

DS #: 5222

APN: 137-26-212-001, 137-26-212-002

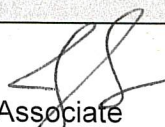
PROJECT: Summerlin Village 21B Crystal Canyon Parcels A and B

SUBMITTAL: 1st

SCANNED BY/DATE: _____

CHECKED BY/DATE: _____



CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		December 23, 2019
TO: Land Development Services Department of Building & Safety		FROM: Jennifer Shinn, P.E.  Flood Control, Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for:	COPIES TO:
	Summerlin Village 21B Crystal Canyon Parcels A and B	RCI Engineering
Cross Streets:	Carriage Hill Drive and Far Hills Avenue	Woodside Homes of Nevada, LLC
File Number:	F:\Depot\DSMemos\DS05222A.doc	Bart Anderson, P.E., DevCo
Parcel Number:	137-26-212-001, 137-26-212-002	CCRFCD
Zoning Action:		
FEMA Flood Zone	YES NO X	
Proposed Storm Drain	YES X NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	11/21/2019	12/19/2019	See Comments Below	\$400.00	3653840: \$400
			TOTAL FEES (LDDRS):	\$400.00	----

REMARKS:

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

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

The following are comments pertaining to the subject site specific drainage study and grading plans:

1. Provide a copy of the zoning/planning conditions associated with this site with the next submittal to verify compliance with conditions. *Flood Control* will not issue conditional approval of the drainage study without the associated zoning/planning conditions (issued by the *City Council*). Any associated conditions of approval that revise the site drainage parameters will require that the drainage study be revised and resubmitted.
2. The site is adjacent to or crosses an existing or proposed Clark County Regional Flood Control District (CCRFCD) master planned facility. Therefore, CCRFCD concurrence is required prior to final approval of the drainage study.

Please note that effective March 15, 2019, CCRFCD adopted new requirements for drainage study concurrence submittals. Follow the link below for specific guidance:

<http://gustfront.ccrfcd.org?LandDev/LandDev.aspx>

3. Sites with a grade difference of 2 feet above or below the existing grades are required to have approval from the *City of Las Vegas Planning and Development Department*. The engineer must submit copies of the Grading Plans and Detail Sheets with a letter justifying the grade difference to the *City Planning Department* (229-6301). The engineer must provide *City Planning* approval with the next submittal.

4. Each phase of the construction of this project must be represented with a basin map and HEC-1. Provide the necessary exhibits and calculations.
5. Provide overall phasing maps.
6. Page 11, first paragraph of the report states: "Flow is only slightly erosive and Phase 2 construction of the infrastructure streets will be constructed concurrently with or shortly after Phase 1. It is unlikely that a 100-year storm even will occur in the short period between construction of Phase 1 and Phase 2". The phasing schedule needs to be addressed as the project does not meet HDDCM requirements between phases. If phases are to be constructed "concurrently", they should be considered as 1 phase and the interim conditions should be reflected as such. If the phases are built sequentially, provide the construction schedule for clarity.
7. The report proves the 100-year intensity is 3.43 per the HDDCM but you calculate per a referenced intensity of 3.39. Use the 3.43 value per the HDDCM.
8. Interim Flow Hydraulic Analysis Report calls out "DI 1-2 sump interim" however Figure 5 Interim Phase 1 shows 4 inlets, none of which are labeled. Provide inlet labels on Figure 5 and provide calculations for all proposed inlets in the interim condition.
9. As a general rule for Summerlin, flow depths must be below the top of curb. The plans call out roll curb which has a depth of 0.38', therefore all flow in the streets must be reduced to 0.38'. For example, Section 2 and 3 have flow depths above 0.38' and are therefore above the top of curb. Add more inlets to reduce street flow where necessary.
10. Ultimate hydraulic Section 4 should be analyzed for 28 cfs per prorated basin PR3. However, it has been analyzed in FlowMaster with 30 cfs. Revise accordingly.
11. The capacity calculation for Inlets 5 and 3 in the Ultimate Condition are unclear. A total of 23 cfs should be going to the inlets. It is unclear how 16 cfs and 6 cfs were derived for the inlet capture. Address with next submittal.
12. Provide a high point at the neighborhood entrance 6" above depth of flow in Ridge Pine Street to prevent flow from Ridge Pine Street from entering the neighborhood.
13. The lateral pipes connecting from the manhole into Inlets 3 and 5 cannot be constructed under the curb and gutter. Shift the storm drain manhole toward the center of the road and connect the pipes into the inlets at an angle.
14. The proposed wrought iron fence across the public drainage easement must utilize RTC Uniform Standard Drawing 425.S1. Revise Construction Note 17 accordingly.
15. Call out Public Drainage Easements on Grading Plans.
16. Call out removal of existing 36" RCP at CE-O and the existing 42" RCP at CE-K.
17. Label Document Number or Book and Page Number for all existing easements on the Grading Plan.
18. Provide a Public Drainage Easement through CE-K going over the proposed 36" storm drain.
19. The engineer must provide a table on the Grading Plans that shows a quantity estimate of all drainage improvements within Public Drainage Easements. All drainage improvements within Public Drainage Easements must be bonded and inspected.
20. All drainage easements must be public drainage easements to be privately maintained and common lots to be labeled on the Grading Plans and to be dedicated as such on the Final Map. The minimum width for a public drainage easement is 10' if the 100-year flow is less than 20-cfs.
21. The City Council of the City of Las Vegas adopted an amendment to Title 20 of the Municipal Code in which Section 20.10.030 requires all public drainage easements to be concrete lined. Revise all pertinent plans, section details, and construction notes accordingly.

22. The INV OUT for DI U1-2 shown on Sheet P-7 does not match the value used in the Standard Form 6. In addition, the INV OUT value is higher than the TC elevation. Revise the plans accordingly.

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
HDR/JKS

T/R/S: T20S/R59E/S26
AREA K-26

**TECHNICAL DRAINAGE STUDY
FOR SUMMERLIN VILLAGE 21B
PARCELS A AND B
CRYSTAL CANYON**

Prepared for:

**Woodside Homes of Nevada
4670 South Fort Apache Road, Suite 200
Las Vegas, NV 89147
Phone: (702) 889-7824**

November 2019

PROJECT 4320.0009

**RCI Engineering
500 South Rancho Drive, Suite 17
Las Vegas, NV 89106
www.rcinevada.com**

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin Village 21B Crystal Canyon Parcels A and B Date: November, 2019
 Location of Development: a) Descriptive (Cross Streets) North/South: Carriage Hill Drive
 East/West: Far Hills Avenue
 b) Section: 26 Township: 20 South Range: 59 East
 c) APN : 137-26-212-001, 137-26-212-002

Name of Owner: Woodside Homes of Nevada LLC
 Telephone No.: 702-889-7824 Fax No.: _____ E-Mail Address: _____
 Address: 4670 South Fort Apache Road, Suite 200, Las Vegas, NV 89147

Contact Person-Name: Rick J. Read, P.E. Telephone No.: 702-453-0800
 * E-Mail Address: rread@rcinevada.com Fax No.: 702-453-0801
 Firm: RCI Engineering
 Address: 500 South Rancho Drive, Suite 17 Las Vegas, Nevada 89106

Type of Land Development/Land Disturbance Process:

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

- Total Owned Land Area: At Site: 27.6 acres Being Developed/Disturbed: 27.6 acres
- Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ Yes** ☒ No
- Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ Yes** ☐ No
- Proposed type of development (Residential, Commercial, Etc.): Residential
- Approximate upstream land area which drains to the subject site: 0 acres
- Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation: Update #1 to the Flood Control Master Plan Update Summerlin West Planning Area
- If known, please briefly identify the proposed discharge point(s) of runoff from the site: East into storm drain in Carriage Hill Drive
- Briefly describe your proposed schedule for the subject project: ASAP

Engineer's Seal	Submit this form as part of the required drainage study to the local entity which has jurisdiction over the subject property. This form may provide sufficient information to serve as the Conceptual Drainage Study.		
	*New Required Field **Review and concurrence of the Clark County Regional Flood Control District is required.		
	Local Entity File No.	Revision	Date
REFERENCE:		STANDARD FORM 1	



November 21, 2019

City of Las Vegas
Flood Control
333 N Rancho Dr.
Las Vegas, NV 89106

RE: Certification Letter for Paper and Digital Plans for the
Technical Drainage Study for Summerlin Village 21 Parcels A and B.

Mr. Sung,

This letter has been provided as certification that the paper version of the plans match the digital PDF plans on the CD submitted with the drainage study.

Sincerely,

RCI Engineering

A handwritten signature in blue ink that reads "Rick J. Read".

Rick J. Read, P.E.

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Summerlin Village 21B Parcels A and B Crystal Canyon		Map ID:
Firm Name: RCI Engineering		Engineer: Rick Read, P.E.
Address: 500 South Rancho Drive, Suite 17		
City: Las Vegas	State: Nevada	Zip: 89106
Phone Number: 453-0800	Fax Number: 453-0801	
Property Owner: Woodside Homes		
Address: 4670 South Fort Apache Road, Suite 200		
City: Las Vegas	State: Nevada	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	
☒	☐	Design Manual Standard Form 1 with the engineer's seal and signature.
☒	☐	Design Manual Standard Form 4 .
☒	☐	2 copies of the 24" x 36" Drainage Plan.
☐	☒	A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.

Reference:	STANDARD FORM 2
------------	----------------------------

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS

Yes	No	
☒	☐	A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.
☒	☐	A copy of the current CCRFCD Master Plan Update Figure, (F-x), for Flood Control Facilities and Environmental areas with the site delineated.
☒	☐	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.
☒	☐	Vicinity Map with local and major cross streets identified and a north arrow.
☒	☐	Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.

III. DRAINAGE PLAN

Yes	No	
☒	☐	Sheet size: 24" x 36" sealed by a registered engineer in the State of Nevada.
☒	☐	Minimum scale: 1" = 60'.
☒	☐	Project name.
☒	☐	Vicinity Map with local and major cross streets.
☒	☐	Revision box.
☒	☐	North arrow and bar scale.
☒	☐	Engineer's/consultant's address and phone number.
☒	☐	Elevation datum and benchmark.
☒	☐	Legend for symbols and abbreviations.
☒	☐	Cut/fill scarps, where applicable.
☒	☐	Street names, grades, widths.
☒	☐	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.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
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.
	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"x48". 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.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes No

- | | | |
|---|-----|--|
| 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. |
| | 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. |

IV. HYDROLOGIC ANALYSIS

Yes No

- | | | |
|---|-----|--|
| X | | Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated. |
| | N/A | 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 storm water flows showing basin area, Q ₁₀ and Q ₁₀₀ for both individual basins and combined basin flows, where acceptable. |
| 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. |

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

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. $Q_{100} d \times v \leq 8$. $Q_{10} d \times v \leq 6$ and 12 foot dry lane for rights-of-way ≥ 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.
X		Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
X		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.

REFERENCE:

STANDARD FORM 2

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I. INTRODUCTION

Woodside Homes is proposing to develop a 27.6 acre site as a single family residential project located between Far Hills Avenue on the South and Redpoint Drive on the north. The Project is also bordered on the east and west by Carriage Hill Drive and Ridge Pine Street. The overall Project will consist of 166 single family residences with onsite open space, landscaping, and perimeter block walls. The Project will be built as 4 Phases. Phase 1 will include construction of 29 lots with full improvements along with construction of the entrance road (Santa Elena Drive). The Phase 2 improvement will include 47 lots and street improvements for Badwater Basin Blvd. and Sailing Stone Street. The Phase 3 improvements will include 33 lots and street improvements for Little Haystack Drive and Great Bahama Way. Phase 4 improvements will include 57 lots and all street improvements north of Santa Elena Drive and Painted Chasm Way. The purpose of this report is to accompany the civil improvement plans, to provide detailed hydrological and hydraulic analyses for the site, and to determine adequate protection for the Project from offsite and onsite flows. The following tasks were performed in the preparation of this report:

- ♦ Identify previous drainage studies for the project site and surrounding areas.
- ♦ Identify the FEMA floodplain designation for the project site.
- ♦ Estimate runoff generated for the peak onsite 10-year and 100-year return period storms for proposed, and ultimate conditions (offsite and existing conditions flows have been referenced).
- ♦ Recommend drainage facilities to protect the project from storm runoff.

II. LOCATION AND DESCRIPTION

The Project is located in Section 26, Township 20 South, Range 59 East, M.D.M., in Las Vegas, Nevada. Far Hills Drive on the south has been constructed. Ridge Pine Street, Redpoint Drive and Carriage Hill Drive are under construction and will be completed prior to the start of construction for this project. Please refer to Figures 1 and 2 for the Vicinity and Location Maps for the Project site. The Phase lines have been shown on Figure 2.

PROJECT SITE



WOODSIDE SUMMERLIN 21B
WOODSIDE HOMES

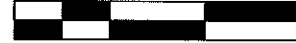
FIGURE 1
VICINITY MAP

RCI Engineering

500 SOUTH RANCHO DRIVE SUITE 17, LAS VEGAS, NV 89106
PH#702.453.0800 FAX#702.453.0801



200' 0' 200' 400'



SCALE: 1" = 400'

PROJECT SITE

REDPOINT DRIVE

RIDGE PINE STREET

UNIT 4

UNIT 1

UNIT 2

UNIT 3

CARRIAGE HILL DRIVE

FAR HILLS AVENUE

UNIT PHASE LINE

215

WOODSIDE SUMMERLIN 21B

WOODSIDE HOMES

FIGURE 2
LOCATION MAP

RCI Engineering

500 SOUTH RANCHO DRIVE SUITE 17, LAS VEGAS, NV 89106
PH#702.453.0800 FAX#702.453.0801

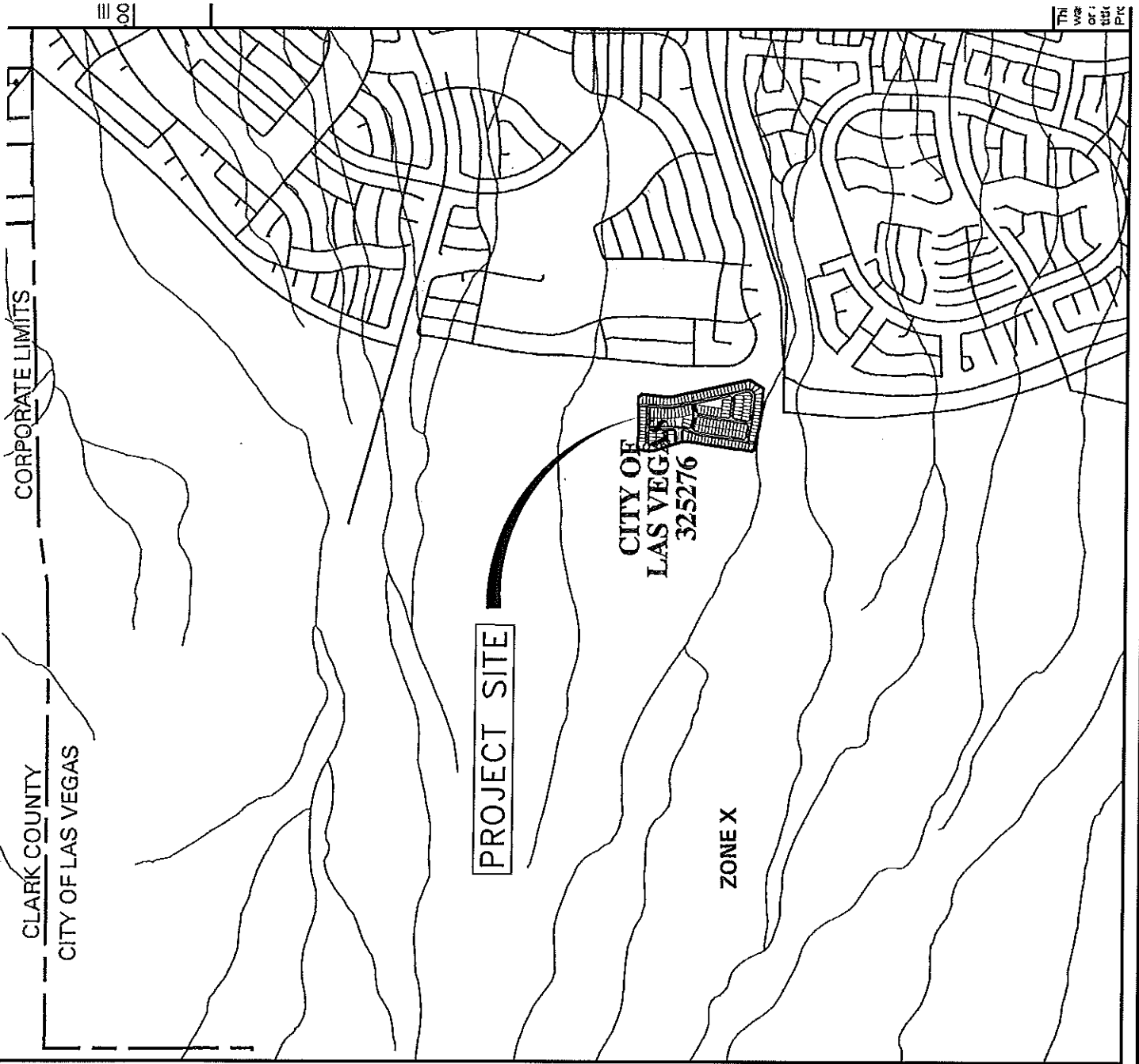
The site is presently undeveloped with sparse vegetation. The proposed development will consist of residential housing with Type A drainage. The project will include lots with an average lot size of 5,125 square feet. The Project will have a gated entrance from Ridge Pine Street. Interior streets will be private with private surface maintenance. The entrance road (Santa Elena Drive) will be a 65-foot private roadway with "L" Type curb and gutter, median island, a 4-foot detached sidewalk and landscaping on both sides. The majority of the interior residential streets will consist of a 36-foot wide private roadway with a normal crown section, Roll type curb and gutter and a 5-foot wide sidewalk on one side. Painted Chanted Way will have the same pavement cross section with a 4-foot wide sidewalk. Sailing Stones Street will be constructed 39-feet wide from back of curb to back of curb with a 5-foot wide sidewalk on one side. The reason that Sailing Stones Street is wider is to make room for storm drain.

III. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD HAZARD ANALYSIS

Figure 3 was reproduced from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) containing Community Panel Numbers 32003C2150E and 2150E, dated September 27, 2002. Review of the FIRM panels shows that the Project is currently located within a Zone X. Zone X areas are defined as areas outside of the 100-year floodplains; areas of 100 year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100 year flood. Therefore, the project is not located within a FEMA-designated Special Flood Hazard Area (SFHA).

IV. CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT FACILITIES

Figure 4 has been reproduced from Figure F-22 of the 2018 *Clark County Regional Flood Control District (CCRFCD) Master Plan Update* (Reference 1, hereinafter referred to as the 2018 MPU). This figure depicts the project site in relation to existing and proposed CCRFCD facilities. As shown on the figure, the site is adjacent to CCRFCD Facilities APFH 0019 in Far Hills Avenue and APCH 0001 in Carriage Hill Drive. Therefore, the Project is located adjacent to CCRFCD facilities and will be submitted to CCRFCD for concurrence once a conditional letter of approval has been received from the City of Las Vegas.



FIRM
FLOOD INSURANCE RATE MAP
 CLARK COUNTY,
 NEVADA AND
 INCORPORATED AREAS

PANEL 2150 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:	COMMUNITY	NUMBER	PANEL	SUFFIX
	LAS VEGAS CITY OF CLARK COUNTY UNINCORPORATED AREAS	325276	2150	E
		325063	2150	E

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
32003C2150 E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

MAP SCALE 1" = 2000'



WOODSIDE SUMMERLIN 21B
 WOODSIDE HOMES

FIGURE 3
 F.I.R.M. MAP

RCI Engineering

500 SOUTH RANCHO DRIVE, LAS VEGAS, NV 89106
 PH#702.453.0800 FAX#702.453.0801



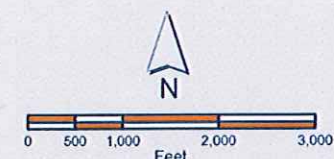
2018
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F-22

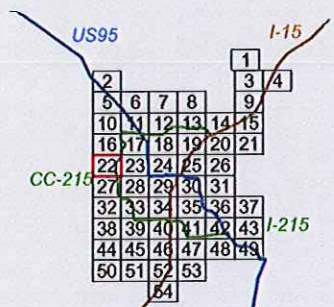
FLOOD CONTROL FACILITIES
LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator
- Remove & Replace/Parallel Facilities
- Category A
 - Channel
 - Stormdrain
 - Crossing
- Category B
 - Channel
 - Stormdrain
 - Crossing

FIGURE 4



AerialSource: Esri World Imagery 2017



ATKINS

Member of the SNC-Lavalin Group

Louis Berger

AREA OF STUDY

V. HYDROLOGY

The methodology presented in this study is in compliance with the *CCRFCD Hydrologic Criteria and Drainage Design Manual* (Reference 2, hereinafter referred to as the Manual).

Model Description - The watersheds were modeled using the SCS Unit Hydrograph method within the U.S. Army Corps of Engineers *HEC-1 Flood Hydrograph Package* (Reference 3).

The site hydrology has previously been modelled in the *Update #1 to the Flood Control Master Plan Update Summerlin West Planning Area* by VTN Nevada. (Reference 4, hereinafter referred to as the Master Plan Study Update). The Master Plan Study Update was approved on April 17, 2019. Precipitation for this drainage study matches what was used in the Master Plan Study Update. Pertinent information from the Master Plan Study Update has been included in Appendix C.

Precipitation - The project site lies outside of the McCarran Rainfall Area as delineated in the Design Manual on Figures 503 and 506. The 10-year and 100-year point precipitation values for the project will be 1.86 inches and 3.39 inches during a 6-hour storm event, respectively. This equates to a 0.55 ratio between the 10-year and 100-year storm events. (See Appendix A)

Since the drainage area for the project will be less than 8 square miles, an SDN 3 design storm distribution per Table 503 of the Manual was selected for use in the HEC-1 computer model.

Curve Numbers (CN) –The soils information for this Project was also referenced from the the NRCS Website. The site is comprised of soil type 156 (Vase-Wechech).

The soils map from the NRCS Website has been included in Appendix A that delineates soil type 156 as HSG "D", "B", and a small portion "A".

For the given soils, CN values were determined from the appropriate columns of Table 602 of the Manual. Existing conditions storm flows were referenced from the Conceptual Study and will be discussed in detail in the existing conditions section of this report. For

the ultimate conditions, the developed site was modeled with a CN value of 95 for the onsite residential basins. In the interim condition Phases 2, 3, and 4 will be rough graded and a combination CN value for newly graded areas and residential was used for the subbasins.

Drainage Areas and Flow Patterns - The subbasins and flow patterns used in the hydrologic modeling for proposed conditions used electronic files of the grading plans for the Project and for the surrounding improvements constructed by Summerlin.

Lag Time - The lag time (TLAG) is described as the time between the center of mass of rainfall and the time of peak discharge from a basin. Lag time can be related to time of concentration (T_c) by the following relationship: $TLAG = 0.6(T_c)$. The time of concentration (T_c) is defined as the time required for runoff to flow from the most remote part of the basin area to the outlet of the basin or a design point under consideration. The procedure for calculating T_c is outlined in Section 602 of the Manual. Lag time calculations for the drainage subbasins has been included in Appendix A on Standard Form 4.

VI. EXISTING CONDITIONS

Existing conditions for this Project has been referenced from the *Technical Drainage Study For Summerlin West Village 21 Carriage Hill Drive Far Hills to East West Collector* by VTN Nevada (Reference 5, hereinafter referred to as the Carriage Hill Study). An approval letter for the Carriage Hill Study could not be found. The only thing referenced from the study is the existing condition and the CLV did not comment on that analysis. Therefore, it is assumed that the existing condition in that study is valid. The plans have been approved and there are several references from the approved plans that will be discussed later in this report. The existing condition for the site has been shown on Figure 6 from the Carriage Hill Study in Appendix C.

Under existing conditions all of the surrounding roads have been constructed. Ridge Pine Street on the west was constructed as a part of the *Technical Drainage Study for Summerlin Village 21 Ridge Pine Street (Far Hills Avenue to Street A)*, by VTN Nevada (Reference 6, hereinafter referred to as the Ridge Pine Study). The Ridge Pine Study was

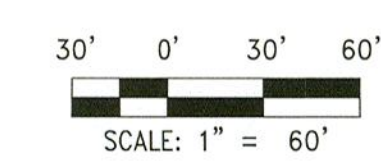
approved on July 30, 2018. Far Hills Avenue on the south was designed as a part of the *Technical Drainage Study For Village 20/21 Far Hills Avenue Drainage and Grading Improvements*, by G. C. Wallace, Inc. Engineering (Reference 7, hereinafter referred to as the Far Hills Study). The Far Hills Study was approved on December 5, 1997. Red Point Drive on the north was designed as a part of the *Technical Drainage Study for Summerlin West Village 21 Street A (Desert Foothills Drive to Carriage Hill Drive)* by VTN Nevada (Reference 8, hereinafter referred to as the Red Point Study). The Red Point Study was approved on July 31, 2018. The roadways that border the Project have either already been constructed or are under construction and will be completed prior to or concurrently with this Project. Therefore, it is assumed that the site is protected from offsite storm flows from the surrounding area by the adjacent street improvements. Please see pertinent excerpts from the referenced approved studies in Appendix C.

VII. INTERIM CONDITIONS

Figure 5 depicts the interim condition onsite subbasins and flow patterns for the Project. The interim condition HEC-1 model has been included in Appendix A. Table 1 summarizes the interim condition 100-year and 10-year flow rate for the site. The site is being broken into four Phases for development purposes. The Phase 1 improvement plans will include rough grading, construction of the perimeter walls, the onsite retaining walls, the entrance road, and 29 residential lots. The interim condition for the site has been included only for the Phase 1 improvements. Interim conditions models have not been prepared for when Phases 2, 3 and 4 are constructed since those conditions match the normal construction practices for residential projects. Under interim conditions the entrance from Ridge Pine Street will be constructed with the Phase 1 improvement plans.

TABLE 1 INTERIM CONDITIONS HEC-1 MODEL SUMMARY			
*SUBBASIN OR CP	BASIN AREA (AC)	100 YR (cfs)	10 YR (cfs)
INT1	11.51	42	20
INT2	10.42	38	18
INT3	5.65	22	11
CP1	n/a	60	29

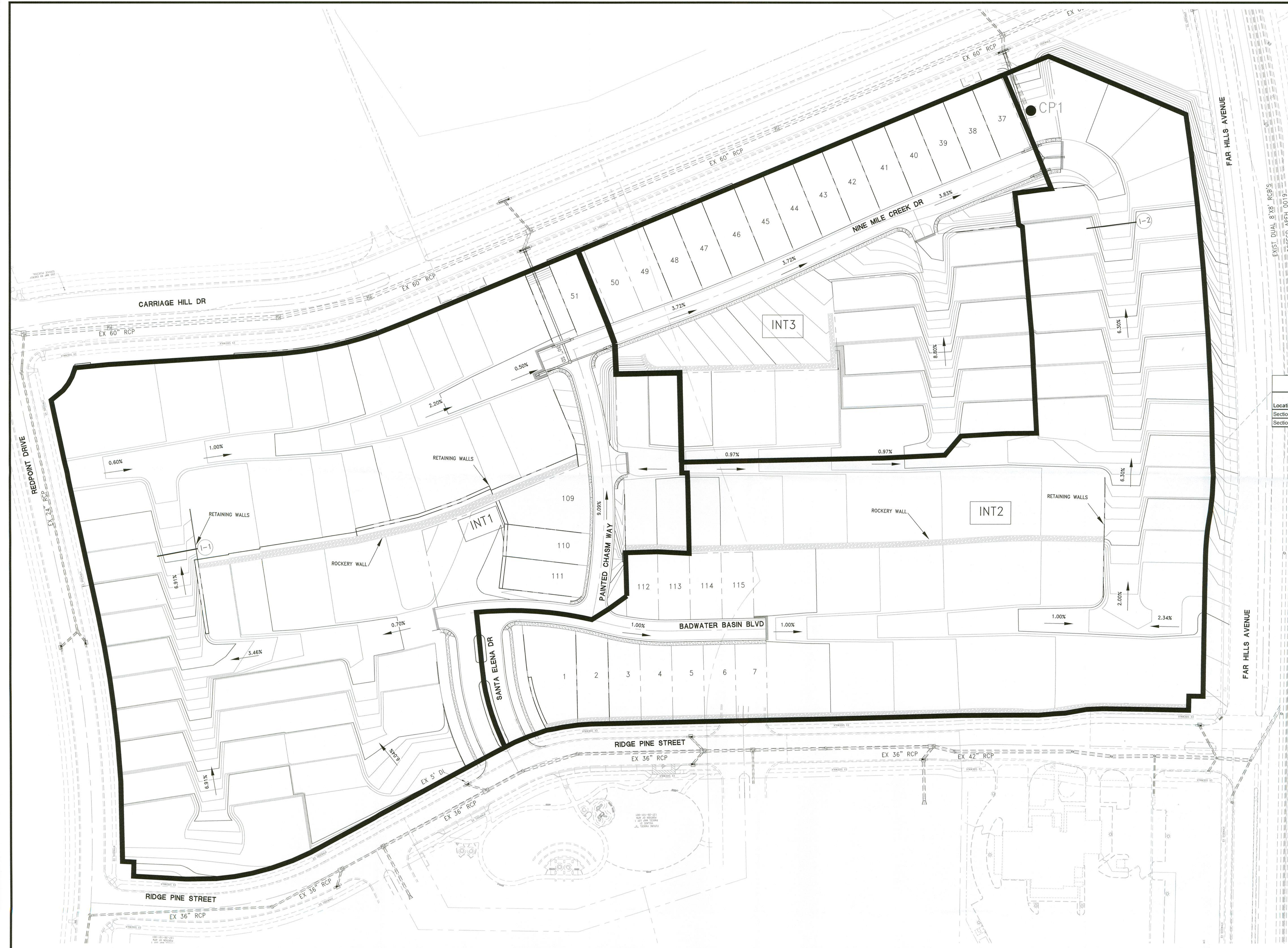
*See Figure 5



- LEGEND**
- PROPOSED FLOW DIRECTION
 - PROPOSED SUBBASIN BOUNDARY
 - EXISTING STORM DRAIN PIPE
 - INT1 PROPOSED DRAINAGE SUBBASIN
 - CP1 PROPOSED CONCENTRATION POINT
 - I-1 CROSS SECTION LOCATION

INTERIM CONDITIONS HEC-1 MODEL SUMMARY			
SUBBASIN OR CP	Basin Area (ac)	100 YR (cfs)	10 YR (cfs)
INT1	11.51	42	20
INT2	10.42	38	18
INT3	5.65	22	11
CP1	n/a	60	29

100-YEAR INTERIM HYDRAULIC SECTIONS					
Location	Slope (%)	Q ₁₀₀ (cfs)	D ₁₀₀ (ft)	V ₁₀₀ (ft/sec)	D*V ₁₀₀
Section I-1	6.91	21	0.15	4.4	n/a
Section I-2	6.3	38	0.22	5.4	n/a



VILLAGE 21B PARCELS A AND B
WOODSIDE

FIGURE 5
INTERIM PHASE 1

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Under interim conditions the drainage patterns match the ultimate condition drainage patterns. The flows produced in the interim condition are slightly lower than the flows produced during the ultimate condition due to a lower CN value and slower lag times. Normal depth calculations have been conducted at two key locations to determine velocities in the rough cut street sections. Please refer to Figure 5 for those normal depth calculations and the hydraulic summary table. There is a small area at the southeast corner of the project (Cross Section 2) where the 100-year storm flow velocities are 5.4 feet per second. That flow is only slightly erosive and Phase 2 construction of the infrastructure streets will be constructed concurrently with or shortly after Phase 1. It is unlikely that a 100-year storm event will occur in the short time period between construction of Phase 1 and Phase 2 and any erosive damage to the rough cut streets will be repaired by the developer.

In the interim condition there will be a 100-year storm flow of 42 cfs produced by Subbasin INT1. The 100-year storm flow from Subbasin INT1 will drain to drop inlets 3, 4, and 5 at the east end of Painted Chasm Way. Those inlets are in a sump and will convey the interim flows into an existing storm drain in Carriage Hill Drive. Subbasins INT2 and INT3 will produce a combined 100-year storm flow of 60 cfs at Combination Point CP1. There are two 20-foot Type CM2 drop inlets in a sump at Combination Point CP1 (Inlets 1 and 2) that will intercept the interim 100-year storm flows ($Q_{100}=30$ cfs each) at a ponding depth of 0.53 feet. The rough grading at CP1 will contain those interim flows not allowing any runoff to exist the site at that location. There is an 18-inch RCP storm drain that will be extended west in Sailing Stones Street in Phase 2 to intercept a portion of the ultimate condition upstream runoff. Ultimate conditions storm flows are the worst case storm flows and drop inlets and storm drain have been sized for the ultimate condition 100-year storm flows. A more detailed analysis of the hydraulics for the project will be addressed in the Prorated Storm Flows and Hydraulics Section of this report.

VIII. ULTIMATE CONDITIONS

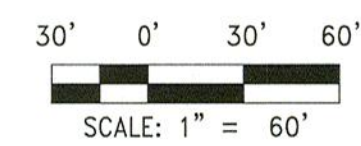
Figure 6 depicts the ultimate condition subbasins and flow patterns for the Project. The ultimate condition HEC-1 model has been included in Appendix A. Table 2 summarizes the ultimate condition 100-year and 10-year flow rate for the project site. The site will drain to the east and to the southeast corner of the Project. There are existing storm drain laterals at those locations and drop inlets have been designed to intercept and convey the 100-year storm flows to the existing 60-inch RCP storm drain in Carriage Hill Drive.

TABLE 2 ULTIMATE CONDITIONS HEC-1 MODEL SUMMARY			
SUBBASIN OR CP*	BASIN AREA (AC)	100 YR (cfs)	10 YR (cfs)
ON1	11.51	45	23
ON2	10.42	39	20
ON3	5.65	23	12
CP1	n/a	62	32

*See Figure 6

In the ultimate condition Subbasin ON1 will produce 45 cfs during a 100-year storm event. Storm flows from Subbasin ON1 will drain to the Nine Mile Creek/Painted Chasm Way intersection where those flows will be conveyed via drop inlet and storm drain into the existing 60-inch RCP. Storm flows from Subbasins ON2 and ON3 will drain to Combination Point CP1 for a combined 100-year storm flow of 62 cfs. The 100-year storm flow will be conveyed to the existing 60-inch RCP storm drain via drop inlets and storm drain in Sailing Stones Street and Nine Mile Creek Road. The hydraulics of the onsite storm drain will be addressed in the Prorated Storm Flows and Hydraulics Section of this report.

The developed site will produce a combined 100-year storm flow of 107 cfs (45 cfs from Subbasin ON1 plus 62 cfs from CP1). It was determined in the Master Plan Study Update that the Parcels A and B sites will produce a combined 100-year storm flow of 105 cfs from Subbasins A and B. Please refer to the HEC-1 model and Figure A.6.6 in Appendix C.



LEGEND

- PROPOSED FLOW DIRECTION
- PROPOSED SUBBASIN BOUNDARY
- PRORATED BASIN BOUNDARY
- PROPOSED STORM DRAIN PIPE
- ON1 PROPOSED DRAINAGE SUBBASIN
- CP1 PROPOSED CONCENTRATION POINT

- 1 CROSS SECTION LOCATION
- PR1 PRORATED BASIN NAME
5.9 ACRES
23 CFS
- PR2 PRORATED BASIN NAME
5.6 ACRES
22 CFS
- PR3 PRORATED BASIN NAME
7.2 ACRES
28 CFS
- PR4 PRORATED BASIN NAME
3.2 ACRES
11 CFS

ULTIMATE CONDITIONS HEC-1 MODEL SUMMARY			
SUBBASIN OR CP	BASIN AREA (AC)	100 YR (cfs)	10 YR (cfs)
ON1	11.51	45	23
ON2	10.42	39	20
ON3	5.65	23	12
CP1	n/a	62	32

PR1 = 5.9 ACRES*3.9 CFS/ACRE = 23 CFS
PR2 = 5.6 ACRES*3.9 CFS/ACRE = 22 CFS
PR3 = 7.2 ACRES*3.9 CFS/ACRE = 28 CFS
PR4 = 3.2 ACRES*3.9 CFS/ACRE = 11 CFS

- UI-1 20' TYPE CM2
INTERCEPT 24 CFS
0 BYPASS
- UI-2 20' TYPE CM2
INTERCEPT 24 CFS
0 BYPASS
- UI-3 5.5' TYPE CM2
INTERCEPT 6 CFS
BYPASS 0 CFS
- UI-4 22.5' TYPE CM2
INTERCEPT 23 CFS
BYPASS 0 CFS
- UI-5 12.5' TYPE CM2
INTERCEPT 16 CFS
BYPASS 0 CFS
- UI-2-6, UI-2-7 12.5' TYPE CM2
INTERCEPT 7 CFS EACH
TOTAL 14 CFS
BYPASS 7 CFS EACH
TOTAL 14 CFS

100-YEAR CROSS SECTIONS					
Location	Slope (%)	Q ₁₀₀ (cfs)	D ₁₀₀ (ft)	V ₁₀₀ (ft/sec)	D*V ₁₀₀
Section 1	6.91	23	0.34	7.15	2.4
Section 2	1.00	23	0.44	3.51	1.5
Section 3	0.50	45	0.62	3.54	2.2
Section 4	6.30	30	0.37	7.20	2.7
Section 5	3.83	23	0.37	5.62	2.1
Section 6	8.80	12	0.27	6.57	1.8

VILLAGE 21B PARCELS A AND B
WOODSIDE

FIGURE 6
ULTIMATE CONDITIONS MAP

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The CN values and rainfall for this study are a little higher than what was calculated in the Master Plan Study Update which would account for the 1.8 percent increased 100-year runoff of 2 cfs during a 100-year storm event. There will be an ultimate 100-year storm flow of 406 cfs in the existing 60-inch RCP according to the Carriage Hill Study. That is only a 0.50 percent change in the 100-year storm flows in the existing 60-inch RCP in Carriage Hill Drive. Therefore, the 100-year storm flows produced by the site are within tolerances for the existing 60-inch storm drain in Carriage Hill Drive and will not have a negative impact to the downstream storm drain system.

The existing site is steep and drains from west to east at a slope of around 6 to 8 percent. In order to balance the earthwork on the site and keep retaining walls at a reasonable height the lots along Ridge Pine Street and Redpoint Drive are below the adjacent street elevations. The entrance to the site is from Ridge Pine Street and no hump has been graded in the street to keep flows from rounding the corner and draining onto the site. There is only 1 cfs in the east half of Ridge Pine Street at the entrance and there is an existing 5.5-foot Type C drop inlet on the upstream side of the entrance that has been designed to intercept that storm flow. Therefore, for this study it is assumed that no flow will drain onto the site from Ridge Pine Street. Please see Figure 8 and Sheet UT2 and UT10 from the improvement plans and the Ridge Pine Study in Appendix C.

IX. PRORATED STORM FLOWS AND HYDRAULICS

Prorated storm flows for this study were calculated to model the ultimate conditions onsite discharges to design points. Table 3 summarizes the 100-year storm prorated basin calculations. Calculations are based on the overall 100-year storm flow from the site and then divided by the acreage to determine how much runoff per acre will be produced. The acreage of each Prorated Basin is then multiplied by the cfs/acre which equals the cfs per Prorated Basin. The developed site is 27.6 acres and will produce a combined 100-year storm flow of 107 cfs. Therefore, the site will produce an ultimate condition 100-year storm flow of approximately 3.9 cfs per acre ($107 \text{ CFS} / 27.6 \text{ acres}$). The Prorated Basins 100-year storm flows have been shown on Figure 6 and summarized in Table 3.

The prorated storm flows from this study were used to check the depth and velocity of storm flows to ensure that the 100-year storm runoff with erosive velocities will not flow above the top of curb. Prorated Basin PR1 represents the northwest portion of the site. Prorated Basin PR1 is 5.9 acres and will produce a 100-year storm flow of 23 cfs. ($3.9 \text{ cfs/acre} \times 5.9 \text{ acres} = 23 \text{ cfs}$). Prorated Basin PR2 is 5.6 acres and will produce a 100-year storm flow of 22 cfs. ($3.9 \text{ cfs/acre} \times 5.6 \text{ acres} = 22 \text{ cfs}$). All prorated storm flows in the following discussion are calculated the same as the previous examples. Prorated Basin PR3 is 7.2 acres and will produce a 100-year storm flow of 28 cfs and Prorated Basin PR4 is 2.8 acres and will produce a 100-year storm flow of 11 cfs.

TABLE 3 100-YR PRORATED STORM FLOWS			
SUBBASIN OR CP*	BASIN AREA (AC)	CFS/ACRE	100 YR (cfs)
PR1	5.9	3.9	23
PR2	5.6	3.9	22
PR3	7.2	3.9	28
PR4	2.8	3.9	11

• See Figure 6

Figure 6 shows the hydraulic cross section locations and the proposed storm drain and drop inlets for the Project. Table 4 is a summary of the normal depth calculations for the interior streets. The normal depth calculations, drop inlet calculations, Standard Form 6 models for the storm drain and D-load calculations for the site have been included in Appendix B. The site has been graded to drain to the southeast corner of the Project at the east end of Sierra Mar Street.

TABLE 4 100-YEAR HYDRAULIC ON-SITE STREET SECTIONS					
Location*	Slope (%)	Q ₁₀₀ (cfs)	D ₁₀₀ (ft)	V ₁₀₀ (ft/sec)	D*V ₁₀₀
Section 1	6.91	23	0.34	7.15	2.4
Section 2	1.00	23	0.44	3.51	1.5
Section 3	0.50	45	0.62	3.54	2.2
Section 4	6.30	30	0.37	7.20	2.7
Section 5	3.83	23	0.37	5.62	2.1
Section 6	8.80	12	0.27	6.57	1.8

• See Figure 6

The majority of the interior residential streets will consist of a 36-foot wide private roadway with a normal crown section, Roll type curb and gutter and a 5-foot wide sidewalk on one side. Painted Chanted Way will have the same pavement cross section with a 4-foot wide sidewalk. Sailing Stones Street will be constructed 39-foot wide from back of curb to back of curb with a 5-foot wide sidewalk on one side. Sailing Stones Street is wider to make room for storm drain.

Please refer to Figure 6 for the Cross Section locations and a hydraulic summary of the storm flows and for a summary of the drop inlet locations, storm flows intercepted and storm drain. The site is steep and slopes from west to east at approximately 7 percent. Drop inlets have been placed to intercept the 100-year storm flows to keep flows at or less than back of curb (0.38 feet deep) when velocities are erosive (exceed 5 fps). All of the following discussion for the normal depth calculations are based on 100-year storm flows. Cross Section 1 was cut in Salt Creek Avenue upstream of Nine Mile Creek Road. At that location there will be a 100-year storm flow of 23 cfs from Prorated Basin PR1. The depth of flow at that location will be 0.34 feet with a velocity of 7.15 fps. Cross Section 2 was cut just downstream of that in Nine Mile Creek Road. At that location there will also be a 100-year storm flow of 23 cfs from Prorated Basin PR1. The depth of flow at that location will be 0.44 feet with a velocity of 3.51 fps during a 100-year storm event. The depth of flow is above the top of curb at that location with non-erosive velocities. Cross Section 3 was cut in Nine Mile Creek Road just upstream of Painted Chasm Way. At that location there will also be a conservative 100-year storm flow of 45 cfs from Subbasin ON1. The depth of flow at that location will be 0.62 feet with a velocity of 3.54 fps during a 100-year storm event. The depth of flow is above the top of curb at that location with non-erosive velocities.

Drop inlets 3, 4, and 5 are all in a sump condition at the intersection and it is assumed that the 100-year flows will be split evenly on both side of the street. Inlet 5 will intercept approximately 16 cfs and inlet 3 will intercept approximately 6 cfs. That is a combined 100-year storm flow of 22 cfs (approximately $\frac{1}{2}$ of the 100-year storm flow produced by Subbasin ON1). Drop inlet 4 on the east half of the street will intercept 23 cfs during a 100-year storm event which accounts for the other half of the flow from Subbasin ON1. The Water Surface Elevation (ponding) at all three inlets is with about .10 feet of each other and the combined flow intercepted will be 45 cfs during a 100-year storm event.

Cross Section 4 was cut in Sailing Stones Street just downstream of Little Haystack Drive. At that location there will be a 100-year storm flow of 28 cfs from Prorated Basin PR3. The depth of flow at that location will be 0.37 feet with a velocity of 7.20 fps. Drop inlets 6 and 7 have been placed just downstream of Little Haystack Drive to intercept 7 cfs each (Total=14 cfs) to keep the 100-year storm flow below the top of curb since the velocities of those storm flows are erosive on that steep street.

Cross Section 5 was cut in Nine Mile Creek Road at the southeast corner of the Project. At that location there will also be a 100-year storm flow of 23 cfs from Subbasin ON3. The depth of flow at that location will be 0.0.37 feet with a velocity of 5.62 fps during a 100-year storm event. The depth of flow is below the top of curb at that location with erosive velocities. Drop Inlets 1 and 2 have been placed in a sump at the Nine Mile Creek/Sailing Stones curve and have been designed to intercept a 100-year storm flow of 24 cfs each (Total = 48 cfs) which is equal to the combined 100-year storm flow of 62 cfs at Combination Point CP1 minus the 14 cfs intercepted by Drop Inlets 6 and 7.

Drop inlet calculations using HEC 22 software from Visual Urban for the Type CM2 drop inlets have been enclosed in Appendix B. All drop inlets have been designed with a 50 percent clogging factor per City of Las Vegas criteria. Standard Form 6 Spreadsheets and drop inlet calculations for the proposed onsite storm drain have been included in Appendix B. The onsite storm drain conveys the 100-year storm flow of 107 cfs into the existing 60-inch RCP storm drain in Carriage Hill Drive at two locations. The starting HGL for the Standard Form 6 spreadsheets at those locations were referenced from the approved Carriage Hill Drive Improvement Plans. Copies of Sheets UT6 and UT8 from the Carriage Hill Drive Improvement plans have been included in Appendix B along with the Standard Form 6 Models to show the referenced starting HGL's that were used in the models. The starting HGL used in the models has been marked in red on those sheets.

There are two locations where emergency overflow calculations have been performed. The first location is at the easement at the southeast corner of the Project between lots 36 and 37. There will be a 100-year storm flow of 62 cfs draining to that easement if under the unlikely event all of the drop inlets on the project become 100-percent clogged. A submerged weir calculation for that easement has been conducted and is included in Appendix B. As shown in that calculation the finished floor elevations for Lot 36 and 37

adjacent to the easement are a minimum of 0.6 feet above the 100-year storm emergency overflow water surface elevation.

The second location is at the easement at middle of the east side of the Project between lots 51 and 52. There will be a 100-year storm flow of 45 cfs draining to that easement under the unlikely event that all of the drop inlets on the project were to become 100-percent clogged. A submerged weir calculation for that easement has been conducted and is included in Appendix B. As shown in that calculation the finished floor elevations for Lot 51 and 52 adjacent to the easement are a minimum of 0.8 feet above the 100-year storm emergency overflow water surface elevation.

There are two locations where the flows at "T" intersections could potentially have a negative impact to the residences on the opposite side of the intersection. The first location is at the Salt Creek Avenue/Nine Mile Creek intersection. At that location there will be a 100-year storm flow of 23 cfs produced by Prorated Basin PR1 in Salt Creek Avenue. The 100-year storm flows will drain at a depth of 0.34 feet and a velocity of 7.15 fps with a corresponding EGL of 1.13 ft. The finish floor elevations for lots 63 and 64 on the east side of the intersection are a minimum of 2 feet above the TC elevation. Under the unlikely event that the 100-year storm flows were to come to a complete stop at the intersection, those residences are above the EGL of the 100-year storm flows. The second location is at the Great Bahama Way/Nine Mile Creek intersection. At that location there will be a 100-year storm flow of 12 cfs which is one half of the storm flows produced by Subbasin ON3 in Great Bahama Way. The 100-year storm flows will drain at a depth of 0.27 feet and a velocity of 6.57 fps with a corresponding EGL of 0.94 ft. The finish floor elevations for lots 40 and 41 on the east side of the intersection are a minimum of 1.7 feet above the TC elevation. Under the unlikely event that the 100-year storm flows were to come to a complete stop at the intersection, those residences are above the EGL.

Per City of Las Vegas criteria in the Design Manual, the onsite finish floor elevations shall be set at a vertical distance of 6-inches above highest top of curb elevation or twice the depth of flow in the gutter flow line. Based on the street capacity calculations, the maximum depth of surface flow in the interior streets for the 100-year storm event will be 0.62 ft. To meet 2* depth of flow criteria the finish floor elevations should be set to a minimum of 1.24-feet above highest adjacent flow line elevation (0.86 above the TC

elevation). Therefore, the site criteria will be to set all finish floor elevations to a minimum of 0.86-inches above the highest top of curb. All finish floor elevations on the Project site exceed this criteria.

Based on the calculated street flow characteristics, the Design Manual criteria for depth (D) and velocity times depth ($V \cdot D$) to be less than 8 during the 100-year storm event will be met. Since in all cases the $D \cdot V$ was less than 6 during the 100-year storm event, 10-year cross section calculations were not warranted.

Perimeter streets hydraulics were reviewed to make sure that the site is protected from storm flows in the adjacent offsite streets. Storm flows in Carriage Hill Drive were addressed in the Carriage Hill Study. The 100-year storm flow in Carriage Hill Drive adjacent to the site will drain at 0.35 feet deep and be below top of curb in all cases. Please refer to Fig 8 from the Carriage Hill Study in Appendix C. All of the finish floor elevations for lots along Carriage Hill Drive are about 11-14.5 feet above the top of curb and will not be negatively impacted by the offsite street flows.

Storm flows in Ridge Pine Street were addressed in the Ridge Pine Study. The 100-year storm flow in Ridge Pine Street adjacent to the site will drain at a worst case of 0.32 feet deep and be below top of curb in all cases. Please refer to Fig 8 from the Ridge Pine Study in Appendix C. All of the finish floor elevations for lots along Ridge Pine Street are below the top of curb of the adjacent street. The perimeter wall along Ridge Pine Street will be solid grouted 3 courses above highest adjacent grade with 8-inch CMU or equivalent block to provide flood protection.

Storm flows in Redpoint Drive were addressed in the Ridge Pine Study. The 100-year storm flow in Redpoint Drive adjacent to the site will drain at a worst case of 0.32 feet deep and be below top of curb in all cases. Please refer to Fig 8 from the Red Point Study in Appendix C. All of the finish floor elevations for lots along Redpoint Drive are below the top of curb of the adjacent street. The perimeter wall along Redpoint Drive will be solid grouted 3 courses above highest adjacent grade with 8-inch CMU or equivalent block to provide flood protection. Finish floor elevations are a minimum of 2 feet above the top of curb in Far Hills Avenue and storm flows in Far Hills Avenue will not have a negative impact to the Project site.

X. CONCLUSIONS AND RECOMMENDATIONS

1. Methodology used in this report is in compliance with the Clark County Regional Flood Control District (CCRFCD) criteria.
2. The proposed project lies within a FEMA Zone X. Therefore, the project is not currently located in a FEMA-designated Special Flood Hazard Area.
3. Storm drain facilities proposed within the project and shown on the grading plans will be constructed with the Parcels A and B Phase 1 and Phase 2 improvements.
4. Homes to be constructed within this project will have adequate freeboard to be protected from flows conveyed in the adjacent streets.
5. Summerlin will construct the adjacent perimeter streets prior to or concurrently with this Project.

XI. REFERENCES

1. Clark County Regional Flood Control District, *Clark County Regional Flood Control District - The 2018 Las Vegas Valley Master Plan Update*
2. Clark County Regional Flood Control District, *Hydrologic Criteria and Drainage Design Manual*, updated August 1999.
3. U.S. Army Corps of Engineers, *HEC-1 Flood Hydrograph Package*, June 1998.
4. VTN Nevada, *Update #1 to the Flood Control Master Plan Update Summerlin West Planning Area*. April 2019.
5. VTN Nevada *Technical Drainage Study For Summerlin West Village 21 Carriage Hill Drive Far Hills to East West Collector*
6. VTN Nevada, *Technical Drainage Study for Summerlin Village 21 Ridge Pine Street (Far Hills Avenue to Street A)*, July 2018.
7. G. C. Wallace, Inc. Engineering, *Technical Drainage Study For Village 20/21 Far Hills Avenue Drainage and Grading Improvements*, December 1997.
8. VTN Nevada, *Technical Drainage Study for Summerlin West Village 21 Street A (Desert Foothills Drive to Carriage Hill Drive)* July 2018.

APPENDIX A –LAND PLAN CONDITIONS AND HYDROLOGIC CALCS

Tentative Map

Precipitation References

Soils References

Curve Number Reference

Interim Conditions

Curve Number Calculations

Standard Form 4

HEC-1 Model

Ultimate Conditions

Curve Number References (From Conceptual Study)

Standard Form 4

HEC-1 Model

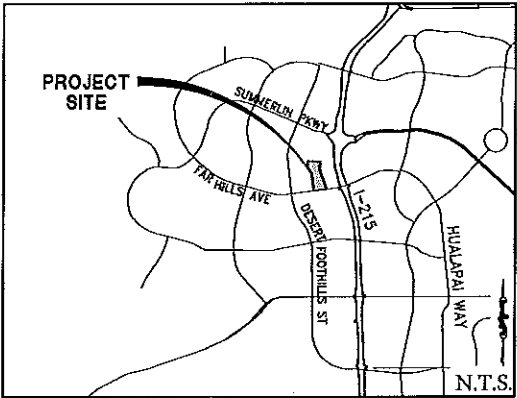
TENTATIVE MAP FOR
CRYSTAL CANYON
SUMMERLIN VILLAGE 21 PARCELS A & B

BY

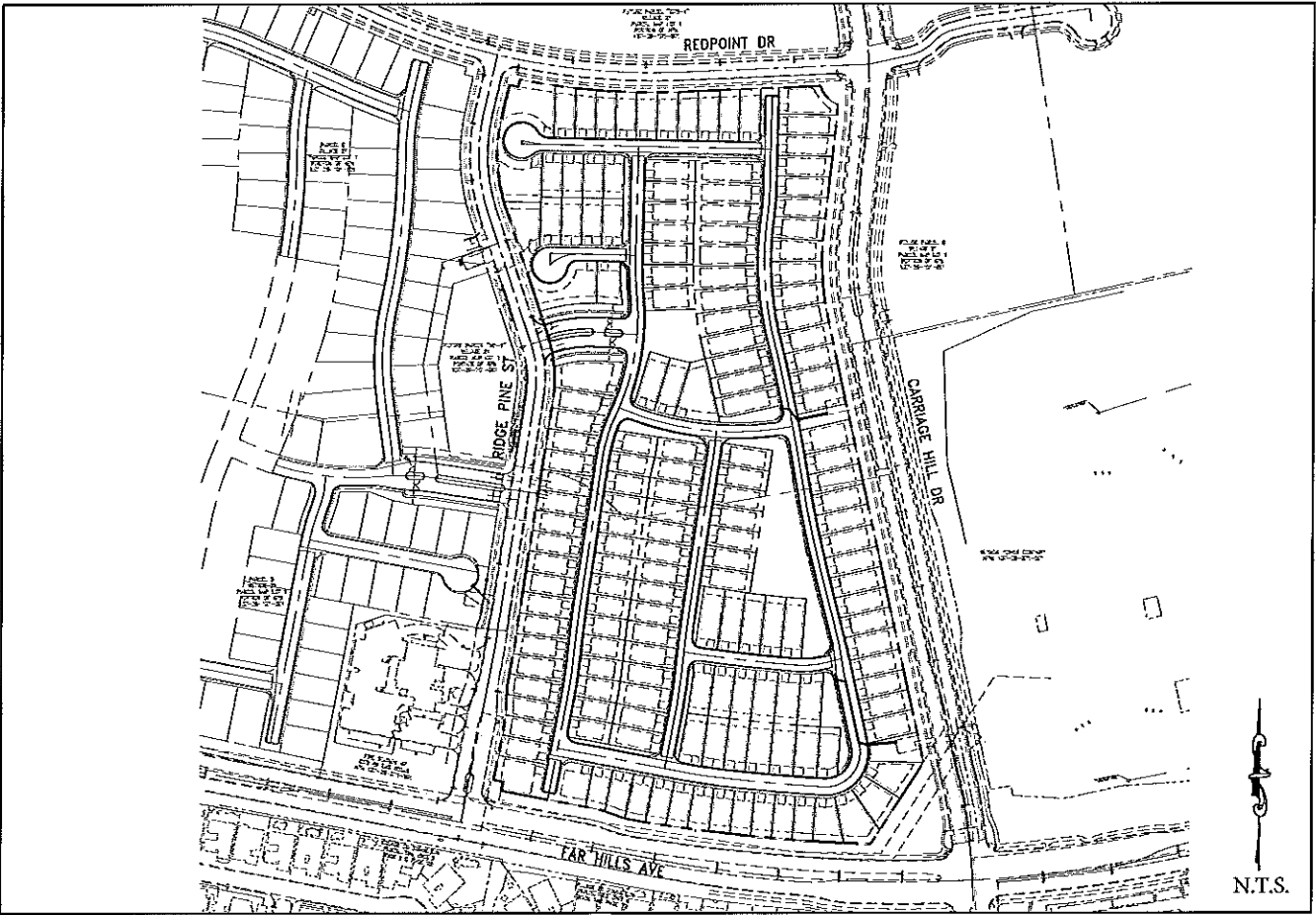


A SINGLE FAMILY RESIDENTIAL SUBDIVISION

27.56 +/- ACRES
PORTION OF APN 137-26-212-001
& 137-26-212-002



VICINITY MAP
NOT TO SCALE



SITE PLAN
NOT TO SCALE

GENERAL NOTES

- ALL IMPROVEMENTS SHALL CONFORM TO THE UNIFORM STANDARDS AND SPECIFICATIONS OF CLARK COUNTY, NEVADA.
- UTILITY SERVICES PROVIDED AS FOLLOWS:
 - WATER: LAS VEGAS VALLEY WATER DISTRICT
 - ELECTRIC: NV DESERT
 - GAS: SOUTHWEST GAS CORPORATION
 - SEWER: CITY OF LAS VEGAS
 - SOLID WASTE DISPOSAL: REPUBLIC SERVICES
 - TELEPHONE: CANTERLIN
- UTILITY EASEMENTS TO BE DEDICATED TO RESPECTIVE AGENCIES.
- SEWER CONTRIBUTION = 0.13035 M.G.D. AVG. (PEAK)
- BUILDING SETBACKS TO COMPLY WITH CLARK COUNTY DEVELOPMENT CODE OR APPROVED WAYLAYS.
- STORM WATER TO SURFACE DRAIN ON STREETS.
- THIS DEVELOPMENT IS SHOWN IN ITS ENTIRETY ON THIS TENTATIVE MAP.
- THIS DEVELOPMENT LIES WITHIN A ZONE "C" AS DESIGNATED BY FEMA FIRM MAP# 32000C2150E DATED 01/27/2002
- ALL INTERIOR SEWER AND WATER MAINS ARE 8" UNLESS OTHERWISE SHOWN.
- ALL INTERIOR STREETS ARE PRIVATE.
- ALL CURB RADII = 25' AT INTERSECTIONS UNLESS OTHERWISE SHOWN.
- THIS SUBDIVISION WILL HAVE COAR'S & TO MAINTAIN LANDSCAPING IN PERPETUITY BY THE HOME OWNER'S ASSOCIATION.
- THERE ARE NO DESERVABLE FAULTS OR FISSURES ON OR NEAR THIS SITE.
- SLEEPS, SPRINGS, OR OTHER INDICATIONS OF HIGH GROUND WATER LEVELS HAVE NOT BEEN LOCATED WITHIN 20 FEET OF THE EXISTING GROUND SURFACE.
- THE LOT SQUARE FOOTAGE LISTED ON THIS MAP REPRESENTS NET SQUARE FOOTAGE. NET SQUARE FOOTAGE IS EQUAL TO GROSS SQUARE FOOTAGE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAV88)

CITY OF LAS VEGAS BENCHMARK: D388 (REVISED 2008)
NAVD88 ELEVATION: 569.574 METERS (3,246.63 FEET)

IND USGARS DISC SET IN ROCK RIDGE 150' SOUTH OF
CHARLESTON BLVD. & WEST OF DETENTION BASIN.
1215.895, 525

BASIS OF BEARINGS

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF
THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS). LAS
VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF
1988; SAID MERIDIAN BEING COINCIDENT WITH 114°58'
WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH
2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN):
39°15'09"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'09"W
NORTHING AT GRID ORIGIN: 400,000.00 M
(1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M
(984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135
(EXACT)

NOTES:

- ALL DISTANCES AND BEARINGS SHOWN HEREON ARE
PROJECTED (GRID) VALUES BASED ON THE PRECEDING
PROJECTION DEFINITION. THE PROJECTION WAS
DEFINED SUCH THAT PROJECTED (GRID) DISTANCES
ARE EQUIVALENT TO "GROUND" DISTANCES IN THE
PROJECT AREA.
- GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID
COORDINATES) DO NOT EQUAL GEODETIC BEARINGS
DUE TO MERIDIAN CONVERGENCE.

LEGEND

RIGHT-OF-WAY	---
CENTERLINE	---
EASEMENT	---
PROPOSED PUBLIC SEWER LINE	—○—
PROPOSED PUBLIC WATERLINE	—X—
EXISTING PUBLIC SEWER LINE	—X—
EXISTING PUBLIC WATERLINE	—X—
PROPOSED SIDEWALK	—
PROPOSED FIRE HYDRANT	▼
EXISTING STREET LIGHT	○
INDEX CONTOUR	—2035—
INTERMEDIATE CONTOUR	—
LOT NUMBER	1
RATE OF GRADE	2.00%
RIGHT OF WAY	R/W
SIDEWALK	SW
SQUARE FEET	S.F.
COMMON ELEVATION	C.E.
POINT OF CONNECTION	POC

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 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. CONTRACTOR
TO VERIFY LOCATIONS OF ANY CHANGES
OR DISCREPANCIES.

OWNER

HOWARD HUGHES COMPANY, LLC
10846 GRIFFITH PEAK DRIVE, SUITE 100
LAS VEGAS, NV 89136

APPLICANT

WOODSIDE HOMES OF NEVADA LLC
7895 W. SUNSET RD., SUITE 110 LAS VEGAS, NV 89113
PHONE: (702) 889-7824

DESIGN ENGINEER:



RCI ENGINEERING
500 SOUTH RANCHO DRIVE, SUITE 17, LAS VEGAS, NV 89106
PHONE: 702.433.0800 FAX: 702.433.0801

LAND USE INFORMATION:

APN	= A PART OF 137-26-212-001 & 137-26-212-002
CURRENT PLANNED LAND USE	= PC/SF3
CURRENT ZONING	= PC/SF3
PROPOSED ZONING	= PC/SF3
TOTAL GROSS ACREAGE	= 27.56 AC
TOTAL SINGLE FAMILY MANAGED LOTS	= 168 LOTS
TOTAL COMMON LOTS	= 17 LOTS
DENSITY	= 6.02 DU/AC
OPEN SPACE REQUIREMENT	= 15,100 S.F.
OPEN SPACE PROVIDED	= 84,107 S.F.
MAXIMUM LOT SIZE	= 11,138 S.F.
MINIMUM LOT SIZE	= 4,077 S.F.
AVERAGE LOT SIZE	= 5,125 S.F.
TYPICAL LOT SIZE	= 45,595'

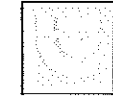
NOTE: GROSS SQUARE FOOTAGE IS EQUAL TO NET SQUARE FOOTAGE

SHEET INDEX

SHT No.	DWG ID	DRAWING DESCRIPTION
1	TM1	COVER SHEET
2	TM2	OVERALL MAP
3	TM3	TENTATIVE MAP NORTH AREA
4	TM4	TENTATIVE MAP SOUTH AREA
5	TM5	DETAILS AND SECTIONS
6	CS1	SITE CROSS SECTIONS
7	CS2	SITE CROSS SECTIONS

DATE: September 01, 2019
HOME SCALE: N/A
VERT. SCALE: N/A
DRAWN BY: RCI
CHECKED BY: RCI
APPROVED BY: RCI
PROJECT #: 2308000

RCI ENGINEERING
500 SOUTH RANCHO DRIVE, SUITE 17, LAS VEGAS, NV 89106
PHONE: 702.433.0800 FAX: 702.433.0801

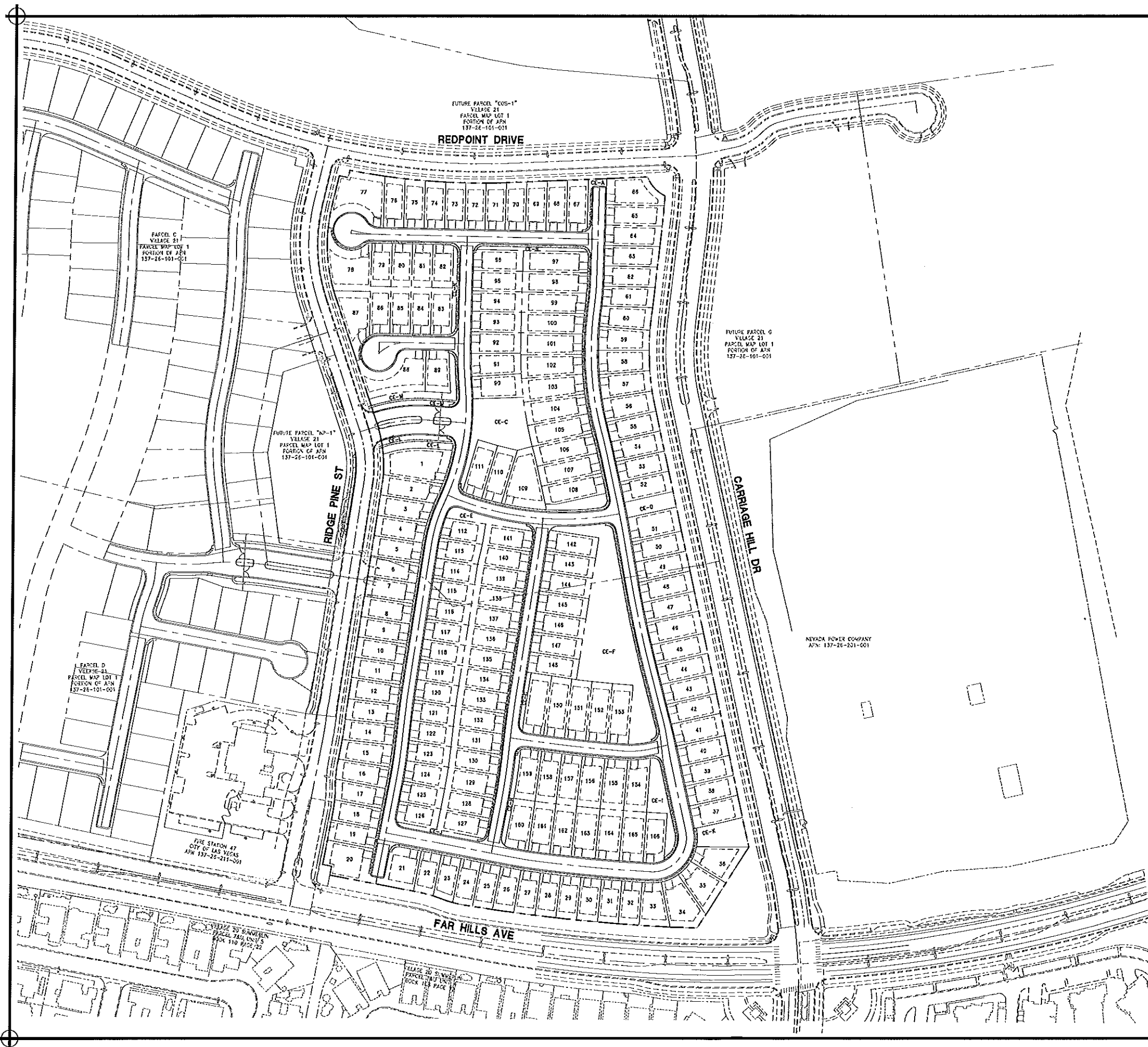


Woodside Homes
BETTER BY DESIGN

CRYSTAL CANYON
SUMMERLIN VILLAGE 21 PARCEL A & B
TENTATIVE MAP
COVER SHEET



DATE: 8/25/23
DRAWING
TM-1
SHT 1 OF 7



LEGEND

RIGHT-OF-WAY	---
CENTERLINE	---
EASEMENT	---
PROPOSED PUBLIC SEWER LINE	---
PROPOSED PUBLIC WATERLINE	---
EXISTING PUBLIC SEWER LINE	---
EXISTING PUBLIC WATERLINE	---
PROPOSED SIDEWALK	---
PROPOSED FIRE HYDRANT	---
EXISTING STREET LIGHT	---
INDEX CONTOUR	---
INTERMEDIATE CONTOUR	---
LOT NUMBER	1
RATE OF GRADE	2.00%
RIGHT OF WAY	R/W
SIDEWALK	SW
SQUARE FEET	S.F.
COMMON ELEVATION	C.E.
POINT OF CONNECTION	POC

100' 50' 0' 100' 200'

SCALE 1" = 100'

DATE: September 04, 2019
PROJECT: 137-26-101-001
DRAWN BY: N/A
CHECKED BY: N/A
APPROVED BY: N/A
PROJECT # 137-26-101-001

RCI ENGINEERING
500 SOUTH RANCHO DRIVE, SUITE 17, LAS VEGAS, NV 89106
MAIN: 702.455.0800 FAX: 702.455.0801

Woodside Homes
BETTER BY DESIGN

CRYSTAL CANYON
SUMMERLIN VILLAGE 21 PARCEL A & B
TENTATIVE MAP
OVERALL MAP

NEVADA
CITY OF LAS VEGAS
PLANNING/CAD FILED IN: SUMMERLIN 21 PARCEL A & B
DATE: 9/05/19 8:03am

PROFESSIONAL ENGINEER - STATE OF NEVADA
CHRISTOPHER L. THOMPSON
Exp. 6/30/2023
CIVIL
No. 14154

DATE: _____
DRAWING: TM-2
SHT 2 OF 7

MATCH LINE SEE SHEET TM-3

FUTURE PARCEL "NP-1"
VILLAGE 21
PARCELS MAP LOT 1
PORTION OF ACN
137-26-101-001

POPE FIVE ST

PARTIAL CHAM WAY

GREAT PALMWAY

BALBOA BLVD

PARK HILLS AVE

VILLAGE 20 SUMMER IN
PARCEL 120 UNIT
BOOK 188 PAGE 72

Nevada Power Company
ATTN: 137-26-201-001

E.A. OVERHEAD TRANSMISSION
POWER POLY(N.V. ENERGY)

FIRE STATION 47
OFF OF LAS VEGAS
PH 137-25-211-001

§

DATE: _____
DRAWING
TM-4
SHT 4 OF 7



Woodside Homes
BETTER BY DESIGN

DATE: September 05, 2019
HORIZ. SCALE: 1"=60'
VERT. SCALE: N/A
DRAWN BY: SRC
DESIGNED BY: MD
CHECKED BY: CLT
APPROVED BY: CLT
PROJECT #: 4370.0000

UTILITY LOCATIONS SHOWN HEREON ARE AFFIRMATIVE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.

FAST
Call before you Overhead
1-702-432-5300
FREIGHTWAY AND AERIAL
SYSTEM OF TRANSPORTATION

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

Call before you do UnderGround

1-702-267-2783

CITY OF HENDERSON UTILITY SERVICES LINE LOCATION AND

2" BRASS CAP IN THE TOP OF CURB AT THE NORTHWEST CORNER OF ANTHEM PKWY AND SCOTTS VALLEY EQ.

ELEVATION=777.561 METERS (NAVD'83)
ELEVATION=2551.05 US SURVEY FEET (NAVD'83)

SOUTH 09°16'35" EAST BEING THE BEARING OF THE EAST LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 23, TOWNSHIP 23 SOUTH, RANGE 61 EAST, W.D.M., CITY OF HENDERSON, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 145, PAGE 52 OF PLATS.

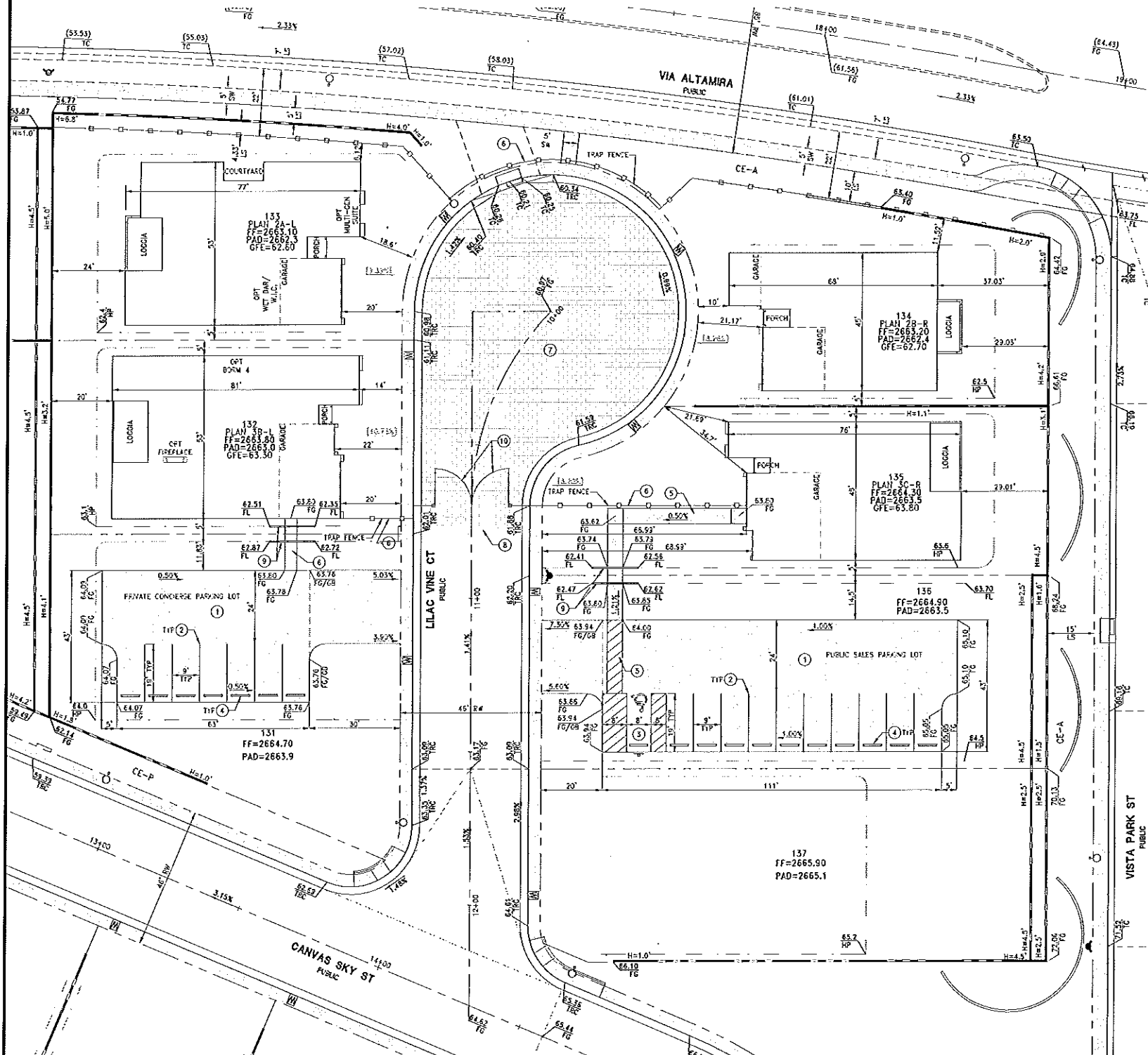
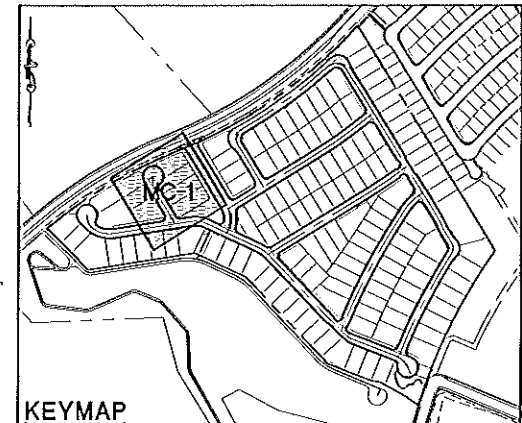
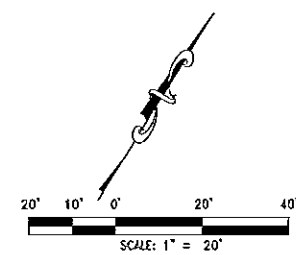
- ① INSTALL A/C. PAVEMENT PER DETAIL 1 THIS SHEET.
- ② INSTALL 4'-0" WIDE WHITE PAINTED PARKING STRIPE.
- ③ INSTALL VAN ACCESSIBLE HAND-AP. SIGN, 4'-0" WIDE PAINTED LOADING BAY STRIPES AND PARKING BAY HAND-AP. SYMBOL.
- ④ INSTALL FREECAST RUMBER BLOCK PER CCASD NO. 233.
- ⑤ INSTALL ADA ACCESS PATH.
- ⑥ INSTALL WOOD WALKING PATH AND TRAP TENCING PER LANDSCAPE PLANS.
- ⑦ INSTALL BRICK PAVING PER DETAIL 3 THIS SHEET
- ⑧ INSTALL CONCRETE FAYER HEADER PER DETAIL 2 THIS SHEET
- ⑨ INSTALL 4" PVC DRAIN PIPE
- ⑩ INSTALL 24" WIDE EMERGENCY FIRE DEPARTMENT CRASH GATE

SELES OFFICE PUBLIC PARKING
625 SF SALES - 1 SPACE PER 200 SF
PARKING STALLS REQUIRED - 4 SPACES
PARKING STALLS PROVIDED - 11 SPACES
- 10 STANDARD SPACES
- 1 HANDICAP ACCESSIBLE SPACE
CONDUCE OFFICE PRIVATE PARKING
PARKING STALLS REQUIRED - 0 SPACES
PARKING STALLS PROVIDED - 6 SPACES
- 6 STANDARD SPACES
- 0 HANDICAP ACCESSIBLE SPACE

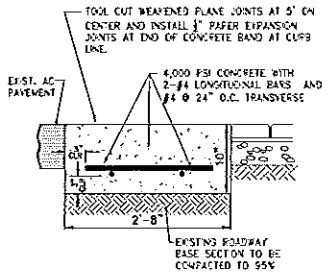
ACCORDING TO THE FERRI FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NUMBER 320030ND00C DATED NOVEMBER 16, 2011, THE SITE IS LOCATED IN A ZONE "X" AND SHADED ZONE "X".

ALL TEMPORARY IMPROVEMENTS WITHIN RIGHT OF WAY THAT ARE CONSTRUCTED FOR THE ADA ACCESS PATH TO BE REMOVED AND REPLACED PER GRADING PLANS AND DETAILS THIS PLAN SET.
ALL ADA PATH SURFACES TO BE CONSTRUCTED PER LANDSCAPING PLANS BY OTHERS.

_____ ROW OR PROPERTY LINE
 _____ CENTERLINE
 _____ EDGE OF ASPHALT
 □-□-□- TRAP FENCE
 FF=01.00 FINISH FLOOR ELEV
 PAD=01.0 PAD ELEV
 GPE=01.00 GARAGE FLOOR ELEV
8.15% RATE OF GRADE / SLOPE
0.00 FUTURE DRIVEWAY SLOPE
 3% SPOT ELEVATION
 ○ STREET LIGHT
 W WATER METER
 W DPE HYDRANT

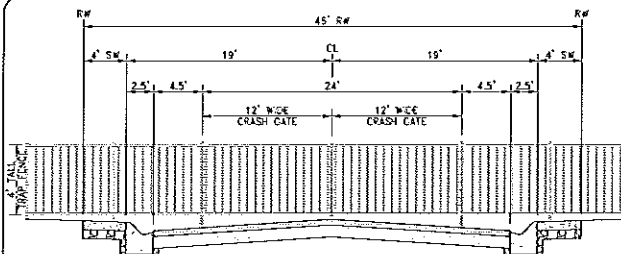


*SLOPE PER PLAN



SCALE: NTS **MC-1**

SCALE: NIS (MC-1)



PAYENA
LOT 132 - PLAN 3 ELEVATION B WITH OPTIONAL FIRE PLACE AND BEDROOM
LOT 133 - PLAN 2 ELEVATION A WITH OPTIONAL WET BAR/ W.I.C.
CASTANO
LOT 134 - PLAN 2 ELEVATION B WITH NO OPTIONS
LOT 135 - PLAN 3 ELEVATION C WITH NO OPTIONS

FOR REVIEW ONLY		DATE	BY	APPROV	DATE
REV	DESCRIPTION				
	DATE: October 03, 2010				
	HORIZ. SCALE: 1"=50'				
	VERT. SCALE: N/A				
	DRAWN BY: CJ				
	DESIGNED BY: DP				
	CHECKED BY: JLL				
	APPROVED BY: JLL				
	PROJECT #: 110-00000				

TOLL HENDERSON, LLC
1140 TOWN CENTER DRIVE SUITE 220
LAS VEGAS, NV 89144
PHONE: 702-543-8860 FAX: 702-542-0610

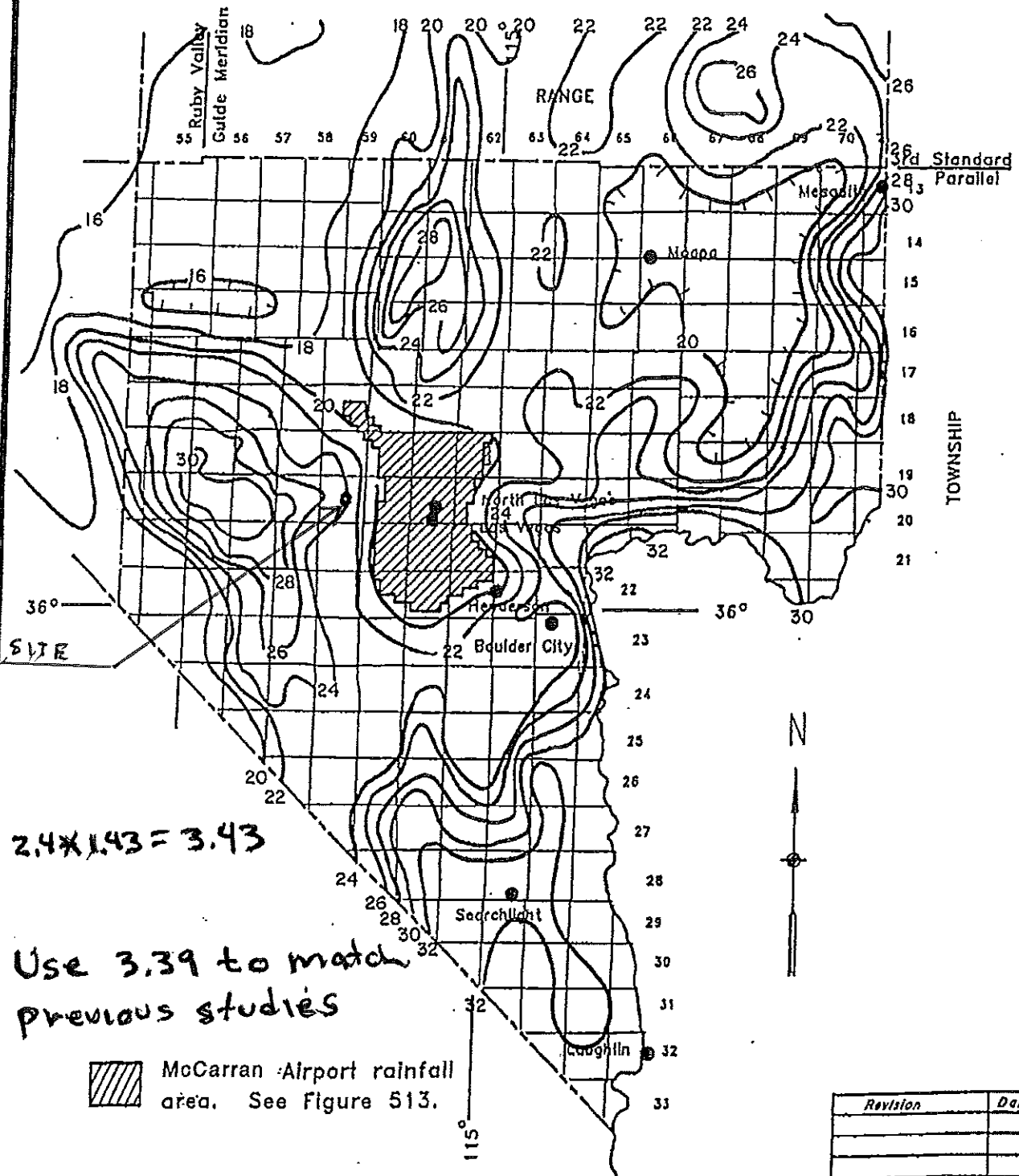
RCI ENGINEERING
500 SMOOT RANCH DRIVE, SUITE 17, LAS VEGAS, NV 89166
PHONE: 702-506-0850 FAX: 702-506-0861

INSPIRADA POD 5-2
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
MODEL COMPLEX

DRAWING
MC-1
 SHEET 66 OF 87
 PCYL
 2019044927

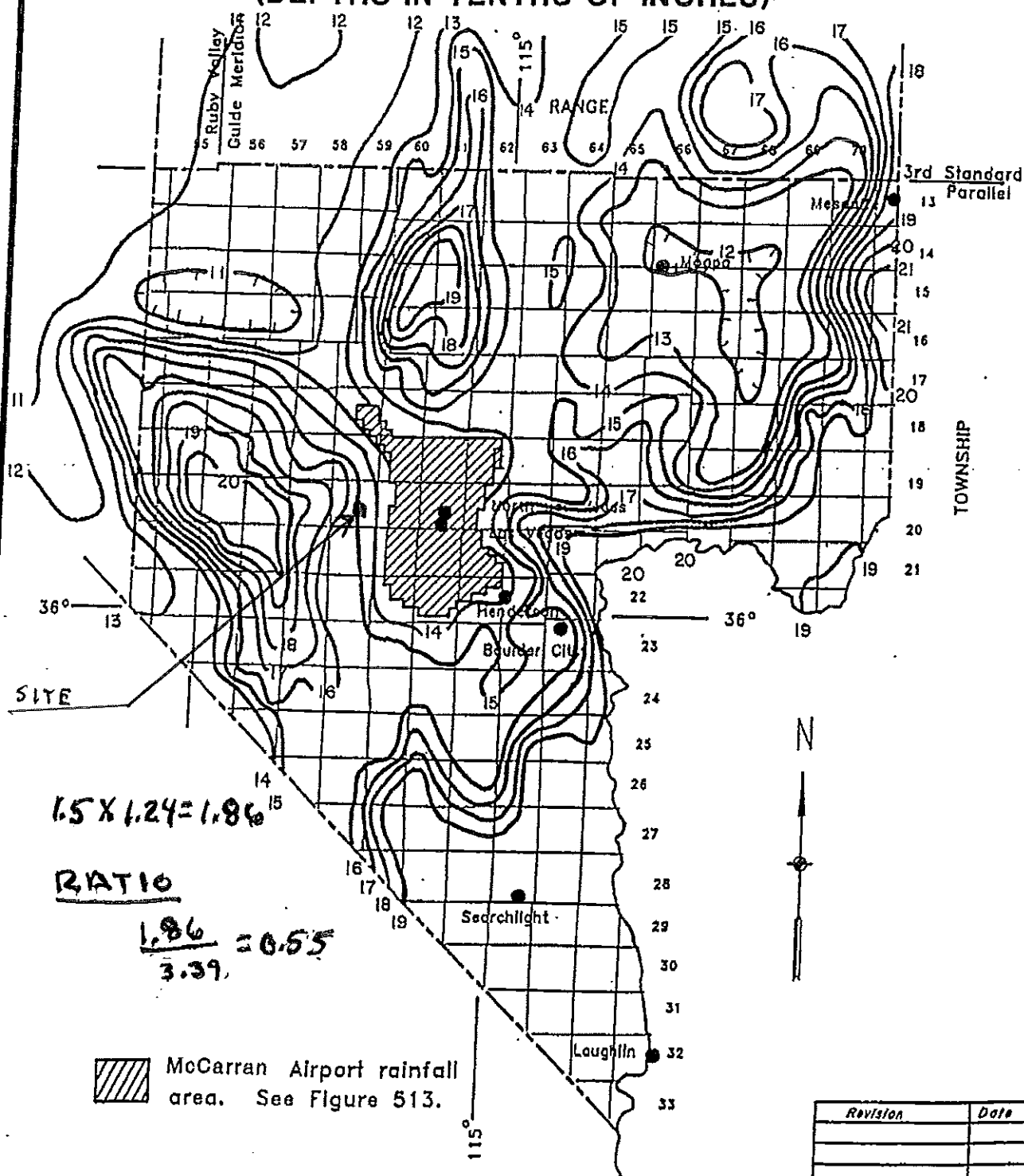
HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

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



HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

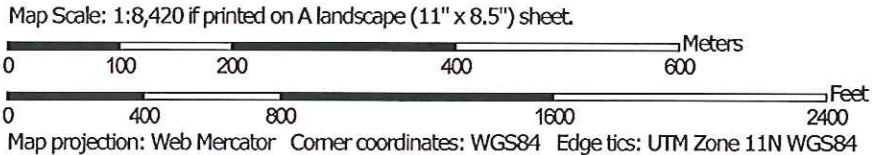
RAINFALL DEPTH-DURATION-FREQUENCY 10-YEAR, 6-HOUR (DEPTHS IN TENTHS OF INCHES)



Soil Map—Las Vegas Valley Area, Nevada, Part of Clark County
(Woodside Homes Village 21B)



100% Soils 156



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

Soil Map—Las Vegas Valley Area, Nevada, Part of Clark County
(Woodside Homes Village 21B)

MAP LEGEND

Area of Interest (AOI)			Spoil Area
	Area of Interest (AOI)		Stony Spot
Soils			Very Stony Spot
	Soil Map Unit Polygons		Wet Spot
	Soil Map Unit Lines		Other
	Soil Map Unit Points		Special Line Features
Special Point Features		Water Features	
	Blowout		Streams and Canals
	Borrow Pit	Transportation	
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow	Background	
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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 13, Sep 14, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 6, 2016—Sep 1, 2017

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.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk "*" denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties—Las Vegas Valley Area, Nevada, Part of Clark County														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
152—Cave gravelly fine sandy loam, 0 to 4 percent slopes			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
Cave	100	D	0-12	Gravelly fine sandy loam	SC-SM, SM	A-2, A-4	0-0-0	0-3-5	70-80-90	60-68-75	40-53-65	25-33-40	15-20-25	NP-3-5
			12-36	Indurated	—	—	—	—	—	—	—	—	—	—
			36-60	Gravelly loamy sand, very gravelly sandy loam	GM, GP-GM, SM, SP-SM	A-1, A-2	0-0-0	0-3-5	35-55-75	30-45-60	20-28-35	10-20-30	0-8-15	NP

Engineering Properties--Las Vegas Valley Area, Nevada, Part of Clark County													
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number--				Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200	
155--Vace-Wechech association			In				L-R-H	L-R-H	L-R-H	L-R-H	L-R-H	L-R-H	L-R-H
Vace	45 D		0-2	Gravelly fine sandy loam	GC, SC, SC-SM	A-2	0-0-1	0-0-5	60-70-85	50-60-75	35-45-55	15-20-35	4-8-12
			2-8	Gravelly loam, fine sandy loam, gravelly fine sandy loam, loam	CL, CL-ML, SC	A-6, A-4	0-0-0	0-0-5	65-95-100	55-90-100	50-75-85	40-55-65	4-8-12
			8-60	Cemented material	—	—	—	—	—	—	—	—	—
Wechech	25 D		0-2	Very gravelly sandy loam	GC, GC-GM	A-1, A-2	0-0-0	5-8-15	35-50-55	30-45-50	20-25-35	10-15-20	4-6-12
			2-7	Very gravelly sandy loam, very gravelly fine sandy loam	GC-GM	A-1, A-2	0-0-0	0-0-5	35-50-55	30-45-50	20-30-35	12-20-25	4-6-12
			7-13	Very gravelly sandy loam, very gravelly fine sandy loam	GC-GM, GC	A-2, A-1	0-0-0	0-8-10	35-40-50	30-35-45	15-30-40	8-15-25	4-6-12
			13-60	Cemented material	—	—	—	—	—	—	—	—	—
Wechech, steep	15 D		0-2	Very gravelly sandy loam	GC, GC-GM	A-1, A-2	0-0-0	5-8-15	35-50-55	30-45-50	20-25-35	10-15-20	4-6-12
			2-7	Very gravelly fine sandy loam, very gravelly sandy loam	GC-GM	A-1, A-2	0-0-0	0-0-5	35-50-55	30-45-50	20-30-35	12-20-25	4-6-12
			7-13	Very gravelly sandy loam, very gravelly fine sandy loam	GC-GM, GC	A-2, A-1	0-0-0	0-8-10	35-40-50	30-35-45	15-30-40	8-15-25	4-6-12

Engineering Properties—Las Vegas Valley Area, Nevada, Part of Clark County														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
			13-60	Cemented material	—	—	—	—	—	—	—	—	—	—
Weiser	8 B		0-6	Gravelly very fine sandy loam	GM, SM	A-4	0-0-0	0-0-0	60-70-80	55-65-75	50-60-70	35-43-50	15-20-25	NP-3-5
			6-10	Extremely gravelly loam	GP-GM	A-1	0-3-5	0-5-10	15-23-30	10-18-25	5-13-20	5-8-10	15-20-25	NP-3-5
			10-42	Extremely gravelly sandy loam	GP, GP-GM	A-1	0-3-5	0-5-10	15-23-30	10-18-25	5-13-20	0-5-10	15-20-25	NP-3-5
			42-60	Extremely gravelly sandy loam	GP, GP-GC, GP-GM	A-1, A-2	0-3-5	0-5-10	15-23-30	10-18-25	5-13-20	0-5-10	15-20-25	NP-5-10
Irongold	4 D		0-1	Very gravelly sandy loam	GM	A-1	0-3-5	0-5-10	40-50-55	35-45-50	15-18-20	10-13-15	15-20-25	NP-3-5
			1-7	Loam, gravelly loam	SM, ML, GM, CL-ML	A-4	0-0-5	0-0-5	70-83-95	60-75-90	50-65-80	45-58-70	15-20-25	NP-3-5
			7-11	Gravelly sandy loam, very gravelly loam, very gravelly sandy loam, gravelly loam	GM, SM	A-1, A-2, A-4	0-3-5	0-5-10	35-48-65	30-43-60	20-35-50	15-28-40	15-20-25	NP-3-5
			11-34	Cemented material	—	—	—	—	—	—	—	—	—	—

89% D

Engineering Properties—Las Vegas Valley Area, Nevada, Part of Clark County														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
			34-60	Extremely gravelly loamy coarse sand	GP, GP-GM	A-1	0-0-5	0-0-5	30-38-45	10-18-25	5-8-10	0-5-10	0-17-21	NP-2-4
Commski	2 B		0-3	Extremely gravelly loam	GW-GM, GM	A-1	0-8-10	0-8-10	20-30-35	10-20-25	10-18-25	7-13-17	15-20-25	NP-3-5
			3-60	Extremely gravelly coarse sandy loam, extremely gravelly fine sandy loam, extremely gravelly sandy loam	GW-GM	A-1	0-2-5	0-3-10	20-30-35	10-20-25	7-13-18	4-8-10	25-28-30	NP-3-5
Threelakes	1 A		0-4	Extremely gravelly loamy sand	GP-GM, GP	A-1	0-2-5	10-15-23	30-40-50	15-25-30	5-10-15	0-5-10	10-12-15	NP-2-5
			4-31	Extremely gravelly fine sandy loam, extremely gravelly sandy loam	GP, GP-GM, GP-GC	A-1, A-2	0-0-5	0-7-10	20-28-35	10-18-25	5-13-20	0-5-10	16-22-27	2-6-10
			31-60	Stratified extremely gravelly fine sandy loam to extremely gravelly loamy coarse sand	GP, GW-GC	A-1, A-2	0-0-5	0-5-8	20-30-40	10-18-25	5-13-20	0-5-10	17-22-27	3-6-10

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

RUNOFF CURVE NUMBERS (URBAN AREAS¹)

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area ²	A	B	C	D
<i>Fully developed urban areas (vegetation established)</i>					
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

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

RUNOFF CURVE NUMBERS (URBAN AREAS¹)

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area ²	A	B	C	D
<i>Fully developed urban areas (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.): ³					
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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
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Developing urban areas

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--	----	----	----	----

1 Average runoff condition, and $I_a = 0.2S$.

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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

CN CALCULATIONS -INTERIM CONDITIONS

				CN- NEWLY GRADED		CN- COMMERCIAL	
Basin	% SOIL TYPE	HYDRO		%		%	
INT1	11	A	77			89	
		B	85			92	
		C	91			94	
		D	94			95	
	89			85		15	
							93
Basin	% SOIL TYPE	HYDRO					
INT2	11	A	77			89	
		B	83			92	
		C	91			94	
		D	94			95	
	89			83		17	
							93.4
Basin	% SOIL TYPE	HYDRO					
INT3	11	A	77			89	
		B	60			92	
		C	91			94	
		D	94			95	
	89			60		40	
							93.7

WEIGHTED CN	0.0
	9.6
	0.0
	83.8
	93

WEIGHTED CN	0.0
	9.6
	0.0
	83.8
	93.4

WEIGHTED CN	0.0
	9.7
	0.0
	84.0
	93.7

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

RCI
ENGINEERING

Summerlin Village 21 Parcels A and B
Interim Conditions

BY:
DATE:

rjr
11/12/19

SUB-BASIN DATA				INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)				Tc	Tc Check	Tlag	REMARKS
DESIG:	DEV./EX. (D or E)	CN	K	AREA Ac	AREA Mi ²	INITIAL LENGTH Feet	SLOPE %	TRAVEL LENGTH Feet	SLOPE %	VELOCITY FPS	V1 FPS	VELOCITY FPS	Tt Min	Tt
(1)			(2)	(3)		(4)	(5)	(7)	(8)	(9a)	(9b)		(10)	
INT1	D	93.0	0.8376	11.51	0.0180	32	2.0	2.1	2.3	3.0	4.6		6.2	18.3
INT2	D	93.4	0.8429	10.42	0.0163	30	2.0	2.0	2.9	3.4	5.2		7.0	20.9
INT3	D	93.7	0.8468	5.65	0.0088	103	1.5	4.1	3.3	3.7	5.6		2.7	14.2

$$T_c = T_i + T_t \quad T_{lag} = 0.6 T_c$$

$$T_i = 1.8 (1.1 - K) L^{1/2} / S^{1/3}$$

$$K = 0.0132 (CN) - 0.39$$

$$T_c \text{ Check (Developed)} = L/180 + 10$$

For the travel time (Tt) calculations,

V1 applies to the first 500 feet of travel distance;

V2 applies to the remaining travel distance.

