE ROAD CLARK COUNTY, NEVADA" BY GEOTEK, INC., DATED JAN. 14, 2004

NOTE:
TROVIA COVE (PRIVATE STREET) IS A CLV PUBLIC SEWER EASEMENT

LEGEND

	PROPERTY LINE
	STREET CENTERLINE
	LOT LINE
	BUILDING SETBACK LINE
	PROPOSED "L" CURB & GUTTER
	EXISTING "L" CURB & GUTTER
	PROPOSED "L" CURB & GUTTER
-XXXX-	EXISTING CONTOUR LINES
	PROPOSED SCREEN/RETAINING WALL
	EXISTING SCREEN/RETAINING WALL
	PROPOSED FLOW LINE
	PROPOSED EDGE OF PAVEMENT
	EXIST. EDGE OF PAVEMENT
	PROPOSED SAWCUT LINE
	PROPOSED OFF–SITE PAVEMENT
	PROPOSED SIGHT VISABILITY ZONE
00.00 LOC	PROPOSED ELEVATION & LOCATION
(00.00) LOC	EXISTING ELEVATION & LOCATION
0.00%	PROPOSED GRADE
1	CONSTRUCTION NOTE
	PROPOSED HYDRANT

CL	CENTERLINE
TC	TOP OF CURB
EP	EDGE OF PAVEMENT
CR	CROWN LINE
FG	FINISHED GRADE
TF	TOP OF FOOTING
TRW	TOP OF RETAINING WALL
BSW	BACK OF SIDEWALK
GB	GRADE BREAK
BVC	BEGIN VERTICAL CURVE
EVC	END VERTICAL CURVE
F.F.	FINISHED FLOOR
HP	HIGHPOINT
AC	ASPHALTIC CONCRETE

CLARK COUNTY
DEPARTMENT OF DEVELOPMENT SERVICES

Acceptance of plans for filing

By Jack Gutmann 9-7-05

Acceptance of these plans for filing shall not be construed to be a permit for or an approval of any violation of any of the provisions of the state or county laws and/or specifications. Clark County shall be held free from damages which may result from the construction of the improvements from the engineering design depicted herein.

NOTE: Power poles and/or other existing facilities not in proper location based on proposed improvements shown hereon will be relocated at no expense to Clark County.

NOTE:
1. NOTHING OVER 24" IN HEIGHT ALLOWED IN SIGHT VISIBILITY ZONE EXCEPT TRAFFIC CONTROL DEVICES
2. COMPLETION OF SECTION II OF DRAINAGE COMPLIANCE REPORT REQUIRED.

ENGINEERS CERTIFICATE

I CERTIFY THAT THIS GRADING PLAN IS IN ACCORDANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT CLARK COUNTY FOR THIS PROJECT. HTE #05–10165

4/4 04-56859

JOHN R. GUSTAFSON, P.E. — DATE 9/6/05

Call 2 business days before you UNDERGROUND
1–702–455–7511
CLARK COUNTY AND TRAFFIC OPERATIONS
1–702–229–6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD 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 OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Avoid cutting underground utility lines. It's costly. Call before you Dig 1–800–227–2600 UNDERGROUND SERVICE (USA)

Avoid overhead, power line contact Call before you OVERHEAD 1–702–227–2929 NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

HTE 05-10165

PROFESSIONAL ENGINEER – STATE OF NEVADA – JOHN R. GUSTAFSON – No. 13140 – 9/6/05

DATE	REVISIONS	APP'D

PREPARED FOR :
POST 2000, L.L.C.
7473 WEST LAKE MEAD STE. #100
LAS VEGAS, NEVADA 89128

DATE	AUGUST 2005	
DESIGN	UFH	
DRAWN	UFH	
CHECK	MAV	
SCALE	NOT TO SCALE	

BAUCHMAN & TURNER, INC.
CIVIL ENGINEERS LAND SURVEYORS LAND PLANNERS
1210 HINSON STREET LAS VEGAS, NEVADA 89102
(702) 870–8771

TROVIA COVE-MSM 164-04
GRADING PLAN
SECTION 5 , TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.B.& M.
CLARK COUNTY NEVADA
HICKAM AVE. & DURANGO DR.

SHEET
GP04
OF
7
PROJ. NO.
TROVIA COVE

N:\Carey\Trovia Cove\dwg\MSTP\GSTCOVE_04GP.dwg, GRADING PLAN, 9/1/2005 11:59:28 AM, dwtaf

Reference Material

Technical Drainage Study for Stone Ridge Estates II

Department of Development Services
Civil Engineering Division

500 S Grand Central Pky 1st Fl • PO Box 551799 • Las Vegas NV 89155-1799
(702) 455-4600 • Fax (702) 388-2550

Phil Rosenquist, Director

LTR

05-54073
LTR

March 9, 2006

Phase One
6136 Cottontail Cove Street
Las Vegas, NV 89130

SUBJECT: **Technical Drainage Study** for Stone Ridge Estates II
Study Dated: August 2, 2005
Addendum #1 Dated: February 7, 2006
Location: SEC of Durango Drive and Hickman Avenue
(Sec. 04, T20S, R60E)
HTE# 05-54073

The referenced **Technical Drainage Study** 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.

1. The site shall be graded with respect to drainage as shown on "Craig Sevy – MSM 0099-04 Stone Ridge Estates II", grading plan sheets GR1, PP1 and PP2, signed and sealed by Brian P. Norris, P.E., on February 6, 2006.

2. The following drainage facilities shall be constructed:

   a. Perimeter blockwalls with three (3) courses of solid grouting above FG elevation, located along the west and north sides of the site, as shown on grading plan sheet GR1, Construction Note 3.

3. Section 2 of the Clark County Building Office Operations Division Drainage Compliance Report must be completed by the engineer for facilities listed in Item 2 above.

4. The minimum finished floor elevations for the proposed structures shall be constructed as shown on the above mentioned grading plan.

5. The subject site is located within Zone X, as shown on FIRM Community Panel Number 32003C 2135 E, revised December 31, 2003. Zone X is determined to be outside the 0.2% annual chance flood plain.

BOARD OF COUNTY COMMISSIONERS
RORY REID, Chairman • MYRNA WILLIAMS, Vice Chair
TOM COLLINS • YVONNE ATKINSON GATES • CHIP MAXFIELD • LYNETTE BOGGS McDONALD • BRUCE L. WOODBURY
THOM REILLY, County Manager

HTE# 05-54073

6. Mylars of the grading plan must be submitted to the Clark County Civil Engineering Division Plan Check for approval signatures prior to map recordation.

7. Right-of-way dedication must be verified.

8. **As a condition of final approval, the drainage/grading plans submitted for this project require the following modifications prior to Civil Engineering Plan Check submittal:**

   a. Add the MSM number to the grading plan title of sheets PP1 and PP2.

No liability is assumed by County for information, data, and conclusions of consulting engineer.

DEPARTMENT OF DEVELOPMENT SERVICES

BY: _____

Jeffery J. Jensen, P.E.
Senior Engineer
Civil Engineering Division

cc: Craig Sevy
Development File

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
* RUN DATE   26JAN06  TIME  21:32:29    *
*                                       *
*****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   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
   1          ID  ------------------------------------------------------------------------
   2          ID
   3          ID  TECHNICAL DRAINAGE STUDY FOR STONE RIDGE ESTATES II, CLARK CO. NEVADA
   4          ID
   5          ID  01/26/2006
   6          ID
   7          ID  PREPARED FOR: CRAIG SEVY
   8          ID  PREPARED BY:  PHASE ONE CONSULTING ENGINEERS
   9          ID                6136 COTTONTAIL COVE ST, LAS VEGAS, NV 89130
  10          ID
  11          ID  FUTURE CONDITIONS (
  12          ID
  13          ID  ------------------------------------------------------------------------
  14          IT      2       0       0     300
  15          IO      5
  16          IN      5
  17          JR   PREC    1.00    0.56

  18          KK  OF.1D
  19          KM  FUTURE OFFSITE BASIN WEST OF SITE (DEVELOPED (1/2 ACRE LOTS)
  20          BA  .0108
  21          PB  2.86
  22          PC   .000   .020   .057   .070   .087   .108   .124   .130   .130   .130
  23          PC   .130   .130   .130   .133   .140   .142   .148   .158   .172   .181
  24          PC   .190   .197   .199   .200   .201   .204   .214   .229   .241   .249
  25          PC   .251   .256   .270   .278   .281   .283   .295   .322   .352   .409
  26          PC   .499   .590   .710   .744   .781   .812   .819   .835   .851   .856
  27          PC   .860   .868   .876   .888   .910   .926   .937   .950   .970   .976
  28          PC   .982   .985   .987   .989   .990   .993   .993   .994   .995   .998
  29          PC   .998   .999  1.00
  30          LS      83
  31          UD   .169

  32          KK     H1
  33          KM  HICKAM AVENUE 1 (EXISTING RURAL ROAD)
  34          BA  .0010
  35          LS             92
  36          UD   .052

  37          KK     D1
  38          KM  DURANGO DRIVE (EXISTING RURAL ROAD 0.10% SLOPE RUNOFF ASSUMED OVERTOP ROAD)
  39          BA  .0013
  40          LS             92
  41          UD   .050

  42          KK  CP.1D
  43          KM  COMBINE OF.1D, H1, AND D1
  44          HC      3

  45          KK     H2
  46          KM  HICKAM AVENUE EAST OF DURANGO (PAVED RURAL ROAD)
  47          BA  .0006
  48          LS             92
  49          UD   .050
```

1 HEC-1 INPUT PAGE 2

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

```
             50          KK   ON.1D
             51          KM   PROPOSED ONSITE (DEVELOPED)
             52          BA   .0032
             53          LS                83
             54          UD    .123

             55          KK   CP.2D
             56          KM   COMBINE H2 AND ON.1D
             57          HC       2

             58          KK   CP.3D
             59          KM   COMBINE ALL FLOW
             60          HC       2
             61          ZZ
1*************************************
*                                   *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998            *
*           VERSION 4.1             *
*                                   *
*  RUN DATE   26JAN06  TIME  21:32:29   *
*                                   *
*************************************

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

                    ------------------------------------------------------------------------

                    TECHNICAL DRAINAGE STUDY FOR STONE RIDGE ESTATES II, CLARK CO. NEVADA

                    01/26/2006

                    PREPARED FOR: CRAIG SEVY
                    PREPARED BY:  PHASE ONE CONSULTING ENGINEERS
                                  6136 COTTONTAIL COVE ST, LAS VEGAS, NV 89130

                    FUTURE CONDITIONS

                    ------------------------------------------------------------------------

  15 IO          OUTPUT CONTROL VARIABLES
                      IPRNT          5  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                      NMIN           2  MINUTES IN COMPUTATION INTERVAL
                     IDATE       1    0  STARTING DATE
                     ITIME         0000  STARTING TIME
                        NQ          300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE       1    0  ENDING DATE
                    NDTIME        0958  ENDING TIME
                     ICENT          19  CENTURY MARK

                   COMPUTATION INTERVAL      .03 HOURS
                        TOTAL TIME BASE     9.97 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       .56
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

                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION      AREA    PLAN                    RATIO 1  RATIO 2
                                                                 1.00       .56

 HYDROGRAPH AT
+                 OF.1D        .01     1   FLOW                  12.        4.
                                            TIME                3.60       3.60

 HYDROGRAPH AT
+                   H1         .00     1   FLOW                   2.        1.
                                            TIME                3.50       3.50
```

```
 HYDROGRAPH AT
+                    D1        .00    1   FLOW          3.      1.
                                          TIME        3.50    3.50

  3 COMBINED AT
+                  CP.1D       .01    1   FLOW         16.      6.
                                          TIME        3.53    3.53

 HYDROGRAPH AT
+                    H2        .00    1   FLOW          1.      1.
                                          TIME        3.50    3.50

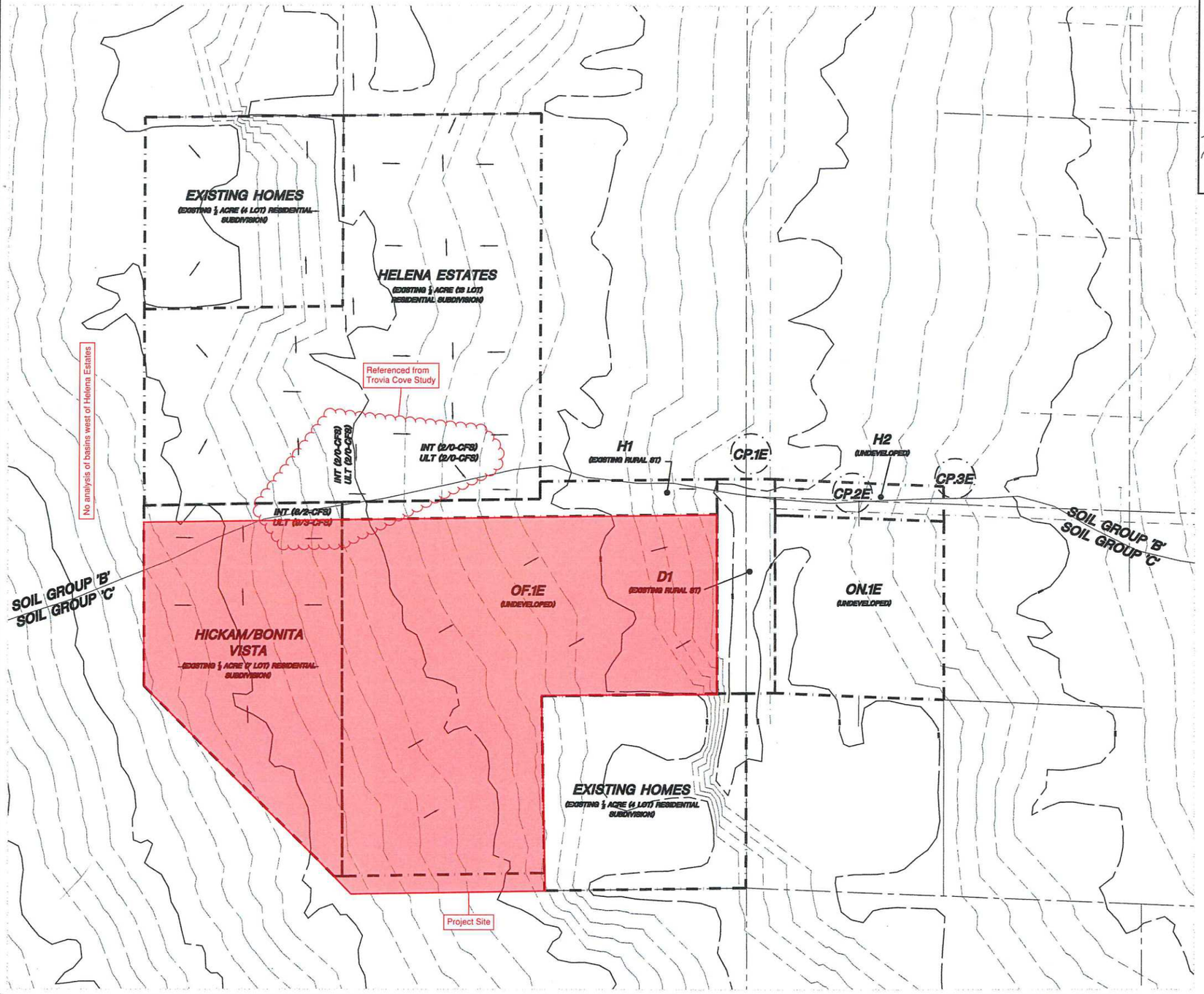
 HYDROGRAPH AT
+                  ON.1D       .00    1   FLOW          4.      1.
                                          TIME        3.57    3.57

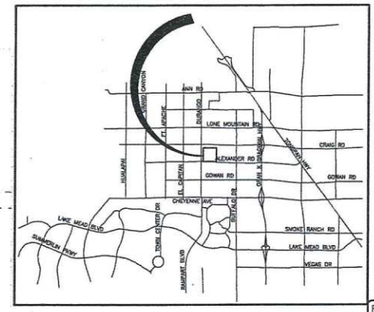
  2 COMBINED AT
+                  CP.2D       .00    1   FLOW          5.      2.
                                          TIME        3.53    3.53

  2 COMBINED AT
+                  CP.3D       .02    1   FLOW         21.      7.
                                          TIME        3.53    3.53


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

Concentration points combine basins on west and east of Durango Drive, showing flow was designed to cross Durango Drive at Hickam Avenue.





GRAPHIC SCALE
(IN FEET)
1 inch = 60 ft.

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD 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 OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Avoid cutting underground utility lines. It's costly. Call before you Dig 1-800-227-2600 UNDERGROUND SERVICE (USA)

Avoid overhead power line contact. Call before you Overhead 1-702-593-6111 NEVADA POWER EMERGENCY AND SAFETY SERVICES DEPARTMENT

REVISION BLOCK

NO.	DESCRIPTION	DT.

CRAIG SEVY - MSM # 0099-04
STONE RIDGE ESTATES II
EXISTING CONDITIONS
BASIN MAP

PHASE ONE
CONSULTING ENGINEERS
6138 Cottontail Cove Street, Las Vegas, Nevada 89130
Phone: (702) 245-8207 Email: PhaseOneEng@aol.com

PROFESSIONAL ENGINEER — STATE OF NEVADA — BRIAN P. NORRIS — 11449 — CIVIL — EXP. 12/2007

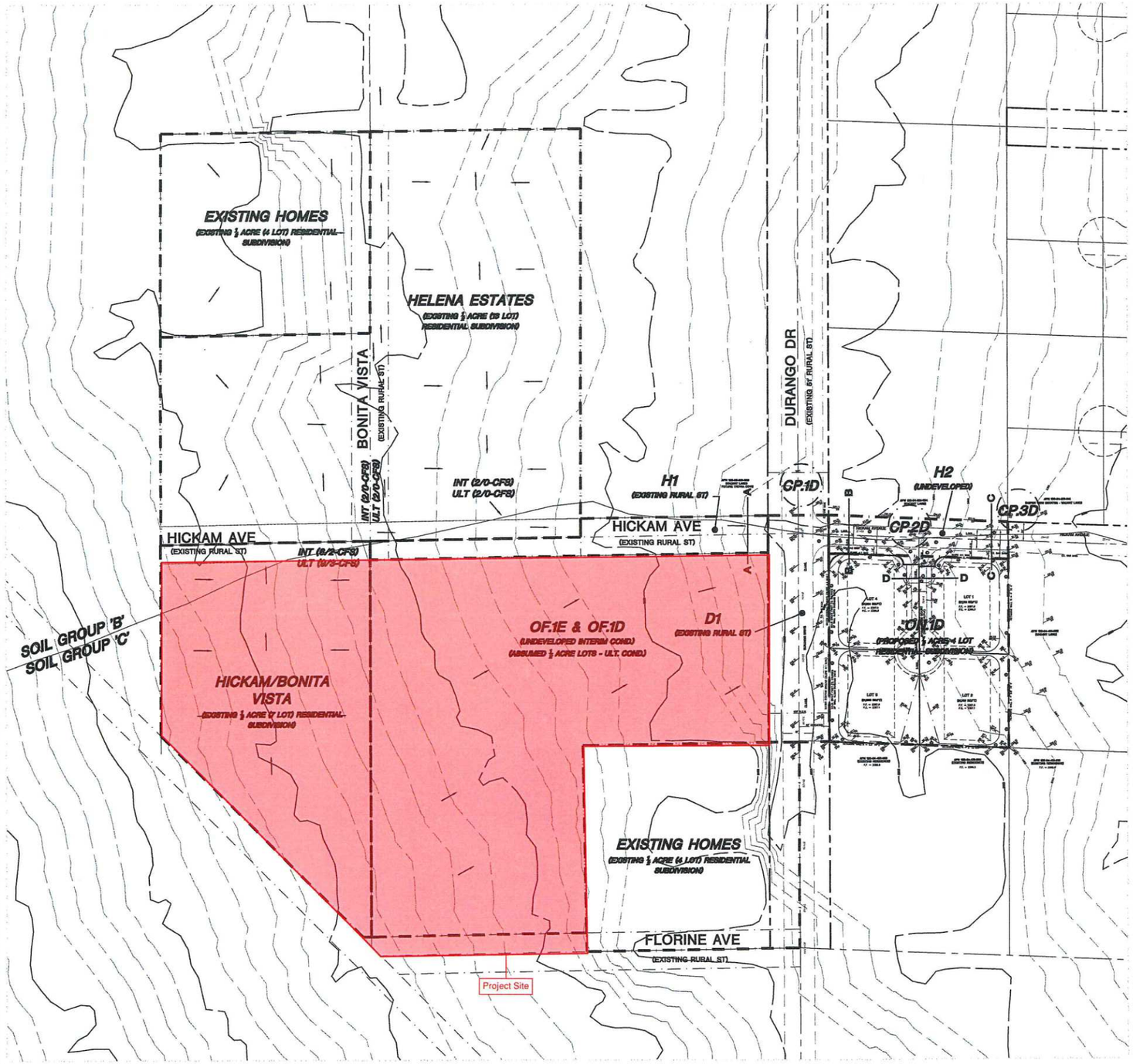
PROJECT #:	60-04001
SCALE:	1" = 80'
DATE:	2/6/2006
DRAWN BY:	SOP
CHECKED BY:	BPN

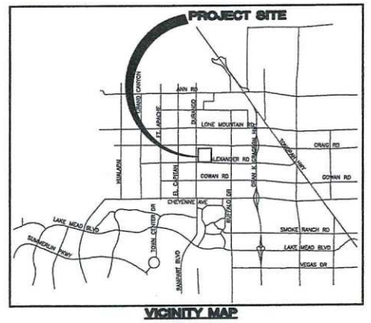
SHEET
ECBM-1
1 OF 1 SHEETS

ADDMAP1

HTE # - 05-54073

ADDMAP1





VICINITY MAP
NOT TO SCALE

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVER-HEAD 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 OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Avoid cutting underground utility lines. It's costly.
Call before you Dig
1-800-227-2600
(UNDERGROUND SERVICE DIG)

Avoid overhead power line contact.
Call before you Overhead
1-702-593-6111
(NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT)

GRAPHIC SCALE
0 60 120 180
(IN FEET)
1 inch = 80 ft.

LEGEND

- = STREET CENTER LINE
- = RIGHT OF WAY
- = BACK OF CURB
- = PROPERTY LINE
- 70.84 FL / 71.50 TC = FLOWLINE ELEVATION
- = FINISHED GRADE ELEVATION
- 70.84 TC / (71.50) BC = TOP OF CURB ELEVATION
- = EXISTING GRADE ELEVATION
- 2.00% = RATE & DIRECTION OF SLOPE
- FF: XX.XX = FINISH FLOOR ELEVATION
- = EXISTING CONTOURS
- = PROPOSED CONTOURS

GRADING CONSTRUCTION NOTES

1. INSTALL 2" A.C. OVER 9" TYPE II BASE
2. INSTALL 3" A.C. OVER 9" TYPE II BASE
3. INSTALL PERIMETER BLOCK WALL (6' HIGH)
4. INSTALL GATED ENTRY

BENCHMARK

RIVET AND SQUARE ALUMINUM PLATE IN CONCRETE MAILBOX PAD FIFTY TWO FEET EAST AND THIRY FEET NORTH OF THE PI OF ANN ROAD AND EGAN CREST DRIVE.