Existing V1 = 14.8*(S/100)^{1/2}

Existing V2 = 29.4*(S/100)^{1/2}

Minimum Tc (EX) = 10 Min per Section 602

Developed

Developed

Minimum Tc (DEV) = 5 Min per Section 602.1

$$V1 = 20.2*(S/100)^{1/2}$$

$$V2 = 30.6*(S/100)^{1/2}$$

REFERENCE :

STANDARD FORM 4


```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 12NOV19 TIME 10:27:14
*
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* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

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

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

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

1

HEC-1 INPUT

PAGE 1

```

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

*DIAGRAM
1 ID VILLAGE 21 PARCELS A AND B
2 ID INTERIM ROUGH GRADED CONDITION
3 ID DESIGN STORM = 100-YEAR 6-HOUR STORM
4 ID STORM DISTRIBUTION = SDN3
5 ID
6 IT 5 0 0 300
7 IO 5 0 0
8 IN 5 0 0
9 JR PREC 1.00 0.55
*

10 KK INT1
11 KM SUBBASIN INT1
12 BA .0180
13 PB 3.39
14 PC 0.000 0.020 0.057 0.070 0.087 0.108 0.124 0.130 0.130 0.130
15 PC 0.130 0.130 0.130 0.133 0.140 0.142 0.148 0.158 0.172 0.181
16 PC 0.190 0.197 0.199 0.200 0.201 0.204 0.214 0.229 0.241 0.249
17 PC 0.251 0.256 0.270 0.278 0.281 0.283 0.295 0.322 0.352 0.409
18 PC 0.499 0.590 0.710 0.744 0.781 0.812 0.819 0.835 0.851 0.856
19 PC 0.860 0.868 0.876 0.888 0.910 0.926 0.937 0.950 0.970 0.976
20 PC 0.982 0.985 0.987 0.989 0.990 0.993 0.993 0.994 0.995 0.998
21 PC 0.998 0.999 1.000
22 LS 0 93
23 UD .083
*

24 KK INT2
25 KM SUBBASIN INT2
26 BA 0.0163
27 LS 0 93.4
28 UD .090
*

29 KK INT3
30 KM SUBBASIN INT3
31 BA .0088
32 LS 0 93.7
33 UD .068
*

34 KK CP1
35 KM COMBINATION POINT CP1
36 HC 2
*
37 ZZ

```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```

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

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

10 INT1
.
.
24 INT2
.
.
29 INT3
.
.
34 CP1.....

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*   JUN 1998
*   VERSION 4.1
*
* RUN DATE 12NOV19 TIME 10:27:14
*
*****

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* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

```

VILLAGE 21 PARCELS A AND B
INTERIM ROUGH GRADED CONDITION
DESIGN STORM = 100-YEAR 6-HOUR STORM
STORM DISTRIBUTION = SDN3

```

7 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      .55

```

1

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1	RATIO 2
				1.00	.55
HYDROGRAPH AT					
+	INT1	.02	1 FLOW	42.	20.
			TIME	3.50	3.50
HYDROGRAPH AT					
+	INT2	.02	1 FLOW	38.	18.
			TIME	3.50	3.50
HYDROGRAPH AT					
+	INT3	.01	1 FLOW	22.	11.
			TIME	3.50	3.50
2 COMBINED AT					
+	CP1	.03	1 FLOW	60.	29.
			TIME	3.50	3.50

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

CN CALCULATIONS -ULTIMATE CONDITIONS

Basin ON1, ON2, ON3	CN- COMMERCIAL			WEIGHTED CN
	% SOIL TYPE	HYDRO	%	
	11	A	89	0.0
		B	100	10.1
		C	94	0.0
	89	D	95	84.6
95				


```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*      JUN 1998
*      VERSION 4.1
*
* RUN DATE 04OCT19 TIME 08:58:13
*
*****

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* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

```

```

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

```

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

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

1

HEC-1 INPUT

PAGE 1

```

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

*DIAGRAM
1  ID      VILLAGE 21 PARCELS A AND B
2  ID      PROPOSED /ULTIMATE CONDITIONS
3  ID      DESIGN STORM = 100-YEAR 6-HOUR STORM
4  ID      STORM DISTRIBUTION = SDN3
5  ID
6  IT      5      0      0      300
7  IO      5      0      0
8  IN      5      0      0
9  JR      PREC      1.00      0.55
*

10  KK      ON1
11  KM      SUBBASIN ON1
12  BA      .0180
13  PB      3.39
14  PC      0.000      0.020      0.057      0.070      0.087      0.108      0.124      0.130      0.130      0.130
15  PC      0.130      0.130      0.130      0.133      0.140      0.142      0.148      0.158      0.172      0.181
16  PC      0.190      0.197      0.199      0.200      0.201      0.204      0.214      0.229      0.241      0.249
17  PC      0.251      0.256      0.270      0.278      0.281      0.283      0.295      0.322      0.352      0.409
18  PC      0.499      0.590      0.710      0.744      0.781      0.812      0.819      0.835      0.851      0.856
19  PC      0.860      0.868      0.876      0.888      0.910      0.926      0.937      0.950      0.970      0.976
20  PC      0.982      0.985      0.987      0.989      0.990      0.993      0.993      0.994      0.995      0.998
21  PC      0.998      0.999      1.000
22  LS      0      95
23  UD      .081
*

24  KK      ON2
25  KM      SUBBASIN ON2
26  BA      0.0163
27  LS      0      95
28  UD      0.088
*

29  KK      ON3
30  KM      SUBBASIN ON3
31  BA      .0088
32  LS      0      95
33  UD      .065
*

34  KK      CP1
35  KM      COMBINATION POINT CP1
36  HC      2
*
37  ZZ

```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```

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

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

10      ON1
.
.
24      .      ON2
.
.
29      .      .      ON3
.
.
34      .      CP1.....

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

1*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
* RUN DATE 04OCT19 TIME 08:58:13 *
*****

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```

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* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
*****

```

VILLAGE 21 PARCELS A AND B
 PROPOSED /ULTIMATE CONDITIONS
 DESIGN STORM = 100-YEAR 6-HOUR STORM
 STORM DISTRIBUTION = SDN3

```

7 IO      OUTPUT CONTROL VARIABLES
          IPRT 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 .55

```

1

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1	RATIO 2
				1.00	.55
HYDROGRAPH AT					
+	ON1	.02	1 FLOW	45.	23.
			TIME	3.50	3.50
HYDROGRAPH AT					
+	ON2	.02	1 FLOW	39.	20.
			TIME	3.50	3.50
HYDROGRAPH AT					
+	ON3	.01	1 FLOW	23.	12.
			TIME	3.50	3.50
2 COMBINED AT					
+	CP1	.03	1 FLOW	62.	32.
			TIME	3.50	3.50

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

APPENDIX B – HYDRAULIC CALCS

100-Year Interim Conditions

Flowmaster Hydraulic Normal Depth Calculations

Drop Inlet Calculations for 1 and 2

100-Year Ultimate Condition

Flow Rate Hydraulic Street Cross Sections

Drop Inlet Calculations

Standard Form 6 Models w/Referenced Starting HGL Sheets

Emergency Overflow Calculations

D-Load Calculations

Worksheet for NEWLY GRADED SECTION I-1, 100-YEAR

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.9100 %
Discharge	21.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
1+00.00	1.00
1+03.00	0.00
1+34.00	0.00
1+37.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(1+00.00, 1.00)	(1+37.00, 1.00)	0.025

Options

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

Results

Normal Depth	0.15 ft
Elevation Range	0.00 to 1.00 ft
Flow Area	4.8 ft ²
Wetted Perimeter	31.96 ft
Hydraulic Radius	0.15 ft
Top Width	31.91 ft
Normal Depth	0.15 ft
Critical Depth	0.24 ft
Critical Slope	1.4796 %
Velocity	4.40 ft/s
Velocity Head	0.30 ft
Specific Energy	0.45 ft
Froude Number	2.007
Flow Type	Supercritical

Worksheet for NEWLY GRADED SECTION I-1, 100-YEAR

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.15 ft
Critical Depth	0.24 ft
Channel Slope	6.9100 %
Critical Slope	1.4796 %

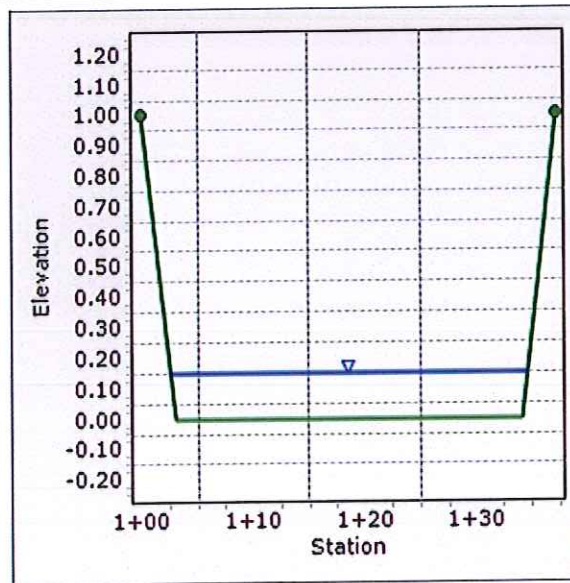
Cross Section for NEWLY GRADED SECTION I-1, 100-YEAR

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.9100 %
Normal Depth	0.15 ft
Discharge	21.00 cfs



Worksheet for NEWLY GRADED SECTION I-2, 100-YEAR

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.3000 %
Discharge	38.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
1+00.00	1.00
1+03.00	0.00
1+34.00	0.00
1+37.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(1+00.00, 1.00)	(1+37.00, 1.00)	0.025

Options

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

Results

Normal Depth	0.22 ft
Elevation Range	0.00 to 1.00 ft
Flow Area	7.0 ft ²
Wetted Perimeter	32.41 ft
Hydraulic Radius	0.22 ft
Top Width	32.33 ft
Normal Depth	0.22 ft
Critical Depth	0.36 ft
Critical Slope	1.3052 %
Velocity	5.40 ft/s
Velocity Head	0.45 ft
Specific Energy	0.67 ft
Froude Number	2.038
Flow Type	Supercritical

Worksheet for NEWLY GRADED SECTION I-2, 100-YEAR

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.22 ft
Critical Depth	0.36 ft
Channel Slope	6.3000 %
Critical Slope	1.3052 %

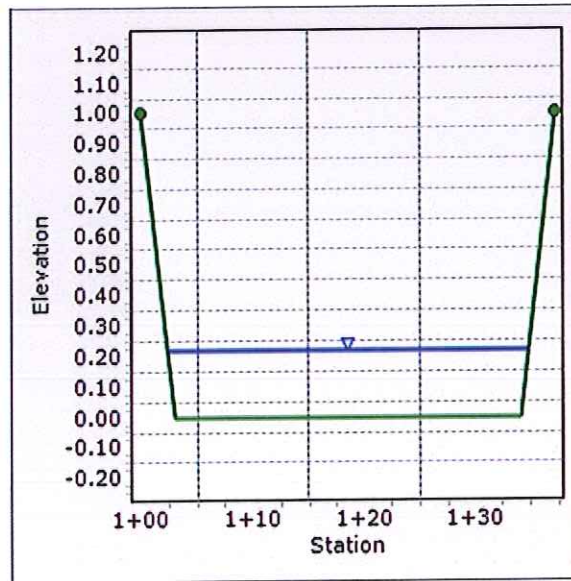
Cross Section for NEWLY GRADED SECTION I-2, 100-YEAR

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.3000 %
Normal Depth	0.22 ft
Discharge	38.00 cfs



Interim Flows

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, October 04, 2019

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: DI 1-2 sump interim

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0050 ft/ft

Cross-Slope of Pavement: 0.0200 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0160

Gutter Width: 2.0000 ft

Design Flow: 31.0000 cfs

Gutter Result Parameters

Width of Spread: 29.7533 ft

Gutter Depression: 0.0000 in

Area of Flow: 8.8526 ft²

E_o (Gutter Flow to Total Flow): 0.1696

Gutter Depth at Curb: 7.1408 in

Inlet Input Parameters

Inlet Location: Inlet in Sag

Percent Clogging: 0.0000 %

Inlet Type: Sweeper Combo

Grate Type: P - 1-7/8

Grate Width: 2.0000 ft

Grate Length: 11.6670 ft

Length of Inlet: 13.3300 ft

Curb opening height: 6.0000 in

Local Depression: 4.0000 in

Inlet Result Parameters

Perimeter: 20.9300 ft

Effective Perimeter: 20.9300 ft

Area: 32.1089 ft²

Effective Area: 32.1089 ft²

Depth at curb face (upstream of local depression): 0.5323 ft

Computed Width of Spread at Sag: 26.6167 ft

Flow type: Weir Flow

Efficiency: 1.0000

Clogging Factor (50%)

Grate, $11.67 \times 1.5 = 17.5'$

Curb Opening $13.33 \times 1.5 = 20'$

20' Long Type CM2 Inlet W/2.5' Sweeper (7 Grates)

Intercept 31 cfs

Bypass 0 cfs

Ponding Depth = 0.53

OK

100-YR
FLOW FROM PROPORTED
BASIN PR-1

Worksheet for 31-Foot Section 1 100-year

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	6.9100 %
Discharge	23.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+95.00	1.00
0+95.00	0.48
1+00.00	0.38
1+01.50	0.00
1+02.50	0.08
1+02.50	0.13
1+15.50	0.39
1+28.50	0.13
1+28.50	0.08
1+29.50	0.00
1+31.00	0.38
1+31.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+95.00, 1.00)	(0+95.00, 0.48)	0.013
(0+95.00, 0.48)	(1+00.00, 0.38)	0.013
(1+00.00, 0.38)	(1+02.50, 0.13)	0.013
(1+02.50, 0.13)	(1+15.50, 0.39)	0.016
(1+15.50, 0.39)	(1+28.50, 0.13)	0.016
(1+28.50, 0.13)	(1+31.00, 0.38)	0.013
(1+31.00, 0.38)	(1+31.00, 1.00)	0.013

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

Results	
Normal Depth	0.34 ft
Elevation Range	0.00 to 1.00 ft

Worksheet for 31-Foot Section 1 100-year

Results

Flow Area	3.2 ft ²
Wetted Perimeter	25.53 ft
Hydraulic Radius	0.13 ft
Top Width	25.35 ft
Normal Depth	<u>0.34 ft</u>
Critical Depth	0.50 ft
Critical Slope	0.4508 %
Velocity	<u>7.15 ft/s</u>
Velocity Head	0.80 ft
Specific Energy	<u>1.13 ft</u>
Froude Number	3.542
Flow Type	Supercritical

EGL

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.34 ft
Critical Depth	0.50 ft
Channel Slope	6.9100 %
Critical Slope	0.4508 %

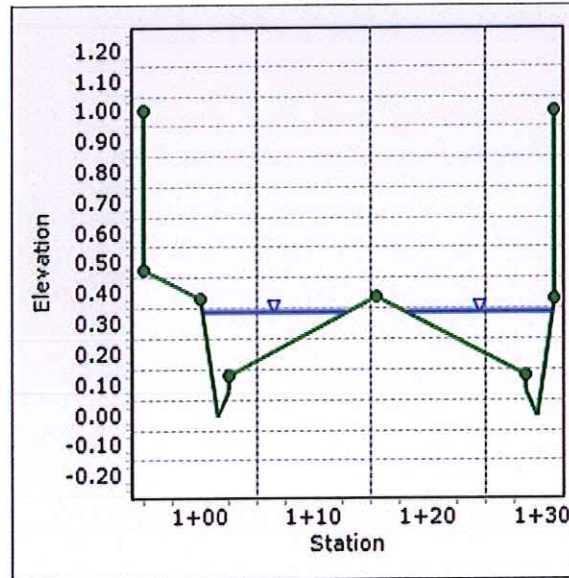
Cross Section for 31-Foot Section 1 100-year

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.9100 %
Normal Depth	0.34 ft
Discharge	23.00 cfs



Worksheet for 31-Foot Section 2 100-year

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	1.0000 %
Discharge	23.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+95.00	1.00
0+95.00	0.48
1+00.00	0.38
1+01.50	0.00
1+02.50	0.08
1+02.50	0.13
1+15.50	0.39
1+28.50	0.13
1+28.50	0.08
1+29.50	0.00
1+31.00	0.38
1+31.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+95.00, 1.00)	(0+95.00, 0.48)	0.013
(0+95.00, 0.48)	(1+00.00, 0.38)	0.013
(1+00.00, 0.38)	(1+02.50, 0.13)	0.013
(1+02.50, 0.13)	(1+15.50, 0.39)	0.016
(1+15.50, 0.39)	(1+28.50, 0.13)	0.016
(1+28.50, 0.13)	(1+31.00, 0.38)	0.013
(1+31.00, 0.38)	(1+31.00, 1.00)	0.013

Options

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

Results

Normal Depth	0.44 ft
Elevation Range	0.00 to 1.00 ft

Worksheet for 31-Foot Section 2 100-year

Results

Flow Area	6.5 ft ²
Wetted Perimeter	34.56 ft
Hydraulic Radius	0.19 ft
Top Width	34.30 ft
Normal Depth	<u>0.44 ft</u>
Critical Depth	0.50 ft
Critical Slope	0.4684 %
Velocity	<u>3.51 ft/s</u>
Velocity Head	0.19 ft
Specific Energy	0.64 ft
Froude Number	1.417
Flow Type	Supercritical

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.44 ft
Critical Depth	0.50 ft
Channel Slope	1.0000 %
Critical Slope	0.4684 %

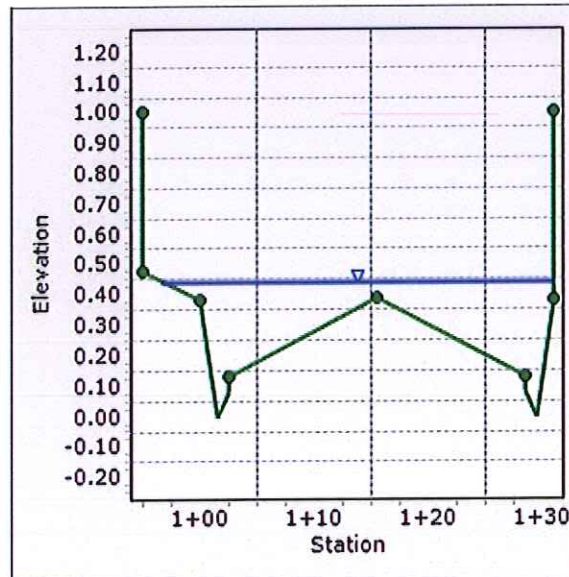
Cross Section for 31-Foot Section 2 100-year

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	1.0000 %
Normal Depth	0.44 ft
Discharge	23.00 cfs



Worksheet for 31-Foot Section 3 100-year

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.5000 %
Discharge	45.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+95.00	1.00
0+95.00	0.48
1+00.00	0.38
1+01.50	0.00
1+02.50	0.08
1+02.50	0.13
1+15.50	0.39
1+28.50	0.13
1+28.50	0.08
1+29.50	0.00
1+31.00	0.38
1+31.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+95.00, 1.00)	(0+95.00, 0.48)	0.013
(0+95.00, 0.48)	(1+00.00, 0.38)	0.013
(1+00.00, 0.38)	(1+02.50, 0.13)	0.013
(1+02.50, 0.13)	(1+15.50, 0.39)	0.016
(1+15.50, 0.39)	(1+28.50, 0.13)	0.016
(1+28.50, 0.13)	(1+31.00, 0.38)	0.013
(1+31.00, 0.38)	(1+31.00, 1.00)	0.013

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

Results	
Normal Depth	0.62 ft
Elevation Range	0.00 to 1.00 ft

Worksheet for 31-Foot Section 3 100-year

Results

Flow Area	12.7 ft ²
Wetted Perimeter	36.57 ft
Hydraulic Radius	0.35 ft
Top Width	36.00 ft
Normal Depth	<u>0.62 ft</u>
Critical Depth	0.63 ft
Critical Slope	0.4493 %
Velocity	<u>3.54 ft/s</u>
Velocity Head	0.19 ft
Specific Energy	0.81 ft
Froude Number	1.050
Flow Type	Supercritical

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.62 ft
Critical Depth	0.63 ft
Channel Slope	0.5000 %
Critical Slope	0.4493 %

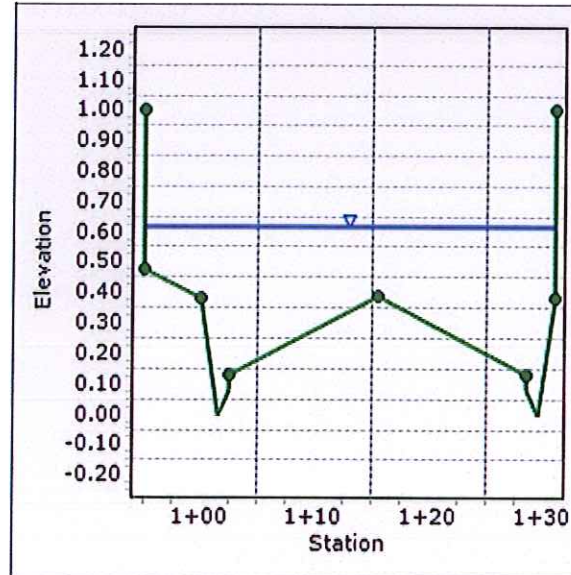
Cross Section for 31-Foot Section 3 100-year

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.5000 %
Normal Depth	0.62 ft
Discharge	45.00 cfs



Worksheet for 39-Foot Section 4 100-year

Project Description	
Friction Method	Manning
Solve For	Formula
	Normal Depth
Input Data	
Channel Slope	6.3000 %
Discharge	30.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+95.00	1.00
0+95.00	0.48
1+00.00	0.38
1+01.50	0.00
1+02.50	0.08
1+02.50	0.13
1+19.50	0.47
1+36.50	0.13
1+36.50	0.08
1+37.50	0.00
1+39.00	0.38
1+39.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+95.00, 1.00)	(0+95.00, 0.48)	0.025
(0+95.00, 0.48)	(1+00.00, 0.38)	0.025
(1+00.00, 0.38)	(1+02.50, 0.13)	0.013
(1+02.50, 0.13)	(1+19.50, 0.47)	0.016
(1+19.50, 0.47)	(1+36.50, 0.13)	0.016
(1+36.50, 0.13)	(1+39.00, 0.38)	0.013
(1+39.00, 0.38)	(1+39.00, 1.00)	0.025

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

Results	
Normal Depth	0.37 ft
Elevation Range	0.00 to 1.00 ft

Worksheet for 39-Foot Section 4 100-year

Results

Flow Area	4.2 ft ²
Wetted Perimeter	29.50 ft
Hydraulic Radius	0.14 ft
Top Width	29.32 ft
Normal Depth	<u>0.37 ft</u>
Critical Depth	0.53 ft
Critical Slope	0.4650 %
Velocity	<u>7.20 ft/s</u>
Velocity Head	0.81 ft
Specific Energy	1.17 ft
Froude Number	3.367
Flow Type	Supercritical

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.37 ft
Critical Depth	0.53 ft
Channel Slope	6.3000 %
Critical Slope	0.4650 %

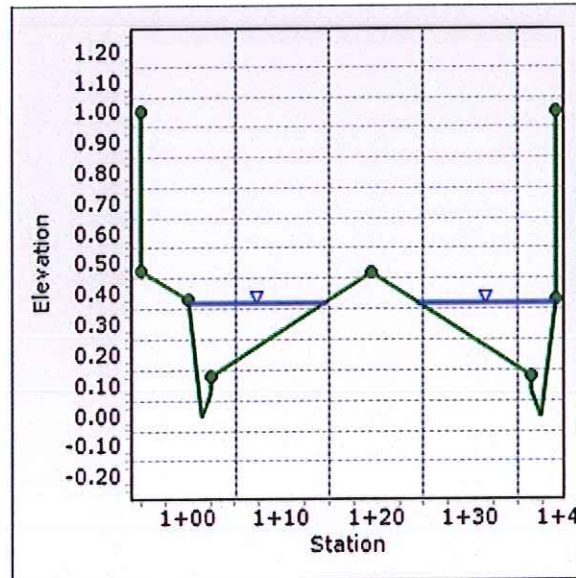
Cross Section for 39-Foot Section 4 100-year

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.3000 %
Normal Depth	0.37 ft
Discharge	30.00 cfs



Worksheet for 31-Foot Section 5 100-year

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	3.8300 %
Discharge	23.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+95.00	1.00
0+95.00	0.48
1+00.00	0.38
1+01.50	0.00
1+02.50	0.08
1+02.50	0.13
1+15.50	0.39
1+28.50	0.13
1+28.50	0.08
1+29.50	0.00
1+31.00	0.38
1+31.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+95.00, 1.00)	(0+95.00, 0.48)	0.013
(0+95.00, 0.48)	(1+00.00, 0.38)	0.013
(1+00.00, 0.38)	(1+02.50, 0.13)	0.013
(1+02.50, 0.13)	(1+15.50, 0.39)	0.016
(1+15.50, 0.39)	(1+28.50, 0.13)	0.016
(1+28.50, 0.13)	(1+31.00, 0.38)	0.013
(1+31.00, 0.38)	(1+31.00, 1.00)	0.013

Options

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

Results

Normal Depth	0.37 ft
Elevation Range	0.00 to 1.00 ft

Worksheet for 31-Foot Section 5 100-year

Results

Flow Area	4.1 ft ²
Wetted Perimeter	28.97 ft
Hydraulic Radius	0.14 ft
Top Width	28.78 ft
Normal Depth	0.37 ft
Critical Depth	0.50 ft
Critical Slope	0.4700 %
Velocity	5.62 ft/s
Velocity Head	0.49 ft
Specific Energy	0.86 ft
Froude Number	2.630
Flow Type	Supercritical

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.37 ft
Critical Depth	0.50 ft
Channel Slope	3.8300 %
Critical Slope	0.4700 %

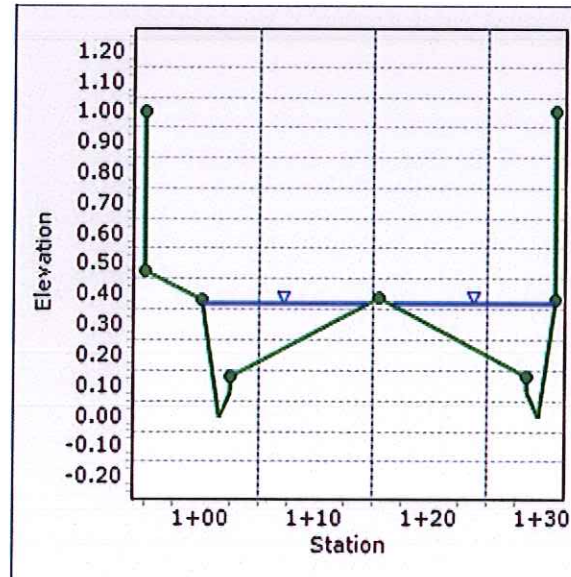
Cross Section for 31-Foot Section 5 100-year

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	3.8300 %
Normal Depth	0.37 ft
Discharge	23.00 cfs



1/2 FLOWS FROM Subbasin 013

Worksheet for 31-Foot Section 6 100-year

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	8.8000 %
Discharge	12.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+95.00	1.00
0+95.00	0.48
1+00.00	0.38
1+01.50	0.00
1+02.50	0.08
1+02.50	0.13
1+15.50	0.39
1+28.50	0.13
1+28.50	0.08
1+29.50	0.00
1+31.00	0.38
1+31.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+95.00, 1.00)	(0+95.00, 0.48)	0.013
(0+95.00, 0.48)	(1+00.00, 0.38)	0.013
(1+00.00, 0.38)	(1+02.50, 0.13)	0.013
(1+02.50, 0.13)	(1+15.50, 0.39)	0.016
(1+15.50, 0.39)	(1+28.50, 0.13)	0.016
(1+28.50, 0.13)	(1+31.00, 0.38)	0.013
(1+31.00, 0.38)	(1+31.00, 1.00)	0.013

Options

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

Results

Normal Depth	0.27 ft
Elevation Range	0.00 to 1.00 ft

Worksheet for 31-Foot Section 6 100-year

Results

Flow Area	1.8 ft ²
Wetted Perimeter	18.81 ft
Hydraulic Radius	0.10 ft
Top Width	18.65 ft
Normal Depth	0.27 ft
Critical Depth	0.41 ft
Critical Slope	0.5385 %
Velocity	6.57 ft/s
Velocity Head	0.67 ft
Specific Energy	0.94 ft
Froude Number	3.702
Flow Type	Supercritical

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.27 ft
Critical Depth	0.41 ft
Channel Slope	8.8000 %
Critical Slope	0.5385 %

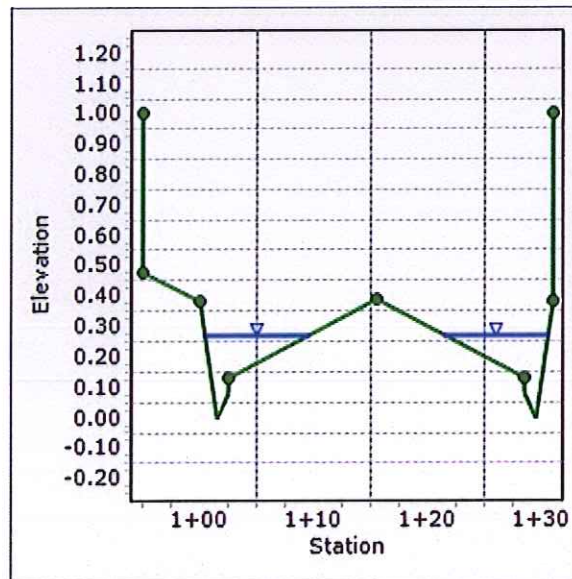
Cross Section for 31-Foot Section 6 100-year

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	8.8000 %
Normal Depth	0.27 ft
Discharge	12.00 cfs



Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, October 04, 2019

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: DI 1-2 sump

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0050 ft/ft

Cross-Slope of Pavement: 0.0200 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0160

Gutter Width: 2.0000 ft

Design Flow: 24.0000 cfs

Gutter Result Parameters

Width of Spread: 27.0304 ft

Gutter Depression: 0.0000 in

Area of Flow: 7.3064 ft²

E_o (Gutter Flow to Total Flow): 0.1856

Gutter Depth at Curb: 6.4873 in

Inlet Input Parameters

Inlet Location: Inlet in Sag

Percent Clogging: 0.0000 %

Inlet Type: Sweeper Combo

Grate Type: P - 1-7/8

Grate Width: 2.0000 ft

Grate Length: 11.6670 ft

Length of Inlet: 13.3300 ft

Curb opening height: 6.0000 in

Local Depression: 4.0000 in

Inlet Result Parameters

Perimeter: 20.9300 ft

Effective Perimeter: 20.9300 ft

Area: 32.1089 ft²

Effective Area: 32.1089 ft²

Depth at curb face (upstream of local depression): 0.4300 ft

Computed Width of Spread at Sag: 21.5020 ft

Flow type: Weir Flow

Efficiency: 1.0000

Clogging Factor (50%)

Grate, $11.67 \times 1.5 = 17.5'$

Curb Opening $13.33 \times 1.5 = 20'$

20' Long Type CM2 Inlet W/2.5' Sweeper (7 Grates)

Intercept 24 cfs

Bypass 0 cfs

Ponding Depth = 0.43

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, October 04, 2019

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: DI 3

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0050 ft/ft

Cross-Slope of Pavement: 0.0200 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0160

Gutter Width: 2.0000 ft

Design Flow: 6.0000 cfs

Gutter Result Parameters

Width of Spread: 16.0724 ft

Gutter Depression: 0.0000 in

Area of Flow: 2.5832 ft²

E_o (Gutter Flow to Total Flow): 0.2987

Gutter Depth at Curb: 3.8574 in

Inlet Input Parameters

Inlet Location: Inlet in Sag

Percent Clogging: 0.0000 %

Inlet Type: Sweeper Combo

Grate Type: P - 1-7/8

Grate Width: 2.0000 ft

Grate Length: 1.6670 ft

Length of Inlet: 3.3300 ft

Curb opening height: 6.0000 in

Local Depression: 4.0000 in

Inlet Result Parameters

Perimeter: 10.9300 ft

Effective Perimeter: 10.9300 ft

Area: 5.7756 ft²

Effective Area: 5.7756 ft²

Depth at curb face (upstream of local depression): 0.2594 ft

Computed Width of Spread at Sag: 12.9713 ft

Flow type: Weir Flow

Efficiency: 1.0000

Clogging Factor (50%)

Grate, 1.67*1.5= 2.5'

Curb Opening 3.33*1.5=5'

5' Long Type CM2 Inlet W/2.5' Sweeper (1 Grates)

Intercept 6 cfs

Bypass 0 cfs

Ponding Depth = 0.26

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, October 04, 2019

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: DI 4

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0050 ft/ft

Cross-Slope of Pavement: 0.0200 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0160

Gutter Width: 2.0000 ft

Design Flow: 23.0000 cfs

Gutter Result Parameters

Width of Spread: 26.6025 ft

Gutter Depression: 0.0000 in

Area of Flow: 7.0769 ft²

E_o (Gutter Flow to Total Flow): 0.1883

Gutter Depth at Curb: 6.3846 in

Inlet Input Parameters

Inlet Location: Inlet in Sag

Percent Clogging: 0.0000 %

Inlet Type: Sweeper Combo

Grate Type: P - 1-7/8

Grate Width: 2.0000 ft

Grate Length: 13.3300 ft

Length of Inlet: 15.0000 ft

Curb opening height: 6.0000 in

Local Depression: 4.0000 in

Inlet Result Parameters

Perimeter: 22.6000 ft

Effective Perimeter: 22.6000 ft

Area: 36.4940 ft²

Effective Area: 36.4940 ft²

Depth at curb face (upstream of local depression): 0.3842 ft

Computed Width of Spread at Sag: 19.2121 ft

Flow type: Weir Flow

Efficiency: 1.0000

Clogging Factor (50%)

Grate, $13.33 \times 1.5 = 20'$

Curb Opening $15.0 \times 1.5 = 22.5'$

22.5' Long Type CM2 Inlet W/2.5' Sweeper (8 Grates)

Intercept 23 cfs

Bypass 0 cfs

Ponding Depth = 0.38

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, October 04, 2019

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: DI 5

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0050 ft/ft

Cross-Slope of Pavement: 0.0200 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0160

Gutter Width: 2.0000 ft

Design Flow: 16.0000 cfs

Gutter Result Parameters

Width of Spread: 23.2177 ft

Gutter Depression: 0.0000 in

Area of Flow: 5.3906 ft²

E_o (Gutter Flow to Total Flow): 0.2138

Gutter Depth at Curb: 5.5722 in

Inlet Input Parameters

Inlet Location: Inlet in Sag

Percent Clogging: 0.0000 %

Inlet Type: Sweeper Combo

Grate Type: P - 1-7/8

Grate Width: 2.0000 ft

Grate Length: 6.6670 ft

Length of Inlet: 8.3300 ft

Curb opening height: 6.0000 in

Local Depression: 4.0000 in

Inlet Result Parameters

Perimeter: 15.9300 ft

Effective Perimeter: 15.9300 ft

Area: 18.9423 ft²

Effective Area: 18.9423 ft²

Depth at curb face (upstream of local depression): 0.4000 ft

Computed Width of Spread at Sag: 20.0022 ft

Flow type: Weir Flow

Efficiency: 1.0000

Clogging Factor (50%)

Grate, $6.67 \times 1.5 = 10'$

Curb Opening $8.33 \times 1.5 = 12.5'$

12.5' Long Type CM2 Inlet W/2.5' Sweeper (4 Grates)

Intercept 16 cfs

Bypass 0 cfs

Ponding Depth = 0.40

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Friday, October 04, 2019

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: DI U2 6-7

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0630 ft/ft

Cross-Slope of Pavement: 0.0200 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0160

Gutter Width: 2.0000 ft

Design Flow: 14.0000 cfs

Gutter Result Parameters

Width of Spread: 13.7326 ft

Gutter Depression: 0.0000 in

Area of Flow: 1.8858 ft²

E_o (Gutter Flow to Total Flow): 0.3431

Gutter Depth at Curb: 3.2958 in

Inlet Input Parameters

Inlet Location: Inlet on Grade

Inlet Type: Sweeper Combo

Grate Type: P - 1-7/8

Grate Width: 2.0000 ft

Grate Length: 6.6670 ft

Length of Inlet: 8.3300 ft

Local Depression: 4.0000 in

Inlet Result Parameters

Intercepted Flow: 7.4407 cfs
Bypass Flow: 6.5593 cfs
Approach Velocity: 7.2964 ft/s
Splash-over Velocity: 16.7118 ft/s
Efficiency: 0.5315

Clogging Factor (50%)

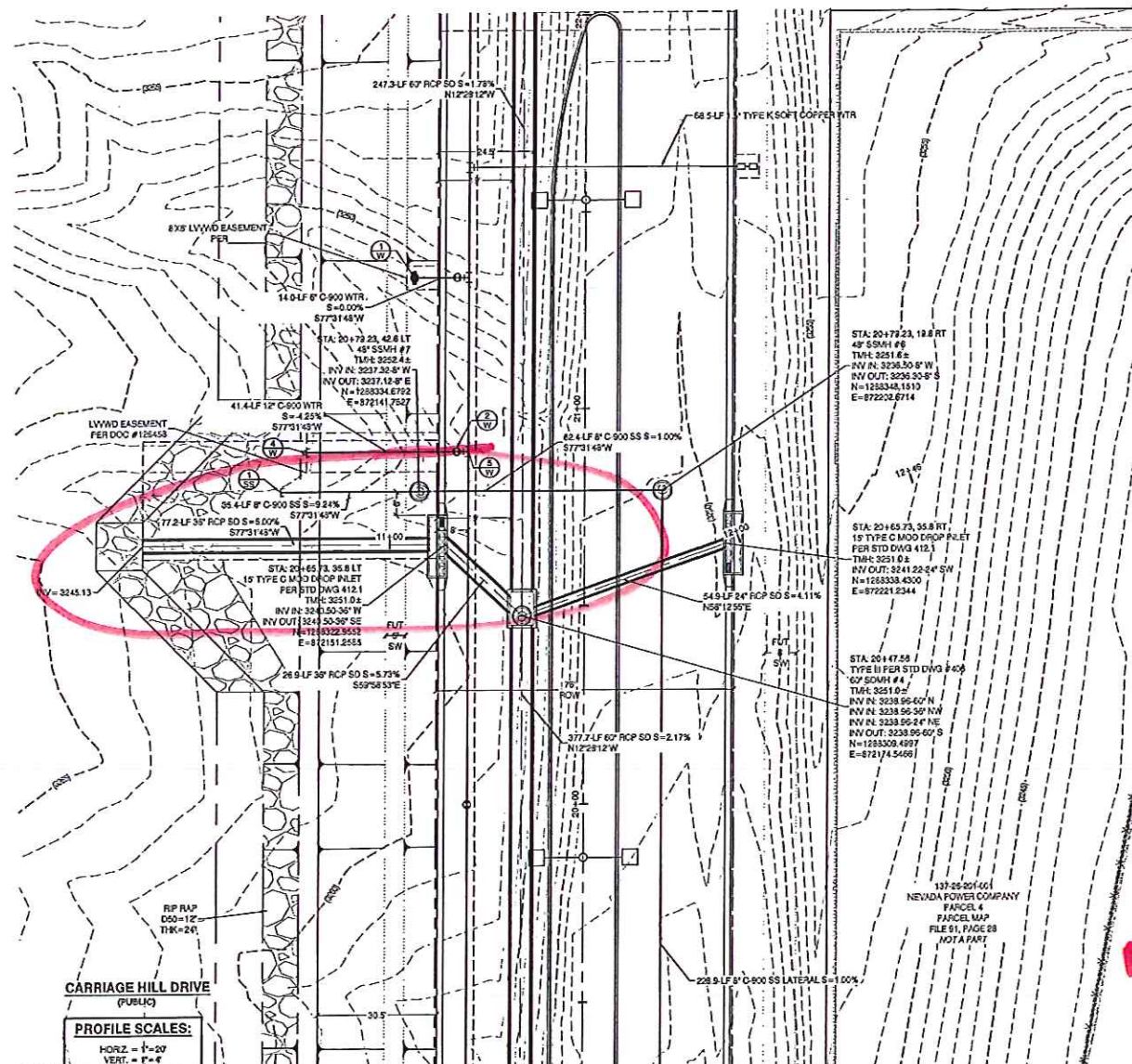
Grate, $6.67 \times 1.5 = 10'$

Curb Opening $8.33 \times 1.5 = 12.5'$

12.5' Long Type CM2 Inlet W/2.5' Sweeper (4 Grates)

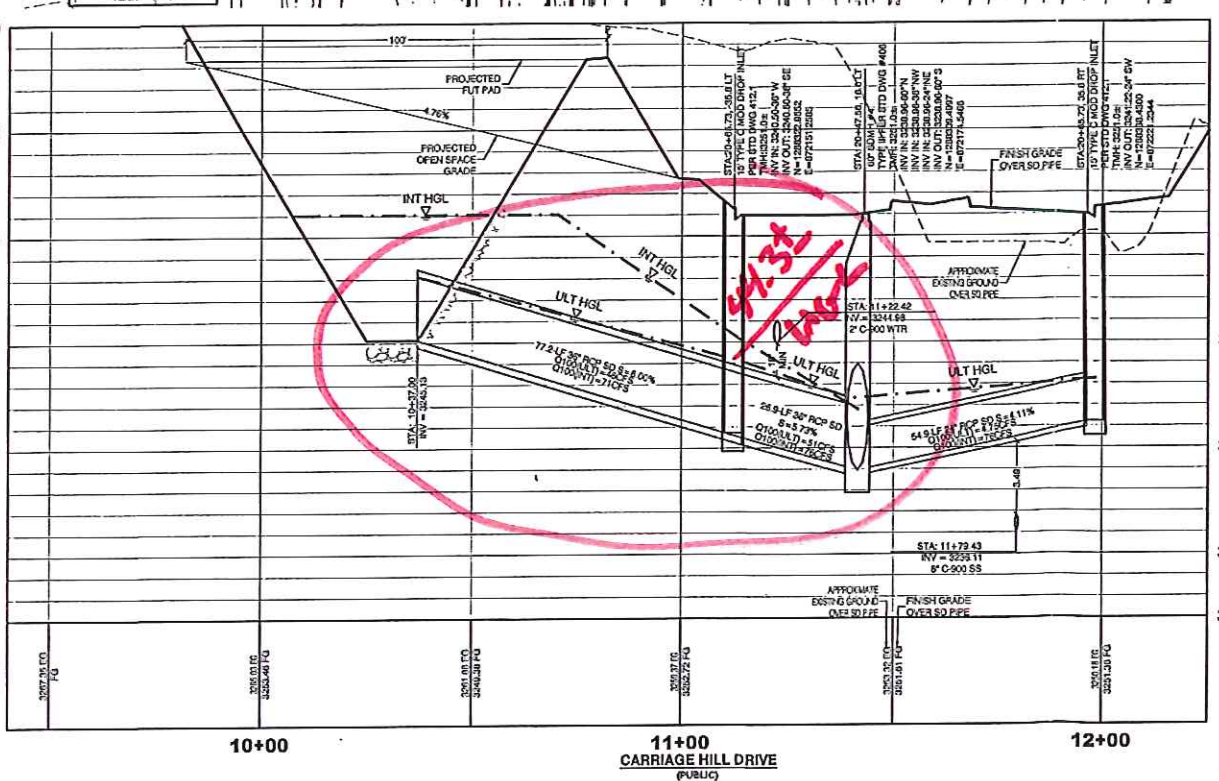
Intercept 7 cfs

Bypass 7 cfs



CARRIAGE HILL DRIVE
(PUBLIC)

PROFILE SCALES:
HORIZ. = 1"=40'
VERT. = 1"=4'



36" RCP
DESIGNED
FOR 54 CFS
(ULTIMATE)

71 CFS
(INTERIM)

SOUTHWEST GAS CONSTRUCTION NOTES

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-600-0020.
2. THERE SHALL BE A MINIMUM HORIZONTAL AND VERTICAL CLEARANCE OF 18" 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 702-668-6167 48 HOURS PRIOR TO CONSTRUCTION.
4. IN THE EVENT OF A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2099.

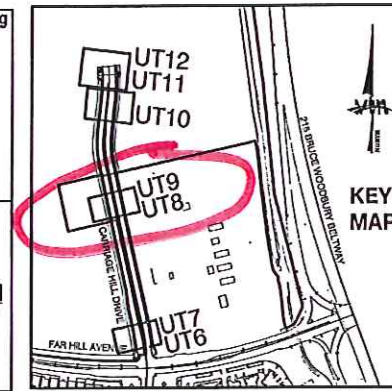
SOUTHWEST GAS CORPORATION DATE

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

1-702-227-2929

Call 811
1-800-271-2600
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS

Call Underground
1-702-455-6000
1-702-227-2929
1-702-227-2929



- DROP INLET NOTE**
WHERE 12 FEET PARALLEL SEPARATION IS NOT PRACTICABLE, CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALL, BASE VALVE AND TOP TO BE CONSTRUCTED WITH WATERSTOP, CENTER BULL OR FLAT STRIP, (WYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUIVA.)
- WATER PRESSURE ZONE:**
WATER SERVICE LOCATED IN THE 3435 PRESSURE ZONE.
- WATER MAIN COVER NOTE:**
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDCS SECTION 2.08.
- WATERLINE TRENCH NOTE:**
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDCS PLATE NO. 17.
- WATER LINE MARKER BALLS NOTE**
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDCS PLATE NO. 15.
- FIRE HYDRANT MARKER NOTES**
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:
1. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 14' FROM FACE OF CURB ON HYDRANT SIDE.
- LAS VEGAS FIRE & RESCUE APPROVAL**
BY: *[Signature]* DATE: 11/5/19
APPROVAL OF THESE PLANS SHALL NOT BE CONSIDERED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. THE FLOW - GPM AT 20 PSI RESIDUAL.

CONSTRUCTION NOTES	
WATER	PUBLIC
1. 12\"/>	1 EA
2. 12\"/>	1 EA
3. 12\"/>	1 EA
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92. 12\"/>	1 EA
93. 12\"/>	1 EA
94. 12\"/>	1 EA
95. 12\"/>	1 EA
96. 12\"/>	1 EA
97. 12\"/>	1 EA
98. 12\"/>	1 EA
99. 12\"/>	1 EA
100. 12\"/>	1 EA

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983, SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)
DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)
ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 38°15'00\"/>

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.
2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODESIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK
PROJECT DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83)
CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD83 ELEVATION: 999.574 METERS (3,280.00 FEET)
PVD USG&GS DISC SET IN ROCK ROGE 150 SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T1157692.500

CONSTRUCTION NOTES	
SEWER	PUBLIC
1. STANDARD MAN-HOLE PER 50-1A & 1B	7 EA
2. 8\"/>	1,192 LF
3. 8\"/>	2 EA
4. 8\"/>	0 EA
5. 8\"/>	0 EA
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100. 8\"/>	0 EA

WATER MAIN JOINT DEFLECTION
PVD PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDCS 2.07.01 AND 2.07.02.
FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

UTILITY CROSSING NOTE:
ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST CONFORM TO SECTION 2.22 OF UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR PORTAL, WATER SYSTEMS (UDCS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES.

ENGINEER 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 AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES 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.

LAS VEGAS VALLEY WATER DISTRICT APPROVAL
APPROVED FOR CONSTRUCTION
11-7-19
LAS VEGAS VALLEY WATER DISTRICT OF ENGINEERING SERVICES
PROJECT NO: 109458 FIRST APPROVED DATE: 8/20/18
LWWD APPROVED FIRE FLOW 2,825 GPM AT 20 PSI RESIDUAL

CITY OF LAS VEGAS

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY
1000 W. CHARLESTON BLVD. SUITE 300
LAS VEGAS, NEVADA 89102
702.733.1234

UTILITY PLAN & PROFILE 8

SUMMERLIN WEST VILLAGE 21
CARRIAGE HILL DRIVE

DESIGNED BY: 10/22/2017
CHECKED BY: 10/22/2017
PROJECT NO: 109458
SCALE: 1"=40' HORIZ.
1"=4' VERT.

PROJ. NO. 109458-A QS:157-26-NW

WILLIAM J. MEYER
REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA
No. 15145
10/31/18
22 OF 42 SHEETS
DRAWING NO. L18-00888

Storm Drain Hydraulics Calculations

WOODSIDE PARCEL A AND B

DATE: 11/11/19

[illegible]

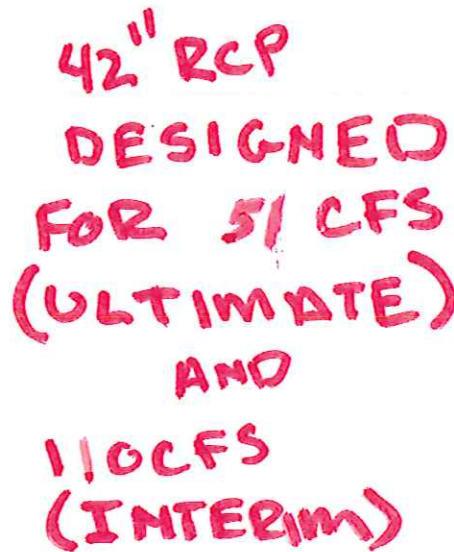
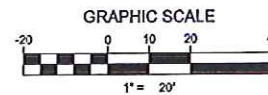
Storm Drain Hydraulics Calculations

STORM DRAIN LATERAL TO INLET #3

DATE: 11/11/19

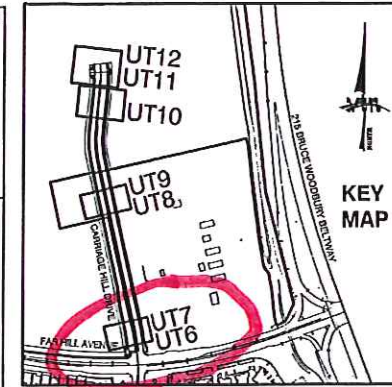
[illegible]

[illegible][illegible]



SOUTHWEST GAS CONSTRUCTION NOTES	
1.	IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-955-6000
	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
2.	FOR VALVE ADJUSTMENT CONTACT 702-668-6107 48 HOURS PRIOR TO CONSTRUCTION
3.	IN THE EVENT OF A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2099
SOUTHWEST GAS CORPORATION	DATE

AVOID THE BIG OVERHEAD PORTABLES IT'S COSTLY.  CALL BEFORE YOU DO OVERHEAD 1-702-227-2929	Call before you Dig Avoid cutting underground utility lines. It's costly.  1-800-227-2600 1-702-435-8000 CLARK COUNTY TRAFFIC OPERATIONS
Call before you Dig  1-702-435-8111 CLARK COUNTY TRAFFIC OPERATIONS	Call before you Dig  1-702-435-8111 CLARK COUNTY TRAFFIC OPERATIONS



DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE, CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS, BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP. (NYLON, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUIV.)

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3435 PRESSURE ZONE.

WATER MAIN COVER NOTE: ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UOACS SECTION 2.08
--

WATERLINE TRENCH NOTE:
CONSTRUCT WATERLINE TRENCH SECTION AND BACK-FILL PER UDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE

FIRE HYDRANT MARKER NOTES	
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:	
1.	ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2.	ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE; LOCATE MARKER 18' FROM FACE OF CURB ON HYDRANT SIDE.

LAS VEGAS FIRE & RESCUE APPROVAL

BY: [Signature] DATE: 11/5/10

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 OR COUNTY LAWS.

FIRE FLOW — GPM AT 20 P.S.I. RESIDUAL

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; S&D MERIDIAN BEING COINCIDENT WITH 114°59' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)
 DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2013.00
 SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)
 ZONE: LAS VEGAS HIGH ELEVATION ZONE
 PROJECTION: TRANSVERSE MERCATOR
 STANDARD PARALLEL (AND LATITUDE OF GRID
 ORIGIN): 36° 15' 00" N

EASTING AT CENTRAL MERIDIAN: 300,000 M (#94,250,000
 FTUS)
 SCALE FACTOR ON CENTRAL MERIDIAN: 1.000195 (EXACT)

NOTES:
 1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE
 PROJECTED (GRID) VALUES BASED ON THE PRECEDING
 PROJECTION DEFINITION. THE PROJECTION WAS DEFINED
 SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT
 TO "GROUND" DISTANCES IN THE PROJECT AREA.
 2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID
 COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO
 MERIDIAN CONVERGENCE.

BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVDS88)
CITY OF LAS VEGAS BENCHMARK: D568 (REVISED 2008)
NAVDS88 ELEVATION: 938.574 METERS (3,078.63 FEET)
FIND USC&GS DISC SET IN ROCK RIDGE 150 SOUTH OF
CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R9E,S03

48

CONSTRUCTION NOTES		PUBLIC
WATER		
	FIRE HYDRANT ASSEMBLY, INCLUDING 12"x6" TEE WITH 6" G.V. (PER UDACS PLATE 30 & 43)	5 EA.
	8" GATE VALVE (PER UDACS PLATE 30 & 39)	1 EA.
	12" GATE VALVE (PER UDACS PLATE 30 & 39)	8 EA.
	12" CAP & BLOW OFF (PER UDACS PLATE 30)	4 EA.
	12"x12" TEE (PER UDACS PLATE 31)	4 EA.
	12"x6" TEE (PER UDACS PLATE 31)	1 EA.
	12" 5° VERTICAL BEND (PER UDACS PLATE 31)	2 EA.
	12" 5° BEND (PER UDACS PLATE 31)	9 EA.
	12" 11.25° BEND (PER UDACS PLATE 31)	4 EA.
	12" 22.5° VERTICAL BEND (PER UDACS PLATE 31)	2 EA.
	12" 45° BEND (PER UDACS PLATE 31)	4 EA.
	1 1/2" TYPE K SOFT COPPER WATER LATERAL SERVICE WITH 1' METER PER UDACS PLATE 4 (REGULATION) AND 1 1/2" RPPA PER UDACS PLATE 8	2 EA.
	8" CAP & BLOW OFF (PER UDACS PLATE 30)	1 EA.
	12" 45° VERTICAL BEND (PER UDACS PLATE 31)	4 EA.
	15" C 900 WATER MAIN PER UDACS 2.06 01 & PLATE 17	1,078 LF.
	8" C 900 WATER MAIN PER UDACS 2.06 01 & PLATE 17	92 LF.
	6" C 900 WATER MAIN PER UDACS 2.06 01 & PLATE 17	39 LF.
	1.5" COPPER WATER PER UDACS 2.06 01 & PLATE 17	77 LF.
	WATER POINT OF CONNECTION	

<u>CONSTRUCTION NOTES</u>			
	<u>SEWER</u>	PUBLIC	F
	STANDARD MANHOLE PER SD-1A & 1B	7 EA.	0
	8" C-900 SANTARY SEWER MAIN	1,192 LF.	0
	8" SEWER CAP (PER STD 4 & 6 & 11)	2 EA.	0
	SEWER POINT OF CONNECTION		

WATER MAIN JOINT DEFLECTION

PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) INCH PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1 FEET, PER UDAC'S 2.07.61 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM

UTILITY CROSSING NOTE:
ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST CONFORM TO SECTION 222 OF UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR PORTABLE WATER SYSTEMS (UDCS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES.

ENGINEER DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HERE ON 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 AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES SHOWN HERE ON, THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES SHOWN IN THEIR PROPOSED LOCATION.

AS VEGAS VALLEY WATER DISTRICT APPROVA
 OVED FOR CONSTRUCTION

343 VALLEY WATER DISTRICT ENGINEERING SERVICES
 CT NO: 126458 FIRST APPROVED DATE: 8/20/18
 APPROVED FIRE FLOW 2,825 GPM AT 20 PSI RESIDUAL 107V7

DRAWN BY: <u> </u> EDC		10/23/2017	UTILITY PLAN & PROFILE 6		HOWARD HUGHES COMPANY, LLC A DELAWARE LIMITED LIABILITY COMPANY 10601 W CHAMBERLAIN BLVD SUITE 500 LAS VEGAS NV 89155 702-791-4000	2727 SOUTH RANCHO BOULEVARD LAS VEGAS, NEVADA 89145-1448 PH. (702) 672-2659 FAX. (702) 365-5297 WEB WWW.VTNK.COM CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS	1 08/27/2018 EDC	ADJUSTED WATER MAIN JODD PIRE HYDRANT AND MEDIAN BREAK ADJUSTED STEEL SLEEVES AND IRRIGATION SLEEVES UPDATE STREETLIGHT NOTES AND LEGEND <i>file</i>
DESIGNED BY: <u> </u> EDC		10/23/2017	SUMMERLIN WEST VILLAGE 21 CARRIAGE HILL DRIVE		CITY OF LAS VEGAS	JPH	1 08/27/2018 JPH	1 08/27/2018 JPH
CHECKED BY: <u> </u> MUM		07/27/2018	PROJECT NO: 7851 SCALE: 1"=40' 1"=40' HORIZ 1"=40' VERT					
SHEET 20 OF 42 SHEETS DRAWING NO. L18-00888		PROFESSIONAL ENGINEER - STATE OF NEVADA WILLIAM J. MEYER EXP. 12/31/19 CIVIL 10/31/18						

Storm Drain Hydraulics Calculations

STORM DRAIN MAINLINE IN SAILING STONES STREET

DATE: 11/18/19

CONDUIT DATA										FLOW DATA										ENERGY LOSS DATA										EGL & HGL				COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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STATION			PIPE	BOX		IRREG		#	INVERT ELEV		L	S	A	Φ	Q	V	V2/2g	Sf	Ave.	Frict	Frict	Manhole			Junction			Contraction/ Inlet			Expansion/Outlet			Bend			Misc			CONDUIT		TRANSITION		FULL/																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
FROM	TO	T/R	D	SPAN	RISE	AREA	HYD RAD		D/S	U/S	(ft)	(%)	(ft²)		(cfs)	(ft/s)	(ft)	(ft/ft)	S _f	H _f	H _f	Θ	K _{mh}	H _{mh}	Θ	K _j	H _j	Inlet/ Cont	K _i	H _i	Θ	K _o	H _o	R _{bend}	Θ	K _b	H _b	H _m	Total	U/S EGL	U/S HGL	U/S EGL	U/S HGL	PART FLOW	CRTL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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Summary of Results

[illegible]

Storm Drain Hydraulics Calculations

STORM DRAIN LATERAL TO INLET U2-7

DATE: 11/18/19

[illegible]

Summary of Results

[illegible]

Storm Drain Hydraulics Calculations

STORM DRAIN LATERAL TO INLET U1-2

DATE: 11/12/19

[illegible]

Summary of Results

[illegible]

Worksheet for Emergency Overflow Lots 36-37

Project Description	
Friction Method	Manning
Solve For	Formula
	Normal Depth
Input Data	
Channel Slope	16.0000 %
Discharge	62.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
1+00.00	1.00
1+03.00	0.00
1+49.00	0.00
1+52.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(1+00.00, 1.00)	(1+52.00, 1.00)	0.030

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

Results	
Normal Depth	0.20 ft
Elevation Range	0.00 to 1.00 ft
Flow Area	9.3 ft ²
Wetted Perimeter	47.26 ft
Hydraulic Radius	0.20 ft
Top Width	47.19 ft
Normal Depth	0.20 ft
Critical Depth	0.38 ft
Critical Slope	1.8304 %
Velocity	6.69 ft/s
Velocity Head	0.70 ft
Specific Energy	0.89 ft
Froude Number	2.662
Flow Type	Supercritical

Worksheet for Emergency Overflow Lots 36-37

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

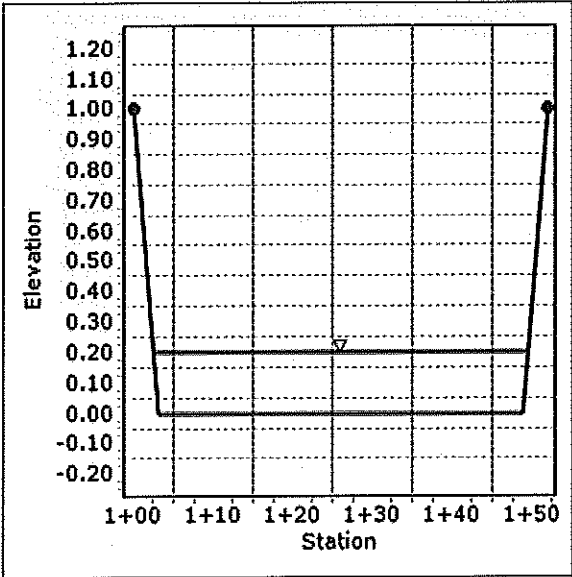
GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.20 ft
Critical Depth	0.38 ft
Channel Slope	16.0000 %
Critical Slope	1.8304 %

Cross Section for Emergency Overflow Lots 36-37

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data	
Channel Slope	16.0000 %
Normal Depth	0.20 ft
Discharge	62.00 cfs



SUBMERGED WEIR

WOODSIDE HOMES PARCELS A AND B

Q100 = 62 Design Flow

L = 46

H2 = 0.2 Flowmaster

ASSUME H1 = 0.62 Weir Head

C (FOR H1) = 3

$Q_F = CL(H)^{3/2}$ 67.0 Free Flow

$Q_S = Q_F * [1-(H2/H1)^{3/2}]^{0.385}$ 62.0 Submerged Flow

WEIR ELEVATION 44.00 Overflow Easement

HEAD 0.62

FREE BOARD 0.00

MINIMUM FF = 44.6
LOTS 36 AND 37 FF 45.20

Worksheet for Emergency Overflow Lots 51-52

Project Description	
Friction Method	Manning
Solve For	Formula
	Normal Depth
Input Data	
Channel Slope	1.4300 %
Discharge	45.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
1+00.00	1.00
1+00.00	0.00
1+36.00	0.00
1+36.00	1.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(1+00.00, 1.00)	(1+36.00, 1.00)	0.030

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

Results	
Normal Depth	0.40 ft X
Elevation Range	0.00 to 1.00 ft
Flow Area	14.3 ft ²
Wetted Perimeter	36.79 ft
Hydraulic Radius	0.39 ft
Top Width	36.00 ft
Normal Depth	0.40 ft
Critical Depth	0.36 ft
Critical Slope	1.8852 %
Velocity	3.15 ft/s
Velocity Head	0.15 ft
Specific Energy	0.55 ft
Froude Number	0.882
Flow Type	Subcritical

Worksheet for Emergency Overflow Lots 51-52

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.40 ft
Critical Depth	0.36 ft
Channel Slope	1.4300 %
Critical Slope	1.8852 %

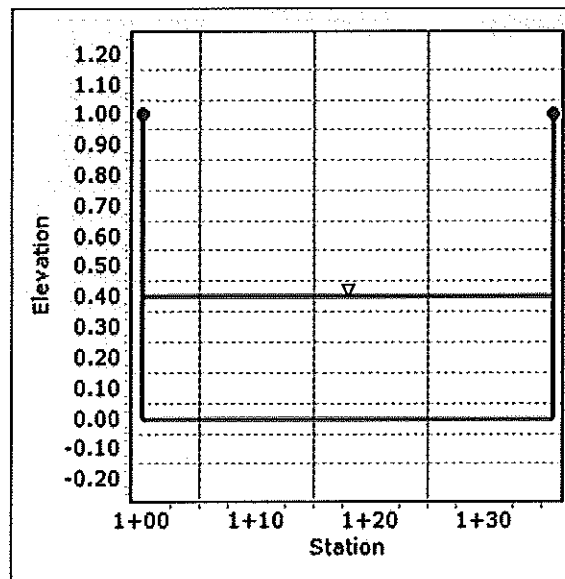
Cross Section for Emergency Overflow Lots 51-52

Project Description

Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data

Channel Slope	1.4300 %
Normal Depth	0.40 ft
Discharge	45.00 cfs



SUBMERGED WEIR

Woodside Parcels A and B

Q100 = 45 Design Flow

L = 36

H2 = 0.4 Flowmaster

ASSUME H1 = 0.66 Weir Head

C (FOR H1) = 3

$Q_F = CL(H)^{3/2}$ 57.9 Free Flow

$Q_S = Q_F * [1 - (H2/H1)^{3/2}]^{0.385}$ 45.3 Submerged Flow

WEIR ELEVATION 65.00 Overflow Easement

HEAD 0.66

FREE BOARD 0.00

MINIMUM FF = 65.7
LOT 51 and 52 FF 66.50

DATE _____

CLIENT _____ JOB NO. _____ CALC. BY _____

DESCRIPTION _____ CHECKED BY _____

DLOADS

USE

Bedding Factor Other 1.9

Wall thickness B

SOIL DENSITY 140

Live Load HS series 20

Soil Type 0.165 Sand & Gravel.

design data 7

american
Concrete
Pipe
association

CONCRETE PIPE SELECTION: Trench Installations

Trench conduits are usually installed in relatively narrow trenches excavated in undisturbed soil and backfilled to the original ground surface.

When a rigid conduit is installed in a narrow trench and backfilled, the backfill material will tend to settle. This downward movement generates frictional forces along the trench walls, which act upward to help support the weight of the backfill material. The magnitude of the frictional forces depends on the unit weight of the backfill material w , the value of Rankine's lateral pressure ratio K , and the coefficient of sliding friction μ' between the backfill material and the trench walls.

The backfill load on a conduit installed in a trench condition is equal to the weight of the mass of fill material within the trench less the summation of the frictional load transfers, and is expressed by the equation:

$$W_d = C_d w B_d z$$

where

W_d = backfill load, pounds per linear foot

C_d = load coefficient for trench condition

w = unit weight of backfill material, pounds per cubic foot

B_d = width of trench at the top of the conduit, feet

Figures 2 through 5, based on the above equation, enable a direct determination of backfill load for a given trench width and depth of cover. As the trench width increases for a given depth of cover and pipe diameter, a point is reached at which an embankment condition develops. The curves showing pipe size indicate the limiting trench width for each pipe diameter beyond which greater trench widths will not affect the load. When this condition occurs, the load on the conduit remains constant. This load should be determined by the intersection of the vertical line representing the depth of cover and the dashed line representing the particular pipe diameter under consideration. For intermediate pipe sizes not shown in Figures 2 through 5, interpolation should be used.

The field supporting strength of a concrete pipe line is dependent on the inherent strength of the pipe, the type of foundation on which the pipe is installed and the compaction of the sidefill material adjacent to the pipe. A common method used to determine the inherent strength of a pipe is the three-edge bearing test, in which the pipe is subjected to concentrated loads at the crown and invert. The load that a pipe will support under this condition of loading is called the *three-edge bearing strength* and is expressed in pounds per linear foot.

ASTM Specification C14 covers three strength classes for non-reinforced concrete pipe — Class 1, 2 and 3. These three classes are specified to meet ultimate loads, expressed in terms of minimum strength in three-edge-bearing as listed in Table I.

TABLE I: Strength Requirements Non-reinforced Concrete Pipe ASTM C14

Pipe Diameter, Inches	Minimum Three-Edge Bearing Strengths, Pounds per Linear Foot		
	Class 1	Class 2	Class 3
4	1500	2000	2400
6	1500	2000	2400
8	1500	2000	2400
10	1600	2000	2400
12	1800	2250	2600
15	2000	2600	2900
18	2200	3000	3300
21	2400	3300	3850
24	2600	3600	4400
27	2800	3950	4600
30	3000	4300	4750
33	3150	4400	4875
36	3300	4500	5000

Another means of expressing pipe strength is in terms of D-load. The D-load of a pipe is the supporting strength of a pipe loaded under three-edge-bearing test conditions expressed in pounds per linear foot per foot of inside diameter. Thus the bearing strength may be converted to D-load by dividing by the inside diameter in feet.

ASTM Specification C76 specifies five strength classes reinforced concrete pipe. These strength classes are expressed in terms of D-load at 0.01-inch crack and for ultimate load. The D-load to produce the 0.01-inch crack $D_{0.01}$ is the maximum load applied to the concrete pipe before a crack occurs having a width of 0.01-inch measured at close intervals, throughout a length of at least 1-foot. The D-load to produce ultimate load D_u is the maximum three-edge-bearing test load carried by a pipe, expressed as D-load. Table II lists 0.01-inch crack and ultimate D-loads for the strength classes covered by ASTM Specification C76.

TABLE II: Strength Requirements Reinforced Concrete Pipe ASTM C76

Strength Class	Minimum D-Load in Three-Edge Bearing Pounds per Linear Foot per Foot of Internal Diameter	
	0.01 Inch Crack- $D_{0.01}$	Ultimate- D_u
I	800	1200
II	1000	1500
III	1350	2000
IV	2000	3000
V	3000	3750

up to 800 CLASS I

800 < CLASS II < 1000

1000 < CLASS III < 1350

1350 < CLASS IV < 2000

2000 < CLASS V < 3000

```

SSSSSSSSS  AAAAAAAAAA  MMM  MMM  MMM  MMM
SS          AA      AA   MM M M MM  MM M M MM
SSSSSSSSS  AAAAAAAAAA  MM  M  MM  MM  M  MM
          SS  AA      AA   MM      MM  MM      MM
SSSSSSSSS  AA      AA   MM      MM  MM      MM

```

P R O G R A M S A M M

AMERICAN CONCRETE PIPE ASSOCIATION
VERSION 2.0 - 1 SEPTEMBER 1990

Program SAMM computes earth loads on concrete pipe in accordance with the methods presented in the Concrete Pipe Design Manual (March 1990) and the Concrete Pipe Handbook (January 1988), published by the American Concrete Pipe Association. The user must select input values suitable to his specific installation. The information presented in the computer output is for review, interpretation, application and approval by a qualified engineer who must assume full responsibility for verifying that said output is appropriate and correct. There are no express or implied warranties. The use of this product does not constitute endorsement by ACPA or any other agents.

DATE: 11 / 14 / 2019

DESIGNER: RJR
18" PCP

PROGRAM SAMM

D-LOAD REQUIREMENTS FOR A 18 IN. DIAMETER CIRCULAR PIPE

 P I P E D A T A

DIAMETER (in.)	18.00
WALL B, THICKNESS (in.)	2.500

 I N S T A L L A T I O N C O N D I T I O N S

MINIMUM DEPTH OF FILL (ft.)	1.00
MAXIMUM DEPTH OF FILL (ft.)	20.00
SOIL DENSITY (lb/cu. ft.)	140.0
SPECIFIED BEDDING FACTOR	1.90
INSTALLATION TYPE	TRENCH
TRENCH WIDTH (ft.)	5.90
SOIL LATERAL PRESSURE/FRICTION TERM (KMU')	0.1650
PARAMETERS TO COMPUTE TRANSITION WIDTH	
POSITIVE PROJECTION RATIO	1.00
POSITIVE SETTLEMENT RATIO	0.50
SOIL LATERAL PRESSURE/FRICTION TERM (KMU)	0.1924
SOIL LATERAL PRESSURE COEFFICIENT	0.33

 A D D I T I O N A L L O A D S

LIVE LOAD	AASHTO HS-20
NO SURCHARGE LOAD	

 F A C T O R S O F S A F E T Y

FACTOR OF SAFETY ON 0.01 INCH CRACK D-LOAD (EARTH,LIVE)	1.00; 1.00
FACTOR OF SAFETY ON ULTIMATE LOAD (EARTH,LIVE) IN ACCORDANCE WITH ASTM C 76	
DL.01 LESS THAN 2000 LBS/FT/FT	1.5
DL.01 GREATER THAN 3000 LBS/FT/FT	1.25
DL.01 BETWEEN 2000 AND 3000 LBS/FT/FT	INTERPOLATED

R E S U L T S O F A N A L Y S I S

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SSSSSSSSS  AAAAAAAAAA  MMM  MMM  MMM  MMM
SS          AA    AA    MM M M MM  MM M M MM
SSSSSSSSS  AAAAAAAAAA  MM  M  MM  MM  M  MM
          SS  AA    AA  MM    MM  MM    MM
SSSSSSSSS  AA    AA  MM    MM  MM    MM

```

P R O G R A M S A M M

 AMERICAN CONCRETE PIPE ASSOCIATION
 VERSION 2.0 - 1 SEPTEMBER 1990

Program SAMM computes earth loads on concrete pipe in accordance with the methods presented in the Concrete Pipe Design Manual (March 1990) and the Concrete Pipe Handbook (January 1988), published by the American Concrete Pipe Association. The user must select input values suitable to his specific installation. The information presented in the computer output is for review, interpretation, application and approval by a qualified engineer who must assume full responsibility for verifying that said output is appropriate and correct. There are no express or implied warranties. The use of this product does not constitute endorsement by ACPA or any other agents.

PIPE DEPTH (ft.)	-----EARTH LOAD-----			LIVE	SURCH	TOTAL	BED	REQUIRED D-LOAD	
	ARCHING	>TRANS	LOAD	LOAD	LOAD	LOAD	FACT	0.01 in. ULT.	
	FACTOR		(lb/ft)	(lb/ft)	(lb/ft)	(lb/ft)		(lb/ft/ft)	
1.0	1.11	Y	297.	2603.	0.	2900.	1.90	1018.	1527.
1.5	1.17	Y	470.	1971.	0.	2440.	1.90	856.	1284.
2.0	1.23	Y	660.	1455.	0.	2115.	1.90	742.	1113.
2.5	1.30	Y	871.	1032.	0.	1903.	1.90	668.	1002.
3.0	1.37	Y	1104.	751.	0.	1855.	1.90	651.	976.
3.5	1.45	Y	1362.	616.	0.	1978.	1.90	694.	1041.
4.0	1.47	Y	1573.	516.	0.	2089.	1.90	733.	1100.
4.5	1.47	Y	1776.	439.	0.	2215.	1.90	777.	1166.
5.0	1.48	Y	1979.	378.	0.	2357.	1.90	827.	1241.
5.5	1.48	Y	2185.	329.	0.	2514.	1.90	882.	1323.
6.0	1.48	Y	2387.	290.	0.	2677.	1.90	939.	1409.
6.5	1.48	Y	2590.	257.	0.	2847.	1.90	999.	1498.
7.0	1.49	Y	2792.	229.	0.	3022.	1.90	1060.	1590.
7.5	1.49	Y	2995.	206.	0.	3201.	1.90	1123.	1685.
8.0	1.49	Y	3197.	186.	0.	3384.	1.90	1187.	1781.
8.5	1.49	Y	3400.	169.	0.	3569.	1.90	1252.	1879.
9.0	1.49	Y	3602.	155.	0.	3757.	1.90	1318.	1977.
9.5	1.49	Y	3805.	142.	0.	3947.	1.90	1385.	2077.
10.0	1.49	Y	4008.	130.	0.	4138.	1.90	1452.	2178.
10.5	1.49	Y	4210.	120.	0.	4330.	1.90	1519.	2279.
11.0	1.50	Y	4413.	111.	0.	4524.	1.90	1587.	2381.
11.5	1.50	Y	4616.	103.	0.	4719.	1.90	1656.	2484.
12.0	1.50	Y	4818.	96.	0.	4915.	1.90	1724.	2587.
12.5	1.49	Y	5014.	90.	0.	5103.	1.90	1791.	2686.
13.0	1.50	Y	5216.	84.	0.	5300.	1.90	1860.	2789.
13.5	1.50	Y	5418.	79.	0.	5497.	1.90	1929.	2893.

14.0	1.50	Y	5620.	74.	0.	5694.	1.90	1998.	2997.
14.5	1.50	Y	5823.	70.	0.	5892.	1.90	2067.	3066.
15.0	1.50	Y	6025.	66.	0.	6091.	1.90	2137.	3132.
15.5	1.50	Y	6227.	62.	0.	6289.	1.90	2207.	3196.
16.0	1.50	Y	6429.	59.	0.	6488.	1.90	2277.	3257.
16.5	1.50	Y	6632.	56.	0.	6687.	1.90	2346.	3316.
17.0	1.50	Y	6834.	53.	0.	6887.	1.90	2416.	3373.
17.5	1.50	Y	7036.	50.	0.	7087.	1.90	2487.	3427.
18.0	1.50	Y	7239.	48.	0.	7287.	1.90	2557.	3479.
18.5	1.50	Y	7441.	46.	0.	7487.	1.90	2627.	3529.
19.0	1.50	Y	7644.	43.	0.	7687.	1.90	2697.	3576.
19.5	1.50	Y	7846.	41.	0.	7887.	1.90	2768.	3620.
20.0	1.50	Y	8048.	40.	0.	8088.	1.90	2838.	3662.

DATE: 11/14/2019

DESIGNER: R/R
24" RCP

PROGRAM SAMM

D-LOAD REQUIREMENTS FOR A 24 IN. DIAMETER CIRCULAR PIPE

 P I P E D A T A

DIAMETER (in.)	24.00
WALL B, THICKNESS (in.)	3.000

 I N S T A L L A T I O N C O N D I T I O N S

MINIMUM DEPTH OF FILL (ft.)	1.00
MAXIMUM DEPTH OF FILL (ft.)	20.00
SOIL DENSITY (lb/cu. ft.)	140.0
SPECIFIED BEDDING FACTOR	1.90
INSTALLATION TYPE	TRENCH
TRENCH WIDTH (ft.)	6.50
SOIL LATERAL PRESSURE/FRICTION TERM (KMU')	0.0165
PARAMETERS TO COMPUTE TRANSITION WIDTH	
POSITIVE PROJECTION RATIO	1.00
POSITIVE SETTLEMENT RATIO	0.50
SOIL LATERAL PRESSURE/FRICTION TERM (KMU)	0.1924
SOIL LATERAL PRESSURE COEFFICIENT	0.33

 A D D I T I O N A L L O A D S

LIVE LOAD	AASHTO HS-20
NO SURCHARGE LOAD	

 F A C T O R S O F S A F E T Y

FACTOR OF SAFETY ON 0.01 INCH CRACK D-LOAD (EARTH,LIVE)	1.00; 1.00
FACTOR OF SAFETY ON ULTIMATE LOAD (EARTH,LIVE) IN ACCORDANCE WITH ASTM C 76	
DL.01 LESS THAN 2000 LBS/FT/FT	1.5
DL.01 GREATER THAN 3000 LBS/FT/FT	1.25
DL.01 BETWEEN 2000 AND 3000 LBS/FT/FT	INTERPOLATED

R E S U L T S O F A N A L Y S I S

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SSSSSSSSS  AAAAAAAAA  MMM  MMM  MMM  MMM
SS          AA      AA  MM M M MM  MM M M MM
SSSSSSSSS  AAAAAAAAA  MM  M  MM  MM  M  MM
          SS  AA      AA  MM      MM  MM      MM
SSSSSSSSS  AA        AA  MM      MM  MM      MM

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P R O G R A M S A M M

 AMERICAN CONCRETE PIPE ASSOCIATION
 VERSION 2.0 - 1 SEPTEMBER 1990

Program SAMM computes earth loads on concrete pipe in accordance with the methods presented in the Concrete Pipe Design Manual (March 1990) and the Concrete Pipe Handbook (January 1988), published by the American Concrete Pipe Association. The user must select input values suitable to his specific installation. The information presented in the computer output is for review, interpretation, application and approval by a qualified engineer who must assume full responsibility for verifying that said output is appropriate and correct. There are no express or implied warranties. The use of this product does not constitute endorsement by ACPA or any other agents.

PIPE DEPTH (ft.)	-----EARTH LOAD-----			LIVE	SURCH	TOTAL	BED	REQUIRED D-LOAD	
	ARCHING	>TRANS	LOAD	LOAD	LOAD	LOAD	FACT	0.01 in. ULT.	
	FACTOR		(lb/ft)	(lb/ft)	(lb/ft)	(lb/ft)		(lb/ft/ft)	
1.0	1.08	Y	378.	3008.	0.	3386.	1.90	891.	1337.
1.5	1.12	Y	591.	2400.	0.	2991.	1.90	787.	1181.
2.0	1.17	Y	820.	1781.	0.	2600.	1.90	684.	1026.
2.5	1.22	Y	1067.	1269.	0.	2336.	1.90	615.	922.
3.0	1.27	Y	1334.	927.	0.	2261.	1.90	595.	893.
3.5	1.33	Y	1623.	763.	0.	2386.	1.90	628.	942.
4.0	1.38	Y	1935.	641.	0.	2575.	1.90	678.	1017.
4.5	1.44	Y	2272.	546.	0.	2818.	1.90	742.	1112.
5.0	1.46	Y	2562.	472.	0.	3034.	1.90	798.	1197.
5.5	1.47	Y	2827.	412.	0.	3239.	1.90	852.	1278.
6.0	1.47	Y	3091.	363.	0.	3454.	1.90	909.	1363.
6.5	1.47	Y	3356.	322.	0.	3678.	1.90	968.	1452.
7.0	1.48	Y	3625.	288.	0.	3913.	1.90	1030.	1545.
7.5	1.48	Y	3889.	260.	0.	4149.	1.90	1092.	1638.
8.0	1.48	Y	4153.	235.	0.	4388.	1.90	1155.	1732.
8.5	1.48	Y	4417.	214.	0.	4631.	1.90	1219.	1828.
9.0	1.49	Y	4682.	195.	0.	4877.	1.90	1283.	1925.
9.5	1.49	Y	4946.	179.	0.	5125.	1.90	1349.	2023.
10.0	1.49	Y	5210.	165.	0.	5375.	1.90	1414.	2122.
10.5	1.49	Y	5474.	152.	0.	5627.	1.90	1481.	2221.
11.0	1.49	Y	5738.	141.	0.	5880.	1.90	1547.	2321.
11.5	1.49	Y	6003.	131.	0.	6134.	1.90	1614.	2421.
12.0	1.49	Y	6267.	122.	0.	6389.	1.90	1681.	2522.
12.5	1.49	Y	6531.	114.	0.	6645.	1.90	1749.	2623.
13.0	1.49	Y	6795.	107.	0.	6902.	1.90	1816.	2725.
13.5	1.49	Y	7060.	100.	0.	7160.	1.90	1884.	2826.

14.0	1.49	Y	9011.	114.	0.	9125.	1.90	1921.	2882.
14.5	1.49	Y	9337.	107.	0.	9444.	1.90	1988.	2982.
15.0	1.49	Y	9663.	101.	0.	9764.	1.90	2056.	3055.
15.5	1.49	Y	9989.	96.	0.	10085.	1.90	2123.	3119.
16.0	1.49	Y	10315.	91.	0.	10405.	1.90	2191.	3182.
16.5	1.49	Y	10641.	86.	0.	10727.	1.90	2258.	3242.
17.0	1.49	Y	10967.	82.	0.	11048.	1.90	2326.	3299.
17.5	1.49	Y	11293.	78.	0.	11370.	1.90	2394.	3355.
18.0	1.50	Y	11619.	74.	0.	11693.	1.90	2462.	3408.
18.5	1.50	Y	11945.	71.	0.	12015.	1.90	2530.	3459.
19.0	1.50	Y	12271.	67.	0.	12338.	1.90	2598.	3508.
19.5	1.50	Y	12597.	64.	0.	12661.	1.90	2666.	3555.
20.0	1.49	Y	12904.	62.	0.	12965.	1.90	2730.	3596.

DATE: 11/14/2019

DESIGNER: R912

30" RCP

PROGRAM SAMM

D-LOAD REQUIREMENTS FOR A 30 IN. DIAMETER CIRCULAR PIPE

P I P E D A T A

DIAMETER (in.)	30.00
WALL B, THICKNESS (in.)	3.500

I N S T A L L A T I O N C O N D I T I O N S

MINIMUM DEPTH OF FILL (ft.)	1.00
MAXIMUM DEPTH OF FILL (ft.)	20.00
SOIL DENSITY (lb/cu. ft.)	140.0
SPECIFIED BEDDING FACTOR	1.90
INSTALLATION TYPE	TRENCH
TRENCH WIDTH (ft.)	7.10
SOIL LATERAL PRESSURE/FRICTION TERM (KMU')	0.1650
PARAMETERS TO COMPUTE TRANSITION WIDTH	
POSITIVE PROJECTION RATIO	1.00
POSITIVE SETTLEMENT RATIO	0.50
SOIL LATERAL PRESSURE/FRICTION TERM (KMU)	0.1924
SOIL LATERAL PRESSURE COEFFICIENT	0.33

A D D I T I O N A L L O A D S

LIVE LOAD	AASHTO HS-20
NO SURCHARGE LOAD	

F A C T O R S O F S A F E T Y

FACTOR OF SAFETY ON 0.01 INCH CRACK D-LOAD (EARTH,LIVE)	1.00; 1.00
FACTOR OF SAFETY ON ULTIMATE LOAD (EARTH,LIVE) IN ACCORDANCE WITH ASTM C 76	
DL.01 LESS THAN 2000 LBS/FT/FT	1.5
DL.01 GREATER THAN 3000 LBS/FT/FT	1.25
DL.01 BETWEEN 2000 AND 3000 LBS/FT/FT	INTERPOLATED

RESULTS OF ANALYSIS

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SSSSSSSSS  AAAAAAAAAA  MMM  MMM  MMM  MMM
SS          AA    AA    MM M M MM  MM M M MM
SSSSSSSSS  AAAAAAAAAA  MM  M  MM  MM  M  MM
          SS  AA    AA  MM      MM  MM      MM
SSSSSSSSS  AA    AA  MM      MM  MM      MM

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PROGRAM SAMM

AMERICAN CONCRETE PIPE ASSOCIATION
VERSION 2.0 - 1 SEPTEMBER 1990

Program SAMM computes earth loads on concrete pipe in accordance with the methods presented in the Concrete Pipe Design Manual (March 1990) and the Concrete Pipe Handbook (January 1988), published by the American Concrete Pipe Association. The user must select input values suitable to his specific installation. The information presented in the computer output is for review, interpretation, application and approval by a qualified engineer who must assume full responsibility for verifying that said output is appropriate and correct. There are no express or implied warranties. The use of this product does not constitute endorsement by ACPA or any other agents.

PIPE DEPTH (ft.)	-----EARTH LOAD-----		LIVE LOAD (lb/ft)	SURCH LOAD (lb/ft)	TOTAL LOAD (lb/ft)	BED FACT	REQUIRED D-LOAD 0.01 in. ULT. (lb/ft/ft)
	ARCHING FACTOR	>TRANS LOAD (lb/ft)					
1.0	1.07	Y	460.	2830.	0.	3290.	1.90
1.5	1.10	Y	712.	2777.	0.	3489.	1.90
2.0	1.14	Y	981.	2069.	0.	3050.	1.90
2.5	1.17	Y	1266.	1480.	0.	2746.	1.90
3.0	1.21	Y	1571.	1084.	0.	2655.	1.90
3.5	1.25	Y	1895.	896.	0.	2790.	1.90
4.0	1.30	Y	2239.	754.	0.	2993.	1.90
4.5	1.34	Y	2606.	644.	0.	3250.	1.90
5.0	1.39	Y	2997.	558.	0.	3554.	1.90
5.5	1.44	Y	3412.	488.	0.	3900.	1.90
6.0	1.46	Y	3783.	431.	0.	4214.	1.90
6.5	1.47	Y	4115.	383.	0.	4498.	1.90
7.0	1.47	Y	4441.	343.	0.	4784.	1.90
7.5	1.47	Y	4767.	310.	0.	5077.	1.90
8.0	1.47	Y	5093.	281.	0.	5374.	1.90
8.5	1.48	Y	5427.	255.	0.	5682.	1.90
9.0	1.48	Y	5753.	234.	0.	5986.	1.90
9.5	1.48	Y	6079.	215.	0.	6293.	1.90
10.0	1.48	Y	6404.	198.	0.	6602.	1.90
10.5	1.48	Y	6730.	183.	0.	6913.	1.90
11.0	1.49	Y	7056.	170.	0.	7226.	1.90
11.5	1.49	Y	7382.	158.	0.	7540.	1.90
12.0	1.49	Y	7708.	147.	0.	7855.	1.90
12.5	1.49	Y	8034.	138.	0.	8171.	1.90
13.0	1.49	Y	8359.	129.	0.	8488.	1.90
13.5	1.49	Y	8685.	121.	0.	8806.	1.90

14.0	1.49	Y	7324.	94.	0.	7418.	1.90	1952.	2928.
14.5	1.50	Y	7588.	89.	0.	7677.	1.90	2020.	3020.
15.0	1.50	Y	7853.	84.	0.	7937.	1.90	2089.	3087.
15.5	1.50	Y	8117.	79.	0.	8196.	1.90	2157.	3151.
16.0	1.49	Y	8369.	75.	0.	8444.	1.90	2222.	3210.
16.5	1.49	Y	8633.	71.	0.	8704.	1.90	2291.	3269.
17.0	1.50	Y	8897.	68.	0.	8964.	1.90	2359.	3327.
17.5	1.50	Y	9160.	64.	0.	9225.	1.90	2428.	3382.
18.0	1.50	Y	9424.	61.	0.	9485.	1.90	2496.	3435.
18.5	1.50	Y	9688.	58.	0.	9746.	1.90	2565.	3485.
19.0	1.50	Y	9952.	56.	0.	10008.	1.90	2634.	3533.
19.5	1.50	Y	10216.	53.	0.	10269.	1.90	2702.	3579.
20.0	1.50	Y	10480.	51.	0.	10530.	1.90	2771.	3622.

DATE: 11/14/2019

DESIGNER: RJR
36" RCP

PROGRAM SAMM

D-LOAD REQUIREMENTS FOR A 36 IN. DIAMETER CIRCULAR PIPE

 P I P E D A T A

DIAMETER (in.)	36.00
WALL B, THICKNESS (in.)	4.000

I N S T A L L A T I O N C O N D I T I O N S

MINIMUM DEPTH OF FILL (ft.)	1.00
MAXIMUM DEPTH OF FILL (ft.)	20.00
SOIL DENSITY (lb/cu. ft.)	140.0
SPECIFIED BEDDING FACTOR	1.90
INSTALLATION TYPE	TRENCH
TRENCH WIDTH (ft.)	7.67
SOIL LATERAL PRESSURE/FRICTION TERM (KMU')	0.1650
PARAMETERS TO COMPUTE TRANSITION WIDTH	
POSITIVE PROJECTION RATIO	1.00
POSITIVE SETTLEMENT RATIO	0.50
SOIL LATERAL PRESSURE/FRICTION TERM (KMU)	0.1650
SOIL LATERAL PRESSURE COEFFICIENT	0.33

A D D I T I O N A L L O A D S

LIVE LOAD	AASHTO HS-20
NO SURCHARGE LOAD	

F A C T O R S O F S A F E T Y

FACTOR OF SAFETY ON 0.01 INCH CRACK D-LOAD (EARTH,LIVE)	1.00; 1.00
FACTOR OF SAFETY ON ULTIMATE LOAD (EARTH,LIVE) IN ACCORDANCE WITH ASTM C 76	
DL.01 LESS THAN 2000 LBS/FT/FT	1.5
DL.01 GREATER THAN 3000 LBS/FT/FT	1.25
DL.01 BETWEEN 2000 AND 3000 LBS/FT/FT	INTERPOLATED

RESULTS OF ANALYSIS

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SSSSSSSSS  AAAAAAAAAA  MMM  MMM  MMM  MMM
SS          AA    AA    MM M M MM  MM M M MM
SSSSSSSSS  AAAAAAAAAA  MM  M  MM  MM  M  MM
          SS  AA    AA  MM      MM  MM      MM
SSSSSSSSS  AA      AA  MM      MM  MM      MM

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PROGRAM SAMM

AMERICAN CONCRETE PIPE ASSOCIATION
VERSION 2.0 - 1 SEPTEMBER 1990

Program SAMM computes earth loads on concrete pipe in accordance with the methods presented in the Concrete Pipe Design Manual (March 1990) and the Concrete Pipe Handbook (January 1988), published by the American Concrete Pipe Association. The user must select input values suitable to his specific installation. The information presented in the computer output is for review, interpretation, application and approval by a qualified engineer who must assume full responsibility for verifying that said output is appropriate and correct. There are no express or implied warranties. The use of this product does not constitute endorsement by ACPA or any other agents.

PIPE DEPTH (ft.)	-----EARTH LOAD-----			LIVE LOAD (lb/ft)	SURCH LOAD (lb/ft)	TOTAL LOAD (lb/ft)	BED FACT	REQUIRED D-LOAD 0.01 in. ULT. (lb/ft/ft)	
	ARCHING	>TRANS	LOAD (lb/ft)						
1.0	1.05	Y	537.	2814.	0.	3351.	1.90	588.	882.
2.0	1.10	Y	1125.	2326.	0.	3450.	1.90	605.	908.
3.0	1.15	Y	1768.	1227.	0.	2995.	1.90	525.	788.
4.0	1.20	Y	2472.	857.	0.	3329.	1.90	584.	876.
5.0	1.26	Y	3241.	637.	0.	3878.	1.90	680.	1021.
6.0	1.33	Y	4084.	494.	0.	4577.	1.90	803.	1205.
7.0	1.39	Y	5006.	395.	0.	5400.	1.90	947.	1421.
8.0	1.43	Y	5871.	323.	0.	6194.	1.90	1087.	1630.
9.0	1.43	Y	6630.	270.	0.	6899.	1.90	1210.	1816.
10.0	1.44	Y	7387.	229.	0.	7616.	1.90	1336.	2004.
11.0	1.44	Y	8154.	197.	0.	8351.	1.90	1465.	2198.
12.0	1.45	Y	8911.	171.	0.	9082.	1.90	1593.	2390.
13.0	1.45	Y	9668.	150.	0.	9817.	1.90	1722.	2584.
14.0	1.45	Y	10424.	132.	0.	10557.	1.90	1852.	2778.
15.0	1.45	Y	11181.	118.	0.	11298.	1.90	1982.	2973.
16.0	1.45	Y	11937.	106.	0.	12043.	1.90	2113.	3110.
17.0	1.45	Y	12693.	95.	0.	12789.	1.90	2244.	3229.
18.0	1.46	N	13446.	86.	0.	13533.	1.90	2374.	3339.
19.0	1.43	N	13930.	79.	0.	14009.	1.90	2458.	3405.
20.0	1.40	N	14394.	72.	0.	14466.	1.90	2538.	3466.

APPENDIX C – REFERENCE MATERIALS

Clark County Regional Flood Control District, *Clark County Regional Flood Control District - The 2013 Las Vegas Valley Master Plan Update*, September 2013.

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

U.S. Army Corps of Engineers, *HEC-1 Flood Hydrograph Package*, June 1998.

VTN Nevada, *Update #1 to the Flood Control Master Plan Update Summerlin West Planning Area*. April 2019.

VTN Nevada, *Technical Drainage Study for Summerlin Village 21 Carriage Hill Drive*.

VTN Nevada, *Technical Drainage Study for Summerlin Village 21 Ridge Pine Street (Far Hills Avenue to Street A)*, July 2018.

G. C. Wallace, Inc. Engineering, *Technical Drainage Study For Village 20/21 Far Hills Avenue Drainage and Grading Improvements*, December 1997.

VTN Nevada, *Technical Drainage Study for Summerlin West Village 21 Street A (Desert Foothills Drive to Carriage Hill Drive)* July 2018.

Update #1 to the FLOOD CONTROL MASTER PLAN UPDATE

SUMMERLIN WEST PLANNING AREA *Las Vegas, Nevada*

W.O. # 7809

Prepared for:

Howard Hughes Corp.

Submitted to:

Public Works Department
City of Las Vegas



REGIONAL FLOOD CONTROL DISTRICT



Steven C. Parrish, P.E.
General Manager/Chief
Engineer

June 28, 2018

BOARD OF DIRECTORS

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Mr. Oh Sang Kwon, P.E.
City of Las Vegas Department of Public Works
333 North Rancho Drive
Las Vegas, NV 89106

**DISTRICT CONCURRENCE: SUMMERLIN WEST PLANNING AREA MASTER
PLAN UPDATE
(DS4926D) (RFCD No. 18-10069)**

Dear Mr. Kwon:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated October 9, 2017, Addendum No. 1 dated December 6, 2017, Addendum No. 2 dated February 27, 2018, Addendum No. 3 dated April 20, 2018, and Supplement No. 1 dated May 22, 2018 for above-mentioned project as submitted by VTN NEVADA. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Department of Public Works dated May 22, 2018.

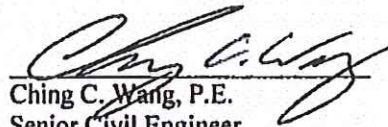
District concurs with acceptance of this Technical Drainage Study by City of Las Vegas Department of Public Works.

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 VTN NEVADA 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.

STEVEN C. PARRISH, P.E.
General Manager/Chief Engineer

BY:


Ching C. Wang, P.E.
Senior Civil Engineer

CCW:ay

c: William J. Meyer, P.E., VTN Nevada

P:\Letters and Memos\Local Drainage\Land Development & Drainage\2018\18-10069.doc

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		April 17, 2019
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: Summerlin West Planning Area Master Plan Update		COPIES TO: VTN Nevada
Cross Streets:	West of I-215 between Lake Mead Boulevard and Charleston Boulevard	The Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS4926H.doc	Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-017	CCRFGD
Zoning Action:		CCPW
FEMA Flood Zone	YES ☒ NO	
Proposed Storm Drain	YES ☒ NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	10/9/2017 & 10/25/2017	11/8/2017	Not Approved	\$400.00	490518: \$400
2 nd Submittal	12/6/2017	12/20/2017 & 1/10/2018	Not Approved	\$400.00	492005: \$400
3 rd Submittal	2/27/2018	3/24/2018	Not Approved	\$400.00	493739: \$400
4 th Submittal & Supplement	4/23/2018 & 5/22/2018	5/22/2018	See Comments Below	\$400.00	495223: \$400
CCPW & CCRFGD	7/30/2018	7/30/2018	Concurrence Recv'd	N/C	N/C
5 th Submittal	1/3/2019 (Paid on 1/7/2019)	1/30/2019	Not Approved	\$100.00	502286: \$100
6 th Submittal	2/19/2019	3/13/2019	Conditional Approval	\$400.00	503267: \$400
CCPW & CCRFGD	4/15/2019	4/17/2019	Concurrence Recv'd	N/C	N/C
TOTAL FEES (LDDRS):				\$2,100.00	----

REMARKS:

5th & 6th Submittals: Update #1 & Addendum #1 to address Land Use Changes in the Summerlin West Planning Area

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

☒	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.

1. The proposed revision of the overall *Summerlin West Planning Area* (SWPA) will have impact to the various existing downstream regional facilities. All impacted downstream facilities must be modified and substantially completed prior to the onsite development of upstream Villages.

With the exception of ***Summerlin West Villages 21 and 22***, no occupancy permits will be issued to the remaining villages prior to the pertinent downstream facility modifications being completed.

2. The *Study* states that ***Detention Basin 5*** (DB5) needs additional capacity to accommodate the increased flows from the proposed SWPA revision. An update to the **DB5** technical drainage study must be submitted and approved prior to any upstream Villages development with the exception of Villages 21 and 22.
3. The *Study* states that a portion of the existing *Beltway Channel* between *Far Hills Avenue* and *Summerlin Parkway* requires modification with heightened stem walls. An update to the Western Beltway Channel modification must be submitted and approved prior to any upstream Villages development with the exception of Villages 21 and 22.

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
WSP/AYS

T/R/S: T21S/R69E/22
AREA K-22

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		July 30, 2018
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:	COPIES TO:
	Summerlin West Planning Area Master Plan Update	VTN Nevada
Cross Streets:	West of I-215 between Lake Mead Boulevard and Charleston Boulevard	The Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS4926E.doc	Bart Anderson, P.E., DayCo
Parcel Number:	137-22-000-017	CCRFC
Zoning Action:		CCPW
FEMA Flood Zone	YES X NO	
Proposed Storm Drain	YES X NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Tr #
1 st Submittal	10/9/2017 & 10/25/2017	11/8/2017	Not Approved	\$400.00	490518 \$ ()
2 nd Submittal	12/6/2017	12/20/2017 & 1/10/2018	Not Approved	\$400.00	492005 \$ ()
3 rd Submittal	2/27/2018	3/24/2018	Not Approved	\$400.00	493739 \$ ()
4 th Submittal & Supplement	4/23/2018 & 5/22/2018	5/22/2018	See Comments Below	\$400.00	495223 \$ ()
CCPW & CCRFC	7/30/2018	7/30/2018	Concurrence Recv'd	N/C	N/C
TOTAL FEES (LDDRS):				\$1,600.00	

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.

- Atkins is working on the 2018 MPU. Coordinate and verify the proposed regional flood control facilities as shown in Sheet A.6.5 with Atkins for inclusion of the Summerlin West Master Plan facilities into the ongoing 2018 MPU.

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 proposed construction unit in a contiguous subdivision is considered under construction until all disturbed 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/stormC.I.F.n> or call (775) 687-9429.

END OF REMARKS
WSP/AYS

T/R/S: T21S/R69E/22
AREA K-22



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 Concurrence Letter

Date: April 10, 2019
Firm: VTN Nevada
Engineer: Joanna Ayson / Brian Ruiz
Address: 2727 South Rainbow Boulevard, Las Vegas, NV 89146
Phone: (702) 873-7550
Fax: (702) 362-2597
E-mail: jayson@vtnnv.com; bruiz@vtnnv.com

Subject: Update for Summerlin West Planning Area Master Plan Update
Location: West of I-215 between Lake Mead Blvd and Charleston Blvd
APN: 137-21-000-002, 137-26-101-001 and others
Sec, Township, Range: S33 and others T20S, R59E
Flood Zone & Panel: Zone A and Zone X, 2125E and 2150E, Dated September 27, 2002
Application Number: PW19-12378

Submittals	Date Received	Date Returned	Reviewer	Miscellaneous
Update	03/21/2019	04/10/2019	CR	
Addendum 1	03/21/2019	04/10/2019	CR	

The above-referenced project is located within the **City of Las Vegas** adjacent to Clark County unincorporated areas. The drainage study was submitted to the County for concurrence on March 21, 2019. In addition, the County has received the City of Las Vegas acceptance letter dated March 13, 2019 for the Technical Drainage Study (DS4926G).

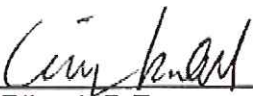
The County concurs with the acceptance of this Drainage Study by the City of Las Vegas. Please note that the County's review of this development is limited to drainage issues significant to Clark County unincorporated areas.

This update addresses; changes to land densities and parcel configurations; addition of drainage channels to Village 27; interim flood control berm to Village 21; revisions to existing washes to be designated as MPU facilities; upsizing Detention Basins DB5 and Grand Central Park to account for increased flow routing. The previously approved Technical Drainage Studies are: PW18-14248.

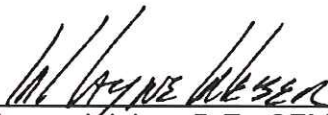
Additional Conditions:

1. The individual Technical Drainage Studies for the areas adjacent to the County to the west of the project site will need to be submitted for County review to verify acceptance of drainage flows.
2. Exhibits in future submittals need to show parcel lines and numbers; entity boundaries; ultimate development boundary; street names; etc.

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, P.E.
Senior Civil Engineer
Development Review
crissy@ClarkCountyNV.gov



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

CURVE NUMBERS FOR SOILS

Soil # 156 Vace - Wechech association				
Soil	Percent	Group	Existing ₁	Commercial ₂
Vace and Similar	45%	D	88	95
Wechech and Similar	25%	D	88	95
Wechech, steep, and similar	15%	D	88	95
Weiser	8%	B	77	92
Irongold	4%	D	88	95
Commski	2%	B	77	92
Threelakes	1%	A	63	89
Total	100%		87	95

Soil # 502 Canutlo-Cave gravelly fine sandy loams, 2 to 8 percent slopes				
Soil	Percent	Group	Existing ₁	Commercial ₂
Canutlo	55%	A	63	89
Cave	40%	D	88	95
Arizo	5%	D	88	95
Total	100%		75	92

Notes:

- 1- Referenced from Table 602 (4 of 4), Desert Shrub, Poor Condition
- 2- Referenced from Table 602 (1 of 4) Commercial

Curve Number calculations for basins

Basin	Type	Soil	1	3	CN Value
EX1	156	100	100%		87
OFFX	156	100%	97%	3%	87
INT1	156	100%	100%		87
INT2	156	100%	100%		87
INT3	156	95%	100%		86
	502	5%	95%	5%	

CURVE NUMBERS FOR SOILS - W.O. #7809

Soil # 112 Arizo very gravelly loamy sand, flooded, 0 to 4 percent slopes												
Soil	Percent	Group	Existing ₁	Impervious ₂	Residential ₄ (Apartment/Condo)	Residential ₅ (Townhouse)	Residential ₆ (7,000 Ft ²)	Residential ₇ (10,000 Ft ²)	Residential ₈ (20,000 Ft ²)	Open Space ₉ (Poor Condition)	Urban Districts ₁₁ (Commercial and Business)	Industrial ₁₂
Arizo	100%	A	63	98	81	80	76	61	54	68	89	81
Total	100%		63	98	81	80	76	61	54	68	89	81

Soil # 152 Cave gravelly fine sandy loam, 0 to 4 percent slopes												
Soil	Percent	Group	Existing ₁	Impervious ₂	Residential ₄ (Apartment/Condo)	Residential ₅ (Townhouse)	Residential ₆ (7,000 Ft ²)	Residential ₇ (10,000 Ft ²)	Residential ₈ (20,000 Ft ²)	Open Space ₉ (Poor Condition)	Urban Districts ₁₁ (Commercial and Business)	Industrial ₁₂
Cave	100%	D	88	98	93	92	91	87	85	89	95	93
Total	100%		88	98	93	92	91	87	85	89	95	93

Soil # 155 Cave gravelly fine sandy loam, 4 to 15 percent slopes												
Soil	Percent	Group	Existing ₁	Impervious ₂	Residential ₄ (Apartment/Condo)	Residential ₅ (Townhouse)	Residential ₆ (7,000 Ft ²)	Residential ₇ (10,000 Ft ²)	Residential ₈ (20,000 Ft ²)	Open Space ₉ (Poor Condition)	Urban Districts ₁₁ (Commercial and Business)	Industrial ₁₂
Cave	100%	D	88	98	93	92	91	87	85	89	95	93
Total	100%		88	98	93	92	91	87	85	89	95	93

Soil # 156 Vace - Wechech association												
Soil	Percent	Group	Existing ₁	Impervious ₂	Residential ₄ (Apartment/Condo)	Residential ₅ (Townhouse)	Residential ₆ (7,000 Ft ²)	Residential ₇ (10,000 Ft ²)	Residential ₈ (20,000 Ft ²)	Open Space ₉ (Poor Condition)	Urban Districts ₁₁ (Commercial and Business)	Industrial ₁₂
Vace and Similar	45%	D	88	98	93	92	91	87	85	89	95	93
Wechech and Similar	25%	D	88	98	93	92	91	87	85	89	95	93
Wechech, steep, and similar	15%	D	88	98	93	92	91	87	85	89	95	93
Weiser	8%	B	77	98	88	87	84	75	70	79	92	88
Irongold	4%	D	88	98	93	92	91	87	85	89	95	93
Commski	2%	B	77	98	88	87	84	75	70	79	92	88
Threelakes	1%	A	63	98	81	80	76	61	54	68	89	81
Total	100%		87	98	93	92	91	86	84	88	95	93

Soil # 191 Dalian very cobbly fine sandy loam, 2 to 8 percent slopes												
Soil	Percent	Group	Existing ₁	Impervious ₂	Residential ₄ (Apartment/Condo)	Residential ₅ (6,000 Ft ² or Less)	Residential ₆ (7,000 Ft ²)	Residential ₇ (10,000 Ft ²)	Residential ₈ (20,000 Ft ²)	Open Space ₉ (Poor Condition)	Urban Districts ₁₁ (Commercial and Business)	Industrial ₁₂
Dalian	100%	A	63	98	81		80	61	54	68	89	81
Total	100%		63	98	81		80	61	54	68	89	81

Soil # 294 Rock outcrop, sand stone												
Soil	Percent	Group	Existing ₁	Impervious ₂	Residential ₄ (Apartment/Condo)	Residential ₅ (Townhouse)	Residential ₆ (7,000 Ft ²)	Residential ₇ (10,000 Ft ²)	Residential ₈ (20,000 Ft ²)	Open Space ₉ (Poor Condition)	Urban Districts ₁₁ (Commercial and Business)	Industrial ₁₂
Rock outcrop	90%	D	88	98	93	92	91	87	85	89	95	93
Nupper	5%	D	88	98	93	92	91	87	85	89	95	93
Moentria	5%	D	88	98	93	92	91	87	85	89	95	93
Total	100%		88	98	93	92	91	87	85	89	95	93

Soil # 320 Boxspring - Zeheme - Rock outcrop association												
Soil	Percent	Group	Existing ₁	Impervious ₂	Residential ₄ (Apartment/Condo)	Residential ₅ (Townhouse)	Residential ₆ (7,000 Ft ²)	Residential ₇ (10,000 Ft ²)	Residential ₈ (20,000 Ft ²)	Open Space ₉ (Poor Condition)	Urban Districts ₁₁ (Commercial and Business)	Industrial ₁₂
Boxspring	50%	D	88	98	93	92	91	87	85	89	95	93
Zeheme	33%	D	88	98	93	92	91	87	85	89	95	93
Rock Outcrop	15%	D	88	98	93	92	91	87	85	89	95	93
Typic Haplocalcids	2%	B	77	98	88	87	84	75	70	79	92	88
Total	100%		88	98	93	92	91	87	85	89	95	93

Soil # 323 Boxspring - Scrapy - Rock Outcrop Association												
Soil	Percent	Group	Existing ₁	Impervious ₂	Residential ₄ (Apartment/Condo)	Residential ₅ (Townhouse)	Residential ₆ (7,000 Ft ²)	Residential ₇ (10,000 Ft ²)	Residential ₈ (20,000 Ft ²)	Open Space ₉ (Poor Condition)	Urban Districts ₁₁ (Commercial and Business)	Industrial ₁₂
Boxspring	40%	D	88	98	93	92	91	87	85	89	95	93
Scrapy	30%	D	88	98	93	92	91	87	85	89	95	93
Rock outcrop	15%	D	88	98	93	92	91	87	85	89	95	93
Lithic calciustolls	9%	D	88	98	93	92	91	87	85	89	95	93
Typic Haplustolls	6%	B	77	98	88	87	84	75	70	79	92	88
Total	100%		88	98	93	92	91	87	85	89	95	93


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1*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*   JUN 1998                      *
*   VERSION 4.1                    *
* RUN DATE 27DEC18 TIME 16:51:33 *
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*****
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET             *
* DAVIS, CALIFORNIA 95616       *
* (916) 756-1104                *
*****

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X  X  XXXXXX  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  XXXXXX  XXXXX  XXX

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

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

1

HEC-1 INPUT

PAGE 1

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

*DIAGRAM

*** FREE ***

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1 ID INPUT FILE DATE = SEPTEMBER 12,2017
2 ID DESIGN STORM = 100-YEAR 6-HR STORM
3 ID STORM DISTRIBUTION = SDN #3
4 ID MODELED BY VTN (JVA)
5 ID
6 ID *****
7 ID * VILLAGE 21 (PREVIOUSLY AREA 1) HEC-1 MODE *
8 ID * REFER TO LAND USE EXHIBIT BY VTN FOR LOCATION OF AREAS 1 *
9 ID *
10 ID *****
11 ID
12 ID
13 ID
14 ID 100-YEAR, 6-HOUR STORM, SDN3
15 ID
16 IT 5 0 0 100
17 IO 5 0 0
18 IN 5 0 0
19 JR PREC 1.00
*
20 KK SUM43
21 BA 0.0045
22 PB 3.40
23 PC 0 0.02 0.057 0.07 0.087 0.108 0.124 0.13 0.13 0.130
24 PC 0.13 0.13 0.13 0.133 0.14 0.142 0.148 0.158 0.172 0.181
25 PC 0.19 0.197 0.199 0.2 0.201 0.204 0.214 0.229 0.241 0.249
26 PC 0.251 0.256 0.27 0.278 0.281 0.283 0.295 0.322 0.352 0.409
27 PC 0.499 0.59 0.71 0.744 0.781 0.812 0.819 0.835 0.851 0.856
28 PC 0.86 0.868 0.876 0.888 0.91 0.926 0.937 0.95 0.97 0.976
29 PC 0.982 0.985 0.987 0.989 0.99 0.993 0.993 0.994 0.995 0.998
30 PC 0.998 0.999 1
31 LS 0 98
32 UD 0.050
*
33 KK Z
34 BA 0.0070
35 PB 3.41
36 LS 0 94.2
37 UD 0.065
*
38 KK AA
39 BA 0.0063
40 PB 3.40
41 LS 0 94.2
42 UD 0.060
*

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SEE PAGE 18
FOR UPDATED
FLOWS
FOR
PARCELS A+B

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

43 KK CAA
44 KM COMBINES SUMM3, Z, AND AA
45 HC 3
*

46 KK NP-4
47 BA 0.0016
48 PB 3.40
49 LS 0 88.0
50 UD 0.084
*

51 KK NP-3
52 BA 0.0018
53 PB 3.38
54 LS 0 88.0
55 UD 0.101
*

56 KK CNP-3
57 KM COMBINES NP-3 AND NP-4
58 HC 2
*

59 KK SUMM1
60 PB 3.40
61 BA 0.0079
62 LS 0 98
63 UD 0.093
*

64 KK Y
65 PB 3.40
66 BA 0.0062
67 LS 0 94.2
68 UD 0.066
*

69 KK X
70 PB 3.40
71 BA 0.0061
72 LS 0 94.2
73 UD 0.068
*

74 KK DES1
75 BA 0.0028
76 PB 3.38
77 LS 0 98
78 UD 0.066
*

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

79 KK CSUMM1
80 KM RFCO FACILITY IN DESERT FOOTHILLS DRIVE
81 HC 6
*

82 KK S
83 BA 0.0099
84 PB 3.40
85 LS 0 94.2
86 UD 0.081
*

87 KK V25-G
88 KM OLD PARCEL NAME IS W48
89 BA 0.0179
90 PB 3.41
91 LS 0 93.0
92 UD 0.069
*

93 KK R
94 BA 0.0048
95 PB 3.40
96 LS 0 92.2
97 UD 0.071
*

98 KK CR

99 KM COMBINE Q AND R
100 HC 2
*

101 KK Q
102 BA 0.0049
103 PB 3.40
104 LS 0 92.2
105 UD 0.075
*

106 KK CQ
107 KM COMBINE Q AND CR
108 HC 2
*

109 KK RCQ
110 KM ROUTE CQR TO CST1
111 RD 330 0.055 0.013 0 CIRC 3
*

1

HEC-1 INPUT

PAGE 4

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

112 KK ST1
113 BA 0.0023
114 PB 3.40
115 LS 0 98
116 UD 0.050
*

117 KK CST1
118 KM COMBINES CQ AND ST1
119 HC 2
*

120 KK DUMMY2
121 KM RFCO FACILITY IN DESERT FOOTHILLS DR
122 HC 2
*

123 KK P
124 BA 0.0047
125 PB 3.40
126 LS 0 92.1
127 UD 0.079
*

128 KK DES2
129 PB 3.40
130 BA 0.0037
131 LS 0 98
132 UD 0.062
*

133 KK COES2
134 KM RFCO FACILITY IN DESERT FOOTHILLS DR
135 HC 3
*

136 KK DES3
137 BA 0.0058
138 PB 3.40
139 LS 0 98
140 UD 0.050
*

141 KK L
142 BA 0.0116
143 PB 3.40
144 LS 0 95.0
145 UD 0.072
*

1

HEC-1 INPUT

PAGE 5

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

146 KK COS-3
147 BA 0.0092
148 PB 3.39
149 LS 0 88.0
150 UD 0.107
*

151 KK DES4
152 BA 0.0044
153 PB 3.40

V21-SDN3.OUT

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154      LS      0      98.0
155      UD      0.076
      *

156      KK      CDES4
157      KM      RFCD FACILITY IN DESERT FOOTHILLS DR
158      HC      5
      *

159      KK      V25-F
160      BA      0.0163
161      PB      3.44
162      LS      0      95.0
163      UD      0.067
      *

164      KKV25-COS4
165      BA      0.0073
166      PB      3.43
167      LS      0      88.0
168      UD      0.089
      *

169      KKV25-FOXX
170      BA      0.0050
171      PB      3.41
172      LS      0      98.0
173      UD      0.062
      *

174      KK      CFOXN
175      KM      COMBINE V25-F, V25-COS4, V25-FOXX
176      HC      3
      *

177      KK      V25-B
178      KM      OLD BASIN NAME GP20
179      BA      0.0311
180      PB      3.42
181      LS      0      91.0
182      UD      0.097
      *

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1

HEC-1 INPUT

PAGE 6

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

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183      KKV25-FOXS
184      BA      0.0050
185      PB      3.40
186      LS      0      98.0
187      UD      0.179
      *

188      KK      CFOXs
189      KM      COMBINE V25-B, AND V25-FOXS
190      HC      2
      *

191      KK      V25-C
192      BA      0.0415
193      PB      3.45
194      LS      0      90.7
195      UD      0.109
      *

196      KK      RV25-C
197      KM      ROUTE V25-C TO CSTA1
198      RD      2047 0.013 0.023      0      CIRC      3.5
      *

199      KKV25-COS2
200      BA      0.0028
201      PB      3.43
202      LS      0      88.0
203      UD      0.128
      *

204      KKR25-COS2
205      KM      ROUTE V25-COS2
206      RD      1947 0.013 0.023      0      CIRC      3.5
      *

207      KK      STA1
208      KM      OLD PARCEL NAME IS SAME
209      BA      0.0046
210      PB      3.43
211      LS      0      98.0
212      UD      0.051

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V21-SDN3.OUT

213 KK CSTA1
 214 KM COMBINE V25-FOX5, V25-C, CFOX5, V25-COS2, STA1, AND CFOX5
 215 HC 5
 *

1

HEC-1 INPUT

PAGE 7

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

216 KK RCSTA1
 217 KM ROUTE STA1 TO CST2
 218 RD 1530 0.013 0.060 0 CIRC 3.5
 *

219 KK V25-E
 220 KM OLD PARCEL NAME IS W63
 221 BA 0.0268
 222 PB 3.40
 223 LS 0 95.0
 224 UD 0.088
 *

225 KK RV25-E
 226 KM ROUTE V25-E TO CST2
 227 RD 702 0.013 0.060 0 CIRC 3.5
 *

228 KKV25-COS3
 229 KM OLD PARCEL NAME IS GPPW3
 230 BA 0.0037
 231 PB 3.41
 232 LS 0 88.1
 233 UD 0.070
 *

234 KK ST2
 235 BA 0.0045
 236 PB 3.39
 237 LS 0 98
 238 UD 0.059

239 KK CST2
 240 KM RFCD FACILITY IN DESERT FOOTHILLS DR
 241 HC 4
 *

242 KK DUMMYS
 243 KM RFCD FACILITY IN DESERT FOOTHILLS DR
 244 HC 2
 *

245 KK F
 246 BA 0.0259
 247 PB 3.39
 248 LS 0 95.0
 249 UD 0.079
 *

1

HEC-1 INPUT

PAGE 8

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

250 KK E
 251 BA 0.0315
 252 PB 3.38
 253 LS 0 95.0
 254 UD 0.081
 *

255 KK DES5
 256 BA 0.0091
 257 PB 3.38
 258 LS 0 98.0
 259 UD 0.108
 *

260 KK COES5
 261 KM RFCD FACILITY IN DESERT FOOTHILLS DR
 262 HC 4
 *

263 KK C
 264 BA 0.0232
 265 PB 3.36
 266 LS 0 95.0
 267 UD 0.098
 *

V21-SDN3.OUT

268 KK NP-1
269 BA 0.0020
270 PB 3.36
271 LS 0 88.0
272 UD 0.068
*

273 KK ST7
274 BA 0.0036
275 PB 3.36
276 LS 0 98
277 UD 0.089
*

278 KK D
279 BA 0.0230
280 PB 3.36
281 LS 0 95.0
282 UD 0.081
*

283 KK CST7
284 KM COMBINES IN RIDGE PINE ST
285 HC 4
*

1

HEC-1 INPUT

PAGE 9

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

286 KK DUMMY7
287 KM RFCD FACILITY IN FAR HILLS
288 HC 2
*

289 KK W
290 BA 0.0130
291 PB 3.38
292 LS 0 94.2
293 UD 0.082
*

294 KK SUMM2
295 BA 0.0057
296 PB 3.38
297 LS 0 98
298 UD 0.053
*

299 KK T
300 PB 3.38
301 BA 0.0093
302 LS 0 94.2
303 UD 0.080
*

304 KK NP-2
305 BA 0.0015
306 PB 3.38
307 LS 0 89.0
308 UD 0.073
*

309 KK ST3
310 BA 0.0027
311 PB 3.38
312 LS 0 98.0
313 UD 0.050
*

314 KK CST3
315 KM COMBINE NP-2 AND ST3
316 HC 2
*

317 KK DUMMY8
318 KM COMBINE CT AND CST3
319 HC 4
*

1

HEC-1 INPUT

PAGE 10

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

320 KK CARR1
321 BA 0.0055
322 PB 3.36
323 LS 0 98.0

V21-SDN3.OUT

```

324      UD      0.060
      *

325      KK      M
326      BA      0.0142
327      PB      3.36
328      LS      0      92.0
329      UD      0.083
      *

330      KK      CCARR1
331      KM      RFCD FACILITY IN CARRIAGE HILL DR
332      HC      3
      *

333      KK      N
334      BA      0.0040
335      PB      3.38
336      LS      0      92.2
337      UD      0.071
      *

338      KK      0
339      BA      0.0054
340      PB      3.38
341      LS      0      92.1
342      UD      0.074
      *

343      KK      STD
344      BA      0.0014
345      PB      3.38
346      LS      0      98
347      UD      0.050
      *

348      KK      CSTD
349      KM      COMBINE N, O, AND STD
350      HC      3
      *

351      KK      K
352      BA      0.0128
353      PB      3.37
354      LS      0      92.0
355      UD      0.077
      *

```

1

HEC-1 INPUT

PAGE 11

```

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

356      KK      STB
357      BA      0.0041
358      PB      3.38
359      LS      0      98
360      UD      0.050
      *

361      KK      CSTB
362      HC      3
      *

363      KK      DUMMY10
364      KM      RFCD FACILITY IN CARRIAGE HILL DR
365      HC      2
      *

366      KK      J
367      BA      0.0185
368      PB      3.35
369      LS      0      92.0
370      UD      0.081
      *

371      KK      DUMMY11
372      KM      RFCD FACILITY IN CARRIAGE HILL DR
373      HC      2
      *

374      KK      COS-2
375      BA      0.0009
376      PB      3.37
377      LS      0      88.3
378      UD      0.131
      *

379      KK      COS-1
380      BA      0.0122

```

381 PB 3.37
 382 LS 0 88.0
 383 UD 0.110
 *

384 KK CCOS-1
 385 HC 2
 *

386 KK CARR2
 387 BA 0.0038
 388 PB 3.35
 389 LS 0 98.0
 390 UD 0.068
 *

1

HEC-1 INPUT

PAGE 12

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

391 KK ST6
 392 BA 0.0048
 393 PB 3.37
 394 LS 0 98
 395 UD 0.058
 *

396 KK CCARR2
 397 KM RFCO FACILITY IN CARRIAGE HILL DR
 398 HC 4
 *

399 KK B
 400 BA 0.0217
 401 PB 3.34
 402 LS 0 95.0
 403 UD 0.077
 *

404 KK A
 405 BA 0.0221
 406 PB 3.33
 407 LS 0 94.9
 408 UD 0.096
 *

409 KK CARR3
 410 BA 0.0076
 411 PB 3.34
 412 LS 0 98
 413 UD 0.089
 *

414 KK CCARR3
 415 KM RFCO FACILITY IN CARRIAGE HILL DR
 416 HC 4
 *

417 KK DUMMY13
 418 KM RFCO FACILITY IN FAR HILLS
 419 HC 3
 *

420 KK V
 421 BA 0.0113
 422 PB 3.38
 423 LS 0 94.2
 424 UD 0.069
 *

1

HEC-1 INPUT

PAGE 13

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

425 KK SUMM4
 426 BA 0.0076
 427 PB 3.38
 428 LS 0 98
 429 UD 0.055
 *

430 KK CSUMM4
 431 KM COMBINES IN EX BELTWAY CHANNEL
 432 HC 2
 *

433 KK DC-2
 434 BA 0.0019
 435 PB 3.36

436 LS 0 93.0
 437 UD 0.057
 *

438 KK U
 439 BA 0.0315
 440 PB 3.36
 441 LS 0 94.2
 442 UD 0.094
 *

443 KK I
 444 BA 0.0292
 445 PB 3.35
 446 LS 0 92.0
 447 UD 0.106
 *

448 KK STA
 449 BA 0.0016
 450 PB 3.35
 451 LS 0 98.0
 452 UD 0.050
 *

453 KK G
 454 BA 0.0078
 455 PB 3.35
 456 LS 0 95.0
 457 UD 0.088
 *

458 KK H
 459 BA 0.0091
 460 PB 3.33
 461 LS 0 95.0
 462 UD 0.102
 *

1

HEC-1 INPUT

PAGE 14

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

463 KK CGH
 464 KM COMBINES G AND H
 465 HC 2
 *

466 KK DC-1
 467 BA 0.0128
 468 PB 3.33
 469 LS 0 93.0
 470 UD 0.207
 *

471 KK NVE
 472 BA 0.0340
 473 PB 3.32
 474 LS 0 93.0
 475 UD 0.096
 *

476 KK CDC1
 477 KM COMBINES IN EX BELTWAY CHANNEL
 478 HC 8
 *

479 KK CFAR
 480 KM EX FAR HILLS AVE SD
 481 HC 2
 *

482 ZZ

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

```

20  SUMM3
    .
    .
33  .      Z
    .      .
    .      .
38  .      .      AA
    .      .
    .      .
43  CAA.....
  
```

Line	Code	Label
46	NP-4	
51	NP-3	
56	CNP-3	
59	SUMM1	
64	Y	
69	X	
74	DES1	
79	CSUMM1	
82	S	
87	V25-G	
93	R	
98	CR	
101	Q	
106	CQ	
109	V	
112	RCQ	
117	ST1	
120	CST1	
123	DUMMY2	
128	P	
133	DES2	
136	CDES2	
141	DES3	
146	L	
151	COS-3	
156	DES4	
159	CDES4	
164	V25-F	
169	V25-COS4	
	V25-FOXO1	

174	.	.	CFOXN.....	V21-SDN3.OUT
177	.	.	V25-B	
183	.	.	V25-F0XS	
188	.	.	CFOXN.....	
191	.	.	V25-C	
196	.	.	V	
199	.	.	V	
204	.	.	RV25-C	
207	.	.	V25-C0S2	
213	.	.	V	
216	.	.	V	
219	.	.	RCSTA1	
225	.	.	V25-E	
228	.	.	V	
234	.	.	V	
239	.	.	RV25-E	
242	.	.	V25-C0S3	
245	.	.		
250	.	.		
255	.	.		
260	.	.		
263	.	.		
268	.	.		
273	.	.		
278	.	.		
283	.	.		
286	.	.		
289	.	.		
294	.	.		
299	.	.		

				V21-SDN3.OUT	
304	.	.	.	NP-2	
	.	.	.		
309	.	.	.		ST3
	.	.	.		
314	.	.	.	CST3.....	
	.	.	.		
317	.	.	.	DUMMY8.....	
	.	.	.		
320	.	.	.	CARR1	
	.	.	.		
325	.	.	.	M	
	.	.	.		
330	.	.	.	CCARR1.....	
	.	.	.		
333	.	.	.	N	
	.	.	.		
338	.	.	.	O	
	.	.	.		
343	.	.	.		STD
	.	.	.		
348	.	.	.	CSTD.....	
	.	.	.		
351	.	.	.	K	
	.	.	.		
356	.	.	.		STB
	.	.	.		
361	.	.	.	CSTB.....	
	.	.	.		
363	.	.	.	DUMMY10.....	
	.	.	.		
366	.	.	.	J	
	.	.	.		
371	.	.	.	DUMMY11.....	
	.	.	.		
374	.	.	.	COS-2	
	.	.	.		
379	.	.	.		COS-1
	.	.	.		
384	.	.	.	CCOS-1.....	
	.	.	.		
386	.	.	.	CARR2	
	.	.	.		
391	.	.	.		ST6
	.	.	.		
396	.	.	.	CCARR2.....	
	.	.	.		
399	.	.	.	B	
	.	.	.		
404	.	.	.		A
	.	.	.		
409	.	.	.		CARR3
	.	.	.		
414	.	.	.	CCARR3.....	
	.	.	.		
417	.	.	.	DUMMY13.....	
	.	.	.		
420	.	.	.	V	
	.	.	.		
425	.	.	.	SUM4	


```

*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*      JUN 1998
*      VERSION 4.1
*
* RUN DATE 27DEC18 TIME 16:51:33
*
*****

```

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

* VILLAGE 21 (PREVIOUSLY AREA 1) HEC-1 MODE *
* REFER TO LAND USE EXHIBIT BY VTN FOR LOCATION OF AREAS 1 *
* *

Page 13

FLOW STORAGE VOLUME CUBIC FEET PER SECOND
 SURFACE AREA ACRE-FEET
 TEMPERATURE ACRES
 DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
 NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
 RATIOS OF PRECIPITATION
 1.00

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
HYDROGRAPH AT +	SUMM3	.00	1 FLOW TIME	13. 3.50
HYDROGRAPH AT +	Z	.01	1 FLOW TIME	18. 3.50
HYDROGRAPH AT +	AA	.01	1 FLOW TIME	17. 3.50
3 COMBINED AT +	CAA	.02	1 FLOW TIME	48. 3.50
HYDROGRAPH AT +	NP-4	.00	1 FLOW TIME	3. 3.50
HYDROGRAPH AT +	NP-3	.00	1 FLOW TIME	3. 3.50
2 COMBINED AT +	CNP-3	.00	1 FLOW TIME	7. 3.50
HYDROGRAPH AT +	SUMM1	.01	1 FLOW TIME	20. 3.50
HYDROGRAPH AT +	Y	.01	1 FLOW TIME	16. 3.50
HYDROGRAPH AT +	X	.01	1 FLOW TIME	16. 3.50
HYDROGRAPH AT +	DES1	.00	1 FLOW TIME	8. 3.50
6 COMBINED AT +	CSUMM1	.04	1 FLOW TIME	113. 3.50
HYDROGRAPH AT +	S	.01	1 FLOW TIME	24. 3.50
HYDROGRAPH AT +	V25-G	.02	1 FLOW TIME	45. 3.50
HYDROGRAPH AT +	R	.00	1 FLOW TIME	12. 3.50
2 COMBINED AT +	CR	.02	1 FLOW TIME	56. 3.50
HYDROGRAPH AT +	Q	.00	1 FLOW TIME	12. 3.50

V21-SDN3.OUT

2 COMBINED AT					
+	CQ	.03	1	FLOW TIME	68. 3.50
ROUTED TO					
+	RCQ	.03	1	FLOW TIME	67. 3.50
HYDROGRAPH AT					
+	ST1	.00	1	FLOW TIME	7. 3.50
2 COMBINED AT					
+	CST1	.03	1	FLOW TIME	74. 3.50
2 COMBINED AT					
+	DUMMY2	.04	1	FLOW TIME	98. 3.50
HYDROGRAPH AT					
+	P	.00	1	FLOW TIME	11. 3.50
HYDROGRAPH AT					
+	DES2	.00	1	FLOW TIME	10. 3.50
3 COMBINED AT					
+	CDES2	.05	1	FLOW TIME	119. 3.50
HYDROGRAPH AT					
+	DES3	.01	1	FLOW TIME	17. 3.50
HYDROGRAPH AT					
+	L	.01	1	FLOW TIME	30. 3.50
HYDROGRAPH AT					
+	COS-3	.01	1	FLOW TIME	17. 3.50
HYDROGRAPH AT					
+	DES4	.00	1	FLOW TIME	12. 3.50
5 COMBINED AT					
+	CDES4	.08	1	FLOW TIME	195. 3.50
HYDROGRAPH AT					
+	V25-F	.02	1	FLOW TIME	43. 3.50
HYDROGRAPH AT					
+	V25-COS4	.01	1	FLOW TIME	15. 3.50
HYDROGRAPH AT					
+	V25-FOXN	.00	1	FLOW TIME	14. 3.50
3 COMBINED AT					
+	CFOXN	.03	1	FLOW TIME	72. 3.50
HYDROGRAPH AT					
+	V25-B	.03	1	FLOW TIME	67. 3.50
HYDROGRAPH AT					
+	V25-FOXS	.00	1	FLOW TIME	11. 3.58
2 COMBINED AT					
+	CFOXS	.04	1	FLOW TIME	77. 3.50
HYDROGRAPH AT					
+	V25-C	.04	1	FLOW TIME	86. 3.50
ROUTED TO					
+	RV25-C	.04	1	FLOW TIME	84. 3.58

HYDROGRAPH AT					
+	V25-COS2	.00	1	FLOW TIME	5. 3.58
ROUTED TO					
+	RV25-COS	.00	1	FLOW TIME	5. 3.67
HYDROGRAPH AT					
+	STA1	.00	1	FLOW TIME	13. 3.50
5 COMBINED AT					
+	CSTA1	.11	1	FLOW TIME	238. 3.50
ROUTED TO					
+	RCSTA1	.11	1	FLOW TIME	217. 3.58
HYDROGRAPH AT					
+	V25-E	.03	1	FLOW TIME	65. 3.50
ROUTED TO					
+	RV25-E	.03	1	FLOW TIME	59. 3.58
HYDROGRAPH AT					
+	V25-COS3	.00	1	FLOW TIME	8. 3.50
HYDROGRAPH AT					
+	ST2	.00	1	FLOW TIME	12. 3.50
4 COMBINED AT					
+	CST2	.15	1	FLOW TIME	291. 3.58
2 COMBINED AT					
+	DUMMY5	.23	1	FLOW TIME	461. 3.50
HYDROGRAPH AT					
+	F	.03	1	FLOW TIME	65. 3.50
HYDROGRAPH AT					
+	E	.03	1	FLOW TIME	78. 3.50
HYDROGRAPH AT					
+	DES5	.01	1	FLOW TIME	22. 3.50
4 COMBINED AT					
+	CDES5	.29	1	FLOW TIME	624. 3.50
HYDROGRAPH AT					
+	C	.02	1	FLOW TIME	54. 3.50
HYDROGRAPH AT					
+	NP-1	.00	1	FLOW TIME	4. 3.50
HYDROGRAPH AT					
+	ST7	.00	1	FLOW TIME	9. 3.50
HYDROGRAPH AT					
+	D	.02	1	FLOW TIME	56. 3.50
4 COMBINED AT					
+	CST7	.05	1	FLOW TIME	124. 3.50
2 COMBINED AT					
+	DUMMY7	.35	1	FLOW TIME	748. 3.50
HYDROGRAPH AT					
+	W	.01	1	FLOW TIME	31. 3.50
HYDROGRAPH AT					

+	SUNM42	.01	1	FLOW TIME	16. 3.50
+	HYDROGRAPH AT T	.01	1	FLOW TIME	23. 3.50
+	HYDROGRAPH AT NP-2	.00	1	FLOW TIME	3. 3.50
+	HYDROGRAPH AT ST3	.00	1	FLOW TIME	8. 3.50
+	2 COMBINED AT CST3	.00	1	FLOW TIME	11. 3.50
+	4 COMBINED AT DUMMY8	.03	1	FLOW TIME	81. 3.50
+	HYDROGRAPH AT CARR1	.01	1	FLOW TIME	15. 3.50
+	HYDROGRAPH AT M	.01	1	FLOW TIME	32. 3.50
+	3 COMBINED AT CCARR1	.05	1	FLOW TIME	129. 3.50
+	HYDROGRAPH AT N	.00	1	FLOW TIME	10. 3.50
+	HYDROGRAPH AT O	.01	1	FLOW TIME	13. 3.50
+	HYDROGRAPH AT STD	.00	1	FLOW TIME	4. 3.50
+	3 COMBINED AT CSTD	.01	1	FLOW TIME	26. 3.50
+	HYDROGRAPH AT K	.01	1	FLOW TIME	30. 3.50
+	HYDROGRAPH AT STB	.00	1	FLOW TIME	12. 3.50
+	3 COMBINED AT CSTB	.03	1	FLOW TIME	68. 3.50
+	2 COMBINED AT DUMMY10	.08	1	FLOW TIME	197. 3.50
+	HYDROGRAPH AT J	.02	1	FLOW TIME	42. 3.50
+	2 COMBINED AT DUMMY11	.10	1	FLOW TIME	239. 3.50
+	HYDROGRAPH AT COS-2	.00	1	FLOW TIME	2. 3.58
+	HYDROGRAPH AT COS-1	.01	1	FLOW TIME	22. 3.50
+	2 COMBINED AT CCOS-1	.01	1	FLOW TIME	24. 3.50
+	HYDROGRAPH AT CARR2	.00	1	FLOW	10.

			TIME	3.50
HYDROGRAPH AT				
+	ST6	.00	1 FLOW	13.
			TIME	3.50
4 COMBINED AT				
+	CCARR2	.12	1 FLOW	286.
			TIME	3.50
HYDROGRAPH AT				
+	B	.02	1 FLOW	54.
			TIME	3.50
HYDROGRAPH AT				
+	A	.02	1 FLOW	51.
			TIME	3.50
HYDROGRAPH AT				
+	CARR3	.01	1 FLOW	19.
			TIME	3.50
4 COMBINED AT				
+	CCARR3	.17	1 FLOW	410.
			TIME	3.50
3 COMBINED AT				
+	DUMMY13	.56	1 FLOW	1271.
			TIME	3.50
HYDROGRAPH AT				
+	V	.01	1 FLOW	29.
			TIME	3.50
HYDROGRAPH AT				
+	SUMM4	.01	1 FLOW	21.
			TIME	3.50
2 COMBINED AT				
+	CSUMM4	.02	1 FLOW	50.
			TIME	3.50
HYDROGRAPH AT				
+	DC-2	.00	1 FLOW	5.
			TIME	3.50
HYDROGRAPH AT				
+	U	.03	1 FLOW	73.
			TIME	3.50
HYDROGRAPH AT				
+	I	.03	1 FLOW	61.
			TIME	3.50
HYDROGRAPH AT				
+	STA	.00	1 FLOW	5.
			TIME	3.50
HYDROGRAPH AT				
+	G	.01	1 FLOW	19.
			TIME	3.50
HYDROGRAPH AT				
+	H	.01	1 FLOW	21.
			TIME	3.50
2 COMBINED AT				
+	CGH	.02	1 FLOW	39.
			TIME	3.50
HYDROGRAPH AT				
+	DC-1	.01	1 FLOW	23.
			TIME	3.58
HYDROGRAPH AT				
+	IWE	.03	1 FLOW	75.
			TIME	3.50
8 COMBINED AT				
+	CDC1	.15	1 FLOW	326.
			TIME	3.50
2 COMBINED AT				
+	CFAR	.71	1 FLOW	1598.
			TIME	3.50

UPDATED FLOWS

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
INTERPOLATED TO

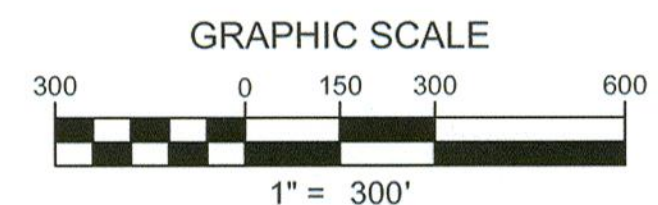
ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	V21-SDN3.OUT COMPUTATION INTERVAL		VOLUME (IN)
						DT (MIN)	PEAK (CFS)	
FOR PLAN = 1 RATIO= .00								
RCQ	MANE	.22	67.72	210.18	2.62	5.00	67.37	210.00
CONTINUITY SUMMARY (AC-FT) - INFLOW= .3853E+01 EXCESS= .0000E+00 OUTFLOW= .3853E+01 BASIN STORAGE= .1974E-04 PERCENT ERROR= .0								
FOR PLAN = 1 RATIO= .00								
RV25-C	MANE	3.60	84.77	216.10	2.46	5.00	83.86	215.00
CONTINUITY SUMMARY (AC-FT) - INFLOW= .5451E+01 EXCESS= .0000E+00 OUTFLOW= .5449E+01 BASIN STORAGE= .5287E-03 PERCENT ERROR= .0								
FOR PLAN = 1 RATIO= .00								
RV25-COS	MANE	4.00	5.08	220.00	2.20	5.00	5.08	220.00
CONTINUITY SUMMARY (AC-FT) - INFLOW= .3289E+00 EXCESS= .0000E+00 OUTFLOW= .3289E+00 BASIN STORAGE= .4677E-03 PERCENT ERROR= -.2								
FOR PLAN = 1 RATIO= .00								
RCSTA1	MANE	4.00	220.97	216.00	2.58	5.00	217.33	215.00
CONTINUITY SUMMARY (AC-FT) - INFLOW= .1570E+02 EXCESS= .0000E+00 OUTFLOW= .1562E+02 BASIN STORAGE= .7824E-03 PERCENT ERROR= .5								
FOR PLAN = 1 RATIO= .00								
RV25-E	MANE	2.81	61.69	213.68	2.84	5.00	59.42	215.00
CONTINUITY SUMMARY (AC-FT) - INFLOW= .4061E+01 EXCESS= .0000E+00 OUTFLOW= .4053E+01 BASIN STORAGE= .2477E-03 PERCENT ERROR= .2								

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



LEGEND

- | | |
|---|------------------------|
|  | ONSITE BASIN BOUNDARY |
|  | OFFSITE BASIN BOUNDARY |
| W51 | BASIN DESIGNATION |
|  | CONCENTRATION POINT |
|  | FLOW ARROW |



HEC-1 SUMMARY TABLE
VILLAGE 21
ULTIMATE CONDITION

Basin / Concentration Point	Area (Acre)			Q ₁₀₀ (cfs)			SDN
	Update	Previous	Difference	Update	Previous	Difference	
SUMM3	7.73	5.00	2.73	13	30	-17	SDN3
Z	4.50	4.50	0.00	18	17	1	SDN3
AA	4.02	3.71	0.31	17	14	3	SDN3
CAA	16.25	13.21	3.04	48	-	N/A	SDN3
NP-4	1.05	N/A	N/A	3	0	n/a	SDN3
NP-3	1.14	1.49	-0.35	3	4	-1	SDN3
CNP-3	2.18	1.49	0.69	7	-	N/A	SDN3
SUMM1	5.05	5.00	0.05	20	19	1	SDN3
Y	3.98	3.98	0.00	16	15	1	SDN3
X	3.94	3.63	0.31	16	14	2	SDN3
DES1	1.80	1.83	-0.03	8	7	1	SDN3
CSUMM1	33.20	N/A	N/A	113	-	N/A	SDN3
S	6.33	6.56	-0.23	24	25	-1	SDN3
V25-G	11.44	N/A	N/A	45	-	N/A	SDN3
R	3.07	3.10	-0.03	12	11	1	SDN3
CR	14.51	3.10	11.41	56	-	N/A	SDN3
Q	3.16	3.16	0.00	12	11	1	SDN3
CQ	17.67	6.26	11.41	68	-	N/A	SDN3
ST1	1.50	1.62	-0.12	7	6	1	SDN3
CS1	19.18	14.44	4.74	74	54	20	SDN3
P	3.00	3.17	-0.17	11	11	0	SDN3
DES2	2.39	2.27	0.12	10	9	1	SDN3
CDES2	30.89	N/A	N/A	119	-	N/A	SDN3
DES3	3.73	3.78	-0.05	17	15	2	SDN3
L	7.44	7.36	0.08	30	26	4	SDN3
COS-3	5.90	6.10	-0.20	17	18	-1	SDN3
DES4	2.79	2.88	-0.09	12	11	1	SDN3
V25-F	10.45	N/A	N/A	43	-	N/A	SDN3
V25-COS4	4.64	N/A	N/A	15	-	N/A	SDN3
V25-FOXN	3.23	N/A	N/A	14	-	N/A	SDN3
CFOXN	18.32	N/A	N/A	72	-	N/A	SDN3
V25-B	19.93	N/A	N/A	67	-	N/A	SDN3
V25-FOXBS	3.19	N/A	N/A	11	-	N/A	SDN3
CFOXBS	23.11	N/A	N/A	77	-	N/A	SDN3
V25-C	26.54	N/A	N/A	26	-	N/A	SDN3
V25-COS2	1.79	N/A	N/A	5	-	N/A	SDN3
STA1	2.98	N/A	N/A	13	-	N/A	SDN3
CSTA1	72.75	N/A	N/A	238	-	N/A	SDN3
V25-E	17.13	N/A	N/A	65	-	N/A	SDN3
V25-COS3	2.37	N/A	N/A	8	-	N/A	SDN3
ST2	2.88	2.93	-0.05	12	12	0	SDN3
CS2	95.12	2.93	92.19	291	-	N/A	SDN3
F	16.58	16.88	-0.30	65	59	6	SDN3
E	20.15	20.20	-0.05	78	77	1	SDN3
DES5	5.83	5.46	0.37	22	20	2	SDN3
CDES5	185.60	N/A	N/A	624	-	N/A	SDN3
C	14.83	14.05	0.78	54	44	10	SDN3
NP-1	1.27	1.35	-0.08	4	5	-1	SDN3
ST7	2.30	2.30	0.00	9	9	0	SDN3
D	14.73	15.42	-0.69	56	53	3	SDN3
CS7	33.13	33.12	0.01	124	108	16	SDN3
W	8.31	7.11	1.20	31	27	4	SDN3
SUMM2	3.63	3.28	0.35	16	13	3	SDN3
T	5.98	5.99	-0.01	23	23	0	SDN3
NP-2	0.93	0.87	0.06	3	3	0	SDN3
ST3	1.70	2.09	-0.39	8	8	0	SDN3
CS3	2.63	8.08	-5.45	11	43	-32	SDN3
CARR1	3.52	3.52	0.00	15	14	1	SDN3
M	9.11	9.11	0.00	32	32	0	SDN3
CCARR1	32.00	N/A	N/A	129	-	N/A	SDN3
N	2.54	2.54	0.00	10	9	1	SDN3
O	3.47	3.43	0.04	13	13	0	SDN3
STD	0.88	N/A	N/A	4	-	N/A	SDN3
CSTD	6.90	5.97	0.93	26	-	N/A	SDN3
K	8.20	8.01	0.19	30	29	1	SDN3
STB	2.65	N/A	N/A	12	-	N/A	SDN3
CSB	17.75	8.01	9.74	68	-	N/A	SDN3
J	11.83	11.83	0.00	42	42	0	SDN3
COS-2	0.58	N/A	N/A	2	-	N/A	SDN3
COS-1	7.80	7.78	0.02	22	22	0	SDN3
CCOS-1	8.38	7.78	0.60	24	-	N/A	SDN3
CARR2	2.45	2.49	-0.04	10	10	0	SDN3
ST6	3.08	3.01	0.07	13	12	1	SDN3
CCARR2	76.80	N/A	N/A	286	-	N/A	SDN3
B	13.90	13.71	0.19	54	46	8	SDN3
A	14.15	14.36	-0.21	51	47	4	SDN3
CARR3	4.87	4.85	0.02	19	19	0	SDN3
CCARR3	109.72	N/A	N/A	410	-	N/A	SDN3
V	7.25	7.19	0.06	29	27	2	SDN3
SUMM4	4.87	N/A	N/A	21	-	N/A	SDN3
CSUMM4	12.12	7.19	N/A	50	-	N/A	SDN3
DC-2	1.19	1.40	-0.21	5	5	0	SDN3
U	20.17	20.42	-0.25	73	74	-1	SDN3
I	18.69	18.50	0.19	61	60	1	SDN3
STA	1.01	0.00	n/a	5	0	n/a	SDN3
G	5.01	5.71	-0.70	19	21	-2	SDN3
H	5.79	6.26	-0.47	21	22	-1	SDN3
CGH	10.80	11.97	-1.17	39	-	N/A	SDN3
DC-1	8.19	8.19	0.00	23	25	-2	SDN3
NVE	21.74	21.74	0.00	75	79	-4	SDN3
CDC1	104.69	101.38	3.31	326	-	N/A	SDN3
CFAR	454.4	N/A	N/A	1598	-	N/A	SDN3

THE HOWARD HUGHES CORPORATION
10801 WEST CHARLESTON BLVD., 3RD FLOOR
LAS VEGAS, NEVADA 89135

2018 UPDATE TO
SUMMERLIN WEST
PLANNING AREA

**A.6.6
VILLAGE 21
DRAINAGE BASIN MAP**

DRAWN BY:

DESIGNED BY:

CHECKED BY:

PROJECT NO:	SCALE:	N/A	HOF
-------------	--------	-----	-----

U:\A Figures\A_6.6 Village 21\Drainage Basin Map\A_6.6 Area 1 Drainage Basin Map.dwg

SHEET
A.6.6
OF SHEETS
DRAWING NO.

REVISION

Technical Drainage Study for

Summerlin West Village 21

Carriage Hill Drive

Far Hills to East West Collector

Las Vegas, Nevada

W.O. # 7851

Prepared for:

Howard Hughes Corp.

Submitted to:

Public Works Department
City of Las Vegas



CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM

DATE:

March 22, 2018

TO:

Land Development Services
Department of Building & Safety

FROM:

Albert Sung, P.E.
Flood Control Project

SUBJECT:

Drainage Study for:
Summerlin West Village 21 - Carriage Hill Drive
(Far Hills to East West Collector)

Cross Streets:

Carriage Hill Drive and Far Hills Avenue

File Number:

F:\Depot\DSMemos\DS4962A.doc

Parcel Number:

137-26-299-002, 137-26-399-015,
137-26-297-002, 137-26-397-024

Zoning Action:

FEMA Flood Zone

YES

NO

X

Proposed Storm Drain

YES

X

NO

Bill M. to send
in Supplement (N/E)
to replace DIs @
SDMH #8 with Future
D.I. further upstream.
6/7/18

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	FEES	Payment Trn #
1 st Submittal	3/6/2018	3/21/2018	See Comments Below	\$400.00	493856: \$400
TOTAL FEES (LDDRS):				\$400.00	----

REMARKS:

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

	is approved subject to conformance to all City standards and the following conditions:
X	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.

1. The site is adjacent to or crosses an existing or proposed *Clark County Regional Flood Control District* (CCRFCD) master planned facility. Therefore, CCRFCD concurrence is required prior to final approval of the drainage study.
2. The referenced *Flood Control Master Plan Update for Summerlin West Planning Area* (SWPA) is still under review; therefore, this study will not be approved prior to the approval of the SWPA Master Update study.
3. The project proposed to build temporary drainage facilities including drainage berms/swales along the west side of the proposed *Carriage Hill Drive*. Prior to the final plans approval the developer must complete a **Maintenance & Liability Agreement** for the interim drainage improvements and post a minimum maintenance bond of \$50,000 or 50-percent of the construction cost for the improvements, whichever is greater. The engineer must submit an estimate of the quantities for constructing the facilities and an exhibit that adequately shows the location and limits of the drainage facilities to *City Flood Control* for approval. Once the drainage study is conditionally approved, the engineer/developer should contact the City's Land Development Section (702-229-6371) to begin the agreement process.

In order for the maintenance bond to be released in the future, a drainage update/letter will be required to justify that the berm/swale are no longer necessary and can be removed.

4. Since the street and the associated storm drain facilities will eventually be accepted by the **City of Las Vegas**, the engineer/developer must coordinate with *City of Las Vegas Streets & Sanitation Department* for their review and approval prior to the final acceptance of the subject improvement plans.
5. Per the *SWPA Flood Control Master Plan Update*, the size of the storm drain in *Carriage Hill Drive* is 66", not 60" as shown in the subject improvement plans. Review and revise accordingly.
6. Provide maintenance access to both stubs on the west side of the *Carriage Hill Drive*. Include a typical access road section.
7. The future storm drain alignment to the north jogs to the east side of *Carriage Hill Drive*. It is recommended that the alignment remains on the west side of the roadway unless there is a necessary reason for the realignment. Review and revise accordingly.
8. Please provide an explanation for the flow at the future roadway extension to the north. It is expected that there will be no bypass flow onto this proposed portion of *Carriage Hill Drive*? Please clarify.
9. **Report:** The Q_{100} values presented on page 3 of the report in Table 2 for the Interim Condition Hec-1 Summary do not match the Hec-1 report, or the table shown on Figure 7. Please revise.
10. **Fig 8:** The flow velocity listed for section 2 does not match the velocity per the Flowmaster report, please update. Similarly the VxD value shown in the same table for section 2 should be updated accordingly.
11. **GR1:** The proposed riprap shown on the north side of the proposed street is called out to have a maximum slope of 2:1, but the *Detail B/DT1* shows a maximum slope of 3:1, please revise.
12. **GR3:** The proposed inlet elevation for the proposed 36" RCP is shown as the same elevation as the outlet elevation, but is shown to be 3244.99 ft in the given HY-8 Culvert analysis, please revise.
13. **GR5:** Provide two nominal inlets at both sides of the roadway at SDMH #8.

Discuss whether the drop inlet shown north of the proposed improvements is part of proposed or for future conditions, if future please label as future.

Provide "End of Road" markers at the north end of *Carriage Hill Drive*.
14. **UT8:** The 8" SS is shown to be 18.83' below the proposed RCP, but appears to be much closer, please revise.
15. All offsite interim flood control facilities such as but not limited to berms / ditches and temporary sump are privately owned and to be privately maintained by the *Howard Hughes Company*. Provide a note as such on the grading plans.
16. Add a note in all pertinent sheets for the construction of all storm drain drop inlets per USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).

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
WSP/AYS

T/R/S: T21S/R69E/26
AREA K-26

TRANSACTION REPORT

MAR/22/2018/THU 05:39 PM

FAX (TX)

#	DATE	START T.	RECEIVER	COM. TIME	PAGE	TYPE/NOTE	FILE
001	MAR/22	05:38PM	7023622597	0:01:01	2	MEMORY OK	ECM 0886

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		March 22, 2018
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: Summerlin West Village 21 - Carriage Hill Drive (Far Hills to East West Collector)		COPIES TO: VTN Nevada
Cross Streets:	Carriage Hill Drive and Far Hills Avenue	The Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS4962A.doc	Bart Anderson, P.E., DevCo
Parcel Number:	137-26-299-002, 137-26-399-015, 137-26-297-002, 137-26-397-024	CCRFCD
Zoning Action:		
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	3/6/2018	3/21/2018	See Comments Below	\$400.00	493856: \$400
TOTAL FEES (LDDRS):				\$400.00	----

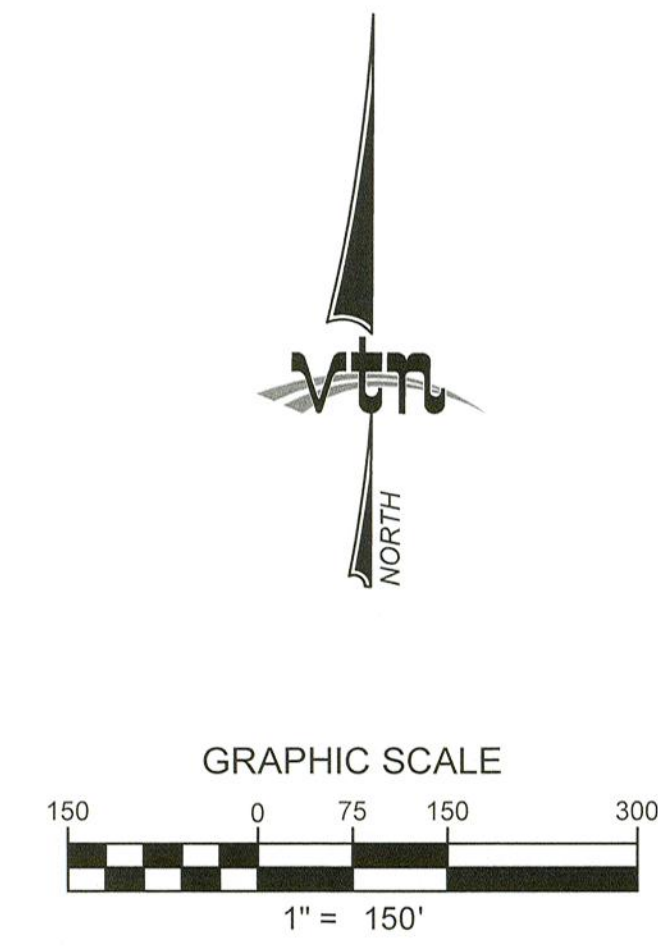
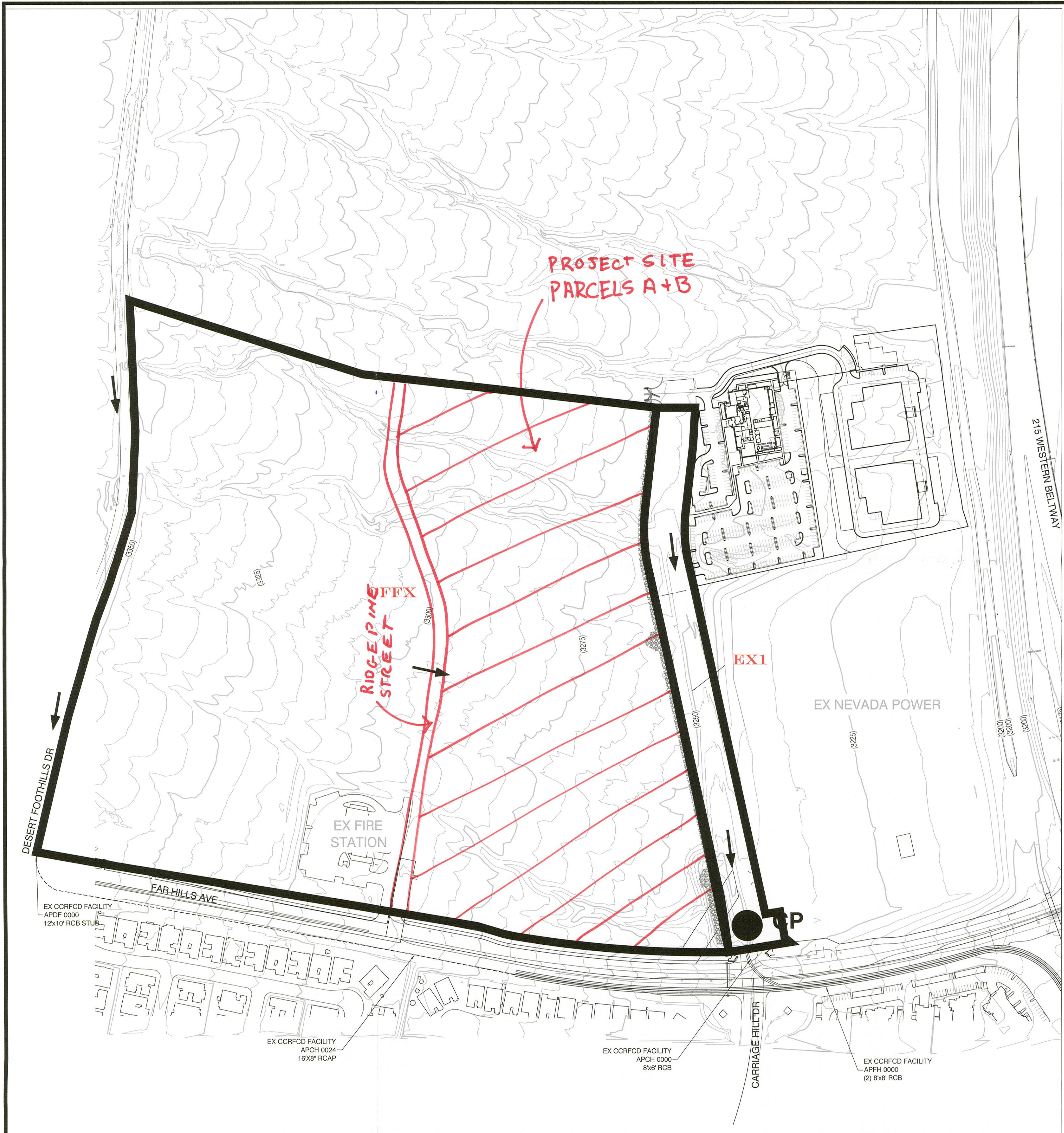
REMARKS:

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

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X	must be resubmitted or supplemented including the following:
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In order for the maintenance bond to be released in the future, a drainage update/letter will be required to justify that the berm/swale are no longer necessary and can be removed.



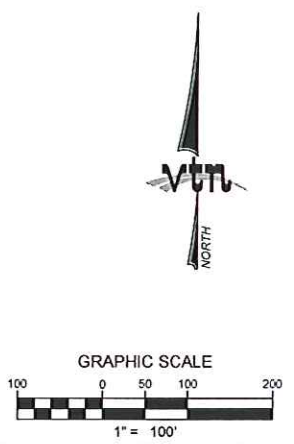
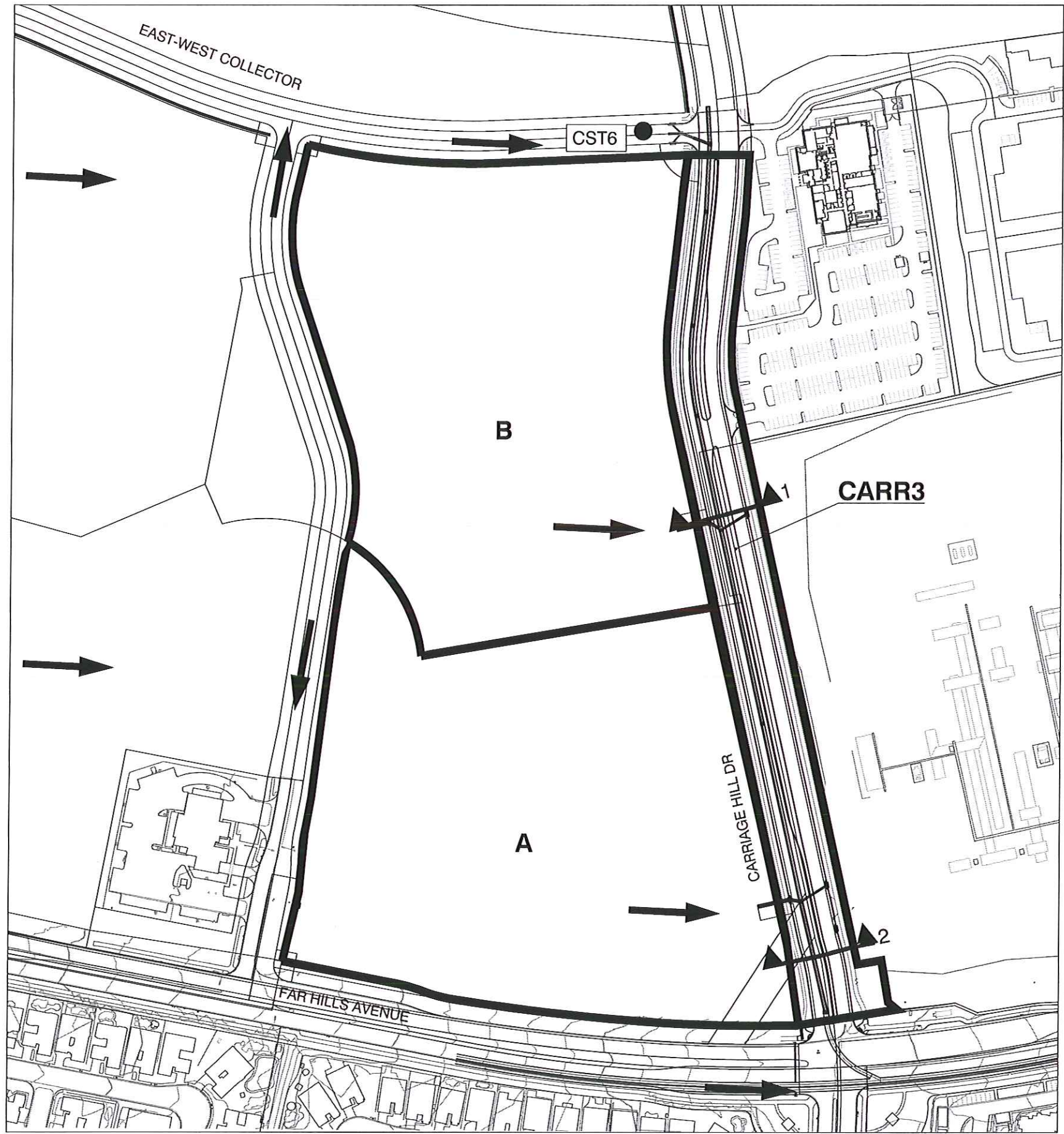
- LEGEND**
- CONCENTRATION POINT
 - BASIN BOUNDARY
 - EX1 BASIN DESIGNATION
 - FLOW ARROW

EXISTING CONDITION HEC-1 SUMMARY TABLE		
BASIN ID	AREA (ac)	Q100 (CFS)
OFFX	67.25	199
EX1	4.85	12
CP	-	212

THE HOWARD HUGHES CORPORATION 19801 WEST CHARLESTON BLVD, 3RD FLOOR LAS VEGAS, NEVADA 89135		2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146-5148 PH. (702) 873-7550 FAX (702) 882-2597 WEB WWW.VTNV.COM CONSULTING ENGINEERS • PLANNERS • AND SURVEYORS	
DRAWN BY: SUB/VA		SEPT 2017	
DESIGNED BY: SUB/VA		SEPT 2017	
CHECKED BY: WAM		SEPT 2017	
PROJECT NO: 7809		SCALE: HORIZ. VERT.	
SHEET		REV	
OF SHEETS		DATE	
DRAWING NO.		BY	
		REVISION	

**FIGURE 6:
EXISTING CONDITION BASIN MAP**

**SUMMERLIN WEST VILLAGE 21
CARRIAGE HILL DRIVE - FAR HILLS
TO EAST WEST COLLECTOR**



- LEGEND
- BASIN BOUNDARY
 - BASIN DESIGNATION
 - CROSS SECTION
 - CONCENTRATION POINT

ULTIMATE CONDITION
HEC-1 SUMMARY TABLE*

BASIN ID	AREA (ac)	Q100 (CFS)
CST6		66
B	13.76	46
A	14.65	48
CARR3	4.65	19

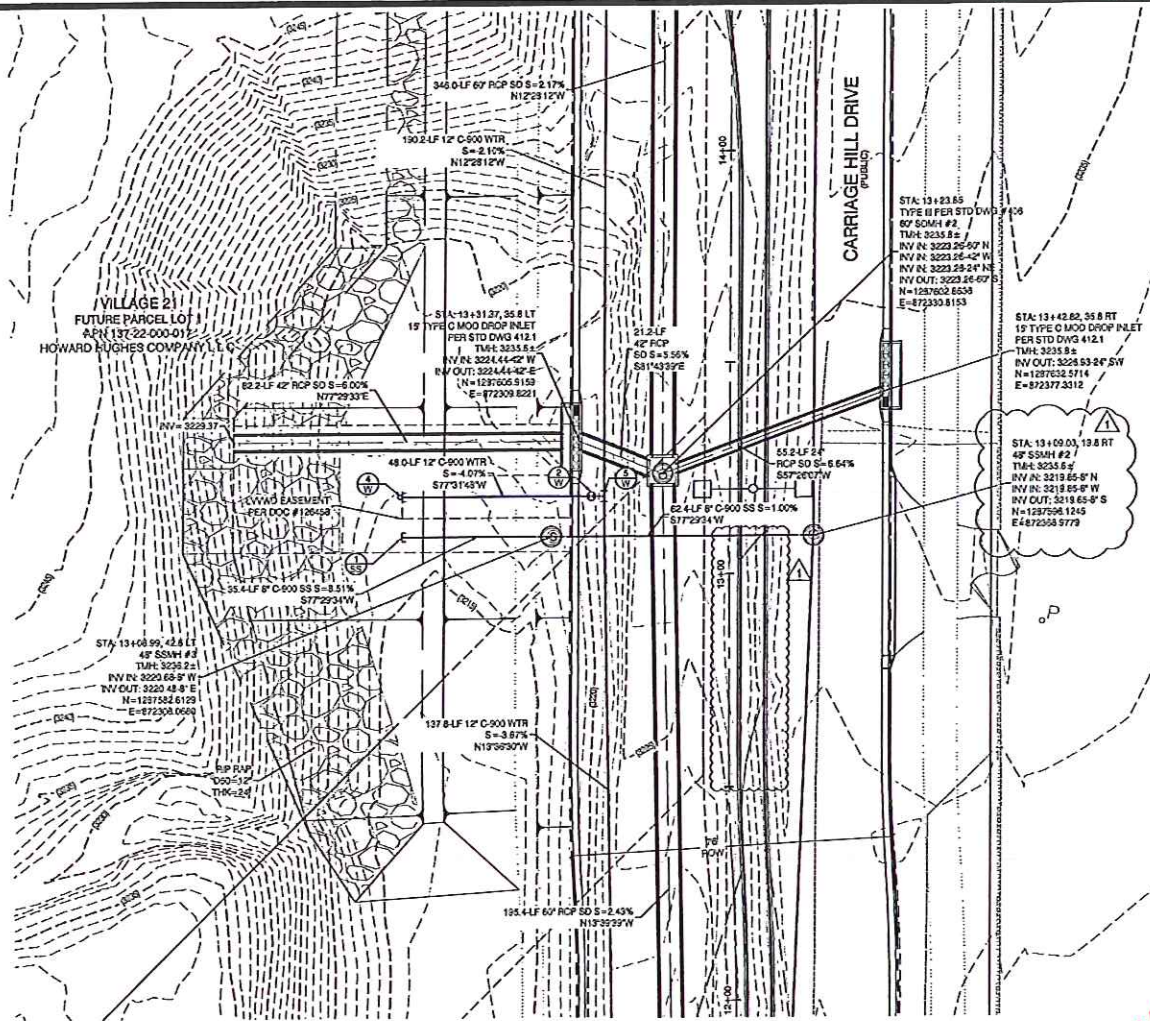
*Refer to Village 21 HEC-1 model

STREET FLOW ANALYSIS SUMMARY TABLE

Section	Discharge (cfs)	Slope (%)	Velocity (fps)	Depth (ft)	V x D	Tributary Basins
1	9.5	2.10%	3.42	0.35	1.20	1/2 CARR3
2	9.5	2.10%	3.72	0.35	1.30	1/2 CARR3

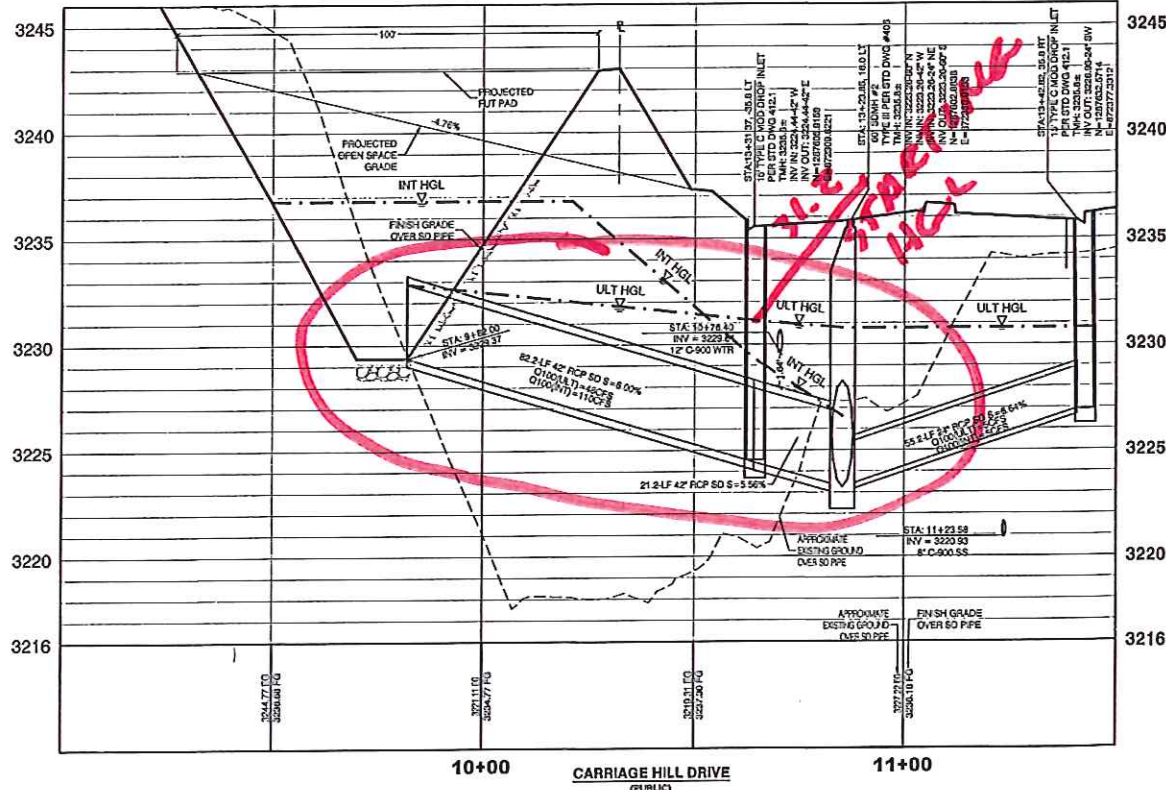
0.35' DEEP
IN CARRIAGE
HILL

THE HOWARD HUGHES CORPORATION 1000 WEST CHARLESTON BLVD., 3RD FLOOR LAS VEGAS, NEVADA 89105		2777 SOUTH RANDOLPH BOULEVARD LAS VEGAS, NEVADA 89146-5148 PH: (702) 875-7500 FAX: (702) 382-2527 WEB: WWW.VTNV.COM CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS	
FIGURE 8: ULTIMATE CONDITION BASIN MAP		SUMMERLIN WEST VILLAGE 21 CARRIAGE HILL DRIVE - FAR HILLS TO EAST WEST COLLECTOR	
DRAWN BY: JVA	DESIGNED BY: JVA	CHECKED BY: WJA	PROJECT NO: 7100
DATE: 8/20/17		SCALE: HORIZ. VERT.	
SHEET FIG 8 OF SHEETS			
DRAWING NO.			



CARRIAGE HILL DRIVE
(PUBLIC)

PROFILE SCALES:
HORIZ. = 1"=20'
VERT. = 1"=4'



42" RCP
DESIGNED
FOR 51 CFS
(ULTIMATE)
AND
110 CFS
(INTERIM)

SOUTHWEST GAS CONSTRUCTION NOTES

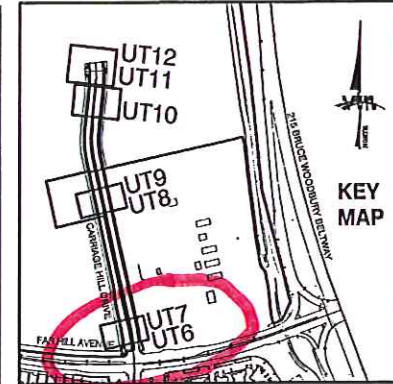
- IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-0003
- THERE SHALL BE A MINIMUM HORIZONTAL AND VERTICAL CLEARANCE OF 12-INCHES BETWEEN NATURAL GAS STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS AND ELECTRIC
- FOR VALVE ADJUSTMENT CONTACT 702-662-6197 48 HOURS PRIOR TO CONSTRUCTION
- IN THE EVENT OF A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2009

SOUTHWEST GAS CORPORATION DATE

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

1-702-227-2929

Call before you Dig
Underground
1-702-227-2929



DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE, CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS, BASE WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER B.L.B. OR FLAT STRIP, (NYLON, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL).

WATER PRESSURE ZONE:

WATER SERVICE LOCATED IN THE 3435 PRESSURE ZONE.

WATER MAIN COVER NOTE:

ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.04

WATERLINE TRENCH NOTE:

CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE

INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE NO. 15

FIRE HYDRANT MARKER NOTES

BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

- ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
- ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 18' FROM FACE OF CURB ON HYDRANT SIDE.

LAS VEGAS FIRE & RESCUE APPROVAL

BY: *[Signature]* DATE: 11/5/18

APPROVAL OF THESE PLANS SHALL NOT BE CONSIDERED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW - GPM AT 20 P.S.I. PRESSURE.