N.A.V.D. 1988
ELEVATION = 2770.41 FEET
STATION: 1C99 25SSE6

BASIS OF BEARING

NORTH 00°08'09" WEST BEING THE WEST LINE OF THE SOUTHWEST QUARTER (SW1/4) OF THE SOUTHWEST QUARTER (SW1/4) OF SECTION 4, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA AS DEPICTED UPON A PARCEL MAP FILED OF RECORD IN FILE 63 PAGE 27 OF PARCEL MAPS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

REVISION BLOCK		
NO.	DESCRIPTION	DT.

CRAIG SEVY - MSM # 0000-04
STONE RIDGE ESTATES II
DEVELOPED CONDITIONS BASIN MAP

PHASE ONE
CONSULTING ENGINEERS
6136 Cottontail Cove Street, Las Vegas, Nevada 89130
Phone: (702) 245-8207 Email: PhaseOneConEng@aol.com

PROFESSIONAL ENGINEER - STATE OF NEVADA
BRIAN P. NORRIS
2/6/06
CIVIL
NO. 14449
EXP. 12/2007

PROJECT #:	60-04001
SCALE:	1" = 80'
DATE:	2/6/2006
DRAWN BY:	SOP
CHECKED BY:	BPN

SHEET
DCBM-1
1 OF 1 SHEETS

HTE # - 05-64073

Reference Material

Gowan North Channel Phase III

GOWAN NORTH III

LAS10T02

DEPARTMENT OF PUBLIC WORKS

Mayor:
OSCAR B. GOODMAN

City Council:
GARY REESE
(Mayor Pro-Tem)
LARRY BROWN
LYNETTE BOGGS McDONALD
LAWRENCE WEEKLY
MICHAEL MACK
JANET MONCRIEF

City Manager:
DOUGLAS A. SELBY

Director of Public Works:
RICHARD D. GOECKE

City Engineer:
CHARLES KAJKOWSKI JR, P.E.

NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICES TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THIS NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

GOWAN NORTH CHANNEL PHASE III

DURANGO DRIVE TO LONE MOUNTAIN ROAD

FUNDED BY:

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

REVIEWED BY:

City Engineer — 1/26/2004 Date

Construction Management — 1-27-04 Date

Engineering Design — 1/26/04 Date

*Las Vegas Valley Water District — 1/9/04 Date
Sht. 1, 2, 10, 11, 15, 17, 18, 19, 20, 22.

*Nevada Power Company - Transmission — 1-6-04 Date

*Nevada Power Company - Distribution — 1-6-04 Date

*Southwest Gas Corporation — 1-12-04 Date

*Sprint Telephone Co. Jane F. Stokes — 1/6/04 Date

*Cox Communications Las Vegas, Inc. — 1/6/04 Date

City Traffic Engineer — 1-22-04 Date

Clark County Regional Flood Control District — 1/14/2004 Date

Clark County Public Works — 2-9-04 Date

The affixed Sprint Nevada 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.

- The signature above acknowledges the Utility Company representative has reviewed the plans and that to the best of his/her knowledge the utility lines are shown in the correct locations and are the correct sizes. While such data has been collected with reasonable care, there is no expressed or implied guarantee that the locations are exact. The Contractor shall bear the responsibility of obtaining the actual field locations.

The signature above further acknowledges the Utility Company does not anticipate construction or maintenance in the project area for five (5) years in conformance with the CLV no-cut policy.

BID#: 04.1730.18

PBS&J
2270 Corporate Circle,
Suite 100
Henderson, Nevada 89074
Telephone: 702/263-7275
Fax: 702/263-7200
ENGINEERING • PLANNING • SURVEYING • CONSTRUCTION SERVICES

D:\Dwgs\510018_XC01-018.DWG Jan 06, 2004 - 7:21am

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DESIGN SECTION
CITY ENGINEER: CHARLES KAJKOWSKI JR. P.E.
CITY PROJECT ENGINEER: MARVIN STINE, P.E.
PROJECT MANAGER: ALI ZENHARI, P.E.
DESIGN BY: PC/LSB
DRAWN BY: LSB
CHECK BY: AZ/PC
DATE: DEC. 12, 2003

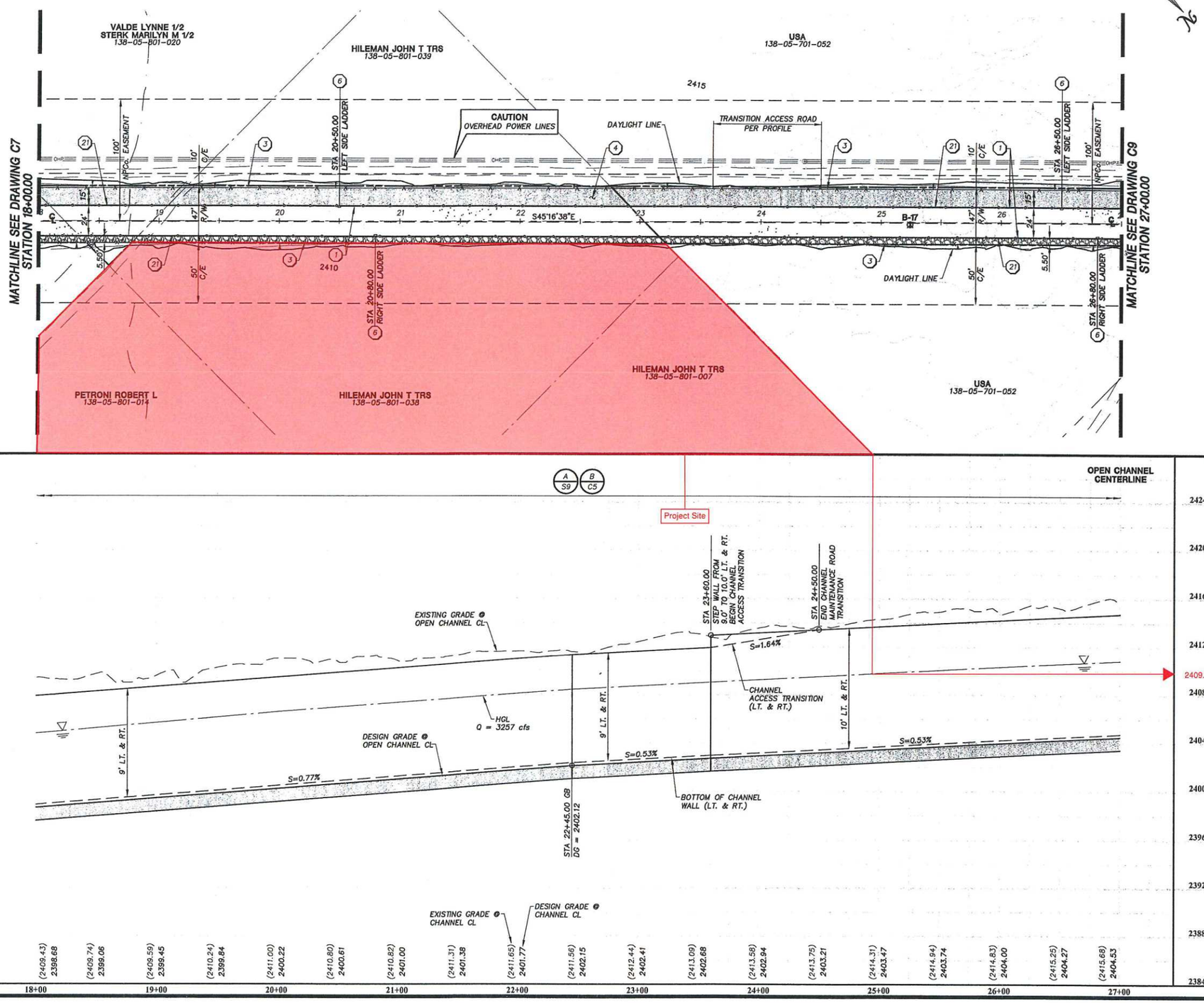
TITLE: GOWAN NORTH CHANNEL PHASE III

SHEET: COVER SHEET

PROFESSIONAL ENGINEER STATE OF NEVADA ALI ZENHARI Date of Expiration 6-30-04 CIVIL No. 08930 1-5-04

SHEET: C1
1 OF 42
DRAWING# 731-65B

GOWAN NORTH CHANNEL FINAL SUBMITTAL



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

HORIZ 1 inch = 40ft.
VERTICAL 1 inch = 4 ft.

BASIS OF BEARING

THE BASIS OF BEARING FOR THE SURVEY SHOWN HEREON IS GRID NORTH AS DEFINED BY THE NEVADA COORDINATE SYSTEM OF 1983 (NCS83) EAST ZONE (2701)

BENCHMARK

CITY OF LAS VEGAS BENCHMARK NO. 1LV00 3W4 – RIVET AND PLATE IN ELECTRIC BASE, 250' EAST OF BUFFALO DRIVE ON SOUTH SIDE OF CRAIG ROAD.

NAVD 1988
DATUM ELEVATION = 14.7310
METERS 2345.01 FEET

CAUTION:
EXISTING UTILITIES ARE LOCATED ON THE PLANS FROM A SEARCH OF AVAILABLE RECORDS. CONTRACTOR TO VERIFY LOCATIONS AND DEPTHS PRIOR TO CONSTRUCTION.

KEY NOTES

CONSTRUCTION ITEMS:

1. CONSTRUCT RECTANGULAR CHANNEL PER SECTION 'B' DWG C5.
2. CONSTRUCT DOUBLE ARCH PER SECTION 'C' DWG C6.
3. CONSTRUCT 6' HIGH CHAIN LINK FENCE PER DETAIL 'B' DWG D1.
4. CONSTRUCT MAINTENANCE ROAD – 2" AC OVER 4" TYPE II BASE PER SECTION 'B' DRAWING C5.
5. INSTALL 12" PVC CLASS C900 WATERLINE PER DETAIL 'H' DRAWING D1. CONNECT NEW LINE TO EXISTING 12" PVC WELL DISCHARGE LINE. LENGTH PER PLANS.
6. INSTALL CHANNEL ACCESS LADDER PER DETAIL 'A' DWG D1.
7. CONSTRUCT 5.5" PLANTMIX BITUMINOUS SURFACE OVER 13" TYPE II AGGREGATE BASE. REFER TO SECTIONS THIS SHEET.
8. INSTALL DOUBLE SWING GATE PER DETAIL 'C' DWG D1.
9. INSTALL 12" PVC CLASS C900 WATERLINE PER DETAIL 'G' DRAWING D1. CONNECT NEW LINE TO EXISTING 12" PVC WELL DISCHARGE LINE. LENGTH PER PLANS.
10. CONSTRUCT CONCRETE 6"x3' CUT OFF WALL PER DETAIL 'F' DWG. D1. LENGTH PER PLANS.
11. CONSTRUCT ACCESS ROAD PER SECTION 'A' DWG E1.
12. REMOVE AND RESET EXISTING SIGN.
13. SAWCUT TO CLEAN EDGE, MATCH EXISTING.
14. INSTALL MODIFIED NDOT TYPE 2A DROP INLET PER DETAIL 'C' DWG D2.
15. INSTALL 36" CLASS III RCP PER DETAIL 'C' DWG. D3.
16. INSTALL CONCRETE APRON PER DETAIL 'C' DWG D2.
17. ADJUST EXISTING WATER VALVE BOX COVER TO FINISH GRADE PER UDACS PLATE #8.
18. EXISTING GAS APPURTENANCES TO BE ADJUSTED TO FINISH GRADE (BY OTHERS).
19. RELOCATE TELEPHONE MANHOLE (BY SPRINT).
20. PROTECT–IN–PLACE.
21. CONSTRUCT POST AND CABLE RAILING PER DETAIL 'A' DRAWING D2.
22. CONSTRUCT 2' WIDE SIDEWALK DRAIN PER STD. DRAWING #236.
23. ADJUST EXISTING WATER MANHOLE COVER TO FINISH GRADE PER USD #408.
24. INSTALL 4" WIDE WHITE PAINTED EDGE LINE.
25. INSTALL TYPE I CENTERLINE PER STD. DWG. #244.
26. CONSTRUCT 5' WIDE AC SIDEWALK 2" AC OVER 6" TYPE II AGGREGATE BASE.
27. RELOCATE NEVADA POWER FACILITIES. (BY NEVADA POWER).
28. CONSTRUCT CONCRETE APRON PER ENLARGEMENT 'A' DRAWING G1.
29. INSTALL 24" WHITE STOP LINE (TYPE 1 PMF) PER USD #254A.
30. INSTALL 24" CROSSWALK RECTANGLES (TYPE 1 PMF) PER USD #254A.
31. INSTALL 6" TYPE II AGGREGATE WITH 95% COMPACTION.
32. INSTALL PORTABLE CONCRETE BARRIER RAIL PER STD. DWG. #602.

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DESIGN SECTION

CITY ENGINEER: CHARLES KAJKOWSKI JR., P.E.
CITY PROJECT ENGINEER: MARVIN STINE, P.E.
PROJECT MANAGER: ALI ZENHARI, P.E.
DESIGN BY: PC
DRAWN BY: LSB/WHJ
CHECK BY: AZ
DATE: DEC. 12, 2003

TITLE: GOWAN NORTH CHANNEL PHASE III

SHEET: CHANNEL PLAN AND PROFILE STA 18+00.00 TO STA 27+00.00

PROFESSIONAL ENGINEER-STATE OF NEVADA
Ali R. ZENHARI
No. 08930
CIVIL
1-5-04

SHEET: C8
8 OF 42

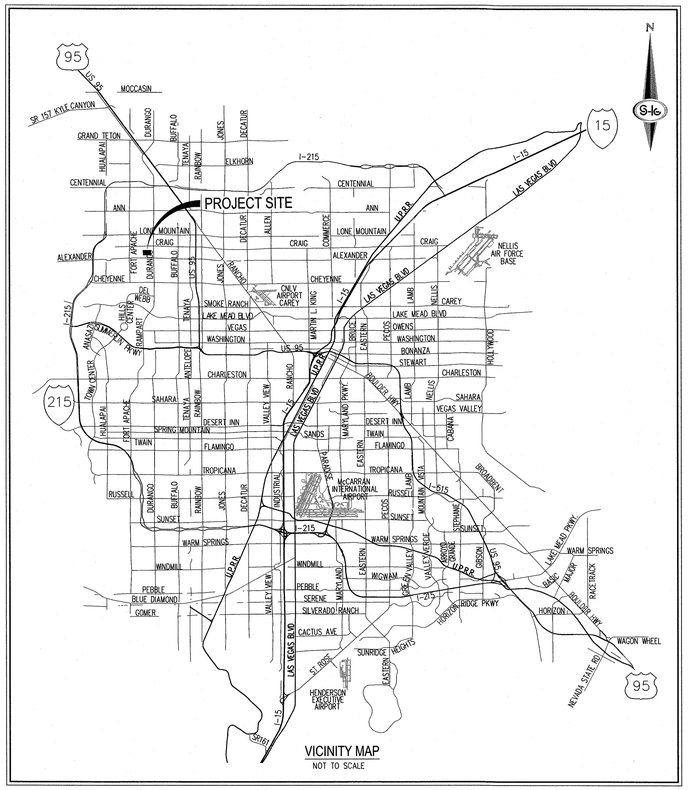
DRAWING # 731-85B

D:\DWGS\S10018\JC08-018.DWG Jan 06, 2004 - 1:47pm

GOWAN NORTH CHANNEL FINAL SUBMITTAL

APPENDIX H

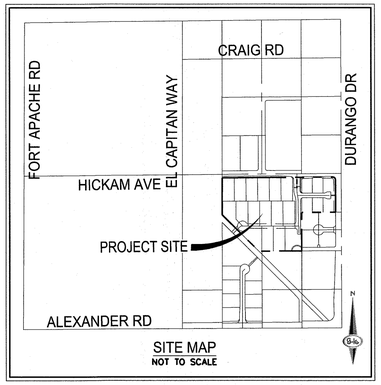
Grading Plan & Detail Sheets



PINNACLE HOMES

IMPROVEMENT PLANS FOR ELK RIDGE ESTATES IV

CLARK COUNTY, NEVADA
RESIDENTIAL SUBDIVISION
APN: 138-05-801-065, AND -066



SHEET INDEX		
SHEET NUMBER	SHEET DESCRIPTION	SHEET TITLE
1	C-1	COVER SHEET
2	C-2	GENERAL NOTES
3	C-3	QUANTITIES AND ABBREVIATIONS
4	G-1	GRADING PLAN I
5	G-2	GRADING PLAN II
6	G-3	GRADING PLAN III
7	G-4	GRADING PLAN IV
8	G-5	GRADING PLAN V
9	D-1	DETAIL SHEET I
10	D-2	DETAIL SHEET II
11	PP-1	PLAN AND PROFILE – DURANGO DRIVE
12	PP-2	PLAN AND PROFILE – HICKAM AVENUE I
13	PP-3	PLAN AND PROFILE – HICKAM AVENUE II
14	PP-4	PLAN AND PROFILE – COBALT CANYON STREET I
15	PP-5	PLAN AND PROFILE – COBALT CANYON STREET II
16	PP-6	PLAN AND PROFILE – CARBON CANYON COURT
17	PP-7	PLAN AND PROFILE – SENTINEL PEAK COURT I
18	PP-8	PLAN AND PROFILE – SENTINEL PEAK COURT II
19	PP-9	PLAN AND PROFILE – SD LATERAL

APPROVALS

CLARK COUNTY FIRE DEPARTMENT — DATE

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE, COUNTY LAWS AND/OR SPECIFICATIONS.

2,250 GPM 20 PSI

CITY ENGINEER–ALLEN PAVELKA PE, #9029 — DATE

APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED OF 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.

CENTRAL TELEPHONE CO. DBA CENTURYLINK — DATE

THE AFFIXED CENTURYLINK 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 STATUES AND / OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. ###### DATE:
LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL
SHEETS: ##

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM LAS VEGAS VALLEY WATER DISTRICT.

NV ENERGY — DATE

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 CORPORATION — DATE

COX COMMUNICATIONS LAS VEGAS, INC. — DATE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
COVER SHEET

S5 T20 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER — STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/7/17

C-1
SHEET 1 OF 19

OWNER/DEVELOPER	ENGINEER
PINNACLE HOMES 9225 W FLAMINGO RD SUITE #190 LAS VEGAS, NV 89147 PH: 702-228-0720 CONTACT: FRANK WYATT	SLATER HANIFAN GROUP, INC. 5740 S. ARVILLE STREET, SUITE 216 LAS VEGAS, NV 89118 PH: (702) 284-5300 FX: (702) 284-5399 CONTACT: KEVIN M. BROSS

LEGAL DESCRIPTION

LYING WITHIN THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2,395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

PROJECT INFORMATION

OVERALL PROJECT INFORMATION

ACREAGE (GROSS):	= 10.8 AC
ACREAGE (NET):	= 9.3 AC
DENSITY (LOTS/GROSS ACRE):	= 2.0 DU/GROSS AC
TOTAL NO. OF RESIDENTIAL LOTS	= 22
TOTAL NO. OF COMMON ELEMENTS	= 1
MINIMUM LOT SIZE	= 11,436 SF±
MAXIMUM LOT SIZE	= 22,635 SF±
PROVIDED OPEN SPACE	= 8,994 SF±

APN 138-05-801-065

PROPOSED ZONING	= R-D
ACREAGE (GROSS):	= 2.0 AC
ACREAGE (NET):	= 1.6 AC
DENSITY (LOTS/GROSS ACRE):	= 3.0 DU/GROSS AC
TOTAL NO. OF RESIDENTIAL LOTS	= 6
TOTAL NO. OF COMMON ELEMENTS	= 0
MINIMUM LOT SIZE	= 11,436 SF±
MAXIMUM LOT SIZE	= 11,754 SF±
PROVIDED OPEN SPACE	= 0 SF±

APN 138-05-801-066

PROPOSED ZONING	= R-E
ACREAGE (GROSS):	= 8.8 AC
ACREAGE (NET):	= 7.7 AC
DENSITY (LOTS/GROSS ACRE):	= 1.8 DU/GROSS AC
TOTAL NO. OF RESIDENTIAL LOTS	= 16
TOTAL NO. OF COMMON ELEMENTS	= 1
MINIMUM LOT SIZE	= 19,584 SF±
MAXIMUM LOT SIZE	= 22,635 SF±
PROVIDED OPEN SPACE	= 8,994 SF±

EARTHWORK SUMMARY (UNADJUSTED)

CUT	15,270 CY.
FILL	15,416 CY.
NET	146 CY. FILL

DEVIATIONS FROM STANDARDS

NONE

PRE-DEVELOPMENT NOTE

A PRE-DEVELOPMENT MEETING WITH THE DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW DIVISION, OFF-SITE INSPECTOR IS REQUIRED. PLEASE CONTACT INSPECTOR AT 702-455-4610

SWPPP 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 PROJECTS THAT DISTURB MORE THEN ONE ACRE OF LAND MUST SUBMIT TO NDEP A "NOTICE OF INTENT" FOR INCLUSION UNDER STORMWATER PERMIT NO. NVR100000 ALONG WITH THE APPROPRIATE FILLING FEE.

GEOTECHNICAL ENGINEER

PREPARED BY: WRIGHT ENGINEERS
ADDRESS: 5275 ARVILLE STREET, SUITE 108, LAS VEGAS, NEVADA 89118
PHONE: 702-323-6000
PROJECT No. 171083
DATED: 06/30/2017

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

J:\pin1702 ers iv\dwg\improv\pin1702 cvr.dwg 9/7/2017 4:03 PM Emily Hoy

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT # ADD FIELD (REVISED 01/09/2017)

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. THE BUSINESS DAY 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.
4. 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 ABUTTING 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.

IS NO LEAD COMPLIANCE NOTE
TO COMPLY WITH THE FEDERAL SAFE DRINKING WATER ACT, ALL WATER WORKS BRASS PRODUCTS PROPOSED TO BE RELOCATED, OR INSTALLED AS NEW MUST BE INSTALLED WITH THE LEAD FREE APPROVED PRODUCT. THE OLD LEADED PRODUCT MAY NOT BE USED.

GRADING NOTES

1. INDICATED GRADES OTHER THAN T.C., F.G. & GUTTER F.L. ARE ROUGH GRADES.
2. THE ROUGH GRADING PLANS SHALL BE ON THE JOB SITE AT ALL TIMES. THE ROUGH GRADING SHALL BE FINISHED IN CONFORMANCE WITH THE LINES AND GRADES SHOWN ON THE PLANS. THE GRADING QUANTITIES ARE BASED ON THE ELEVATION AND DETAILS SHOWN ON THE PLANS. ANY DEVIATIONS FROM THE PLANS WILL RESULT IN QUANTITY CHANGES.
3. CARE SHALL BE EXERCISED IN GRADING CORNER LOTS.
4. ROUGH PAD ELEVATIONS SHALL BE GRADED TO WITHIN 0.1' OF THE PAD ELEVATIONS SHOWN ON THE PLANS. WHEN GRADING IS COMPLETE PER THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE LOTS CAN BE INSPECTED. AT THAT TIME THE ENGINEER SHALL ALSO DECIDE IF ANY ADDITIONAL DITCHES OR BERMS ARE REQUIRED. THE CONTRACTOR IS REQUESTED NOT TO REMOVE ANY OF HIS ROUGH GRADING EQUIPMENT UNTIL HE RECEIVES GRADING APPROVAL FROM THE ENGINEER.
5. SOILS REPORT PREPARED BY WRIGHT ENGINEERS, PROJECT NO. 171083, DATED 06/30/2017.
6. EARTHWORK QUANTITIES (RAW):
    -CUT = 15,270 CUBIC YARDS.
    -FILL = 15,416 CUBIC YARDS.
    -NET = 146 CUBIC YARDS FILL.

    A) THE ABOVE QUANTITIES DO NOT REFLECT LOSSES DUE TO SUBSIDENCE OR SHRINKAGE.
    B) THE ABOVE QUANTITIES DO REFLECT USING NATIVE MATERIAL IN LIEU OF TYPE I GRAVEL BASE MATERIAL FOR STREET SECTIONS.
    C) THE ABOVE QUANTITIES DO NOT REFLECT ANY EARTHWORK WHICH MAY BE REQUIRED BY THE ENGINEER TO CONSTRUCT ADDITIONAL PROTECTIVE DITCHES OR BERMS NOT SHOWN ON THESE DRAWINGS.

CLARK COUNTY TRAFFIC NOTES

1. 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 HEREUNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
2. 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 GROUND MOUNTED STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING COUNTY STREETS IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
3. ALL CONSTRUCTION SIGNING, BARRICADING AND PAVEMENT MARKINGS SHALL CONFORM TO THE NEVADA WORK ZONE TRAFFIC CONTROL HANDBOOK – 1986 AND TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION.
4. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL, OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE COUNTY TRAFFIC MANAGER.
5. THE DEVELOPER SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL ALL PERMANENT SIGNS SHOWN ON THE PLANS. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CLARK COUNTY AREA STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGNPOSTS SHALL BE INSTALLED IN ACCORDANCE WITH CLARK COUNTY AREA STANDARDS. ALL SIGNS SHALL USE CLASS VI SHEETING.
6. IF A PROPOSED STREET LIGHT STANDARD IS FIELD LOCATED TO WITHIN FIVE (5) FEET OF ANY SIGN SHOWN HEREON TO BE MOUNTED ON A SIGN POST, CHANGE SIGN MOUNTING TO ONE ON THE STREETLIGHT STANDARD.
7. PRIOR TO CONSTRUCTION, THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE CURRENT PLANNING DIVISION OF THE DEPARTMENT OF COMPREHENSIVE PLANNING.
8. ALL TRAFFIC SIGNAL POLE ASSEMBLIES, STEEL PEDESTAL FOR CABINETS AND STREET LIGHT POLES SHALL BE GALVANIZED PER ASTM A.123.
9. ALL STREET LIGHTING INSTALLATIONS EXCEPT NOTED ON THE STREET LIGHTING PLANS SHALL CONFORM TO THE UNIFORM STANDARD DRAWINGS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA, NEVADA, LATEST EDITION OF EACH EXCEPT AS NOTED ON THE STREET LIGHTING PLANS AND LED LUMINAIRES. REFER TO CLARK COUNTY PUBLIC WORKS QUALIFIED PRODUCTS LIST "QPL" FOR LED LUMINAIRES. QPL CAN BE FOUND ONLINE AT HTTP://WWW.CLARKCOUNTYNV.GOV/PUBLICWORKS/PAGES/DEFAULT.ASPX
10. THE FOLLOWING CLARK COUNTY UNDERGROUND FACILITIES MAY BE LOCATED IN YOUR PROJECT AREA: STREET LIGHTING, TRAFFIC SIGNALS, AND FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.) INTERCONNECT CABLE. YOU MUST CONTACT CLARK COUNTY TRAFFIC MANAGEMENT DIVISION, OPERATIONS UNIT AT 455-6000 FOR LOCATIONS AT LEAST 48 HOURS PRIOR TO WORKING IN THE AREA. CLARK COUNTY IS NOT A MEMBER OF "CALL BEFORE YOU DIG" (UNDERGROUND SERVICE ALERT), AND A CALL TO THAT ORGANIZATION DOES NOT RELIEVE YOU OF LIABILITY FOR CLARK COUNTY FACILITIES.
11. F.A.S.T. INTERCONNECT CABLE POLICY IS IN EFFECT. INTERCONNECT CABLE MUST BE MAINTAINED AT ALL TIMES. DEVELOPER/CONTRACTOR SHALL PROVIDE TEMPORARY OVERHEAD INTERCONNECT CABLE WHILE PERMANENT CABLE IS BEING RELOCATED. TEMPORARY AERIAL INSTALLATION MUST BE ACCEPTABLE TO THE COUNTY TRAFFIC MANAGER AND TO F.A.S.T. ANY DAMAGE TO THIS CABLE IS DEEMED IN EMERGENCY BY F.A.S.T., CITY OF LAS VEGAS, CLARK COUNTY AND NDOT AND MUST BE REPAIRED IMMEDIATELY TO F.A.S.T. ACCEPTANCE. $2,500 PER DAY DAMAGES MAY BE ASSESSED AFTER 24 HOURS HAS ELAPSED FROM TIME OF BREAK OR DAMAGE.
12. ALL NEW OR REPLACEMENT TRAFFIC SIGNAL LOOPS SHALL BE INSTALLED USING CABLE-IN-DUCT WIRING, SHALL HAVE INDEPENDENT LEAD-IN WIRES FOR EACH LOOP FROM THE CONTROLLER TO THE PULL-BOX, AND EACH LEAD-IN SHALL BE INDIVIDUALLY TAGGED.
13. TRAFFIC SIGNAL PEDESTRIAN HEADS SHALL BE THE L.E.D. TYPE.
14. ELECTRICAL POWER SERVICE POINT LOCATION(S) FOR STREET LIGHTING AND TRAFFIC SIGNALS MUST BE INDICATED ON THE PLANS. IF CONNECTING TO AN EXISTING CIRCUIT, INDICATE LOCATION OF EXISTING SERVICE POINT FOR EACH CIRCUIT.
15. WHEN STREETLIGHTS ARE TO BE CONNECTED TO AN EXISTING CIRCUIT, THE ENGINEER MUST CERTIFY THAT THE EXISTING CIRCUIT IS CAPABLE OF HANDLING THE ADDITIONAL CIRCUIT LOAD.
16. CLARK COUNTY RESERVES THE RIGHT TO REJECT STREET LIGHT AND TRAFFIC SIGNAL POLES AND ASSEMBLIES WHICH HAVE A "STRIPED" APPEARANCE.
17. TWO WEEKS PRIOR TO BEGINNING OF CONSTRUCTION, MODIFICATION OR RELOCATION OF ANY TRAFFIC SIGNAL SYSTEM, WRITTEN NOTICE SHALL BE SUBMITTED TO THE CLARK COUNTY TRAFFIC MANAGEMENT DIVISION OF THE DATE THAT WORK WILL BEGIN.
18. THREE (3) NORMAL WORKING DAYS PRIOR TO TURN-ON OR COMPLETION OF MODIFICATION(S) TO A TRAFFIC SIGNAL SYSTEM, WRITTEN NOTICE SHALL BE SUBMITTED TO THE CLARK COUNTY TRAFFIC MANAGEMENT DIVISION THAT WORK IS BEING COMPLETED AND THE PROPOSED DATE OF COMPLETION.

FIRE DEPARTMENT NOTES

UNIFORM GUIDELINES – INSTALLATION AND SPECIFICATION OF FIRE HYDRANTS

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE CLARK COUNTY FIRE CODE AS AMENDED, AND THE 2007 EDITION OF NATIONAL FIRE PROTECTION ASSOCIATION PAMPHLET #24.
2. FIRE HYDRANTS AND WATER SUPPLIES FOR FIRE PROTECTION SHALL BE AND MADE SERVICEABLE PRIOR TO AND DURING THE TIME OF CONSTRUCTION IN ACCORDANCE WITH SECTION 1412 OF THE CLARK COUNTY FIRE CODE, AS AMENDED.
3. IF DURING CONSTRUCTION IT BECOMES NECESSARY TO CLOSE ANY CONTROL VALVE OR PLACE A HYDRANT OUT OF SERVICE, APPROVAL SHALL BE OBTAINED FROM THE FIRE DEPARTMENT PRIOR TO PLACING THE HYDRANT OUT OF SERVICE.
4. PAINTING OF CURBS AND/OR STRIPING OF ASPHALT AREAS AND PROTECTION OF HYDRANTS FROM PHYSICAL INJURY SHALL BE PER THE FIRE HYDRANT INSTALLATION SPECIFICATIONS OF THE FIRE PREVENTION DIVISION.
5. NO FIRE HYDRANT SHALL BE LOCATED WITHIN 25 FEET OF ANY STRUCTURE, OR 6 FEET OF A DRIVEWAY, POWER POLE, LIGHT STANDARD, OR ANY OTHER OBSTRUCTION. FOR WALL, FENCE AND PLANTER LOCATIONS, A PERIMETER AROUND THE HYDRANT MEASURING A MINIMUM OF 3 FEET FROM ITS EXTERIOR SHALL BE MAINTAINED CLEAR OF ALL OBSTRUCTION AT ALL TIMES.
6. FIRE APPARATUS ACCESS ROADS SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS, WITH A MINIMUM VEHICLE LOAD OF 33,000 POUNDS PER AXLE, AND SHALL BE SURFACED AND PAVED SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.

    EXCEPTION: TEMPORARY ACCESS ROADS SERVING ONLY BUILDINGS UNDER CONSTRUCTION SHALL NOT BE REQUIRED TO BE PAVED, BUT SHALL COMPLY WITH ALL OTHER REQUIREMENTS OF SECTION 503.2.3 OF THE CLARK COUNTY FIRE CODE.
7. PRIOR TO ACCEPTANCE OF ANY FIRE SERVICE MAIN, A SATISFACTORY HYDROSTATIC TEST WITH PIPING JOINTS UNCOVERED MUST BE CONDUCTED. APPROVED PLANS, AN INSTALLATION PERMIT AND A CONTRACTOR'S MATERIALS AND TEST CERTIFICATE MUST BE PROVIDED AT TIME OF INSPECTION. SCHEDULE INSPECTION AT WWW.CLARKCOUNTYNV.GOV/DEVELOPMENTSERVICES/FIREPREVENTION.
8. FIRE HYDRANTS SHALL BE LOCATED 4' TO 7' FROM BACK OF CURB AND A MINIMUM OF 6 FEET AWAY FROM TURNS.
9. BLUE REFLECTIVE MARKERS MUST BE INSTALLED BEFORE FINAL HYDRANT ACCEPTANCE CAN BE ATTAINED (SECTION C107 OF THE CLARK COUNTY FIRE CODE, AS AMENDED)
10. HYDRANTS THAT ARE PROPOSED FOR INSTALLATION IN PUBLIC WATER SYSTEMS SHALL BE IN ACCORDANCE WITH APPROVED FIRE HYDRANTS AS ALLOWED BY THE WATER PURVEYOR. HYDRANTS PROPOSED FOR INSTALLATION ON PRIVATE WATER SYSTEMS SHALL BE IN ACCORDANCE WITH APPROVED FIRE HYDRANTS AS ALLOWED BY THE FIRE DEPARTMENT.

SOUTHWEST GAS CONSTRUCTION NOTES

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6020
2. THERE SHALL BE A MINIMUM HORIZONTAL AND VERTICAL CLEARANCE OF 12-INCHES BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND FACILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRIC
3. FOR VALVE ADJUSTMENT CONTACT 702-668-6107 48 HOURS PRIOR TO CONSTRUCTION.
4. IN THE EVENT OF NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2099

CAUTION: HIGH PRESSURE GAS

CALL SOUTHWEST GAS AT 702-400-1789 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES 48 HOURS PRIOR TO CONSTRUCTION

GENERAL NOTES

1. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND OF INGRESS AND EGRESS TO SAID CONSTRUCTION. EXTENT OF TRANSITIONS TO BE DETERMINED BY THE COUNTY ENGINEER.
2. EXISTING UTILITIES ARE LOCATED ON PLANS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROTECTION OF UTILITIES AND THE ENGINEER BEARS NO RESPONSIBILITY FOR UTILITIES NOT SHOWN ON PLANS OR NOT IN THE LOCATION SHOWN ON THE PLANS. (CALL BEFORE YOU DIG 800-227-2600).
3. CONSTRUCTION SURVEY: GRADES ARE GIVEN FROM TOP OF STAKES OR NAILS. THE CONTRACTORS ARE CAUTIONED TO OBSERVE THE FOLLOWING RULE IN USING THE GRADE STAKES GIVEN BY THIS OFFICE. THREE CONSECUTIVE POINTS THAT ARE SHOWN TO BE ON THE SAME RATE OF SLOPE MUST BE USED IN COMMON IN ORDER THAT ANY VARIATION OUT OF A PERFECT STRAIGHT GRADE MAY BE DETECTED. IN CASE ANY SUCH DISCREPANCY IS FOUND, THE SAME MUST BE REPORTED OTHERWISE THIS OFFICE WILL NOT BE RESPONSIBLE FOR ANY ERROR IN THE GRADE OF THE FINISH WORK.
4. NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES OR STRUCTURES NOT SHOWN ON THE DRAWINGS. CONTRACTOR TO VERIFY THE EXACT LOCATION OF UTILITIES PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR'S RESPONSIBILITIES REGARDING UTILITIES SHALL BE AS REQUIRED UNDER SECTION 107.17 OF THE UNIFORM STANDARD SPECIFICATIONS FOR CLARK COUNTY AREA, NEVADA AND AS PROVIDED IN THE SPECIFICATIONS. THE CONTRACTOR SHALL USE EXTREME CARE WORKING OVER OR NEAR ANY EXISTING GAS MAINS.
5. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING IMPROVEMENTS, WHICH ARE TO REMAIN IN PLACE FROM DAMAGE. ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR RECONSTRUCTED TO THE SATISFACTION OF THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.
6. FENCES, SIGNS, STRUCTURES, LIGHTS AND OTHER EXISTING IMPROVEMENTS WITHIN STREET R/W SHALL BE REMOVED WHERE SHOWN ON THE CONTRACT DRAWINGS, AND AS REQUIRED BY THE ENGINEER.
7. REPLACEMENT, RELOCATION OR RECONSTRUCTION OF ALL EXISTING IMPROVEMENTS INCLUDING FENCES, WALL SIGNS, AND ALL OTHER ITEMS APPLICABLE TO THIS CONTRACT SHALL BE AS REQUIRED BY THE ENGINEER.
8. THE CONTRACTOR SHALL BACKFILL AND FINAL GRADE ALL CUT OR FILL SLOPES TO MATCH EXISTING CONDITIONS TO THE SATISFACTION OF THE ENGINEER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERTICAL ADJUSTMENT OF ALL EXISTING SANITARY, WATER AND STORM SEWER MANHOLES TO THE FINAL FINISH GRADES IN ACCORDANCE WITH THE DETAILS SHOWN ON THE CONTRACT DRAWINGS AND IN ACCORDANCE WITH SECTION 609 OF THE "STANDARD SPECIFICATIONS".
10. 48 HOURS PRIOR TO START OF CONSTRUCTION THE CONTRACTOR SHALL CONTACT:
    NV ENERGY PHONE – (702) 402-8400
    CENTURYLINK TELEPHONE COMPANY PHONE – (702) 244-7055
    SOUTHWEST GAS CORPORATION PHONE – (702) 400-1789
    LAS VEGAS VALLEY WATER DISTRICT PHONE – (702) 870-2011
11. PRIVATE STREETS, CURB & GUTTER AND VALLEY GUTTERS REFLECTED ON THESE PLANS ARE TO BE INSPECTED BY A CLARK COUNTY INSPECTOR.
12. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED AT ALL STREET INTERSECTIONS PER CLARK COUNTY STANDARD DRAWING 235 EXACT LOCATION OF RAMP TO BE DETERMINED IN FIELD BY A CLARK COUNTY INSPECTOR.
13. STANDARD STREET SECTIONS PER CLARK COUNTY STANDARD DRAWINGS UNLESS OTHERWISE NOTED.
14. CURB AND GUTTER WITH A GRADE OF LESS THAN FOUR TENTHS OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
15. VALLEY GUTTER WITH A GRADE OF FOUR TENTHS OF ONE PERCENT OR LESS SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE PROPER DRAINAGE ACROSS ALL VALLEY GUTTERS.
16. ALL BARRICADING AND TEMPORARY TRAFFIC CONTROL DEVICES OR METHODS USED DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE "NEVADA TRAFFIC CONTROL MANUAL, 1986 PUBLISHED BY THE STATE OF NEVADA, DEPARTMENT OF TRANSPORTATION, EXCEPT AS OTHERWISE PROVIDED IN THE CONTRACT DRAWINGS.
17. ALL GRADING SHALL BE IN ACCORDANCE WITH THE SPECIFICATION MANUAL AND THE SOILS REPORT AS PREPARED BY WRIGHT ENGINEERS. WHERE CONFLICTS OCCUR THE MOST RESTRICTIVE SHALL GOVERN.
18. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL OVERHEAD AND UNDERGROUND 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 OR UNDERGROUND FACILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COSTS AND LIABILITY IN CONNECTION THEREWITH.
19. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY ALTERATIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.
20. THE CONTRACTOR SHALL APPLY FOG SEAL ONLY AFTER ALL CORRECTIONS AND ADJUSTMENTS HAVE BEEN MADE.
21. THE CONTRACTOR SHALL NOT BACKFILL ANY TRENCHES IN WHICH WATERLINES HAVE BEEN UNCOVERED UNTIL THE WATERLINES HAVE BEEN INSPECTED BY THE LAS VEGAS VALLEY WATER DISTRICT.
22. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC. SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND VALLEY GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY.
23. TYPE V CEMENT SHALL BE USED IN ALL CONCRETE WORK.
24. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ALL MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.550.

CLARK COUNTY PUBLIC WORKS DEVELOPMENT REVIEW

1. INSPECTIONS ARE REQUIRED. CALL 24 HOURS IN ADVANCE, 455-4610. YOUR PERMIT, APPROVED PLANS, AND BARRICADE PLANS FOR THIS WORK MUST BE ON THE JOB SITE AT ALL TIMES.
2. EXACT LOCATION OF ALL SAW-CUT LINES SHALL BE DETERMINED IN THE FIELD BY A CLARK COUNTY INSPECTOR.
3. CURB AND GUTTER WITH A GRADE OF LESS THAT 4/10 OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
4. FINAL ASPHALTIC CONCRETE (AC) PAVEMENT SURFACES SHALL BE ONE-HALF (1/2") INCH ABOVE THE LIP OF THE GUTTER (INCLUDING OPEN GRADE).
5. ALL OFF-SITE IMPROVEMENT CONSTRUCTION SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS AND STANDARD DRAWINGS CLARK COUNTY AREA NEVADA AND CLARK COUNTY SUPPLEMENT TO UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS, LATEST REVISION EXCEPT FOR LUMINAIRES. REFER TO CLARK COUNTY PUBLIC WORKS QUALIFIED PRODUCTS LIST "QPL" FOR LED LUMINAIRES. QPL CAN BE FOUND ONLINE AT HTTP://WWW.CLARKCOUNTYNV.GOV/PUBLICWORKS/PAGES/DEFAULT.ASPX
6. PRIVATE STREETS, CURB & GUTTER AND VALLEY GUTTERS REFLECTED ON THESE PLANS ARE TO BE INSPECTED BY A CLARK COUNTY INSPECTOR.
7. WHEEL CHAIR RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS SHALL BE DETERMINED IN THE FIELD BY A CLARK COUNTY INSPECTOR.
8. PROPER SIGNS, BARRIERS, BARRICADES AND LIGHTS SHALL BE PLACED AND MAINTAINED IN ACCORDANCE WITH THE LATEST "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", TRAFFIC, SCHOOL, OR STREET SIGNS OF ANY KIND ARE NOT TO BE MOVED FOR ANY REASON WITHOUT FIRST COORDINATING WITH THE DEPARTMENT OF PUBLIC WORKS OFF-SITE INSPECTOR AT 702-455-4610.
9. THIS PLAN DOES NOT AUTHORIZE CLOSURE OF ANY ROAD OR STREET.
10. NO OPEN TRENCH SHALL BE ALLOWED ACROSS ANY STREET OR WITHIN TEN (10') OF ANY TRAVEL-WAY, EXCEPT WHEN WORK IS IN ACTUAL PROGRESS. AREAS COVERED BY ACCEPTABLE STEEL PLATE ARE NOT TO BE CONSTRUED AS A TRENCH. NO OPEN TRENCH IS PERMITTED IN EXCESS OF 500 FEET OR LENGTH NECESSARY TO ACCOMMODATE PIPE INSTALLATION IN A SINGLE DAY, WHICH EVER IS GREATER. ALL TRENCH CROSSINGS AND BACKFILL SHALL MEET THE STANDARD SPECIFICATION UNLESS OTHERWISE STATED.
11. A TEMPORARY PATCH IS TO BE IN PLACE AT THE END OF EACH WORK DAY WHERE THE BACKFILL IN THE TRENCH HAS BEEN COMPLETED AND PRIOR TO OPENING THE WORK AREA BACK TO TRAFFIC AND IS TO BE MAINTAINED BY THE PERMITTEE. A PERMANENT PATCH IS TO BE IN PLACE WITHIN THIRTY (30) DAYS AFTER THE INSTALLATION OF THE TEMPORARY PATCH.
12. COMPACTION TESTS ARE REQUIRED.

STORMWATER MANAGEMENT NOTES

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 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 CLARK COUNTY TITLE 24.40 AND THE 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 NVR100000, 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, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPS WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.12.
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.