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983, SAID MERIDIAN BEING COINCIDENT WITH 114°59' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FT/US)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR

STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°15'00"

LONGITUDE OF CENTRAL MERIDIAN: 114°59'00"

NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FT/US)

EASTING AT CENTRAL MERIDIAN: 300,000.00 M (984,253.0000 FT/US)

SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:

- ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.
- GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD83)

CITY OF LAS VEGAS BENCHMARK: D369 (REVISED 2008)

NAVD88 ELEVATION: 699.574 METERS (2,295.03 FEET)

END UDACS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN, T215.R55.S03

CONSTRUCTION NOTES	
WATER	PUBLIC
1. FIRE HYDRANT ASSEMBLY, INCLUDING 12" TEE WITH 6" G.V. (PER UDACS PLATE 30 & 43)	5 EA.
2. 8" GATE VALVE (PER UDACS PLATE 30 & 39)	1 EA.
3. 12" GATE VALVE (PER UDACS PLATE 30 & 39)	8 EA.
4. 12" CAP & BLOW OFF (PER UDACS PLATE 30)	4 EA.
5. 12" X 12" TEE (PER UDACS PLATE 31)	4 EA.
6. 12" TEE (PER UDACS PLATE 31)	1 EA.
7. 12" 5' VERTICAL BEND (PER UDACS PLATE 31)	2 EA.
8. 12" 5' BEND (PER UDACS PLATE 31)	9 EA.
9. 12" 11.25' BEND (PER UDACS PLATE 31)	4 EA.
10. 12" 22.5' VERTICAL BEND (PER UDACS PLATE 31)	2 EA.
11. 12" 45' BEND (PER UDACS PLATE 31)	4 EA.
12. 1.5" TYPE K SOFT COPPER WATER LATERAL SERVICE WITH 1.5" METER PER UDACS PLATE 4 (FOR GATE) AND 1.5" RPPA PER UDACS PLATE 8	2 EA.
13. 8" CAP & BLOW OFF (PER UDACS PLATE 30)	1 EA.
14. 12" 45' VERTICAL BEND (PER UDACS PLATE 31)	4 EA.
15. 12" 0.500 WATER MAIN PER UDACS 2.06.01 & PLATE 17	1,878 LF.
16. 8" C 900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	92 LF.
17. 6" C 900 WATER MAIN PER UDACS 2.06.01 & PLATE 17	39 LF.
18. 1.5" COPPER WATER PER UDACS 2.06.01 & PLATE 17	77 LF.
WATER POINT OF CONNECTION	

CONSTRUCTION NOTES	
SEWER	PUBLIC PRIVATE
1. STANDARD MANHOLE PER SD-1A & 1B	7 EA. 0 EA.
2. 8" C 900 SANITARY SEWER MAIN	1,192 LF. 0 LF.
3. 8" SEWER CAP (PER STD 4.6 & 4.11)	2 EA. 0 EA.
SEWER POINT OF CONNECTION	

WATER MAIN JOINT DEFLECTION

PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

UTILITY CROSSING NOTE:

ALL SEWER, STORM DRAIN, CROSSING WATER LINES MUST CONFORM TO SECTION 2.02 OF UDACS DESIGN AND CONSTRUCTION STANDARDS FOR PORTAL, WATER SYSTEMS (UDACS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES.

ENGINEER DISCLAIMER NOTE:

UTILITY LOCATIONS SHOWN HERE ON 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 AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

LAS VEGAS VALLEY WATER DISTRICT APPROVAL

APPROVED FOR CONSTRUCTION

[Signature] 11-7-18

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. 12458 FIRST APPROVED DATE: 8/22/18

LVWD APPROVED FIRE FLOW 2,500 GPM AT 20 P.S.I. PRESSURE 10-7-18

DESIGNED BY: JDC	CHECKED BY: JDC	PROJECT NO. 12458	SCALE: 1"=20' HORIZ. 1"=4' VERT.
DATE: 10/22/2018	DATE: 10/22/2018	PROJECT NO. 12458	SCALE: 1"=20' HORIZ. 1"=4' VERT.
DESIGNED BY: JDC	CHECKED BY: JDC	PROJECT NO. 12458	SCALE: 1"=20' HORIZ. 1"=4' VERT.
DATE: 10/22/2018	DATE: 10/22/2018	PROJECT NO. 12458	SCALE: 1"=20' HORIZ. 1"=4' VERT.

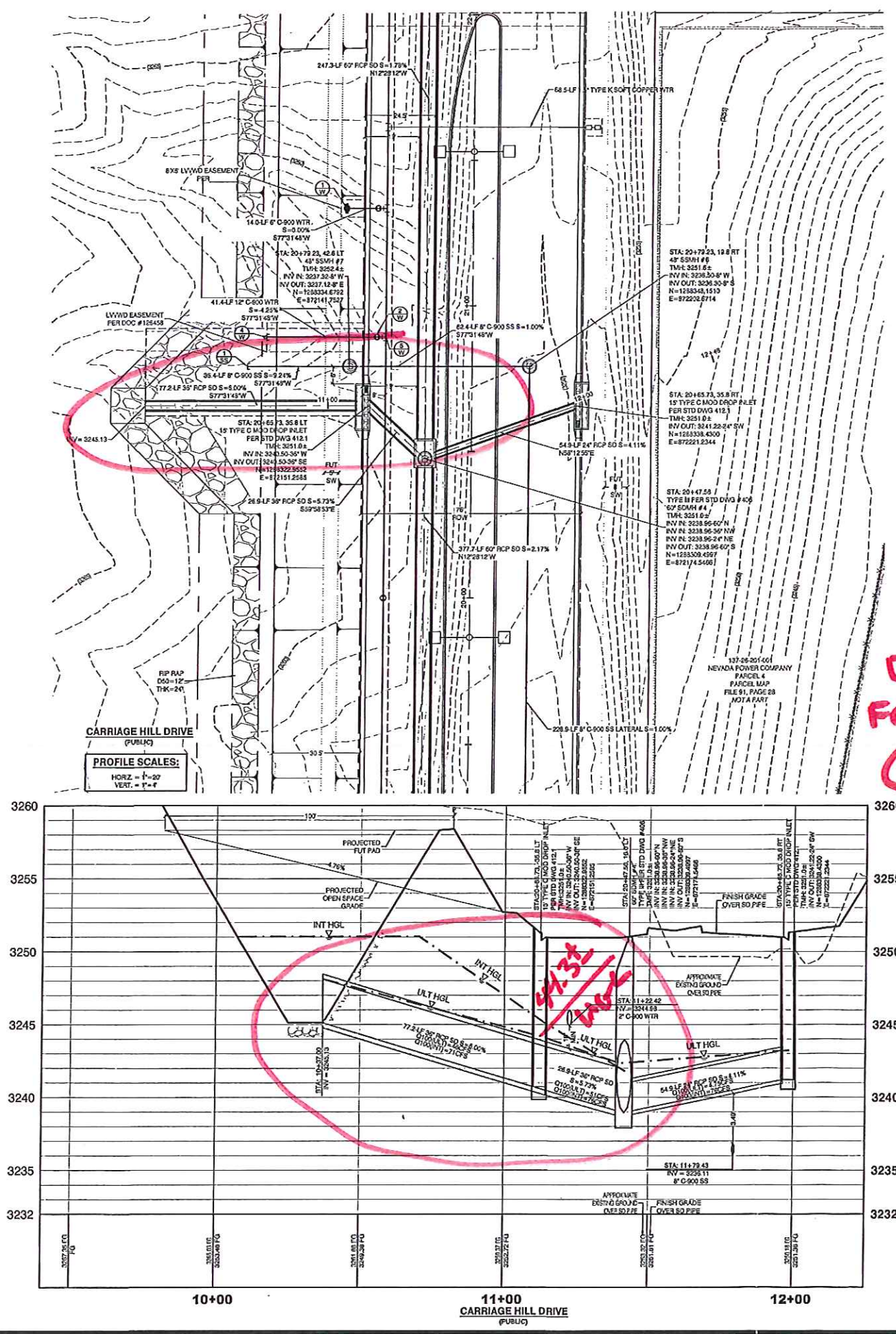
UT6

20 OF 42 SHEETS

DRAWING NO. L18-00888

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY
10001 W CHARLESTON BLVD SUITE 300
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS
2727 SOUTH RANDOLPH BOULEVARD
LAS VEGAS, NEVADA 89146-5146
PH: 702-676-7600 FAX: 702-305-3597 WEB: WWW.VTNV.COM
CONSULTING ENGINEERS & PLANNERS • LAND SURVEYORS



36" RCP
DESIGNED
FOR 54 CFS
(ULTIMATE)

71 CFS
(INTERIM)

SOUTHWEST GAS CONSTRUCTION NOTES

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-499-6029
2. THERE SHALL BE A MINIMUM HORIZONTAL AND VERTICAL CLEARANCE OF 18 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 702-668-6102 48 HOURS PRIOR TO CONSTRUCTION
4. IN THE EVENT OF A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2099

SOUTHWEST GAS CORPORATION DATE

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

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

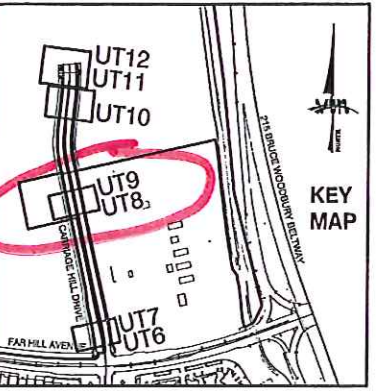
Call before you Dig
Avoid cutting underground utility lines. It's costly.

1-702-227-2929

1-800-221-2630
1-702-455-8000
CLARK COUNTY TRAFFIC OPERATIONS

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

1-702-227-2929



- DROP INLET NOTE**
WHERE 12 FEET PARALLEL SEPARATION IS NOT PRACTICABLE, CAST-IN-PLACE MONOLITHIC POLY WITH WATERSTOP BETWEEN SLAB AND WALLS, BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP. (NYLON, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUIVALENT)
- WATER PRESSURE ZONE:**
WATER SERVICE LOCATED IN THE 3405 PRESSURE ZONE.
- WATER MAIN COVER NOTE:**
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08
- WATERLINE TRENCH NOTE:**
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.
- WATER LINE MARKER BALLS NOTE**
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE NO. 15
- FIRE HYDRANT MARKER NOTES**
BLUE COLORED REFLECTIVE PAISED PAYMENT MARKERS ARE TO BE INSTALLED:
1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 8' FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 18' FROM FACE OF CURB ON HYDRANT SIDE.
- LAS VEGAS FIRE & RESCUE APPROVAL**
BY: *[Signature]* DATE: 11/5/19
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 OR COUNTY LAWS. THE FLOW --- GPM AT 20 P.S.I. RESIDUAL.

CONSTRUCTION NOTES		
WATER	PUBLIC	PRIVATE
1. FIRE HYDRANT ASSEMBLY, INCLUDING 12\"/>	5 EA.	
2. 8\"/>	1 EA.	
3. 12\"/>	8 EA.	
4. 12\"/>	4 EA.	
5. 12\"/>	4 EA.	
6. 12\"/>	1 EA.	
7. 12\"/>	2 EA.	
8. 12\"/>	9 EA.	
9. 12\"/>	4 EA.	
10. 12\"/>	2 EA.	
11. 12\"/>	4 EA.	
12. 12\"/>	2 EA.	
13. 12\"/>	4 EA.	
14. 12\"/>	2 EA.	
15. 12\"/>	1 EA.	
16. 12\"/>	4 EA.	
17. 12\"/>	1,878 LF.	
18. 8\"/>	92 LF.	
19. 8\"/>	39 LF.	
20. 1\"/>	77 LF.	
WATER POINT OF CONNECTION		

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983, SAID MERIDIAN BEING COINCIDENT WITH 114°52' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)
DATUM (REFERENCE FRAME): NAD 83 (G111) EPOCH 2010.00
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)
ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°15'00\"/>

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.
2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1983 (NAVD83)
CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD83 ELEVATION: 993.574 METERS (3,260.63 FEET)
PVD USCGS D-50 SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. 1215.576E, 503

CONSTRUCTION NOTES		
SEWER	PUBLIC	PRIVATE
1. STANDARD MANHOLE PER 50-1A & 1B	7 EA.	0 EA.
2. 8\"/>	1,192 LF.	0 LF.
3. 8\"/>	2 EA.	0 EA.
SEWER POINT OF CONNECTION		

WATER MAIN JOINT DEFLECTION
PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.
FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITNESS SHALL BE USED.

UTILITY CROSSING NOTE:
ALL SEWER/STORM DRAIN CROSSING WATER LINES MUST CONFORM TO SECTION 2.22 OF UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR PORTABLE WATER SYSTEMS (UDACS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES.

ENGINEER 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 AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES 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.

LAS VEGAS VALLEY WATER DISTRICT APPROVAL

APPROVED FOR CONSTRUCTION

[Signature] 11-7-19

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO: 125458 FIRST APPROVED DATE: 8/20/18

LIVVWD APPROVED FIRE FLOW 8,225 GPM AT 20 PSI RESIDUAL

107V 7399

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY

CITY OF LAS VEGAS

UTILITY PLAN & PROFILE 8

SUMMERLIN WEST VILLAGE 21
CARRIAGE HILL DRIVE

DESIGNED BY: 10/25/2017

CHECKED BY: 07/27/2018

PROJECT NO: 125458

SCALE: 1\"/>

DATE: 10/31/18

SHEET
UT8
22 OF 42 SHEETS

DRAWING NO.
L18-00888

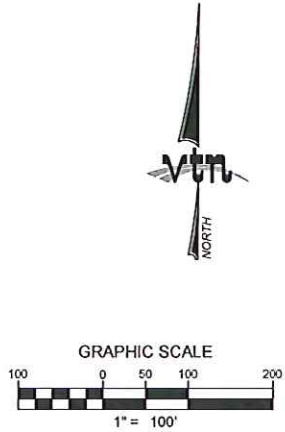
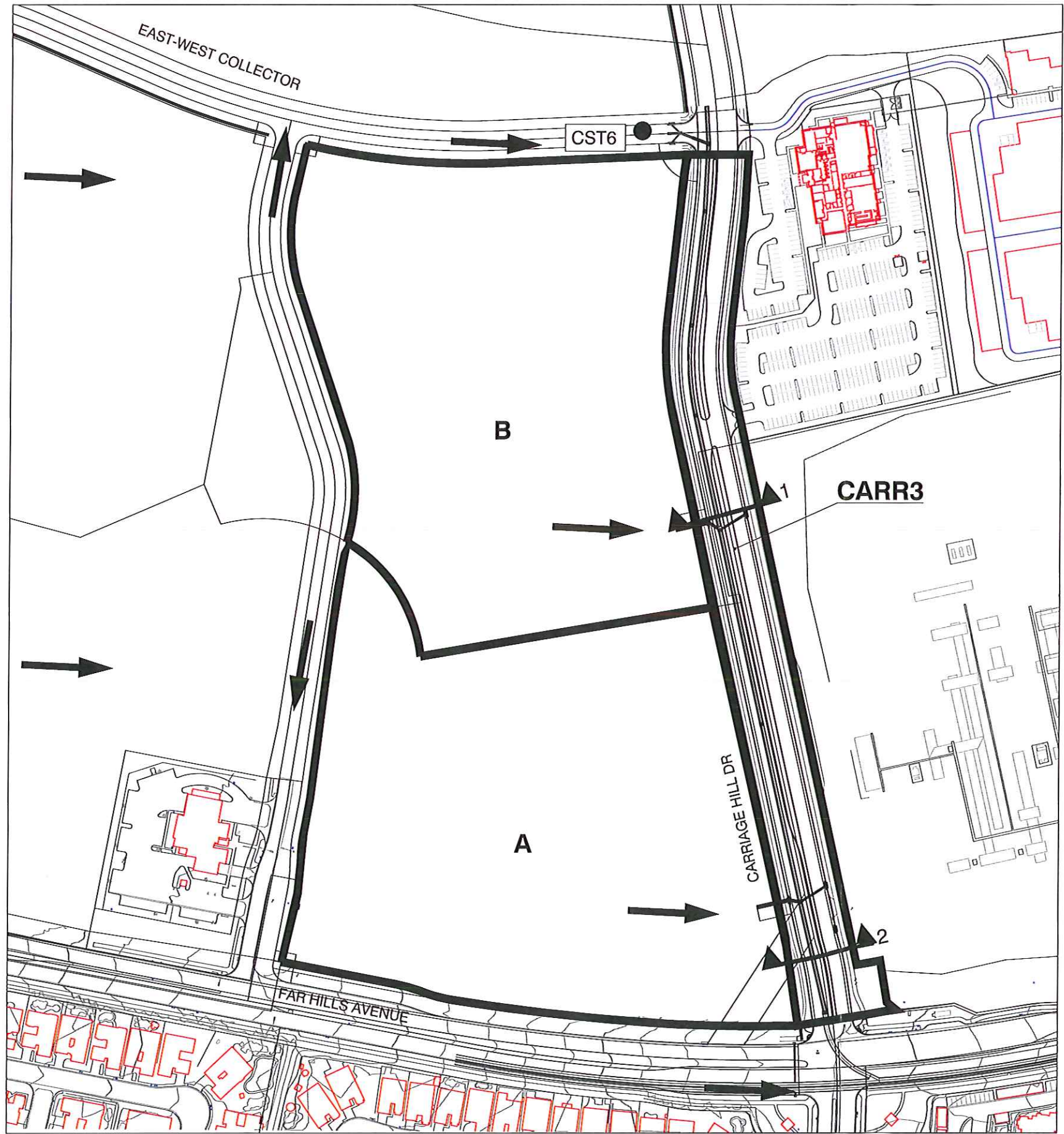
REVISION

NO.	DATE	DESCRIPTION
1	08/27/2018	ISSUED FOR PERMIT
2	10/25/2017	DESIGNED
3	07/27/2018	CHECKED

WILLIAM J. MEYER
REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA
No. 18745
10/31/18

PROJECT: Carriage Hill Drive, Summerlin West Village 21, Las Vegas, NV 89135

PROJECT NO: 125458-A QS:137-03-NW



LEGEND

- BASIN BOUNDARY
- BASIN DESIGNATION
- CROSS SECTION
- CONCENTRATION POINT

ULTIMATE CONDITION HEC-1 SUMMARY TABLE*		
BASIN ID	AREA (ac)	Q100 (CFS)
CST6	-	66
B	13.78	48
A	14.65	48
CARR3	4.85	19

*Refer to Village 21 HEC-1 model

STREET FLOW ANALYSIS SUMMARY TABLE						
Section	Discharge (cfs)	Slope (%)	Velocity (fps)	Depth (ft)	V x D	Tributary Basins
1	9.5	2.10%	3.42	0.35	1.20	1/2 CARR3
2	9.5	2.10%	3.72	0.35	1.30	1/2 CARR3

THE HOWARD HUGHES CORPORATION
1001 WEST CHARLESTON BLVD. 3RD FLOOR
LAS VEGAS, NEVADA 89135

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH: (702) 873-7358 FAX: (702) 962-2597 WEB: WWW.VTHNV.COM
CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS

FIGURE 8:
ULTIMATE CONDITION BASIN MAP

SUMMERLIN WEST VILLAGE 21
CARRIAGE HILL DRIVE - FAR HILLS
TO EAST WEST COLLECTOR

DRAWN BY:
JVA 6/2017

DESIGNED BY:
JVA 6/2017

CHECKED BY:
WJM 6/2017

PROJECT NO:
7600

SCALE:
HORIZ: ###
VERT: ###

SHEET
FIG 8
OF SHEETS

DRAWING NO.

H:\2016\Carriage Hill Drive\South\Drainage\A Figures\Figure 8 - Ultimate Drainage Map.dwg

FAR HILLS TO STREET A
APN: 137-26-299-002 & 137-26-399-015
CITY OF LAS VEGAS
STATE OF NEVADA

FUTURE S.I.D. PROJECT

E S.I.D. PROJECT

LOCATION MAP
N.T.S.

SHEET #	SHEET	DESCRIPTION
42-A	SWG1	SWG COVER SHEET
42-B	SWG2	SWG ABBREVIATIONS AND NOTES
42-C	SWG3	SWG MATERIALS AND SIGNATURES-PF
42-D	SWG4	SWG DESIGN PLAN
42-E	SWG5	SWG DESIGN PLAN
42-F	SWG6	SWG DESIGN PLAN
42-G	SWG7	SWG DETAILS & E
42-H	SWG8	SWG TYPICAL SWPPP EMP'S DETAILS



Call
before you
Underground

1-800-45-5111
CLARK COUNTY TRADING CORPORATION
AND
1-800-738-5111

USE OTHER OFFICE TELEPHONES TRADING EXCH.

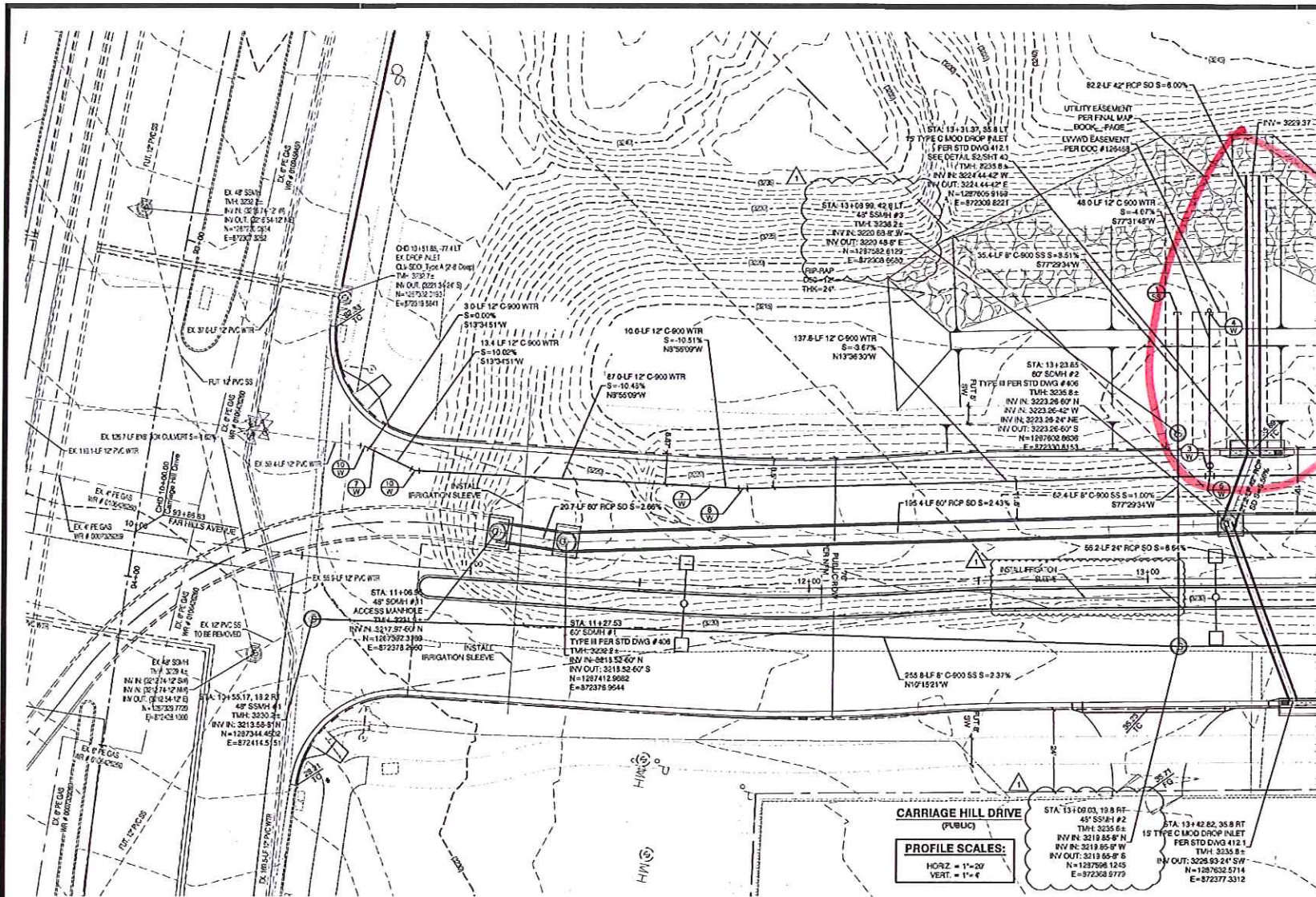
1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6030
2. THERE SHALL BE A MINIMUM HORIZONTAL AND VERTICAL CLEARANCE OF 12 FEET BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND FACILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRIC.
3. FOR VALVE ADJUSTMENT CONTACT 702-668-6107 48 HOURS PRIOR TO CONSTRUCTION
4. IN THE EVENT OF A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES, CONTACT 702-355-2099



BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988
(NAVD88)
CITY OF LAS VEGAS BENCHMARK: 0368 (REVISED 2008)
NAVD88 ELEVATION: 909.574 METERS (3,248.63 FEET)
FIND USCGS DISC SET IN ROCK RIDGE 150' SOUTH OF
CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S, R09E, S03

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY

		DRAWN BY: DDH	10/25/2017
DESIGNED BY: DDH		10/22/2017	
CHECKED BY: WJM		05/25/2018	
PROJECT NO: 7851		SCALE: 1" = 50'	HORIZ. 1" = 50'
SHEET CV		1 OF 47 SHEETS	



MATCHLINE - STA 04+75
SEE SHEET UT2

42" RCP

Call before you Dig
Avoid cutting underground utility lines. It's costly.
1-702-227-2929
CLARK COUNTY TRAFFIC DEPARTMENT

Call before you Dig
Underground
1-702-227-2929
CLARK COUNTY TRAFFIC DEPARTMENT

SOUTHWEST GAS DISCLAIMER:
DISCLAIMER: THE DATA CONTAINED HEREIN IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. SOUTHWEST GAS CORPORATION MAKES NO WARRANTIES AND DOES NOT GUARANTEE THE CORRECTNESS, COMPLETENESS, OR UTILITY STATUS FOR ANY LOSS OR DAMAGE, HOWEVER ARISING, FROM THE USE OF OR RELIANCE ON THE DATA PROVIDED. THE FIELD LOCATION AND DEPTH OF ALL SOUTHWEST GAS FACILITIES SHOULD BE VERIFIED.
INITIAL: MAP DATE: 12/15/2016

DROP INLET NOTE
WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE: CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS. BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOP, CENTER BULB, OR FLAT STRIP, (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL).

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3435 PRESSURE ZONE.

WATER MAIN COVER NOTE:
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDCAS SECTION 2.08.

FIRE HYDRANT MARKER NOTES
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:
1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 8 FEET FROM FACE OF CURB ON HYDRANT SIDE.
2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 18 FEET FROM FACE OF CURB ON HYDRANT SIDE.

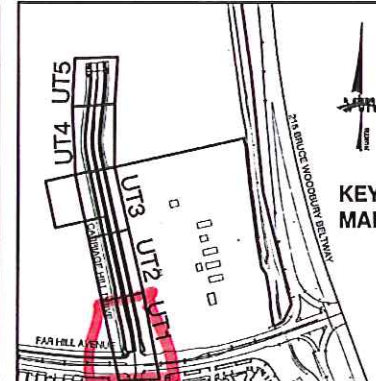
DEPTH OF COVER DURING CONSTRUCTION
MAINTAIN MINIMUM TWENTY FOUR (24) INCH COVER PER UDCAS SECTION 2.08 (4) GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

LAS VEGAS FIRE & RESCUE APPROVAL
BY: [Signature] DATE: 11/5/18
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 OR COUNTY LAWS. FIRE FLOW = 600 GPM AT 20 PSI. RES DUAL.

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983. SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.
LINEAR UNIT: US SURVEY FOOT (FT/US)
DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)
ZONE: LAS VEGAS HIGH ELEVATION ZONE
PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL AND LATITUDE OF GRID ORIGIN: 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.333 FT/US)
EASTING AT CENTRAL MERIDIAN: 300,000.00 M (984,250.000 FT/US)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)
NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO GROUND DISTANCES IN THE PROJECT AREA.
2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAV88)
CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2000)
NAV88 ELEVATION: 980.574 METERS (3,216.63 FEET)
FIND USACGS DISC SET IN ROCK RIDGE 150 SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. 1219.695.503

SOUTHWEST GAS CONSTRUCTION NOTES
1. IN THE EVENT OF A NATURAL GAS EMERGENCY CALL 911 AND 1-877-666-6600.
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 PRIOR TO CONSTRUCTION.
3. FOR VALVE ADJUSTMENT CONTACT 702-668-8107 48 HOURS PRIOR TO CONSTRUCTION.
4. IN THE EVENT OF A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-366-2099.



CONSTRUCTION NOTES

	WATER	PUBLIC
1	FIRE HYDRANT ASSEMBLY, INCLUDING 12" TEE WITH 8" G.V. (PER UDCAS PLATE 30 & 43)	5 EA
2	8" GATE VALVE (PER UDCAS PLATE 30 & 35)	1 EA
3	12" GATE VALVE (PER UDCAS PLATE 30 & 35)	8 EA
4	12" CAP & BLOW OFF (PER UDCAS PLATE 30)	4 EA
5	12" X 12" TEE (PER UDCAS PLATE 31)	4 EA
6	12" X 12" TEE (PER UDCAS PLATE 31)	1 EA
7	12" X 12" VERTICAL BEND (PER UDCAS PLATE 31)	2 EA
8	12" X 12" BEND (PER UDCAS PLATE 31)	9 EA
9	12" X 12" BEND (PER UDCAS PLATE 31)	4 EA
10	12" X 22" VERTICAL BEND (PER UDCAS PLATE 31)	2 EA
11	12" X 45" BEND (PER UDCAS PLATE 31)	4 EA
12	1" TYPE K SOFT COPPER WATER LATERAL SERVICE WITH 1.5" METER PER UDCAS PLATE 4 (PER UDCAS PLATE 4)	2 EA
13	8" CAP & BLOW OFF (PER UDCAS PLATE 30)	1 EA
14	12" X 12" VERTICAL BEND (PER UDCAS PLATE 31)	4 EA
15	12" C-900 WATER MAIN PER UDCAS 2.06 01 & PLATE 17	1287 LF.
16	8" C-900 WATER MAIN PER UDCAS 2.06 01 & PLATE 17	92 LF.
17	6" C-900 WATER MAIN PER UDCAS 2.06 01 & PLATE 17	39 LF.
18	1.5" COPPER WATER PER UDCAS 2.06 01 & PLATE 17	77 LF.
19	WATER POINT OF CONNECTION	

CONSTRUCTION NOTES

	SEWER	PUBLIC	PRIVATE
1	STANDARD MAN-HOLE PER 50-1A & 1B	7 EA	0 EA
2	8" C-900 SANITARY SEWER MAIN	1,192 LF.	0 LF.
3	8" SEWER CAP (PER STD 4.8 & 11)	2 EA	0 EA
4	SEWER POINT OF CONNECTION		

ENGINEER 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 AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES 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.

WATER MAIN JOINT DEFLECTION
PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDCAS 2.07 01 AND 2.07 02.
FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

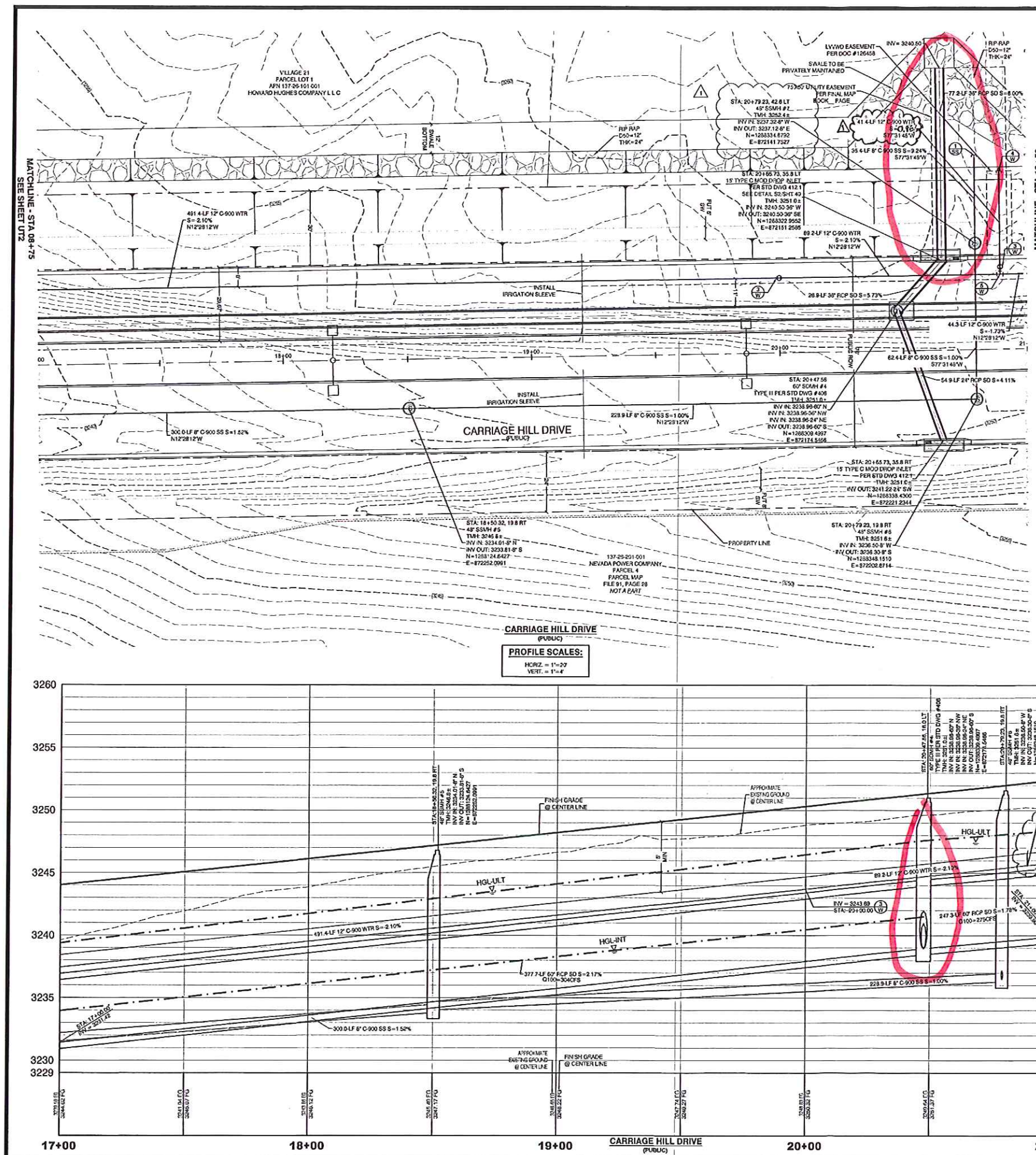
UTILITY CROSSING NOTE:
ALL SEWER/STORM DRAIN CROSSING WATER LINES MUST CONFORM TO SECTION 2.22 OF UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR PORTABLE WATER SYSTEMS (UDCAS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES.

LAS VEGAS VALLEY WATER DISTRICT APPROVAL
APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO: 126458-A FIRST APPROVED DATE: 8/20/2018
LVWD APPROVED FIRE FLOW 2,625 GPM AT 20 PSI RES DUAL 70 71 72 73 74

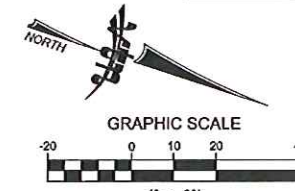
HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146
PH: (702) 735-7650 FAX: (702) 382-5899 WEB: WWW.HHCO.COM
CONSULTING ENGINEERS & PLANNERS & LAND SURVEYORS

UTILITY PLAN & PROFILE 1
CARRIAGE HILL DRIVE
00+25 TO 04+75
SUMMERLIN WEST VILLAGE 21
CARRIAGE HILL DRIVE

DESIGNED BY: 10/23/2017
CHECKED BY: 10/23/2017
DATE: 07/27/2018
SCALE: 1"=20'
PROJECT NO: 126458-A
SHEET: UT1
15 OF 42 SHEETS
L18-00888



36" RCP

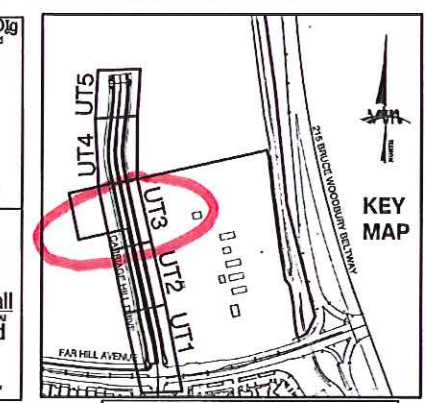


Call before you Dig
Avoid cutting underground utility lines. It's costly.

1-702-227-2929

Call before you Dig
Underground Utility Lines

1-702-227-2929



SOUTHWEST GAS CONSTRUCTION NOTES

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-600-0020.

2. THERE SHALL BE A MINIMUM HORIZONTAL AND VERTICAL CLEARANCE OF 12 FEET BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND FACILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS AND ELECTRIC PRIOR TO CONSTRUCTION.

3. FOR VALVE ADJUSTMENT CONTACT 702-668-6174 48 HOURS PRIOR TO CONSTRUCTION.

4. IN THE EVENT OF A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-305-2099.

SOUTHWEST GAS CORPORATION DATE

WATER PRESSURE ZONE:
WATER SERVICE LOCATED IN THE 3435 PRESSURE ZONE.

WATER MAIN COVER NOTE:
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER LDACS SECTION 2.08.

WATERLINE TRENCH NOTE:
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER LDACS PLATE NO. 17.

WATER LINE MARKER BALLS NOTE:
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER LDACS PLATE NO. 15.

FIRE HYDRANT MARKER NOTES

BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED:

1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 8" FROM FACE OF CURB ON HYDRANT SIDE.

2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 18" FROM FACE OF CURB ON HYDRANT SIDE.

LAS VEGAS FIRE & RESCUE APPROVAL

BY: *[Signature]* DATE: 11/5/18

APPROVAL OF THESE PLANS SHALL NOT BE CONSIDERED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS. FIRE FLOW — GPM AT 20 PSI RESIDUAL.

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983, SAGD MERIDIAN BEING CONCURRENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

LINEAR UNIT: US SURVEY FOOT (FTUS)

DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR

STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 39°15'00"N

LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W

NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.333 FTUS)

EASTING AT CENTRAL MERIDIAN: 300,000.00 M (984,250.000 FTUS)

SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:

1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.

2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVVDOS)

CITY OF LAS VEGAS BENCHMARK: D038 (REVISED 2008)

NAVDOS ELEVATION: 969.574 METERS (3180.63 FEET)

FIELD USGCS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN, T215, R56, S33

CONSTRUCTION NOTES

	WATER	PUBLIC
1. FIRE HYDRANT ASSEMBLY, INCLUDING 12"X4" TEE WITH 6" G.V. (PER LDACS PLATE 35 & 43)	1 EA.	1 EA.
2. 6" GATE VALVE (PER LDACS PLATE 30 & 39)	1 EA.	1 EA.
3. 12" GATE VALVE (PER LDACS PLATE 30 & 39)	8 EA.	8 EA.
4. 12" CAP & BLOW OFF (PER LDACS PLATE 30)	4 EA.	4 EA.
5. 12"X12" TEE (PER LDACS PLATE 31)	4 EA.	4 EA.
6. 12"X3" TEE (PER LDACS PLATE 31)	1 EA.	1 EA.
7. 12" 5' VERTICAL BEND (PER LDACS PLATE 31)	2 EA.	2 EA.
8. 12" 6" BEND (PER LDACS PLATE 31)	9 EA.	9 EA.
9. 12" 11.25" BEND (PER LDACS PLATE 31)	4 EA.	4 EA.
10. 12" 22.5" VERTICAL BEND (PER LDACS PLATE 31)	2 EA.	2 EA.
11. 12" 45" BEND (PER LDACS PLATE 31)	4 EA.	4 EA.
12. 1.5" TYPE K SOFT COPPER WATER LATERAL, SERVICE WITH 1.5" WETER PER LDACS PLATE 4 (PER 3/10/08) AND 1.5" RPPA PER LDACS PLATE 8	2 EA.	2 EA.
13. 6" CAP & BLOW OFF (PER LDACS PLATE 30)	1 EA.	1 EA.
14. 12" 45" VERTICAL BEND (PER LDACS PLATE 31)	4 EA.	4 EA.
15. 12" C-900 WATER MAIN PER LDACS 2.06 01 & PLATE 17	1,878 LF.	
16. 8" C-900 WATER MAIN PER LDACS 2.06 01 & PLATE 17	92 LF.	
17. 6" C-900 WATER MAIN PER LDACS 2.06 01 & PLATE 17	39 LF.	
18. 1.5" COPPER WATER PER LDACS 2.06 01 & PLATE 17	77 LF.	

WATER POINT OF CONNECTION

CONSTRUCTION NOTES

	SEWER	PUBLIC	PRIVATE
1. STANDARD MANHOLE PER SD-1A & 1B	7 EA.	0 EA.	0 EA.
2. 8" C-900 SANITARY SEWER MAIN	1,192 LF.	0 LF.	0 LF.
3. 8" SEWER CAP (PER STD 4.6 & 4.11)	2 EA.	0 EA.	0 EA.

SEWER POINT OF CONNECTION

WATER MAIN JOINT DEFLECTION

PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADII OF CURVATURE OF 1,153 FEET, PER LDACS 2.07 01 AND 2.07 02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

UTILITY CROSSING NOTE:

ALL SEWER/STORM DRAIN CROSSING WATER LINES MUST CONFORM TO SECTION 2.02 OF UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR PORTABLE WATER SYSTEMS (LDACS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES.

ENGINEER 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 AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES 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.

LAS VEGAS VALLEY WATER DISTRICT APPROVAL

APPROVED FOR CONSTRUCTION

DATE: 11-7-18

PROJECT NO: 126458

LAST APPROVED DATE: 8/26/18

LWWD APPROVED FIRE FLOW 2.625 GPM AT 20 PSI RESIDUAL

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY
1600 W. CHARLESTON BLVD. SUITE 300
LAS VEGAS, NEVADA 89102
702-731-1400

CITY OF LAS VEGAS

UTILITY PLAN & PROFILE 3
CARRIAGE HILL DRIVE
08+75 TO 12+50

SUMMERLIN WEST VILLAGE 21
CARRIAGE HILL DRIVE

DESIGNED BY: 10/23/2017
CHECKED BY: 07/27/2018
PROJECT NO: 126458-A
SCALE: 1"=20' HORIZ. 1"=4' VERT.

WILLIAM J. MEYER
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEVADA
No. 15745
10/31/18

UT3
17 OF 42 SHEETS
DRAWING NO. L18-00888

PROJ: 126458-A, QS: 137-26-NW

Technical Drainage Study for

Summerlin West Village 21 Ridge Pine Street (Far Hills Avenue to Street A) *Las Vegas, Nevada*

Prepared for:

Howard Hughes Company, LLC

Submitted to:

City of Las Vegas
Public Works



CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		July 30, 2018
TO: Land Development Services Department of Building & Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	COPIES TO:	
Drainage Study for:	VTN Nevada	
Summerlin West Village 21 - Ridge Pine Street (Far Hills Avenue to Street A)		
Cross Streets:	Ridge Pine Street (Far Hills Ave. to Street A)	Howard Hughes Company, L.L.C.
File Number:	F:\Depot\DSMemos\DS6002B.doc	Bart Anderson, P.E., DevCo
Parcel Number:	137-26-101-001, 137-26-299-003, 137-26-399-016	
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 #
1 st Submittal	6/7/2018	6/11/2018 & 6/25/2018	Not Approved	\$400.00	483842 \$ ()
2 nd Submittal	7/18/2018	7/30/2018	See Comments Below	\$400.00	487228 \$ ()
TOTAL FEES (LDDRS):				\$800.00	

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.

- The project proposed to build temporary drainage facilities including drainage berms/swales along the west side of the proposed Ridge Pine Street. Prior to the final plans approval the developer must complete a **Maintenance & Liability Agreement** for the interim drainage improvements and post a minimum maintenance bond of \$50,000 or 50-percent of the construction cost for the improvements, whichever is greater. The engineer must submit an estimate of the quantities for constructing the facilities and an exhibit that adequately shows the location and limits of the drainage facilities to City Flood Control for approval. Once the drainage study is conditionally approved the engineer/developer should contact the City's Land Development Section (702-229-8371) to begin the agreement process.

In order for the maintenance bond to be released in the future, a drainage update/letter will be required to justify that the berm/swale are no longer necessary and can be removed.

- Since the street and the associated storm drain facilities will eventually be accepted by the City of Las Vegas, the engineer/developer must coordinate with City of Las Vegas Streets & Sanitation Department for their review and approval prior to the final acceptance of the subject improvement plans.

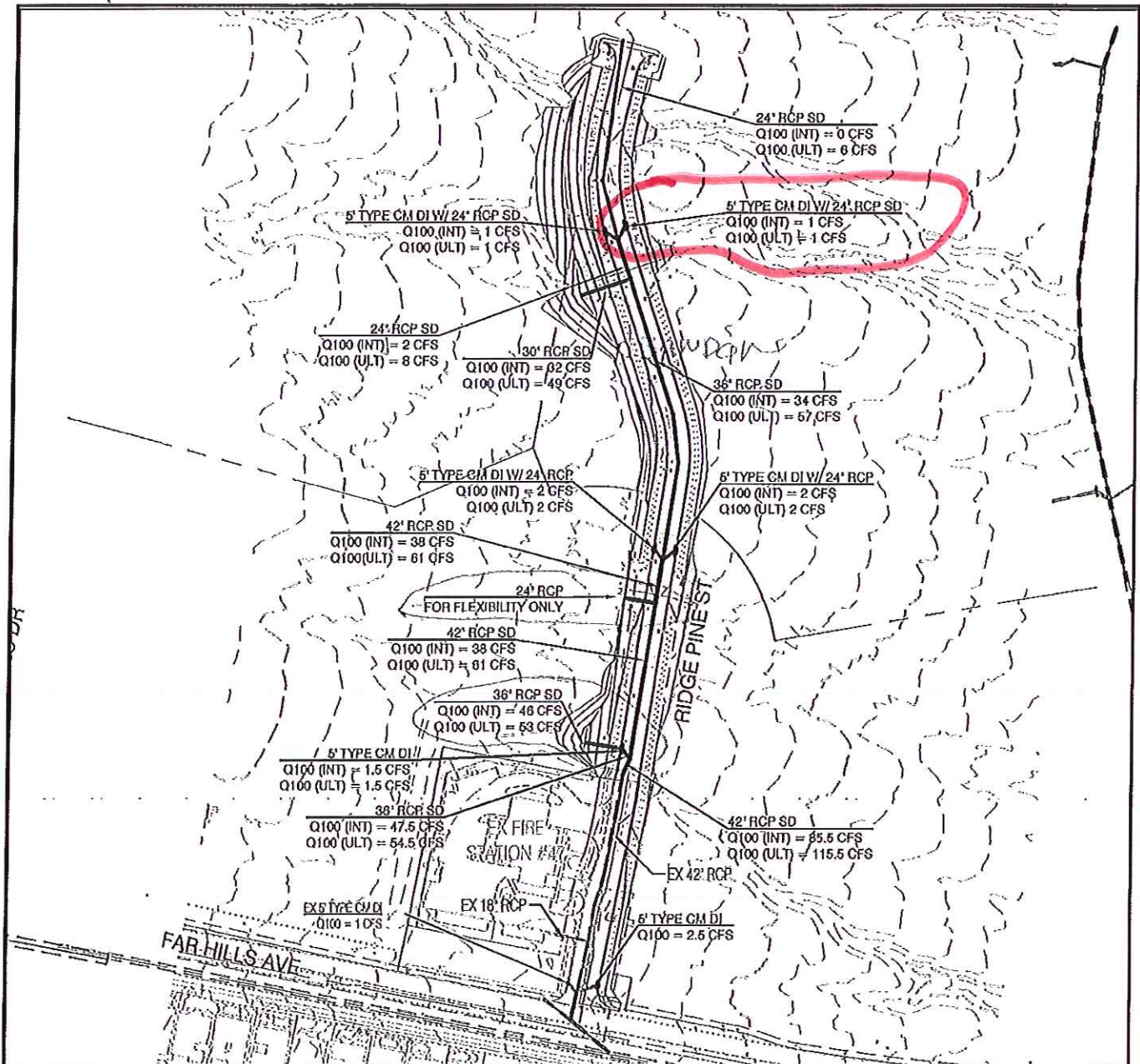
3. All offsite interim flood control facilities such as but not limited to berms / ditches and a temporary local minor sediment basin are privately owned and to be privately maintained by *Howard Hughes Company*.
4. Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (Stormwater Quality Management Stamp and Sign Detail).

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/bwpo/storm01.htm> or call (775) 687-9429.

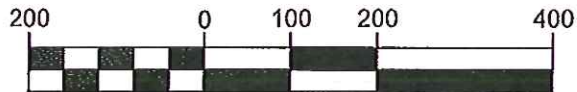
NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas Flood Control Section*. Additionally, conditional 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.

END OF REMARKS
WSP/AYS

T/R/S: T21S/R09E/S3&S4
AREA K-26



GRAPHIC SCALE



1" = 200'

H:\7851\Ridge Pine\Drawings\Figures\Figure 9 - Proposed Storm Drain.dwg

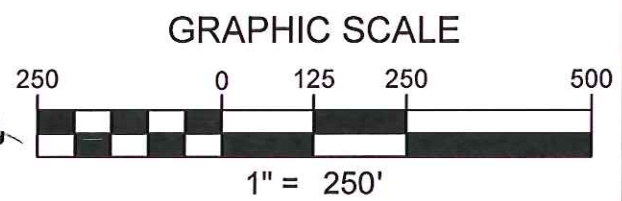
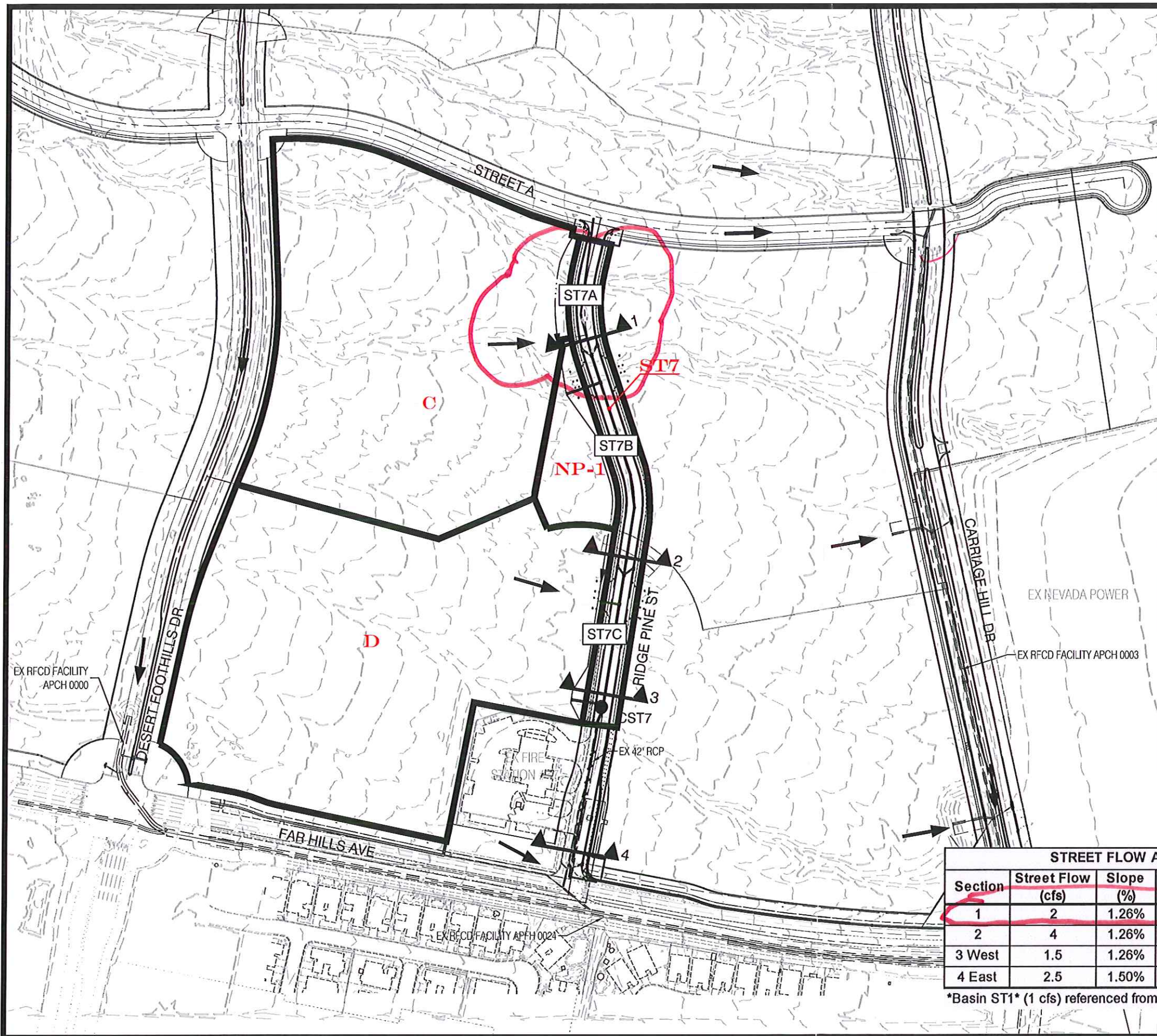


2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NV 89146-5148

FIGURE 9
PROPOSED STORM DRAIN FACILITY MAP

SUMMERLIN WEST VILLAGE 21
RIDGE PINE STREET

SCALE	HORZ.
	VERT.
W.O. NO.	7851-5.9
DRAWN BY:	JYA/ATM
DATE:	APRIL 2018
SHEET	OF



- LEGEND
- CONCENTRATION POINT
 - BASIN BOUNDARY
 - ST7** BASIN DESIGNATION
 - FLOW ARROW
 - CROSS SECTION
 - SUBBASIN BOUNDARY
 - OFFX1** BASIN DESIGNATION

ULTIMATE CONDITION HEC-1 SUMMARY TABLE*		
BASIN ID	AREA (ac)	Q100 (CFS)
C	14.05	44
NP-1	1.35	5
ST7	2.30	9
D	15.42	53
CST7	-	108

*Referenced from Master Study Village 21

PRORATED SUBBASIN SUMMARY			
BASIN ID	AREA (ac)	Q100 (cfs)	
ST7	2.30	9	
SUB BASIN	SUB AREA	SUB AREA	SUB Q100
ST7A	0.53	23%	2
ST7B	1.04	45%	4
ST7C	0.73	32%	3

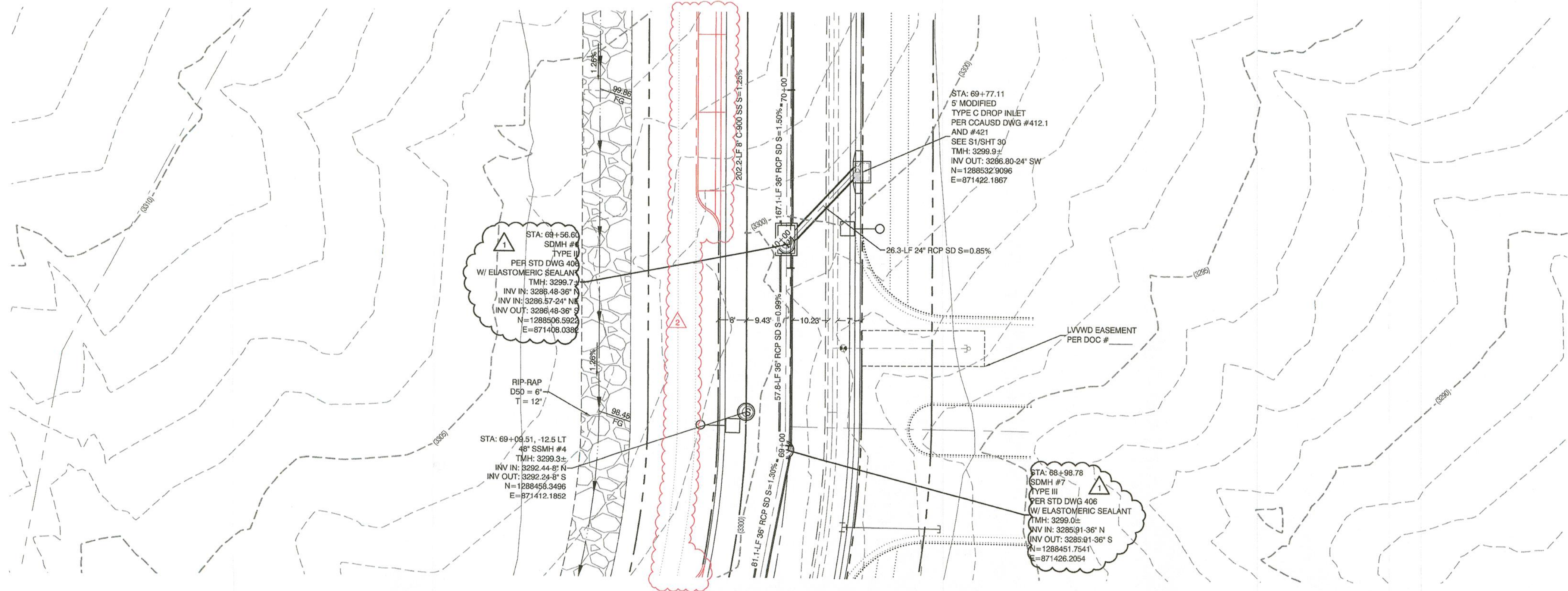
STREET FLOW ANALYSIS SUMMARY TABLE (100-YEAR)						
Section	Street Flow (cfs)	Slope (%)	Velocity (fps)	Depth (ft)	V x D	Tributary Basin & Q (cfs)
1	2	1.26%	2.01	0.26	0.52	ST7A (2)
2	4	1.26%	2.29	0.31	0.71	ST7B (4)
3 West	1.5	1.26%	2.16	0.29	0.63	1/2ST7C (1.5)
4 East	2.5	1.50%	2.57	0.32	0.82	ST7C (1.5), ST1* (1)

Basin ST1 (1 cfs) referenced from Fire Station Study

BELOW TC

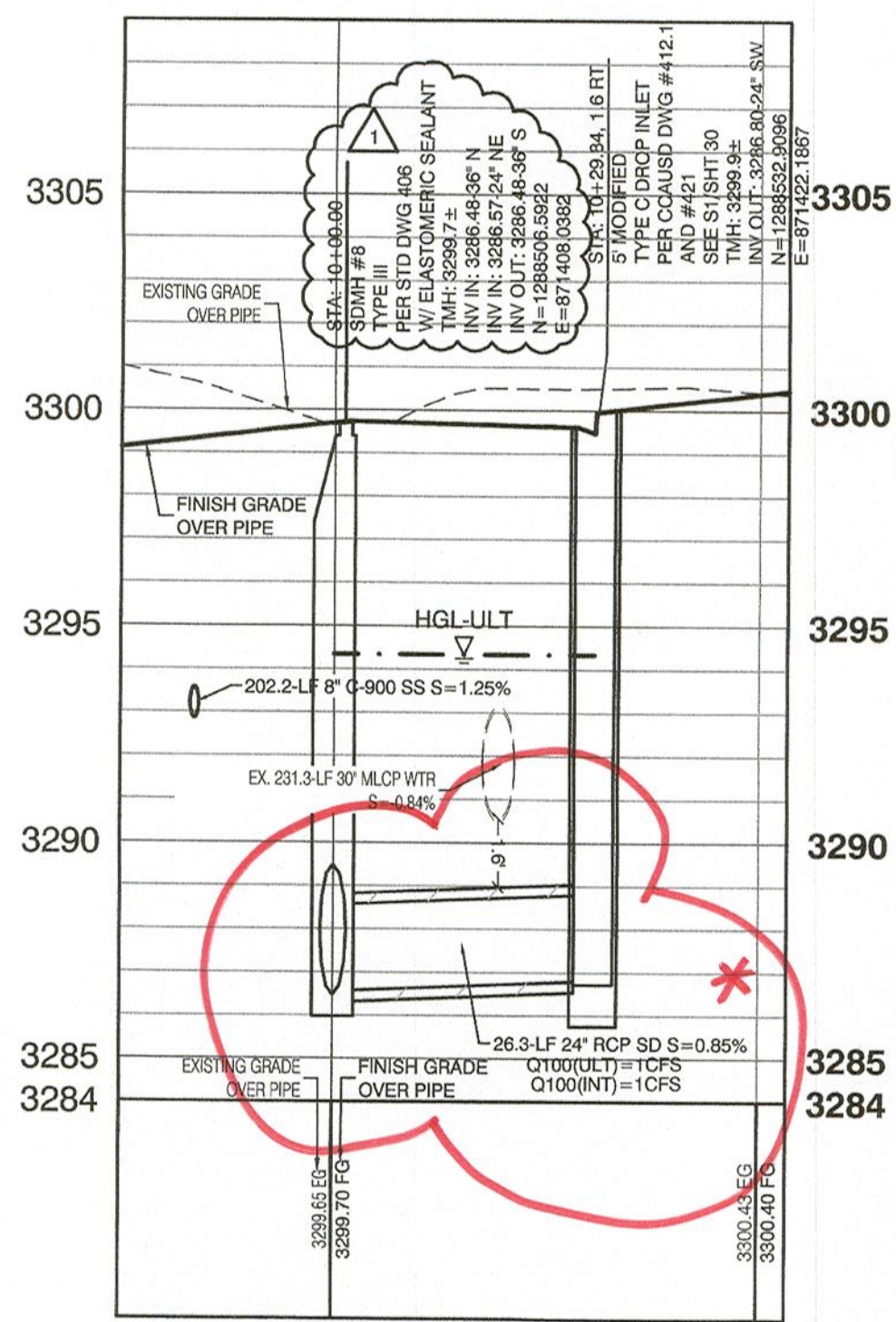
W.O.#:	7851-5.9
DATE:	04/2018
BY:	JYA/ATM
SCALE:	1" = 250'
SHEET	OF

FIGURE 8: ULTIMATE CONDITION BASIN MAP
SUMMERLIN WEST VILLAGE 21
RIDGE PINE STREET (FAR HILLS TO STREET A)



STA: 69+56.50
(PUBLIC)

PROFILE SCALES:
HORIZ. = 1"=20'
VERT. = 1"=4'



10+00

RIDGE PINE
(PUBLIC)

CONSTRUCTION NOTES		
SEWER	PUBLIC	
STANDARD MANHOLE PER SD-1A & 1B W / SINGLE 24" LID	5 EA.	
8" C900 SANITARY SEWER MAIN PER SD-17 OF DCSWCS	958 LF.	
6" SEWER CAP	3 EA.	
SEWER POINT OF CONNECTION		

SOUTHWEST GAS CONSTRUCTION NOTES	
1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6020	
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 A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2099	
SOUTHWEST GAS CORPORATION	DATE

Call before you Dig

Avoid cutting underground utility lines. It's costly.

Call

1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
OR
1-702-228-8811
LAS VEGAS AREA COMPREHENSIVE TRAFFIC SYSTEM

Call before you Dig

Avoid cutting underground utility lines. It's costly.

Call

1-800-227-2600
OR
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS

Call before you Dig

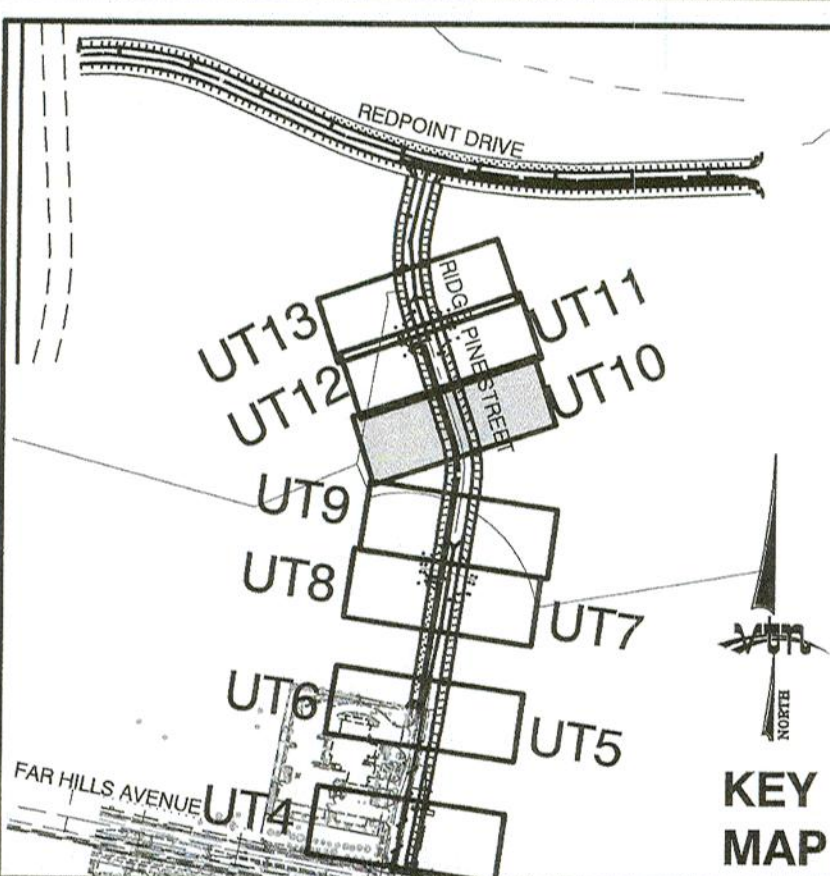
Avoid cutting overhead power lines. It's costly.

Call

1-702-227-2929

LAS VEGAS FIRE & RESCUE APPROVAL	
BY: _____	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 OR COUNTY LAWS. FIRE FLOW ---- GPM AT 20 P.S.I. RESIDUAL.	

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT: 135455 FIRST APPROVED DATE: _____



WATER PRESSURE ZONE:	
WATER SERVICE LOCATED IN THE 3435 PRESSURE ZONE.	
WATER MAIN COVER NOTE:	
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.09	
WATERLINE TRENCH NOTE:	
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.	
WATER LINE MARKER BALLS NOTE	
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE NO. 15	
FIRE HYDRANT MARKER NOTES	
BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS ARE TO BE INSTALLED: 1. ON ROADWAYS WITH NO PARKING PERMITTED ON HYDRANT SIDE, LOCATE MAKER 8' FROM FACE OF CURB ON HYDRANT SIDE. 2. ON ROADWAYS WITH PARKING PERMITTED ON HYDRANT SIDE, LOCATE MARKER 16' FROM FACE OF CURB ON HYDRANT SIDE.	
WATER MAIN JOINT DEFLECTION	
PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET. PER UDACS 2.07.01 AND 2.07.02. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.	
UTILITY CROSSING NOTE:	
ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST CONFORM TO SECTION 2.22 OF UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR PORTABLE WATER SYSTEMS (UDACS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES.	
ENGINEER DISCLAIMER NOTE:	
UTILITY LOCATIONS SHOWN HERE ON 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 AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HERE ON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.	

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY
10845 GRIFFITH DRIVE SUITE 150
LAS VEGAS, NEVADA 89135
702-791-4000

CITY OF LAS VEGAS

UTILITY PLAN & PROFILE 10

SUMMERLIN WEST VILLAGE 21
RIDGE PINE STREET
FAR HILLS TO REDPOINT DRIVE

DRAWN BY: BOC 03/20/2018
DESIGNED BY: DEH 03/20/2018
CHECKED BY: WJM 01/11/2019
PROJECT NO: 7851
SCALE: 1"=20' HORIZ.
1"=4' VERT.

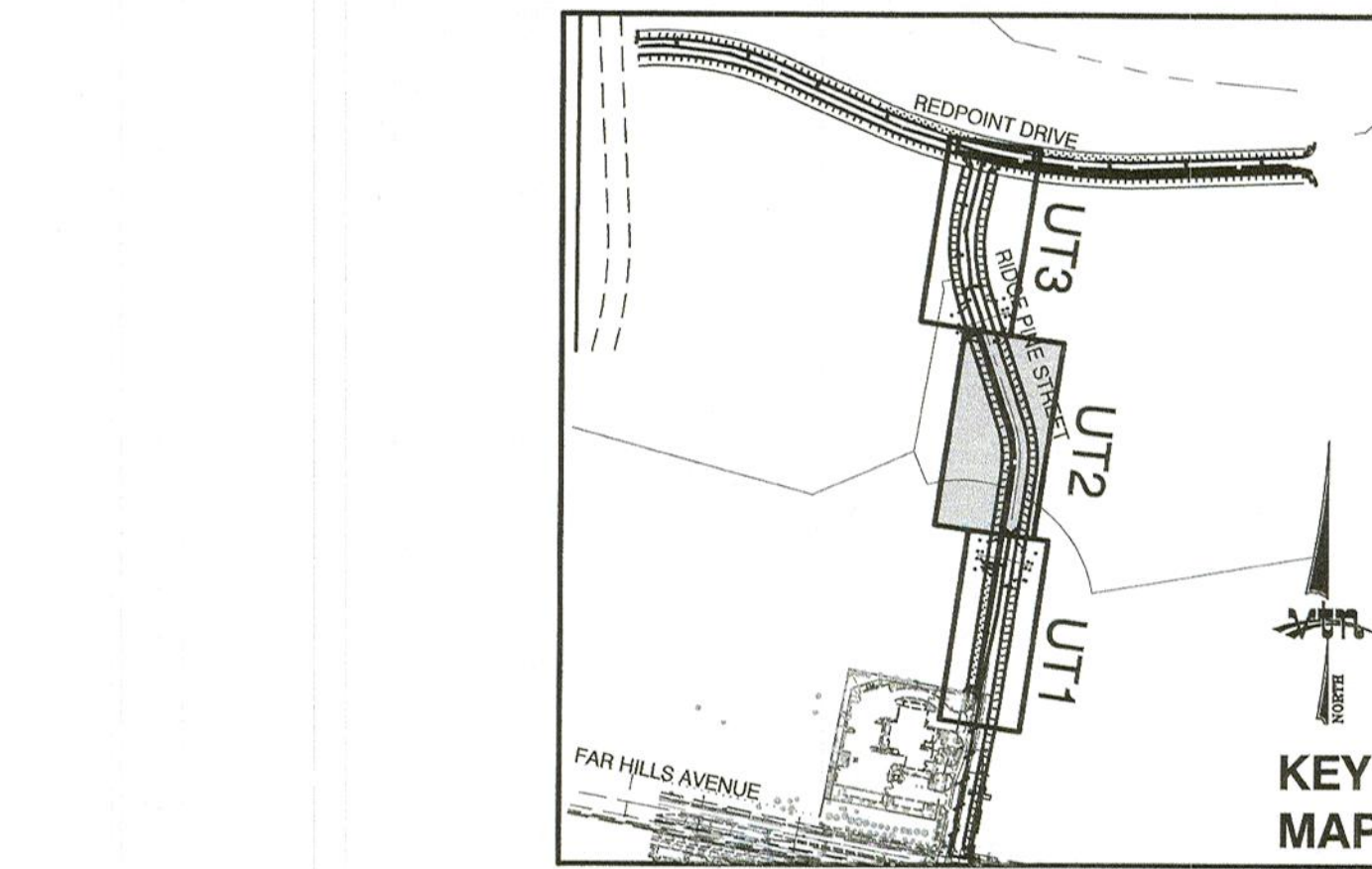
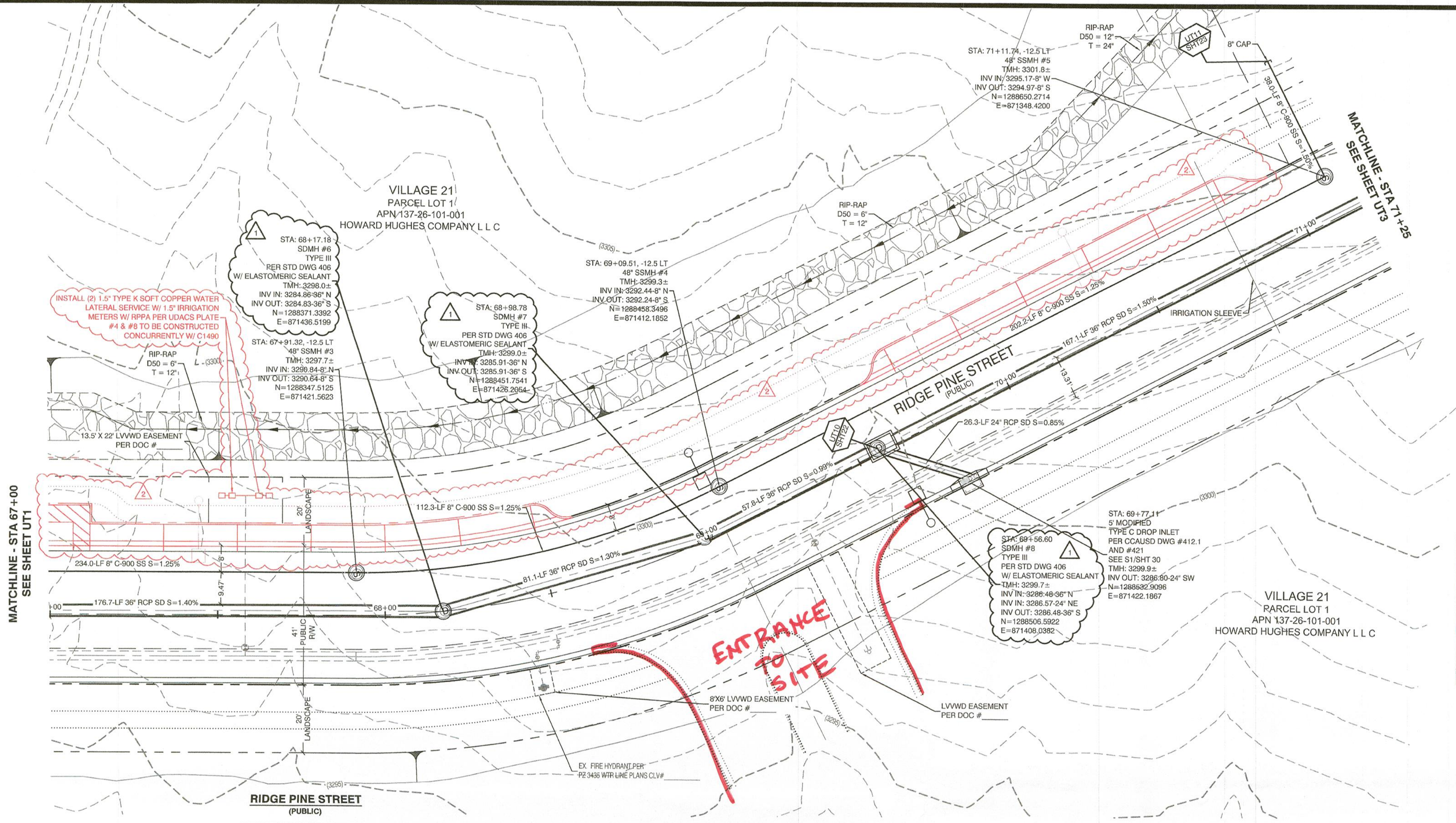
UT10
22 OF 30 SHEETS
DRAWING NO. L18-01668
107V7426

ADD ON STREET PARKING ADJUST ST1 LOCATIONS, ADJUST FUTURE SEWAL, ADD VALLEY GUTTER
ADDED ELASTOMERIC NOTE TO STORM DRAIN MANHOLES, INCREASED PAVEMENT THICKNESS FROM 5" TO 3", CHANGED ST11 CONDUIT FROM 2" PVC TO 1 1/2" PVC, CHANGED ADJUSTED TYPE C DROP INLET FROM 8" TO 7 1/2"

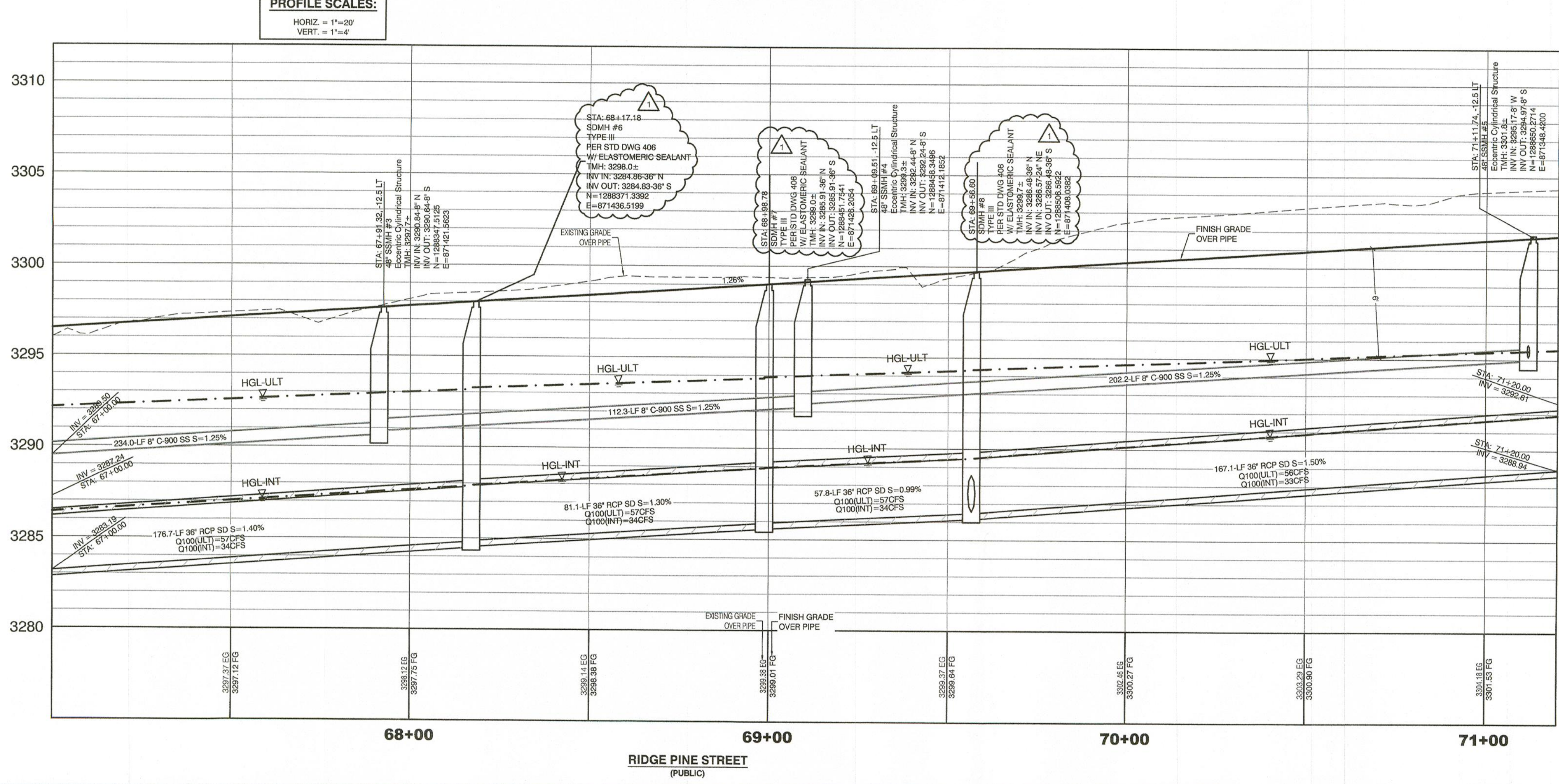
DATE: 04/22/2019
BY: JH
REV: JH

PROFESSIONAL ENGINEER
WILLIAM J. MEYER
EXP: 12/31/19
CIVIL
No. 15749
6/2/19

117851 RIDGE PINE SHEET 107V7426.dwg



- WATER PRESSURE ZONE:**
WATER SERVICE LOCATED IN THE 3435 PRESSURE ZONE.
- WATER MAIN COVER NOTE:**
ALL NEW WATER MAIN TO HAVE MINIMUM DEPTH OF COVER PER UDACS SECTION 2.08
- WATERLINE TRENCH NOTE:**
CONSTRUCT WATERLINE TRENCH SECTION AND BACKFILL PER UDACS PLATE NO. 17.
- WATER LINE MARKER BALLS NOTE**
INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE NO. 15
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- ENGINEER DISCLAIMER NOTE:**
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- 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 A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2059
- SOUTHWEST GAS CORPORATION DATE



- CONSTRUCTION NOTES**
- SEWER**
- STANDARD MANHOLE PER SD-1A & 1B W/ SINGLE 24" LID
 - 8" C900 SANITARY SEWER MAIN PER SD-17 OF DCSWCS
 - 8" SEWER CAP
 - SEWER POINT OF CONNECTION
- PUBLIC**
- 5 EA.
 - 958 LF.
 - 3 EA.
- LAS VEGAS FIRE & RESCUE APPROVAL**
BY: _____ 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 OR COUNTY LAWS. FIRE FLOW — GPM AT 20 P.S.I. RESIDUAL.
- UTILITY CROSSING NOTE:**
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- APPROVED FOR CONSTRUCTION**
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT: 136408 FIRST APPROVED DATE: _____

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

Call before you Dig
Avoid hitting overhead power lines. It's costly.

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

HOWARD HUGHES COMPANY, LLC
A DELAWARE LIMITED LIABILITY COMPANY
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH: (702) 975-7500 FAX: (702) 362-2997 WEB: WWW.HHCO.COM
CONSULTING ENGINEERS & PLANNERS

CITY OF LAS VEGAS

UTILITY PLAN & PROFILE 2
67+00 TO 71+25

SUMMERLIN WEST VILLAGE 21
RIDGE PINE STREET
FAR HILLS TO REDPOINT DRIVE

DESIGNED BY: DEH
CHECKED BY: WJM
PROJECT NO.: 7851

DRAWN BY: BCC
DATE: 03/20/2018

DATE: 03/20/2018

DATE: 01/11/2019

SCALE: 1"=20' HORIZ
1"=4' VERT.

SHEET
UT2
14 OF 30 SHEETS
DRAWING NO.
L18-01668

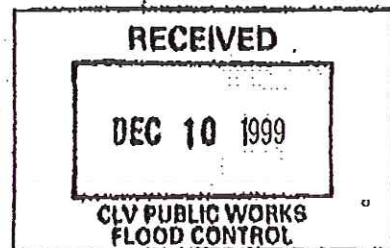
PROFESSIONAL ENGINEER - STATE OF NEVADA
WILLIAM J. MEYER
No. 15745
CIVIL
EXP. 12/31/19

1-702-227-2929

**TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 20/21
FAR HILLS AVENUE DRAINAGE
AND GRADING IMPROVEMENTS**

62020.227

December 1999



2589
K 26, 27
\$250

Prepared for:

**The Howard Hughes Corporation
10000 West Charleston Boulevard, Suite 200
Las Vegas, NV 89135
Phone: (702) 791-4300
Fax: (702) 791-4450**



G.C. WALLACE, INC.
Engineering/Architecture

CITY OF LAS VEGAS		DATE: December 5, 1997	
INTER-OFFICE MEMORANDUM			
TO: Barry Thompson, P.E. Land Development Services Department of Public Works		FROM: Dennis W. Strensky, P.E. Flood Control Project Manager Department of Public Works	
SUBJECT: Drainage Study for: Conceptual Master Drainage Study and Mass Rough Grading for Village 20		COPIES TO: G. C. Wallace, Inc. The Howard Hughes Corporation John McNellis, P.E. CCRFCD NDOT	
FILE NO.	\\KHAN\lood\Depot\DSMEMOS\DS2137B.doc		
FEMA Flood Zone:	YES	No	X
Proposed Storm Drain:	YES	X	No

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES
1st Submittal	10/07/97	10/21/97	Conditionally Accepted	\$250.00
CCRFCD	11/26/97	12/03/97	See Comments Below	N/C
TOTAL FEES:				\$250.00

REMARKS:

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

X	is acceptable in concept subject to conformance to all City standards and the following conditions.
	must be resubmitted or supplemented including the following:
	must have Clark County Regional Flood Control District concurrence

NOTE: Acceptance of this drainage study is for rough grading of Village 20

- Per CCRFCD memo dated 11/19/97 "Final permitting for construction should be withheld until an amendment to the CCRFCD Master Plan Update has been adopted by the District's Board of Director's and the designs and construction plans for regional facilities have been reviewed and approved by the City and the District".
- The report references Detention Basin 4 (DB4) as a 260 acre foot detention basin in the Summerlin West Master Plan. The facilities downstream of this basin are sized to convey future flows, assuming DB4 is in place. It is understood that the developer desires to begin construction on the Summerlin Information Center in Village 20 and construct it concurrently with Detention Basin #4, which is acceptable. At a recent meeting with G.C. Wallace staff, it was agreed to allow rough grading within Village 20. However, no final grading or building permits would be issued until Detention Basin #4 is complete.
- A Maintenance and Liability agreement for all the diversion berms and channels within the project must be signed with Land Development prior to the issuance of any grading permits. Additionally, commitment to construct these facilities as well as a schedule for phasing must be submitted to Flood Control.

4. The reinforced concrete box in Charleston Boulevard must be constructed prior to or concurrent with the diversion channel in Foothills Parkway. NDOT concurrence will be required for the box in Charleston Boulevard prior to final approval of this facility.
5. The flow that is conveyed by the (2) 8' X 8' in Far Hills Avenue must be shown on the drainage map. The report states that *"the Far Hills Avenue storm drain will need to convey 2,301 cfs with a corresponding velocity of 33 fps"*. The maximum allowable velocity for all storm sewer systems is 25 fps per the Clark County Regional Flood Control Design Manual. Due to the excessive velocities in the box, an extra inch of concrete must be provided at the bottom of the box to allow for erosion.
6. A technical update must be provided for the proposed regional and local storm drain facilities within Village 20.

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 Amendment 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.

PLANS SENT TO LAND DEVELOPMENT YES (Initial)

END OF REMARKS
gam/cz

T/R/S: 20S/59E/26
AREA K-26

Technical Drainage Study for

Summerlin West Village 21

Street A

(Desert Foothills Drive to Carriage Hill Drive)

Las Vegas, Nevada

Prepared for:

Howard Hughes Company, LL

Submitted to:

City of Las Vegas
Public Works



CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		July 31, 2018
TO: Land Development Services Department of Building & Safety		FROM: Albert Surg, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT: Drainage Study for: Summerlin West Village 21 - Street A (Desert Foothills Dr. to Carriage Hill Dr.)		COPIES TO: VTN Nevada
Cross Streets:	Street A - Desert Foothills to Carriage Hill	Howard Hughes Company, LLC
File Number:	F:\Depot\DSMemos\DS5003B.doc	Bart Anderson, P.E., DevCo
Parcel Number:	137-28-101-001	
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 Transaction #
1 st Submittal	6/11/2018	6/20/2018 & 6/29/2018	Not Approved	\$400.00	496677: \$ 0.00
2 nd Submittal	7/19/2018	7/31/2018	See Comments Below	\$400.00	497596: \$ 0.00
TOTAL FEES (LDDRS):				\$800.00	

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.

- The project proposed to construct temporary drainage facilities including drainage berms/swales along the south side of the proposed Street A. Prior to the final plans approval, the developer must complete a **Maintenance & Liability Agreement** for the interim drainage improvements and post a minimum maintenance bond of \$50,000 or 50-percent of the construction cost for the improvements, whichever is greater. The engineer must submit an estimate of the quantities for constructing the facilities and an exhibit that adequately shows the location and limits of the drainage facilities to City Flood Control for approval. Once the drainage study is conditionally approved, the engineer/developer should contact the City's Land Development Section (702-229-6371) to begin the agreement process.

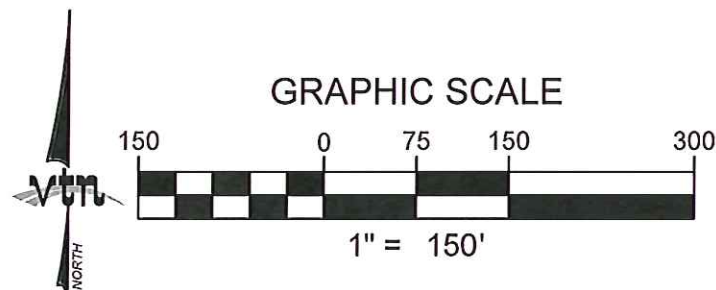
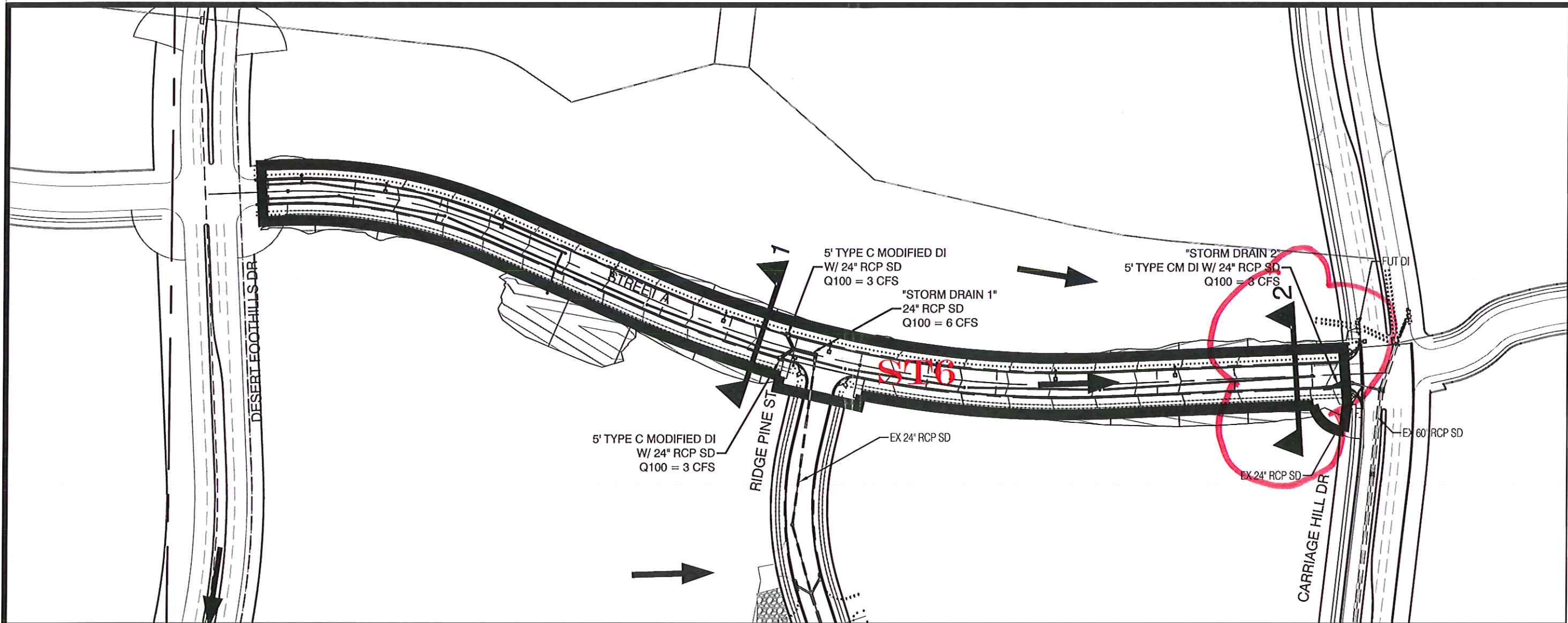
In order for the maintenance bond to be released in the future, a drainage update/letter will be required to justify that the berm/swale are no longer necessary and can be removed.

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 proposed 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/bwps/storm01.htm> or call (775) 687-9429.

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.