2.2 CITY OF LAS V

ABBREVIATIONS

AC	ASPHALTIC CONCRETE OR ACRE	FH	FIRE HYDRANT	PVC	POLYVINYL CHLORIDE
AGG	AGGREGATE BASE	FL	FLOWLINE	PVI	POINT OF VERTICAL INTERSECTION
APN	ASSESSORS PARCEL NUMBER	FT	FEET OR FOOT	QTY	QUANTITY
APPROX OR ~	APPROXIMATE	FUT	FUTURE	R	RADIUS
AVE	AVENUE	GRD	GRADE OR GROUND	RCA	REINFORCED CONCRETE ARCH
@	AT	GB	GRADE BREAK OR GRADE CHANGE	RCB	REINFORCED CONCRETE BOX
BC	BEGIN CURVE OR BACK OF CURB	GV	GATE VALVE	RCP	REINFORCED CONCRETE PIPE
BCR	BEGINNING OF CURB RETURN	HDPE	HIGH DENSITY POLYETHYLENE	RD	ROAD
BHW	BOTTOM OF HEADWALL	HOA	HOME OWNERS ASSOCIATION	RDWY ESMT	ROADWAY EASEMENT
BLDG	BUILDING	HORZ	HORIZONTAL	REQD	REQUIRED
BLVD	BOULEVARD	HP	HIGH POINT	REV	REVISION
BM	BENCHMARK	HWL	HIGH WATER LEVEL	RG	ROUGH GRADE
BVC	BEGIN VERTICAL CURVE	HDWL OR HW	HEADWALL	RT OR R	RIGHT
BWV	BACK WATER VALVE	HYD	HYDRAULIC OR HYDRANT	R/W, ROW	RIGHT OF WAY
CC	CLARK COUNTY	ID	INSIDE DIAMETER	S	SLOPE
CCAUSD	CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS	IN	INCH	SCH	SCHEDULE
CCPW	CLARK COUNTY PUBLIC WORKS	INT	INTERSECTION	SD	STORM DRAIN
CCRFCD	CLARK COUNTY REGIONAL FLOOD DISTRICT	INV	INVERT ELEVATION	SDDI	STORM DRAIN DROP INLET
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT	IP	IRON PIPE	SDMH	STORM DRAIN MANHOLE
CE	COMMON ELEMENT	IRRG	IRRIGATION	SEC	SECTION
CL/C/L/C	CENTERLINE	LF	LINEAR FEET	SF	SQUARE FEET
CLR	CLEAR OR CLEARANCE	LP	LOW POINT	SHT	SHEET
CLSM	CONTROLLED LOW STRENGTH MATERIAL	LT OR L	LEFT	SNWA	SOUTHERN NEVADA WATER AUTHORITY
CLV	CITY OF LAS VEGAS	LVVWD	LAS VEGAS VALLEY WATER DISTRICT	SPECS	SPECIFICATIONS
CML&C	CEMENT MORTAR LINED AND COATED	LWL	LOW WATER LEVEL	ST	STREET
CMU	CONCRETE MASONRY UNIT	MAX	MAXIMUM	SSMH	SANITARY SEWER MANHOLE
CNLV	CITY OF NORTH LAS VEGAS	MECH	MECHANICAL	STA	STATION
COH	CITY OF HENDERSON	MH	MANHOLE	STD	STANDARD
CONC	CONCRETE	MIN	MINIMUM	STL	STEEL OR STREET LIGHT
CT	COURT	MISC	MISCELLANEOUS	SW	SIDEWALK
CY OR CU YD	CUBIC YARD	MUE	MUNICIPAL UTILITY EASEMENT	SWG	SOUTHWEST GAS
DCWCS	DESIGN AND CONSTRUCTION FOR WASTEWATER COLLECTION SYSTEMS	NDOT	NEVADA DEPARTMENT OF TRANSPORTATION	SWR OR SS	SANITARY SEWER
		NPC	NEVADA POWER COMPANY	SY	SQUARE YARD
DET	DETAIL	NTS	NOT TO SCALE	TAN	TANGENT
DI	DUCTILE IRON OR DRAIN INLET	NUE	NONEXCLUSIVE UTILITY EASEMENT	TC	TOP OF CURB
DIA, ø	DIAMETER	OC	ON CENTER	TF	TOP OF FLOOR OR TOP OF FOOTING
DIP	DUCTILE IRON PIPE	OD	OUTSIDE DIAMETER OR OVERALL DIMENSION	TG	TOP OF GRATE
DR	DRIVE	OFF	OFFSET	THRU	THROUGH
DWG(S)	DRAWING	ORIG	ORIGINAL	THW	TOP OF HEADWALL
DWY	DRIVEWAY	PAE	PUBLIC OR PEDESTRIAN ACCESS EASEMENT	TP	TOP OF PIPE
EA	EACH	PB	PULL BOX	TW	TOP OF WALL
ECR	END CURB RETURN	PC	POINT OF CURVE	TRW	TOP OF RETAINING WALL
EG	EXISTING GROUND	PCC	POINT OF COMPOUND CURVE	TSW	TOP OF SCREEN WALL
EL	ELEVATION	PDE	PUBLIC DRAINAGE EASEMENT	TYP	TYPICAL
ESMT	EASEMENT	℄ OR PL	PROPERTY LINE	UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS
EP	EDGE OF PAVEMENT	POB	POINT OF BEGINNING		
ERU	EQUIVALENT RESIDENTIAL UNIT	POC	POINT OF CURVATURE	VC	VERTICAL CURVE
EVC	END VERTICAL CURVE	POE	POINT OF ENDING	VERT	VERTICAL
EX OR EXIST	EXISTING	PRC	POINT OF REVERSE CURVATURE	VG	VALLEY GUTTER
FC	FACE OF CURB	PRELIM	PRELIMINARY	WI	WROUGHT IRON
FF	FINISHED FLOOR	PROP	PROPOSED	WL	WATER LINE
FG	FINISHED GRADE	PRV	PRESSURE REDUCING VALVE	WPZ	WATER PRESSURE ZONE
FGH	FINISHED GRADE, HIGH SIDE	PUE	PUBLIC UTILITY EASEMENT	WT	WEIGHT
FGL	FINISHED GRADE, LOW SIDE	PT	POINT OF TANGENT OR POINT	WTR	WATER LINE

SPECIAL NOTE

IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED WHICH IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CLARK COUNTY DEPT. OF PUBLIC WORKS. TEMPORARY CONSTRUCTION ITEMS INCLUDE: PAVEMENT TRANSITIONS, PROTECTIVE DITCHES AND BERMS, ROAD SIGNS AND BARRICADES, ETC.

NOTICE TO CONTRACTOR

-QUANTITIES SHOWN ARE ESTIMATES ONLY AND ARE INTENDED TO ILLUSTRATE SCOPE OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXACT QUANTITIES INVOLVED.

-EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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 OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS. CALL BEFORE YOU DIG: (800) 227-2600

LEGEND

EXISTING	PROPOSED	DESCRIPTION
(1900)	1900	5' CONTOUR
		1' CONTOUR
		STRIPING
		SEWER MANHOLE
		CURB AND GUTTER
EX 8" PVC SS	8" PVC SS	SANITARY SEWER PIPE AND FLOW ARROW
EX 8" PVC WTR	8" PVC WTR	WATER PIPE
		WATER GATE VALVE
		FIRE HYDRANT
		WATER BLOW-OFF
		WATER LATERAL W/ METER
		SANITARY SEWER LATERAL
		STREETLIGHT
		EDGE OF PAVEMENT
		TRAFFIC SIGN
PAD= XXX.X FF = XXX.X	PAD= XXX.X FF = XXX.X	PAD ELEVATION FINISHED FLOOR ELEVATION
(00.00) TC	00.00 TC	ELEVATION
		RETAINING WALL
		STORM DRAIN W/ MANHOLE

	EXISTING GAS GATE VALVE
MH	EXISTING UNKNOWN MANHOLE
GAS	EXISTING GAS, SIZE PER PLAN
	EXISTING POWER POLE
	EXISTING TRAFFIC SIGNAL
	EXISTING WALL
	WATER PIPE FITTING
POC	WATER POINT OF CONNECTION
POC	SEWER POINT OF CONNECTION
	DAYLIGHT LINE
	STREET CENTERLINE
	RIGHT-OF-WAY
	MATCHLINE
	BOUNDARY LINE
	PHASE LINE
P	PROPERTY LINE
	FLOWLINE
	SAWCUT
FILL / CUT	CUT/FILL TRANSITION LINE
	SIDEWALK
	EX STRIPING TO BE OBLITERATED
	GRADE BREAK LINE
ID	REFLECTIVE RAISED PAVEMENT MARKERS
BWV	BACK WATER VALVE
	WROUGHT IRON FENCE
	PONY WALL
	DECORATIVE PERIMETER WALL
	DECORATIVE PERIMETER RETAINING WALL
	PROPOSED CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
	EXISTING CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
	FUTURE CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB

	PROPOSED SCARP AREA
	DRIVEWAY
	PROPOSED RIP RAP
	SIGHT VISIBILITY ZONE PER STD DWG NO. 201.2
	HANDICAP RAMP

QUANTITIES

			PRIVATE	PUBLIC
DRAINAGE				
1.	4.0' TYPE "C" DROP INLET	EA	–	1
2.	18" RCP CLASS III STORM DRAIN	LF	–	68
3.	8' WIDE CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	660	710
4.	SIDEWALK UNDER DRAIN	SF	–	1
5.	48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE	EA	–	1
6.				
SEWER SYSTEM				
1.	4" PVC SEWER LATERAL (PRIVATE)	LF	–	–
2.	8" PVC SEWER PIPE (PUBLIC)	LF	–	–
3.	STANDARD 48" SEWER MANHOLE (PUBLIC)	EA	–	–
4.	8" SEWER PIPE CAP	EA	–	–
5.	BACK WATER VALVE	EA	–	–
6.	8" C-900 WATER QUALITY SEWER PIPE (PUBLIC)	EA	–	–
7.				
WATER SYSTEM				
1.	FIRE HYDRANT ASSEMBLY W/6" GATE VALVE PER UDACS PLATE NO. 40	EA	–	–
2.	6" PVC WATER PIPE (CLASS 150)	LF	–	–
3.	8" PVC WATER PIPE (CLASS 150)	LF	–	–
4.	8" DIP WATER PIPE (CLASS 53)	LF	–	–
5.	8" GATE VALVE WITH VALVE BOX PER UDACS PLATE NO. 30 & 39	EA	–	–
6.	8" X 6" TEE PER UDACS PLATE NO. 31	EA	–	–
7.	8" X 8" TEE PER UDACS PLATE NO. 31	EA	–	–
8.	8" 5 DEGREE BEND WITH RESTRAINED JOINTS	EA	–	–
9.	8" 11.25 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
10.	8" 22.5 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
11.	8" 45 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
12.	8" 90 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
13.	CAP AND 2" BLOW-OFF ASSEMBLY W/CAP PER UDACS PLATE NO. 36	EA	–	–
14.	1" COPPER SERVICE W/ 3/4" METER PER UDACS PLATE NO. 2	EA	–	–
15.	1" COPPER SERVICE W/ 1" METER PER UDACS PLATE NO. 4	EA	–	–
16.	1" COPPER SERVICE W/ 3/4" METER & 1" RPPA PER UDACS PLATE NO. 4 & 8	EA	–	–
		EA	–	
STREET IMPROVEMENTS				
1.	2" A.C. PAVEMENT W/ 4" TYPE II OVER 6" TYPE I AGGREGATE BASE	SY	–	–
2.	STANDARD 18" TYPE "L" ISLAND CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
3.	STANDARD 8" TYPE "A" ISLAND CURB W/6" TYPE I AGGREGATE BASE	LF	–	–
4.	STANDARD 30" TYPE "ROLL" CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
5.	4' WIDE CONCRETE SIDEWALK W/4" TYPE II AGGREGATE BASE	SF	–	–
6.				–
7.				
TRAFFIC SIGNALS				
1.	30" STOP SIGN WITH POST (R1-1)	EA	–	–
2.	9" STREET NAME SIGN (D-3, BROWN W/ WHITE LETTERS)(6 POLES x 2 PER POLE=12)	EA	–	–
3.	BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKER	EA	–	–
4.	CROSSWALK MARKINGS	LF	–	–
5.				
6.				
7.				
8.				
DRY UTILITIES				
1.	100W H.P.S. LUMINAIRE STREET LIGHT W/DECORATIVE POLE	EA	–	–
2.	1-1/4" PVC STREET LIGHT CONDUIT WITH (2) #4 AND (1) #8 CONDUCTORS	LF	–	–
3.	NO. 3-1/2 PULL BOX W/METAL COVER	EA	–	–
4.	150 AMP SERVICE PEDESTAL (IRR)	EA	–	–
5.	200 AMP SERVICE PEDESTAL (STLT)	EA	–	–
6.				

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

QUANTITIES AND ABBREVIATIONS

S5 T20 R60

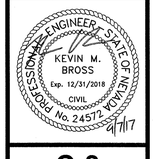
DATE: 9/1/17

DRAFTER: EMH

DESIGNER: EMH

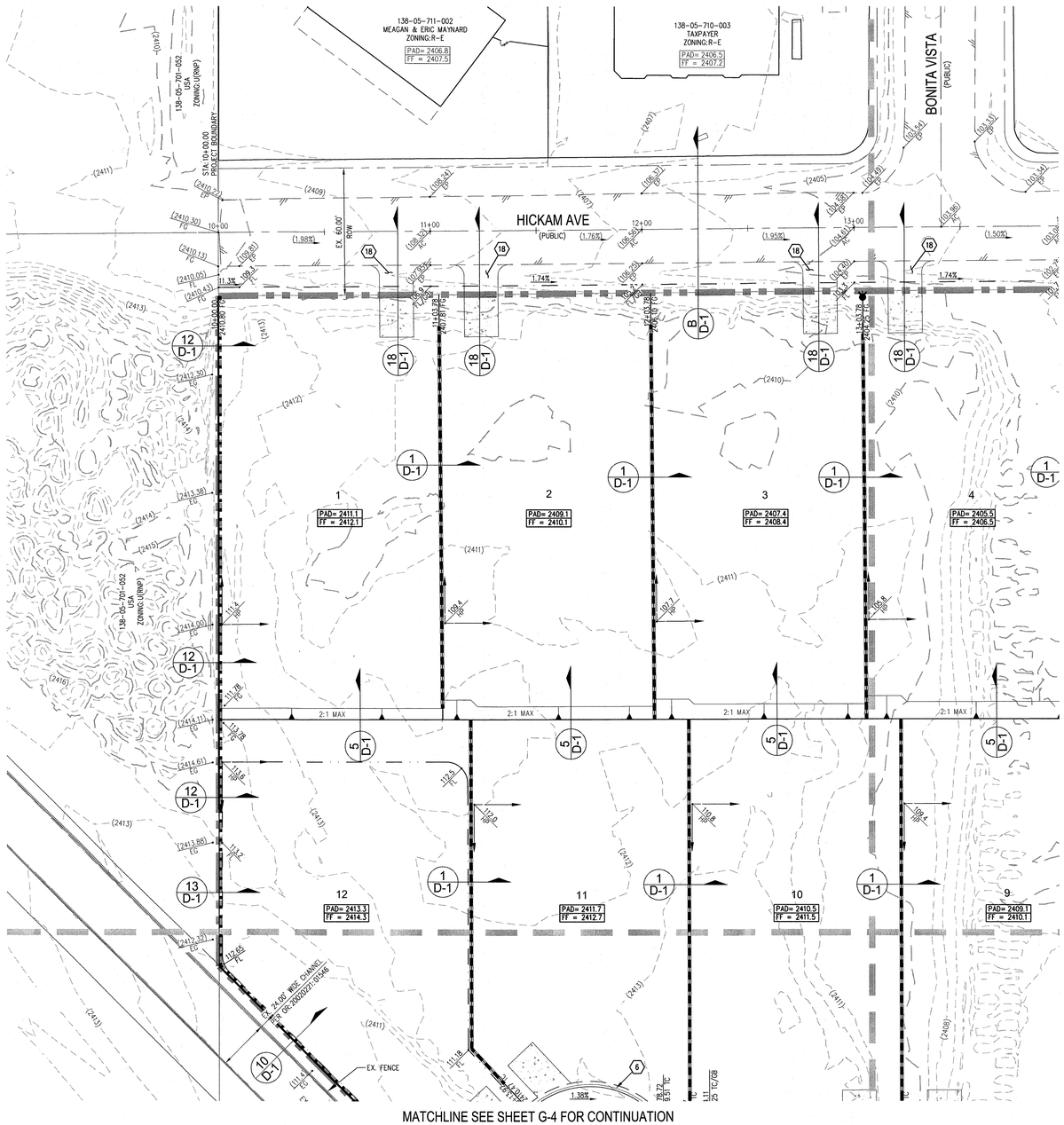
CHECKED: KMB

PROJECT NO.
PIN1702



C-3
SHEET 3 OF 19

J:\pin1702 ere ix\dwg\improv\pin1702 cvr.dwg 9/7/2017 4:03 PM Emily Hoy



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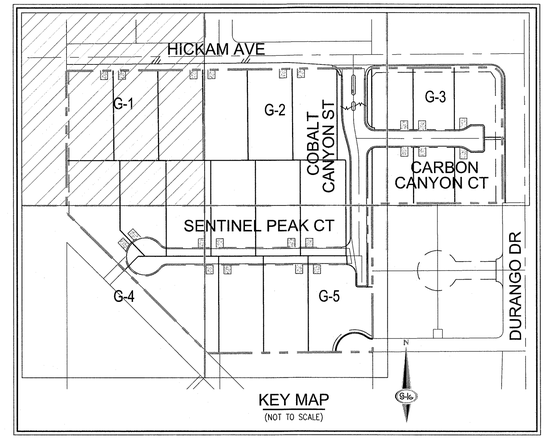
S-16

0 30 60
SCALE - 1"=30' FEET



CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC / (00.00) TC — PROPOSED ELEVATION / EXISTING ELEVATION
- [5.01%] — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
OUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES

1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
10. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
11. INSTALL VALLEY GUTTER VALLEY GUTTER PER CCAUSD NO. 228
12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
15. INSTALL 4' TYPE "C" STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
    CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE II AGGREGATE BASE PER DETAIL 18 ON SHEET D-1
18. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCPW
    REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
19. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
21. EXISTING 24" CLASS III RCP STORM DRAIN
22. EXISTING 48" STORM DRAIN MANHOLE
23. EXISTING AREA DRAIN TO BE REMOVED
24. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SIW6

BRASS CAP "P.LS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

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GRADING NOTES

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CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

DRAINAGE CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY HTE#HTE ##-##### ON FILE AT CLARK COUNTY FOR THE SUBJECT PROJECT.

KEVIN M. BROSS, PE 24572 DATE

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Call before you UnderGround
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CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
GRADING PLAN I

S 5
T 20
R 60

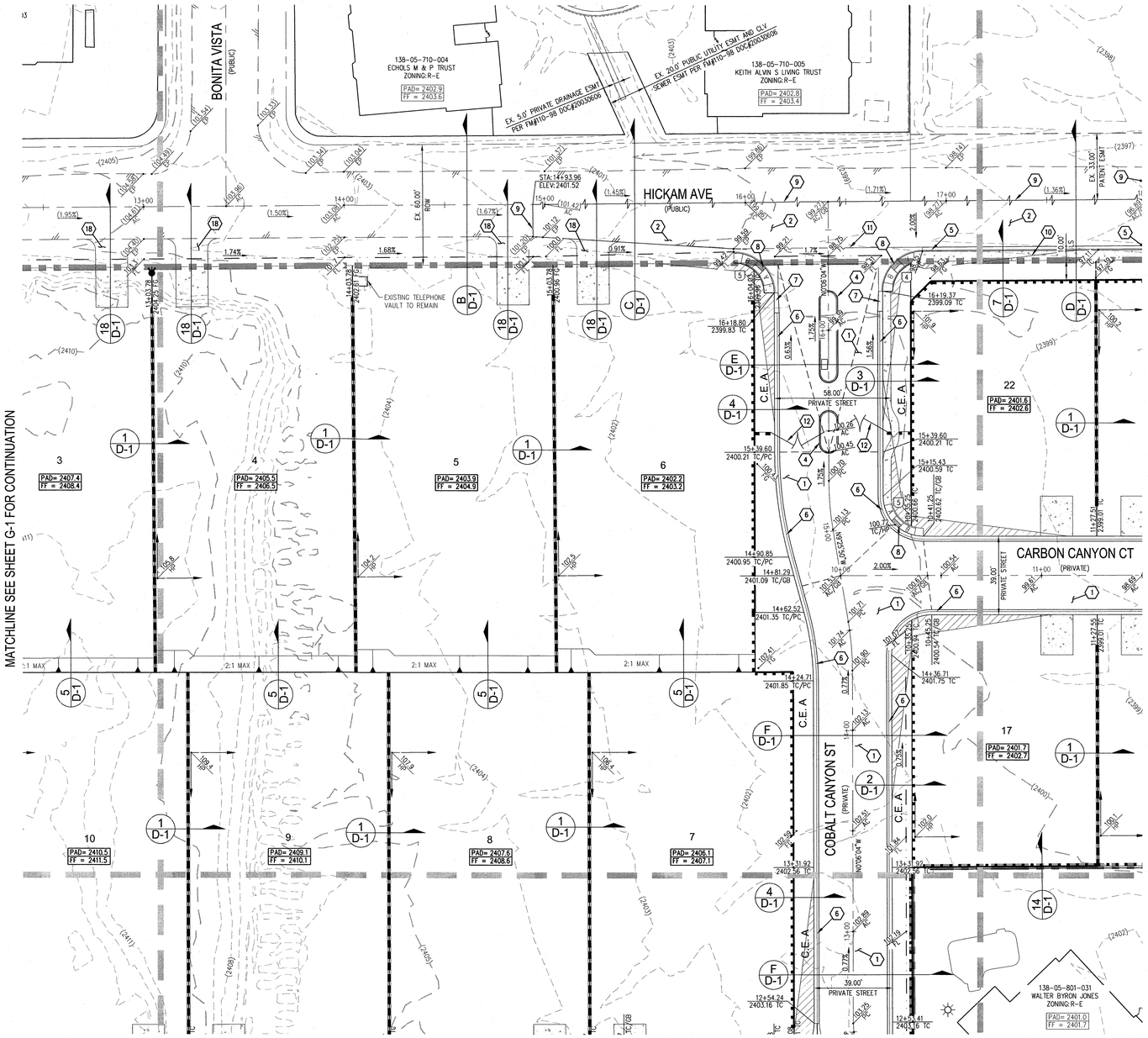
DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/7/17

G-1
SHEET 4 OF 19

J:\pin1702 ere iv\dwg\mgrcx\pin1702 grd.dwg, 9/7/2017 4:04 PM, Emily Hoy



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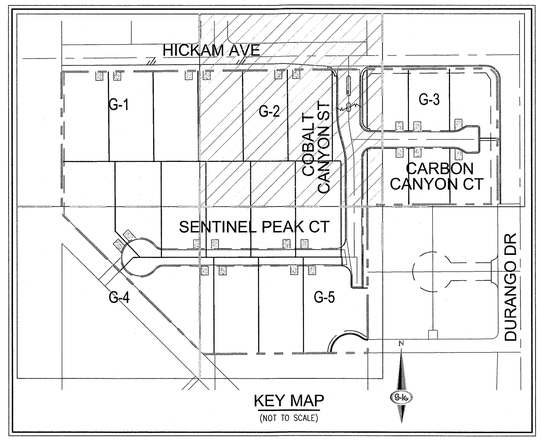
SCALE – 1"=30' (0, 30, 60 FEET)



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3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
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7	3.01 TO 4	12.0	4.5
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GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
- [5.01%] — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
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- FILL / CUT — CUT/FILL TRANSITION LINE
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- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES

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4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
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24. EXISTING AREA DRAIN TO BE REMOVED
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

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

NO.	DESCRIPTION	DATE	BY	APP'D DATE	APP

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

GRADING PLAN II

S5 T-20 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/7/17

G-2
SHEET 5 OF 19

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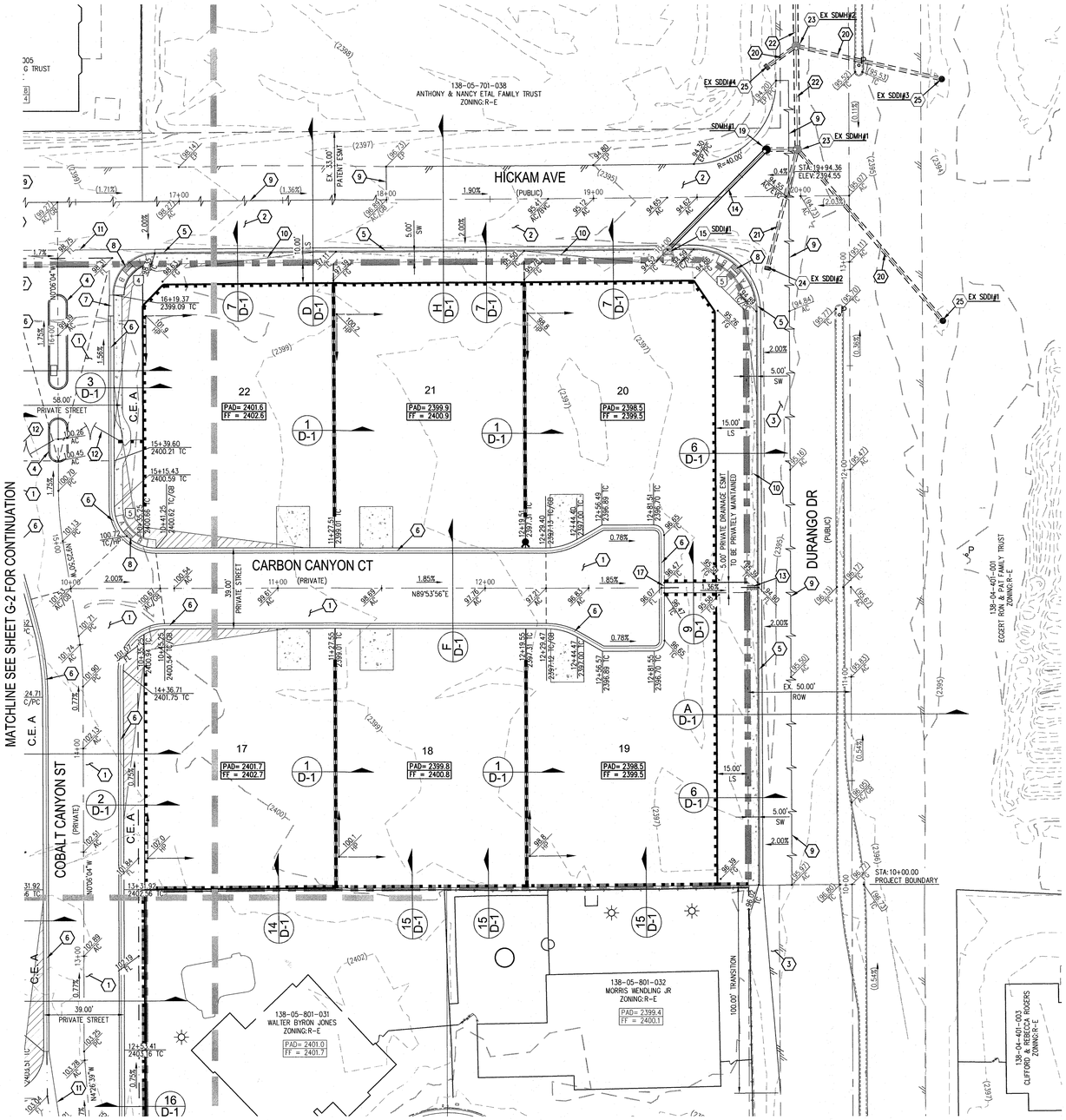

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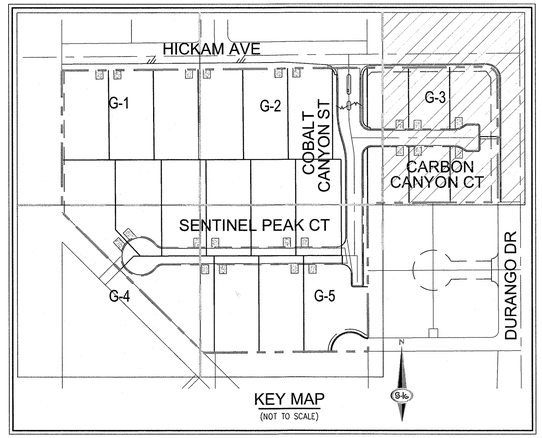

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SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

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PER THE CLARK COUNTY VERTICAL CONTROL V.2003

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KEVIN M. BROSS, PE 24572 DATE

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FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
GRADING PLAN III

S 5
T 20
R 60

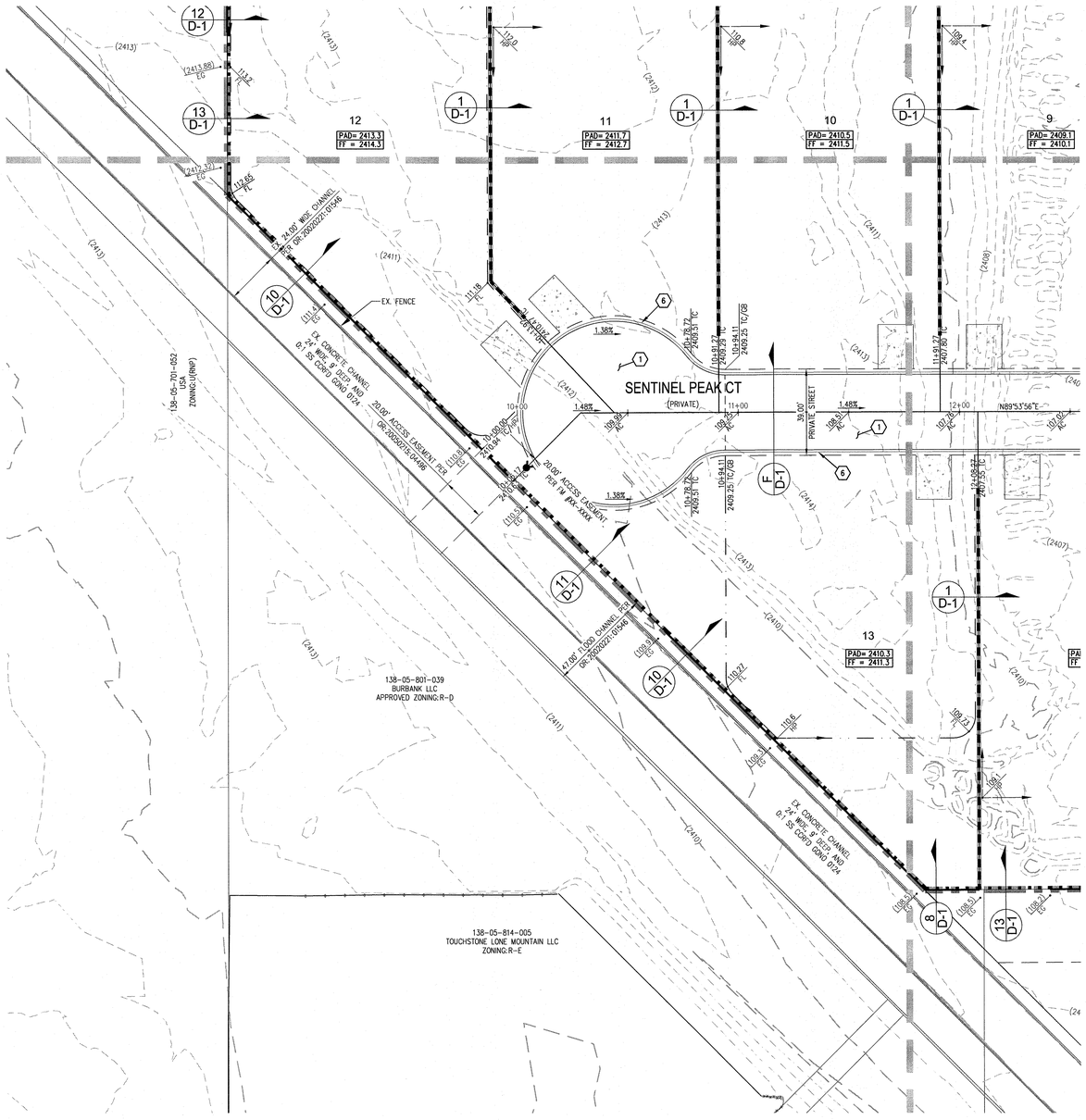
DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

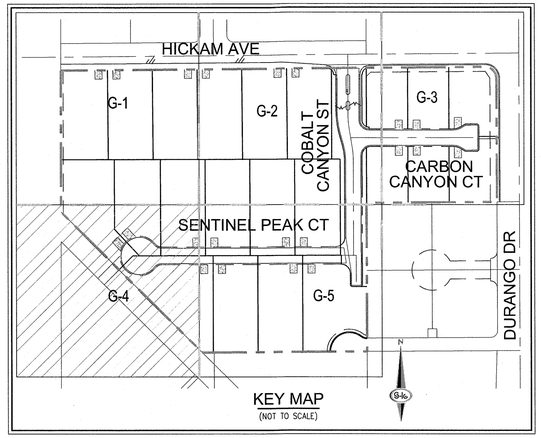
PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/7/17

G-3
SHEET 6 OF 19

J:\pin1702 ere la\dwg\improv\pin1702 grd.dwg 9/7/2017 4:04 PM Emily Hoy





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4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
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- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES

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2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
10. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
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12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
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15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
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17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
18. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCPW
19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
22. EXISTING 24" CLASS III RCP STORM DRAIN
23. EXISTING 48" STORM DRAIN MANHOLE
24. EXISTING AREA DRAIN TO BE REMOVED
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE

1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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.

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GRADING NOTES

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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.
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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.
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10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

GRADING PLAN IV

S 5
T 20
R 60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/1/17

G-4
SHEET 7 OF 19

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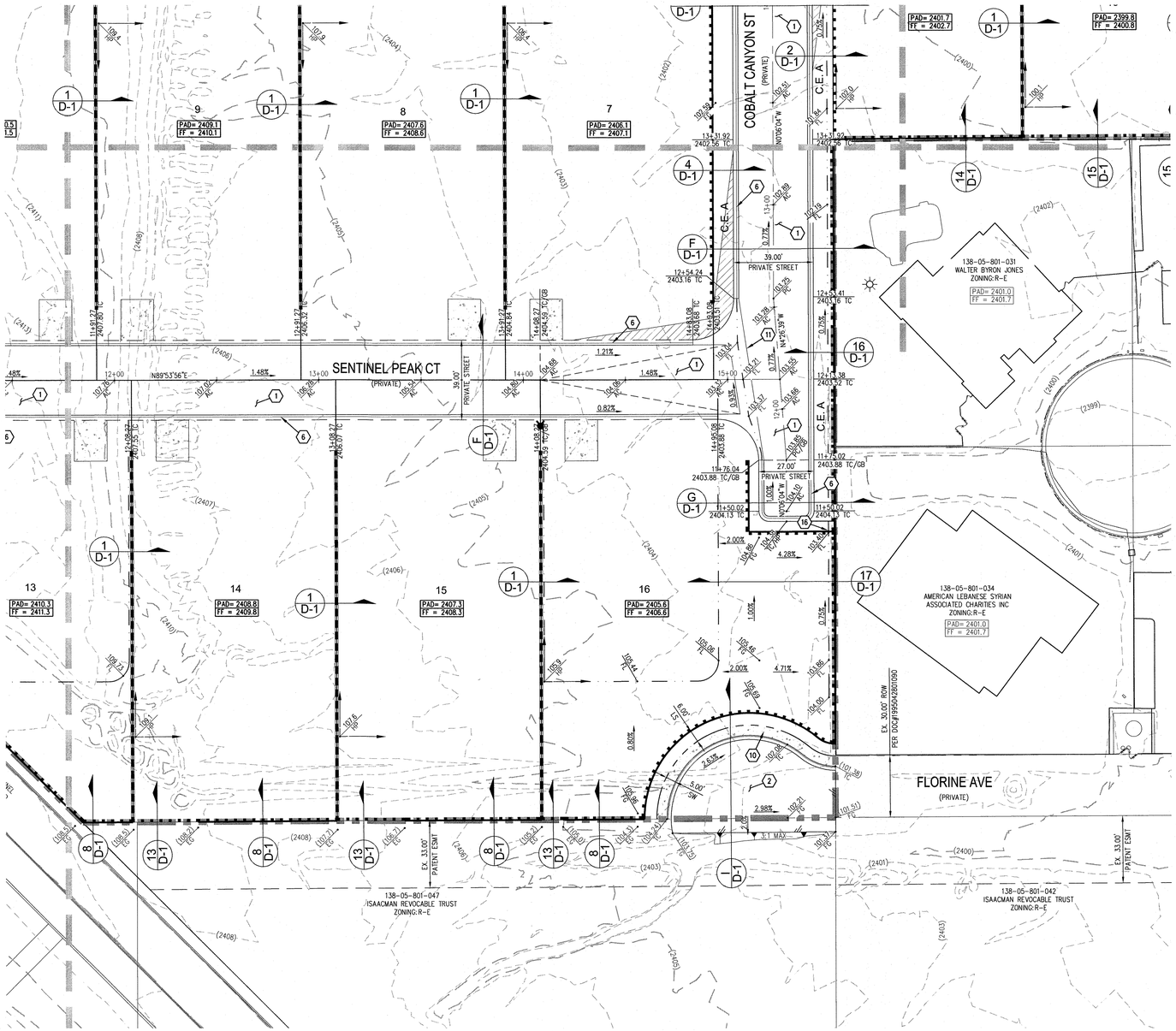

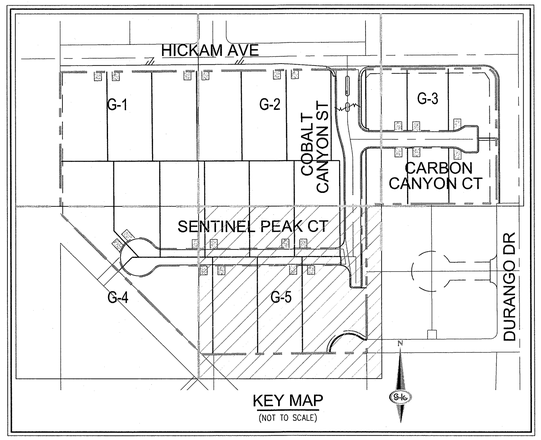

N

SCALE = 1"=30' (0, 30, 60 FEET)

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CALL BEFORE YOU DO OVERHEAD
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Call before you Dig
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OR
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CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

NO.	DESCRIPTION	DATE	BY	APP DATE	APP

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

GRADING PLAN V

S 5
T 20
R 60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

KEVIN M. BROSS, Exp. 12/31/2018, CIVIL No. 24572, STATE OF NEVADA, PROFESSIONAL ENGINEER
9/1/17

G-5
SHEET 8 OF 19

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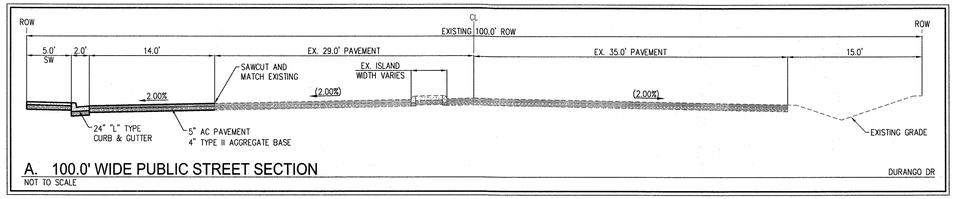
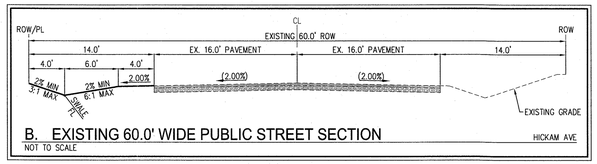


A. 100.0' WIDE PUBLIC STREET SECTION

NOT TO SCALE

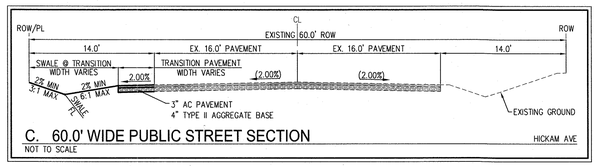
DURANGO DR



B. EXISTING 60.0' WIDE PUBLIC STREET SECTION

NOT TO SCALE

HICKAM AVE



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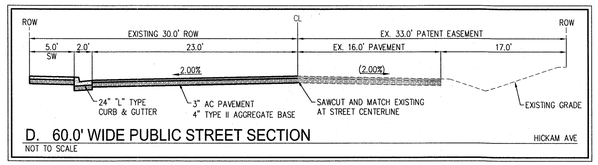
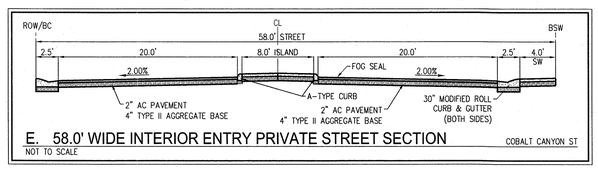


D. 60.0' WIDE PUBLIC STREET SECTION

NOT TO SCALE

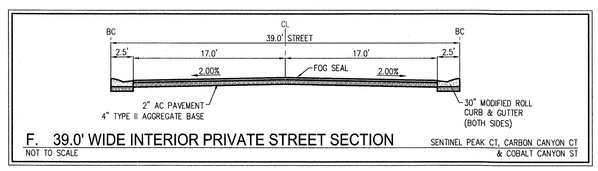
HICKAM AVE



E. 58.0' WIDE INTERIOR ENTRY PRIVATE STREET SECTION

NOT TO SCALE

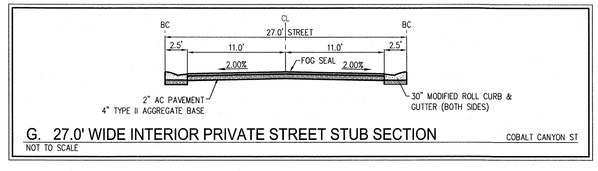
COBALT CANYON ST



F. 39.0' WIDE INTERIOR PRIVATE STREET SECTION

NOT TO SCALE

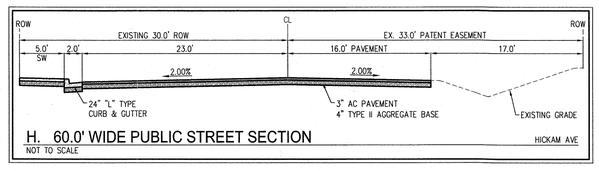
SENTINEL PEAK CT, CARBON CANYON CT & COBALT CANYON ST



G. 27.0' WIDE INTERIOR PRIVATE STREET STUB SECTION

NOT TO SCALE

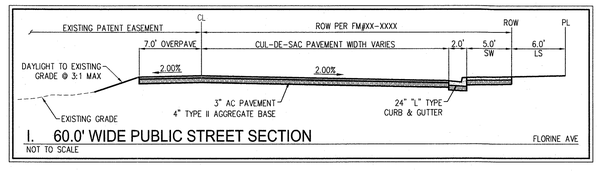
COBALT CANYON ST



H. 60.0' WIDE PUBLIC STREET SECTION

NOT TO SCALE

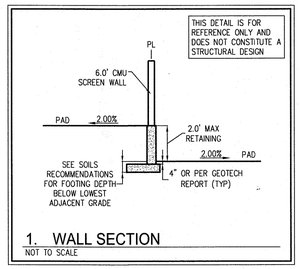
HICKAM AVE



I. 60.0' WIDE PUBLIC STREET SECTION

NOT TO SCALE

FLORINE AVE



1. WALL SECTION

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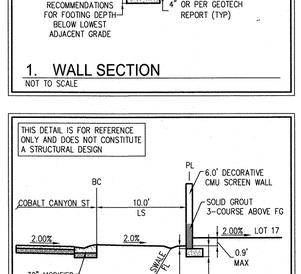

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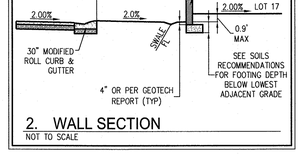

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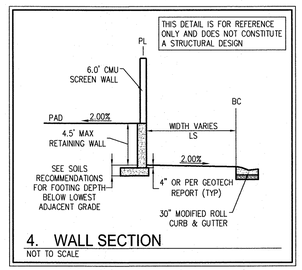

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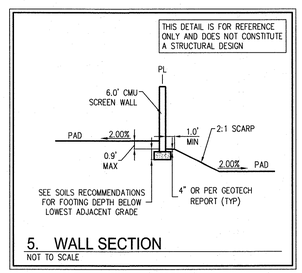

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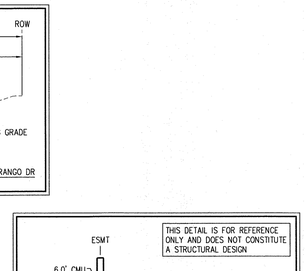

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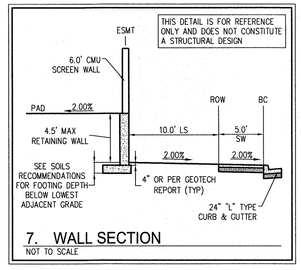

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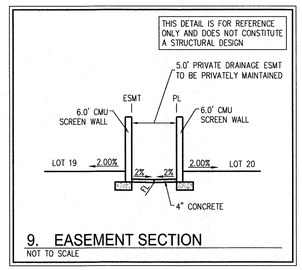

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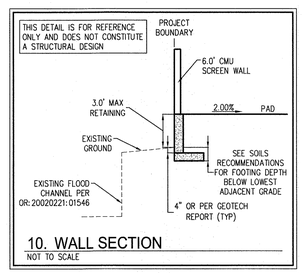

9. EASEMENT SECTION

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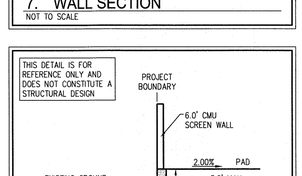