END OF REMARKS
WSP/AYS

T/R/S: T208/R59E/26
AREA K-26



LEGEND

- CONCENTRATION POINT
- BASIN BOUNDARY
- BASIN DESIGNATION
- FLOW ARROW
- CROSS SECTION

ULTIMATE CONDITION HEC-1 SUMMARY TABLE*		
BASIN ID	AREA (ac)	Q100 (CFS)
ST6	3.01	12

*Refer to Village 21 HEC-1 model

STREET FLOW ANALYSIS SUMMARY TABLE (100-YEAR)						
Section	Street Flow (cfs)	Slope (%)	Velocity (fps)	Depth (ft)	V x D	Tributary Basin
1 (MAX)	6	7.84%	5.16	0.27	1.39	1/2ST6
1 (MIN)	6	5.92%	4.61	0.28	1.29	1/2ST6
2 (MAX)	6	8.00%	5.23	0.27	1.41	1/2ST6
2 (MIN)	6	2.32%	3.17	0.32	1.01	1/2ST6

← BELOW TC

W.O.#: 7851-5.9
DATE: 04/2018
BY: JYA
SCALE: 1" = 250'
SHEET OF

FIGURE 8: ULTIMATE CONDITION BASIN MAP
SUMMERLIN VILLAGE 21
STREET A - DESERT FOOTHILLS TO CARRIAGE HILL

IMPROVEMENT PLANS FOR CRYSTAL CANYON UNIT 1 SUMMERLIN VILLAGE 21 PARCEL A AND B A SINGLE FAMILY RESIDENTIAL SUBDIVISION

LEGAL DESCRIPTION

A PORTION OF LOTS A AND B OF THAT CERTAIN FINAL MAP TITLED "SUMMERLIN VILLAGE 21 UNIT 1-LARGE LOT FINAL MAP" ON FILE IN THE OFFICE OF THE COUNTY RECORDER, CLARK COUNTY, NEVADA IN BOOK 158 OF PLATS, PAGE 87, IN THE OFFICE OF THE COUNTY RECORDER OF CLARK COUNTY, NEVADA.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6, RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF "FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158, PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

OWNER:

WOODSIDE HOMES OF NEVADA LLC
7895 W. SUNSET RD, SUITE 110 LAS VEGAS, NV 89113
PHONE: (702) 889-7824

DEVELOPER:

Woodside Homes®
BETTER BY DESIGN

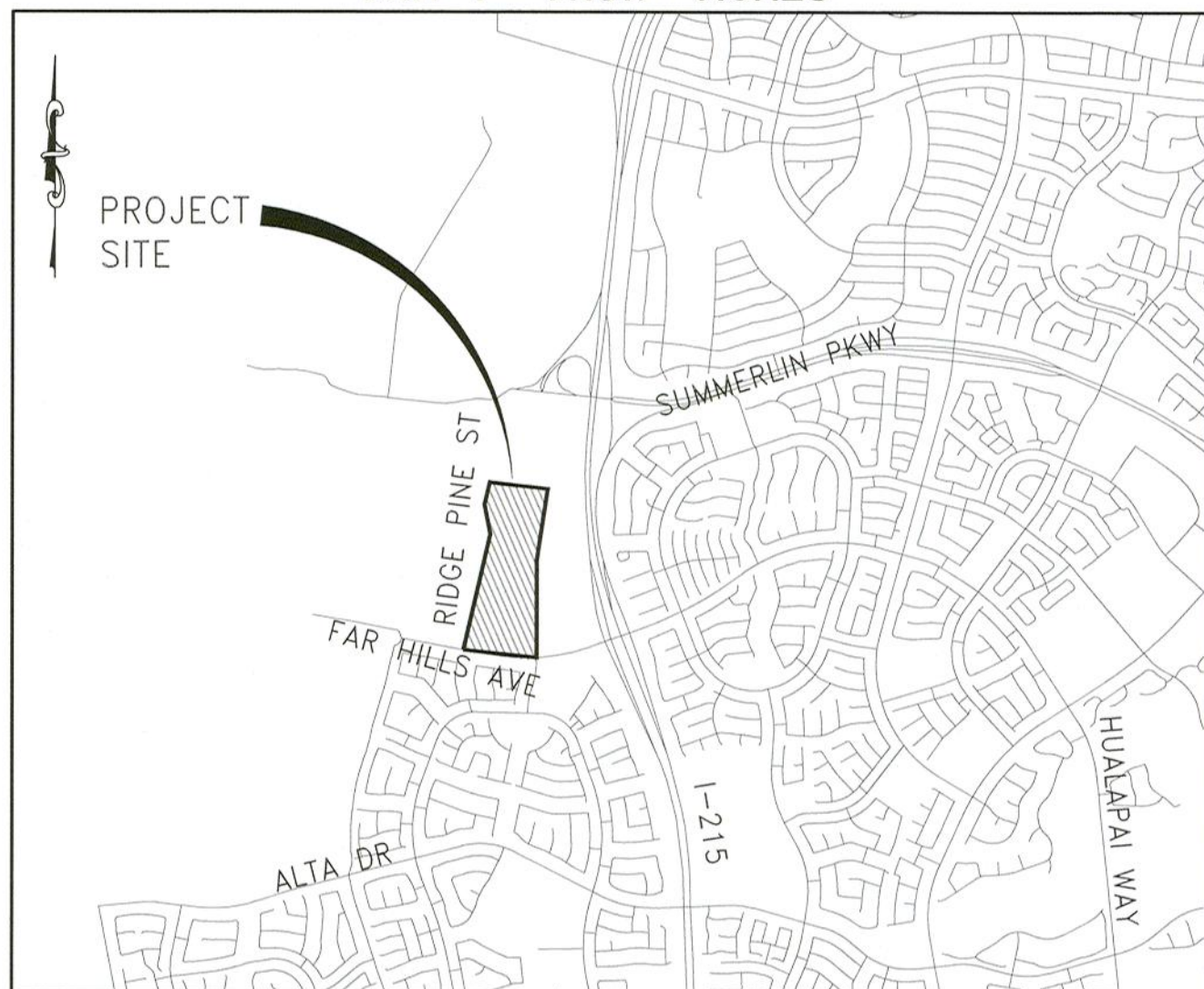
DESIGN ENGINEER:

RCI ENGINEERING
500 SOUTH RANCHO DRIVE, SUITE 17, LAS VEGAS, NV 89106
PH#702.453.0800 FAX#702.453.0801
www.rcinevado.com

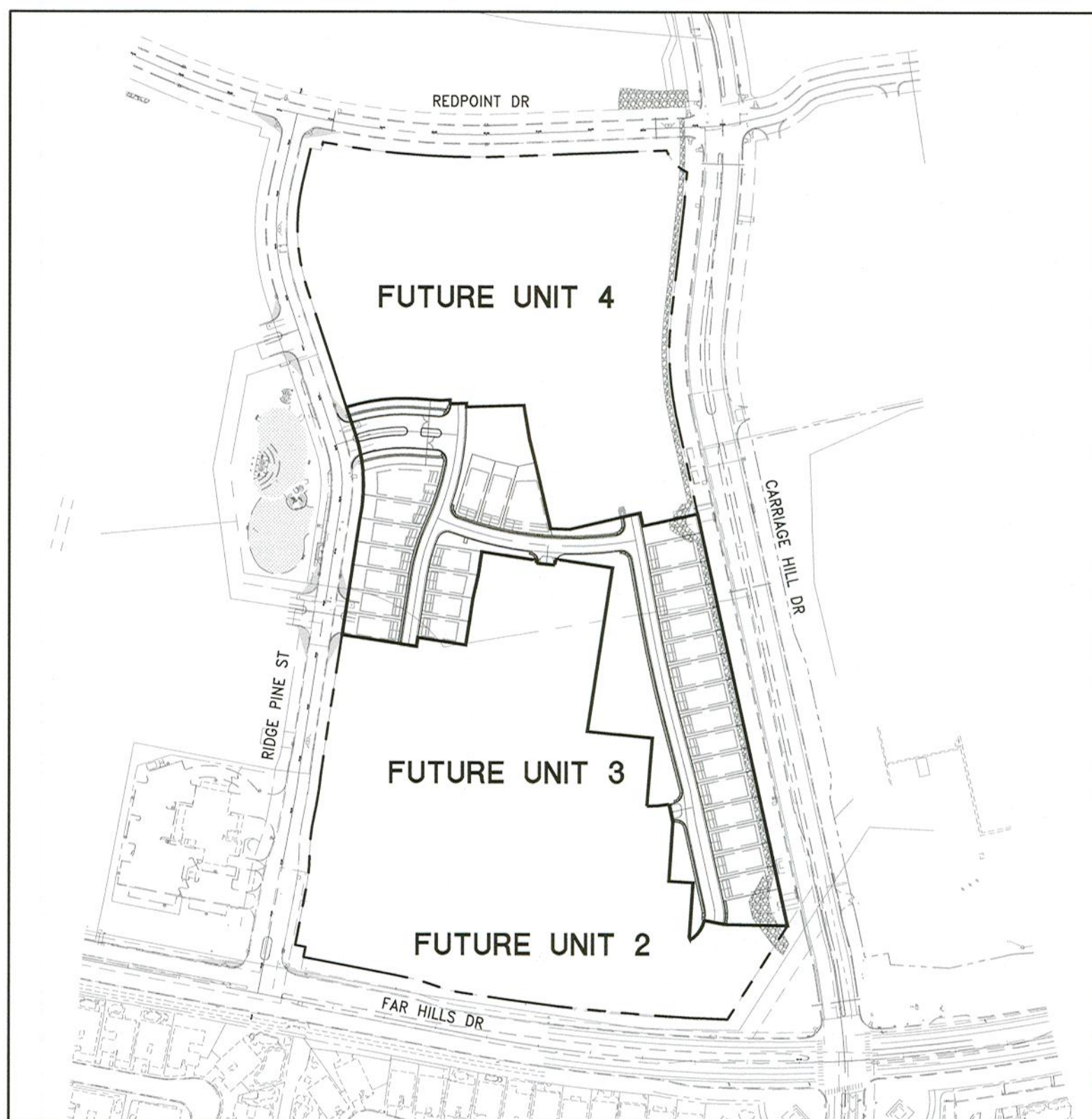
BY

Woodside Homes®
BETTER BY DESIGN

PORTION OF APN 137-26-212-001 & 137-26-212-002
CITY OF LAS VEGAS, NEVADA
UNIT 1 = 7.16+/- ACRES



VICINITY MAP
NOT TO SCALE



SITE PLAN
NOT TO SCALE

APPROVED BY:

CITY OF LAS VEGAS

ROSA CORTEZ, P.E. #17505 DATE
ACTING CITY ENGINEER

APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHTS-OF-WAY AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS, EXCEPT THOSE SPECIFICALLY LISTED UNDER DEVIATIONS FROM STANDARD. 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.

CITY OF LAS VEGAS PLANNING DEPARTMENT DATE
THIS PLAN MEETS THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

CENTURYLINK

CENTRAL TELEPHONE COMPANY - dba CENTURYLINK DATE

THE 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 STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

SOUTHWEST GAS CORPORATION

SOUTHWEST GAS CORPORATION DATE

COX COMMUNICATIONS LAS VEGAS INC.

COX COMMUNICATIONS LAS VEGAS INC. DATE

NV ENERGY

NV ENERGY COMPANY DATE

NV ENERGY COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NV ENERGY COMPANY 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.

CITY OF LAS VEGAS FIRE DEPARTMENT

CITY OF LAS VEGAS FIRE DEPARTMENT DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW X,XXX GPM AT 20 PSI RESIDUAL
(SHEETS C-1, N-1, D-1, MU-1, U-1 AND P-1)

SHEET INDEX

SHT No.	DWG ID	DRAWING DESCRIPTION
1	C-1	COVER SHEET
2	N-1	GENERAL NOTES, LEGENDS AND ABBREVIATIONS
3	G-1	GRADING PLANS (SHEET 1 OF 8)
4	G-2	GRADING PLANS (SHEET 2 OF 8)
5	G-3	GRADING PLANS (SHEET 3 OF 8)
6	G-4	GRADING PLANS (SHEET 4 OF 8)
7	G-5	GRADING PLANS (SHEET 5 OF 8)
8	G-6	GRADING PLANS (SHEET 6 OF 8)
9	G-7	GRADING PLANS (SHEET 7 OF 8)
10	G-8	GRADING PLANS (SHEET 8 OF 8)
11	D-1	GRADING DETAILS (SHEET 1 OF 4)
12	D-2	GRADING DETAILS (SHEET 2 OF 4)
13	D-3	GRADING DETAILS (SHEET 3 OF 4)
14	D-4	GRADING DETAILS (SHEET 4 OF 4)
15	P-1	PLAN AND PROFILE (SHEET 1 OF 7)
16	P-2	PLAN AND PROFILE (SHEET 2 OF 7)
17	P-3	PLAN AND PROFILE (SHEET 3 OF 7)
22	P-4	PLAN AND PROFILE (SHEET 4 OF 7) NINE MILE CREEK DR STA: 21+00.00-25+00.00
23	P-5	PLAN AND PROFILE (SHEET 5 OF 7) NINE MILE CREEK DR STA: 16+50.00-21+00.00
24	P-6	PLAN AND PROFILE (SHEET 6 OF 7) NORTHERN EASEMENT
25	P-7	PLAN AND PROFILE (SHEET 7 OF 7) SOUTHERN EASEMENT

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 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.

Call before you Dig
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.



1-800-227-2600

FAST
Call before you
UnderGround

1-702-432-5300

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

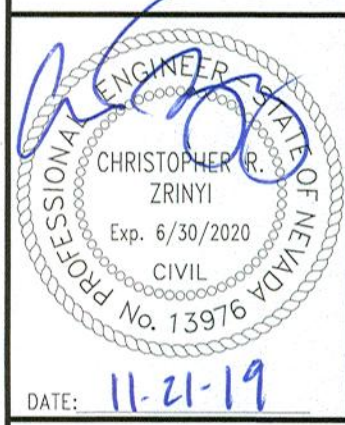


1-702-227-2929

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IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
COVER SHEET



DRAWING
C-1

SHT 1 OF 25

CLY DRAWING NUMBER

CLY PROJECT #

CITY OF LAS VEGAS GENERAL NOTES	
1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST REVISION; AND THE "SUMMERLIN IMPROVEMENT STANDARDS FOR WORK IN THE SUMMERLIN AREA" AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE "UNIFORM BUILDING CODE, AND ALL LOCAL ORDINANCES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".	
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES ARE SHOWN FROM CITY RECORDS, APPROXIMATE AND FOR INFORMATION PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL LOCATE ALL UTILITIES, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES, SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.	
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.	
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.	
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK, CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS, MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.	
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.	
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.	
8. AC PAVEMENT TO BE ONE-HALF INCH (1/2") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND DRIVEWAYS.	
9. CURB AND GUTTER DOWD TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.	
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235, EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.	
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING CONDITIONS, TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.	
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY GEOTEK INC., PROJECT 13735-LV, DATED 10/10/2017, APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.	
13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER. LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATION.	
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS, ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.380 & CITY OF LAS VEGAS TITLE 16, APPENDIX D.	
15. UTILITY COMPANY METER BOXES, MANHOLE UDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APPROXS, AND CROSS GUTTERS. ANY NECESSARY WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER, WAL NOTES:	
16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS AND SIGNIFICANT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.	
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.	
18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, ANDSEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.	
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.	
20. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKER BALLETS, LOCATING RIBBON, ETC., THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION OFFSITE INSPECTION AND TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.	
21. SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION. THE MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER SERVICE LATERALS TO THE STORM DRAIN MAIN, AND THE LOCATION OF THE PUBLIC SEWER MAIN. THE SANITARY SEWER AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS, THE LOCATION SHALL BE DESCRIBED BY COORDINATES WHICH SHALL BE BASED ON THE HORIZONTAL AND VERTICAL CONTROL NETWORKS OF THE CITY OF LAS VEGAS. FINAL LOCATION MAP(S) MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSTIONAL CERTAINIES OF ± 0.09 METERS (± 0.3 FEET) HORIZONTALLY AND VERTICALLY. A SEPARATE ELECTRONIC COMMA DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).	
22. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PRIOR TO THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.	
23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.	

CITY OF LAS VEGAS TRAFFIC NOTES	
1. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.	
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.	
3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.	
4. WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCRKOACHED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS TRAFFIC IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.	
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.	
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL BE FABRICATED WITH DIAMOND GRADE VIP CLASS 6 REFLECTIVE SHEETING OR APPROVED EQUAL. ALL NEW TRAFFIC SIGNS, EXCEPT STREETNAME AND SCHOOL SPEED LIMIT SIGNS, SHALL HAVE 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE OVERLAY FILM; SCHOOL ZONE SIGNS SHALL HAVE 3M SERIES 1150 ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.	
7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.	
8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.	
9. STREET SIGNS AND STOPS SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.	
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC IN OR AROUND THE WORK ZONE. THE CONTRACTOR SHALL HAVE A CERTIFIED STAFF TRAFFIC CONTROL TECHNICIAN OR IMSA WORK ZONE SAFETY SPECIALIST SET UP, MAINTAIN AND/OR REMOVE ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.	
11. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.	
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CITIZENS AREA TRANSIT (C.A.T.) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.	
13. GUARDS SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 828-3442) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR THE USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.	
14. ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS OTHERWISE DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.	
15. THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAVEMENT TRANSITIONS, MARKINGS AND SIGNING THAT ARE REQUIRED TO MATCH ADJACENT ROADWAY SEGMENTS. THE CONTRACTOR SHALL PROVIDE A DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPICTING ANY ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SUCH THAT ADEQUATE TRANSITIONS AND LANE TERMINATIONS BETWEEN ADJACENT ROADWAY SEGMENTS ARE CONSTRUCTED.	

CITY OF LAS VEGAS HYDRANT AND ACCESS GENERAL NOTES	
1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6631 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.	
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICTS -APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.	
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. IFC § 105.6.15	
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. IFC § 3310, § 3312	
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. IFC § 507.5.7.3	
6. ALL UNDERGROUND INSPECTIONS, PRESSURE VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. IFC § 106.3	
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. IFC § 507.2.1, NFPA 24	
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. IFC § 50	
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. IFC § 507.5.7.1	
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. IFC § 507	
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: IFC § C102	
12. RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.	
13. COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.	
14. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE PROTECTION FOR TRANSPORTATION HAZARDS. FIRE HYDRANTS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. IFC § C102.8	
15. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.	
16. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. IFC § C102.10	
17. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.4	
18. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.7	
19. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. IFC § C102.6	
20. TWO (2) SOURCES OF WATER SHALL BE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. FOR SYSTEMS REQUIRED TO HAVE TWO (2) SOURCES OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. FOR SYSTEMS PERMITTED TO HAVE ONE SOURCE OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 3 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. IFC § 503.2.1	
21. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. IFC § 503.2.3	
22. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12%. ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO AND AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%. IFC § 503.2.7, § 503.2.8	
23. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS IFC § 503.2.4	
24. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13FT 6 INS. IFC § 503.2.1	
25. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 33 FT WITH PARKING ON BOTH SIDES MEASURED TO FACE OF CURB. NOT LESS THAN 28 FT WIDE WITH PARKING RESTRICTED TO ONE SIDE MEASURED TO FACE OF CURB. NOT LESS THAN 24 FT WIDE WITH NO PARKING ON EITHER SIDE MEASURED TO FACE OF CURB. FIRE LANE LINES SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IFC § 503.2.1	
26. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. IFC § 503.1.1	
27. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS, ROAD(S) WITH DEADENDS OR A SINGLE POINT OF ACCESS OF 600 FT. CIVIL REGULATION AND MOU	
28. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LINES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. CIVIL REGULATION	
29. ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE. ONE SIGN ON EACH SIDE OF THE FIRE LANE STOOD WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANE. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT AND NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. IFC § 503.3	
30. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM IFC § 503.6	
31. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS, OR HAVING FOUR OR MORE TRAVEL LANES AND A TRAFFIC COUNT OF MORE THAN 30,000 VEHICLES PER DAY, ALL HYDRANTS BEING UTILIZED TO DELIVER FIRE FLOW TO THE PROPOSED LOCATION SHALL BE LOCATED ON THE SAME SIDE OF THE STREET AS THE PROPOSED DEVELOPMENT. CIVIL REGULATION	

CITY OF LAS VEGAS GRADING NOTES	
1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.	
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.	
3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION, ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAVING OF THE EXCAVATION.	
4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.	
5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.	
6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED: HORIZONTAL	
A. PAVEMENT AREA SUBGRADE 0.1'± +0.0' TO -0.1' SEE SOILS REPORT	
B. ENGINEERED FILL 0.5'± +0.1' TO -0.1' SEE SOILS REPORT COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE	
7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.	
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.	
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION PRIOR TO THE END OF THE CONSTRUCTION PERIOD. ALL CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE KEPT IN A CLEAN, SAFE AND USABLE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.	
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.	
STORMWATER RUNOFF MANAGEMENT	
(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))	
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 ACCUMULATE IN, THE PUBLIC RIGHTS OF WAYS OF THE CITY OF LAS VEGAS 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 CRITERIA IN THE CITY OF LAS VEGAS AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES 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 OR TEMPORARILY OR PERMANENTLY CLASSIFIED. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO 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 OF 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 ACTUAL RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO 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.	
SOUTHWEST GAS CONSTRUCTION NOTES	
SOUTHERN NEVADA - SOUTHWEST GAS CORPORATION	
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 A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2099	
5. SOUTHWEST GAS CORPORATION STAND BY CONTACT NUMBER 702-400-1789	
SOUTHWEST GAS CORPORATION	
DATE	

CITY OF LAS VEGAS SEWER NOTES	
1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.	
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY ENGINEER.	
3. CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.	
4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.	
5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETROFIT IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.	
6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "V" S SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.	
7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.	
8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.	
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE SHALL HAVE TO BE REPAIRED, REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.	
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.	
LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES	
LVVWD PROJECT # XXXXX (REVISED 08/01/2017)	
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 (702-258-7171) 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 PLATS, 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 2000 EDITION OF THE UDACS.	
9. ALL WATER FACILITIES AND APPURTENANCES SHALL BE DISINFECTED, PRESSURE TESTED, AND HAVE AN ACCEPTABLE PASSING HEALTH WATER SAMPLE OBTAINED, PRIOR TO OPERATION AND USE.	
10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES, TELEPHONE 702-258-3152 OR 702-258-3802, 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 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 APPROVED PRODUCT'S LIST FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS BY SUBMITTING SHOP DRAWINGS.	
13. TELEPHONE "CALL BEFORE YOU DIG" AT "811" OR 1-800-227-2600.	
14. THE INSTALLATION OF 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.	
15. 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 ADJUTING 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 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 REUSED.	
APPROVED FOR CONSTRUCTION	
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES PROJECT NO. XXXXXX FIRST APPROVED DATE:	
CITY OF LAS VEGAS STREETLIGHT NOTES	
1. ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND ANY ADOPTED SPECIAL AREA STANDARDS.	
2. NO DEVIATION OF STREET LIGHT, PULL BOX, CONDUITS (ETC.) LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF TRAFFIC ENGINEERING AND THE CITY ENGINEER.	
3. ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.	
4. ALL STREET LIGHTING CONDUITS STUB SHALL HAVE AT LEAST ONE GREEN #8 THW WIRE INSTALLED, AS TRACER WIRE, WHEN "EMPTY" CONDUIT IS COMPLETELY INSTALLED FROM PB TO PB. IT SHALL HAVE MINIMUM OF 2 #4 AND 1 #8 THW WIRE WITH THE ENDS TAPED OR "SAFE OFF" PRIOR TO FINAL INSTALLATION.	
5. ANY STRUCTURE SUCH AS BLOCK WALLS, CHAIN LINK FENCES, RETAINING WALLS, ETC., SHALL LEAVE A MINIMUM CLEARANCE IN ACCORDANCE WITH THE USD NO. 320A.	
6. AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TEF0 PRIOR TO ANY PRE-FINAL INSPECTION. THE ASBUILT DRAWING NEEDS TO BE STAMPED AS-BUILT AND SIGNED BY THE PREPARER.	
7. SERVICE POINT SHALL BE COORDINATED WITH NV ENERGY COMPANY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICE POINTS SHALL BE SHOWN ON THE CIVIL PLANS.	
8. IT SHALL BE ASSUMED THAT IN THE ABSENCE OF AN EXISTING, WORKABLE CIRCUIT TO ATTACH TO, ALL INSTALLATIONS SHALL REQUIRE A NEW SERVICE FOR OPERATION OF THE CIRCUIT.	
9. WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREET LIGHTING CIRCUITS AND/OR POLES, THESE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED, AT NO EXPENSE TO THE CITY OF LAS VEGAS, BEFORE STREETLIGHT BASES ARE INSTALLED.	
10. THE CONTRACTOR SHALL FURNISH COMPLETE SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON PLANS.	
11. THE DEVELOPER/OWNER WILL BE REQUIRED TO SUPPLY POWER TO ALL NEW PUBLIC STREET LIGHTS INSTALLED UNDER THIS DESIGN PRIOR TO THE DESIGN PRIOR TO THE DEVELOPER/OWNER WILL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH THE INSTALLATION, CONSTRUCTION, ENERGIZING, MAINTENANCE AND OPERATIONAL COST OF SAID STREET LIGHTS PRIOR TO PROJECT COMPLETION. REFER TO THE PLAN FOR ANY NEW SERVICE REQUIREMENTS. THE TRANSFER OF OWNERSHIP OF THE STREET LIGHTS TO THE CITY OF LAS VEGAS FOR NEW PUBLIC STREET LIGHTS AND/OR SERVICE/S INSTALLED UNDER THIS PLAN DESIGN WILL BE IN CONJUNCTION WITH THIS PROJECT COMPLETION. COORDINATE ALL MAINTENANCE AND OPERATIONAL TRANSFERS WITH THE CITY OF LAS VEGAS TRAFFIC ENGINEERING DEPARTMENT (TEFO) AT (702) 229-6331.	

DISCLAIMER NOTE:	
UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.	
Call before you Dig utility lines. IT'S COSTLY.	FAST Call before you UnderGround freeway and arterial system of transportation 1-800-227-2600
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LEGEND	
EXISTING	PROPOSED
DESCRIPTION	DESCRIPTION
ROW OR PROPERTY LINE	ROW OR PROPERTY LINE
EASEMENT LINE	EASEMENT LINE
CURB & GUTTER (24-INCH)	CURB & GUTTER (24-INCH)
CURB & GUTTER (30-INCH)	CURB & GUTTER (30-INCH)
"L" TYPE ISLAND CURB	"L" TYPE ISLAND CURB
VALLEY GUTTER	VALLEY GUTTER
EDGE OF PAVEMENT	EDGE OF PAVEMENT
SIDEWALK	SIDEWALK
SIDEWALK RAMP	SIDEWALK RAMP
SAWCUT LINE	SAWCUT LINE
RETAINING WALL	RETAINING WALL
FLOOD WALL	FLOOD WALL
WROUGHT IRON VEHICULAR GATES	WROUGHT IRON VEHICULAR GATES
INDEX CONTOURS	INDEX CONTOURS
INTERMEDIATE CONTOURS	INTERMEDIATE CONTOURS

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811**
OR
1-800-227-2600

FAST

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SYSTEM OF TRANSPORTATION

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1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.
ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BUILDING PERMIT NOTE

ALL STRUCTURES SHOWN OR INDICATED ON THIS SUBMITTAL
WITHIN THE PROPERTY REQUIRE A BUILDING PERMIT
APPLICATION AND SUBMITTAL THIS INCLUDES BUILDINGS, ABOVE
GROUND TANKS, SIGNS, RETAINING WALLS, FENCES, TRASH
ENCLOSURES, SHADE STRUCTURES, STAIRWAYS, RAMPS, LIGHT
POLES, LIGHT BOLLARDS, ETC. THIS DOES NOT INCLUDE ANY
FLOOD CONTROL STRUCTURE SUCH AS PIPES, CULVERTS, ARCH
CULVERTS, HEADWALLS, ETC. THIS DOES NOT INCLUDE ANY
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IMPROVEMENT AND/OR GRADING PLANS DOES NOT INCLUDE
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FLOOD ZONE NOTE

ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP
(FIRM) COMMUNITY PANEL NUMBERS 32005C2150E AND
32005C2150E DATED SEPTEMBER 27, 2002, THE SITE IS
LOCATED IN A ZONE "X".

SURVEY MONUMENT NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS
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OBSCURED DURING CONSTRUCTION.

SIGHT VISIBILITY ZONE

NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS
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(MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB
EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

ENGINEERS NOTES

1. CONTRACTOR IS RESPONSIBLE FOR DUST AND EROSION CONTROL DURING CONSTRUCTION.
2. SEE DETAIL SHEET FOR ON-SITE PAVEMENT SECTIONS. CONTRACTOR TO VERIFY WITH SOILS REPORT.
3. SEE FINAL MAP FOR EXACT PROPERTY LINE DIMENSIONS.
4. ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.
5. THESE PLANS SHALL NOT, IN PART OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY THE GOVERNING AGENCIES.
6. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
7. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
8. SOIL REPORT NOTE:
GRADING SHALL BE IN ACCORDANCE
WITH SOILS REPORT PREPARED BY:
ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
9. CUT/FILL ESTIMATES
EXISTING TO FINISH GRADE ELEVATIONS
NET CUT: XX.XXX CY
NET FILL: XX.XXX CY
10. SEE DETAIL 56/D-4 FOR TYPICAL LOT DRAINAGE
11. FOR STORMWATER RUNOFF MANAGEMENT NOTES REFER TO SHEET N-1

NOTE

ALL ON-SITE STORM DRAINS AND THE
ASSOCIATED FACILITIES ARE PRIVATELY
OWNED AND TO BE PRIVATELY MAINTAINED
BY THE HOA

NOTE

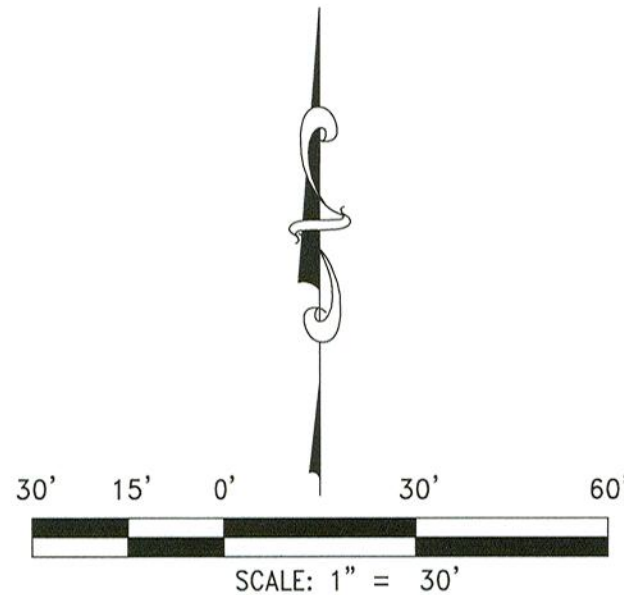
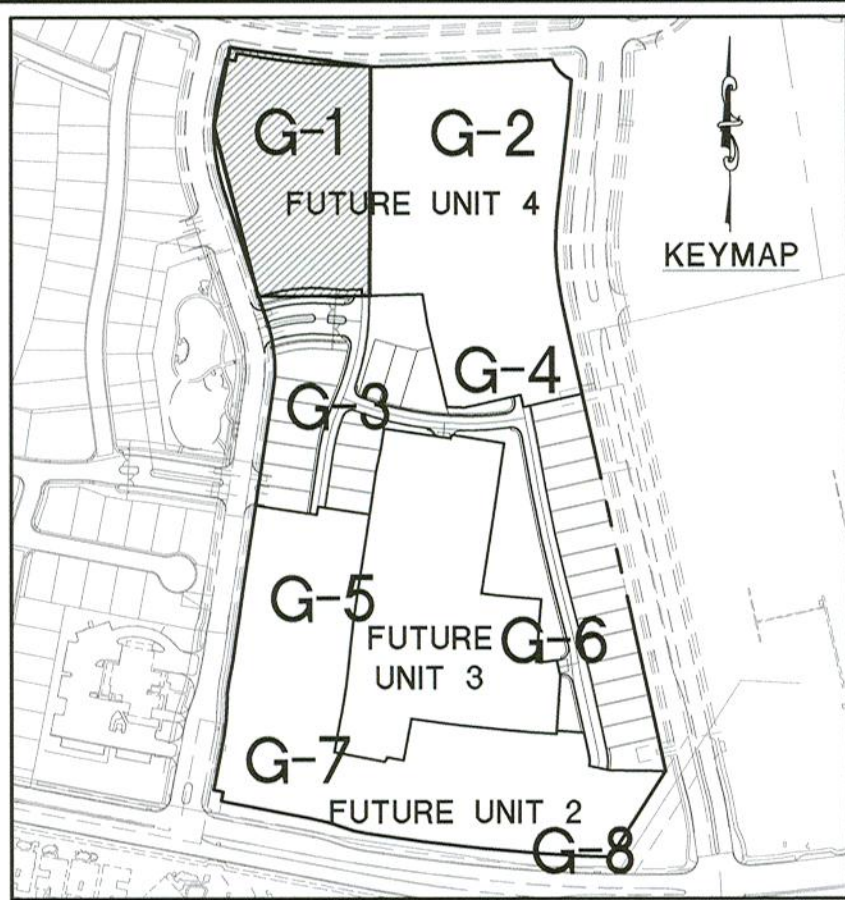
ALL PRIVATE STREETS ARE P.U.E., PUBLIC
SEWER EASEMENTS AND PUBLIC DRAINAGE
EASEMENTS TO BE PRIVATELY MAINTAINED
BY HOA.

SEWER EASEMENT NOTE

NO STRUCTURES AND NO TREES OR VEGETATION TALLER
THAN THREE FEET ALLOWED WITHIN CLV SEWER EASEMENT

CONSTRUCTION NOTES

1. CONSTRUCT AC PAVEMENT PER DETAILS 1 THRU 5 ON SHEET D-1
2. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
3. CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CCAUSD #217.2.51
4. CONSTRUCT 4" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
5. CONSTRUCT 5" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
6. CONSTRUCT 8" CROSS GUTTER PER SUMMERLIN
7. IMPROVEMENT STD DWG #5-64
8. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE 1)
9. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER SUMMERLIN IMPROVEMENT STD DWG S-75
10. CONSTRUCT 5" TRANSITION FROM "L" TYPE CURB AND GUTTER TO "R" TYPE CURB AND GUTTER PER DETAIL 57 SHEET D-4
11. CONSTRUCT "A" TYPE CURB AND GUTTER PER CCAUSD #219
12. CONSTRUCT 5" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 1 GRATES
13. CONSTRUCT 12.5" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 4 GRATES
14. CONSTRUCT 20" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 6 GRATES
15. CONSTRUCT 22.5" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 7 GRATES
16. CONSTRUCT 48" TYPE II-SD MANHOLE PER CCAUSD #405.2
17. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE III)
18. CONSTRUCT 6" HIGH WROUGHT IRON FENCE AND/OR GATES
19. INSTALL 3" WIDE RIPRAP D50=6" THICKNESS=12"



WOODSIDE HOMES OF NEVADA LLC

7835 S. SUMMERLIN BLVD, SUITE 110
LAS VEGAS, NV 89115
PHONE: 702-889-7824

RCI ENGINEERING

500 SOUTH BROADWAY, SUITE 100, LAS VEGAS, NV 89106
www.rciengr.com

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION

GRADING PLANS (SHEET 1 OF 8)

CITY OF LAS VEGAS

DATE: 11-21-19

DRAWING
G-1

SHEET 3 OF 25
CLV DRAWING NUMBER

CLV PROJECT #

REVISIONS

REV	DESCRIPTION	DATE
1	1"=30'	11/20/19
2	N/A	
3	SRC	
4	MJD	
5	CPZ	
6	CPZ	
7	CPZ	
8	CPZ	
9	CPZ	
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100	CPZ	

I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

CHRISTOPHER ZRINYI, PE NO. 13976

DATE

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BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE. LOCATED AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BUILDING PERMIT NOTE

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WITHIN THE PROPERTY REQUIRE A BUILDING PERMIT
APPLICATION AND SUBMITTAL THIS INCLUDES BUILDINGS, ABOVE
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FLOOD ZONE NOTE

ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP
(FIRM) COMMUNITY PANEL NUMBERS 32003C2150E AND
32003C2125E DATED SEPTEMBER 27, 2002, THE SITE IS
LOCATED IN A ZONE "X".

SURVEY MONUMENT NOTE

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- SOIL REPORT NOTE:
GRADING SHALL BE IN ACCORDANCE
WITH SOILS REPORT PREPARED BY:
ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
- CUT/FILL ESTIMATES
EXISTING TO FINISH GRADE ELEVATIONS
NET CUT: XX.XXX CY
NET FILL: XX.XXX CY
- SEE DETAIL 56/D-4 FOR TYPICAL LOT DRAINAGE
- FOR STORMWATER RUNOFF MANAGEMENT NOTES REFER TO SHEET N-1

NOTE

ALL ON-SITE STORM DRAINS AND THE
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NOTE

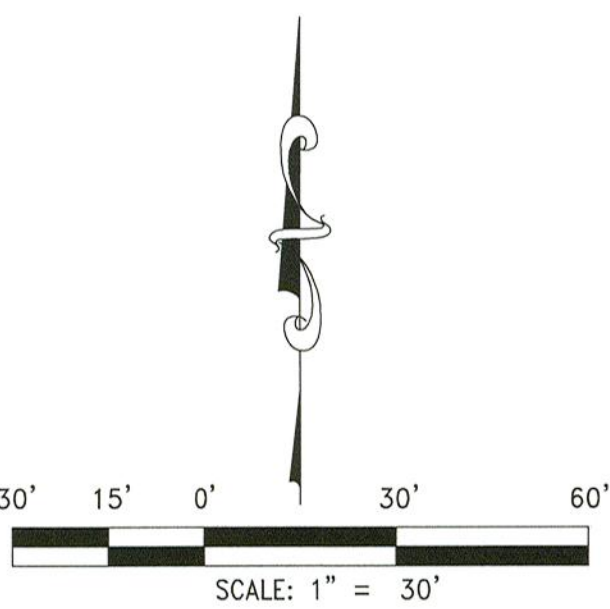
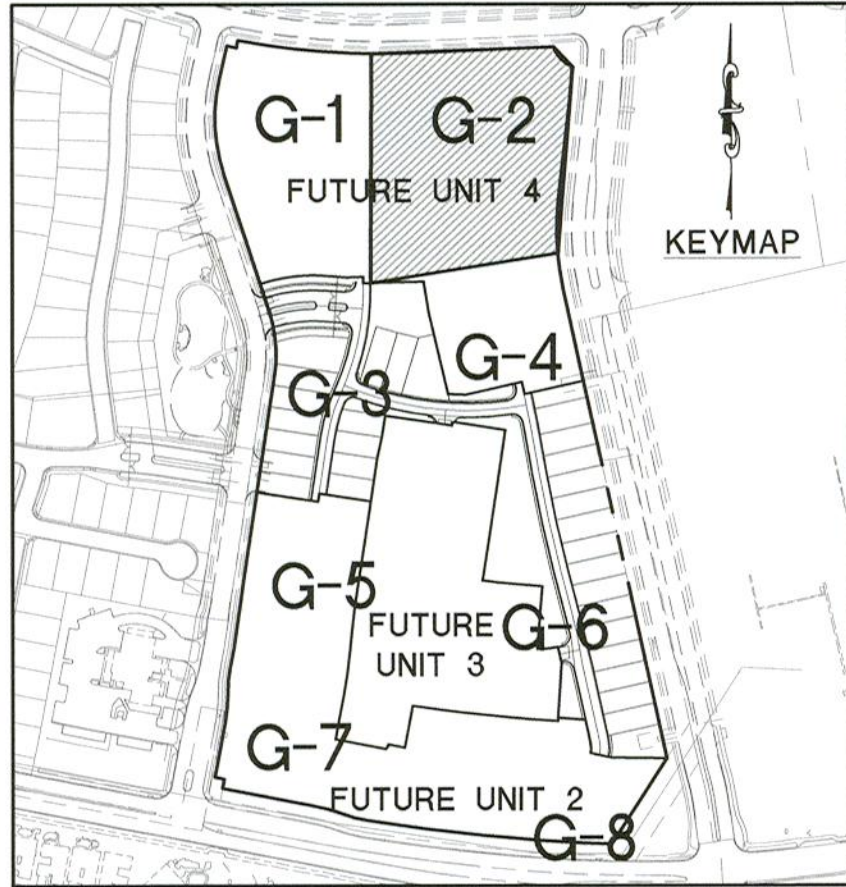
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WOODSIDE HOMES OF NEVADA LLC

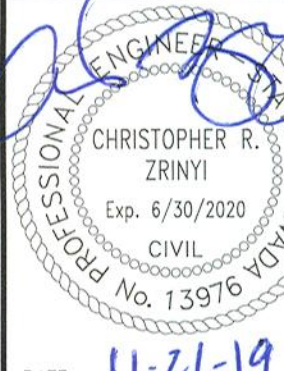
7895 W. SUMMIT RD., SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-888-7824

RCI ENGINEERING
500 SOUTH PULASKI AVE., SUITE 100
LAS VEGAS, NV 89101
WWW.RCIENGINEERING.COM

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 2 OF 8)

NEVADA

CITY OF LAS VEGAS



DATE: 11-21-19

DRAWING
G-2
SHT 4 OF 25
CLV DRAWING NUMBER

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CHRISTOPHER ZRINYI, PE, NO. 13976

DATE

CLV PROJECT #

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WITH SOILS REPORT PREPARED BY:
ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
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NET CUT: XX.XXX CY
NET FILL: XX.XXX CY
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ALL ON-SITE STORM DRAINS AND THE
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NOTE

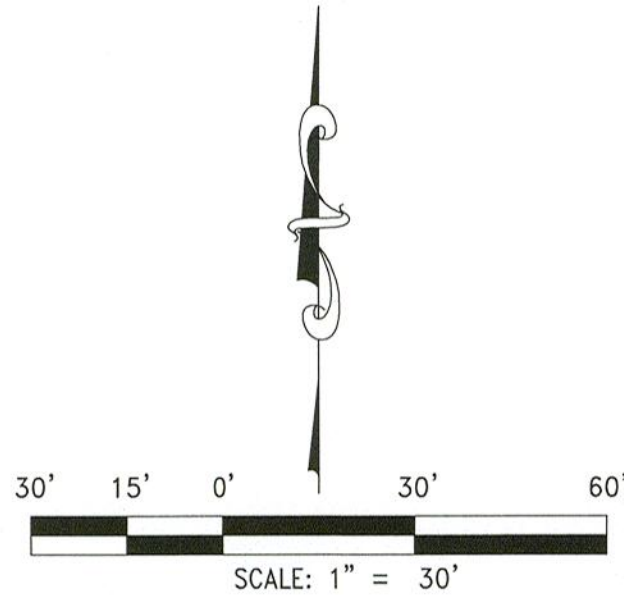
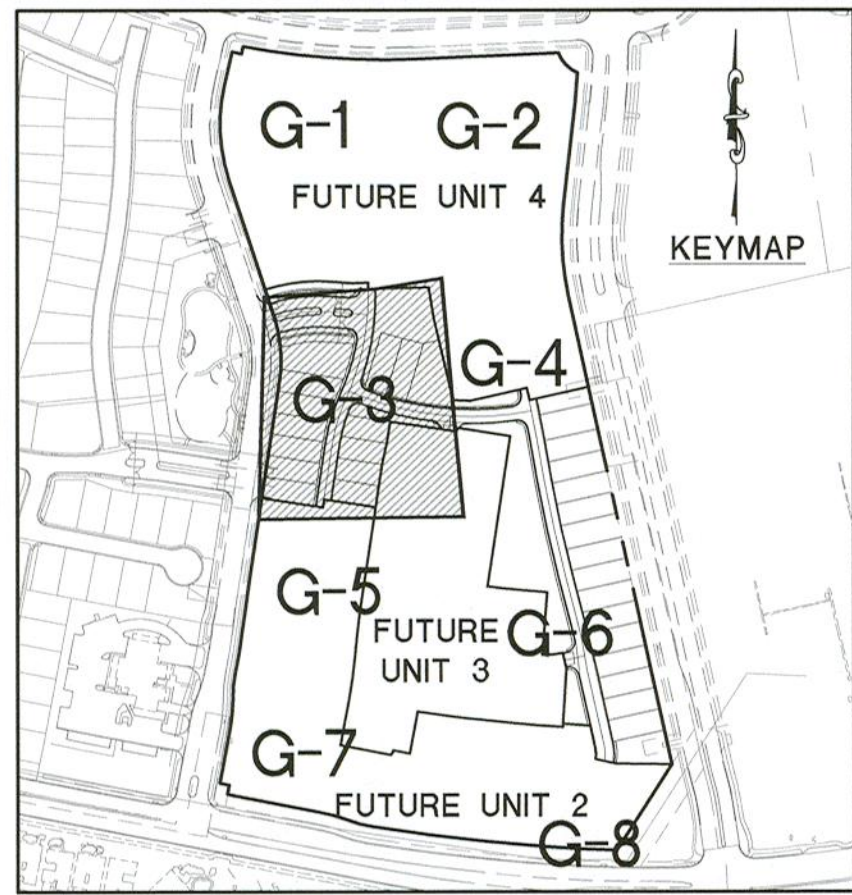
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THAN THREE FEET ALLOWED WITHIN CLV SEWER EASEMENT

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- CONSTRUCT 4" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- CONSTRUCT 5" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- CONSTRUCT 8" CROSS GUTTER PER SUMMERLIN
- IMPROVEMENT STD DWG #5-64
- CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE I)
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WOODSIDE HOMES OF NEVADA LLC

7825 LAS VEGAS BLVD, SUITE 110
LAS VEGAS, NV 89115
PHONE: 702-885-7824

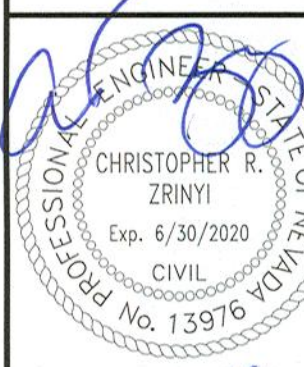
RCI ENGINEERING

500 SOUTH BURNING WOODS BLVD, SUITE 100
LAS VEGAS, NV 89115
WWW.RCIENGINEERING.COM

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 3 OF 8)

NEVADA

CITY OF LAS VEGAS



DATE: 11-21-19

DRAWING

G-3

SHT 5 OF 25

CLV DRAWING NUMBER

CLV PROJECT #

I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
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CHRISTOPHER ZRINYI, PE NO. 13976

DATE

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1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
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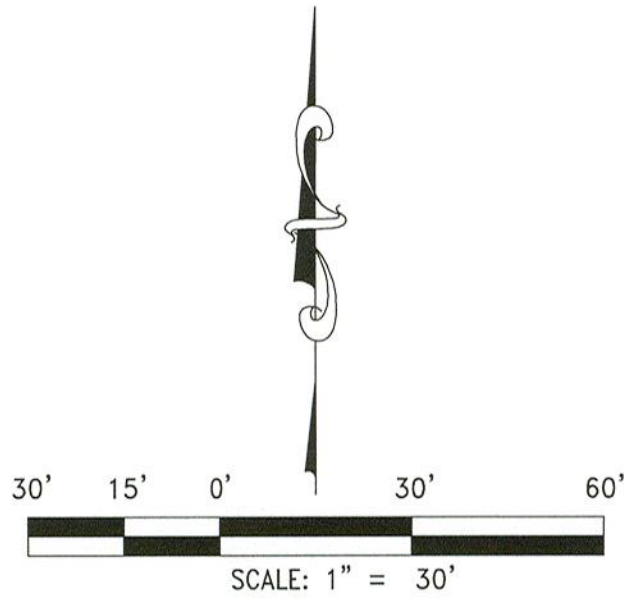
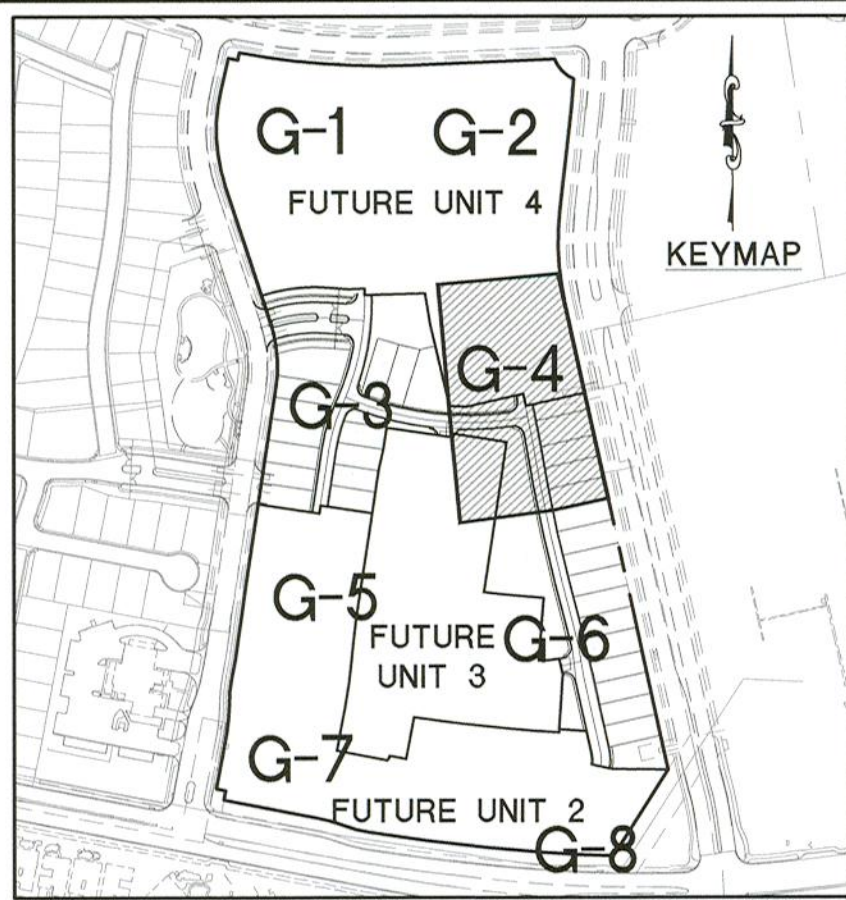
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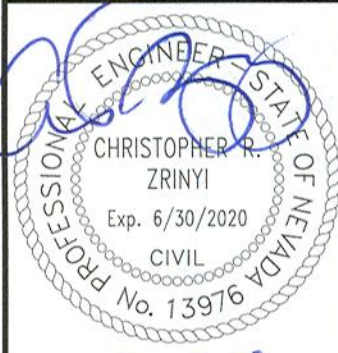
DATE:	REVISION:	DESCRIPTION:
November 20, 2019		

BY:	APPD:	DATE:

REV:	DESCRIPTION:

HORIZ. SCALE:	VERT. SCALE:	SRC:	DESIGNED BY:	CHECKED BY:	APPROVED BY:	PROJECT #:
1"=30'	N/A	MJD	CRZ	CRZ		4320.0009

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 4 OF 8)



DATE: 11-21-19

DRAWING
G-4
SHT 6 OF 25
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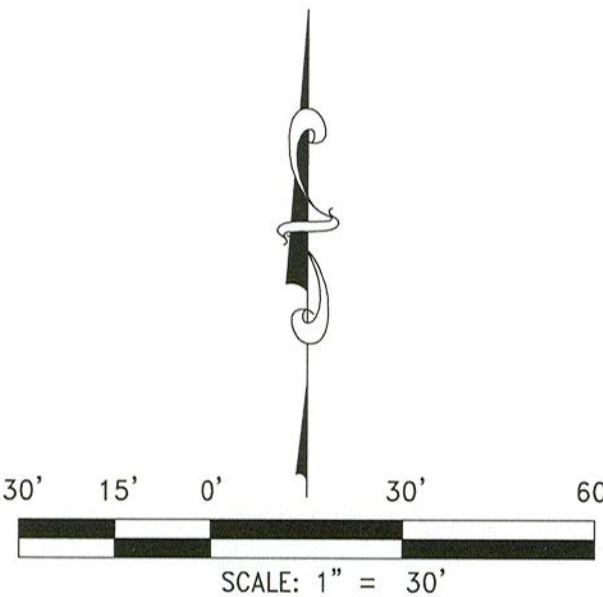
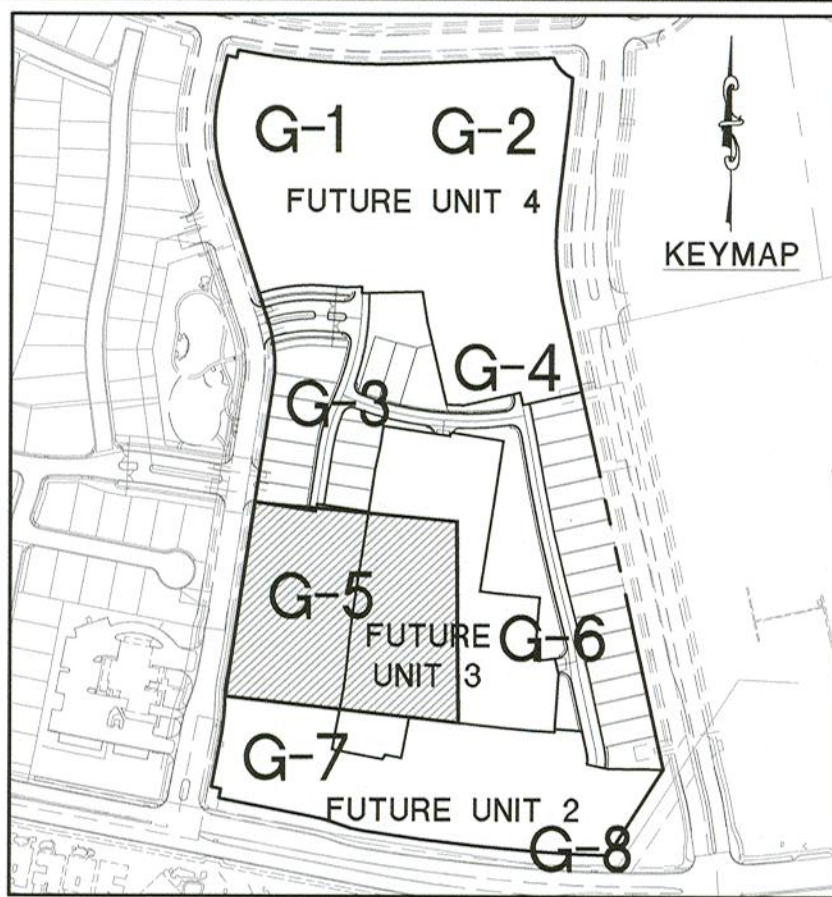
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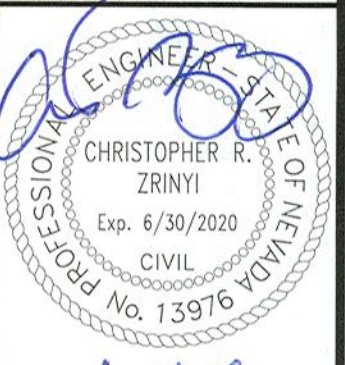
DATE	BY	APPD	DESCRIPTION	REV
November 20, 2019				
HORIZ. SCALE: 1"=30'				
VERT. SCALE: N/A				
DRAWN BY: SRC				
DESIGNED BY: MJD				
CHECKED BY: CRZ				
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WOODSIDE HOMES OF NEVADA LLC

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G-5	
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ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
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NET FILL: XX.XXX CY
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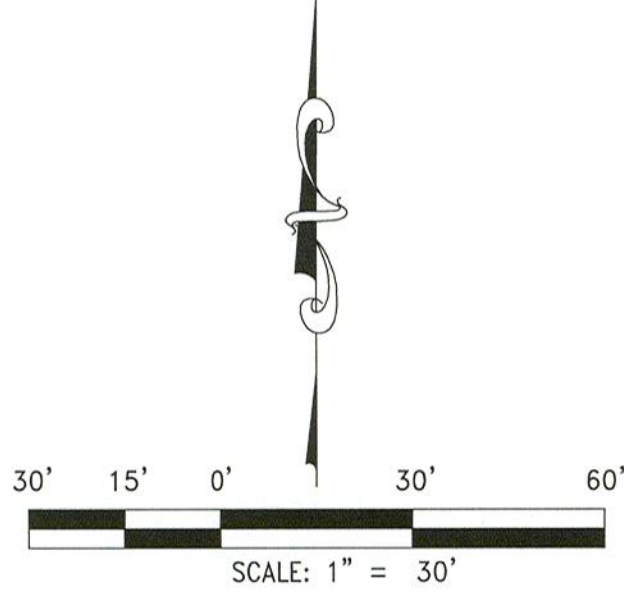
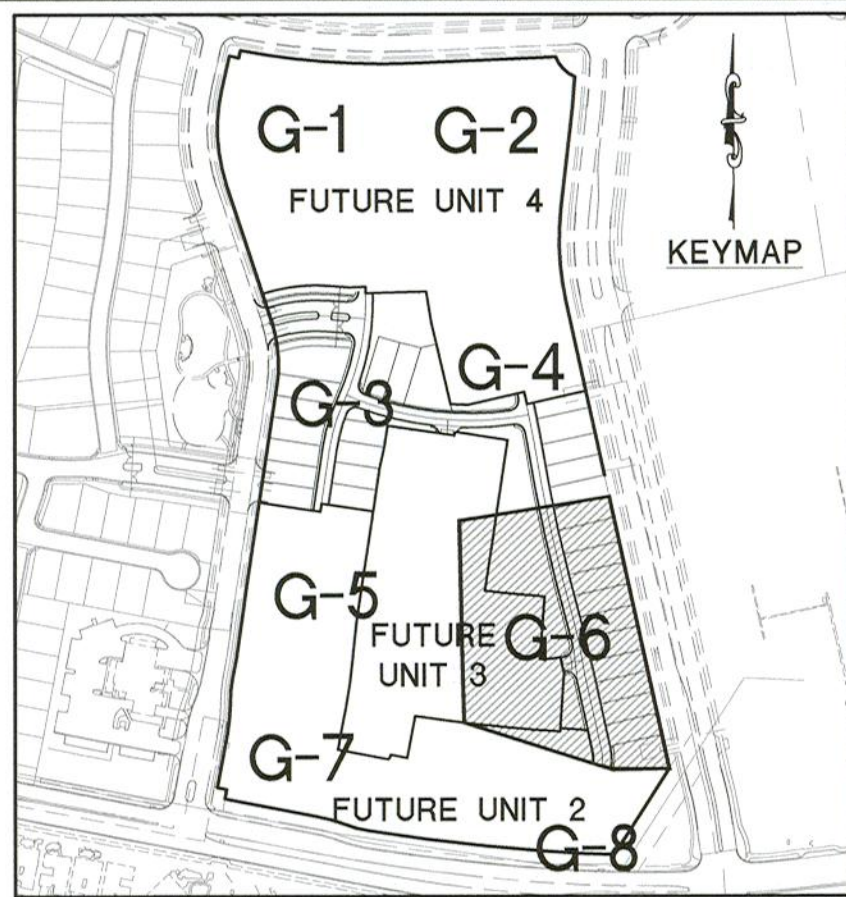
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WOODSIDE HOMES OF NEVADA LLC

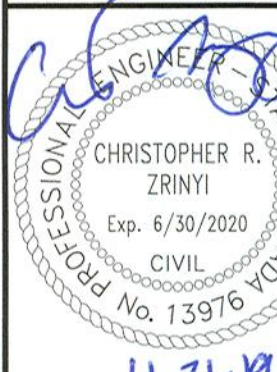
7800 W. SUMMIT DRIVE, SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-893-7824

RCI ENGINEERING
300 SOUTH RAYMOND STREET, SUITE 100
LAS VEGAS, NV 89101
PHONE: 702-433-0880 FAX: 702-433-0881
www.rcieng.com

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION

GRADING PLANS (SHEET 6 OF 8)

NEVADA
CITY OF LAS VEGAS



DATE: 11-21-19

DRAWING
G-6
SHEET 8 OF 25
CLV PROJECT #

I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

CHRISTOPHER ZRINYI, PE NO. 13976 DATE

DISCLAIMER NOTE:

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**CALL BEFORE
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OVERHEAD**

1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
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BUILDING PERMIT NOTE

ALL STRUCTURES SHOWN OR INDICATED ON THIS SUBMITTAL
WITHIN THE PROPERTY REQUIRE A BUILDING PERMIT
APPLICATION AND SUBMITTAL THIS INCLUDES BUILDINGS, ABOVE
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ENCLOSURES, SHADE STRUCTURES, STAIRWAYS, RAMP, LIGHT
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ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP
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32003C2125E DATED SEPTEMBER 27, 2002, THE SITE IS
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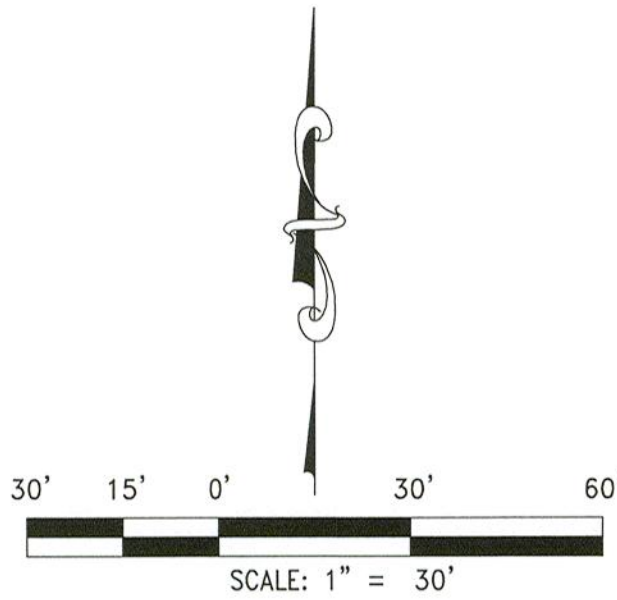
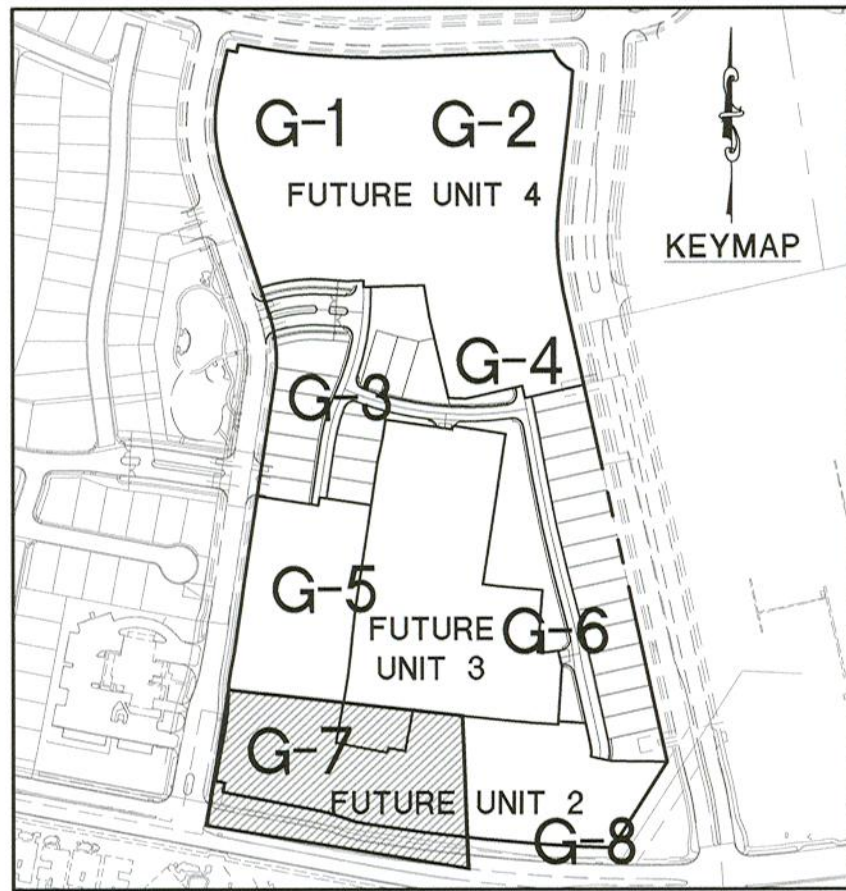
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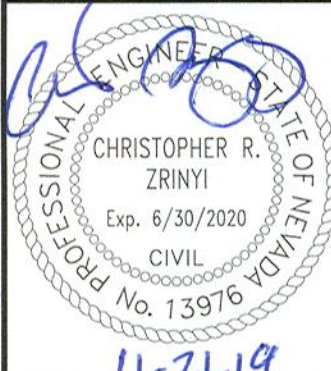
WOODSIDE HOMES OF NEVADA LLC

IMPROVEMENT PLANS FOR
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GRADING PLANS (SHEET 7 OF 8)

NEVADA

CITY OF LAS VEGAS



DATE: 11-21-19

DRAWING
G-7
SHT 9 OF 25
CLV DRAWING NUMBER

CHRISTOPHER ZRINYI, PE NO. 13976

DATE

CLV PROJECT #

G:\4320_Woodside\0009_Summerlin\18_Civil\PS\Phase 1\SUMMERLIN18_PHASE1.dwg scale: 11/20/19 6:25pm

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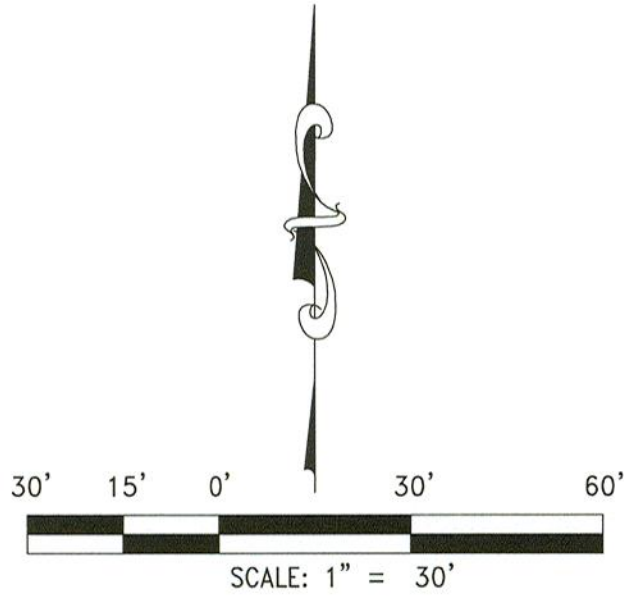
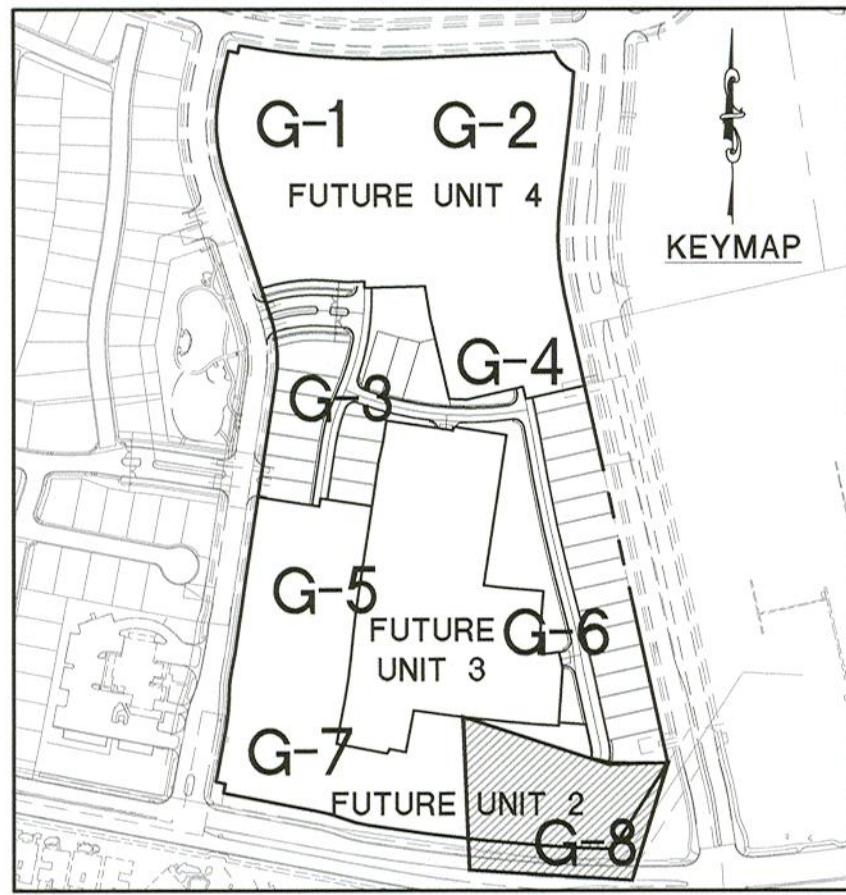
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WOODSIDE HOMES OF NEVADA LLC

7895 N. SHAW BLVD., SUITE 110
LAS VEGAS, NV 89113

PHONE: 702-889-7824

500 SOUTH PHOENIX AVENUE, SUITE 100
LAS VEGAS, NV 89106

PROJECT # 4320.0009

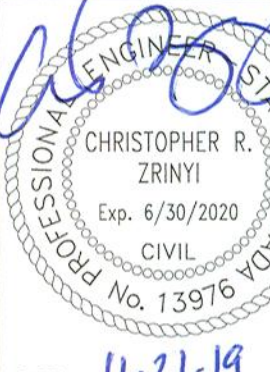
RCI ENGINEERING

DESIGNED BY: MJD
CHECKED BY: CRZ
APPROVED BY: CRZ

DATE: November 20, 2019
HORIZ. SCALE: 1"=30'
VERT. SCALE: N/A
DRAWN BY: SRC
DESIGNED BY: MJD
CHECKED BY: CRZ
APPROVED BY: CRZ

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
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A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 8 OF 8)