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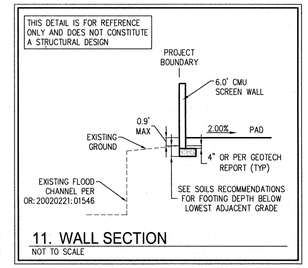

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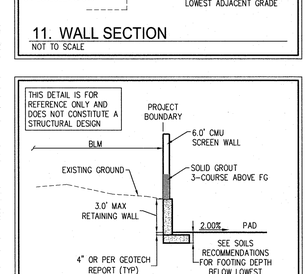

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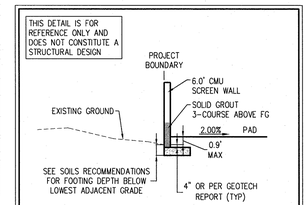

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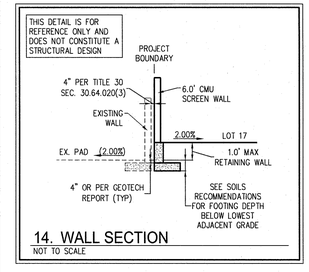

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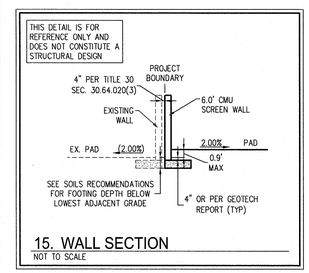

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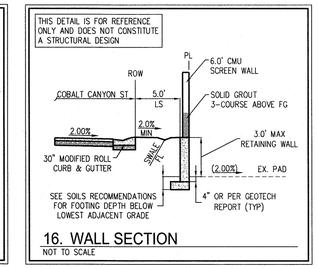

16. WALL SECTION

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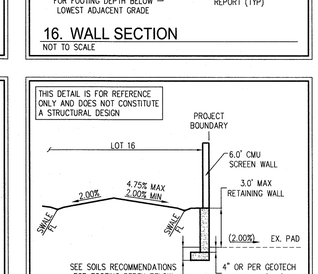
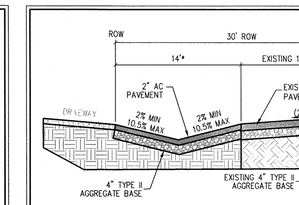


17. WALL SECTION

NOT TO SCALE



18. DRIVEWAY TRANSITION

NOT TO SCALE

HICKAM AVE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

DETAIL SHEET I

S5 T20 R60

DATE: 9/1/17

DRAFTER: EMH

DESIGNER: EMH

CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/7/17

D-1
SHEET 9 OF 19

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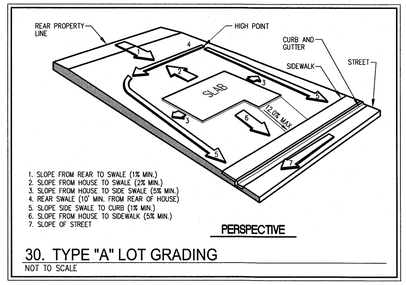
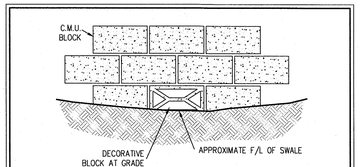


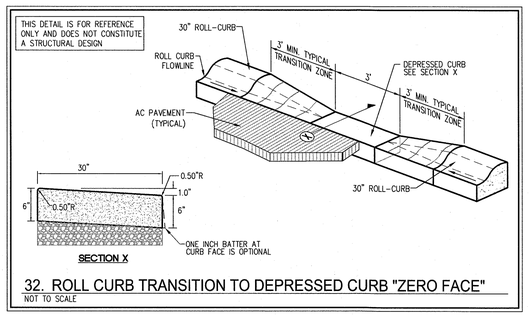
30. TYPE "A" LOT GRADING

NOT TO SCALE



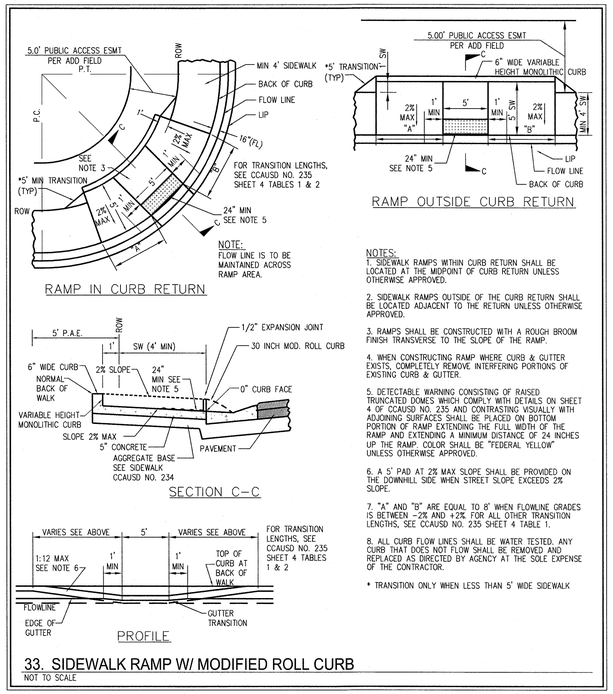
31 BLOCK WALL OPENING

NOT TO SCALE



32. ROLL CURB TRANSITION TO DEPRESSED CURB "ZERO FACE"

NOT TO SCALE



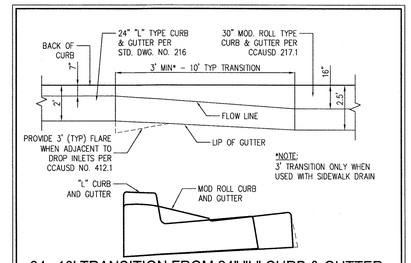
NOTES:

1. SIDEWALK RAMPS WITHIN CURB RETURN SHALL BE LOCATED AT THE MIDPOINT OF CURB RETURN UNLESS OTHERWISE APPROVED.
2. SIDEWALK RAMPS OUTSIDE OF THE CURB RETURN SHALL BE LOCATED ADJACENT TO THE RETURN UNLESS OTHERWISE APPROVED.
3. RAMPS SHALL BE CONSTRUCTED WITH A ROUGH BROOM FINISH TRANSVERSE TO THE SLOPE OF THE RAMP.
4. WHEN CONSTRUCTING RAMP WHERE CURB & GUTTER EXISTS, COMPLETELY REMOVE INTERFERING PORTIONS OF EXISTING CURB & GUTTER.
5. DETECTABLE WARNING CONSISTING OF RAISED TRUNCATED DOMES WHICH COMPLY WITH DETAILS ON SHEET 4 OF CCAUSD NO. 235 AND CONTRASTING VISUALLY WITH ADJOINING SURFACES SHALL BE PLACED ON BOTTOM PORTION OF RAMP EXTENDING THE FULL WIDTH OF THE RAMP AND EXTENDING A MINIMUM DISTANCE OF 24 INCHES UP THE RAMP. COLOR SHALL BE "FEDERAL YELLOW" UNLESS OTHERWISE APPROVED.
6. A 5' PAD AT 2% MAX SLOPE SHALL BE PROVIDED ON THE DOWNHILL SIDE WHEN STREET SLOPE EXCEEDS 2% SLOPE.
7. "A" AND "B" ARE EQUAL TO 8' WHEN FLOWLINE GRADES IS BETWEEN -2% AND +2% FOR ALL OTHER TRANSITION LENGTHS, SEE CCAUSD NO. 235 SHEET 4 TABLE 1.
8. ALL CURB FLOW LINES SHALL BE WATER TESTED. ANY CURB THAT DOES NOT FLOW SHALL BE REMOVED AND REPLACED AS DIRECTED BY AGENCY AT THE SOLE EXPENSE OF THE CONTRACTOR.

* TRANSITION ONLY WHEN LESS THAN 5' WIDE SIDEWALK

33. SIDEWALK RAMP W/ MODIFIED ROLL CURB

NOT TO SCALE



34. 10' TRANSITION FROM 24" "L" CURB & GUTTER TO MODIFIED 30" ROLL CURB & GUTTER

NOT TO SCALE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

DETAIL SHEET II

S5 T-20 R60

DATE: 9/1/17

DRAFTER: EMH

DESIGNER: EMH

CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/1/17

D-2

SHEET 10 OF 19

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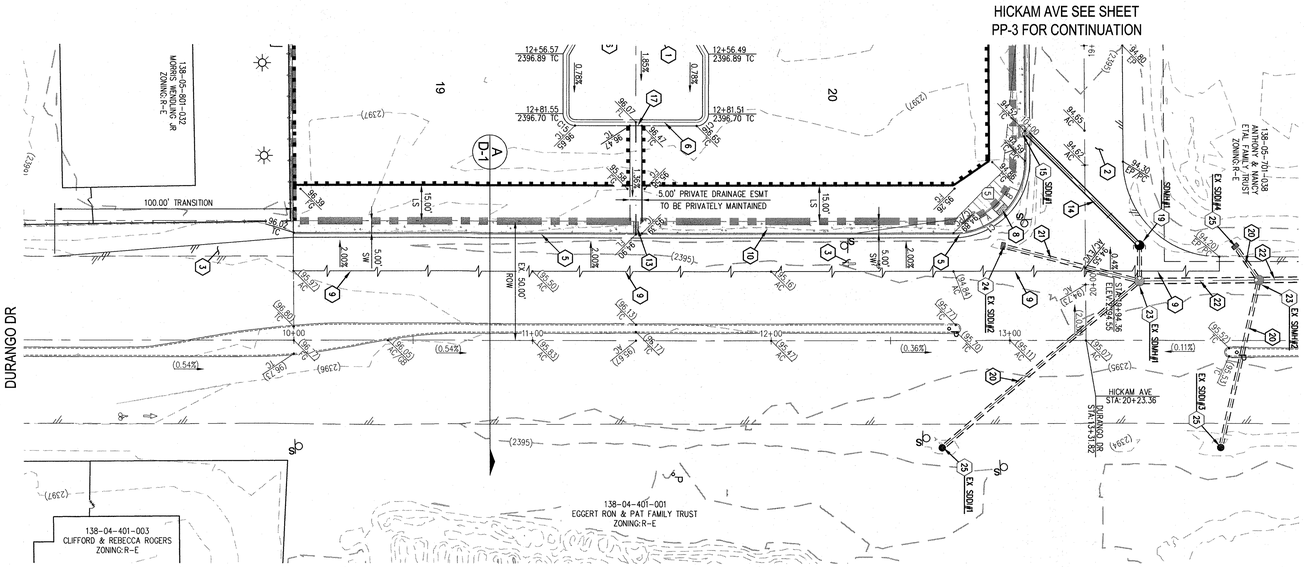
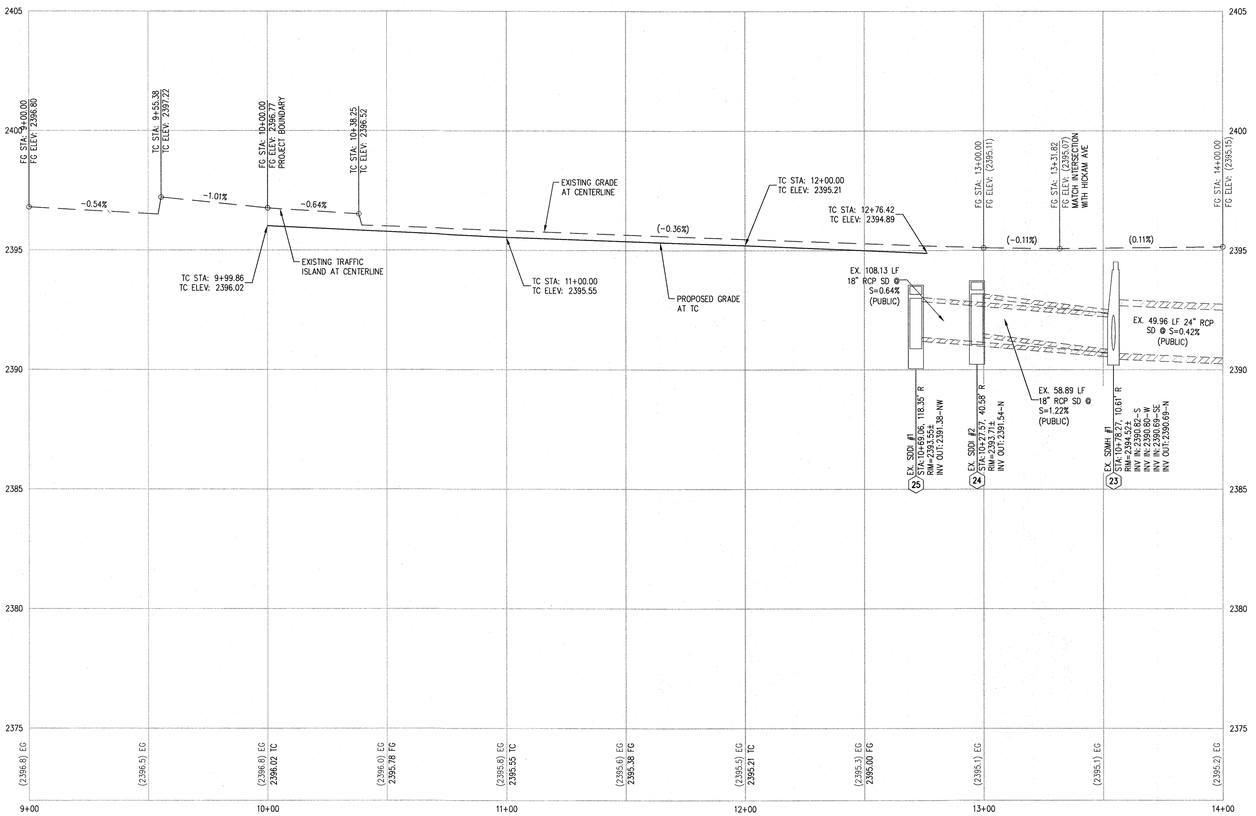


DURANGO DR - PLAN VIEW

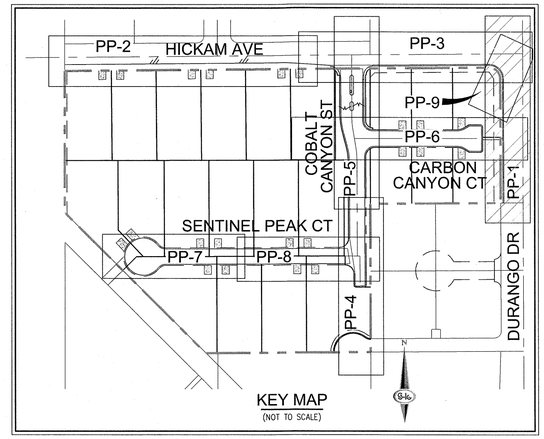
PUBLIC



DURANGO DR - PROFILE VIEW

HORIZ: 1" = 30'
VERT: 1" = 3'

SCALE - 1"=30' (0, 30, 60 FEET)



CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
- [5.01%] — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	47.29'	30.00'	90°18'28"	30.16'

GRADING NOTES

1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
   CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
8. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
9. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
10. INSTALL VALLEY GUTTER VALLEY GUTTER PER CCAUSD NO. 228
11. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
12. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
13. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
14. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
15. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
16. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
17. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCPW
18. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
19. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
21. EXISTING 24" CLASS III RCP STORM DRAIN
22. EXISTING 48" STORM DRAIN MANHOLE
23. EXISTING AREA DRAIN TO BE REMOVED
24. EXISTING AREA DRAIN TO REMAIN
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: 0LV00 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE

1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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.

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES

1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
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.
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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.
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CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY
ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. #####
LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
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Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP DATE	APP

CLARK COUNTY, NEVADA

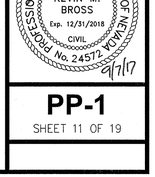
PINNACLE HOMES

ELK RIDGE ESTATES IV

PLAN AND PROFILE - DURANGO DRIVE

S15 T20 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO. PIN1702



PP-1
SHEET 11 OF 19

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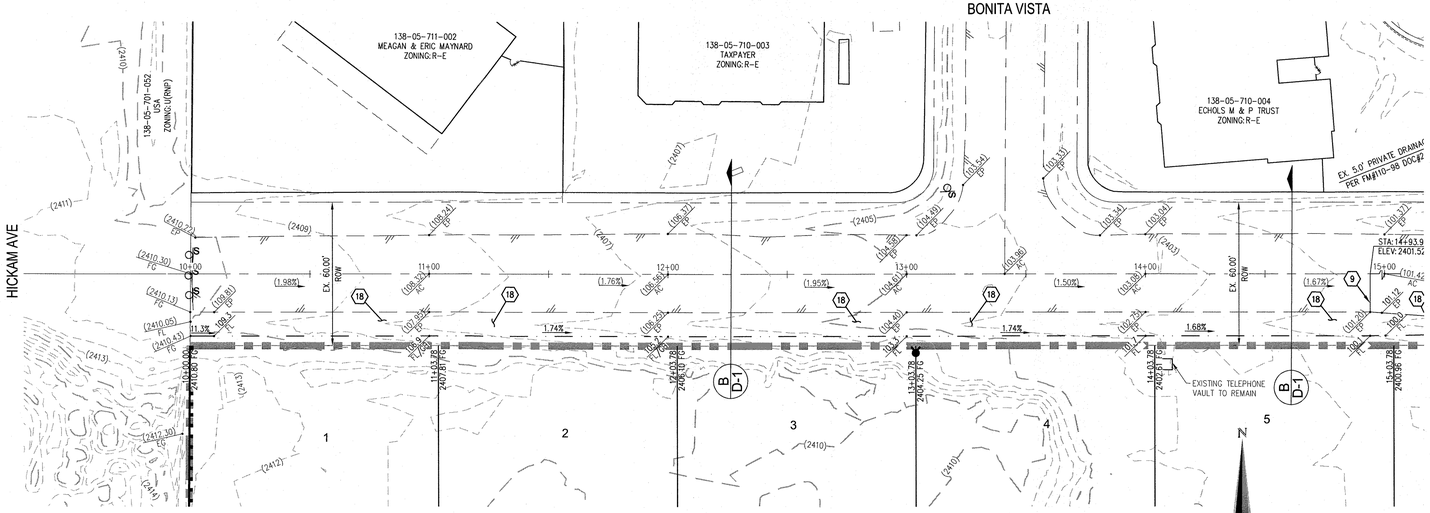
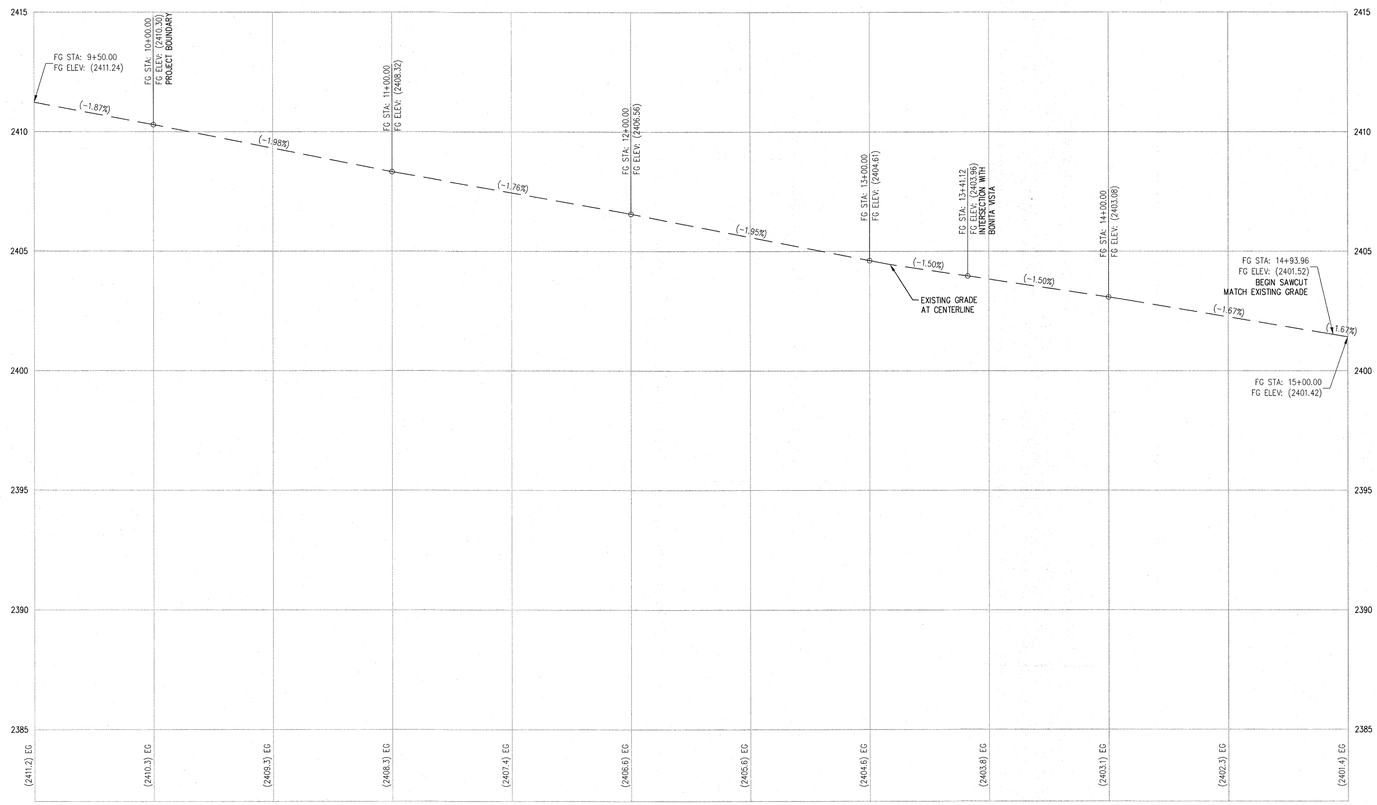
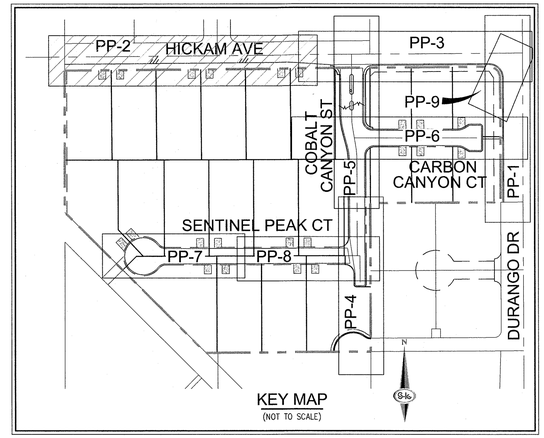


HICKAM AVE - PLAN VIEW
PUBLIC



HICKAM AVE - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

0 30 60
SCALE - 1"=30' FEET



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SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
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8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 FG — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
- [5.01%] — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT
SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS
EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES
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4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
10. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
11. INSTALL VALLEY GUTTER VALLEY GUTTER PER CCAUSD NO. 228
12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
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19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
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ELEVATION NOTE
ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK
BENCHMARK NUMBER: OLVOO 45WW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS
NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION
THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE
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2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES
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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.
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CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW
ACCEPTANCE OF PLANS FOR FILING

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APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######
LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP

CLARK COUNTY, NEVADA

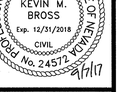
PINNACLE HOMES

ELK RIDGE ESTATES IV

PLAN AND PROFILE - HICKAM AVENUE I

S5 T20 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO. PIN1702



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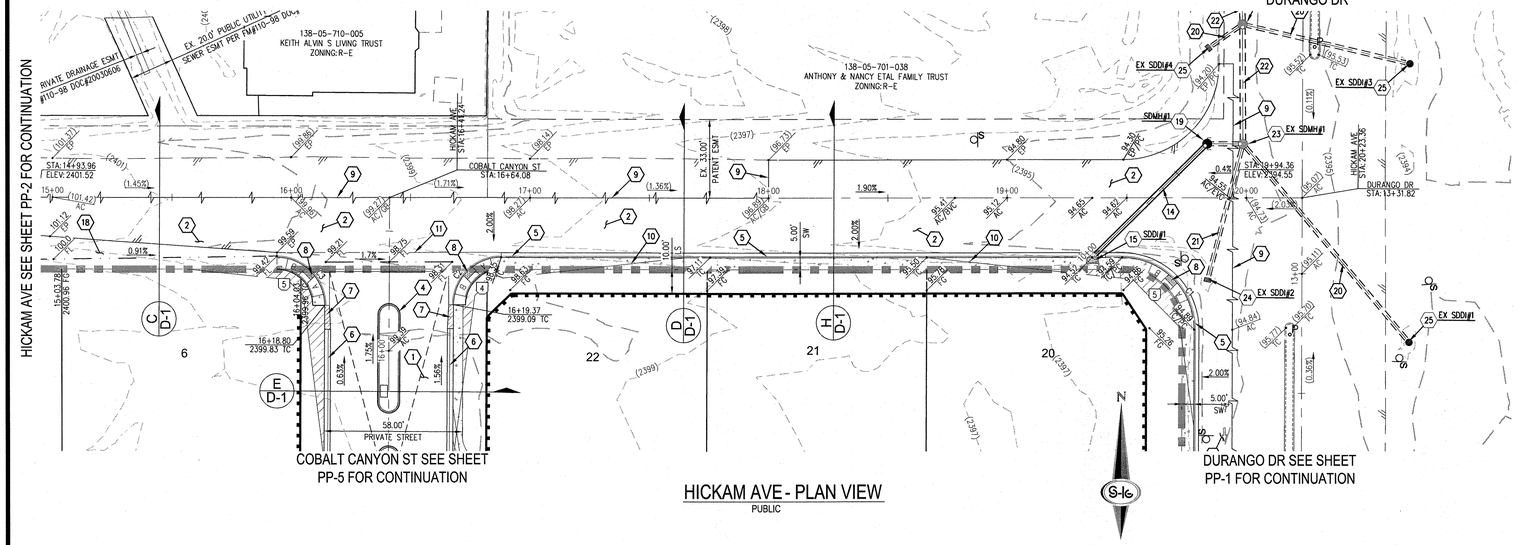
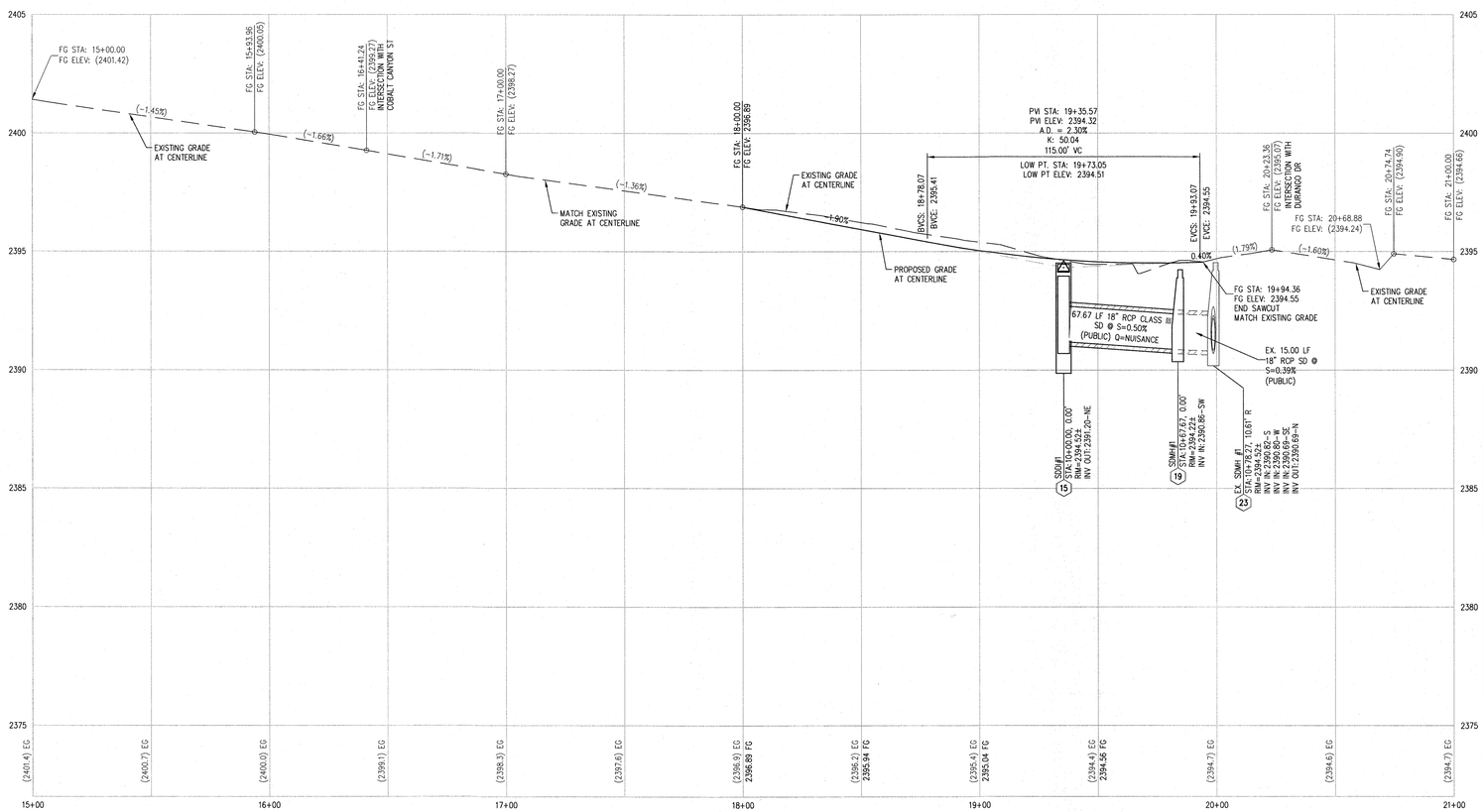
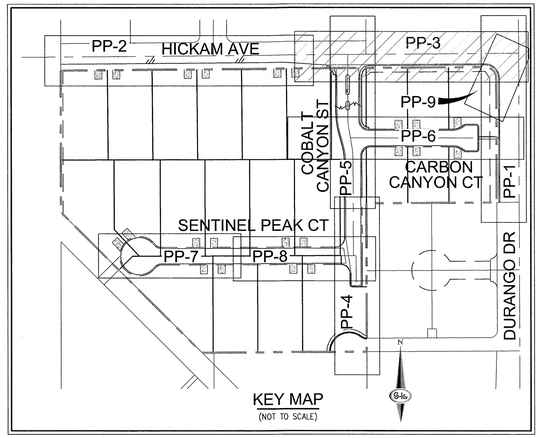




HICKAM AVE - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

0 30 60
SCALE - 1"=30' FEET



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SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

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BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

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CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

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BY _____

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######
LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	47.29'	30.00'	90°18'28"	30.16'
C2	31.29'	20.00'	89°38'34"	19.88'
C3	31.53'	20.00'	90°19'19"	20.11'

FAST
Call before you
UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call
811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

PLAN AND PROFILE - HICKAM AVENUE II

S 5 T 20 R 60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/7/17

PP-3
SHEET 13 OF 19

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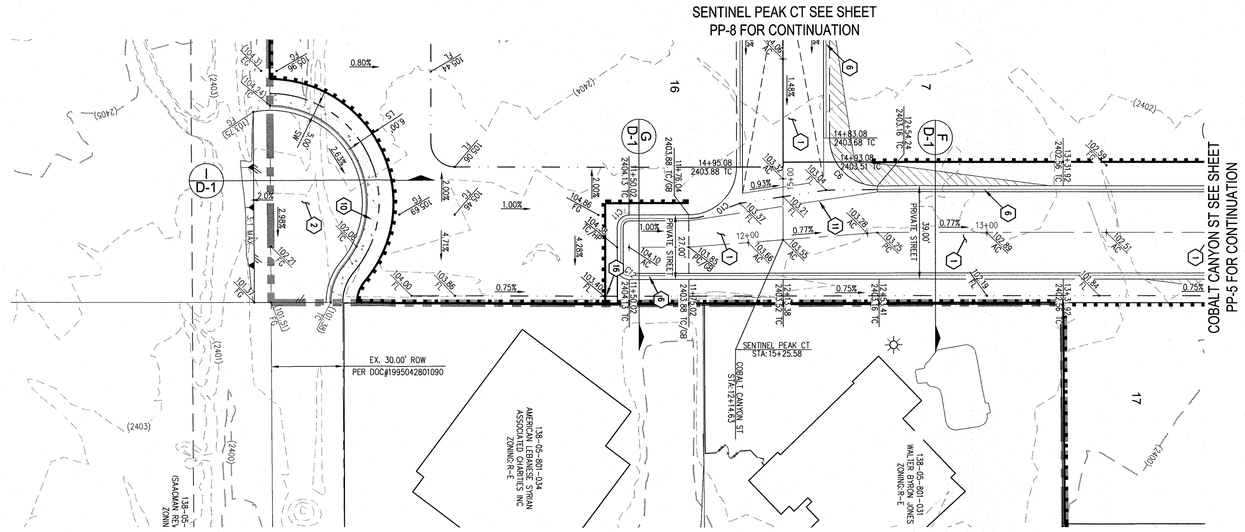
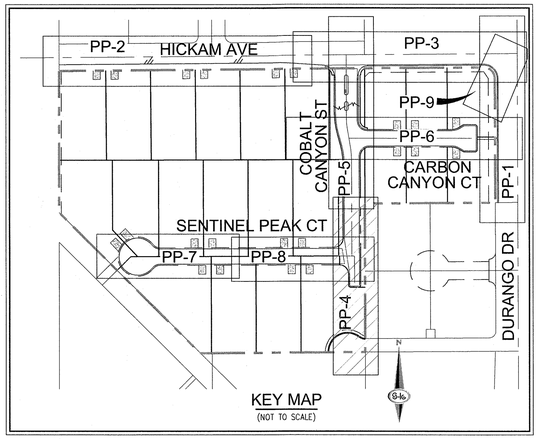
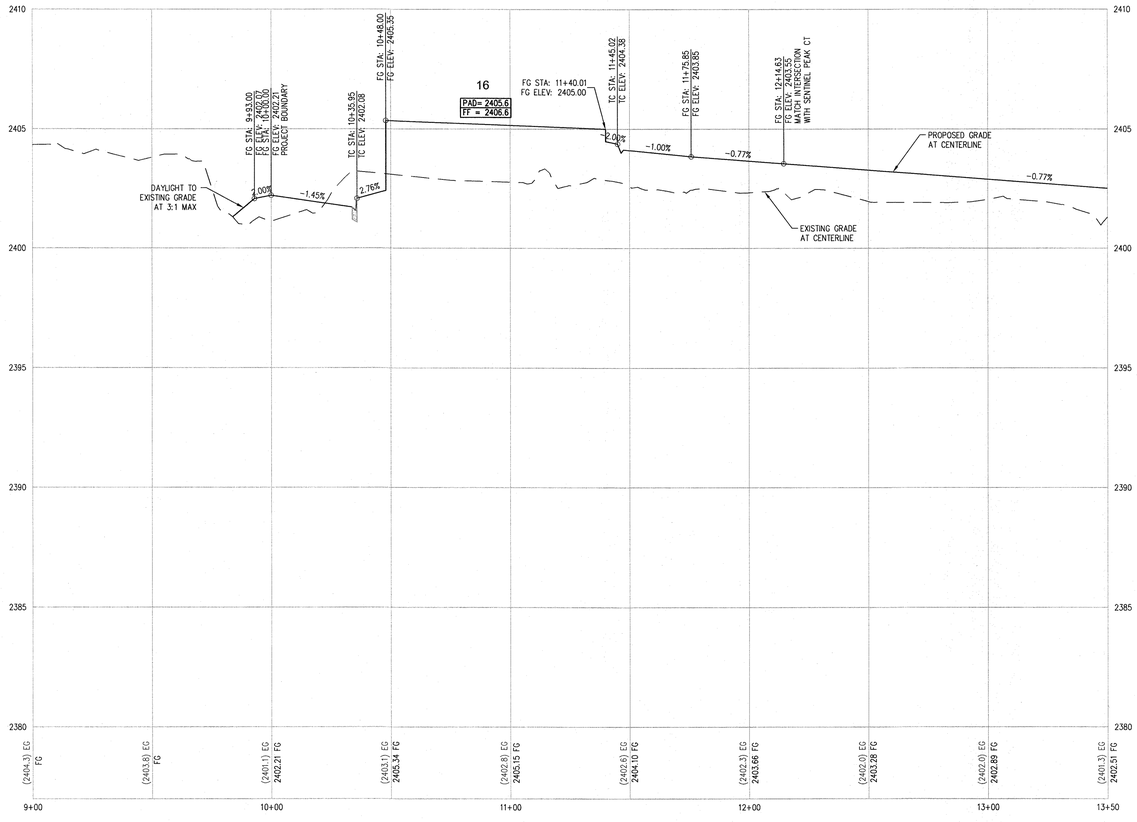


COBALT CANYON ST - PLAN VIEW
PRIVATE

SCALE - 1"=30' (0, 30, 60 FEET)





COBALT CANYON ST - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C6	20.94'	20.00'	60°00'00"	11.55'
C10	31.42'	20.00'	90°00'00"	20.00'
C11	7.85'	5.00'	90°00'00"	5.00'
C12	7.85'	5.00'	90°00'00"	5.00'

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
- 5.01% — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES

1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
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12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
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15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
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18. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCPW
19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
22. EXISTING 24" CLASS III RCP STORM DRAIN
23. EXISTING 48" STORM DRAIN MANHOLE
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ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

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SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE

1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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.

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES

1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
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/REPLEPING 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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.
10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY _____

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

PLAN AND PROFILE - COBALT CANYON STREET I

S 5 T 20 R 60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO. PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA KEVIN M. BROSS Exp. 12/31/2018 CIVIL No. 24572 9/7/17

PP-4
SHEET 14 OF 19

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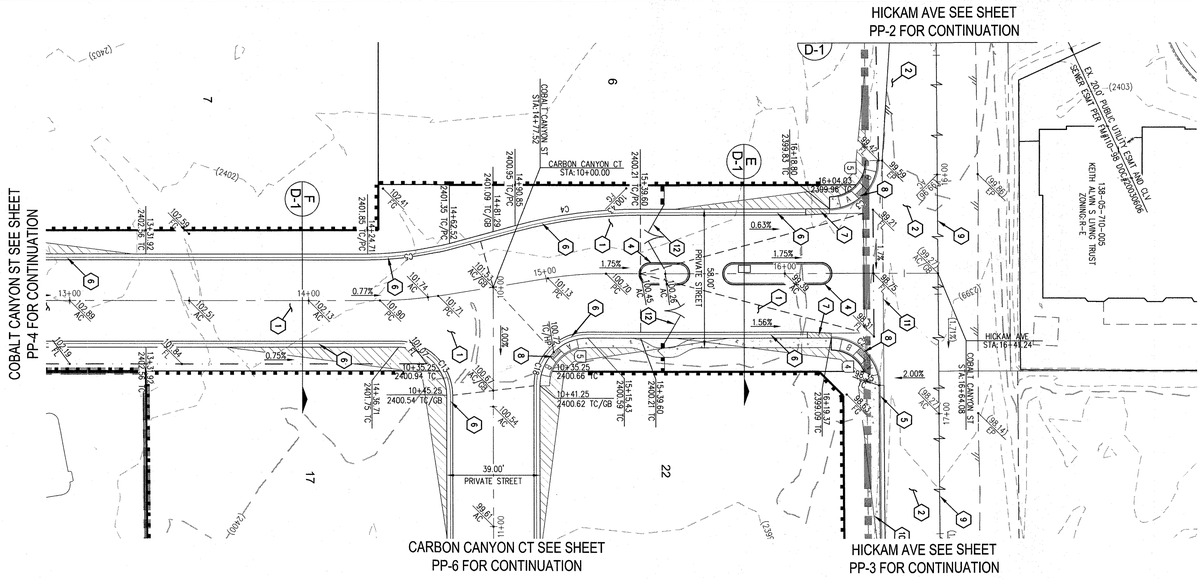
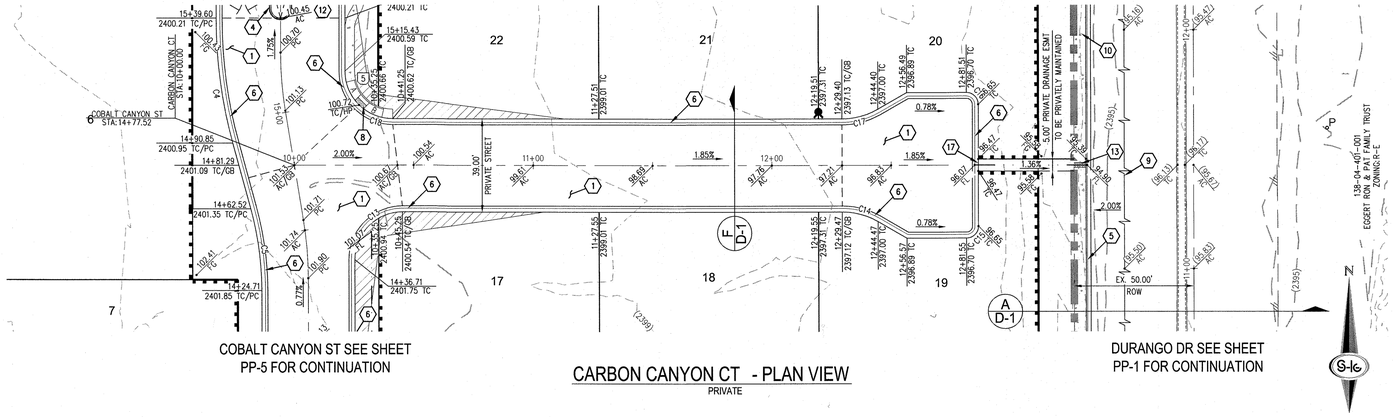
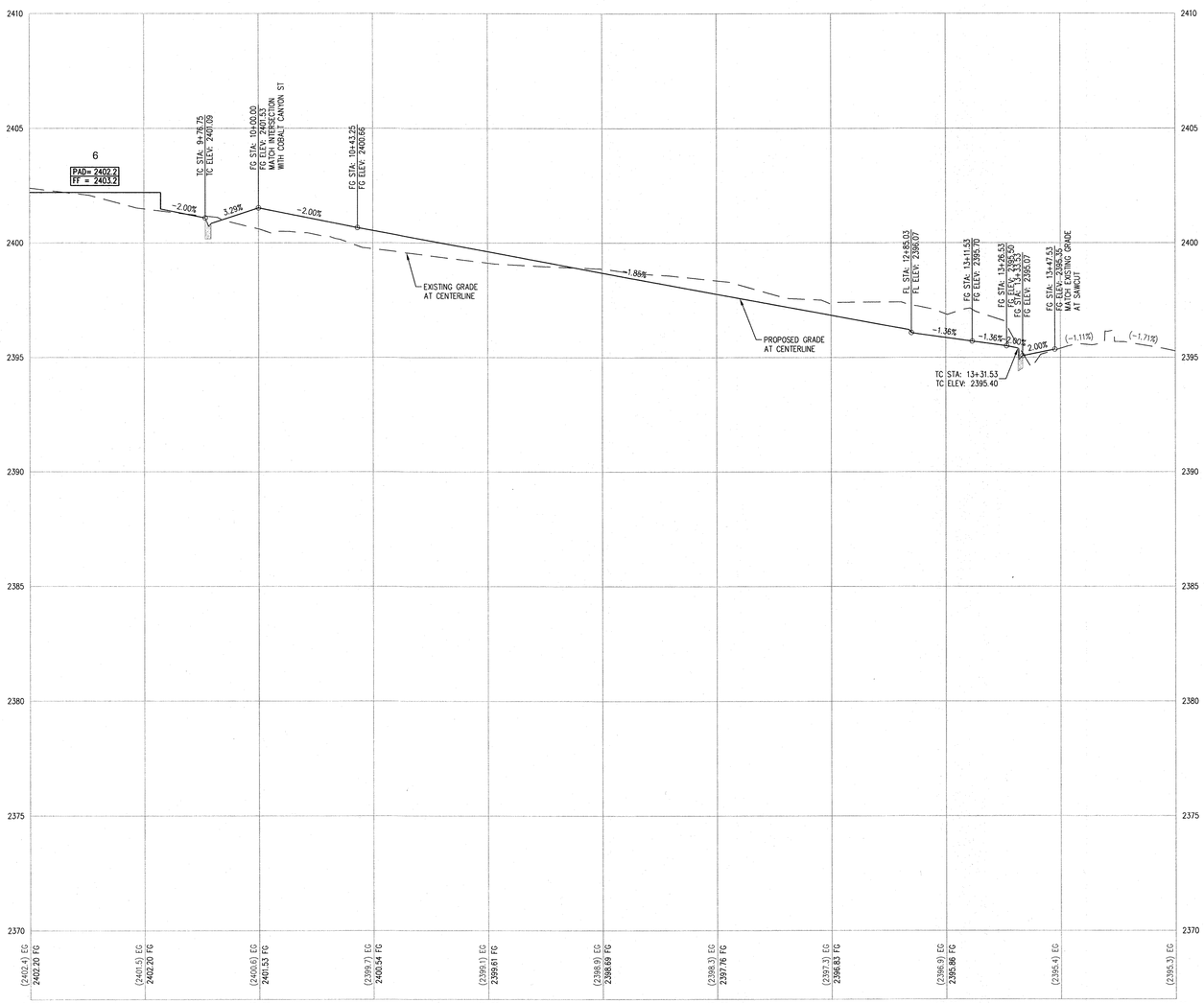

HICKAM AVE SEE SHEET PP-2 FOR CONTINUATION
COBALT CANYON ST SEE SHEET PP-4 FOR CONTINUATION
CARBON CANYON CT SEE SHEET PP-6 FOR CONTINUATION
HICKAM AVE SEE SHEET PP-3 FOR CONTINUATION
CARBON CANYON CT STA:10+00.00
PRIVATE STREET
39.00' PRIVATE STREET
50.00' PRIVATE STREET
HICKAM AVE STA:14+44.24
COBALT CANYON ST STA:16+18.08
CTR. 20.0' PUBLIC UTILITY EASEMENT AND CLV SEWER EASEMENT PER FMT10-98 DOC#200005306
KEITH ALAN S LIVING TRUST ZONING:R-E
0.63%
1.75%
0.77%
2.00%
1.56%
0.75%
2.00%
2.00%
1.75%
2.00%
2.00%
2.00



CARBON CANYON CT - PLAN VIEW
PRIVATE



CARBON CANYON CT - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

SCALE = 1"=30' (0, 30, 60 FEET)

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C4	53.01'	200.00'	15°11'09"	26.66'
C5	34.59'	130.50'	15°11'09"	17.40'
C13	31.42'	20.00'	90°00'00"	20.00'
C14	15.71'	30.00'	30°00'00"	8.04'
C15	7.86'	5.00'	90°03'00"	5.00'
C16	7.85'	5.00'	89°57'00"	5.00'
C17	15.71'	30.00'	30°00'00"	8.04'
C18	31.42'	20.00'	90°00'00"	20.00'

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

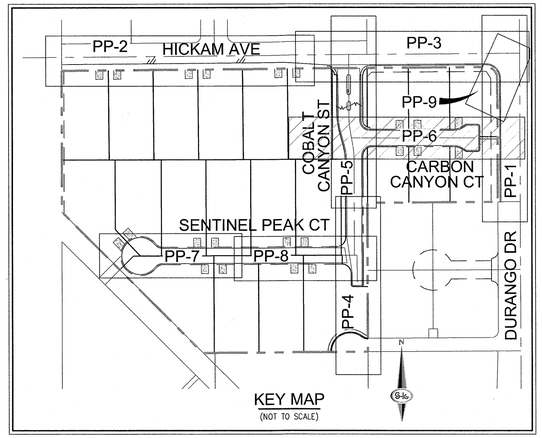
- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
- [5.01%] — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT
SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS
EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.