CITY OF LAS VEGAS



DATE: 11-21-19

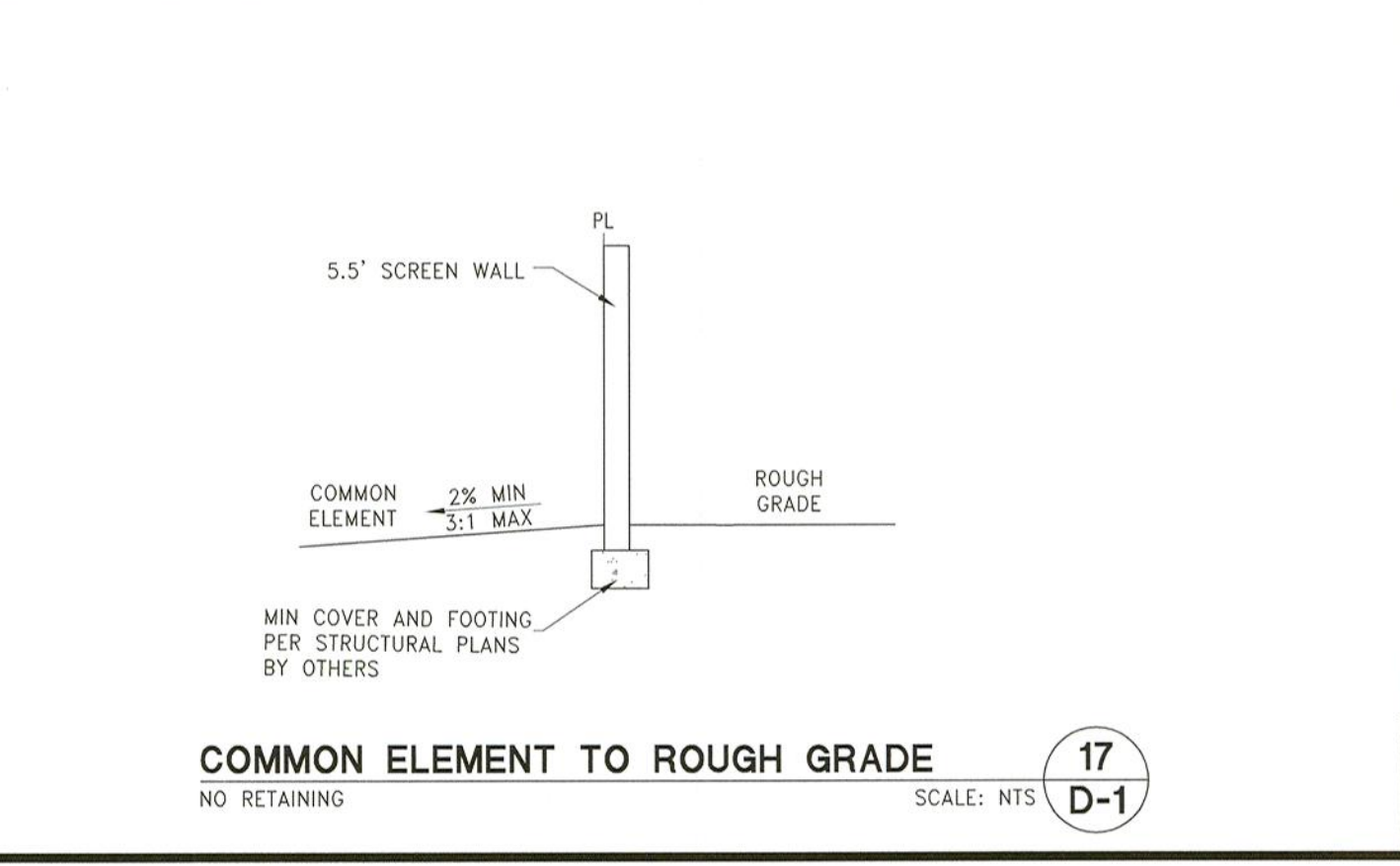
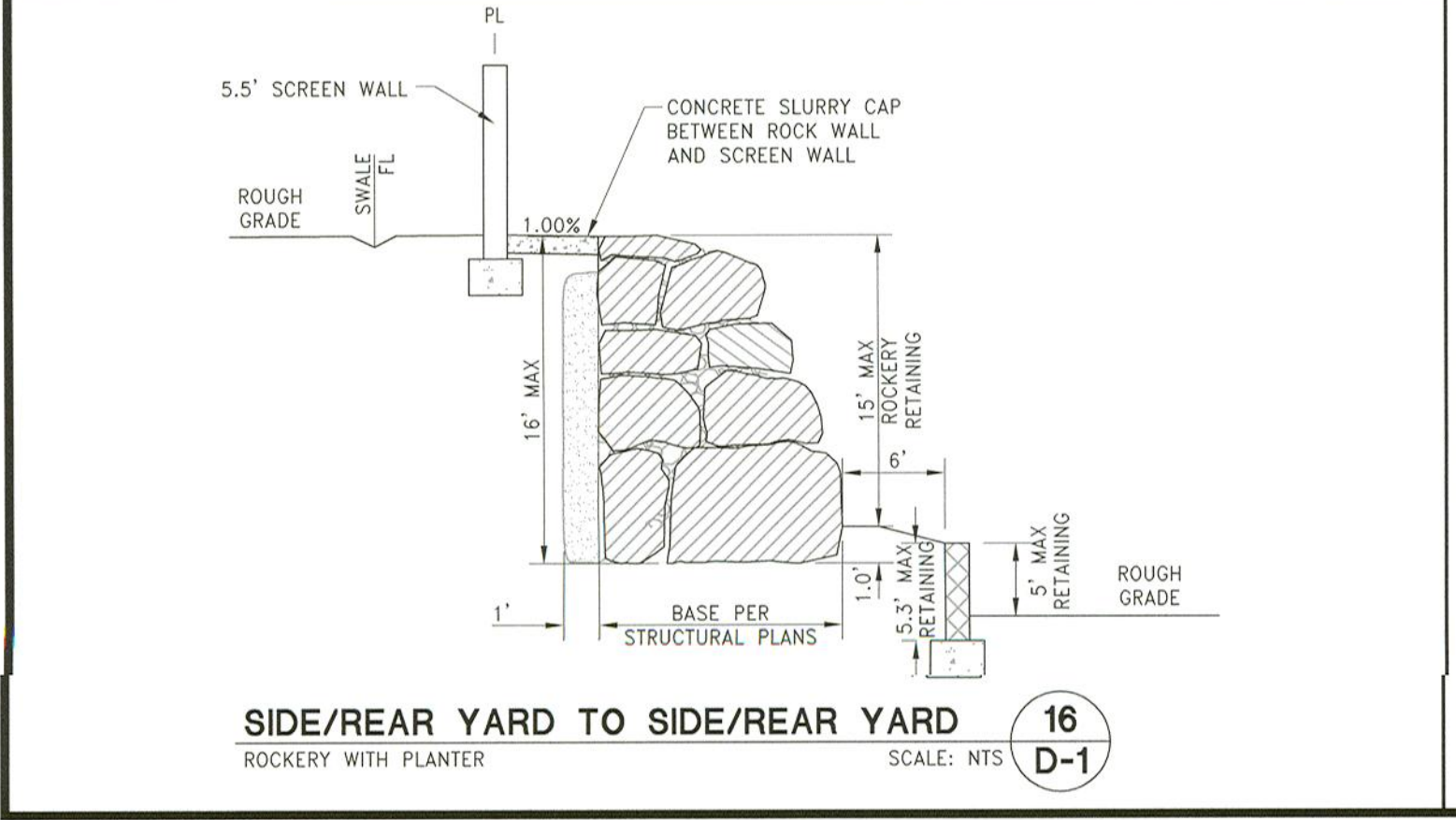
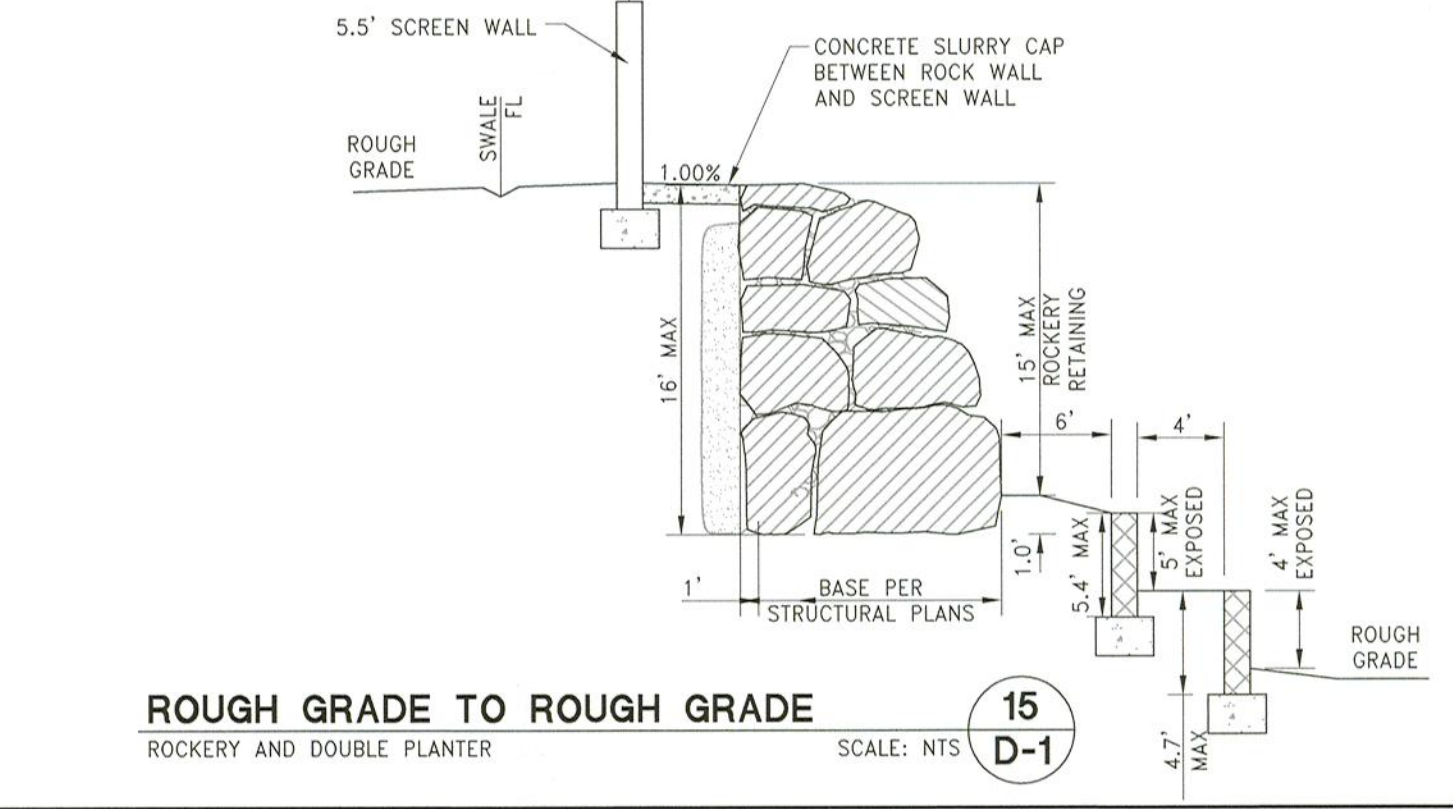
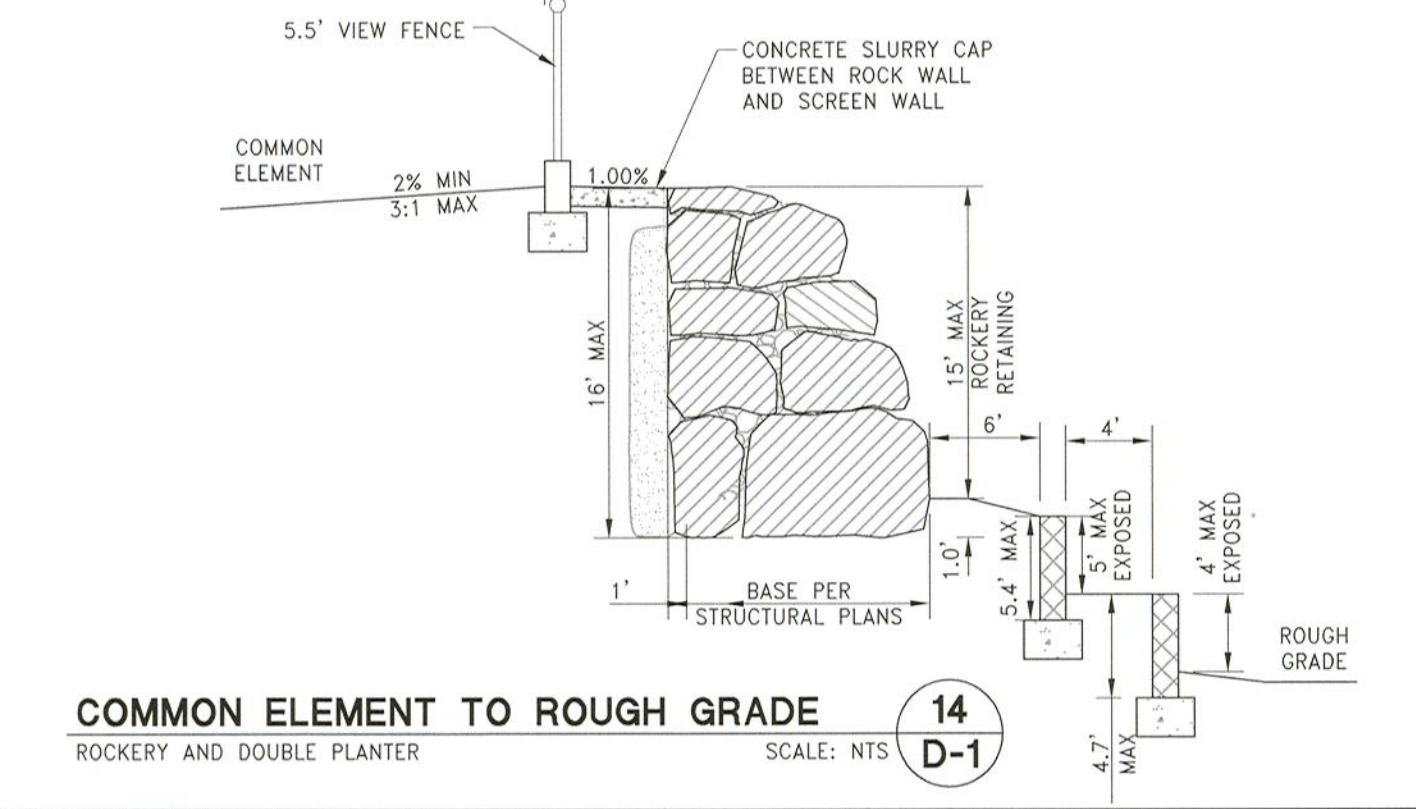
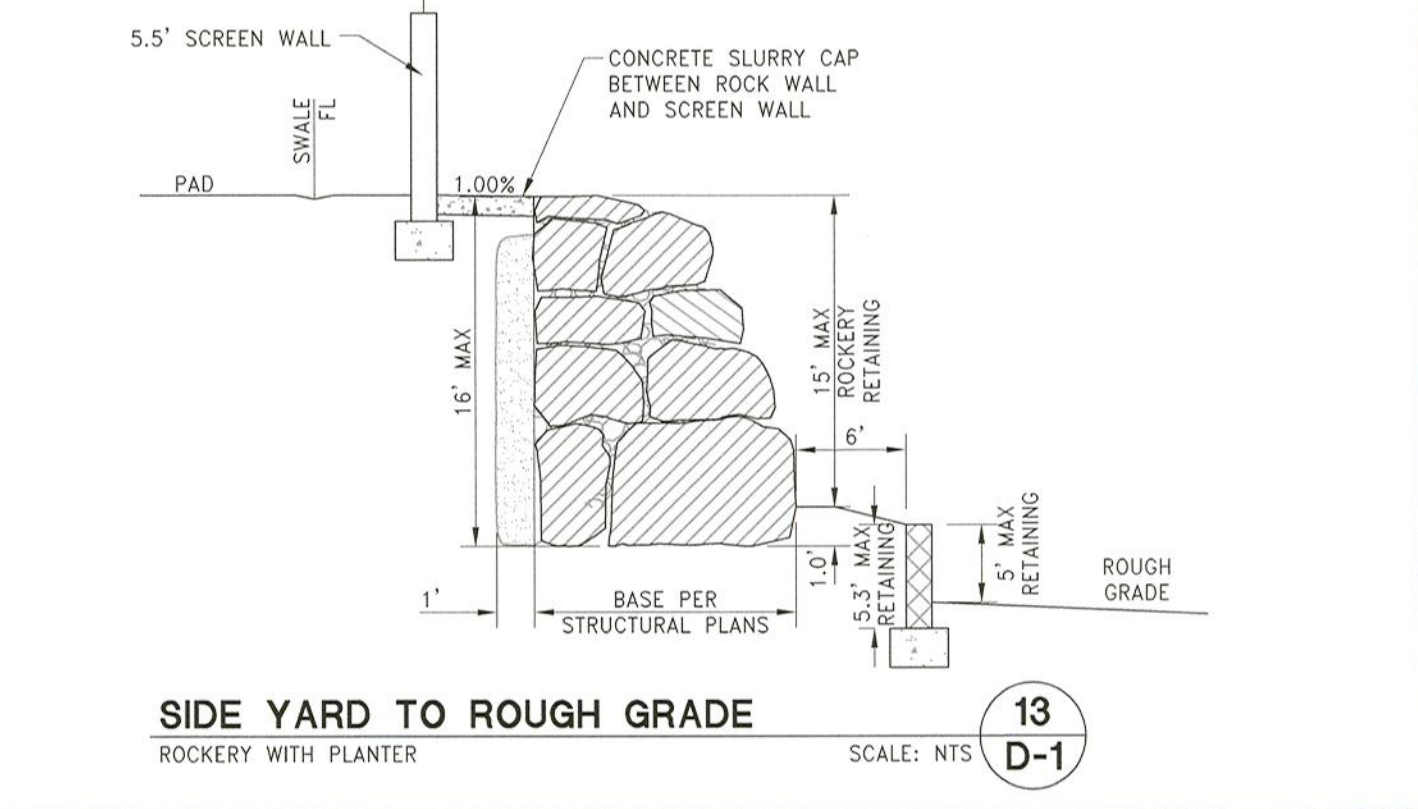
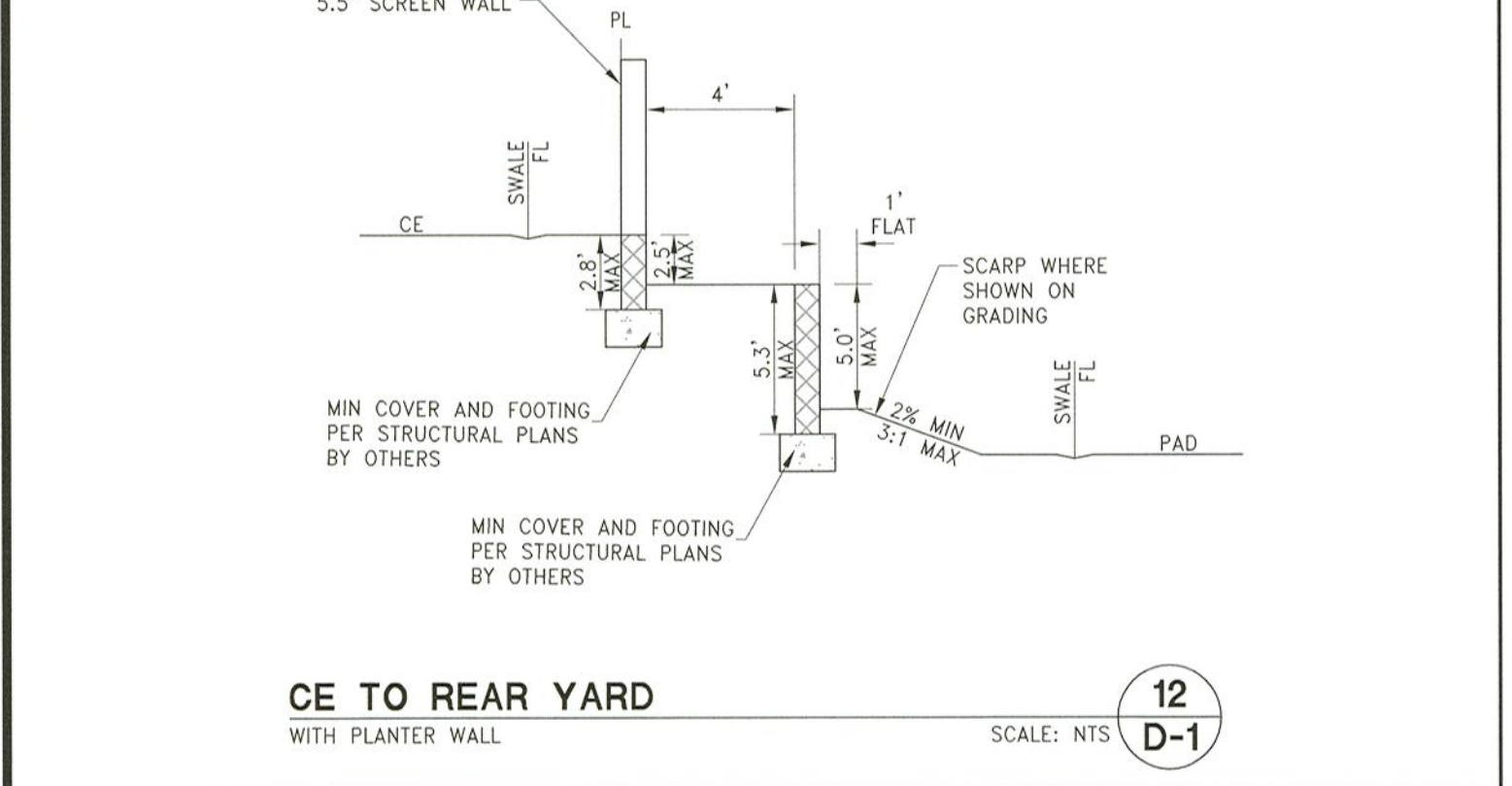
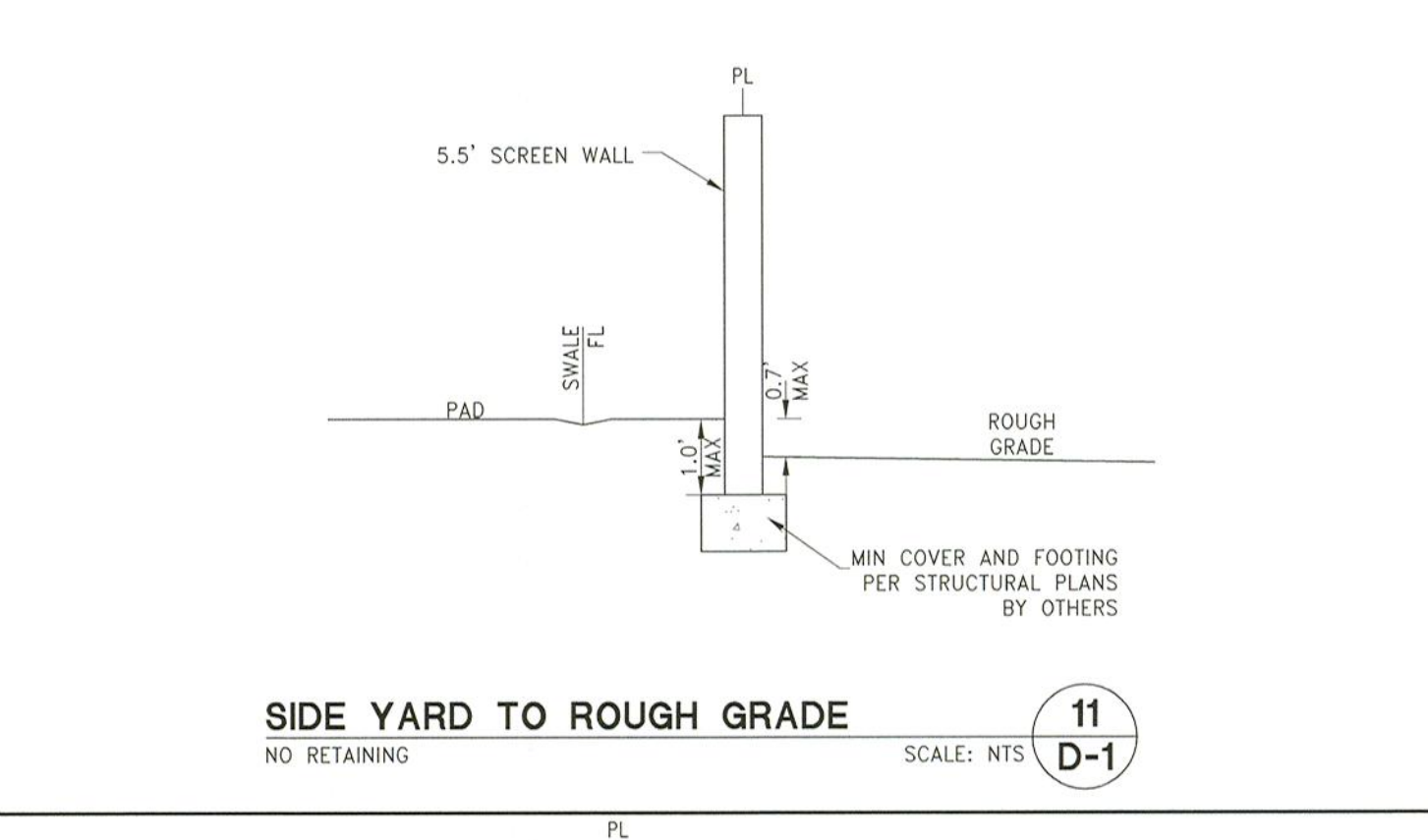
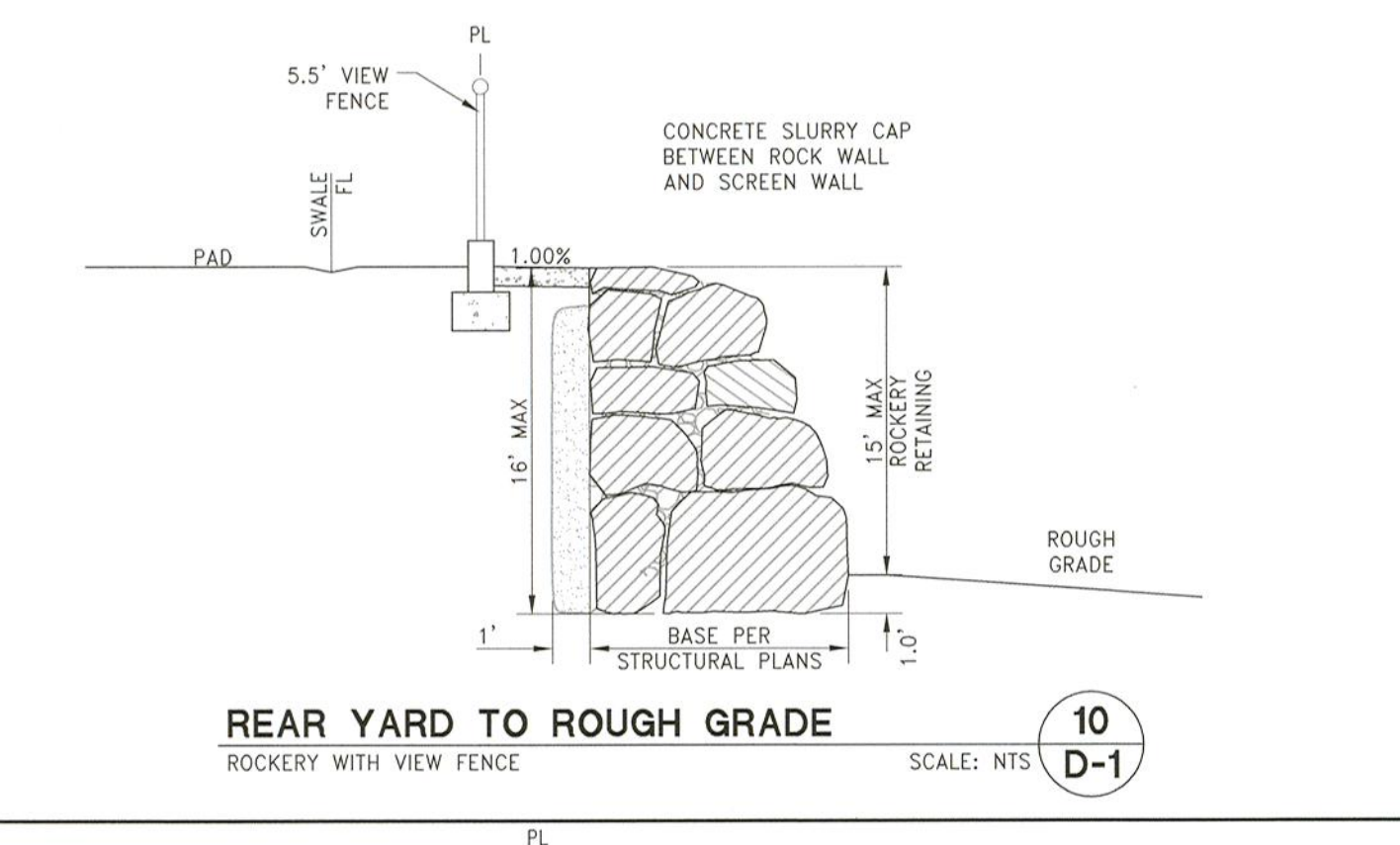
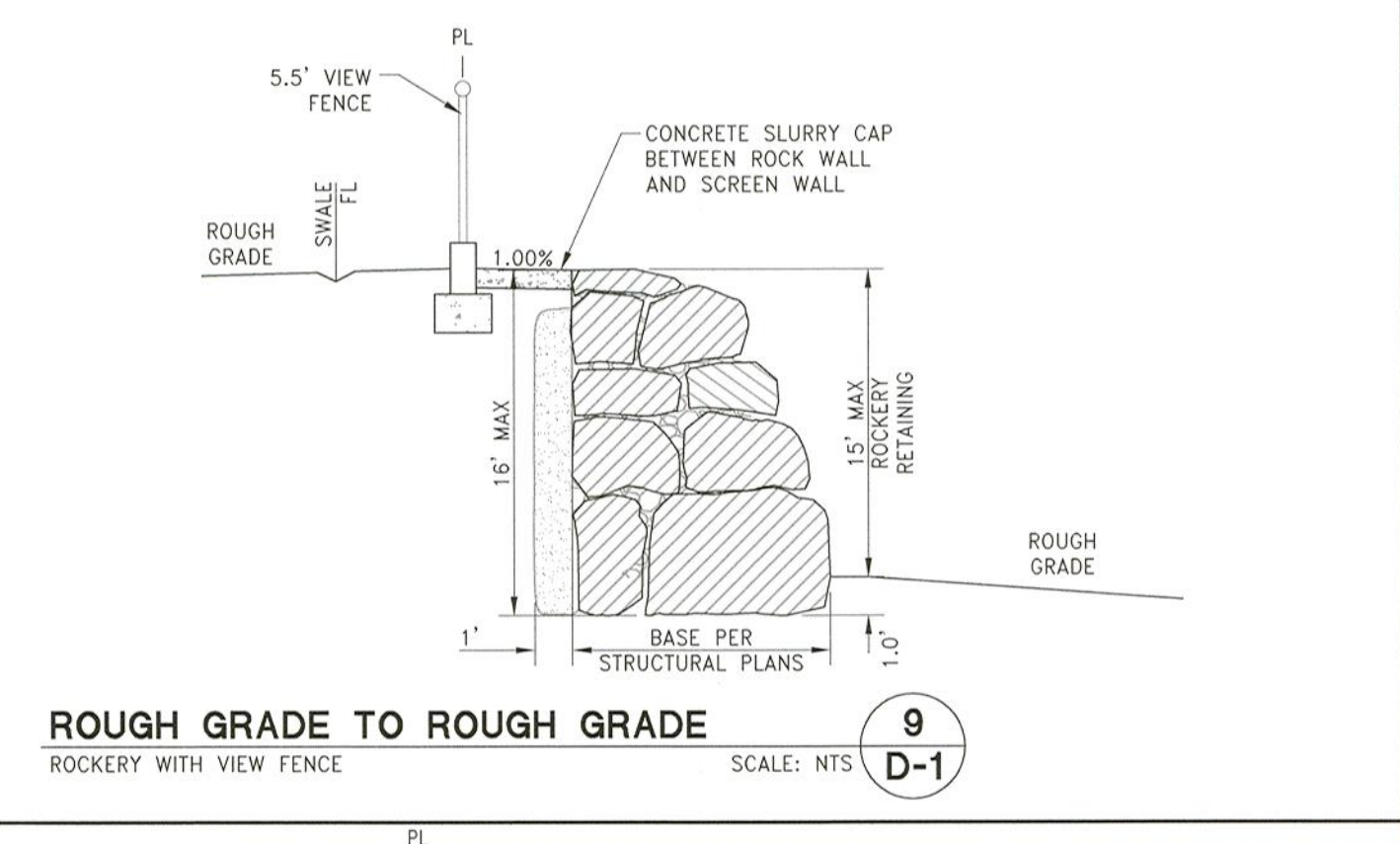
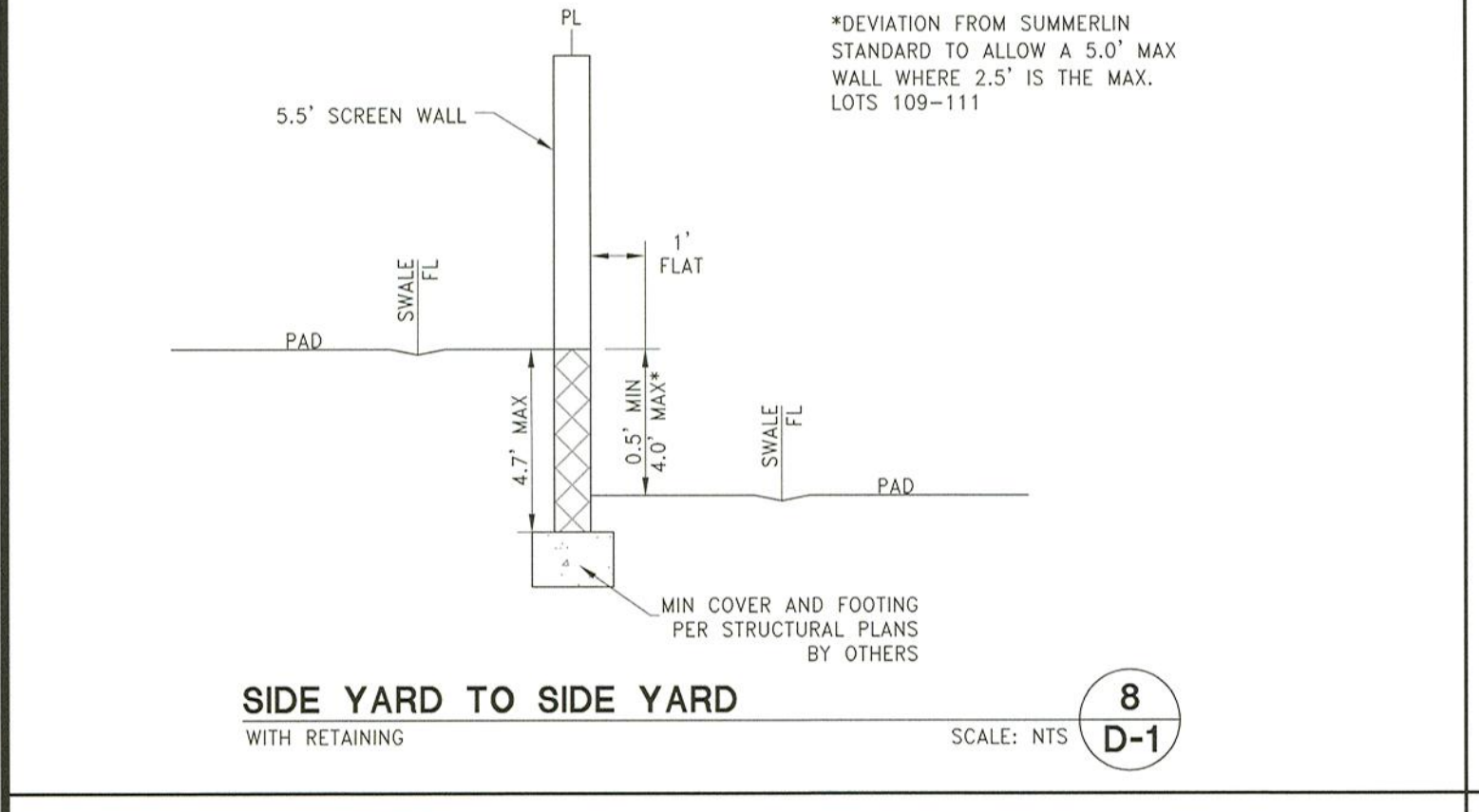
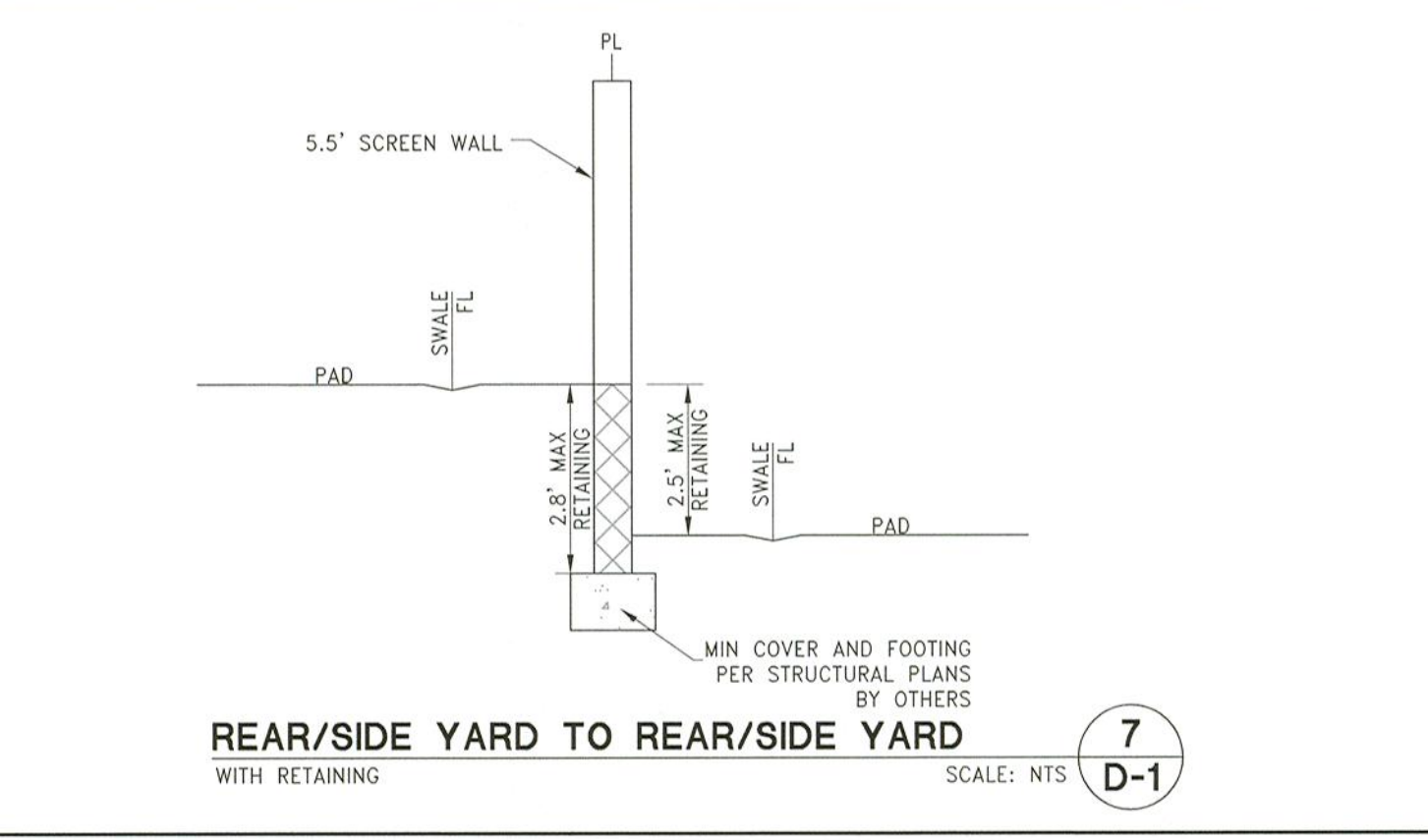
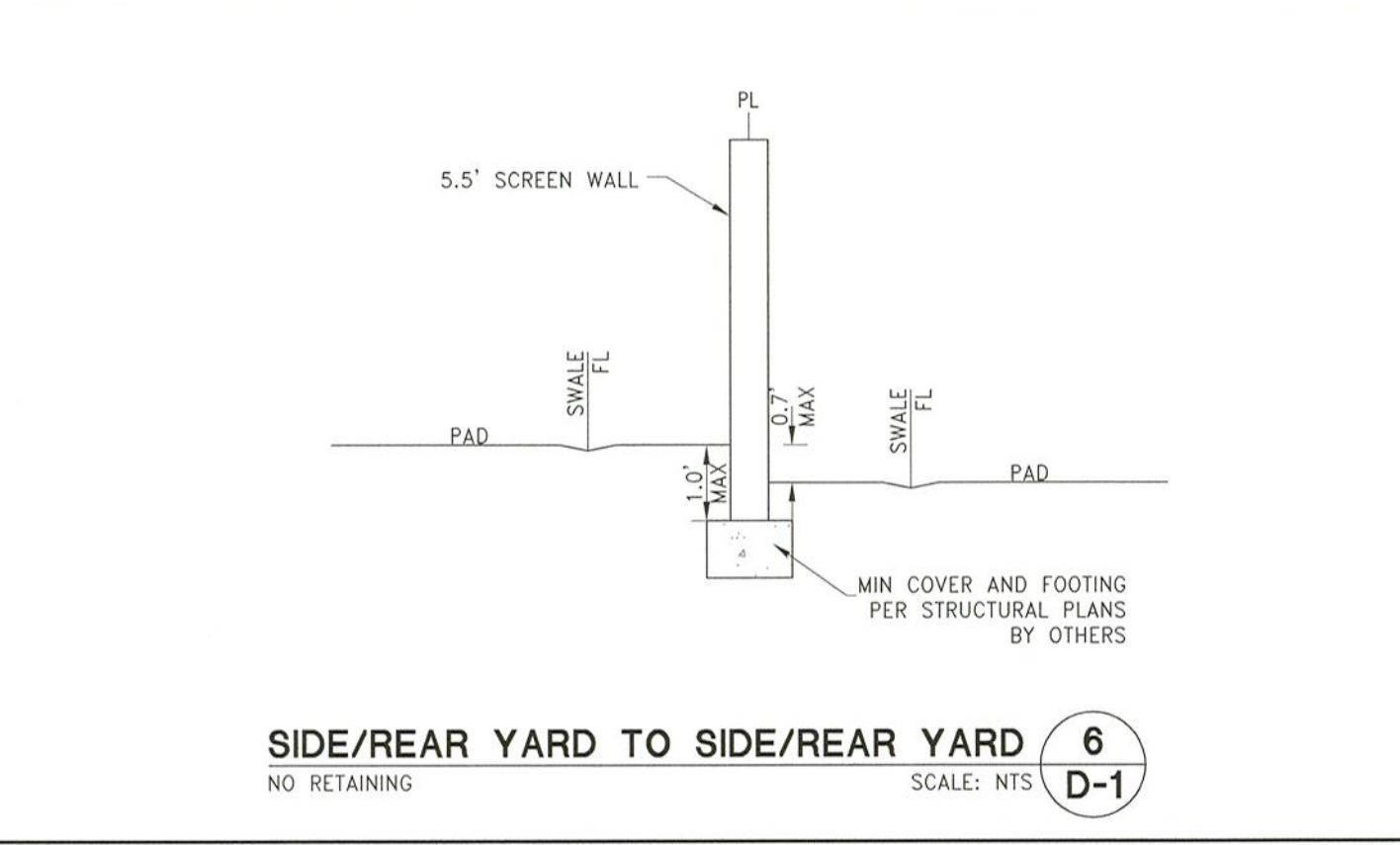
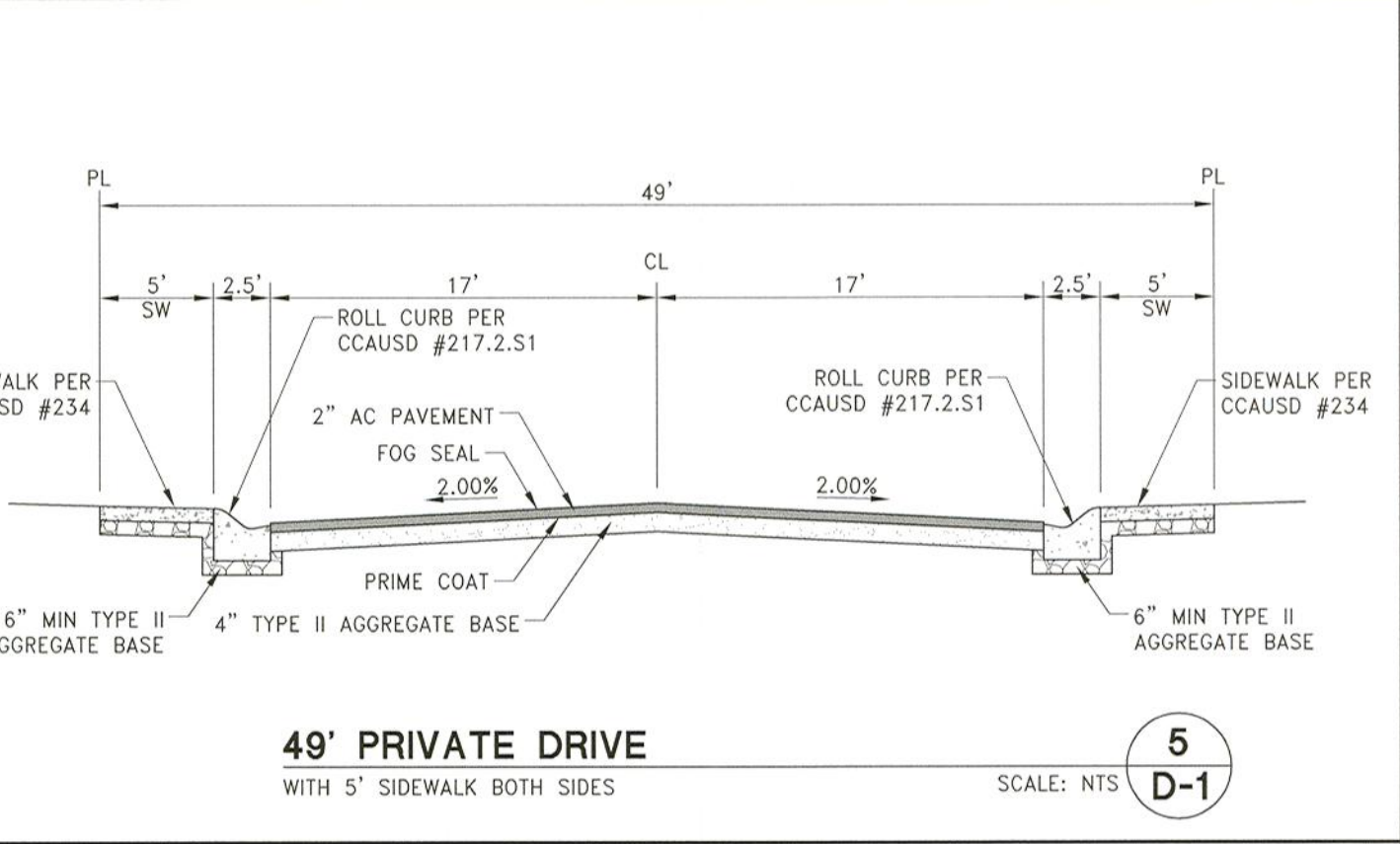
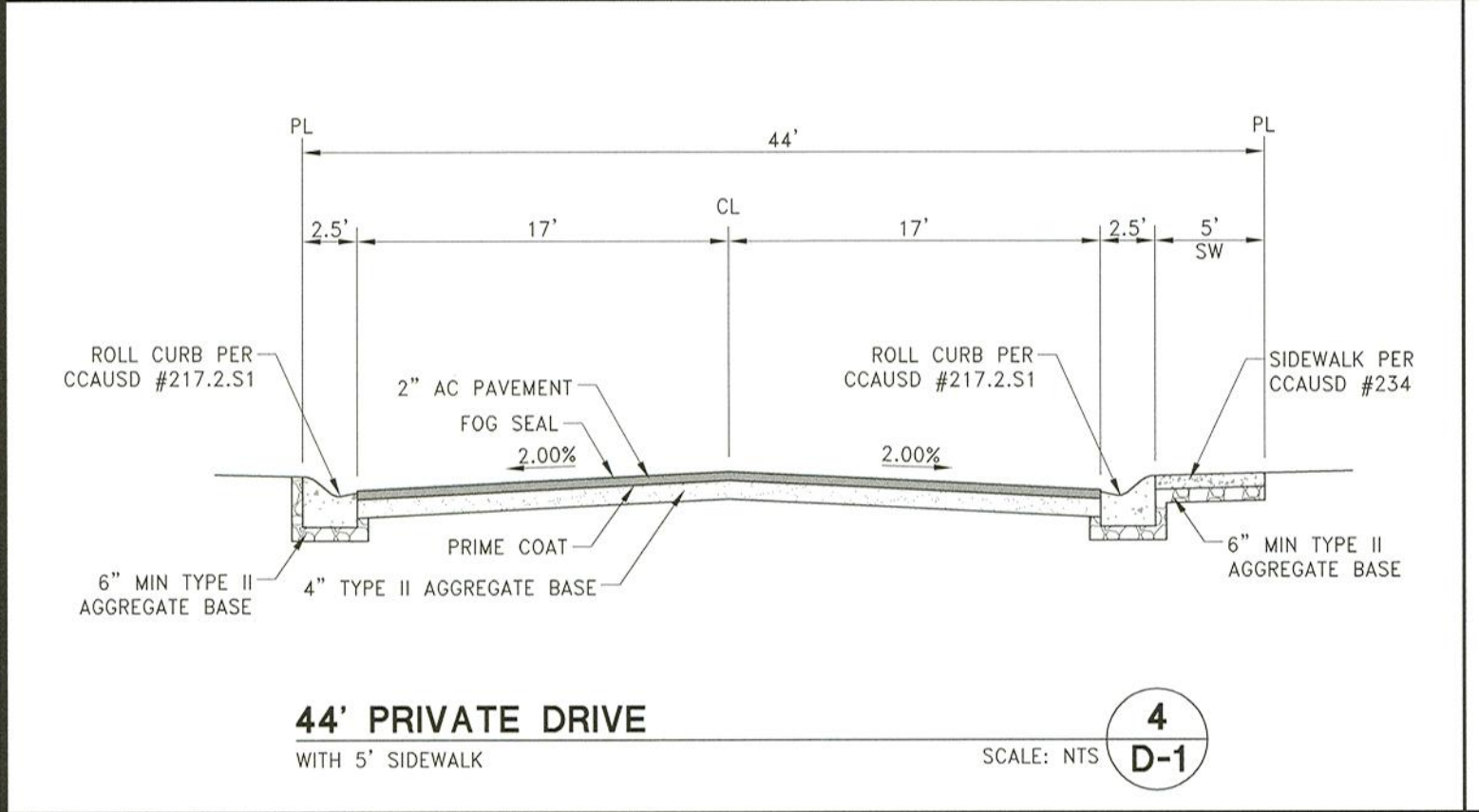
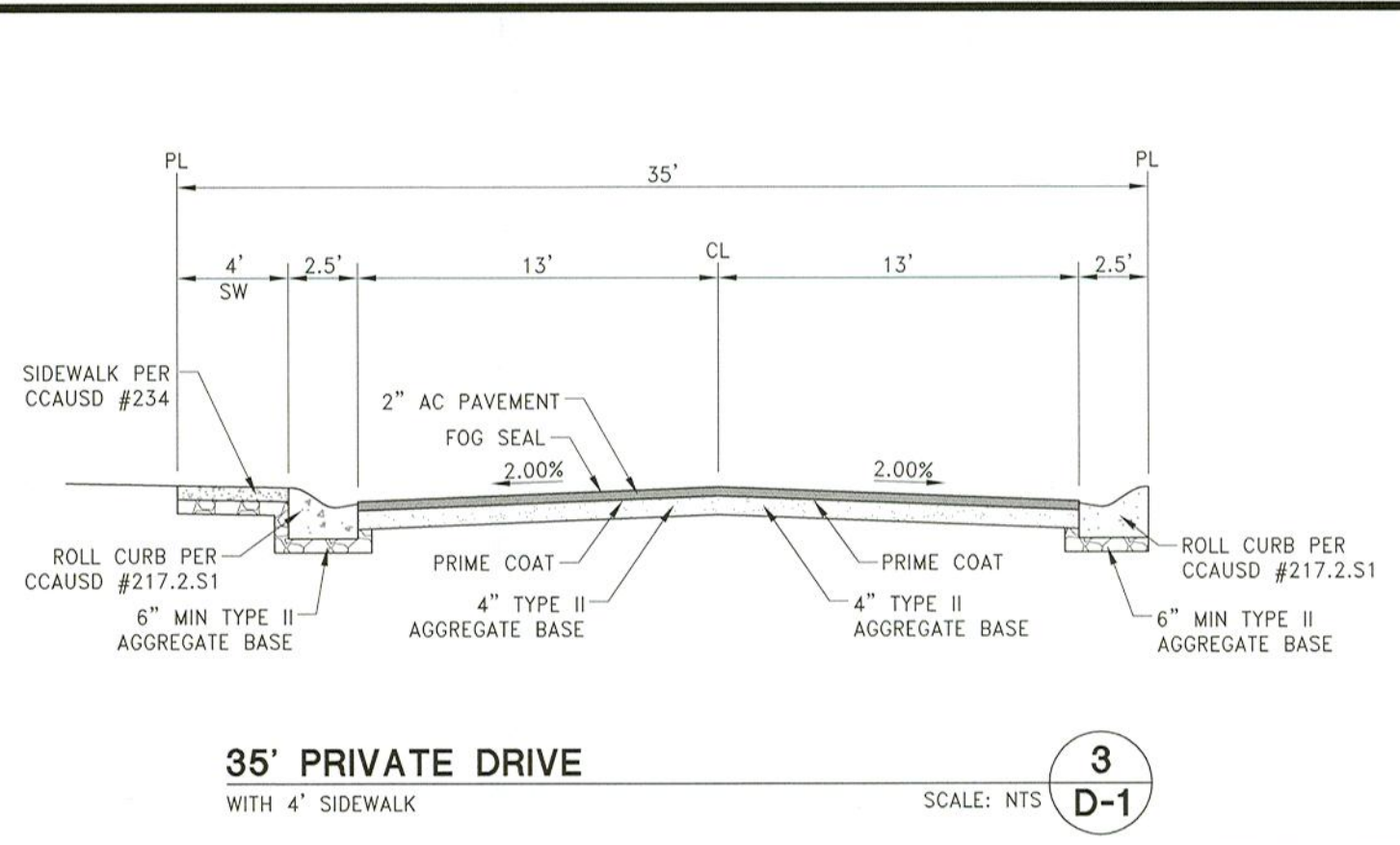
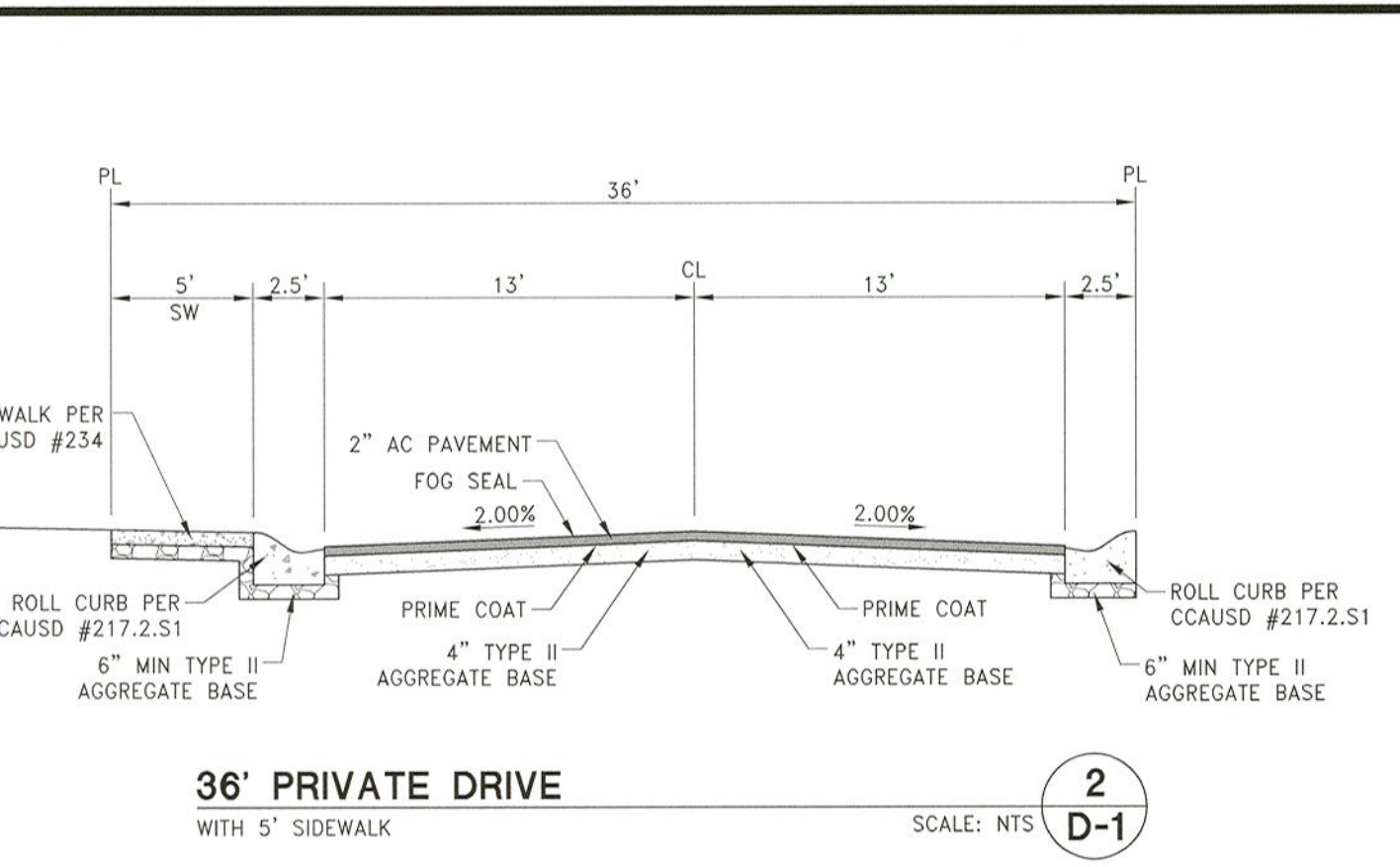
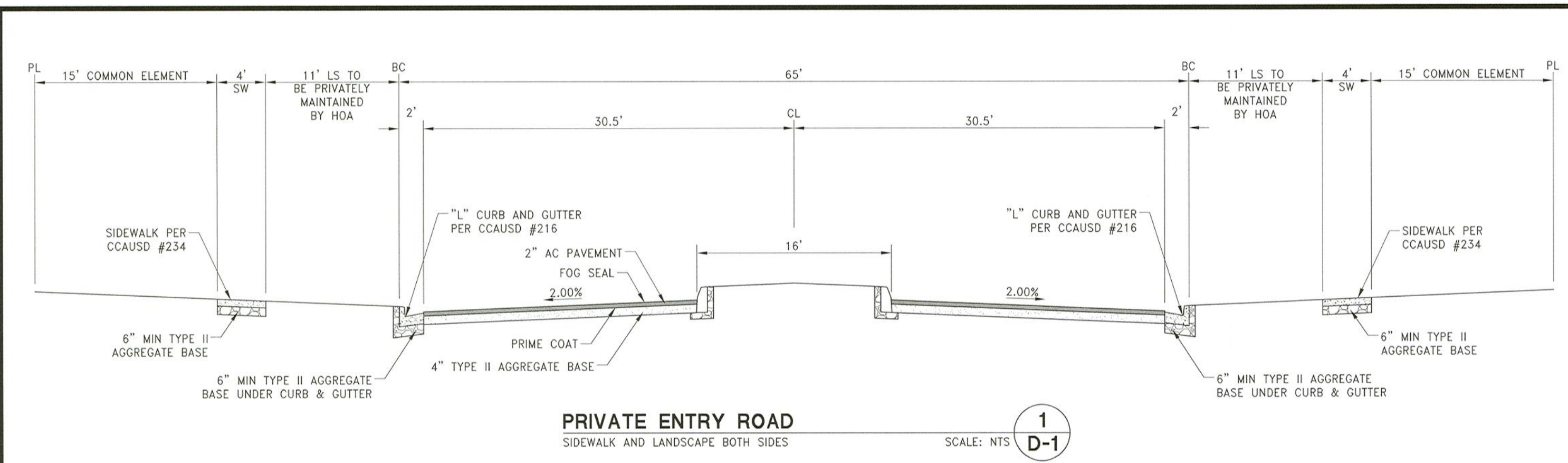
DRAWING
G-8

SHT 10 OF 25
CLV DRAWING NUMBER

I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

CHRISTOPHER ZRINYI, PE NO. 13976

DATE



GEOTECHNICAL NOTE:
A GEOLOGIST OR GEOTECHNICAL ENGINEER SHALL BE ON SITE DURING EXCAVATION AND MASS GRADING OPERATIONS TO EXAMINE THE SOIL CHARACTERISTICS AND GEOLOGICAL CONDITIONS ENCOUNTERED, AND TO PROVIDE PROFESSIONAL ADVICE TO THE OWNER IN THE EVENT THAT UNANTICIPATED SOIL PROBLEMS ARISE AND/OR SUBSURFACE SITE CONDITIONS ARE FOUND TO BE SIGNIFICANTLY DIFFERENT THAN DEFINED BY PRE EXPLORATION AND TESTING.

WALL & SCARP NOTE:
1. CONTRACTOR TO CONSTRUCT ALL SCARP AND MAINTAIN PROPER COVER OVER AND FROM ALL WALL FOOTINGS PER THE SOILS REPORT REFERRED TO ON THE GRADING PLANS, REPORT ANY PROBLEMS IN SHOW SO TO THE DEVELOPER AND THE ENGINEER IMMEDIATELY.
2. SCARP LESS THAN 1' VERTICAL NOT SHOWN ON PLANS.
3. ALL WALL ALIGNMENTS SHALL FOLLOW SIGHT VISIBILITY ZONE ALIGNMENT AND REMAIN OUTSIDE OF SIGHT VISIBILITY ZONE.

DATE	BY	APPD	REV	DESCRIPTION
November 20, 2019	N/A	N/A		
Horiz. Scale:	N/A			
Vert. Scale:	N/A			
Drawn By:	SRC			
Checked By:	MJD			
Approved By:	CPZ			
Project #:	4320.0009			

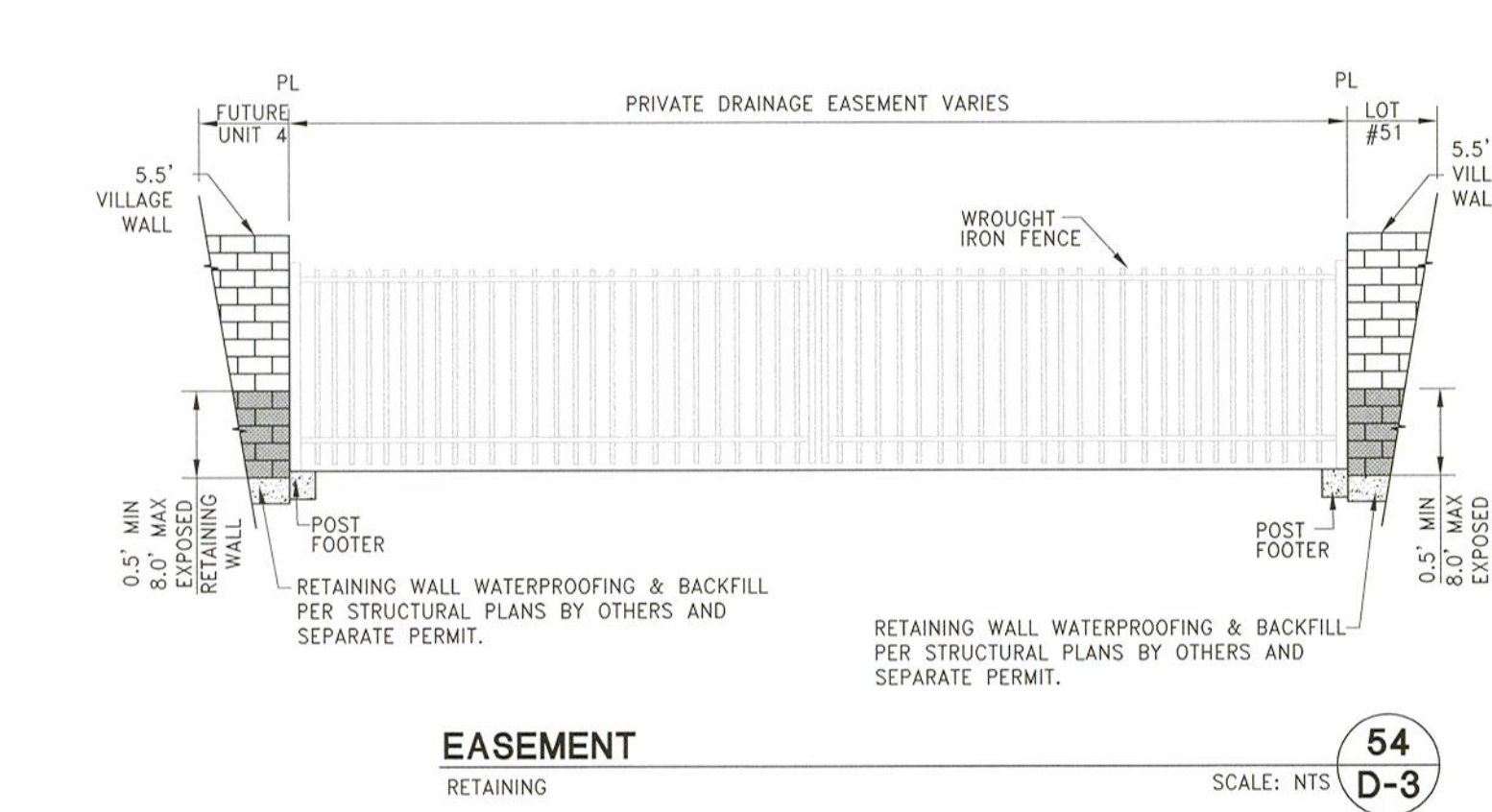
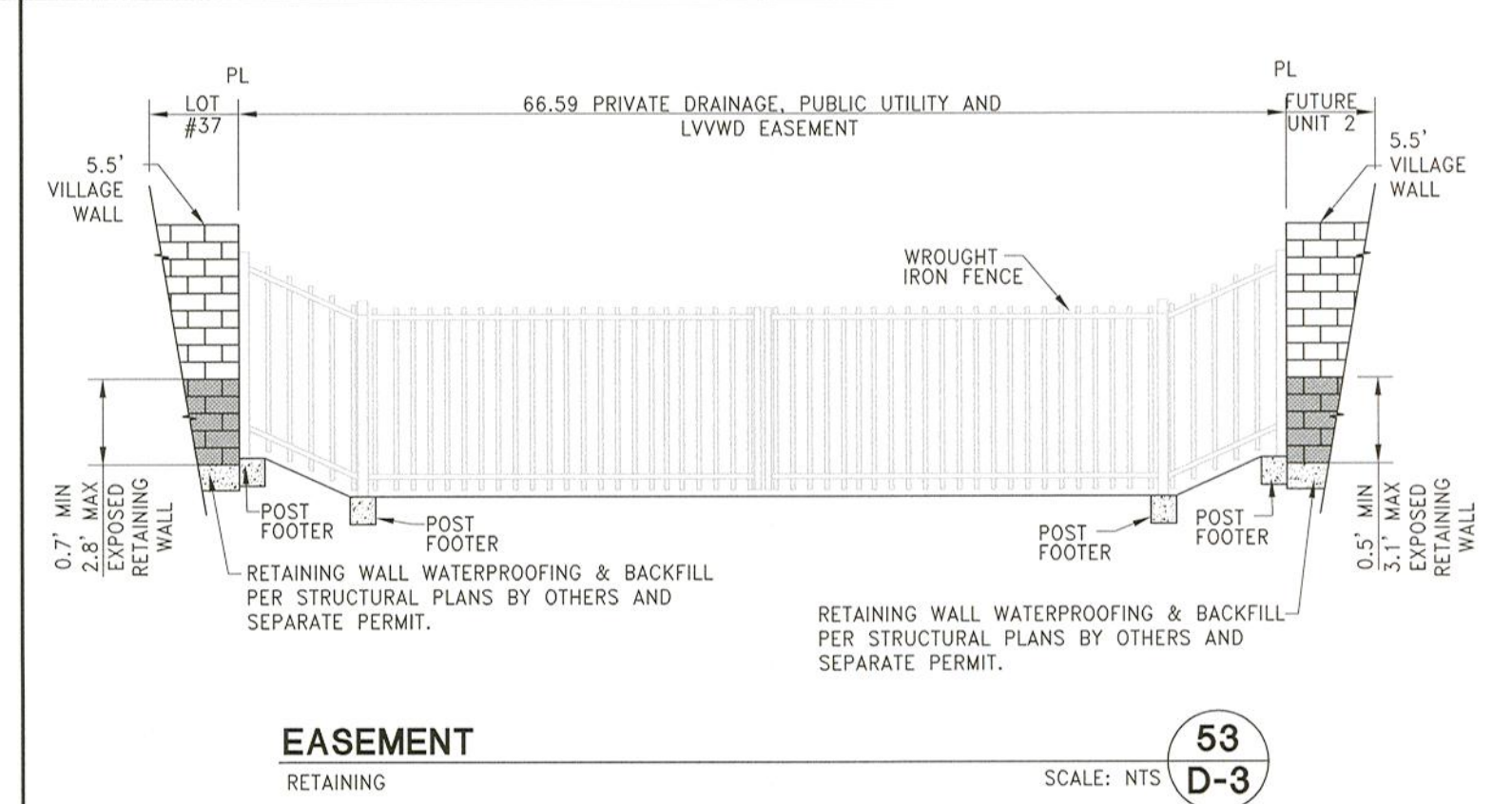
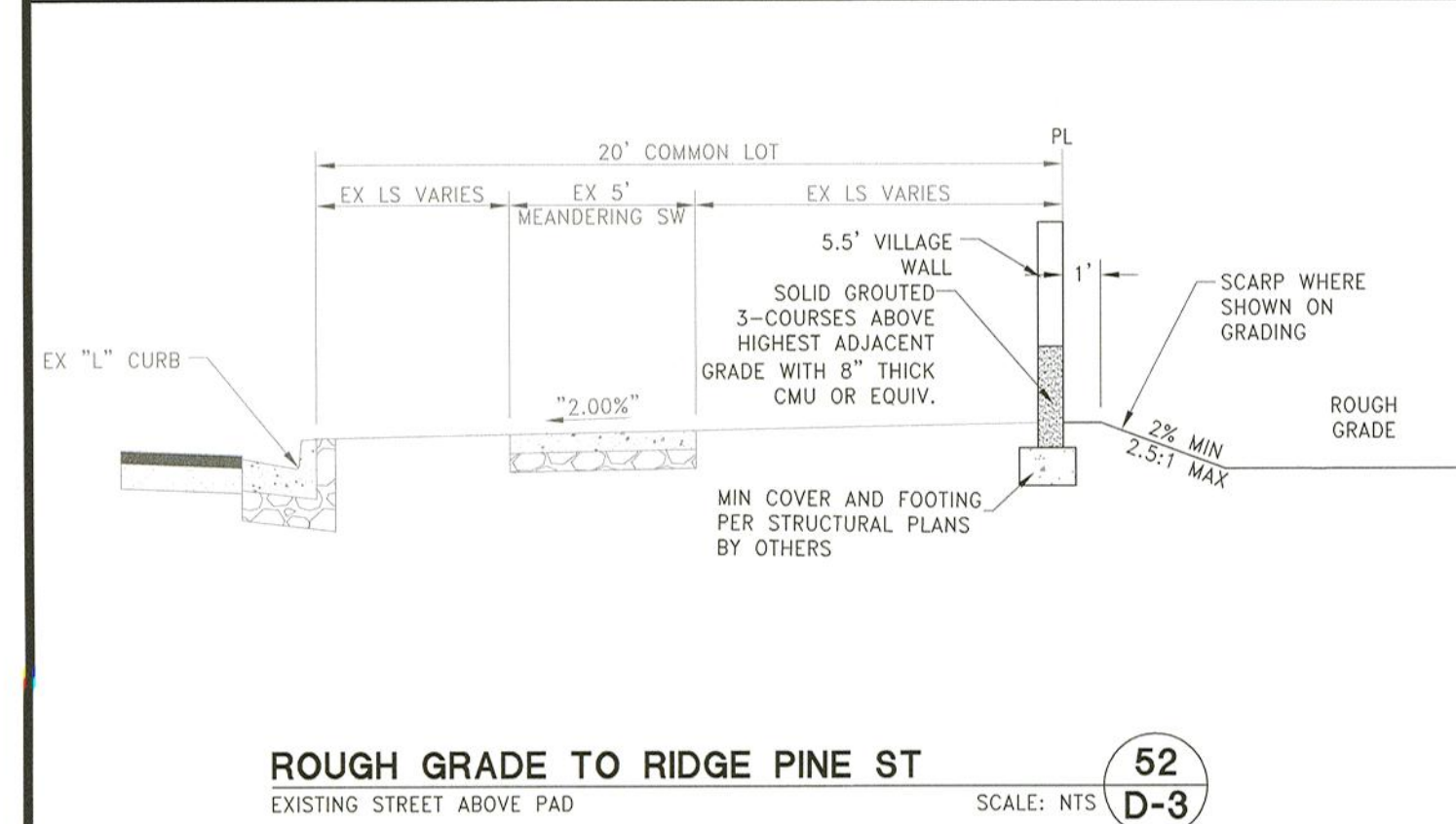
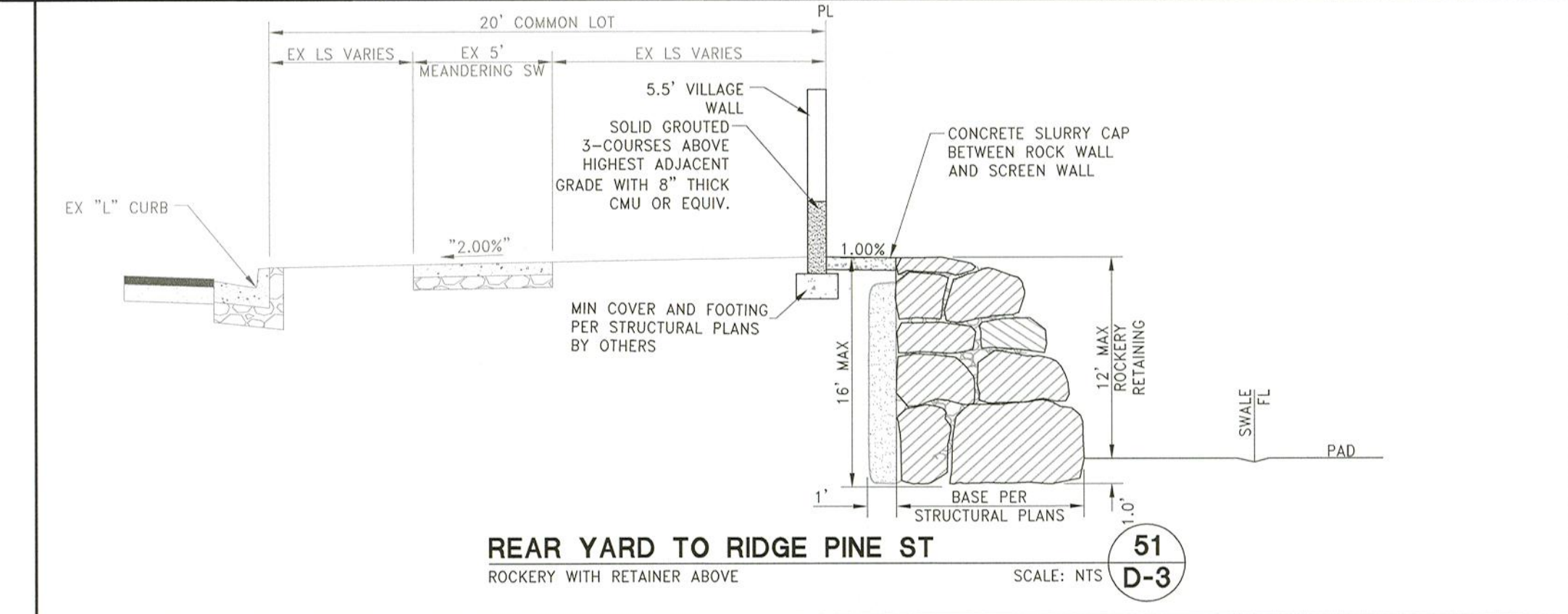
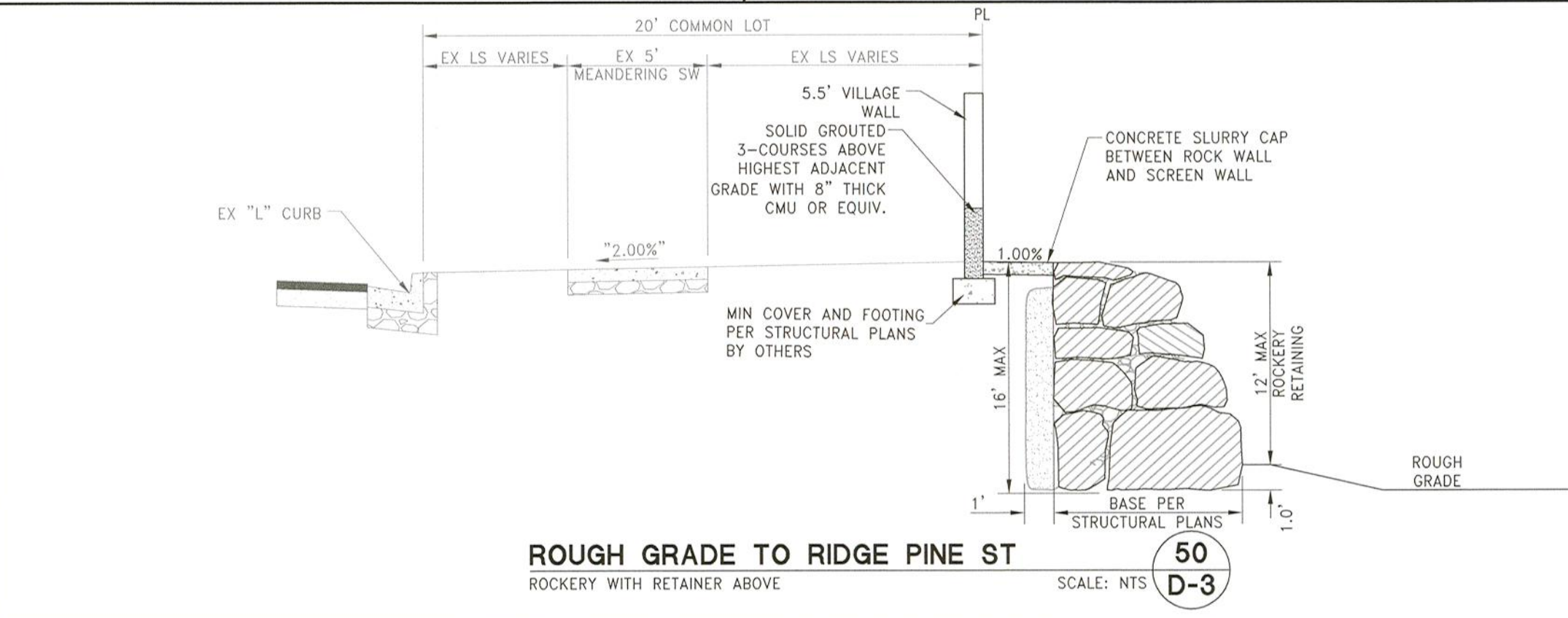
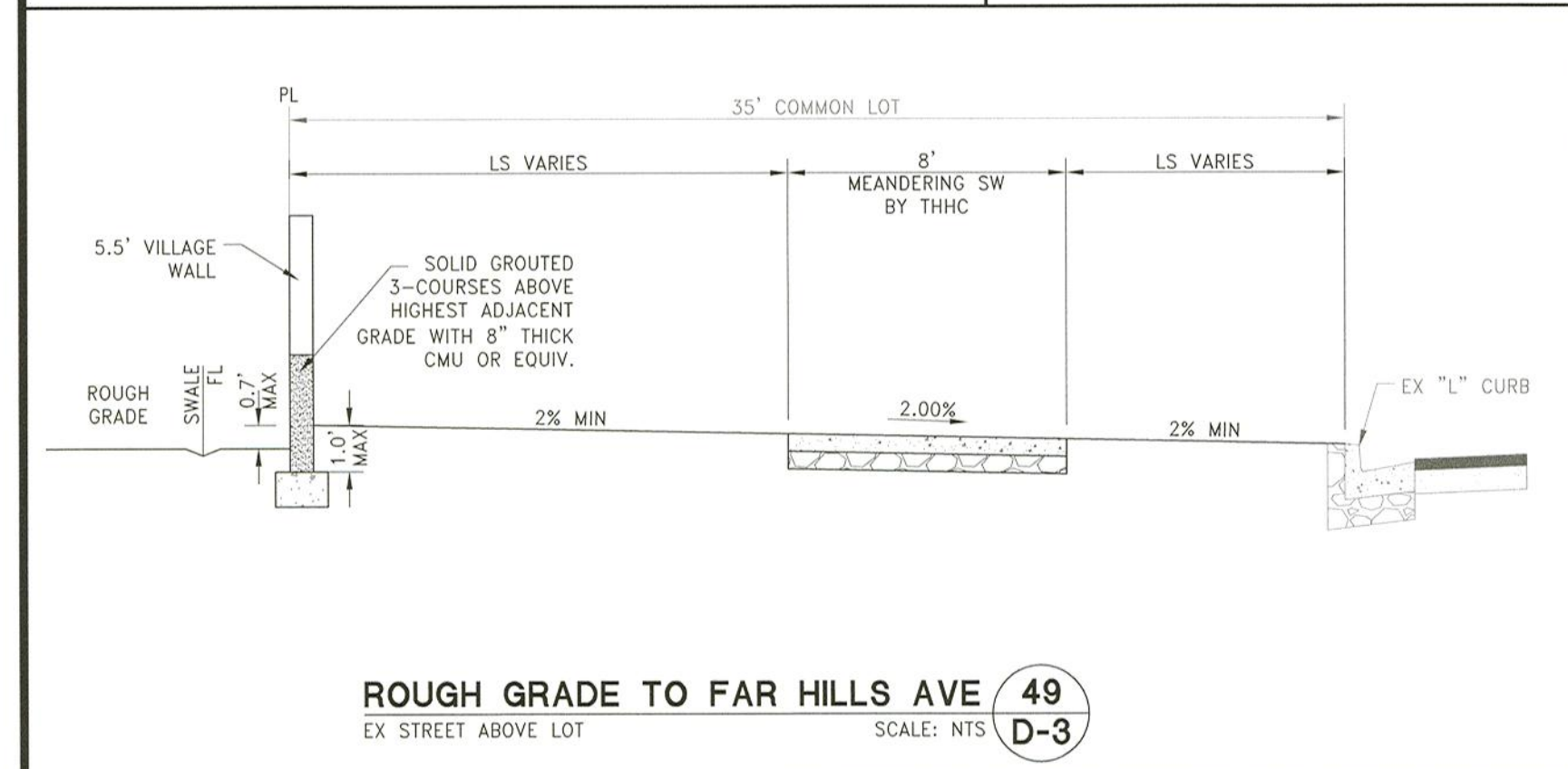
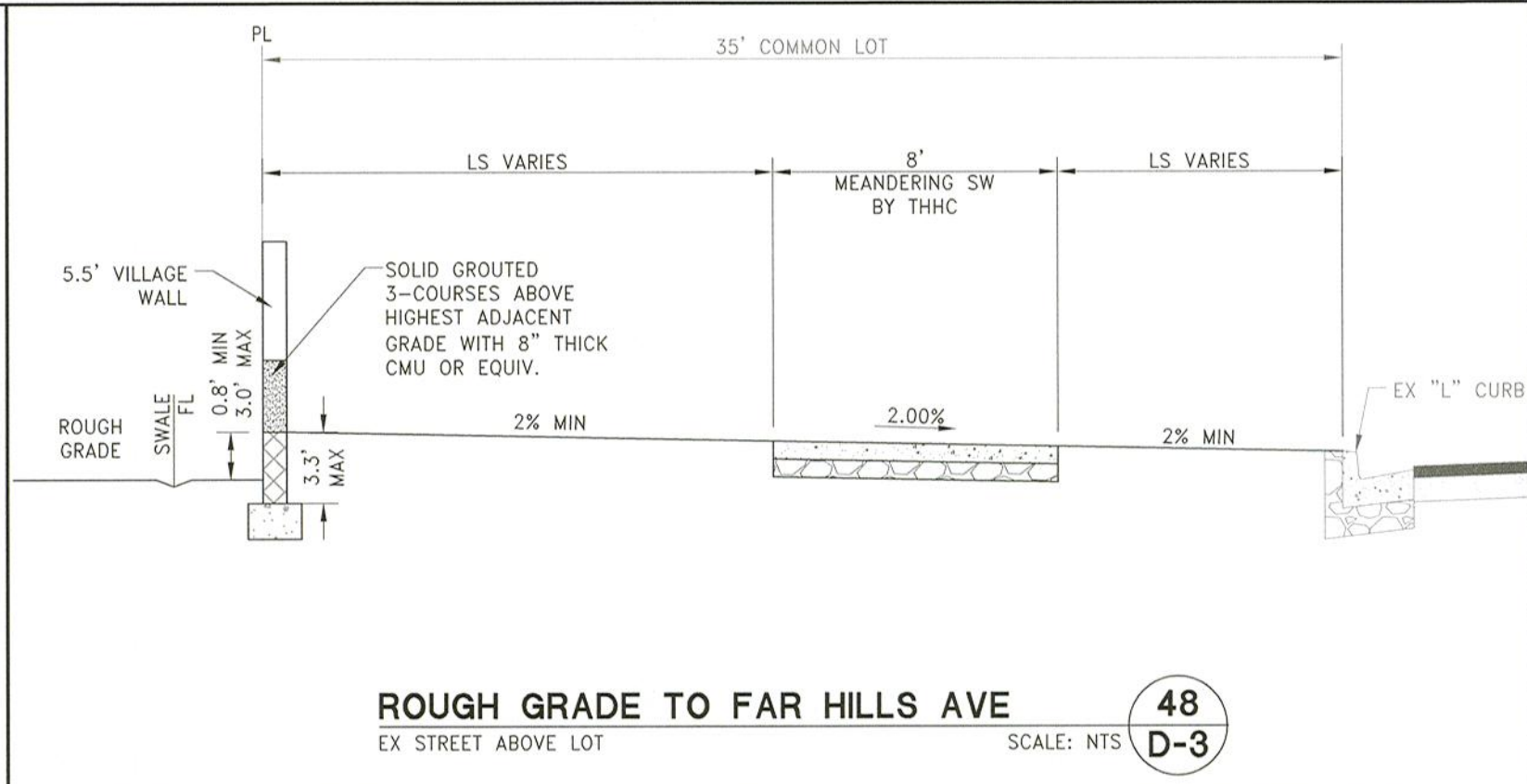
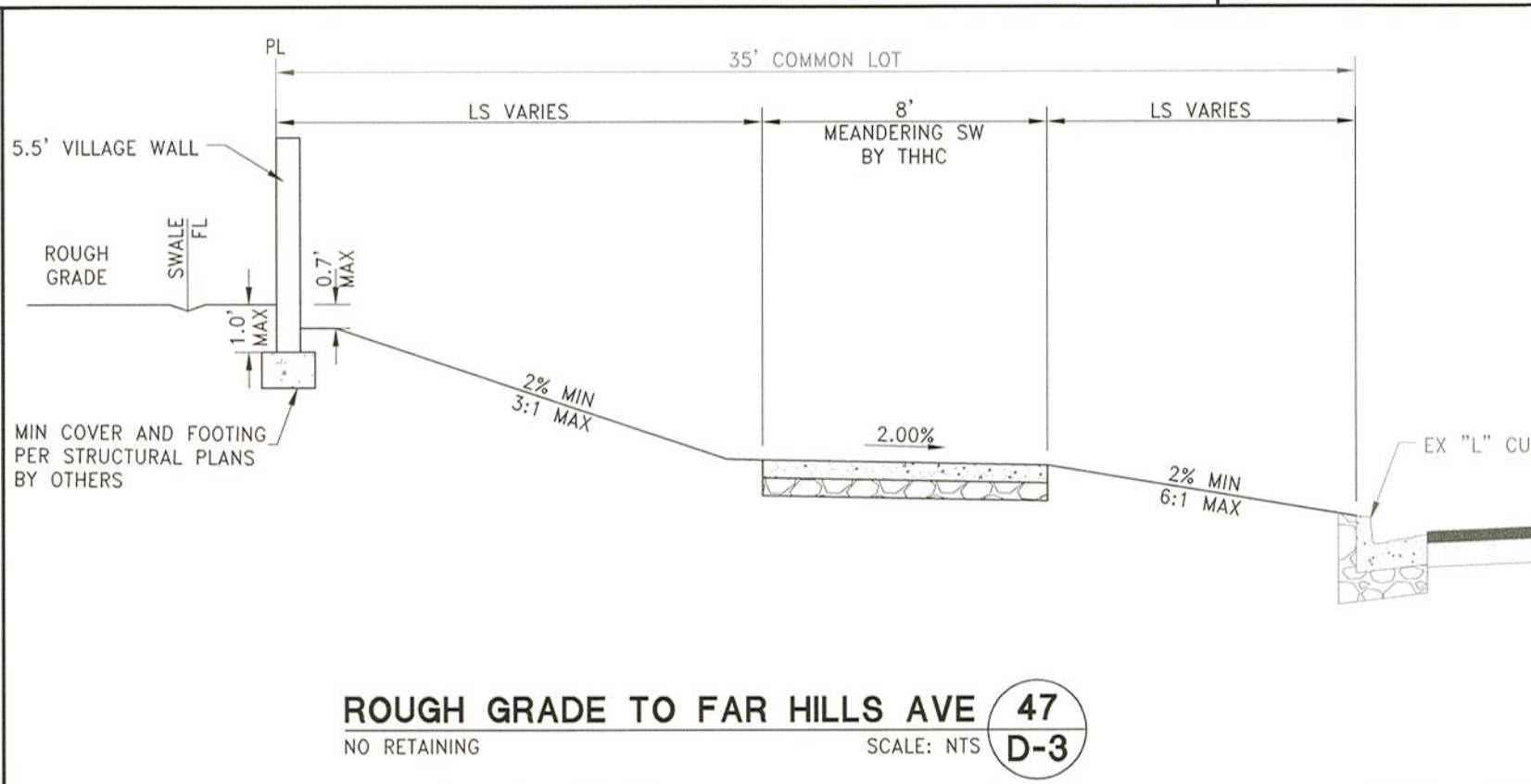
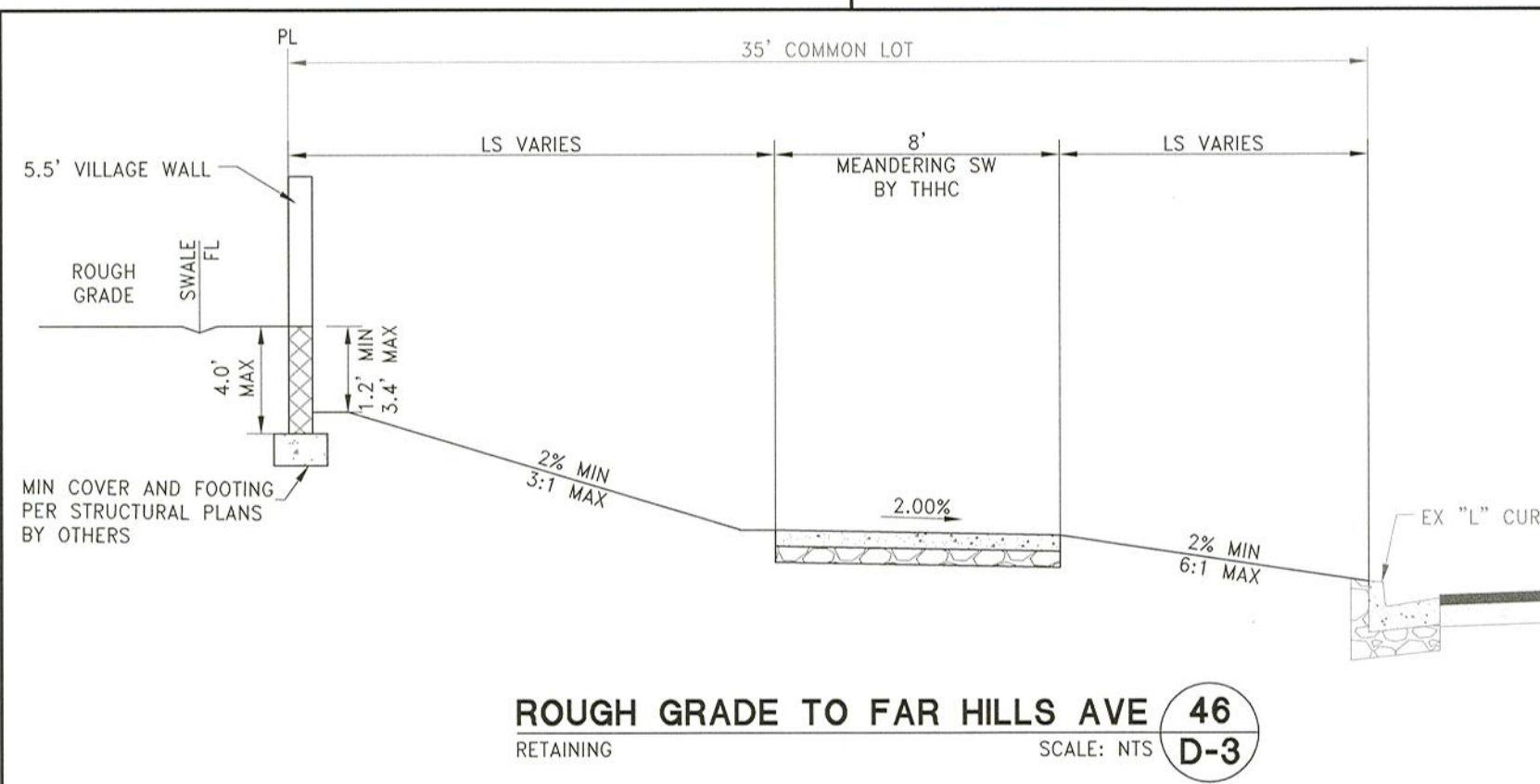
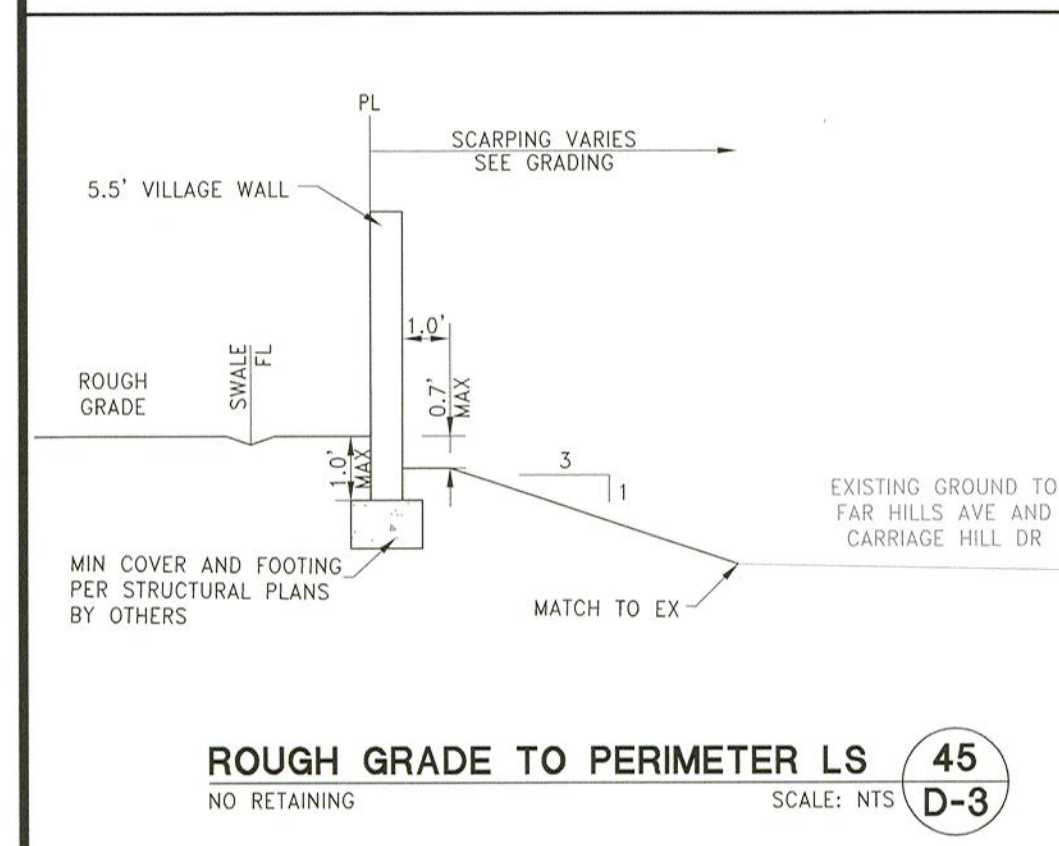
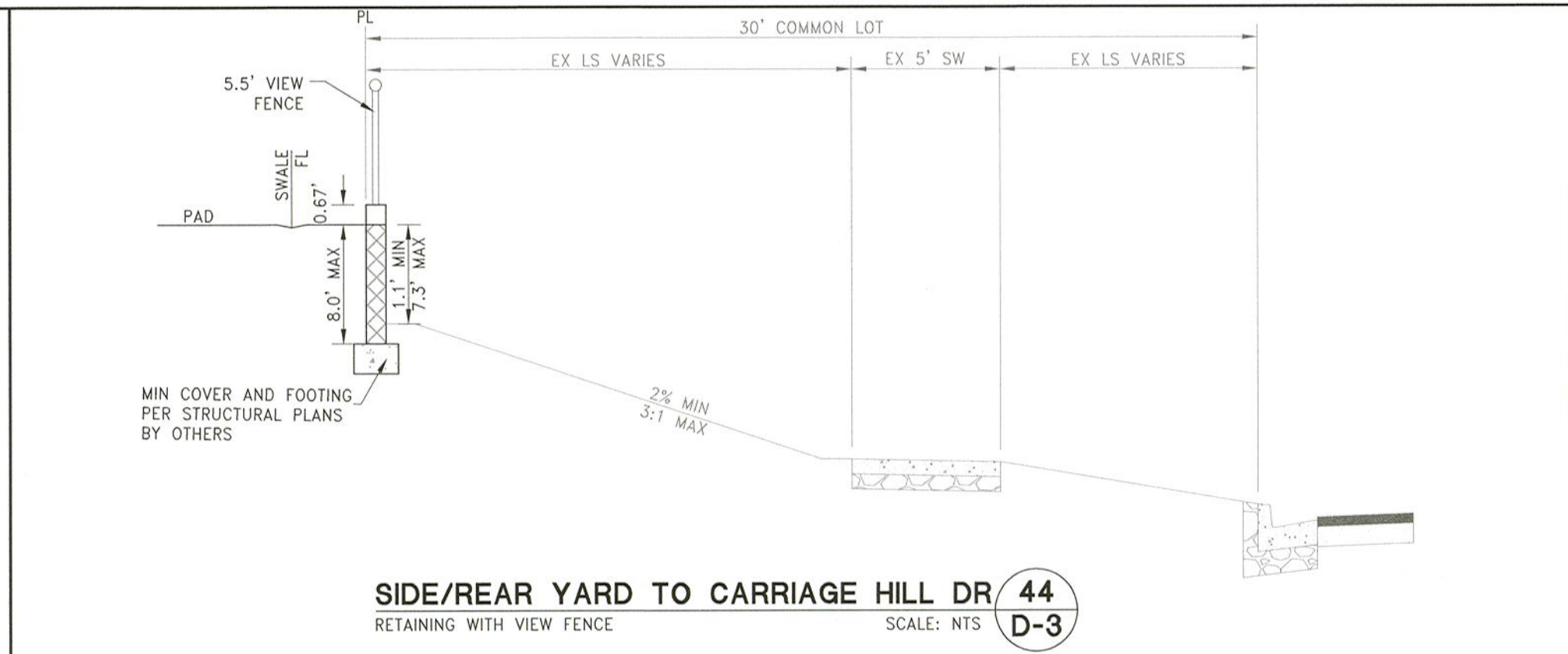
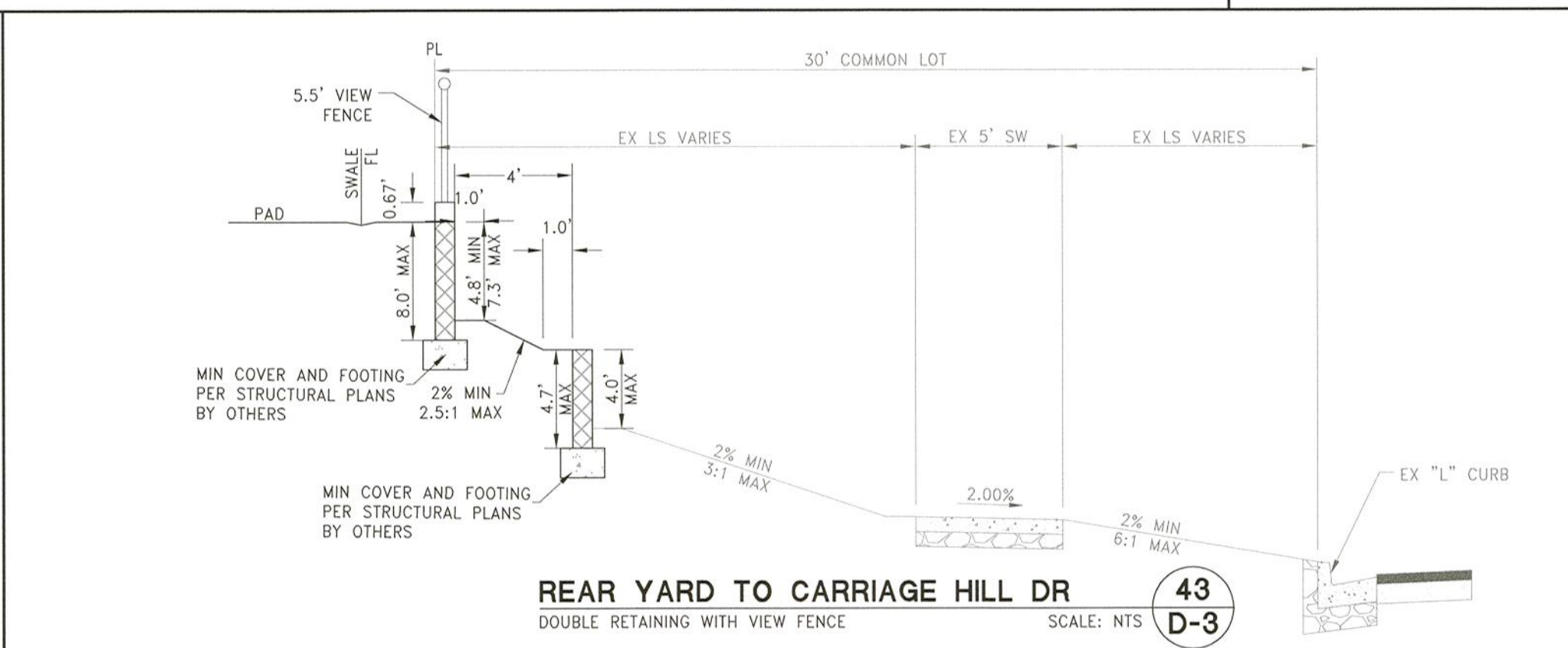
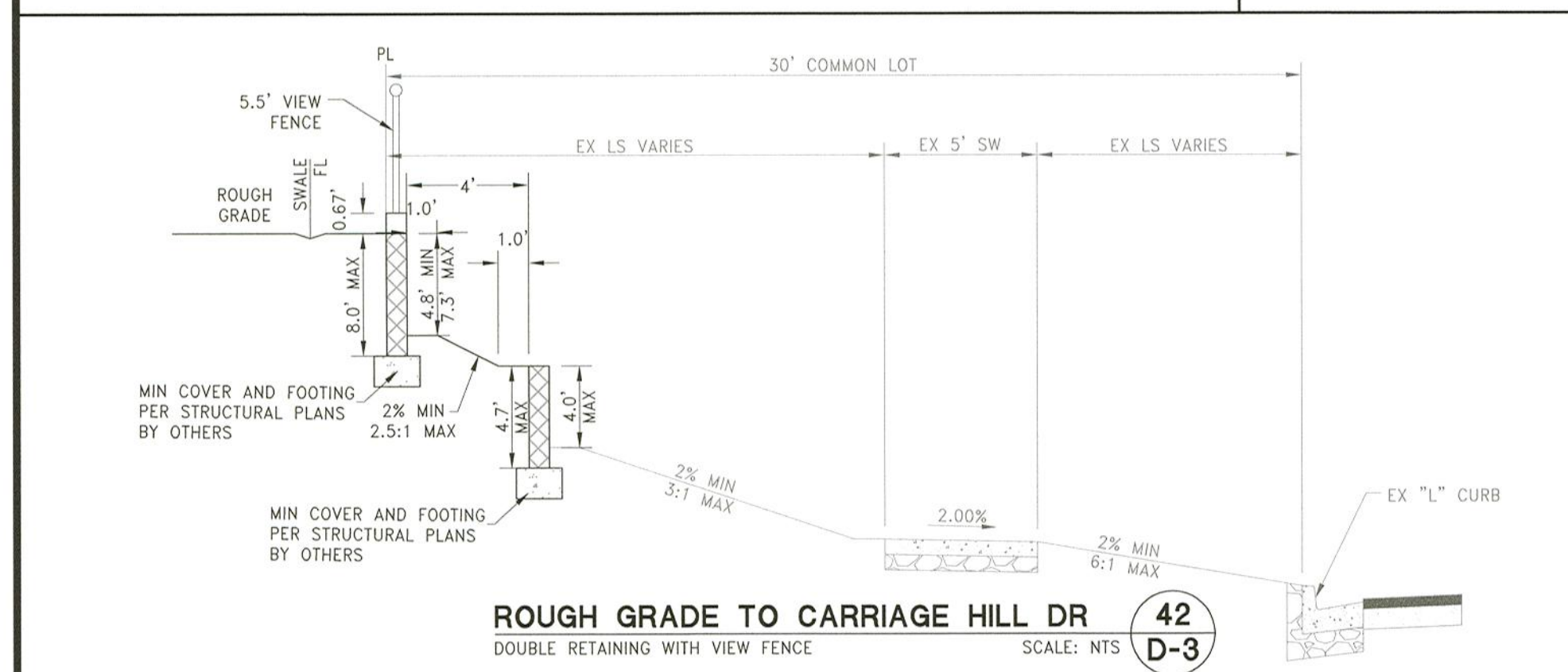
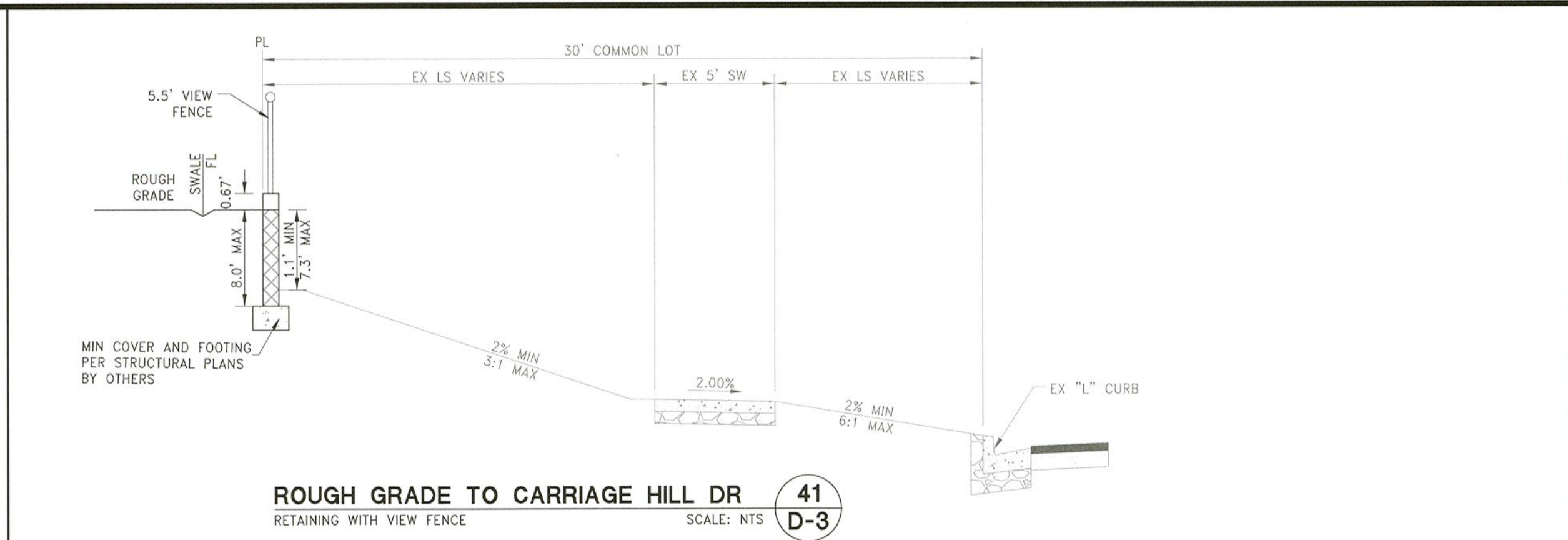
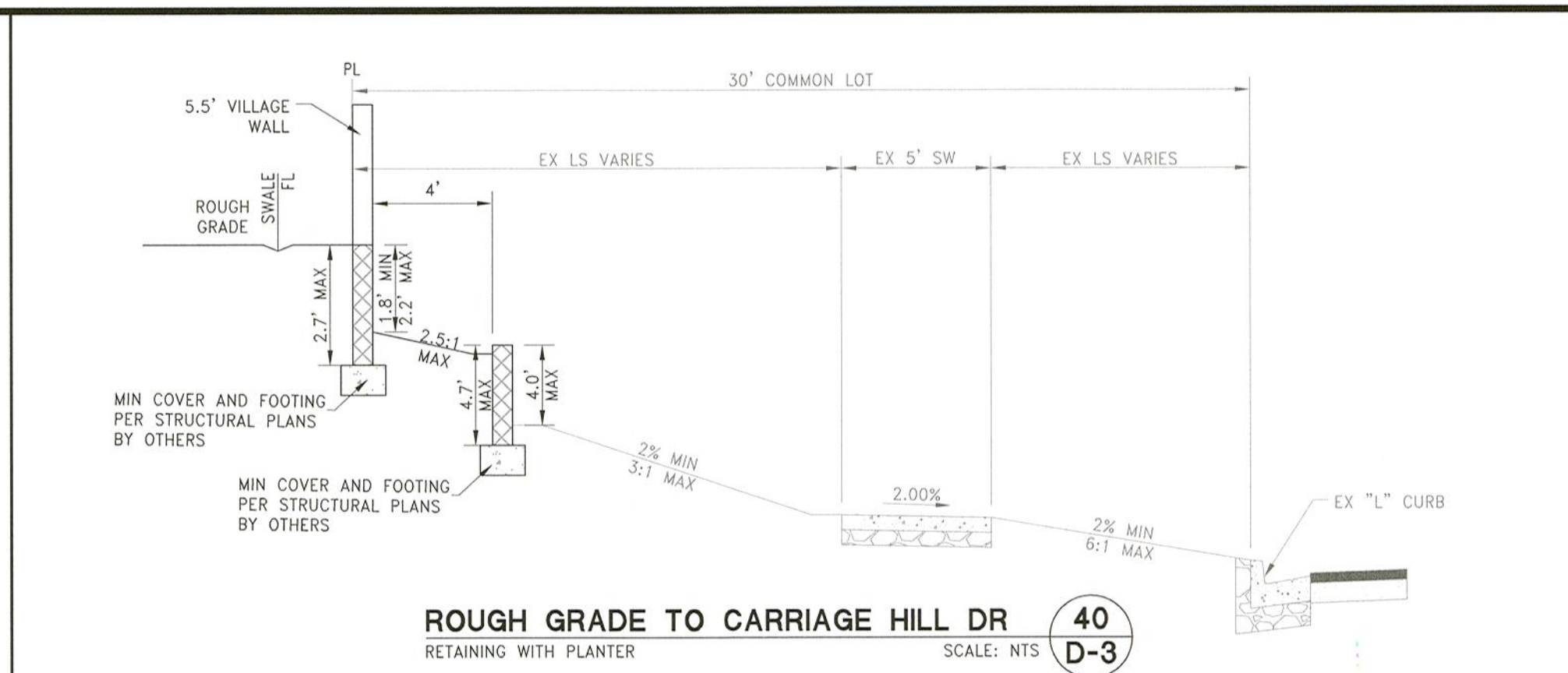
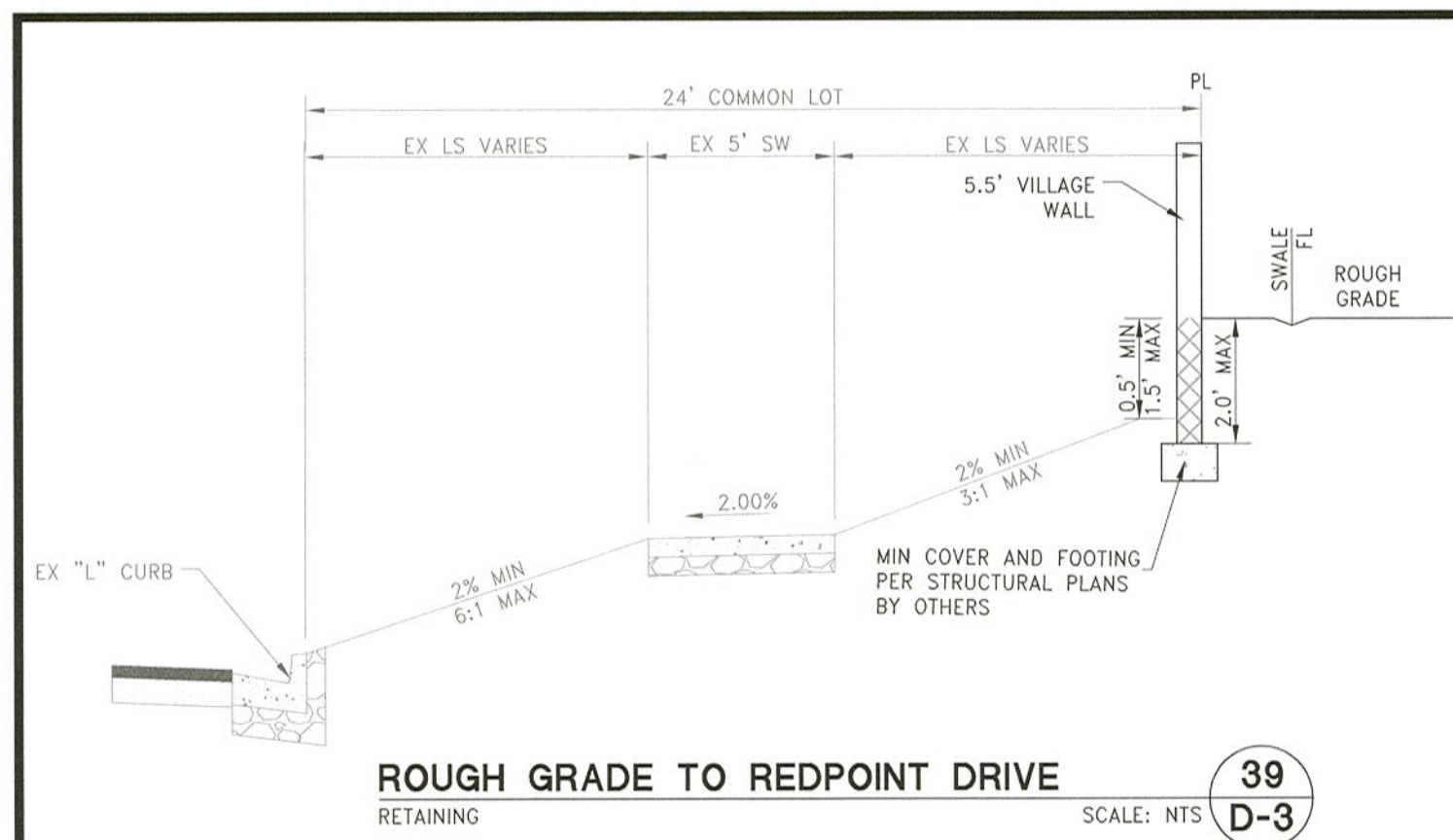
WOODSIDE HOMES OF NEVADA LLC
7835 N. MONTE CARLO BLVD. SUITE 110
LAS VEGAS, NV 89115
PHONE: 702-888-7824

RCI ENGINEERING
500 SOUTH BROADWAY SUITE 100
LAS VEGAS, NV 89101
PHONE: 702-888-7824
WWW.RCIENGINEERING.COM

IMPROVEMENT PLANS FOR CRYSTAL CANYON UNIT 1 SUMMERLIN VILLAGE 21 PARCEL A AND B A SINGLE FAMILY RESIDENTIAL SUBDIVISION GRADING DETAILS (SHEET 1 OF 4)
CITY OF LAS VEGAS

PROFESSIONAL ENGINEER
CHRISTOPHER R. ZRINYI
Exp. 6/30/2020
CIVIL
No. 13976

DATE: 11-21-19
DRAWING: D-1
SHEET 11 OF 25
CLV DRAWING NUMBER
CLV PROJECT #



GEOTECHNICAL NOTE:

A GEOLOGIST OR GEOTECHNICAL ENGINEER SHALL BE ON SITE DURING EXCAVATION AND MASS GRADING OPERATIONS TO EXAMINE THE SOIL CHARACTERISTICS AND GEOLOGICAL CONDITIONS ENCOUNTERED, AND TO PROVIDE PROFESSIONAL ADVICE TO THE OWNER IN THE EVENT THAT UNANTICIPATED SOIL PROBLEMS ARISE AND/OR SUBSURFACE SITE CONDITIONS ARE FOUND TO BE SIGNIFICANTLY DIFFERENT THAN DEFINED BY PRE EXPLORATION AND TESTING.

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2. SCARP LESS THAN 1' VERTICAL NOT SHOWN ON PLANS.
3. ALL WALL ALIGNMENTS SHALL FOLLOW SIGHT VISIBILITY ZONE ALIGNMENT AND REMAIN OUTSIDE OF SIGHT VISIBILITY ZONE.

	HORIZ. SCALE:	N/A
	VERT. SCALE:	N/A
	DRAWN BY:	SRC
	DESIGNED BY:	MJD
	CHECKED BY:	CRZ
	APPROVED BY:	CRZ
	PROJECT #:	4320.0009

7895 W. SUNSET RD., SUITE 110
LAS VEGAS, NV 89113

LAS VEGAS, NV 89113
PHONE: 702-889-7824

BCI ENGINEERING

KCI ENGINEERING
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1

CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCEL A AND B
SINGLE FAMILY RESIDENTIAL SUBDIVISION

GRADING DETAILS (SHEET 3 OF 4)

OF LAS VEGAS NEVADA

D-1_SUMMERLIN21B_PHASE1.dwg sclark 11/20/19 6:26pm

0004_D-1_SUMMERLIN2

DATE: 11-21-19

DRAWING
D-20

D-3

SHT 13 OF 25

CLV DRAWING NUMBER

PROJECT #

DISCLAIMER NOTE:

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.

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UTILITY LINES. IT'S COSTLY.

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OR
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FAST
Call before you
UnderGround
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FREWAY AND ARTERIAL
SYSTEM OF TRANSPORTATION

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POWER LINES. IT'S COSTLY.

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YOU DO
OVERHEAD**

1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

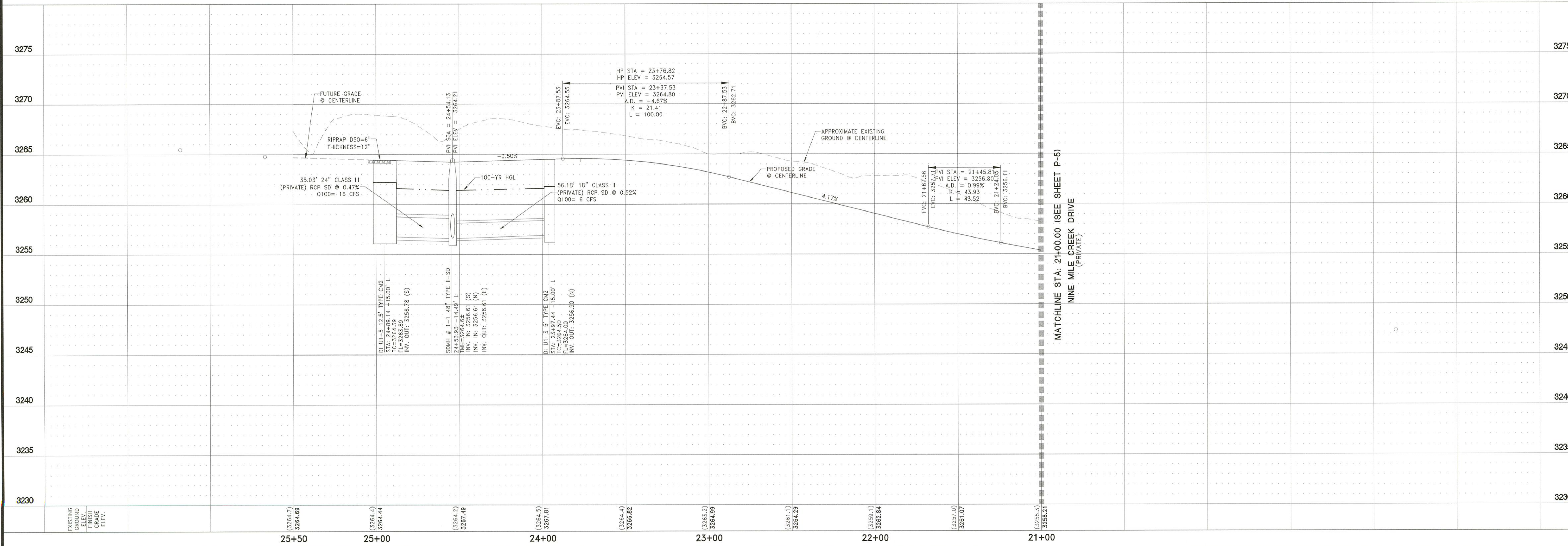
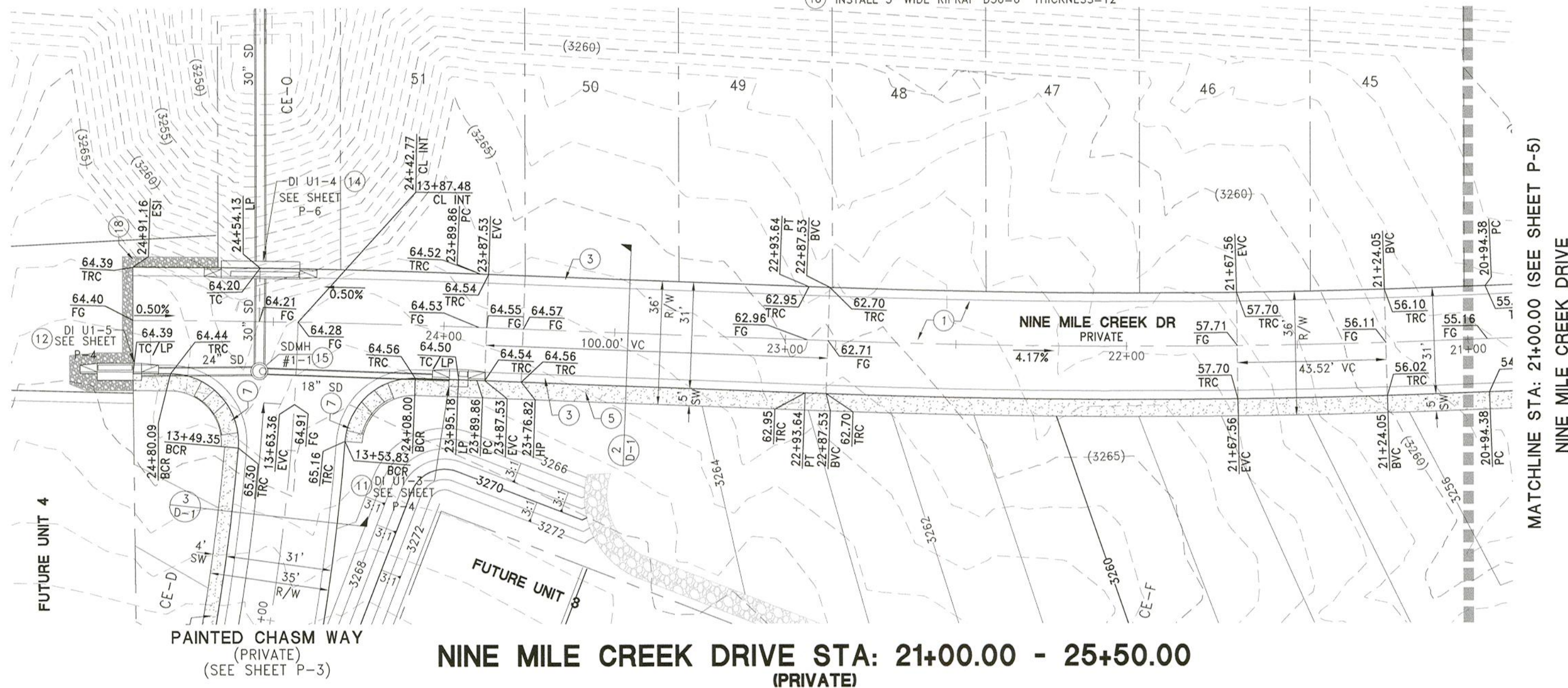
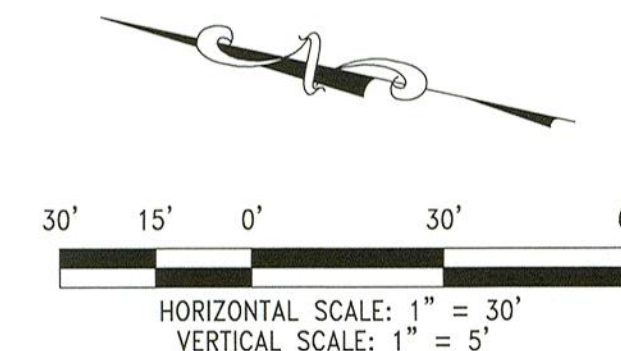
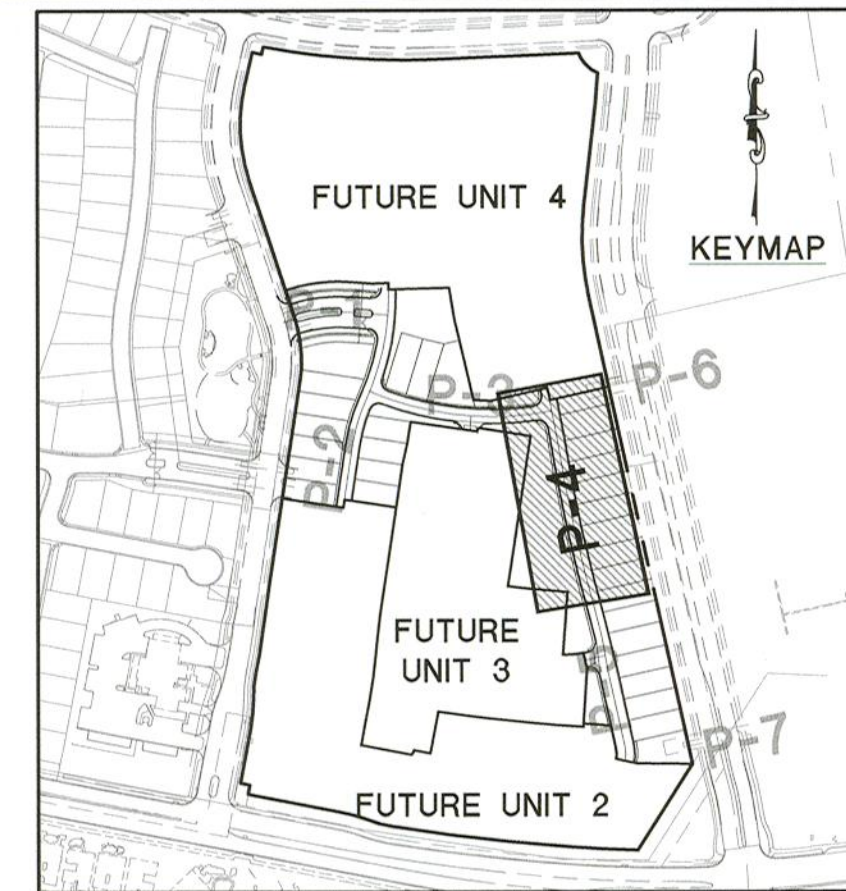
ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

CONSTRUCTION NOTES

- 1) CONSTRUCT AC PAVEMENT PER DETAILS 1 THRU 5 ON SHEET D-1
- 2) CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
- 3) CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CCAUSD #217.2.51
- 4) CONSTRUCT 4" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- 5) CONSTRUCT 5" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- 6) CONSTRUCT 8" CROSS GUTTER PER SUMMERLIN IMPROVEMENT STD DWG #S-64
- 7) CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE I)
- 8) CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER SUMMERLIN IMPROVEMENT STD DWG S-75
- 9) CONSTRUCT 5" TRANSITION FROM "L" TYPE CURB AND GUTTER TO "R" TYPE CURB AND GUTTER PER DETAIL 57 SHEET D-4
- 10) CONSTRUCT "A" TYPE CURB AND GUTTER PER CCAUSD #219
- 11) CONSTRUCT 5" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 1 GRATE
- 12) CONSTRUCT 12.5" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 4 GRATES
- 13) CONSTRUCT 20" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 6 GRATES
- 14) CONSTRUCT 22.5" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 7 GRATES
- 15) CONSTRUCT 48" TYPE II-SD MANHOLE PER CCAUSD #405.2
- 16) CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE III)
- 17) CONSTRUCT 6" HIGH WROUGHT IRON FENCE AND/OR GATES
- 18) INSTALL 3" WIDE RIPRAP D50=6" THICKNESS=12"



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IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCELA A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
PLAN AND PROFILE (SHEET 4 OF 7)
NINE MILE CREEK DR STA: 21+00.00-25+00.00
CITY OF LAS VEGAS

DATE: 11-21-19
DRAWING
P-4
SHT 22 OF 25
CLV DRAWING NUMBER
CLV PROJECT #

REV. DESCRIPTION
BY. DATE
1. November 20, 2019
1"=30'
1"=5'
SPC
MAD
CRZ
4520.0009

DISCLAIMER NOTE:

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1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

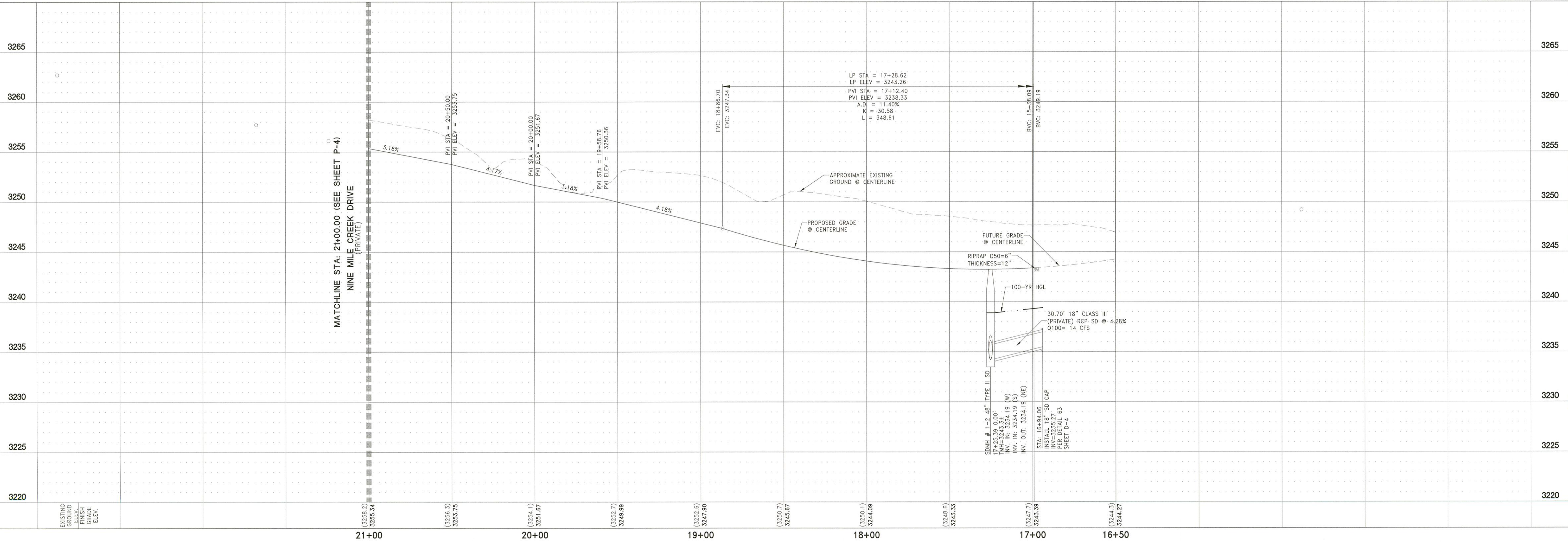
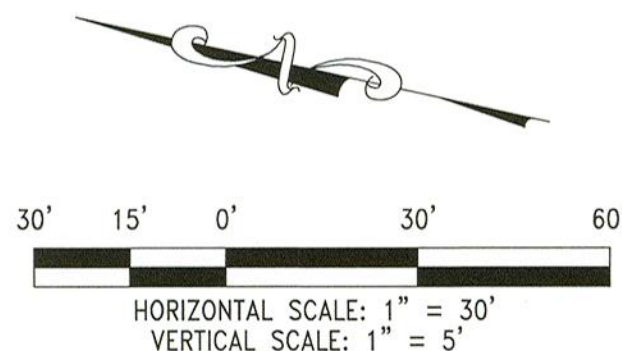
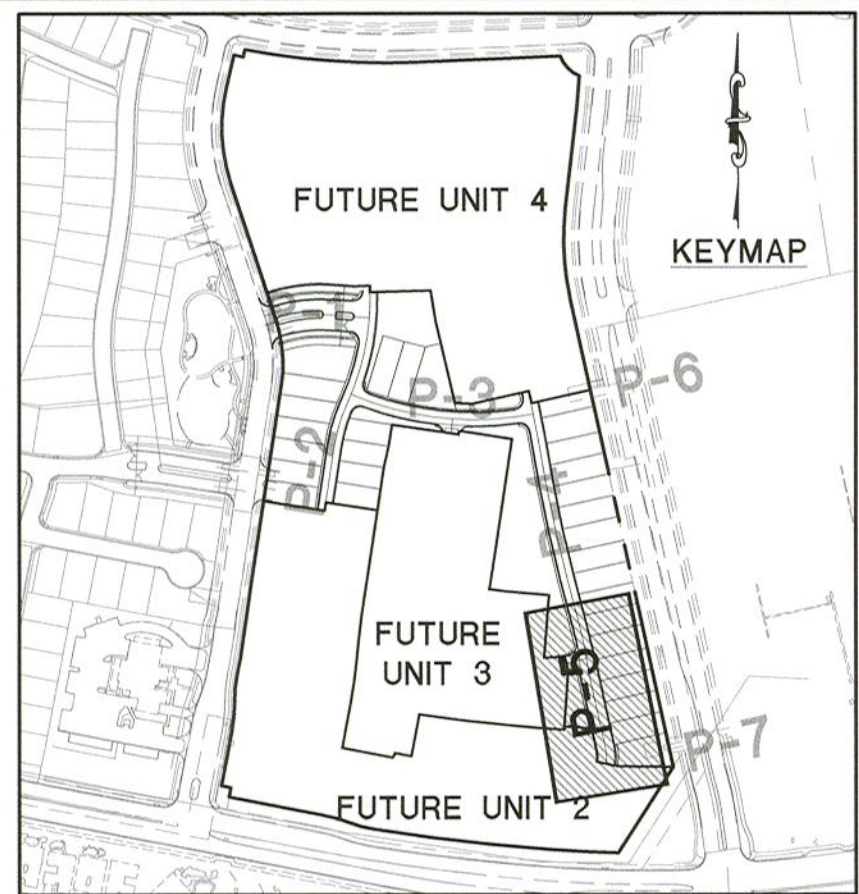
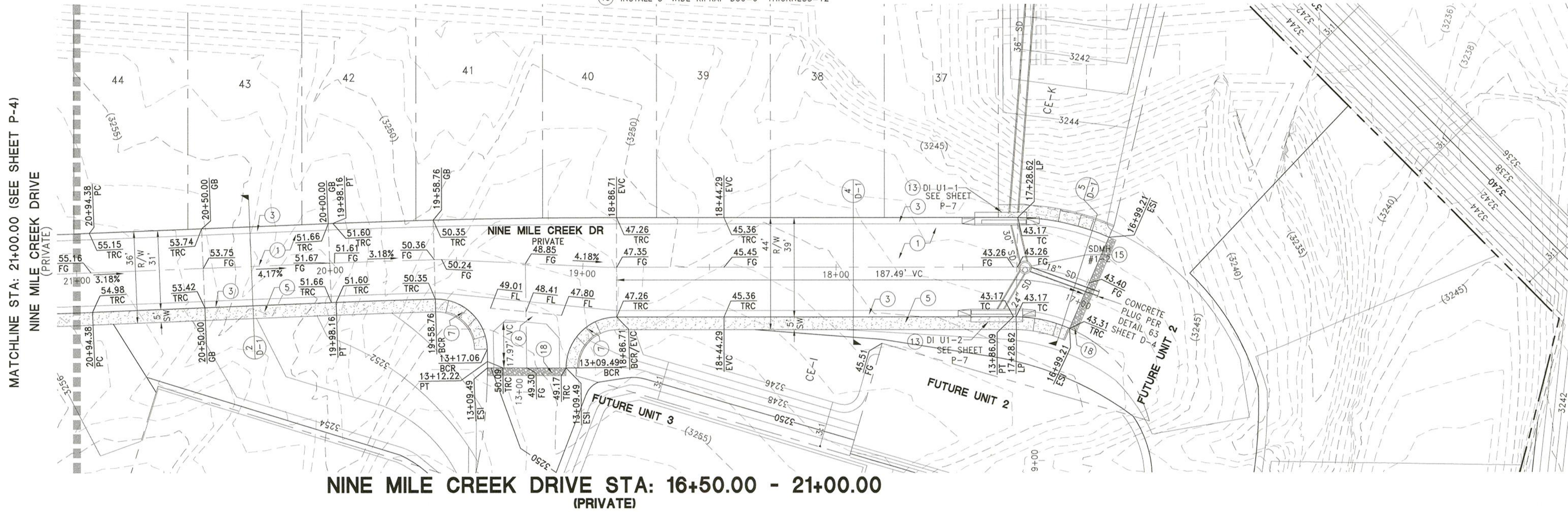
ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

CONSTRUCTION NOTES

1. CONSTRUCT AC PAVEMENT PER DETAILS 1 THRU 5 ON SHEET D-1
2. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
3. CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CCAUSD #217.2.S1
4. CONSTRUCT 4' SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
5. CONSTRUCT 5' SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
6. CONSTRUCT 6" CROSS GUTTER PER SUMMERLIN
7. IMPROVEMENT STD DWG #5-64
8. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE I)
9. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER SUMMERLIN IMPROVEMENT STD DWG S-75
10. CONSTRUCT 5' TRANSITION FROM "L" TYPE CURB AND GUTTER TO "R" TYPE CURB AND GUTTER PER DETAIL 57 SHEET D-4
11. CONSTRUCT "A" TYPE CURB AND GUTTER PER CCAUSD #219
12. CONSTRUCT 5' TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 1 GRATE
13. CONSTRUCT 12.5' TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 4 GRATES
14. CONSTRUCT 20' TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 6 GRATES
15. CONSTRUCT 22.5' TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 7 GRATES
16. CONSTRUCT 48" TYPE II-SD MANHOLE PER CCAUSD #405.2
17. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE III)
18. CONSTRUCT 6" HIGH WROUGHT IRON FENCE AND/OR GATES
19. INSTALL 3' WIDE RIPRAP D50=6" THICKNESS=12"



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IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
PLAN AND PROFILE (SHEET 5 OF 7)
NINE MILE CREEK DR STA: 16+50.00-21+00.00
CITY OF LAS VEGAS



DATE: 11-21-19
DRAWING
P-5
SHEET 23 OF 25
CLV DRAWING NUMBER
CLV PROJECT #

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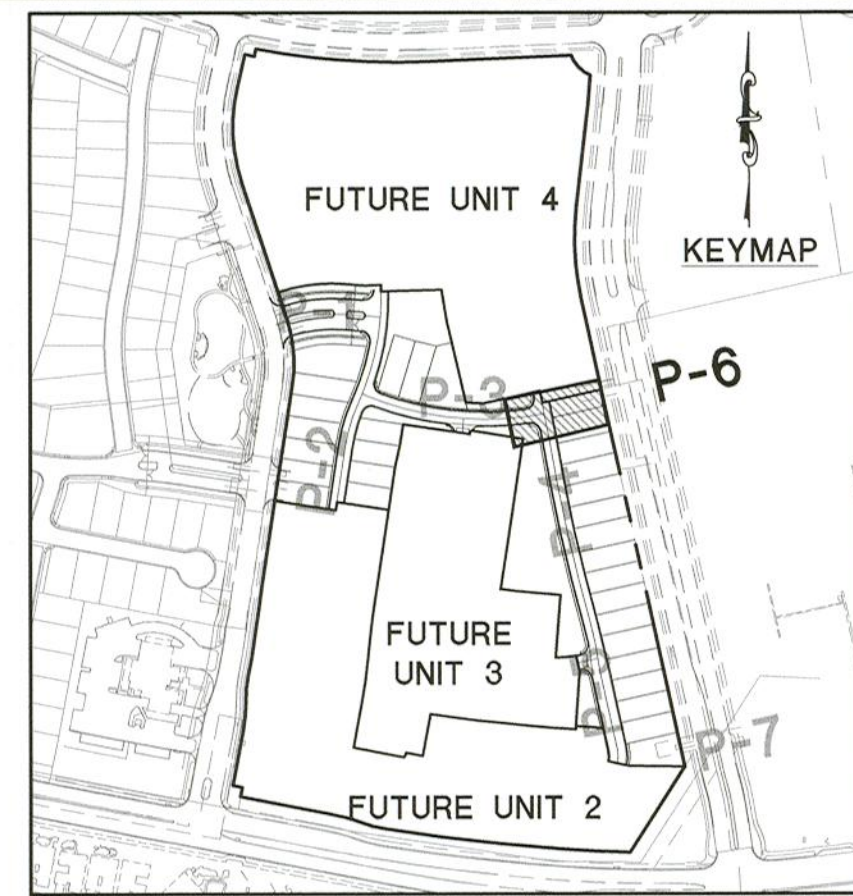
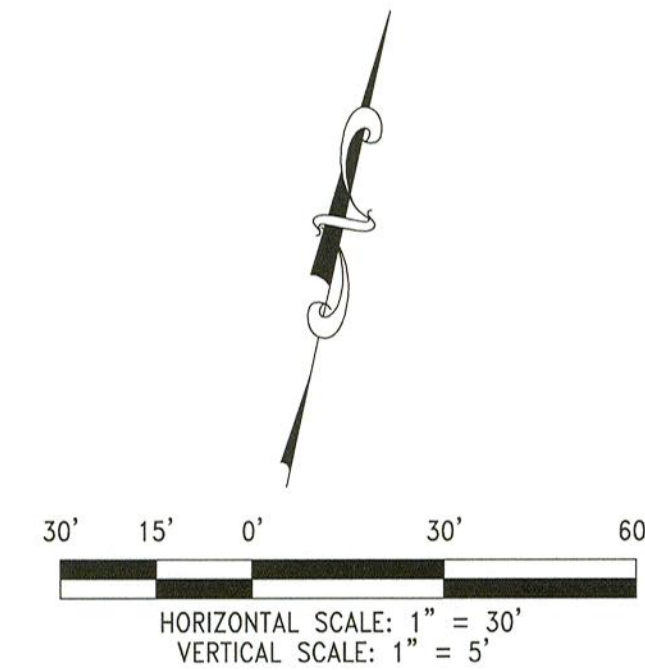
CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
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 PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA

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PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA

- 1 CONSTRUCT AC PAVEMENT THE DETAILS 1 THRU 5 ON SHEET
- 2
- 3 CONSTRUCT "L" TYPE CURB AND GUTTER PER CAUSD #216
- 4 CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CAUSD
- 5 #217.2.51
- 6 CONSTRUCT 4" SIDEWALK PER CAUSD #234 (5-INCH
- 7 THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- 8 CONSTRUCT 5" SIDEWALK PER CAUSD #234 (5-INCH
- 9 THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- 10 CONSTRUCT 6" CROSS SLOPE TO SUMMERLIN
- 11 IMPROVEMENT STD DWG. 5-64
- 12 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED
- 13 OR EQUIVALENT PER CAUSD #235 (CASE II)
- 14 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED
- 15 OR EQUIVALENT PER SUMMERLIN IMPROVEMENT STD DWG. 5-
- 16 64.1.2.51 TRANSITION FROM CURBS AND GUTTER TO
- 17 "R" TYPE CURB AND GUTTER PER DETAIL 5 SHEET D-4
- 18 CONSTRUCT "A" TYPE CURB AND GUTTER PER CAUSD #219
- 19
- 20 CONSTRUCT 5" TYPE "CM2" DROP INLET PER CAUSD #412.
- 21 CAUSD #421, 1, GRATE
- 22 CONSTRUCT 12.5" TYPE "CM2" DROP INLET PER CAUSD
- 23 #412.1, CAUSD #421, 4, GRATES
- 24 CONSTRUCT 20" TYPE "CM2" DROP INLET PER CAUSD #412
- 25 #412.1, CAUSD #421, 1, GRATE
- 26 CONSTRUCT 22.5" TYPE "CM2" DROP INLET PER CAUSD
- 27 #412.1, CAUSD #421, 7, GRATES
- 28
- 29 CONSTRUCT 48" TYPE II-SD MANHOLE PER CAUSD #405.2
- 30 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED
- 31 DOMES OR EQUIVALENT PER CAUSD #235 (CASE III)
- 32
- 33 CONSTRUCT 6" HIGH WROUGHT IRON FENCE AND/OR GATES
- 34
- 35 INSTALL 3" WIDE RIPRAP D50-6" THICKNESS=12"

[illegible]

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IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
PLAN AND PROFILE (SHEET 6 OF 7)
NORTHERN EASEMENT

NEVADA

DATE: 11-21-19
DRAWING
P-6
SHT 24 OF 25
CLV DRAWING NUMBER

 CITY OF LAS VEGAS
 CIVIL PHASE 1\S0007 P-6 SUMMERLIN21B PHASE1.dwg sclark 11/20/19 6:49pm

DISCLAIMER NOTE:

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.

Call before you Dig
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.



OR
1-800-227-2600

FAST



Call
before you
UnderGround
1-702-432-5300
FREWAY AND ARTERIAL
SYSTEM OF TRANSPORTATION

AVOID HITTING OVERHEAD
POWER LINES. IT'S COSTLY.



1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

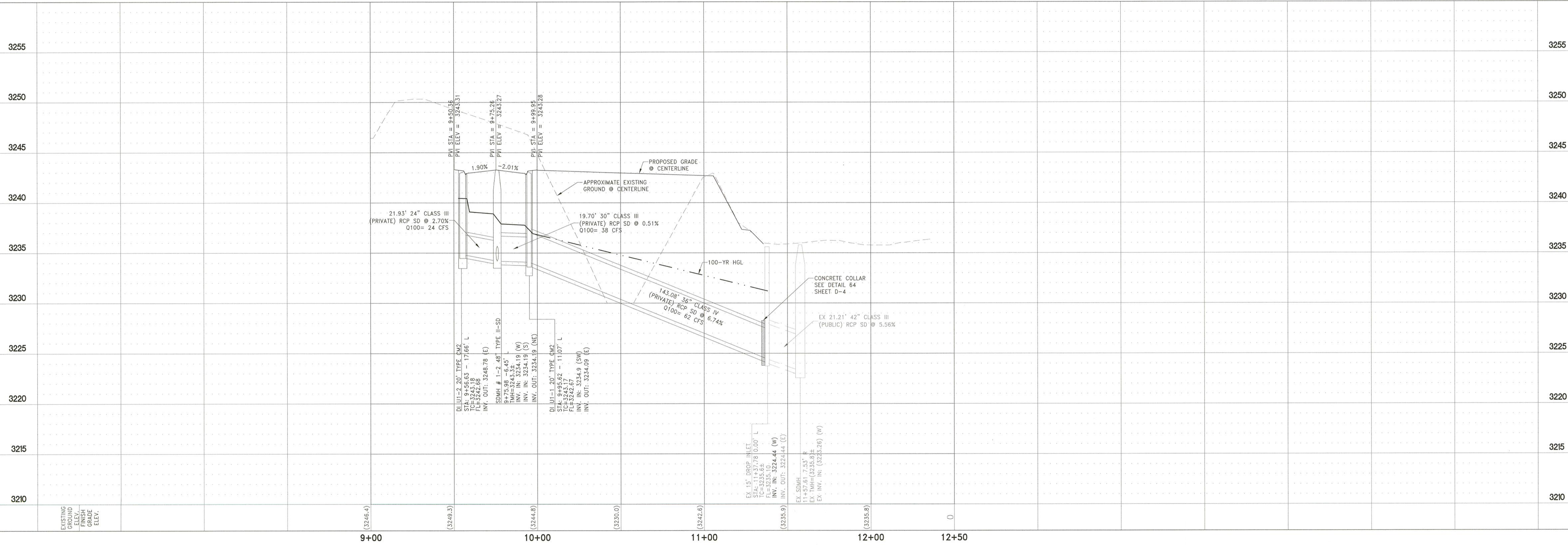
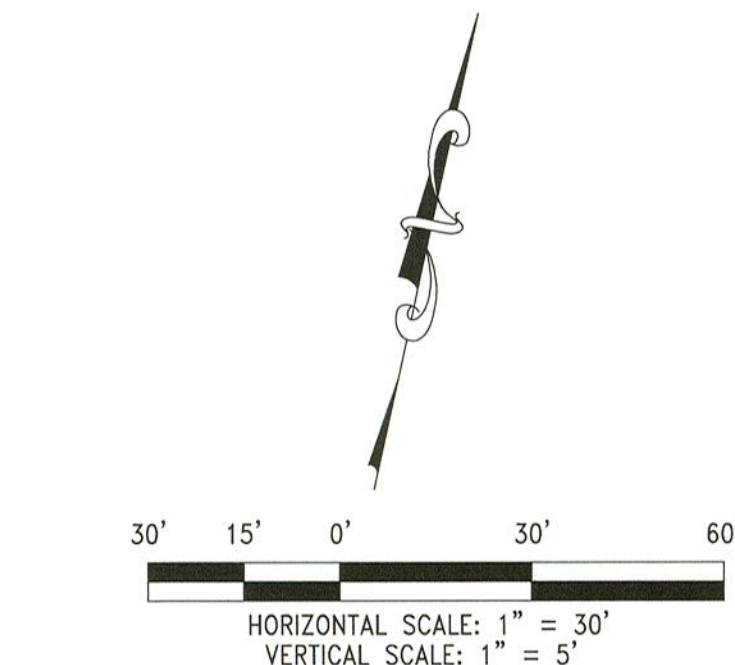
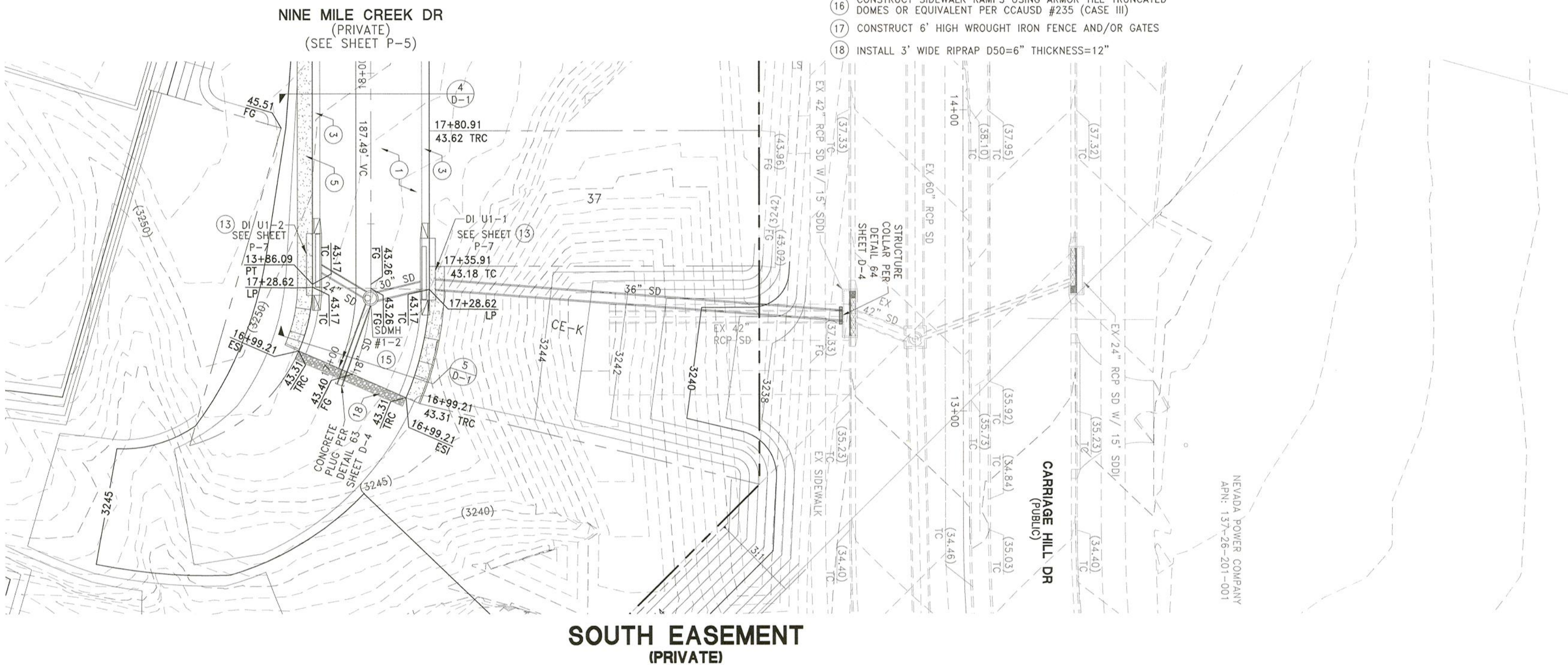
ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

CONSTRUCTION NOTES

- 1) CONSTRUCT AC PAVEMENT PER DETAILS 1 THRU 5 ON SHEET
- 2) CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
- 3) CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CCAUSD #217.2.S1
- 4) CONSTRUCT 4" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- 5) CONSTRUCT 5" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- 6) CONSTRUCT 8" CROSS GUTTER PER SUMMERLIN
- 7) IMPROVEMENT STD DWG #S-64
- 8) CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE I)
- 9) CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER SUMMERLIN IMPROVEMENT STD DWG S-75
- 10) CONSTRUCT 5" TRANSITION FROM "L" TYPE CURB AND GUTTER TO "R" TYPE CURB AND GUTTER PER DETAIL 57 SHEET D-4
- 11) CONSTRUCT "A" TYPE CURB AND GUTTER PER CCAUSD #219
- 12) CONSTRUCT 5" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 1 GRATE
- 13) CONSTRUCT 12.5" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 4 GRATES
- 14) CONSTRUCT 20" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 6 GRATES
- 15) CONSTRUCT 22.5" TYPE "CM2" DROP INLET PER CCAUSD #412.1, CCAUSD #421, 7 GRATES
- 16) CONSTRUCT 48" TYPE II-SD MANHOLE PER CCAUSD #405.2
- 17) CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE III)
- 18) CONSTRUCT 6" HIGH WROUGHT IRON FENCE AND/OR GATES
- 19) INSTALL 3" WIDE RIPRAP D50=6" THICKNESS=12"

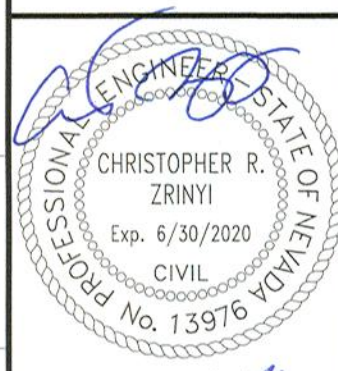


WOODSIDE HOMES OF NEVADA LLC

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RCI ENGINEERING
500 SOUTH RABBIT DRIVE, SUITE 110
LAS VEGAS, NV 89106
www.rcieng.com

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 1
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
PLAN AND PROFILE (SHEET 7 OF 7)
SOUTHERN EASEMENT



DATE: 11-21-19

P-7

SHT 25 OF 25
CLV DRAWING NUMBER

CLV PROJECT #

[illegible]

CITY OF LAS VEGAS GENERAL NOTES	
1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA, NEVADA", LATEST REVISION; AND THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROPRIATE STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE "UNIFORM BUILDING CODE, AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".	
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES ARE SHOWN FROM CIVIL PLANS, LATERALS, AND THE APPROXIMATE AND FOR CONSTRUCTION PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.	
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES, AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORILY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.	
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.	
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.	
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.	
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.	
8. AC PAVEMENT TO BE ONE-HALF INCH (1/2") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND DRIVEWAYS.	
9. CURB AND GUTTER DOWNS TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.	
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.	
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACE TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.	
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY GEOTEK INC., PROJECT 13735-LV, DATED 10/10/2017, APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATION.	
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS, ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.350 & CITY OF LAS VEGAS TITLE 16, APPENDIX D.	
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, DRIVEWAYS, AND GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER. WATER NOTES:	
16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS. THE CONTRACTOR SHALL PROVIDE FOR INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.	
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.	
18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, ANSWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.	
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE CITY OF LAS VEGAS CITY SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.	
20. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATIONS SUCH AS MARKER BALLS LOCATING RIBBON, ETC., THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO OFFSITE INSPECTION AND TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.	
21. SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION. THE MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (VERTICAL) LOCATION OF PUBLIC SEWER MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER SERVICE LATERALS TO THE MAIN AND TO THE SEWER, AND THE LOCATION OF THE SEWER MAIN AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS. THE LOCATION SHALL BE DESCRIBED BY COORDINATES WHICH SHALL BE BASED ON THE CITY OF LAS VEGAS CITY SPECIFICATIONS (AS APPLICABLE) AND THE FINAL LOCATION MAPS MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIONAL CERTAINITIES OF ± 0.09 METERS (± 0.3 FEET) HORIZONTALLY AND VERTICALLY. A SEPARATE ELECTRONIC COMMA DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).	
22. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND FOR STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.	
23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.	

CITY OF LAS VEGAS TRAFFIC NOTES	
1. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.	
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.	
3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCRoACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SADD SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.	
4. WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCRoACHED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.	
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.	
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL BE FABRICATED WITH DIAMOND GRADE PLY CLASS 6 REFLECTIVE SHEETING OR APPROVED EQUAL. ALL NEW TRAFFIC SIGNS, EXCEPT STREETNAME AND SCHOOL SPEED LIMIT SIGNS, SHALL HAVE 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE OVERLAY FILM; SCHOOL ZONE SIGNS SHALL HAVE 3M SERIES 1150 ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.	
7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.	
8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.	
9. STREET SIGNS AND STOPS SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.	
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC IN OR AROUND THE WORK AREA. THE CONTRACTOR SHALL HAVE A CERTIFIED ASSET TRAFFIC CONTROL TECHNICIAN OR IMSA WORK ZONE SAFETY SPECIALIST SET UP, MAINTAIN AND/OR REMOVE ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.	
11. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.	
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CITIZENS AREA TRANSIT (C.A.T.) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.	
13. GUARDS SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 828-3442) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR THE USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.	
14. ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS OTHERWISE DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.	
15. THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAVEMENT TRANSITIONS, MARKINGS AND SIGNING THAT ARE REQUIRED TO MATCH ADJACENT ROADWAY SEGMENTS. THE CONTRACTOR SHALL PROVIDE A DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPICTING ANY ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SUCH THAT ADEQUATE TRANSITIONS AND LANE TERMINATIONS BETWEEN ADJACENT ROADWAY SEGMENTS ARE CONSTRUCTED.	

CITY OF LAS VEGAS HYDRANT AND ACCESS GENERAL NOTES	
1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6651 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.	
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICTS' -APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.	
3. PERMITS ARE REQUIRED FOR LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. IFC § 105.6.15	
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. IFC § 3310, § 3312	
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. IFC § 507.5.7.3	
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLOW VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. IFC § 106.3	
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. IFC § 507.2.1, NFPA 24	
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. IFC § 507	
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. IFC § 507.5.7.1	
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. IFC § 507	
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS; IFC § C102	
12. RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED. * COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.	
13. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE PROTECTION FOR TRANSPORTATION HAZARDS WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY. HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. IFC § C102.8	
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC	
15. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. IFC § C102.10	
16. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.4	
17. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.7	
18. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. IFC § C102.6	
19. TWO (2) SOURCES OF WATER ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. FOR SYSTEMS REQUIRED TO HAVE TWO (2) SOURCES OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. FOR SYSTEMS PERMITTED TO HAVE ONE SOURCE OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 3 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. IFC § 503.2.1	
20. A FIRE APPARATUS ACCESS ROAD SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. IFC § 503.2.3	
21. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12% ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% PRIOR TO THE 25 FT PRIOR TO THE 6% GRADE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%; IFC § 503.2.7, § 503.2.8	
22. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS IFC § 503.2.4	
23. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13FT 6 INS. IFC § 503.2.1	
24. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 33 FT WITH PARKING ON BOTH SIDES MEASURED TO FACE OF CURB, NOT LESS THAN 28 FT WIDE WITH PARKING RESTRICTED TO ONE SIDE MEASURED TO FACE OF CURB, NOT LESS THAN 24 FT WIDE WITH NO PARKING ON EITHER SIDE MEASURED TO FACE OF CURB. FIRE LANES SHALL NOT BE LESS THAN 24 FT WIDE. IFC § 503.2.1	
25. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. IFC § 503.1.1	
26. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS, ROAD(S) WITH DEADENDS OR A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. IFC § 503.2.1	
27. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. CIVIL REGULATION	
28. ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE. ONE SIGN SHALL BE PLACED AT THE START OF THE FIRE LANE WITH SIGNS AT 4 FT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. IFC § 503.3	
29. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM IFC § 503.6	
30. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS, OR HAVING FOUR OR MORE TRAVEL LANES AND A TRAFFIC COUNT OF MORE THAN 30,000 VEHICLES PER DAY, ALL HYDRANTS BEING UTILIZED TO DELIVER FIRE FLOW TO THE PROPOSED LOCATION SHALL BE LOCATED ON THE SAME SIDE OF THE STREET AS THE PROPOSED DEVELOPMENT. CIVIL REGULATION	

CITY OF LAS VEGAS GRADING NOTES	
1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.	
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.	
3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION, ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAVING OF THE EXCAVATION.	
4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.	
5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSURE ADEQUATE PERMIT.	
6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED: HORIZONTAL VERTICAL COMPACTION A. PAVEMENT AREA SUBGRADE 0.1"± +0.0' TO -0.1" SEE SOILS REPORT B. ENGINEERED FILL 0.5"± +0.0' TO -0.1" SEE SOILS REPORT COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE.	
7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.	
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.	
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION PRIOR TO THE END OF THE PROJECT OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE KEPT IN A CLEAN, SAFE AND SOUND CONDITION.	
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.	
STORMWATER RUNOFF MANAGEMENT	
(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))	
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 ACCUMULATE IN, THE PUBLIC RIGHTS OF WAYS OF THE CITY OF LAS VEGAS AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS DEVELOPMENT PROJECT 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 SUBMITTING PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CITY OF LAS VEGAS AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES 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 FROM WHICH THE DISTURBANCE OCCURRED. SOME EXCEPTIONS MAY APPLY. REFER TO NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00000, 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 ACTUAL RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00000, 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.	
SOUTHWEST GAS CONSTRUCTION NOTES	
SOUTHERN NEVADA - SOUTHWEST GAS CORPORATION GENERAL 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 A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2099	
5. SOUTHWEST GAS CORPORATION STAND BY CONTACT NUMBER 702-400-1789	
SOUTHWEST GAS CORPORATION	
DATE	

CITY OF LAS VEGAS SEWER NOTES	
1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.	
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY ENGINEER.	
3. CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.	
4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.	
5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETROFIT IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.	
6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y" 'S SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.	
7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.	
8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.	
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.	
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.	
LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES	
LVVWD PROJECT # XXXXX (REVISED 08/01/2017)	
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 (702-258-7171) 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 PLANS, DRAWINGS, AND SPECIFICATIONS, AND TO THE 2000 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 AND APPURTENANCES SHALL BE DISINFECTED, PRESSURE TESTED, AND HAVE AN ACCEPTABLE PASSING HEALTH WATER SAMPLE OBTAINED, PRIOR TO OPERATION AND USE.	
10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES. TELEPHONE 702-258-3152 OR 702-258-3802. 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 AS BE LISTED ON THE LVVWD APPROVED PRODUCT'S LIST FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS BY SUBMITTING SHOP DRAWINGS.	
13. TELEPHONE "CALL BEFORE YOU DIG" AT "811" OR 1-800-227-2600.	
14. THE INSTALLATION OF LVVWD MUNICIPAL WATER FACILITIES ALONG 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 ADJUTING 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 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 REUSED.	
APPROVED FOR CONSTRUCTION	
PROJECT NO. LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES XXXXXX FIRST APPROVED DATE:	
CITY OF LAS VEGAS STREETLIGHT NOTES	
1. ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND ANY ADOPTED SPECIAL AREA STANDARDS.	
2. NO DEVIATION OF STREET LIGHT, PULL BOX, CONDUITS (ETC.) LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF TRAFFIC ENGINEERING AND THE CITY ENGINEER.	
3. ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.	
4. ALL STREET LIGHTING CONDUITS STUB SHALL HAVE AT LEAST ONE GREEN #8 THW FIRE INSTALLED, AS TRACER WIRE. WHEN "EMPTY" CONDUIT IS SPECIFICALLY INSTALLED FROM PB TO PB, IT SHALL HAVE MINIMUM OF 2 #4 AND 1 #8 THW WIRE WITH THE ENDS TAPED OR "SAFE OFF" PRIOR TO FINAL INSPECTION.	
5. ANY STRUCTURE SUCH AS BLOCK WALLS, CHAIN LINK FENCES, RETAINING WALLS, ETC., SHALL LEAVE A MINIMUM CLEARANCE IN ACCORDANCE WITH THE USD NO. 320A.	
6. AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TEF0 PRIOR TO ANY PRE-FINAL INSPECTION. THE ASBUILT DRAWING NEEDS TO BE STAMPED AS-BUILT AND SIGNED BY THE PREPARER.	
7. SERVICE POINT SHALL BE COORDINATED WITH NV ENERGY COMPANY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICE POINTS SHALL BE SHOWN ON THE CIVIL PLANS.	
8. IT SHALL BE ASSUMED THAT IN THE ABSENCE OF AN EXISTING, WORKABLE CIRCUIT TO ATTACH TO, ALL INSTALLATIONS SHALL REQUIRE A NEW SERVICE FOR OPERATION OF THE CIRCUIT.	
9. WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREET LIGHTING CIRCUITS AND/OR POLES, THESE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED, AT NO EXPENSE TO THE CITY OF LAS VEGAS, BEFORE STREETLIGHT BASES ARE INSTALLED.	
10. THE CONTRACTOR SHALL FURNISH COMPLETE SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON PLANS.	
11. THE DEVELOPER/OWNER WILL BE REQUIRED TO SUPPLY POWER TO ALL NEW PUBLIC STREET LIGHTS INSTALLED UNDER THIS DESIGN PRIOR TO BONDING TO PROJECT. THE DEVELOPER/OWNER WILL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH THE INSTALLATION, CONSTRUCTION, ENERGIZING, MAINTENANCE AND OPERATIONAL COST OF SAID STREET LIGHTS PRIOR TO PROJECT COMPLETION. REFER TO THE PLAN FOR ANY NEW SERVICE REQUIREMENTS. THE TRANSFER OF OWNERSHIP OF THE STREET LIGHTS FROM THE DEVELOPER/OWNER TO THE CITY OF LAS VEGAS FOR NEW PUBLIC STREET LIGHTS AND/OR SERVICE/S INSTALLED UNDER THIS PLAN DESIGN WILL BE IN CONJUNCTION WITH THIS PROJECT COMPLETION. COORDINATE ALL MAINTENANCE AND OPERATIONAL TRANSFERS WITH THE CITY OF LAS VEGAS TRAFFIC ENGINEERING DEPARTMENT (TEFO) AT (702) 229-6331.	
DISCLAIMER NOTE:	
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LEGEND	
EXISTING	PROPOSED
DESCRIPTION	DESCRIPTION
ROW OR PROPERTY LINE	ROW OR PROPERTY LINE
EASEMENT LINE	EASEMENT LINE
CENTERLINE	CENTERLINE
CURB	CURB & GUTTER (24-INCH)
	CURB & GUTTER (30-INCH)
	"L" TYPE ISLAND CURB
	CONCRETE VALLEY GUTTER
	5-INCH CONCRETE SIDEWALK
	SIDEWALK UNDERDRAN
	3/4" WATER METER
	4-INCH IRRIGATION METER WITH 1" RPPA
	POWER/GAS/PHONE/CABLE SERVICE TO LOTS
	SURVEY MONUMENTS
	ADA RAMPS
	4-INCH SEWER LATERAL
	8-INCH PVC SEWER MAIN
	8-INCH C-900 SEWER MAIN
	48-INCH SEWER MANHOLES
	BACKWATER VALVES
	WATER LATERAL
	6-INCH PVC WATER MAIN
	8-INCH PVC WATER MAIN
	12-INCH PVC WATER MAIN
	12-INCH DIP WATER MAIN
	FIRE HYDRANT
	FIRE CRASH GATE (WROUGHT IRON)
	LIGHT STANDARD (STD. BASE)
	1-1/4 INCH STREET LIGHT CONDUIT
	SL 200 AMP SERVICE PEDESTAL
	STREET SIGNS - STAND ALONE

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Call before you Dig
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.

**Call
811**
OR
1-800-227-2600

FAST
Call
before you
UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL
SYSTEM OF TRANSPORTATION

AVOID HITTING OVERHEAD
POWER LINES. IT'S COSTLY.

CALL BEFORE
YOU DO
OVER-HEAD

1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID SILV0926W6,
PIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BUILDING PERMIT NOTE

ALL STRUCTURES SHOWN OR INDICATED ON THIS SUBMITTAL
WITHIN THE PROPERTY REQUIRE A BUILDING PERMIT
APPLICATION AND SUBMITTAL THIS INCLUDES BUILDINGS, ABOVE
GROUND TANKS, SIGNS, RETAINING WALLS, FENCES, TRASH
ENCLOSURES, SHADE STRUCTURES, STAIRWAYS, RAMPS, LIGHT
POLES, LIGHT BOLLARDS, ETC. THIS DOES NOT INCLUDE ANY
FLOOD CONTROL STRUCTURE SUCH AS PIPES, CULVERTS, ARCH
CULVERTS, HEADWALLS, ETC. THIS DOES NOT INCLUDE ANY
WORK WITHIN A PUBLIC STREET RIGHT-OF-WAY. THIS DOES
NOT INCLUDE PRIVATE STREETS. THE REVIEW OF CIVIL
IMPROVEMENT AND/OR GRADING PLANS DOES NOT INCLUDE
ANY REVIEW OF ANY STRUCTURE THAT REQUIRES A BUILDING
PERMIT APPLICATION."

FLOOD_ZONE NOTE

ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP
(FIRM) COMMUNITY PANEL NUMBERS 32003C2150E AND
32003C2125E DATED SEPTEMBER 27, 2002, THE SITE IS
LOCATED IN A ZONE "X".

SURVEY MONUMENT NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS
REQUIRED BY CITY OF LAS VEGAS AND CLARK COUNTY UNIFORM
STANDARD DRAWING NUMBER 243. OWNER IS ALSO RESPONSIBLE TO
REPLACE ALL SURVEY MONUMENTATION DAMAGED, DESTROYED, OR
OBSOLETE DURING CONSTRUCTION.

SIGHT VISIBILITY ZONE

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

ENGINEERS NOTES

- CONTRACTOR IS RESPONSIBLE FOR DUST AND EROSION CONTROL DURING CONSTRUCTION.
- SEE DETAIL SHEET FOR ON-SITE PAVEMENT SECTIONS. CONTRACTOR TO VERIFY WITH SOILS REPORT.
- SEE FINAL MAP FOR EXACT PROPERTY LINE DIMENSIONS.
- ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.
- THESE PLANS SHALL NOT, IN PART OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY THE GOVERNING AGENCIES.
- ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
- DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
- SOIL REPORT NOTE:
GRADING SHALL BE IN ACCORDANCE
WITH SOILS REPORT PREPARED BY:
ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
- CUT/FILL ESTIMATES
EXISTING TO FINISH GRADE ELEVATIONS
NET CUT: 66,691 CY
NET FILL: 79,411 CY
- SEE DETAIL 21/D-2 FOR TYPICAL LOT DRAINAGE
- FOR STORMWATER RUNOFF MANAGEMENT NOTES REFER TO SHEET N-1

NOTE

ALL ON-SITE STORM DRAINS AND THE
ASSOCIATED FACILITIES ARE PRIVATELY
OWNED AND TO BE PRIVATELY MAINTAINED
BY THE HOA.

NOTE

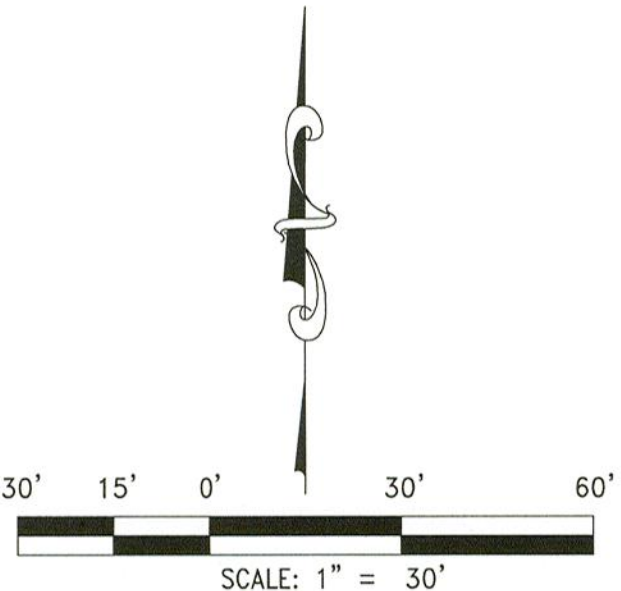
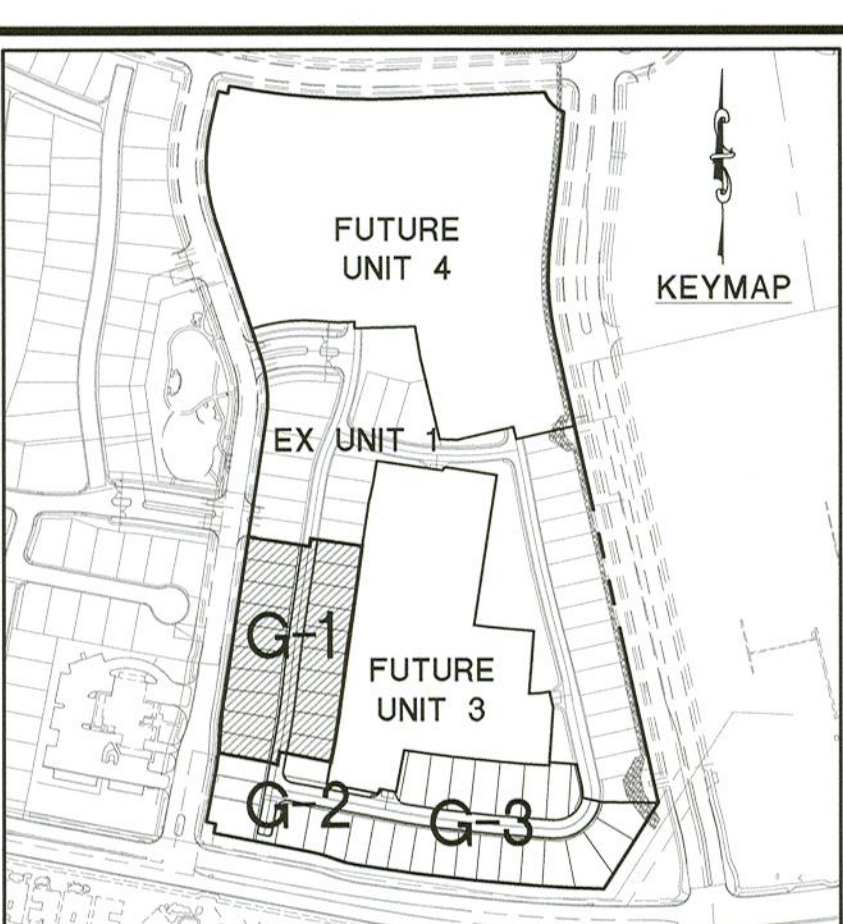
ALL PRIVATE STREETS ARE P.U.E., PUBLIC
SEWER EASEMENTS AND PUBLIC DRAINAGE
EASEMENTS TO BE PRIVATELY MAINTAINED
BY HOA.

SEWER EASEMENT NOTE

NO STRUCTURES AND NO TREES OR VEGETATION TALLER
THAN THREE FEET ALLOWED WITHIN CLV SEWER EASEMENT

CONSTRUCTION NOTES

- CONSTRUCT AC PAVEMENT PER DETAILS 1 THRU 2
ON SHEET D-1
- CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CCAUSD
#217.2.51
- CONSTRUCT 5' SIDEWALK PER CCAUSD #234 (5-INCH
THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- CONSTRUCT 8' CROSS GUTTER PER SUMMERLIN
IMPROVEMENT STD DWG #5-64
- CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED
DOMES OR EQUIVALENT PER CCAUSD #235 (CASE 1)
- CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED
DOMES OR EQUIVALENT PER CCAUSD #235 (CASE 3)
- CONSTRUCT 48" TYPE 1 MANHOLE PER CCAUSD #403
- CONSTRUCT 48" TYPE "CW2" DROP INLET PER CCAUSD #412.1,
CCAUSD #421, 2 GRATES
- CONSTRUCT 6" HIGH WROUGHT IRON FENCE AND/OR GATES
- INSTALL 3" WIDE RIPRAP D50=6" THICKNESS=12"
- REMOVE EXISTING RIPRAP



DATE: November 20, 2019	BY: APPD	DESCRIPTION:
HORIZ. SCALE: 1"=50'	REV:	
VERT. SCALE: N/A		
DRAWN BY: SHC		
DESIGNED BY: MJD		
CHECKED BY: CRZ		
APPROVED BY: CRZ		
PROJECT #: 4320.0009		

WOODSIDE HOMES OF NEVADA LLC

7895 W. SUNSET RD. SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-899-7824

RCI ENGINEERING

500 SOUTH RANCHO DRIVE, SUITE 17, LAS VEGAS, NV 89106
PH: 702.453.0800 FAX: 702.453.0801
www.rcieng.com

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 2
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION

GRADING PLANS (SHEET 1 OF 3)

NEVADA

CITY OF LAS VEGAS

DATE: 11-21-19

DRAWING

G-1

SHT 3 OF 11

CLV DRAWING NUMBER

CLV PROJECT #

1 HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

CHRISTOPHER ZRINYI, PE NO. 13976

DATE

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UTILITY LINES. IT'S COSTLY.



OR
1-800-227-2600

FAST



Call before you
UnderGround
1-702-432-5300

AVOID HITTING OVERHEAD
POWER LINES. IT'S COSTLY.



1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BUILDING PERMIT NOTE

ALL STRUCTURES SHOWN OR INDICATED ON THIS SUBMITTAL
WITHIN THE PROPERTY REQUIRE A BUILDING PERMIT
APPLICATION AND SUBMITTAL THIS INCLUDES BUILDINGS, ABOVE
GROUND TANKS, SIGNS, RETAINING WALLS, FENCES, TRASH
ENCLOSURES, SHADE STRUCTURES, STAIRWAYS, RAMPS, LIGHT
POLES, LIGHT BOLLARDS, ETC. THIS DOES NOT INCLUDE ANY
FLOOD CONTROL STRUCTURE SUCH AS PIPES, CULVERTS, ARCH
CULVERTS, HEADWALLS, ETC. THIS DOES NOT INCLUDE ANY
WORK WITHIN A PUBLIC STREET RIGHT-OF-WAY. THIS DOES
NOT INCLUDE PRIVATE STREETS. THE REVIEW OF CIVIL
IMPROVEMENT AND/OR GRADING PLANS DOES NOT INCLUDE
ANY REVIEW OF ANY STRUCTURE THAT REQUIRES A BUILDING
PERMIT APPLICATION."

FLOOD ZONE NOTE

ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP
(FIRM) COMMUNITY PANEL NUMBERS 32003C2150E AND
32003C2152E DATED SEPTEMBER 27, 2002, THE SITE IS
LOCATED IN A ZONE "X".

SURVEY MONUMENT NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS
REQUIRED BY CITY OF LAS VEGAS AND CLARK COUNTY UNIFORM
STANDARD DRAWING NUMBER 245. OWNER IS ALSO RESPONSIBLE TO
REPLACE ALL SURVEY MONUMENTATION DAMAGED, DESTROYED, OR
OBSCURED DURING CONSTRUCTION.

SIGHT VISIBILITY ZONE

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

ENGINEERS NOTES

1. CONTRACTOR IS RESPONSIBLE FOR DUST AND EROSION CONTROL DURING CONSTRUCTION.
2. SEE DETAIL SHEET FOR ON-SITE PAVEMENT SECTIONS. CONTRACTOR TO VERIFY WITH SOILS REPORT.
3. SEE FINAL MAP FOR EXACT PROPERTY LINE DIMENSIONS.
4. ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.
5. THESE PLANS SHALL NOT, IN PART OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY THE GOVERNING AGENCIES.
6. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
7. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
8. SOIL REPORT NOTE:
GRADING SHALL BE IN ACCORDANCE
WITH SOILS REPORT PREPARED BY:
ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
9. CUT/FILL ESTIMATES
EXISTING TO FINISH GRADE ELEVATIONS
NET CUT: 68,691 CY
NET FILL: 79,411 CY
10. SEE DETAIL 21/D-2 FOR TYPICAL LOT DRAINAGE
11. FOR STORMWATER RUNOFF MANAGEMENT NOTES REFER TO SHEET N-1

NOTE

ALL ON-SITE STORM DRAINS AND THE
ASSOCIATED FACILITIES ARE PRIVATELY
OWNED AND TO BE PRIVATELY MAINTAINED
BY THE HOA

NOTE

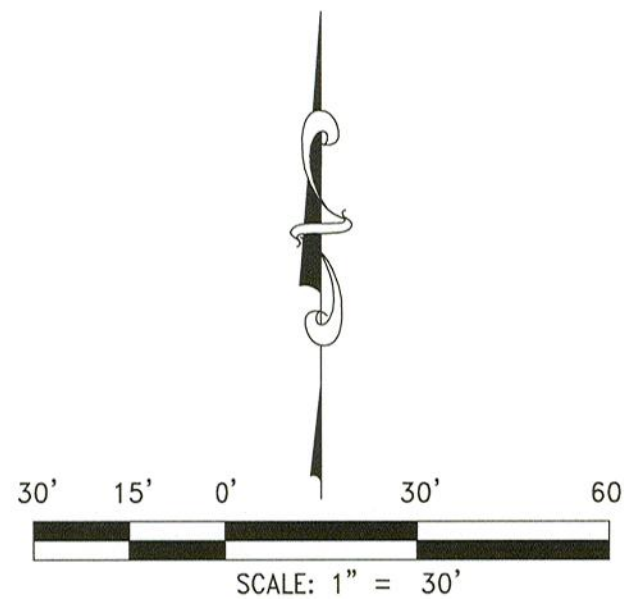
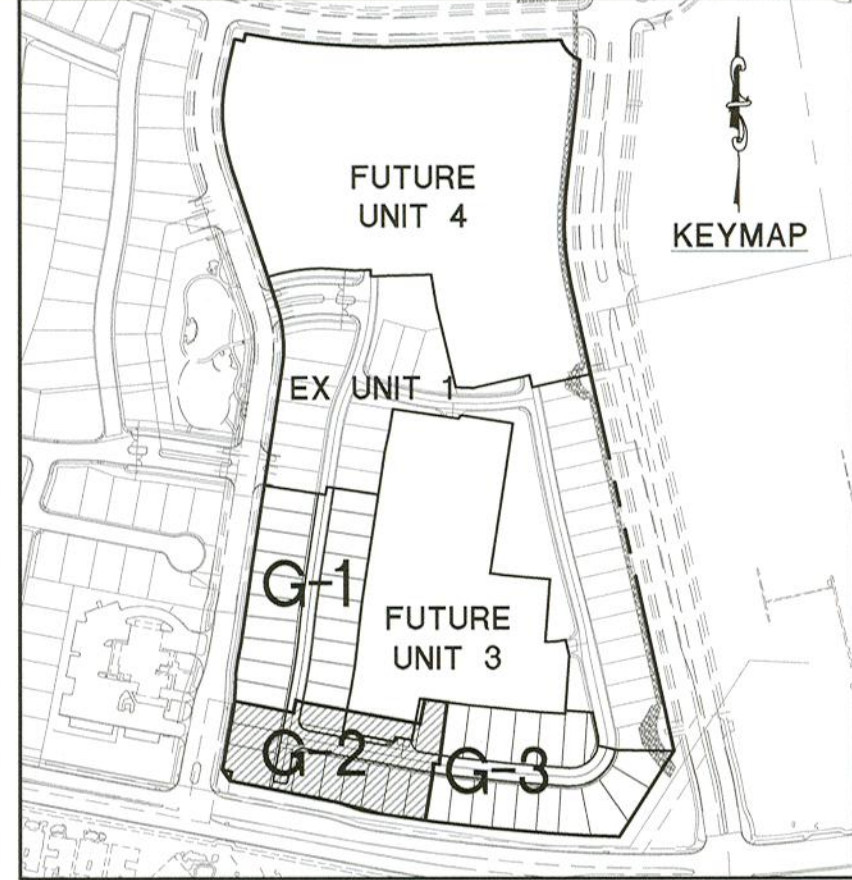
ALL PRIVATE STREETS ARE P.U.E., PUBLIC
SEWER EASEMENTS AND PUBLIC DRAINAGE
EASEMENTS TO BE PRIVATELY MAINTAINED
BY HOA.

SEWER EASEMENT NOTE

NO STRUCTURES AND NO TREES OR VEGETATION TALLER
THAN THREE FEET ALLOWED WITHIN CLV SEWER EASEMENT

CONSTRUCTION NOTES

1. CONSTRUCT AC PAVEMENT PER DETAILS 1 THRU 2
ON SHEET D-1
2. CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CCAUSD
#217.2.51
3. CONSTRUCT 5" SIDEWALK PER CCAUSD #234 (5-INCH
THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
4. CONSTRUCT 8" CROSS GUTTER PER SUMMERLIN
IMPROVEMENT STD DWG #S-64
5. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED
DOMES OR EQUIVALENT PER CCAUSD #235 (CASE 1)
6. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED
DOMES OR EQUIVALENT PER CCAUSD #235 (CASE 3)
7. CONSTRUCT 48" TYPE I MANHOLE PER CCAUSD #403
8. CONSTRUCT 7.5" TYPE "M2" DROP INLET PER CCAUSD #412.1,
CCAUSD #421, 2 GRATES
9. CONSTRUCT 6" HIGH WROUGHT IRON FENCE AND/OR GATES
10. INSTALL 3" WIDE RIPRAP D50=6" THICKNESS=12"
11. REMOVE EXISTING RIPRAP



WOODSIDE HOMES OF NEVADA LLC

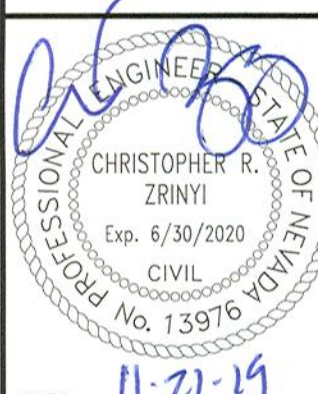
7895 W. SAGE RD., SUITE 110
LAS VEGAS, NV 89106
PHONE: 702-889-7824

RCI ENGINEERING

500 SOUTH BRADDOCK DRIVE, SUITE 100, LAS VEGAS, NV 89106
PHONE: 702-889-7824
WWW.RCIENGINEERING.COM

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 2
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 2 OF 3)

NEVADA



DATE: 11-21-19

DRAWING

G-2

SHT 4 OF 11

CLV DRAWING NUMBER

CLV PROJECT #

I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

CHRISTOPHER ZRINYI, PE NO. 13976 DATE

DISCLAIMER NOTE:

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.

Call before you Dig
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.



1-800-227-2600



Call
before you
UnderGround
1-702-432-5300
FREIGHTWAY AND ARTERIAL
SYSTEM OF TRANSPORTATION



1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

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NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
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FLOOD ZONE NOTE

ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP
(FIRM) COMMUNITY PANEL NUMBERS 32003C2150E AND
32003C2125E DATED SEPTEMBER 27, 2002, THE SITE IS
LOCATED IN A ZONE "X".

SURVEY MONUMENT NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS
REQUIRED BY CITY OF LAS VEGAS AND CLARK COUNTY UNIFORM
STANDARD DRAWING NUMBER 243. OWNER IS ALSO RESPONSIBLE TO
REPLACE ALL SURVEY MONUMENTATION DAMAGED, DESTROYED, OR
OBSOLETE DURING CONSTRUCTION.

SIGHT VISIBILITY ZONE

NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS
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ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
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EXISTING TO FINISH GRADE ELEVATIONS
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NOTE

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NOTE

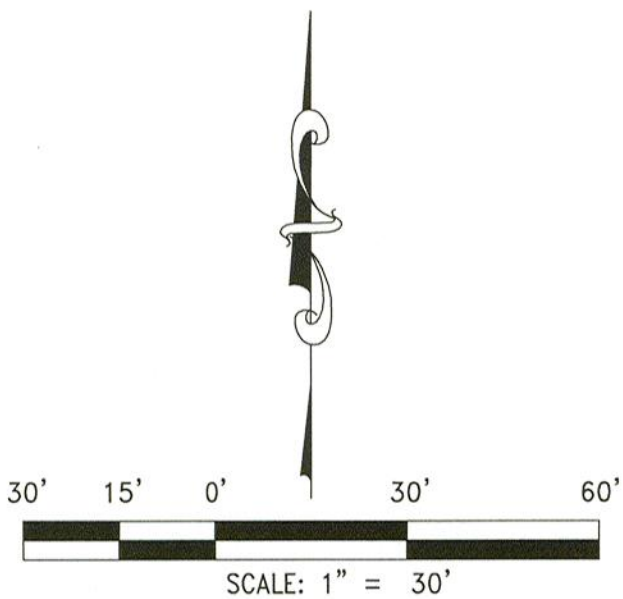
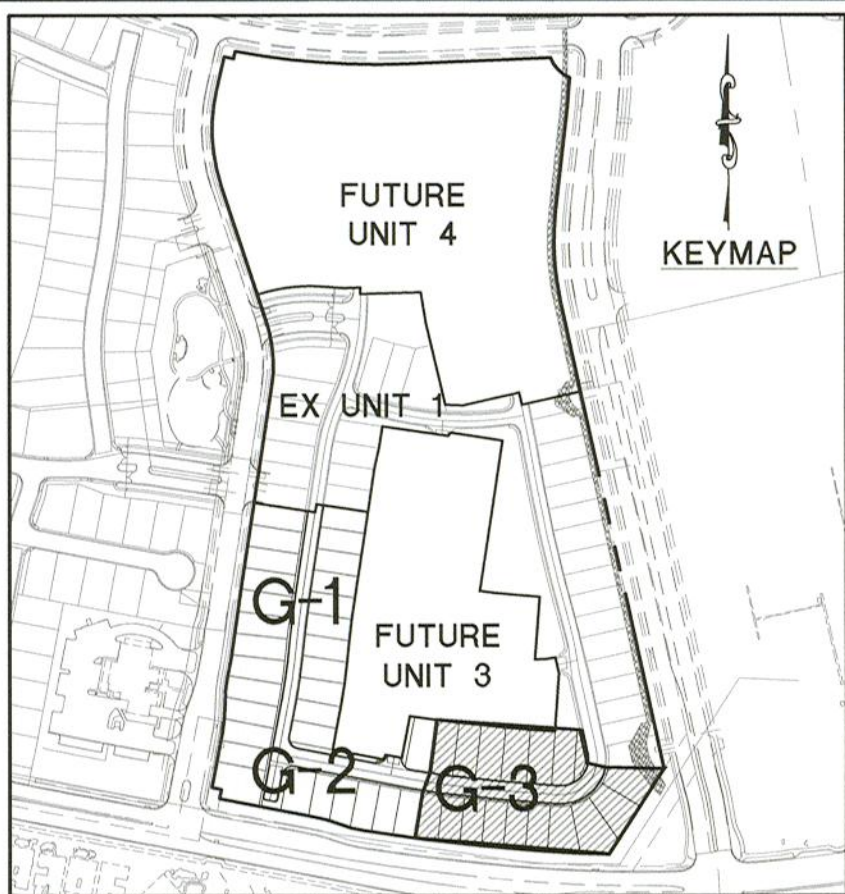
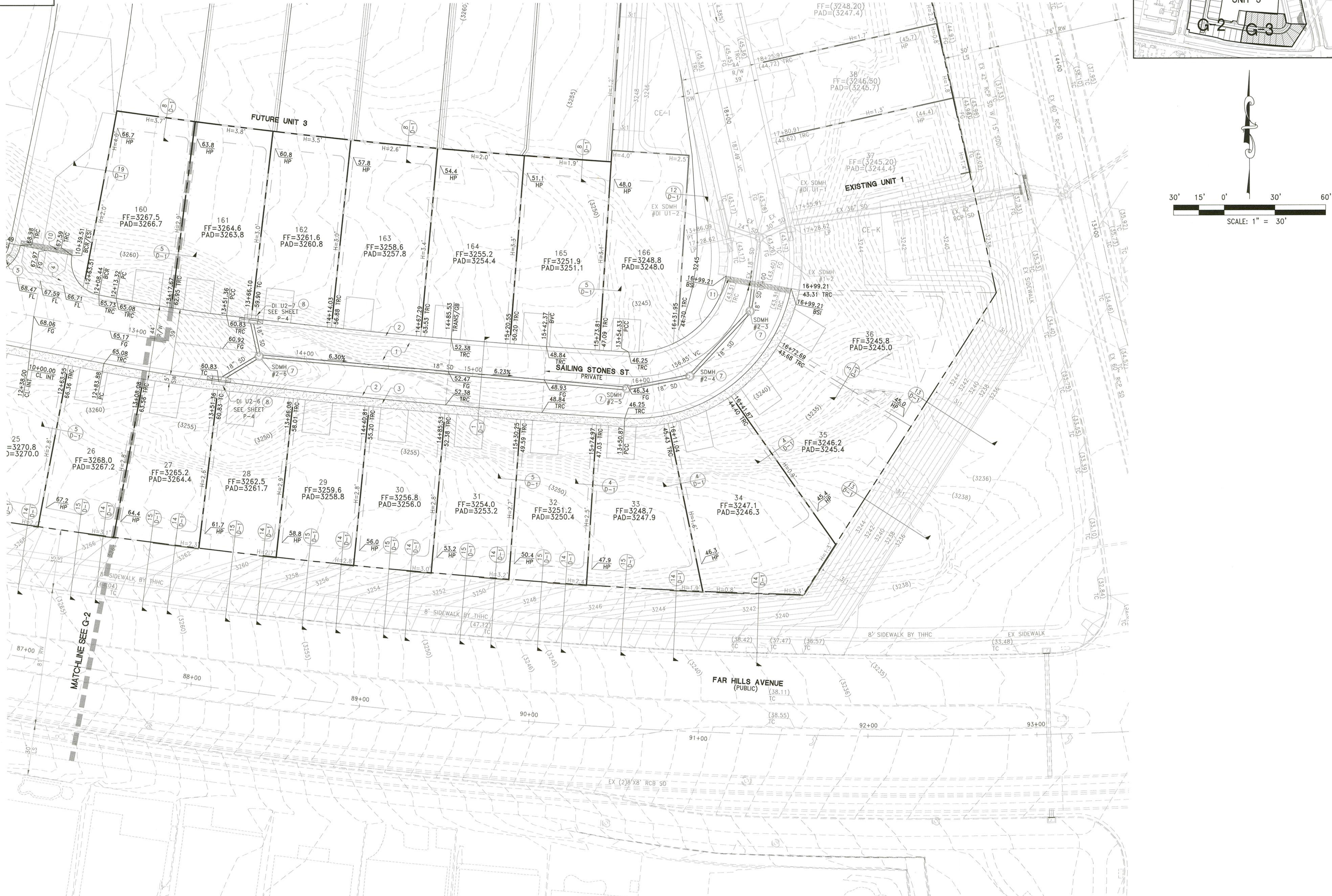
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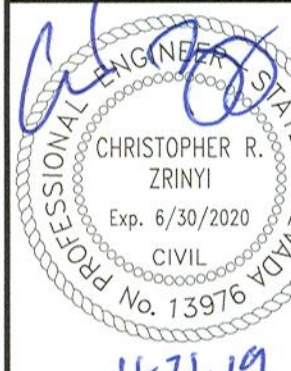
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WOODSIDE HOMES OF NEVADA LLC

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 2
SUMMERLIN VILLAGE 21 PARCELA A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 3 OF 3)



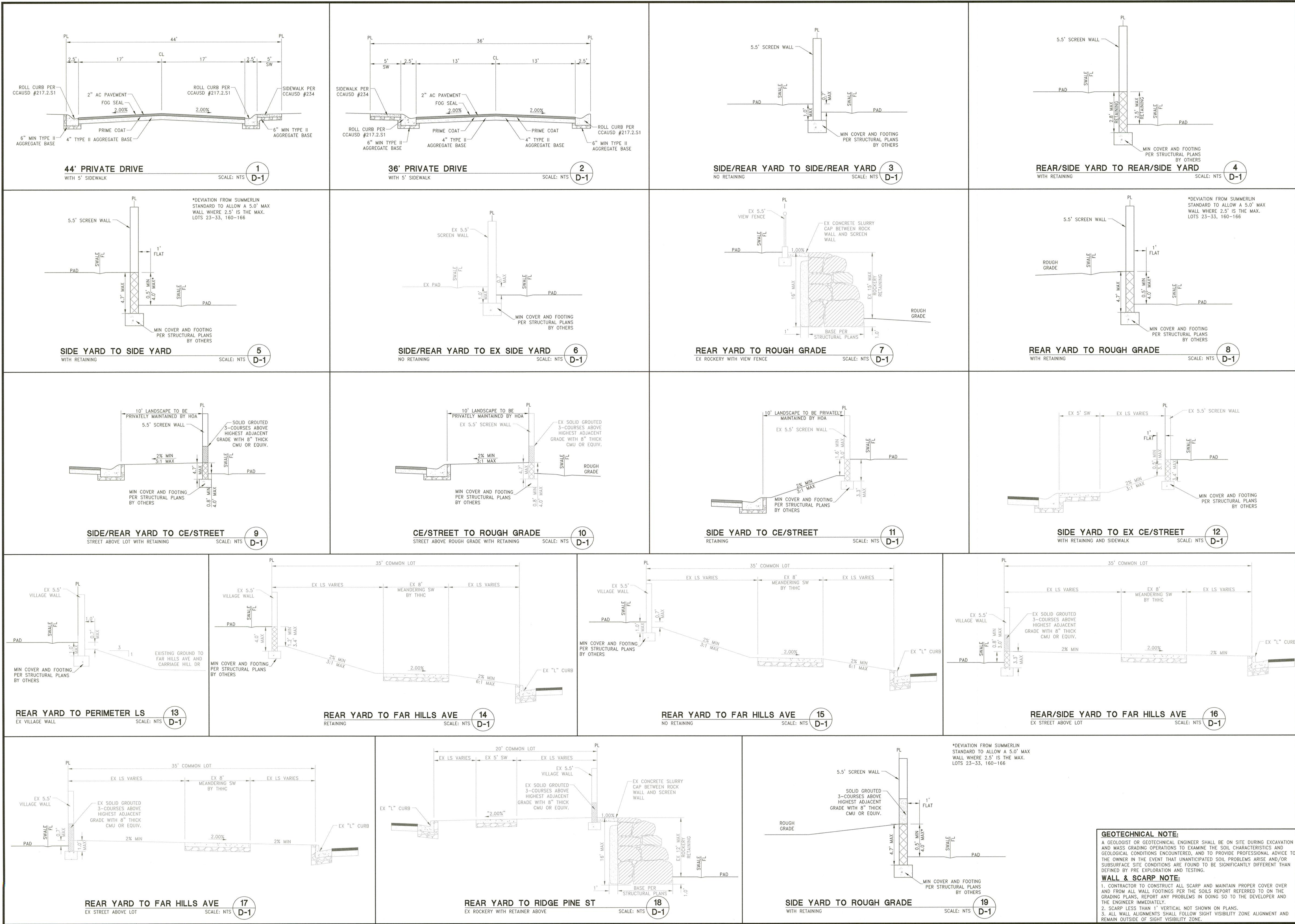
DATE: 11-21-19

DRAWING
G-3
SHT 5 OF 11
CLV DRAWING NUMBER

CLV PROJECT #

I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

CHRISTOPHER ZRINYI, PE NO. 13976 DATE



REV	DESCRIPTION	DATE
1	44' PRIVATE DRIVE WITH 5' SIDEWALK	11/20/19
2	36' PRIVATE DRIVE WITH 5' SIDEWALK	11/20/19
3	SIDE/REAR YARD TO SIDE/REAR YARD	11/20/19
4	REAR/SIDE YARD TO REAR/SIDE YARD	11/20/19
5	SIDE YARD TO SIDE YARD	11/20/19
6	SIDE/REAR YARD TO EX SIDE YARD	11/20/19
7	REAR YARD TO ROUGH GRADE	11/20/19
8	REAR YARD TO ROUGH GRADE	11/20/19
9	SIDE/REAR YARD TO CE/STREET	11/20/19
10	CE/STREET TO ROUGH GRADE	11/20/19
11	SIDE YARD TO CE/STREET	11/20/19
12	SIDE YARD TO EX CE/STREET	11/20/19
13	REAR YARD TO PERIMETER LS	11/20/19
14	REAR YARD TO FAR HILLS AVE	11/20/19
15	REAR YARD TO FAR HILLS AVE	11/20/19
16	REAR/SIDE YARD TO FAR HILLS AVE	11/20/19
17	REAR YARD TO FAR HILLS AVE	11/20/19
18	REAR YARD TO RIDGE PINE ST	11/20/19
19	SIDE YARD TO ROUGH GRADE	11/20/19

WOODSIDE HOMES OF NEVADA LLC
7895 W. SUNSET RD, SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-889-7824

RCI ENGINEERING
500 SOUTH RANCHO DRIVE, SUITE 17, LAS VEGAS, NV 89106
PHONE: 702-453-0800 FAX: 702-453-0801

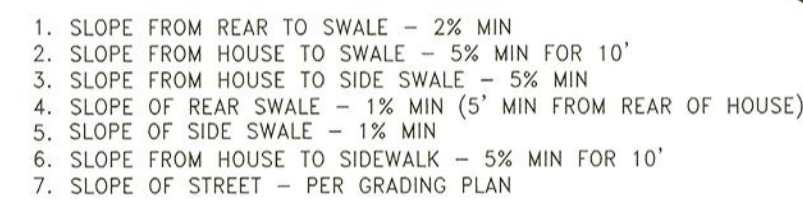
CRISTAL CANYON UNIT 2
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION

GRADING DETAILS (SHEET 1 OF 2)

GEOTECHNICAL NOTE:
A GEOLOGIST OR GEOTECHNICAL ENGINEER SHALL BE ON SITE DURING EXCAVATION AND MASS GRADING OPERATIONS TO EXAMINE THE SOIL CHARACTERISTICS AND GEOLOGICAL CONDITIONS ENCOUNTERED, AND TO PROVIDE PROFESSIONAL ADVICE TO THE OWNER IN THE EVENT THAT UNANTICIPATED SOIL PROBLEMS ARISE AND/OR SUBSURFACE SITE CONDITIONS ARE FOUND TO BE SIGNIFICANTLY DIFFERENT THAN DEFINED BY PRE EXPLORATION AND TESTING.

WALL & SCARP NOTE:
1. CONTRACTOR TO CONSTRUCT ALL SCARP AND MAINTAIN PROPER COVER OVER AND FROM ALL WALL FOOTINGS PER THE SOILS REPORT REFERRED TO ON THE GRADING PLANS, REPORT ANY PROBLEMS IN DOING SO TO THE DEVELOPER AND THE ENGINEER IMMEDIATELY.
2. SCARP LESS THAN 1' VERTICAL NOT SHOWN ON PLANS.
3. ALL WALL ALIGNMENTS SHALL FOLLOW SIGHT VISIBILITY ZONE ALIGNMENT AND REMAIN OUTSIDE OF SIGHT VISIBILITY ZONE.