KEY MAP
(NOT TO SCALE)

GRADING NOTES

1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
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19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
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ELEVATION NOTE
ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK
BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS
NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

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CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW
ACCEPTANCE OF PLANS FOR FILING

BY _____
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APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######
LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

FAST
Call before you
UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
PLAN AND PROFILE - CARBON CANYON COURT

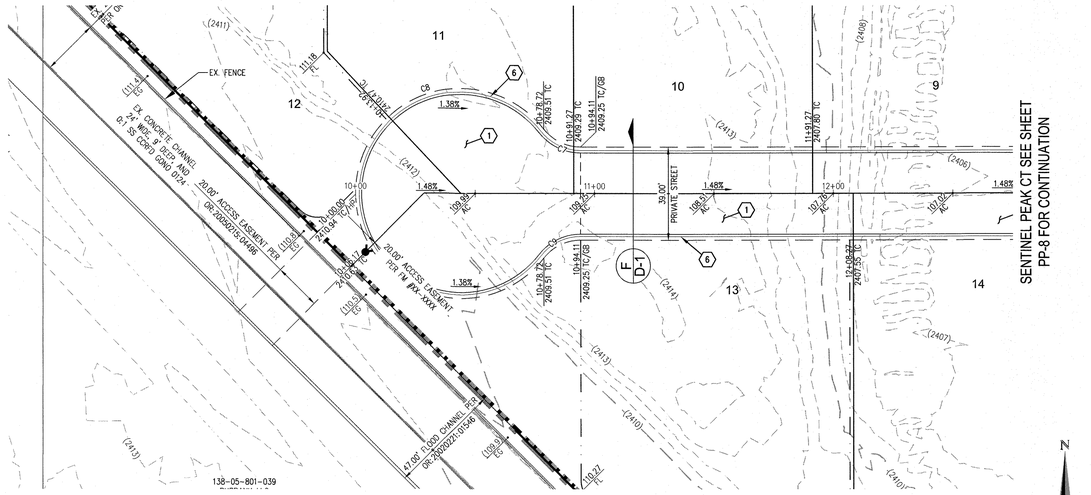
S5 T-20 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO. PIN1702

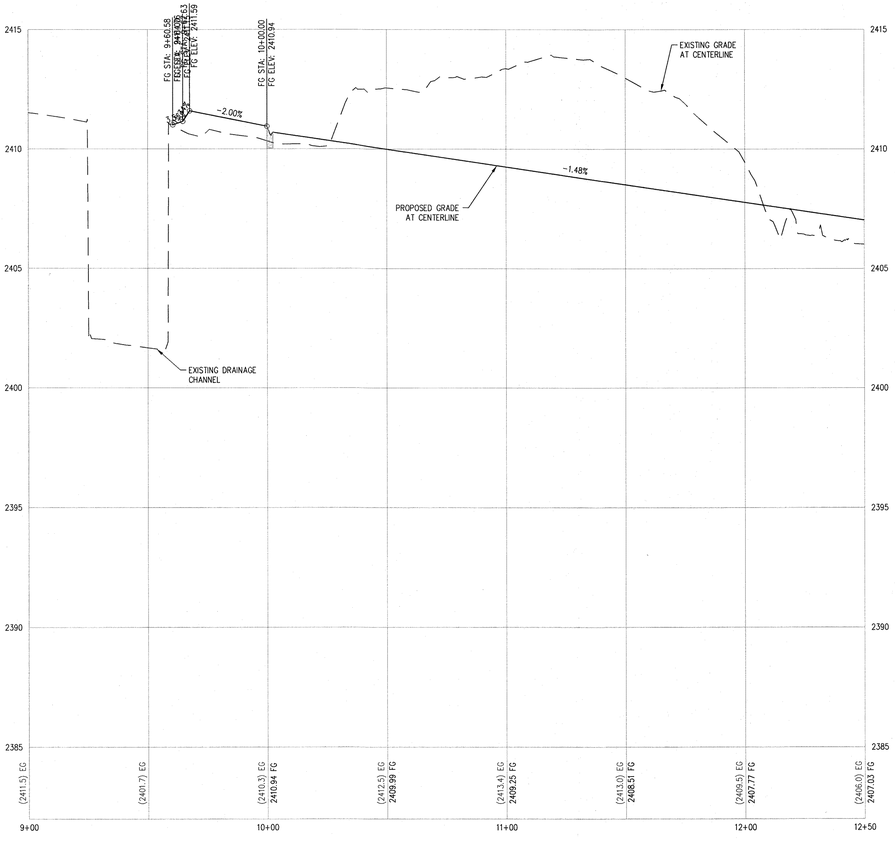
PROFESSIONAL ENGINEER STATE OF NEVADA
KEVIN M. BROSS
Exp. 12/31/2018
CIVIL
No. 24572
9/1/17

PP-6
SHEET 16 OF 19

J:\pin1702 ee\ kv\dwg\improv\pin1702 pp6.dwg, 9/7/2017 4:06 PM, Emily Hoy

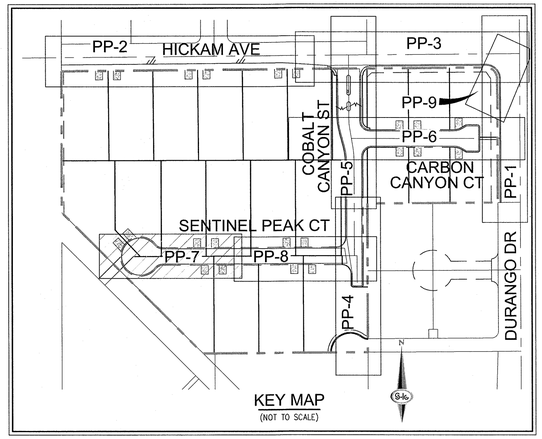


SENTINEL PEAK CT - PLAN VIEW
PRIVATE



SENTINEL PEAK CT - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

0 30 60
SCALE - 1"=30' FEET



KEY MAP
(NOT TO SCALE)

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 FG / (00.00) TC — PROPOSED ELEVATION / EXISTING ELEVATION
- [5.01%] — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT
SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS
EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES
1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
10. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
11. INSTALL VALLEY GUTTER VALLEY GUTTER PER CCAUSD NO. 228
12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
18. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCFW
19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
22. EXISTING 24" CLASS III RCP STORM DRAIN
23. EXISTING 48" STORM DRAIN MANHOLE
24. EXISTING AREA DRAIN TO BE REMOVED
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE
ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK
BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS
NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION
THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE
OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE
1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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.

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES
1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
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/REPLEPING 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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.
10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW
ACCEPTANCE OF PLANS FOR FILING

BY _____
ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######
LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C7	17.73'	19.50'	52°06'29"	9.53'
C8	218.26'	44.00'	284°12'59"	34.24'
C9	17.73'	19.50'	52°06'29"	9.53'

FAST
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FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

PLAN AND PROFILE - SENTINEL PEAK COURT I

S-5 T-20 R-60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA KEVIN M. BROSS Exp. 12/31/2018 CIVIL No. 24573 9/7/17

PP-7
SHEET 17 OF 19

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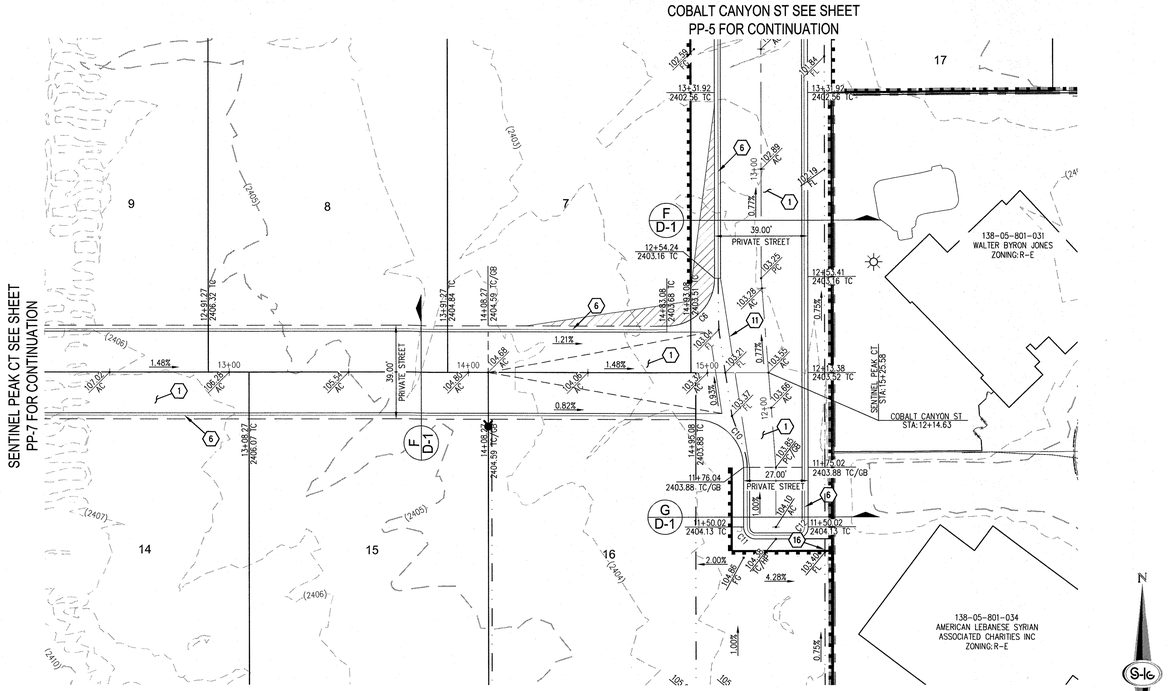
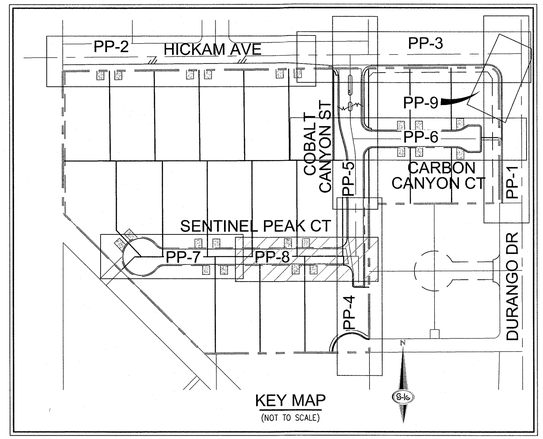


SENTINEL PEAK CT - PLAN VIEW
PRIVATE

SENTINEL PEAK CT - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

SCALE = 1"=30' (0, 30, 60 FEET)



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7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

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- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
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- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

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EARTHWORK QUANTITIES (RAW):
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FILL= 15,416 CU YDS

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2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
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ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

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10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY _____

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C6	20.94'	20.00'	60°00'00"	11.55'
C10	31.42'	20.00'	90°00'00"	20.00'
C11	7.85'	5.00'	90°00'00"	5.00'
C12	7.85'	5.00'	90°00'00"	5.00'

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
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5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES

ELK RIDGE ESTATES IV

PLAN AND PROFILE - SENTINEL PEAK COURT II

S5 T20 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB

PROJECT NO.
PIN1702

PROFESSIONAL ENGINEER STATE OF NEVADA KEVIN M. BROSS Exp. 12/31/2018 CIVIL No. 24572 9/7/17

PP-8
SHEET 18 OF 19

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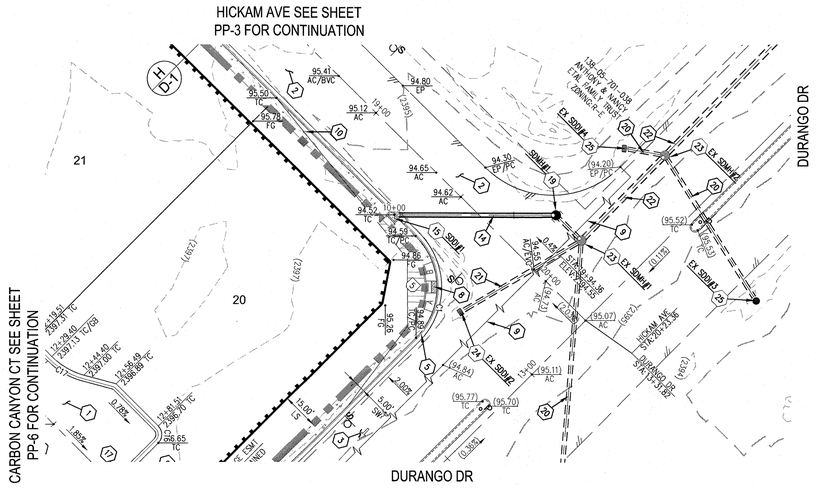
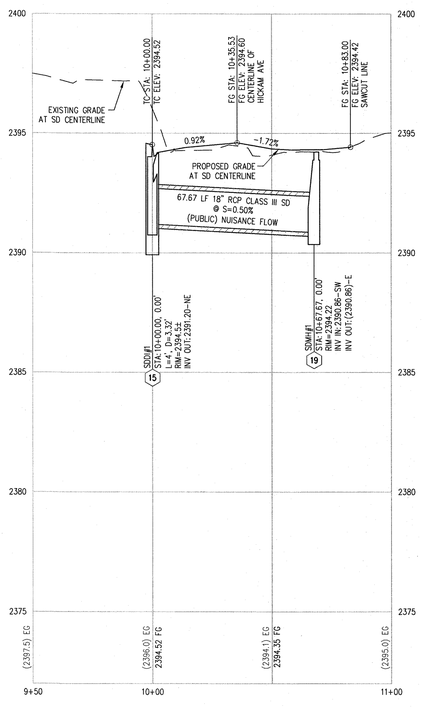
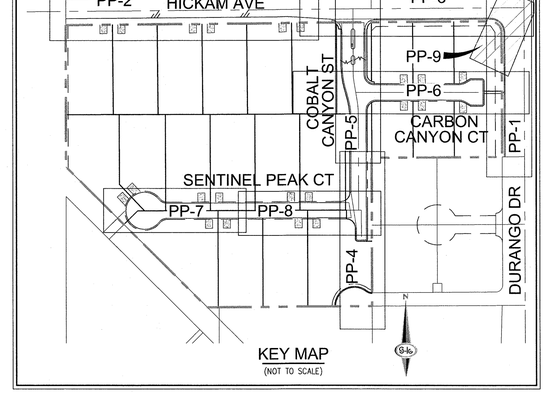






0 30 60
SCALE = 1"=30' FEET

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	47.29'	30.00'	90°18'28"	30.16'
C16	7.85'	5.00'	89°57'00"	5.00'
C17	15.71'	30.00'	30°00'00"	8.04'

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SIDEWALK RAMP TABLE

RAMP NUMBER	GRADE (%) "B" TO "A"	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5	21.5
2	-5 TO -4.01	4.5	15.0
3	-4 TO -3.01	4.5	12.0
4	-3 TO -2.01	4.5	9.5
5	-2 TO 2	8.0	8.0
6	2.01 TO 3	9.5	4.5
7	3.01 TO 4	12.0	4.5
8	4.01 TO 5	15.0	4.5
9	5.01 TO 6	21.5	4.5

GRADING LEGEND

- MATCHLINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY
- PROPERTY LINE
- CURB AND GUTTER
- EXISTING CURB AND GUTTER
- FLOWLINE
- EDGE OF PAVEMENT (EP)
- EXISTING EDGE OF PAVEMENT
- SAWCUT LINE PER CCAUSD NO. 503
- 00.00 TC — PROPOSED ELEVATION
- (00.00) TC — EXISTING ELEVATION
- [5.01%] — DESIGN SLOPE IN VERTICAL CURVE
- (2800) — EXISTING CONTOUR (5-FT)
- EXISTING CONTOUR (1-FT)
- FILL / CUT — CUT/FILL TRANSITION LINE
- FIRE HYDRANT ASSEMBLY
- SIGHT VISIBILITY ZONE
- RETAINING WALL
- DECORATIVE PERIMETER WALL
- DECORATIVE PERIMETER RETAINING WALL

SEE SHEET C-3 FOR ABBREVIATIONS AND QUANTITIES

SOILS REPORT

SOILS REPORT BY WRIGHT ENGINEERS
PROJECT NO. 171083 DATED 06/30/2017

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,270 CU YDS
FILL= 15,416 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

GRADING NOTES

1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
2. INSTALL 3" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
3. INSTALL 5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
4. INSTALL A TYPE CURB PER CCAUSD NO. 219
5. INSTALL L TYPE CURB PER CCAUSD NO. 216
6. INSTALL 30" MODIFIED ROLL TYPE CURB PER CCAUSD NO. 217.1
7. INSTALL 10' CURB TRANSITION FROM "L" CURB TO MODIFIED ROLL CURB PER DETAIL 34 ON SHEET D-2
8. CONSTRUCT ADA SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1 AND DETAIL 33 ON SHEET D-2
9. SAWCUT AND MATCH EXISTING PAVEMENT PER CCAUSD NO. 503 & 500.4
10. INSTALL CONCRETE SIDEWALK (4" THICK WITH 5" TYPE II AGGREGATE BASE) PER CCAUSD NO. 234
11. INSTALL VALLEY GUTTER VALLEY GUTTER PER CCAUSD NO. 228
12. INSTALL 6' HIGH WROUGHT IRON FENCE WITH VEHICLE GATE
13. INSTALL SIDEWALK UNDER DRAIN PER CCAUSD NO. 236
14. INSTALL 18" CLASS III RCP STORM DRAIN LATERAL
15. INSTALL 4' TYPE 'C' STORM DRAIN DROP INLET PER CCAUSD #413 & 421
16. INSTALL CMU BLOCK WALL OPENING PER DETAIL 31 ON SHEET D-2
17. INSTALL DEPRESSED CURB PER DETAIL 32 ON SHEET D-2
18. CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE I AGGREGATE BASE PER DETAIL 18 ON SHEET D-1. PROPOSED DRIVEWAY APPROACH IS NON-STANDARD SECTION AND SHALL NOT BE MAINTAINED BY CCPW
19. REMOVE EXISTING SD PLUG AND INSTALL 48" TYPE II CAST-IN-PLACE STORM DRAIN MANHOLE PER CCAUSD NO. 406
20. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL
21. EXISTING 18" RCP CLASS III STORM DRAIN LATERAL TO BE CAPPED AND ABANDONED
22. EXISTING 24" CLASS III RCP STORM DRAIN
23. EXISTING 48" STORM DRAIN MANHOLE
24. EXISTING AREA DRAIN TO BE REMOVED
25. EXISTING AREA DRAIN TO REMAIN

ELEVATION NOTE

ADD 2300 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 101.00 REPRESENTS 2401.00)

BENCHMARK

BENCHMARK NUMBER: OLVOO 4SWW6

BRASS CAP "PLS 7008" AT DURANGO DRIVE AND HICKAM AVENUE ALIGNMENT

ELEVATION=2395.093 FEET, 730.026 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL V.2003

BASIS OF BEARINGS

NORTH 00°09'04" WEST, BEING THE BEARING OF THE EAST LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 5, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN BOOK 152, PAGE 17 OF PLATS IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN), PER FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2135F, UPDATED NOVEMBER 16, 2011.

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE

1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT 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.

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES

1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
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/REPLEPING 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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.
10. SECTION II OF THE DRAINAGE COMPLIANCE REPORT IS REQUIRED FOR THE COMPLETION OF THE STORM DRAIN AND DRAINAGE EASEMENTS PRIOR TO FINAL BUILDING.

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW

ACCEPTANCE OF PLANS FOR FILING

BY _____

ACCEPTANCE OF THESE PLANS FOR FILING SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS AND/OR SPECIFICATIONS CLARK COUNTY SHALL BE HELD FREE FROM DAMAGES WHICH MAY RESULT FROM THE CONSTRUCTION OF THE IMPROVEMENTS FROM THE ENGINEERING DESIGN DEPICTED HEREIN.

NOTE: POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO CLARK COUNTY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE _____ PROJECT No. ######

LVVWD APPROVED FIRE FLOW 2,250 GPM AT 20 PSI RESIDUAL

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

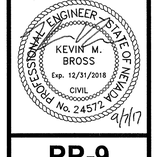
NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CLARK COUNTY, NEVADA

PINNACLE HOMES
ELK RIDGE ESTATES IV
PLAN AND PROFILE - SD LATERAL

S5 T20 R60

DATE: 9/1/17
DRAFTER: EMH
DESIGNER: EMH
CHECKED: KMB
PROJECT NO. PIN1702



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SHEET 19 OF 19

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