DATE: 11-20-19
DRAWING: D-1
SHT 6 OF 11
CLV DRAWING NUMBER
CLV PROJECT #



SCALE: NTS **21**
D-2

DATE:	November 20, 2019
HORIZ. SCALE:	N/A
VERT. SCALE:	N/A
DRAWN BY:	SRC
DESIGNED BY:	MJD
CHECKED BY:	CRZ
APPROVED BY:	CRZ
PROJECT #:	4320.0009

95 W. SUNSET RD, SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-889-7824



PH# / 02.453.0800 FAX# / 02.453.0801
www.rcinevada.com

NEVADA

CITY OF LAS VEGAS



D-2

SHT 7 OF 11

CLV DRAWING NUMBER

CLV PROJECT #

GEOTECHNICAL NOTE:
A GEOLOGIST OR GEOTECHNICAL ENGINEER SHALL BE ON SITE DURING EXCAVATION AND MASS GRADING OPERATIONS TO EXAMINE THE SOIL CHARACTERISTICS AND GEOLOGICAL CONDITIONS ENCOUNTERED, AND TO PROVIDE PROFESSIONAL ADVICE TO THE OWNER IN THE EVENT THAT UNANTICIPATED SOIL PROBLEMS ARISE AND/OR GRADING PLAN REVISIONS ARE FOUND TO BE SIGNIFICANTLY DIFFERENT THAN DEFINED BY PRE EXPLORATION AND TESTING.

WALL & SCARP NOTE:

1. CONTRACTOR TO CONSTRUCT ALL SCARP AND MAINTAIN PROPER COVER OVER AND FROM ALL WALL FOOTINGS PER THE SOILS REPORT REFERRED TO ON THE GRADING PLAN. REPORT ANY PROBLEMS IN DOING SO TO THE DEVELOPER AND THE ENGINEER IMMEDIATELY.
2. SCARP LESS THAN 1' VERTICAL NOT SHOWN ON PLANS.
3. ALL WALL ALIGNED WITH THE EXISTING SIGHT VISIBILITY ZONE ALIGNMENT AND REMAIN OUTSIDE OF SIGHT VISIBILITY ZONE.

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Call
811

FAST

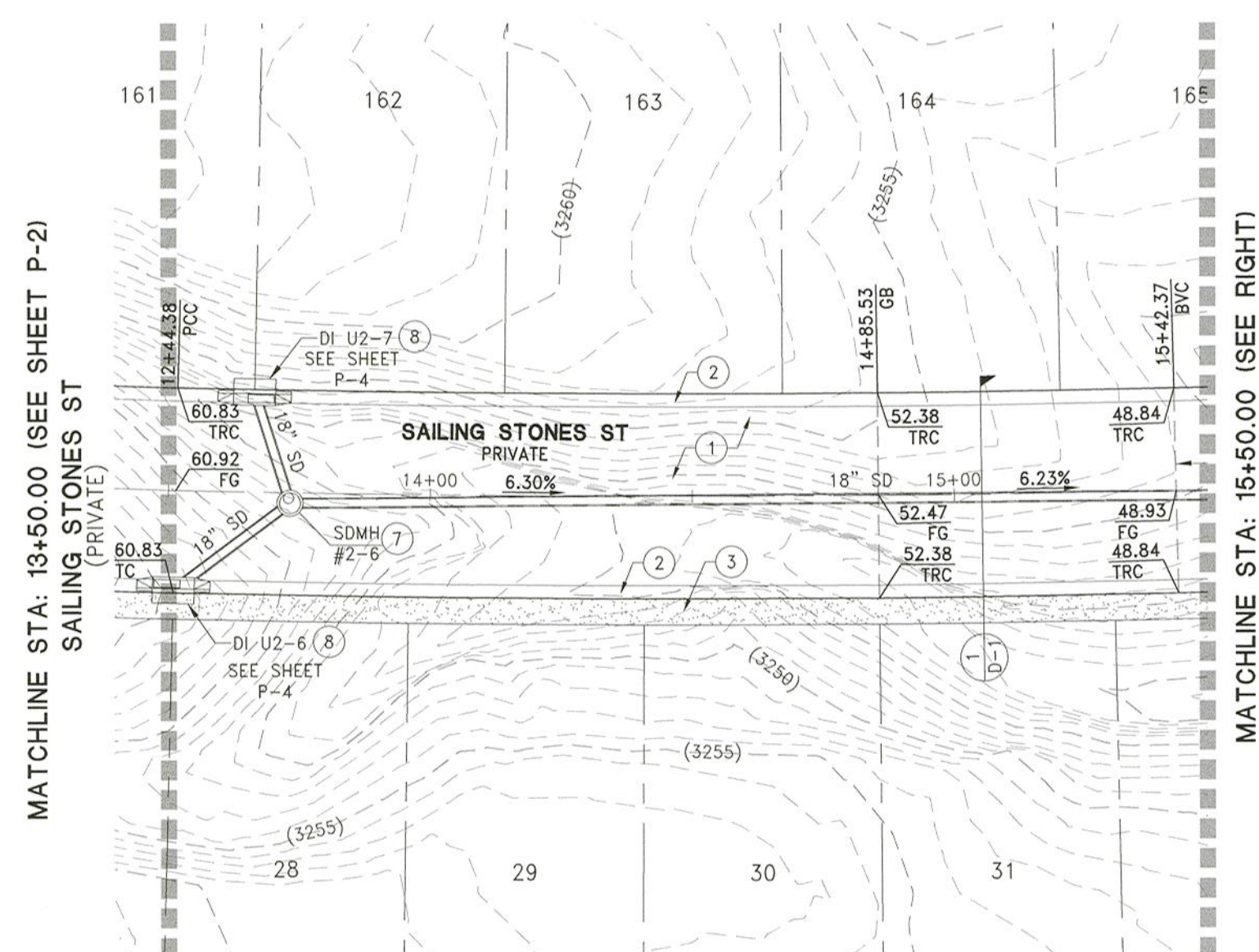
Call
before you
UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL

1-702-227-2929

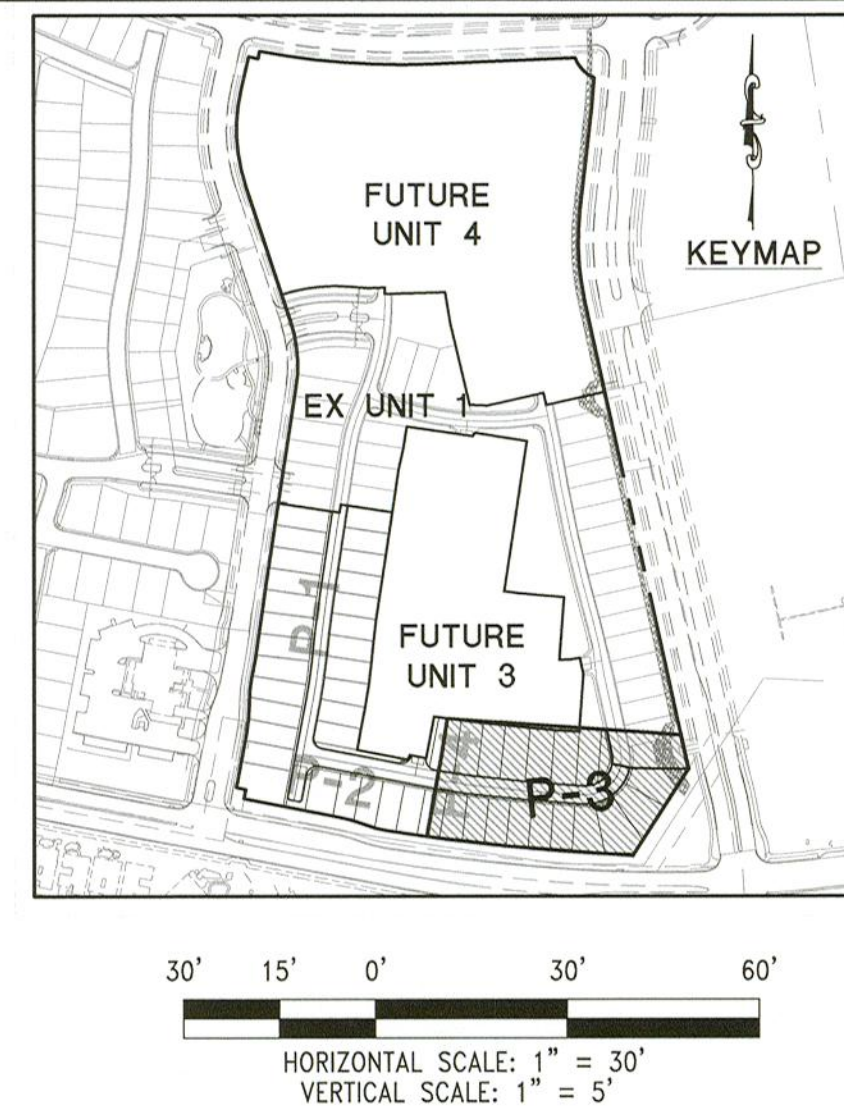
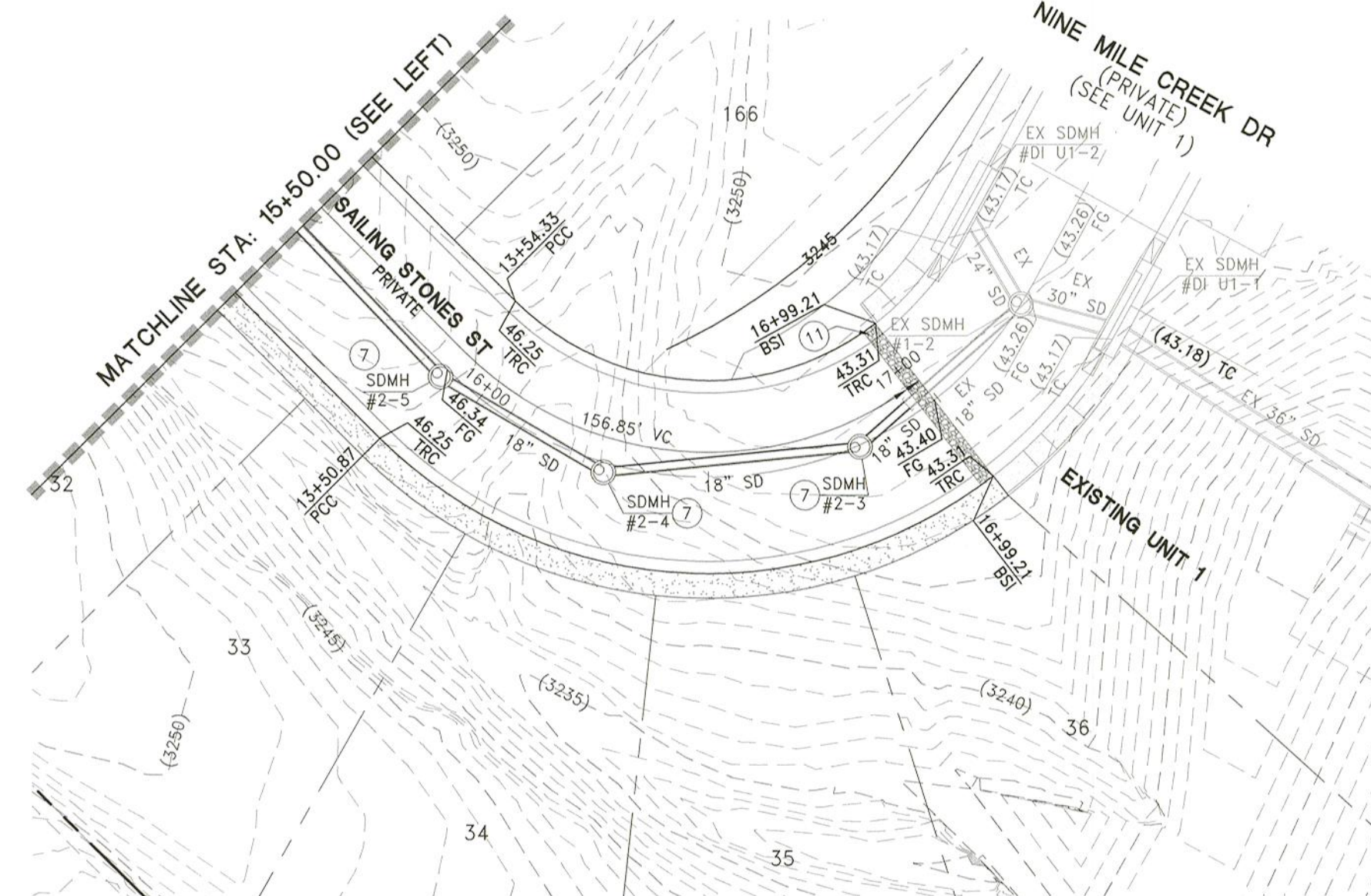
CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
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NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
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PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.



SAILING STONES ST STA: 13+50.00 - 17+50.00
(PRIVATE)



Station	Elevation	Notes
3260		
3255		
3250		
3245		
3240		
3235		
3230		
3225		
3220		
3215		

Diagram Details:

- Proposed Grade @ Centerline:** Solid line showing the new sewer profile.
- Existing Grade @ Centerline:** Dashed line showing the current ground level.
- Approximate Existing Ground @ Centerline:** Dotted line showing the natural ground level.
- 100-YR HGL:** Hydraulic Grade Line for a 100-year flood event.
- Manholes (MH):** Circular structures with diameters (e.g., 13'-7.5" x 2'-0") and invert/finish elevations.
- SDMH (Sanitary Drop Manhole):** Specific type of manhole for drop connections.
- Pipe Segments:** Labeled with size, material, and slope (e.g., 38.20' 18" CLASS III (PRIVATE) RCP SD @ 3.73% Q100= 14 CFS).
- Vertical Curve Data:**
 - PVI STA = 17+12.40, PVI ELEV = 3238.33, A.D. = 11.40%, K = 30.58, L = 348.61
 - BVC: 15+35.09, EVC: 18+86.70
- Grades:** -6.30%, -6.23%, 2.06%, 4.15%, 4.28%.
- Other Labels:** "APPROXIMATE EXISTING GROUND @ CENTERLINE", "PROPOSED GRADE @ CENTERLINE", "EXISTING GRADE @ CENTERLINE".

REV	DESCRIPTION	BY	APPRO	DATE
	DATE: November 20, 2019			
	HORIZ. SCALE: 1"=30'			
	VERT. SCALE: 1"=5'			
	DRAWN BY: SRC			
	DESIGNED BY: MJD			
	CHECKED BY: CRZ			
	APPROVED BY: CRZ			
	PROJECT #:			4320.0059

WOODSIDE HOMES OF NEVADA LLC

7855 W. JONEST RD. SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-889-7824

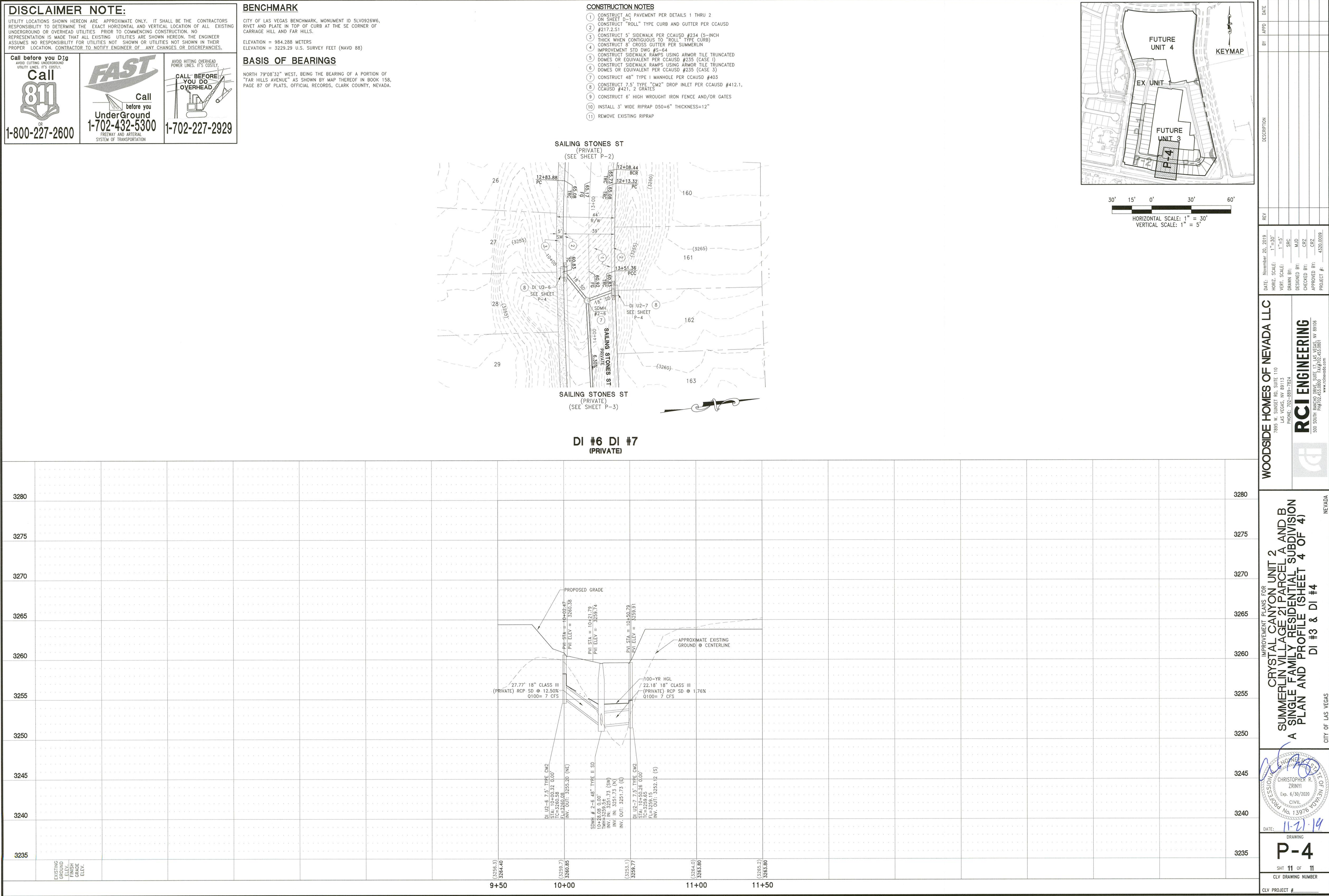
RCI ENGINEERING

500 SOUTH RANCHO VILLAGE, SUITE 200
LAS VEGAS, NV 89106
PHONE: 702-451-0600
770-451-0600 FAX: 702-451-0601
<http://www.rciengr.com>

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 2
SUMMERLIN VILLAGE 21 PARCELA AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
PLAN AND PROFILE (SHEET 3 OF 4)
SAILING STONES ST STA: 13+50.00-17+50.00
CITY OF LAS VEGAS
NEVADA

PROFESSIONAL ENGINEER
CHRISTOPHER R. ZIRINYI
Exp. 6/30/2020
CIVIL
No. 13976 (VAND)
STATE OF NEVADA

DATE: 11-21-19
DRAWING
P-3
SHT 10 OF 11
CLV DRAWING NUMBER



6

7

8

9

10

11

12

SAILING STONES ST
(PRIVATE)
(SEE SHEET P-2)

DI #6 DI #7
(PRIVATE)

3280

3275

3270

3265

3260

3255

3250

3245

3240

3235

EXISTING GROUND ELEV.

GROUND ELEV.

PROPOSED GRADE ELEV.

9+50

10+00

11+00

11+50

3280

3275

3270

3265

3260

3255

3250

3245

3240

3235

EXISTING GROUND ELEV.

GROUND ELEV.

PROPOSED GRADE ELEV.

9+50

10+00

11+00

11+50

WOODSIDE HOMES OF NEVADA LLC

7895 W. SUNSET RD. SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-289-1924

RCI ENGINEERING

500 SOUTH RANCHO DRIVE, SUITE 17, LAS VEGAS, NV 89106
PH: 702-450-5500
www.rciengineer.com

IMPROVEMENT PLANS FOR

CRYSTAL CANYON UNIT 2

SUMMERLIN VILLAGE 21 PARCELS A AND B

A SINGLE FAMILY RESIDENTIAL SUBDIVISION

A PLAN AND PROFILE (SHEET 4 OF 4)

DI #3 & DI #4

NEVADA

CITY OF LAS VEGAS

DATE: 11-21-19

DRAWING

P-4

SHT 11 OF 11

CLV DRAWING NUMBER

CLV PROJECT #

DATE: November 20, 2019

HORIZ. SCALE: 1"=30'

VERT. SCALE: 1"=5'

DRAWN BY: SRC

CHECKED BY: MJD

APPROVED BY: CRZ

PROJECT #: 4320.0009

4320 Woodside	Summerlin	21R	CIVIL	IP(S) PHASE 3	S0001	C-1	SUMMERLIN21R PHASE3.dwg	slcrk	11/20/19	6:50pm
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CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA - LATEST EDITION," THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA - LATEST EDITION," LATEST REVISED EDITION, THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA, AND OTHER APPLICABLE SPECIFICATIONS AND ORDINANCES ADOPTED BY THE CONTRACTING AGENCY, THE CLARK COUNTY BUILDING CODE, AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATION FROM STANDARD PRACTICE."
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CIVIL PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED FROM PLANS FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES AND STRUCTURES WHICH ARE NOT SHOWN ON THE PLANS AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE. FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPEATED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM 90-28 DAY MIX DESIGN, APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. ASP. PAVEMENT TO BE ONE-ONE/4" INCH (1/4") ABOVE ALL CUT GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF SIDEWALK RAMP TO BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY GEOTECH INC., PROJECT 13735-V, DATED 10/10/2017, APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER. CONSTRUCTION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING FENCED CONDITIONS, REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH NGS-380 AND NGS-381 IN THE FIELD BY A CITY INSPECTOR.
15. UTILITY COMPANY MATER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APPROACHES, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER. WALL NOTES.
16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING AND ELEVATIONS, FLOOD ELEVATIONS, AND EIGHT ELEVATIONS AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
18. CONTRACTOR SHALL ADJUST ALL NEW, EXISTING INLETS, VALVE BOXES, MANHOLE RINGS, AND/OR SEWER CLEAN OUTS, ETC. TO FINISH GRADE, UNLESS INDICATED OTHERWISE. WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.
20. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKED BUILDS, LOCALIZATION, OR TRACKING, THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO OFFSITE INSPECTION AND TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.
21. SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO ACCEPTANCE OF THE FACILITY. THE FINAL LOCATION MAP(S) SHALL SHOW THE HORIZONTAL AND VERTICAL UNPERTURBED LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER LATERALS TO THE STORM DRAIN MAIN, AND THE LOCATION OF THE SEWER LATERALS TO THE STORM DRAIN MAIN. THE SEWER AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS, THE LOCATION SHALL BE DESCRIBED BY COORDINATES. THE MAP(S) SHALL BE BASED ON THE HORIZONTAL AND VERTICAL ALIGNMENT OF THE STORM DRAIN MAIN. FINAL LOCATION MAPS MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIVE CERTAINITIES OF ± 0.08 METERS (± 0.3 FEET) HORIZONTALLY AND VERTICALLY. A SEPARATE ELECTRONIC COORDINATE DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).
22. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.
23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

CITY OF LAS VEGAS TRAFFIC NOTES

1. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.
3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
4. WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCRoACHED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKERS STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY ANY EXISTING TRAFFIC MARKINGS, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL BE FABRICATED WITH DIAMOND GRADE VPI CLASS B REFLECTIVE SHEETING OR APPROVED EQUIV. ALL NEW TRAFFIC SIGNS, EXCEPT STREETNAME AND SCHOOL SPEED LIMIT SIGNS, SHALL HAVE 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. ROADWAY ZONE SIGNS SHALL HAVE 3M SERIES 1150 ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.
7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.
8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAYING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
9. STREET SIGNS AND STOP SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC SIGNS AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC OR ARMY OR NAVY WORK AREA. THE CONTRACTOR SHALL HAVE A CERTIFIED ATSSA TRAFFIC CONTROL TECHNICIAN OR IMSA WORK ZONE SAFETY SPECIALIST SET UP, MAINTAIN AND/OR REMOVE ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.
11. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CITIZENS AREA TRANSIT (C.A.T.) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.
13. PAVEMENT SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 828-3442) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR THE USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.
14. ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS OTHERWISE DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.
15. THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAVEMENT TRANSITIONS, MARKINGS AND SIGNING THAT ARE REQUIRED TO MATCH ADJACENT ROADWAY SEGMENTS. THE CONTRACTOR SHALL PROVIDE A DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPICTING ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SUCH THAT ADEQUATE TRANSITIONS AND LANE TERMINATIONS BETWEEN ADJACENT ROADWAY SEGMENTS ARE CONSTRUCTED.

CITY OF LAS VEGAS HYDRANT AND ACCESS GENERAL NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6631 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICTS - APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMITS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. IFC § 105.6.15
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. IFC § 3310, IFC § 3312
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. IFC § 507.5.7.3
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLOW VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED REGULARLY. COVERING FIRE LINES, CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. IFC § 105.3
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.N.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. IFC § 507.2.1, NFPA 24
8. PRIOR TO THE FIRE OCCURRING, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. IFC § 507
9. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: IFC § C102
 - a. RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
 - b. COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
10. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS, WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR OR MORE TRAFFIC LANES. FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 3000 PER DAY. HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. IFC § C102.8
11. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
12. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. IFC § C102.10
13. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.4
14. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.7
15. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. IFC § C102.6
16. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. FOR SYSTEMS REQUIRED TO HAVE TWO (2) SOURCES OF WATER SUPPLY, SECTORAL VALVES AND APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE TO PROVIDE FOR MINIMUM DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. IFC § 503.2.3
17. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12%. ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 60° FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES.
18. NO TURNING RADIUS FOR THE FIRE APPARATUS ACCESS ROADS SHALL BE LESS THAN 30.00 PER DAY. HYDRANTS ARE REQUIRED TO BE LOCATED WITHIN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. IFC § 503.1.1
19. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS OF IFC § 503.2.4
20. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13FT 6 INS. IFC § 503.2.1
21. ALL FIRE APPARATUS ACCESS ROADS SHALL HAVE A TRAFFIC COUNT OF MORE THAN 30.00 PER DAY. HYDRANTS ARE REQUIRED ON BOTH SIDES MEASURED TO FACE OF CURB, NOT LESS THAN 28 FT WIDE WITH PARKING RESTRICTED TO ONE SIDE. MEASURED TO FACE OF CURB, NOT LESS THAN 24 FT WIDE WITH NO PARKING ON EITHER SIDE MEASURED TO FACE OF CURB. FIRE LINES TURNING PARKING LOTS SHALL BE NOT LESS THAN 24 FT. IFC § 503.2.1.1
22. NO FIRE HYDRATS ACCESS ROADS SHALL BE LOCATED WITHIN 25 FT OF THE PERIMETER OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. IFC § 503.1.1
23. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS, ROAD(S) WITH DEADENDS OR A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. CLV REGULATION AND MOV
24. ALL FIRE AND FIRE APPARATUS ACCESS ROADS SHALL HAVE A MINIMUM DRAINAGE OF 81 FT. CLV REGULATION
25. ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE, ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANE. SIGNS TO BE INSTALLED ON BOTH SIDES OF THE ROADWAY IF ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. IFC § 503.5
26. ELECTRICALLY CONTROLLED AND REMOTE DETECTION SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM IFC § 503.6
27. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS, OR HAVING FOUR OR MORE TRAVEL LANES AND A TRAFFIC COUNT OF MORE THAN 30,000 VEHICLES PER DAY, ALL HYDRANTS BEING UTILIZED TO DELIVER FIRE FLOW TO THE PROPOSED LOCATION SHALL BE LOCATED ON THE SAME SIDE OF THE STREET AS THE PROPOSED DEVELOPMENT. CLV REGULATION

CITY OF LAS VEGAS GRADING NOTES

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES.
3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAVING OF THE EXCAVATION.
4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY EXCESSIVE MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.
6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE ADJACENT AREAS. HORIZONTAL, VERTICAL AND HORIZONTAL CURVES SHALL BE PROVIDED AS INDICATED. IN THE AREAS INDICATED: HORIZONTAL VERTICAL COMPACTION
 - A. PAVEMENT AREA: SUBGRADE 0.1' + 0.0' TO -0.1' SEE SOILS REPORT
 - B. ENGINEERED FILL 0.5' + 4.0' TO -0.1' SEE SOILS REPORT COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE.
7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSTRUCTION BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND SATISFACTORY CONDITION THROUGHOUT CONSTRUCTION. ANY OBSTRUCTIONS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

STORMWATER RUNOFF MANAGEMENT

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL EACH BE RESPONSIBLE FOR THE DESIGN, CONSTRUCTION, MAINTENANCE AND MONITORING OF THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT. THE PUBLIC RIGHTS OF THE CITY OF LAS VEGAS 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 SWPPP DOES NOT MEET THE SPECIFIC STANDARDS SPECIFIC TO THE CITY OF LAS VEGAS AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES 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 NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00000, 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 AN AND WITHIN 24 HOURS AFTER ANY ACTIVITY 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 DURING MAINTENANCE AND DISTURBANCE ACTIVITIES. REFER TO NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00000, 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.

SOUTHWEST GAS CONSTRUCTION NOTES

SOUTHERN NEVADA - SOUTHWEST GAS CORPORATION GENERAL 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 STRUCTURES, UNBURNED STRUCTURES, UNBURNED OR NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRIC
3. FOR VALVE ADJUSTMENT CONTACT 702-668-6107 48 HOURS PRIOR TO CONSTRUCTION
4. FOR THE EVENT OF A NATURAL GAS EMERGENCY, UNBURNED OR NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRIC
5. SOUTHWEST GAS CORPORATION STAND BY CONTACT NUMBER 702-400-1789

SOUTHWEST GAS CORPORATION

DATE

CITY OF LAS VEGAS SEWER NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.

2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS, ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY ENGINEER.

3. CHISEL "S" OR "C" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.

4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.

5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER MAINS SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETROFIT IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.

6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y" -"S" SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.

7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.

8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.

9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.

10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

LAS VEGAS VALLEY WATER DISTRICT
(LVVWD) STANDARD NOTES

LVVWD PROJECT # XXXXX
(REVISED 08/01/2017)

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 (702-258-7171) 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 PLANS, 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 2.2.2 OF THE 2010 EDITION OF THE UDACS.

9. ALL WATER FACILITIES AND APPURTENANCES SHALL BE DISINFECTED, PRESSURE TESTED, AND HAVE AN ACCEPTABLE PASSING HEALTH WATER SAMPLE OBTAINED, PRIOR TO OPERATION AND USE.

10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES. TELEPHONE 702-258-3152 OR 702-258-3802, 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 APPROVED PRODUCT'S LIST FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS BY SUBMITTING SHOP DRAWINGS.

13. TELEPHONE "CALL BEFORE YOU DIG" AT "811" OR 1-800-227-2600.

14. THE INSTALLATION OF 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.

15. 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 ADJUTING 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 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 REUSED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. XXXXXX FIRST APPROVED DATE:

CITY OF LAS VEGAS STREETLIGHT NOTES

1. ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND ANY ADDED SPECIAL AREA STANDARDS.

2. NO DEVIATION OF STREET LIGHT, PULL BOX, CONDUITS (ETC.) LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF TRAFFIC ENGINEERING AND THE CITY ENGINEER.

3. ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.

4. ALL STREET LIGHTING CONDUCITS SHALL STUB HAVE AT LEAST ONE GREEN #8 THW WIRE INSTALLED, AS TRACER WIRE, WHEN "EMPTY" CONDUIT IS COMPLETELY INSTALLED FROM PB TO PB. IT SHALL HAVE MINIMUM OF 2 #4 AND 1 #8 THW WIRE WITH THE ENDS TAPED OR "SAFE OFF" PRIOR TO FINAL INSULATION.

5. ANY STRUCTURE SUCH AS BLOCK WALLS, CHAIN LINK FENCES, RETAINING WALLS, ETC., SHALL LEAVE A MINIMUM CLEARANCE IN ACCORDANCE WITH USDN NO. 320A.

6. AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TFO PRIOR TO ANY PRE-FINAL INSPECTION. THE ASBUILT DRAWING NEEDS TO BE STAMPED AS-BUILT AND SIGNED BY THE PREPARER.

7. SERVICE POINT SHALL BE COORDINATED WITH NV ENERGY COMPANY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICE POINTS SHALL BE SHOWN ON THE CIVIL PLANS.

8. IT SHALL BE ASSUMED THAT IN THE ABSENCE OF AN EXISTING, WORKABLE CIRCUIT TO ATTACH TO, ALL INSTALLATIONS SHALL REQUIRE A NEW SERVICE FOR OPERATION OF THE CIRCUIT.

9. WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREET LIGHTING CIRCUITS AND/OR POLES, THESE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED, AT NO EXPENSE TO THE CITY OF LAS VEGAS, BEFORE STREETLIGHT BASES ARE INSTALLED.

10. THE CONTRACTOR SHALL FURNISH COMPLETE SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON PLANS.

11. THE DEVELOPER/OWNER WILL BE REQUIRED TO SUPPLY POWER TO ALL NEW PUBLIC STREET LIGHTS INSTALLED UNDER THIS DESIGN PRIOR TO BOND RELEASE OR PROJECT COMPLETION. THE DEVELOPER/OWNER WILL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH THE INSTALLATION, CONSTRUCTION, MAINTENANCE AND OPERATIONAL COST OF SAID STREET LIGHTS PRIOR TO PROJECT COMPLETION. REFER TO THE PLAN FOR ANY NEW SERVICE REQUIREMENTS. THE TRANSFER OF OWNERSHIP FROM THE DEVELOPER/OWNER TO THE CITY OF LAS VEGAS FOR ALL NEW PUBLIC STREET LIGHTS AND/OR SERVICE/S INSTALLED UNDER THIS DESIGN WILL BE IN CONJUNCTION WITH THIS PROJECT COMPLETION. COORDINATE ALL MAINTENANCE AND OPERATIONAL TRANSFERS WITH THE CITY OF LAS VEGAS TRAFFIC ENGINEERING DEPARTMENT (TEFO) AT (702) 229-6331.

DISCLAIMER NOTE:

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITIES

811

Call before you UnderGround
1-800-227-2600

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.

CALL BEFORE YOU GO OVERHEAD

LEGEND		
EXISTING	PROPOSED	DESCRIPTION
		ROW OR PROPERTY LINE
		EASEMENT LINE
		CENTERLINE
		CURB
		VALLEY GUTTER
		EDGE OF PAVEMENT
		SIDEWALK
		SIDEWALK RAMP
		DRIVEWAY
		SAWCUT LINE
		RETAINING WALL
		FLOOD WALL
		WROUGHT IRON VEHICULAR GATES
		WROUGHT IRON PEDESTRIAN GATES
		INDEX CONTOURS
		INTERMEDIATE CONTOURS
		ROUGH GRADE INDEX CONTOURS
		ROUGH GRADE INTERMEDIATE CONTOURS
		CUT OR FILL SLOPE
		CUT AND FILL LINE
		LOT NUMBER
		FF AND PAD ELEVATION
		GRADE SLOPE
		SPOT ELEVATION
		SWALE LINE
		LOT DIMENSION
		SIGHT VISIBILITY ZONE
		WATERLINE MAIN AND SIZE
		FIRE HYDRANT
		WATER METER AND SERVICE
		LATERAL
		WATER VALVE
		WATER FITTINGS
		WATER LINE REDUCER
		WATER CAP WITH WATER BLOW OFF ASSEMBLY
		IRRIGATION SLEEVE
		PRESSURE REDUCING VALVE
		REDUCED PRESSURE PRINCIPLE ASSEMBLY
		SEWERLINE MAIN AND SIZE
		SEWERLINE MANHOLE
		SEWERLINE CAP
		SEWER LATERAL
		BACK WATER VALVE
		100W HPS STREET LIGHT
		250W HPS STREET LIGHT
		400W HPS STREET LIGHT
		STREET LIGHT CONDUIT AND CAP
		4\"/>
		PULLBOX
		REFLECTIVE FIRE HYDRANT MARKER
		STORM DRAIN MAIN AND SIZE
		ROCK RIP RAP
		STORM DRAIN MANHOLE
		STORM DRAIN DROP INLET

ABBREVIATIONS

AGG	AGGREGATE	FG	FINISH GR
AC	ASPHALTIC CONCRETE	FL	FLOW LINE
AC	ANGLE POINT	FUT	FUTURE
BC	BACK OF CURB	PL-G	PLASTIC G
BSI	BRICK STREET IMPROVEMENTS	ST	STEEL GAG
BVC	BEGINNING OF VERTICAL CURVE	GB	GRADE BR
BM	BENCH MARK	HP	HIGH POINT
BN	BOUNDARY	HDP	HIGH DENSITY
CATV	CABLE TELEVISION	HSI	HIGH STR
CL	CENTERLINE	HPH	HIGH PERF
CCUSD	CLARK COUNTY UNIFORM STANDARD DRAWINGS	INT	INTERSECTION
		INVT	INVERT
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT	LVWD	LVAS, VEGAT
CMH	CENTER OF MANHOLE	LEFT	LEFT
CO	CLEAN OUT, SEWER	LF	LINEAR FEET
COMM	COMMERCIAL	MH	MANHOLE
CONC, PCC	CONCRETE	MAX	MAXIMUM
CONST	CONSTRUCTION OR CONSTRUCT	MIN	MINIMUM
CU, YD, CY	CUBIC YARD	NOT TO	NOT TO
CU, FT, CF	CUBIC FEET	OC	ON CENTER
CU, YD, CF	CUBIC FEET	PVMT	PAVEMENT
DCSWCS	CURB FACE	POINT	POINT
	DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS	PRC	POINT OF
		PC	POINT OF
		POINT	POINT
		PCC	PORTLAND
DIA	DIAMETER	PUE	PUBLIC UTILITY
DWY	DRIVEWAY	PV	POLYVINYL
DI	DROP INLET	PP	POWER PC
DE	DRAINAGE EASEMENT	P	POWER
ESMT	EASEMENT	PROPERTY	PROPERTY
END	END STATE IMPROVEMENTS	POC	POINT OF
EP	EDGE OF PAVEMENT	PROP	PROPOSED
E	ELECTRIC	PULL BOX	PULL BOX
ELEV	ELEVATION	RP	RADIUS PO
EVC	END OF CURB RETURN	RPPA	REDUCED ASSEMBLY
EX, EXIST	END OF VERTICAL CURVE		
FT	FEET OR FOOT	REINB	REINFORCE
FTT	FOOTING WALL	REINFORC	REINFORCE
FI	FIRE HYDRANT	RCF	REINFORC

QUANTITY ESTIMATE			
DESCRIPTION	PUBLIC	PRIVATE	
2-INCH ASPHALTIC CONCRETE PAVING	- SY	- SY	
TYPE II GRAVEL	- CY	- CY	
CURB & GUTTER (24-INCH)	- LF	- LF	
CURB & GUTTER (30-INCH)	- LF	- LF	
"1" TYPE ISLAND CURB	- LF	- LF	
CONCRETE VALLEY GUTTER	- SF	- SF	
5-INCH CONCRETE SIDEWALK	- SF	- SF	
SIDEWALK UNDERDRAIN	- EA	- EA	
3/4" WATER METER	- EA	- EA	
3/4" IRRIGATION METER WITH 1" RPPA	- EA	- EA	
POWER/GAS/PHONE/CABLE SERVICE TO LOTS	- EA	- EA	
SURVEY MONUMENTS	- EA	- EA	
ADA RAMPS	- EA	- EA	
4-INCH SEWER LATERAL	- LF	- LF	
8-INCH PVC SEWER MAIN	- LF	- LF	
8-INCH C-900 SEWER MAIN	- LF	- LF	
48-INCH SEWER MANHOLES	- EA	- EA	
BACKWATER VALVES	- EA	- EA	
WATER LATERAL	- LF	- LF	
6-INCH PVC WATER MAIN	- LF	- LF	
8-INCH PVC WATER MAIN	- LF	- LF	
12-INCH PVC WATER MAIN	- LF	- LF	
12-INCH DIP WATER MAIN	- LF	- LF	
FIRE HYDRANT	- EA	- EA	
FIRE CRASH GATE (WROUGHT IRON)	- SF	- SF	
LIGHT STANDARD (STD. BASE)	- LF	- LF	
1-1/4 INCH STREET LIGHT CONDUIT	- LF	- LF	
SL 200 AMP SERVICE PEDESTAL	- EA	- EA	
STREET SIGNS -STAND ALONE	- EA	- EA	
#3 PULLBOX	- EA	- EA	
USD 601 BARRICADE (5FT)	- EA	- EA	
1" IRRIGATION METER WITH 1" RPPA	- EA	- EA	

DRAINAGE QUANTITY ESTIMATE			
18-INCH STORM DRAIN		- LF	- LF
24-INCH STORM DRAIN		- LF	- LF
30-INCH STORM DRAIN		- LF	- LF
36-INCH STORM DRAIN		- LF	- LF
60-INCH SD MANHOLE (>6')		- EA	- EA
48-INCH SD MANHOLE (>5')		- EA	- EA
5-FOOT TYPE CM2 DROP INLET		- EA	- EA
7.5-FOOT TYPE CM2 DROP INLET		- EA	- EA
10-FOOT TYPE CM2 DROP INLET		- EA	- EA
12.5-FOOT TYPE CM2 DROP INLET		- EA	- EA
15.0-FOOT TYPE CM2 DROP INLET		- EA	- EA
22.5-FOOT TYPE CM2 DROP INLET		- EA	- EA
72"x72" JENSEN PRECAST INLET		- EA	- EA
RIP RAP (050=6")		- CY	- CY
ABANDON PRIVATE RCP		- LF	- LF
DE WROUGHT IRON FENCE		- SF	- SF

NOTE: QUANTITY ESTIMATE IS FOR BONDING PURPOSES ONLY.
 CONTRACTOR TO DETERMINE INDEPENDENT ESTIMATES.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 51V0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST. BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 153
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA

DEVIATIONS FROM STANDARDS

NONE

DEVIATIONS FROM STANDARDS	
NONE	
MADE	R
	R/W
AS	S, SS
	SHT
AK	SU
	SW
	50 FT, FT
	50 YD, SY
	STA
	ST
	STD
	STL
	STREETLIGHT
	TELEPHONE
	TEMPORARY
ET	TOP OF CURB
	TOP OF FOOTING
	TOP OF ROLL CURB
CALE	TRW
	TS
	TSI
	TRAFFIC SIGNAL
	TRAFFIC SIGNAL INTERCON
INTERSECTION	TRANS
REVERSE CURVE	TV
CURVE	UG
TANGENCY	UDACS
CEMENT CONCRETE	VAR
UTILITY EASEMENT	VERT
CLORIDE	VC
LE	VG
LINE	VITRIFIED CLAY PIPE
CONNECTION	WATER
	WCL
	WATER LATERAL
RIGHT OR RADIIUS	
RIGHT-OF-WAY	
SANITARY SEWER	
SHEET	
SEWER LATERAL	
SIDWALK	
SQUARE FOOT	
SQUARE YARD	
STATION	
STORM DRAIN	
STANDARD	
STREETLIGHT	
TELEPHONE	
TEMPORARY	
TOP OF CURB	
TOP OF FOOTING	
TOP OF ROLL CURB	
TOP OF RETAINING WALL	
TRAFFIC SIGNAL	
TRAFFIC SIGNAL INTERCON	
TRANSITION	
TOP OF WALL	
TYPICAL	
UNDERGROUND	
UNIFORM DESIGN AND	
CONSTRUCTION STANDARDS	
VARIABLE	
VERTICAL	
VERTICAL CURVE	
VITRIFIED CLAY PIPE	
WATER	
WATER LATERAL	
WCL	

WOODSIDE HOMES OF NEVADA LLC 7874 N. LAS VEGAS BLVD. UNIT 110 LAS VEGAS, NV 89134 PHONE: 702-889-7824		DATE: November 20, 2019 HORIZ. SCALE: N/A VERT. SCALE: N/A SRC DRAWN BY: MJD DESIGNED BY: CRZ CHECKED BY: CRZ APPROVED BY: CRZ PROJECT #: 4350.0089		REVISION		BY		APPRO			
CRYSTAL CANYON UNIT 3 SUMMERLIN VILLAGE 21 PARCEL A AND B A SINGLE FAMILY RESIDENTIAL SUBDIVISION GENERAL NOTES, LEGEND AND ABBREVIATIONS CITY OF LAS VEGAS		WOODSIDE HOMES OF NEVADA LLC 7874 N. LAS VEGAS BLVD. UNIT 110 LAS VEGAS, NV 89134 PHONE: 702-889-7824		DATE: November 20, 2019 HORIZ. SCALE: N/A VERT. SCALE: N/A SRC DRAWN BY: MJD DESIGNED BY: CRZ CHECKED BY: CRZ APPROVED BY: CRZ PROJECT #: 4350.0089		REVISION		BY		APPRO	
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Call before you Dig
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.

Call
before you
UnderGround
1-800-227-2600
1-702-432-5300
FREWAY AND ARTERIAL
SYSTEM OF TRANSPORTATION

FAST
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FREWAY AND ARTERIAL
SYSTEM OF TRANSPORTATION

AVOID HITTING OVERHEAD
POWER LINES. IT'S COSTLY.

CALL BEFORE
YOU DO
OVERHEAD
1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LVO926W6.
RIVET AND PLATE IN TOP OF CURB AT THE CORNER OF
CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BUILDING PERMIT NOTE

ALL STRUCTURES SHOWN OR INDICATED ON THIS SUBMITTAL
WITHIN THE PROPERTY REQUIRE A BUILDING PERMIT
APPLICATION AND SUBMITTAL THIS INCLUDES BUILDINGS, ABOVE
GROUND TANKS, SIGNS, RETAINING WALLS, FENCES, TRASH
ENCLOSURES, SHADE STRUCTURES, STAIRWAYS, RAMPS, LIGHT
POLES, LIGHT BOLLARDS, ETC. THIS DOES NOT INCLUDE ANY
FLOOD CONTROL STRUCTURE SUCH AS PIPES, CULVERTS, ARCH
CULVERTS, HEADWALLS, ETC. THIS DOES NOT INCLUDE ANY
WORK WITHIN A PUBLIC STREET RIGHT-OF-WAY. THIS DOES
NOT INCLUDE PRIVATE STREETS. THE REVIEW OF CIVIL
IMPROVEMENT AND/OR GRADING PLANS DOES NOT INCLUDE
ANY REVIEW OF ANY STRUCTURE THAT REQUIRES A BUILDING
PERMIT APPLICATION."

FLOOD ZONE NOTE

ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP
(FIRM) COMMUNITY PANEL NUMBERS 32003C2150E AND
32003C2125E DATED SEPTEMBER 27, 2002, THE SITE IS
LOCATED IN A ZONE "X".

SURVEY MONUMENT NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS
REQUIRED BY CITY OF LAS VEGAS AND CLARK COUNTY UNIFORM
STANDARD DRAWING NUMBER 243. OWNER IS ALSO RESPONSIBLE TO
REPLACE ALL SURVEY MONUMENTATION DAMAGED, DESTROYED, OR
OBSURED DURING CONSTRUCTION.

SIGHT VISIBILITY ZONE

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

ENGINEERS NOTES

- CONTRACTOR IS RESPONSIBLE FOR DUST AND EROSION CONTROL DURING CONSTRUCTION.
- SEE DETAIL SHEET FOR ON-SITE PAVEMENT SECTIONS. CONTRACTOR TO VERIFY WITH SOILS REPORT.
- SEE FINAL MAP FOR EXACT PROPERTY LINE DIMENSIONS.
- ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.
- THESE PLANS SHALL NOT, IN PART OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY THE GOVERNING AGENCIES.
- ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
- DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
- SOIL REPORT NOTE:
GRADING SHALL BE IN ACCORDANCE
WITH SOILS REPORT PREPARED BY:
ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
- CUT/FILL ESTIMATES
EXISTING TO FINISH GRADE ELEVATIONS
NET CUT: 68,691 CY
NET FILL: 79,411 CY
- SEE DETAIL 17/0-1 FOR TYPICAL LOT DRAINAGE
- FOR STORMWATER RUNOFF MANAGEMENT NOTES REFER TO SHEET N-1

NOTE

ALL ON-SITE STORM DRAINS AND THE
ASSOCIATED FACILITIES ARE PRIVATELY
OWNED AND TO BE PRIVATELY MAINTAINED
BY THE HOA

NOTE

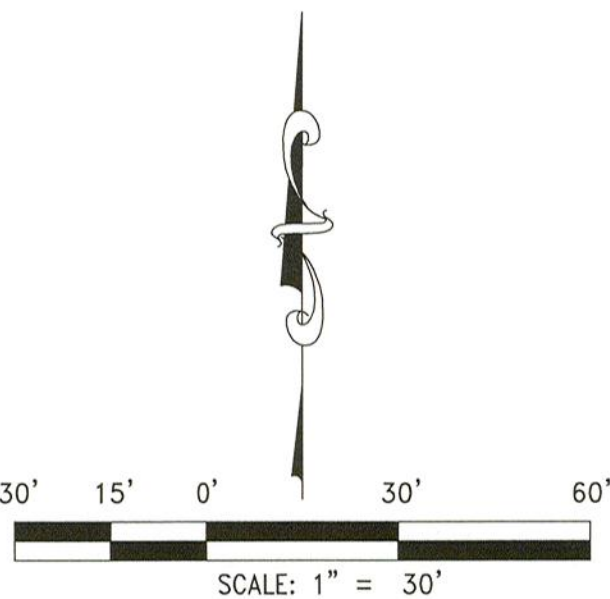
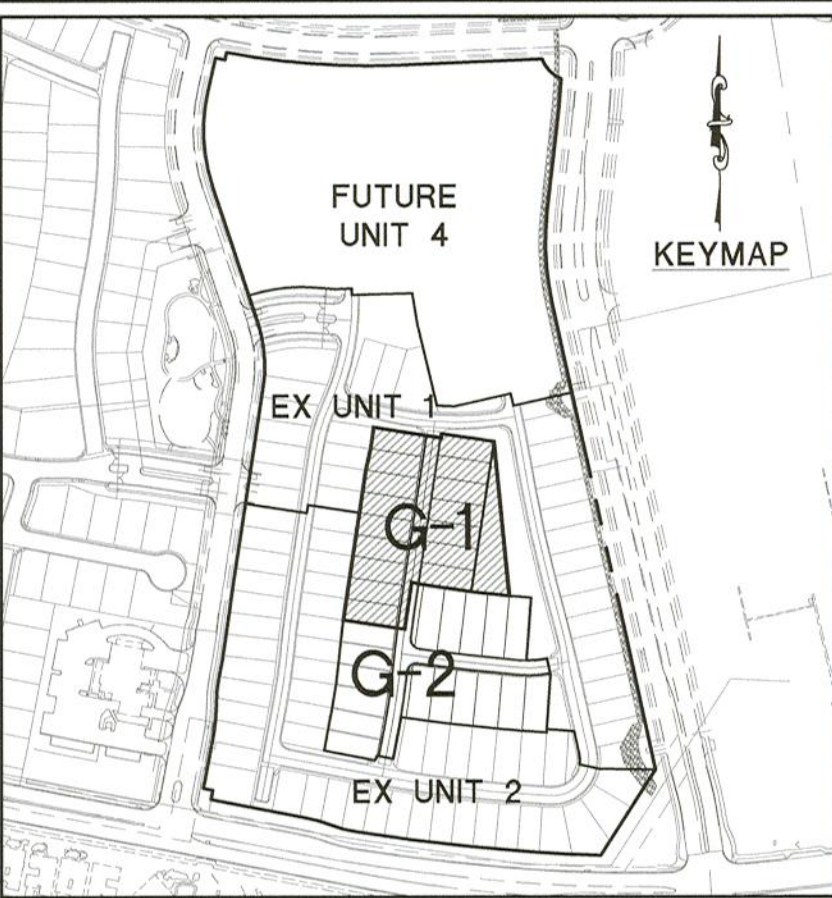
ALL PRIVATE STREETS ARE P.U.E., PUBLIC
SEWER EASEMENTS AND PUBLIC DRAINAGE
EASEMENTS TO BE PRIVATELY MAINTAINED
BY HOA

SEWER EASEMENT NOTE

NO STRUCTURES AND NO TREES OR VEGETATION TALLER
THAN THREE FEET ALLOWED WITHIN CLV SEWER EASEMENT

CONSTRUCTION NOTES

- CONSTRUCT AC PAVEMENT PER DETAIL 1
ON SHEET D-1
- CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CCAUSD
#217.2.S1
- CONSTRUCT 4" SIDEWALK PER CCAUSD #234 (5-INCH
THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED
DOMES OR EQUIVALENT PER CCAUSD #235 (CASE 1)
- CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED
DOMES OR EQUIVALENT PER CCAUSD #235 (CASE 3)
- REMOVE EXISTING RIPRAP



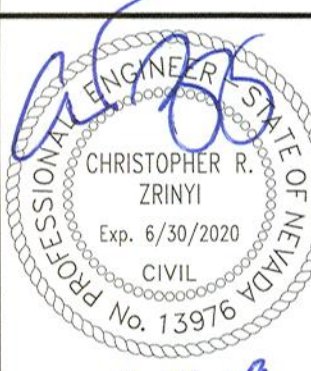
WOODSIDE HOMES OF NEVADA LLC

7800 N. SHAW BLVD, SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-888-7824

RCI ENGINEERING

500 SOUTH RIVINGTON AVE, SUITE 100
LAS VEGAS, NV 89101
www.rciengineers.com

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 3
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 1 OF 2)



DATE: 11-21-19
DRAWING
G-1
SHT 3 OF 5
CLV DRAINING NUMBER
CLV PROJECT #

I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

CHRISTOPHER ZRINYI, PE NO. 13976 DATE

DISCLAIMER NOTE:

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.

Call before you Dig
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.

Call 811
OR
1-800-227-2600

FAST

Call before you
UnderGround
1-702-432-5300
FREEMAN AND ARTERIAL
SYSTEMS OF TRANSPORTATION

AVOID HITTING OVERHEAD
POWER LINES. IT'S COSTLY.

**CALL BEFORE
YOU DO
OVERHEAD**
1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 51V0926W6,
PIVOT AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.
ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BUILDING PERMIT NOTE

ALL STRUCTURES SHOWN OR INDICATED ON THIS SUBMITTAL
WITHIN THE PROPERTY REQUIRE A BUILDING PERMIT
APPLICATION AND SUBMITTAL. THIS INCLUDES BUILDINGS, ABOVE
GROUND TANKS, SIGNS, RETAINING WALLS, FENCES, TRASH
ENCLOSURES, SHADE STRUCTURES, STAIRWAYS, RAMPS, LIGHT
POLES, LIGHT BOLLARDS, ETC. THIS DOES NOT INCLUDE ANY
FLOOD CONTROL STRUCTURE SUCH AS PILES, CULVERTS, ARCH
CULVERTS, HEADWALLS, ETC. THIS DOES NOT INCLUDE ANY
WORK WITHIN A PUBLIC STREET RIGHT-OF-WAY. THIS DOES NOT
INCLUDE PRIVATE STREETS. THE REVIEW OF CIVIL
IMPROVEMENT AND/OR GRADING PLANS DOES NOT INCLUDE
ANY REVIEW OF ANY STRUCTURE THAT REQUIRES A BUILDING
PERMIT APPLICATION."

FLOOD_ZONE NOTE

ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP
(FIRM) COMMUNITY PANEL NUMBERS 32003C2150E AND
32003C2125E DATED SEPTEMBER 27, 2002, THE SITE IS
LOCATED IN A ZONE "X".

SURVEY MONUMENT NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS
REQUIRED BY CITY OF LAS VEGAS AND CLARK COUNTY UNIFORM
STANDARD DRAWING NUMBER 243. OWNER IS ALSO RESPONSIBLE TO
REPLACE ALL SURVEY MONUMENTATION DAMAGED, DESTROYED, OR
OBSOLETE DURING CONSTRUCTION.

SIGHT VISIBILITY ZONE

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

ENGINEERS NOTES

- CONTRACTOR IS RESPONSIBLE FOR DUST AND EROSION CONTROL DURING CONSTRUCTION.
- SEE DETAIL SHEET FOR ON-SITE PAVEMENT SECTIONS. CONTRACTOR TO VERIFY WITH SOILS REPORT.
- SEE FINAL MAP FOR EXACT PROPERTY LINE DIMENSIONS.
- ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.
- THESE PLANS SHALL NOT, IN PART OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY THE GOVERNING AGENCIES.
- ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
- DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
- SOIL REPORT NOTE:
GRADING SHALL BE IN ACCORDANCE
WITH SOILS REPORT PREPARED BY:
ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
- CUT/FILL ESTIMATES
EXISTING TO FINISH GRADE ELEVATIONS
NET CUT: 68,691 CY
NET FILL: 79,411 CY
- SEE DETAIL 17/D-1 FOR TYPICAL LOT DRAINAGE
- FOR STORMWATER RUNOFF MANAGEMENT NOTES REFER TO SHEET N-1

NOTE

ALL PRIVATE STORM DRAINS AND THE
ASSOCIATED FACILITIES ARE PRIVATELY
OWNED AND TO BE PRIVATELY MAINTAINED
BY THE HOA

NOTE

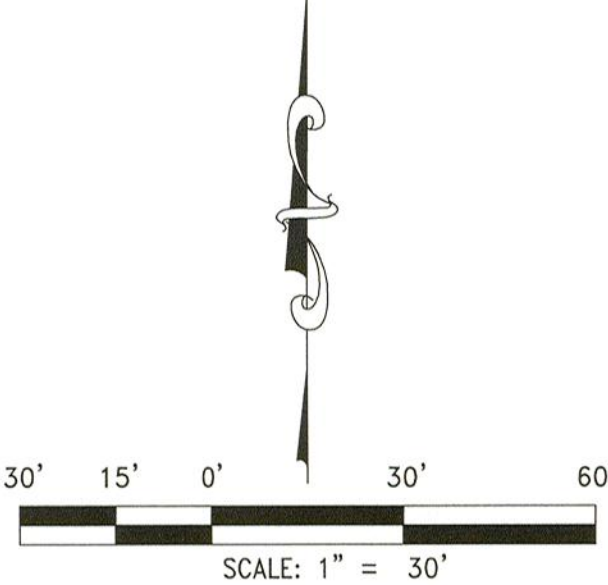
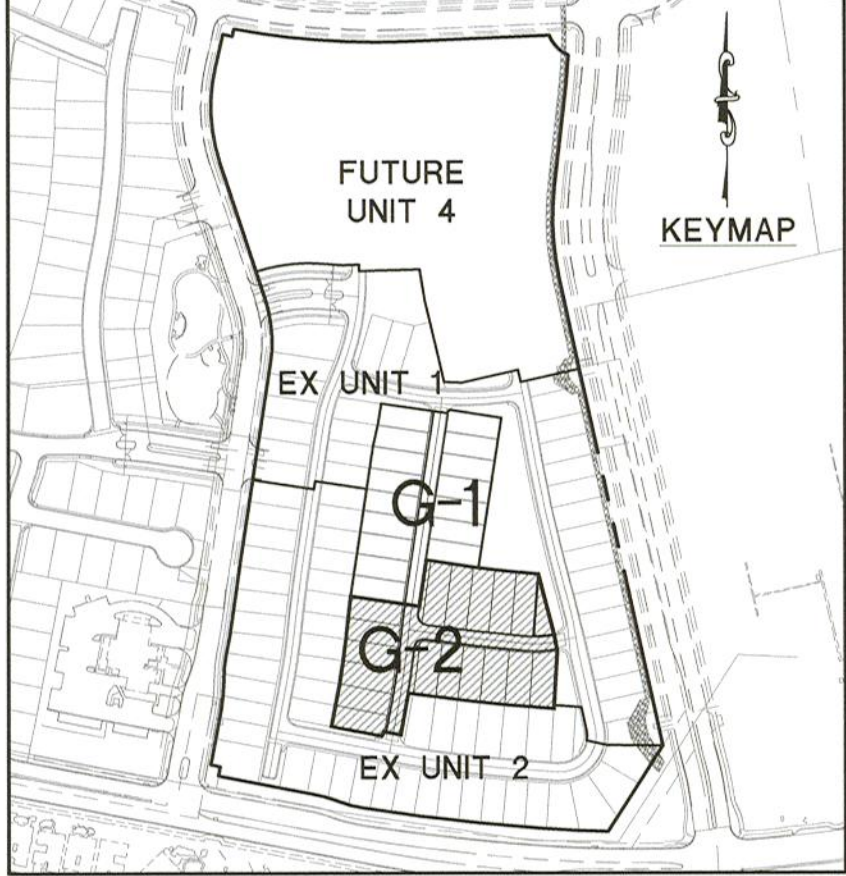
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SEWER EASEMENT NOTE

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CONSTRUCTION NOTES

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ON SHEET D-3
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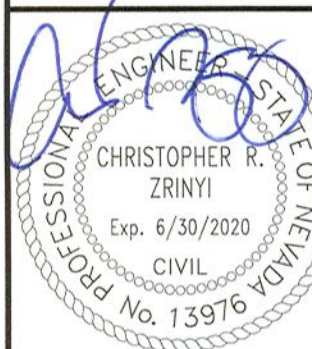
RCI ENGINEERING

500 SOUTH RANCHO DRIVE, SUITE 107, LAS VEGAS, NV 89106
PH: 702.453.0000 FAX: 702.453.0801
www.rciengineers.com

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 3
SUMMERLIN VILLAGE 21 PARCELA A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 2 OF 2)

NEVADA

CITY OF LAS VEGAS



DATE: 11-21-19

DRAWING

G-2

SHT 4 OF 5

CLV DRAWING NUMBER

CLV PROJECT #

I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

CHRISTOPHER ZRINYI, PE NO. 13976

DATE

CITY OF LAS VEGAS

0000 Woodcreek Phase 4 Civil
Summarlin 21R CIVIL
C-1 SUMMARLIN21R PHASE4.cwg sclar 6:56pm 11/20/19

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND MAINTENANCE, CLARK COUNTY AREA NEVADA" LATEST EDITION, THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA" LATEST EDITION, THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA" LATEST EDITION, THE "SUMMITER IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMITER AREA, AND OTHER APPLICABLE SPECIFICATIONS, ORDINANCES, AND REGULATIONS, INCLUDING CONSTRUCTION BUILDING CODES, AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS SHALL BE OBTAINED BY RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CITY PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE NOT TO BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCES WHICH MAY AFFECT HIS OPERATION OF CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ANY LOSS AND DAMAGE TO ANY EXISTING CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE. FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAY CURE MIX IF NOT OTHERWISE APPROVED BY THE CITY. PRIOR TO WORK ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-ONE HALF (1 1/2") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING CONSTRUCTION. PROVIDE SLOPE, DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY GEOTEK INC., PROJECT 13735-V, DATED 10/10/2017, APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWCUT LINES MAY NOT BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER. LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA, NEVADA, EDITION 2017, SECTION 626-350 AND 626-350.1.
15. UTILITY COMPANY METER BOXES, MANHOLE UDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APPROXES, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER. WALL NOTES:
16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CITY PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS, FLOOD CONTROL, AND DRAINAGE INTERSECTIONS. WALLS SHALL REQUIRE SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND/OR SEWER CLEAN OUTS, ETC. TO FINISH GRADE, AND ADJUST WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.
20. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKED BY LINES, LOCALIZATION, ETC. THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO OFFSITE INSPECTION AND TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.
21. SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO PERMITTING. THE FACILITY LOCATION MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER LATERALS TO THE STORM DRAIN MAIN, AND THE LOCATION OF ALL SEWER LATERALS TO THE STORM DRAIN MAIN AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS. THE LOCATION SHALL BE DESCRIBED BY COORDINATES. THE MAP(S) SHALL BE BASED ON THE CLARK COUNTY AREA COORDINATE SYSTEM. THE COORDINATE SYSTEM SHALL BE THE FINAL LOCATION MAP(S) MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE DELIMITED FOR THE CITY OF LAS VEGAS. THE STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).
22. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.
23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

- 1 ALL CONSTRUCTION SIGNS, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
- 2 THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.
- 3 BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT NEW STREET ENDS AND AT ALL EXISTING STOP SIGNS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
- 4 WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCLOSED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.
- 5 IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
- 6 THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL BE FABRICATED WITH DIAMOND GRADE VPI CLASS 6 REFLECTIVE MATERIALS. APPROVED TYPES OF TRAFFIC SIGNS, EXCEPT STREETNAME AND SCHOOL SPEED LIMIT SIGNS, SHALL HAVE 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE OVERLAY FILM; SCHOOL ZONE SIGNS SHALL HAVE 3M SERIES 1160 ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD TYPES UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.
- 7 WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.

- UNDER, REGARDS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
- 9 STREET SIGNS AND STOPS SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.
- 10 THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC IN THE WORK AREA. THE CONTRACTOR SHALL HAVE A CERTIFIED AREA TRAFFIC CONTROL TECHNICIAN OR IMSA WORK ZONE SAFETY SPECIALIST SET UP, MAINTAIN AND/OR REMOVE ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.
- 11 WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
- 12 THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CITIZENS AREA TRANSIT (C.A.T.) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.
- 13 GUARDS SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 828-3442) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR THE USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.
- 14 ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS OTHERWISE DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.
- 15 THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAYMENT TRANSITIONS, MARKINGS AND SIGNAGE THAT ARE REQUIRED TO MATCH ADJACENT ROADWAY SEGMENTS. THE CONTRACTOR SHALL PROVIDE A DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPICTING ANY ADJUSTMENTS TO THE FINAL PAYMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING AVEINEMENTS AND TRAFFIC CONTROL SIGNS SUCH THAT ADEQUATE TRANSITIONS AND LANE TERMINATIONS TO ADJACENT ROADWAY SEGMENTS ARE CONSTRUCTED.

CITY OF LAS VEGAS VEGAS HYDRANT AND ACCESS GENERAL NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6631 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ALL HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICTS - APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE SUBMITTED TO THE FIRE PREVENTION ENGINEER BEFORE COMMENCEMENT OF WORK. IFC § 507.5.1
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW, IFC § 5310, & 3312
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. IFC § 507.5.3
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. IFC § 507.5.4
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A. APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE, IFC § 507.2.1, NFPA 24
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY FOR THE PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. IFC § 507
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. IFC § 507.5.1
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY ADEQUATE FLOW AND PRESSURE REQUIRED FIRE FLOW. IFC § 507
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: IFC § C102 * RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED. COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
12. WHEN THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS, WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED TO BE EACH SIDE OF THE STREET SPACING OF 500 FT ON AN ALTERNATING BASIS. IFC § C102.8
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. IFC § C102.10
15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.4
16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.7
17. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. IFC § C102.6
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS A OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. FOR SYSTEMS REQUIRED TO HAVE TWO (2) SOURCES OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 5 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. IFC § C104
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. IFC § 503.2.1
20. THE GRADE OF THE FIRE APPARATUS ACCESS ROAD SHALL NOT EXCEED 12% GRADES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%, IFC § 503.2.7, & 503.2.8
21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS. IFC § 503.4
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13FT 6 INS. IFC § 503.2.1
23. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 33 FT WITH PARKING ON BOTH SIDES MEASURED TO FACE OF CURB, NOT LESS THAN 28 FT WITH PARKING RESTRICTED TO ONE SIDE MEASURED TO FACE OF CURB. PARKING WITHIN 10 FT OF THE FACE OF CURB SHALL NOT BE LESS THAN 24 FT. IFC § 503.2.1.1
24. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. IFC § 503.1.1
25. APPROVED FIRE DEPARTMENT VEHICLE ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS, ROAD(S) WITH DEADENDS OR A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. CLV REGULATION AND MOU
26. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LINES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. CLV REGULATION
27. FIRE APPARATUS ACCESS ROADS SHALL BE PLACED ON BOTH SIDES OF THE ROAD OR SIDEWALK OF THE DESIGNATED FIRE LANE, ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANE. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR OFF-ROADWAY PAVEMENT OR CURB (IF CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. IFC § 503.3
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM IFC § 503.6
29. ALL STREETS ARE PROVIDED WITH MEDIAN DIVIDERS, OR HAVING FOUR OR MORE TRAVEL LANES AND A TRAFFIC COUNT OF MORE THAN 30,000 VEHICLES PER DAY, ALL HYDRANTS BEING UTILIZED TO DELIVER FIRE FLOW TO THE PROPOSED LOCATION SHALL BE LOCATED ON THE SAME SIDE OF THE STREET AS THE PROPOSED DEVELOPMENT. CLV REGULATION

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

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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 ON THE SITE, TO PROTECT THE PUBLIC RIGHTS OF WATERS OF LAS VEGAS 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 BY THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE DETAILED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CITY OF LAS VEGAS AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND WITHIN THIRTY (30) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY; REFER TO 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 ACTUAL RUNOFF EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL REPORT ANY OF THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.5.
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.

SOUTHERN NEVADA - SOUTHWEST GAS CORPORATION
GENERAL 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 A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND/OR STRUCTURES CONTACT 702-365-2099
5. SOUTHWEST GAS CORPORATION STAND BY CONTACT NUMBER 702-400-1789

SOUTHWEST GAS CORPORATION	DATE
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CITY OF LAS VEGAS SEWER NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. SITE IMPROVEMENTS: CLARK COUNTY, NEVADA. AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS, ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY ENGINEER.
3. CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.
4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.
5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETRAITS IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.
6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y" SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.
7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVUSD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.
8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT # _____ XXXXX
(REVISED 08/01/2017)

1. WATER PLAN SHALL BEGIN UNTIL THE WATER PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE LVVWD. FOLLOWING WATER PLAN APPROVAL, NOTICES SHALL BE GIVEN TO THE LVVWD COMMUNICATION SUPPORT CENTER (702-258-7171) (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION. FOR FUTURE INSPECTIONS, NOTICES MUST BE GIVEN BY 2:00 P.M. THE BUSINESS DAY PRIOR TO THE REQUESTED LVVWD INSPECTION. WHEN REQUESTING INSPECTION, 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 AND APPURTENANCES SHALL BE DISINFECTED, PRESSURE TESTED, AND HAVE AN ACCEPTABLE PASSING HEALTH WATER SAMPLE OBTAINED, PRIOR TO OPERATION AND USE.
10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES. TELEPHONE 702-258-3152 OR 702-258-3802, 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 SHUTDOWNS. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.
12. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE AS LISTED ON THE LVVWD APPROVED PRODUCT'S LIST FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS BY SUBMITTING SHOP DRAWINGS.
13. TELEPHONE "CALL BEFORE YOU DIG" AT 811 OR 1-800-227-2600.
14. THE INSTALLATION OF 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.
15. RECREATIVE PAVING SURFACE WITHIN THE STREET IS THE RESPONSIBILITY OF THE OWNER'S ASSOCIATION, OR THE INDIVIDUAL PROPERTY OWNING IF NO OWNER'S ASSOCIATION IS IN EXISTENCE, OR THE AGENCY HAVING JURISDICTION. DEGRADATE SURFACE SHALL BE REPAIRED WITHIN THE CITY'S 20% DEFLECT AT 500 LB. TEST, PRESENT ABOVE A PUBLIC OR PRIVATE STREET.

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 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 REUSED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. _____ XXXXXXXX FIRST APPROVED DATE: _____

- ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA," LATEST REVISION, AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA," LATEST REVISION, AND ALL OTHER APPLICABLE LOCAL, STATE AND FEDERAL STANDARDS.
- NO DEVIATION OF STREET LIGHT, PULL BOX, CADDIS (ETC.) LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF TRAFFIC ENGINEERING AND THE CITY ENGINEER.
- ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.
- ALL STREET LIGHTING CONDUTS STUB SHALL HAVE AT LEAST ONE GREEN #8 THW WIRE INSTALLED, AS TRACER WIRE, WHEN "EMPTY" CONDUIT IS COMPLETELY INSTALLED FROM PB TO PB. IT SHALL HAVE MINIMUM OF 2 #4 AND 1 #8 THW WIRE WITH THE ENDS TAPED OR "SAFE OFF" PRIOR TO FINAL INSPECTION.
- ANY STRUCTURE SUCH AS BLOCK WALLS, CHAIN LINK FENCES, RETAINING WALLS, ETC., SHALL LEAVE A MINIMUM CLEARANCE.
- AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TEFO PRIOR TO ANY PRE-FINAL INSPECTION. THE ASBUILT DRAWING NEEDS TO BE STAMPED AS-BUILT AND SIGNED BY THE PREPARER.
- SERVICE POINT SHALL BE COORDINATED WITH NV ENERGY COMPANY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICE POINTS SHALL BE SHOWN ON THE CIVIL PLANS.
- IT SHALL BE ASSUMED THAT IN THE ABSENCE OF AN EXISTING, WORKABLE CIRCUIT TO ATTACH TO, ALL INSTALLATIONS SHALL REQUIRE THE USE OF THE SERVICE POINT PROVIDED BY THE CITY.
- WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREET LIGHTING CIRCUITS AND/OR POLES, THESE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED, AT NO EXPENSE TO THE CITY OF LAS VEGAS, BEFORE STREETLIGHT BASES ARE INSTALLED.
- THE CONTRACTOR SHALL FURNISH COMPLETE SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON PLANS.
- THE DEVELOPER/OWNER WILL BE REQUIRED TO SUPPLY POWER TO ALL NEW PUBLIC STREET LIGHTS INSTALLED UNDER THIS DESIGN PRIOR TO BOND RELEASE OR PROJECT COMPLETION. THE DEVELOPER/OWNER WILL BE RESPONSIBLE FOR ALL ITEMS NOT COVERED BY THE DESIGN PRIOR TO BOND RELEASE AND OPERATING AND MAINTENANCE COSTS AFTER BOND RELEASE. PRIOR TO PROJECT COMPLETION, REFER TO THE PLAN FOR ANY NEW SERVICE REQUIREMENTS. THE TRANSFER OF OWNERSHIP FROM THE DEVELOPER TO THE CITY OF LAS VEGAS WILL BE THE BASIS FOR THE TRANSFER OF OPERATING AND MAINTENANCE SERVICE. SERVICE INSTALLED UNDER THIS PLAN DESIGN WILL BE IN CONJUNCTION WITH THIS PROJECT COMPLETION. COORDINATE ALL MAINTENANCE AND OPERATIONAL TRANSFERS WITH THE CITY OF LAS VEGAS TRAFFIC ENGINEERING DEPARTMENT (TEFO) (702) 229-6533

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.	Call before you Dig AVOID CUTTING UNDERGROUND UTILITIES. IT'S COSTLY. FAST Call before you UnderGround 1-702-432-5300 FREWAY AND ARTERIAL SYSTEM OF TRANSPORTATION AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY! CALL BEFORE YOU DO OVERHEAD
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EXISTING	PROPOSED	DESCRIPTION
		ROW OR PROPERTY LINE
		EASEMENT LINE
		CENTERLINE
		CURB
		VALLEY GUTTER
		EDGE OF PAVEMENT
		SIDEWALK
		SIDEWALK RAMP
		DRIVEWAY
		SAWCUT LINE
		RETAINING WALL
		FLOOD WALL
		WROUGHT IRON VEHICULAR GATES
		WROUGHT IRON PEDESTRIAN GATES
		INDEX CONTOURS
		INTERMEDIATE CONTOURS
		ROUGH GRADE INDEX CONTOURS
		ROUGH GRADE INTERMEDIATE CONTOURS
		CUT OR FILL SLOPE
		CUT AND FILL LINE
		LOT NUMBER
		FF AND PAD ELEVATION
		GRADE SLOPE
		SPOT ELEVATION
		SWALE LINE
		LOT DIMENSION
		SIGHT VISIBILITY ZONE
		WATERLINE MAIN AND SIZE
		FIRE HYDRANT
		WATER METER AND SERVICE LATERAL
		WATER VALVE
		WATER FITTINGS
		WATER LINE REDUCER
		WATER CAP WITH WATER BLOW OFF ASSEMBLY
		IRRIGATION SLEEVE
		PRESSURE REDUCING VALVE
		REDUCED PRESSURE PRINCIPLE ASSEMBLY
		SEWERLINE MAIN AND SIZE
		SEWERLINE MANHOLE
		SEWERLINE CAP
		SEWER LATERAL
		BACK WATER VALVE
		100W HPS STREET LIGHT
		250W HPS STREET LIGHT
		400W HPS STREET LIGHT
		STREET LIGHT CONDUIT AND CAP
		4" FIBER OPTIC CONDUIT AND CAP
		PULLBOX
		REFLECTIVE FIRE HYDRANT MARKER
		STORM DRAIN MAIN AND SIZE
		ROCK RIP RAP
		STORM DRAIN MANHOLE
		STORM DRAIN DROP INLET

AGG	AGGREGATE	FG	FINISH GRADE
ASP	ASPHALTIC CONCRETE	FL	FLOW LINE
AP	ANGLE POINT	FUT	FUTURE
BCI	BEND OF CURB	PL-G	PLASTIC GAS
BSI	BEGIN STREET IMPROVEMENTS	S-W	STEEL GAS
BSC	BEGINNING OF VERTICAL CURVE	GR	GRADE
BM	BENCH MARK	HP	HIGH POINT
BDR	BOUNDARY	HDP	HIGH DENSITY
CA TV	CABLE TELEVISION	HPJ	HALF JUNCTION
CL	CENTERLINE	HPPP	HIGH PERFECT
CCUSD	CLARK COUNTY UNIFORM STANDARD	INT	INTERSECT
	DRAWINGS	INV	INVERT
CCWRD	CLARK COUNTY WATER RECLAMATION	LVWDD	LAS VEGAS
	DISTRICT	LEFT	LEFT
CMWH	CENTER OF MANHOLE	L	LINEAR FEET
CO	CLEAN OUT, SEWER	MH	MANHOLE
COMM	COMMERCIAL	MAX	MAXIMUM
CONC, PCC	CONCRETE	MIN	MINIMUM
CONST	CONSTRUCTION OR CONSTRUCT	NTS	NOT TO SCALE
CU YD, CY	CUBIC YARD	ON	ON CENTER
CU FT, CF	CUBIC FEET	PVMT	PAVEMENT
CS	CURB FACE	PI	POINT OF
DCSWCS	DESIGN AND CONSTRUCTION	PC	POINT OF
	COLLECTION SYSTEMS	PT	POINT OF
	STANDARDS FOR WASTEWATER	PCC	PORTLAND
DIA	DIAMETER	PUE	PUBLIC UTILITY
DWY	DRIVEWAY	PVC	POLYVINYL
DI	DROP INLET	P	POWER
DE	DE DRAINAGE EASEMENT	PP	POWER POLE
ESMT	EASEMENT	PR	PROPERTY
ESI	END STREET IMPROVEMENTS	POC	POINT OF
EP	EDGE OF PAVEMENT	PROP	PROPOSED
ELEV	ELEVATION	PUL BOX	PULL BOX
ECR	END OF CURB RETURN	RP	RADIUS PO
EXC	EXISTING	RPPA	REDUCED R
EX, EXIST	EXISTING		ASSEMBLY
FT	FEET OR FOOT	REINF	REINFORCED
FTG	FOOTING WALL	REIN	REINFORCED
FH	FEET HYDRANT	REINFORC	REINFORCED

DESCRIPTION	PUBLIC	PRIVATE
2-INCH ASPHALTIC CONCRETE PAVING	- SY	- SY
TYPE II GRAVEL	- CY	- CY
CURB & GUTTER (24-INCH)	- LF	- LF
CURB & GUTTER (30-INCH)	- LF	- LF
"I" TYPE ISLAND CURB	- LF	- LF
CONCRETE VALLEY GUTTER	- SF	- SF
5-INCH CONCRETE SIDEWALK	- SF	- SF
SIDEWALK UNDERDRAIN	- EA	- EA
3/4" WATER METER	- EA	- EA
3/4" IRRIGATION METER WITH 1" RPPA	- EA	- EA
POWER/GAS/PHONE/CABLE SERVICE TO LOTS	- EA	- EA
SURVEY MONUMENTS	- EA	- EA
ADA RAMPS	- EA	- EA
4-INCH SEWER LATERAL	- LF	- LF
8-INCH PVC SEWER MAIN	- LF	- LF
8-INCH C-900 SEWER MAIN	- LF	- LF
48-INCH SEWER MANHOLES	- EA	- EA
BACKWATER VALVES	- EA	- EA
WATER LATERAL	- LF	- LF
6-INCH PVC WATER MAIN	- LF	- LF
8-INCH PVC WATER MAIN	- LF	- LF
12-INCH PVC WATER MAIN	- LF	- LF
12-INCH DIP WATER MAIN	- LF	- LF
FIRE HYDRANT	- EA	- EA
FIRE CRASH GATE (WROUGHT IRON)	- SF	- SF
LIGHT STANDARD (STD. BASE)	- EA	- EA
1-1/4 INCH STREET LIGHT CONDUIT	- LF	- LF
SL 200 AMP SERVICE PEDESTAL	- EA	- EA
STREET SIGNS -STAND ALONE	- EA	- EA
#3 PULLBOX	- EA	- EA
USD #01 BARRICADE (SFT)	- EA	- EA
1" IRRIGATION METER WITH 1" RPPA	- EA	- EA

18-INCH STORM DRAIN	-	LF	-	LF
24-INCH STORM DRAIN	-	LF	-	LF
30-INCH STORM DRAIN	-	LF	-	LF
36-INCH STORM DRAIN	-	LF	-	LF
60-INCH SD MANHOLE (>6')	-	EA	-	EA
48-INCH SD MANHOLE (>5')	-	EA	-	EA
5-FOOT TYPE CM2 DROP INLET	-	EA	-	EA
7.5-FOOT TYPE CM2 DROP INLET	-	EA	-	EA
10-FOOT TYPE CM2 DROP INLET	-	EA	-	EA
12.5-FOOT TYPE CM2 DROP INLET	-	EA	-	EA
15.0-FOOT TYPE CM2 DROP INLET	-	EA	-	EA
22.5-FOOT TYPE CM2 DROP INLET	-	EA	-	EA
72"x72" JENSEN PRECAST INLET	-	EA	-	EA
RIP RAP (D50=6")	-	CY	-	CY
ABANDON PRIVATE RCP	-	LF	-	LF
DC WROUGHT IRON FENCE	-	SF	-	SF

NOTE:
THIS QUANTITY ESTIMATE IS FOR BONDING PURPOSES ONLY.
CONTRACTOR TO DETERMINE INDEPENDENT ESTIMATIONS.

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

NONE

DATE	BY	APPD	DESCRIPTION
November 20, 2019			
HORIZ. SCALE:		N/A	
VERT. SCALE:		N/A	
DRAWN BY:		SRC	
DESIGNED BY:		MJD	
CHECKED BY:		CRZ	
IN CHARGE:		CRZ	
APPROVED BY:			
PROJECT #:			4320.00209



WOODSIDE HOMES OF NEVADA LLC

7896 W. SUNSET RD. SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-893-7824



RCI ENGINEERING

500 SOUTH RANGLO DRIVE SUITE 100
LAS VEGAS, NV 89166
TEL: 702-735-6681
www.rciengineers.com

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 4
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION

GENERAL NOTES, LEGEND AND ABBREVIATIONS

CITY OF LAS VEGAS

NEVADA



DATE: 11-21-19

DRAWING

N-1

SHT 2 OF 7

CLV DRAWING NUMBER

CLV PROJECT #

DISCLAIMER NOTE:

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.

Call before you Dig
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.

**Call
811**
OR
1-800-227-2600

FAST
Call
before you
UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL
SYSTEM OF TRANSPORTATION

AVOID HITTING OVERHEAD
POWER LINES. IT'S COSTLY.

**CALL BEFORE
YOU DO
OVERHEAD**

1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6, RIVET AND PLATE IN TOP OF CURB AT SE CORNER OF CARRIAGE HILL AND FAR HILLS.
ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF "FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158, PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BUILDING PERMIT NOTE

ALL STRUCTURES SHOWN OR INDICATED ON THIS SUBMITTAL WITHIN THE PROPERTY REQUIRE A BUILDING PERMIT APPLICATION AND SUBMITTAL THIS INCLUDES BUILDINGS, ABOVE GROUND TANKS, SIGNS, RETAINING WALLS, FENCES, TRASH ENCLOSURES, SHADE STRUCTURES, STAIRWAYS, RAMPS, LIGHT POLES, LIGHT BOLLARDS, ETC. THIS DOES NOT INCLUDE ANY FLOOD CONTROL STRUCTURE SUCH AS PIPES, CULVERTS, ARCH CULVERTS, HEADWALLS, ETC. THIS DOES NOT INCLUDE ANY WORK WITHIN A PUBLIC STREET RIGHT-OF-WAY. THIS DOES NOT INCLUDE PRIVATE STREETS. THE REVIEW OF CIVIL IMPROVEMENT AND/OR GRADING PLANS DOES NOT INCLUDE ANY REVIEW OF ANY STRUCTURE THAT REQUIRES A BUILDING PERMIT APPLICATION."

FLOOD ZONE NOTE

ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NUMBERS 32003C2150E AND 32003C2125E DATED SEPTEMBER 27, 2002, THE SITE IS LOCATED IN A ZONE "X".

SURVEY MONUMENT NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS REQUIRED BY CITY OF LAS VEGAS AND CLARK COUNTY UNIFORM STANDARD DRAWING NUMBER 243. OWNER IS ALSO RESPONSIBLE TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DESTROYED, OR OBSOBELED DURING CONSTRUCTION.

SIGHT VISIBILITY ZONE

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

ENGINEERS NOTES

- CONTRACTOR IS RESPONSIBLE FOR DUST AND EROSION CONTROL DURING CONSTRUCTION.
- SEE DETAIL SHEET FOR ON-SITE PAVEMENT SECTIONS. CONTRACTOR TO VERIFY WITH SOILS REPORT.
- SEE FINAL MAP FOR EXACT PROPERTY LINE DIMENSIONS.
- ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.
- THESE PLANS SHALL NOT, IN PART OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY THE GOVERNING AGENCIES.
- ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
- DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
- SOIL REPORT NOTE:
GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT PREPARED BY:
ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
- CUT/FILL ESTIMATES
EXISTING TO FINISH GRADE ELEVATIONS
NET CUT: 65,691 CY
NET FILL: 78,411 CY
- SEE DETAIL 33/D-2 FOR TYPICAL LOT DRAINAGE
- FOR STORMWATER RUNOFF MANAGEMENT NOTES REFER TO SHEET N-1

NOTE

ALL ON-SITE STORM DRAINS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE HOA

NOTE

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

SEWER EASEMENT NOTE

NO STRUCTURES AND NO TREES OR VEGETATION TALLER THAN THREE FEET ALLOWED WITHIN CLV SEWER EASEMENT

CONSTRUCTION NOTES

- CONSTRUCT AC PAVEMENT PER DETAILS 1 THRU 2 ON SHEET
- CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CCAUSD #217.2.51
- CONSTRUCT 8" CROSS GUTTER PER SUMMERLIN IMPROVEMENT STD DWG #5-64
- CONSTRUCT 4" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- CONSTRUCT 5" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE 1)
- CONSTRUCT 6" HIGH WROUGHT IRON FENCE AND/OR GATES
- REMOVE EXISTING RIPRAP
- CONSTRUCT 5" TRANSITION FROM "L" TYPE CURB AND GUTTER TO "R" TYPE CURB AND GUTTER PER DETAIL 34 SHEET D-2



I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

DATE: 11-21-19
DRAWING: G-1
SHT 3 OF 7
CLV DRAWING NUMBER
CLV PROJECT #

WOODSIDE HOMES OF NEVADA LLC

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 4
SUMMERLIN VILLAGE 21 PARCELA A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 1 OF 3)

PROFESSIONAL ENGINEER
CHRISTOPHER R. ZIRNYI
Exp. 6/30/2020
CIVIL
No. 13976

DATE: 11-21-19

DRAWING: G-1

SHT 3 OF 7

CLV DRAWING NUMBER

CLV PROJECT #

REVISIONS
NO. 1
DATE: 11-21-19
BY: [Signature]
DESCRIPTION: [Text]

DATE: November 20, 2019
HORIZ. SCALE: 1"=30'
VERT. SCALE: N/A
DRAWN BY: SRC
DESIGNED BY: MJD
CHECKED BY: CRZ
APPROVED BY: CRZ
PROJECT #: 4320.0009

WOODSIDE HOMES OF NEVADA LLC

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 4
SUMMERLIN VILLAGE 21 PARCELA A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 1 OF 3)

PROFESSIONAL ENGINEER
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CIVIL
No. 13976

DATE: 11-21-19

DRAWING: G-1

SHT 3 OF 7

CLV DRAWING NUMBER

CLV PROJECT #

REVISIONS
NO. 1
DATE: 11-21-19
BY: [Signature]
DESCRIPTION: [Text]

DATE: November 20, 2019
HORIZ. SCALE: 1"=30'
VERT. SCALE: N/A
DRAWN BY: SRC
DESIGNED BY: MJD
CHECKED BY: CRZ
APPROVED BY: CRZ
PROJECT #: 4320.0009

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.



CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.

ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE" AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BUILDING PERMIT NOTE

ALL STRUCTURES SHOWN OR INDICATED ON THIS SUBMITTAL WITHIN THE PROPERTY REQUIRE A BUILDING PERMIT APPLICATION AND SUBMITTAL THIS INCLUDES BUILDINGS, ABOVE GROUND TANKS, SIGNS, RETAINING WALLS, FENCES, TRASH ENCLOSURES, SHADE STRUCTURES, STAIRWAYS, RAMPS, LIGHT POLES, LIGHT BOLLARDS, ETC. THIS DOES NOT INCLUDE ANY COROL STRUCTURE SUCH AS PIPES, CULVERTS, ARCH CULVERTS, HEADWALLS, ETC. THIS DOES NOT INCLUDE ANY WORK WITHIN A PUBLIC STREET RIGHT-OF-WAY, THIS DOES NOT INCLUDE PRIVATE STREETS. THE REVIEW OF CIVIL IMPROVEMENT AND/OR GRADING PLANS DOES NOT INCLUDE ANY REVIEW OF ANY STRUCTURE THAT REQUIRES A BUILDING PERMIT APPLICATION."

FLOOD ZONE NOTE

ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NUMBERS 32003C2150E AND 32003C2125E DATED SEPTEMBER 27, 2002, THE SITE IS LOCATED IN A ZONE "X".

SURVEY MONUMENT NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS
REQUIRED BY CITY OF LAS VEGAS AND CLARK COUNTY UNIFORM
STANDARD DRAWING NUMBER 243. OWNER IS ALSO RESPONSIBLE TO
REPLACE ALL SURVEY MONUMENTATION DAMAGED, DESTROYED, OR
OBSCURED DURING CONSTRUCTION.

SIGHT VISIBILITY ZONE

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

ENGINEERS NOTES

1. CONTRACTOR IS RESPONSIBLE FOR DUST AND EROSION CONTROL DURING CONSTRUCTION.
2. SEE DETAIL SHEET FOR ON-SITE PAVEMENT SECTIONS. CONTRACTOR TO VERIFY WITH SOILS REPORT.
3. SEE FINAL MAP FOR EXACT PROPERTY LINE DIMENSIONS.
4. ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.
5. THESE PLANS SHALL NOT, IN PART OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY THE GOVERNING AGENCIES
6. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
7. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
8. SOIL REPORT NOTE:
GRADING SHALL BE IN ACCORDANCE
WITH SOILS REPORT PREPARED BY:
ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
9. CUT/FILL ESTIMATES
EXISTING TO FINISH GRADE ELEVATIONS
NET CUT: 69.69' CUB
NET FILL: 79.41' CUB
10. SEE DETAIL 33/D-2 FOR TYPICAL LOT DRAINAGE
11. FOR STORMWATER RUNOFF MANAGEMENT NOTES REFER TO SHEET N-1

NOT

ALL ONSITE STORM DRAINS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE HOA

NOT
ALL

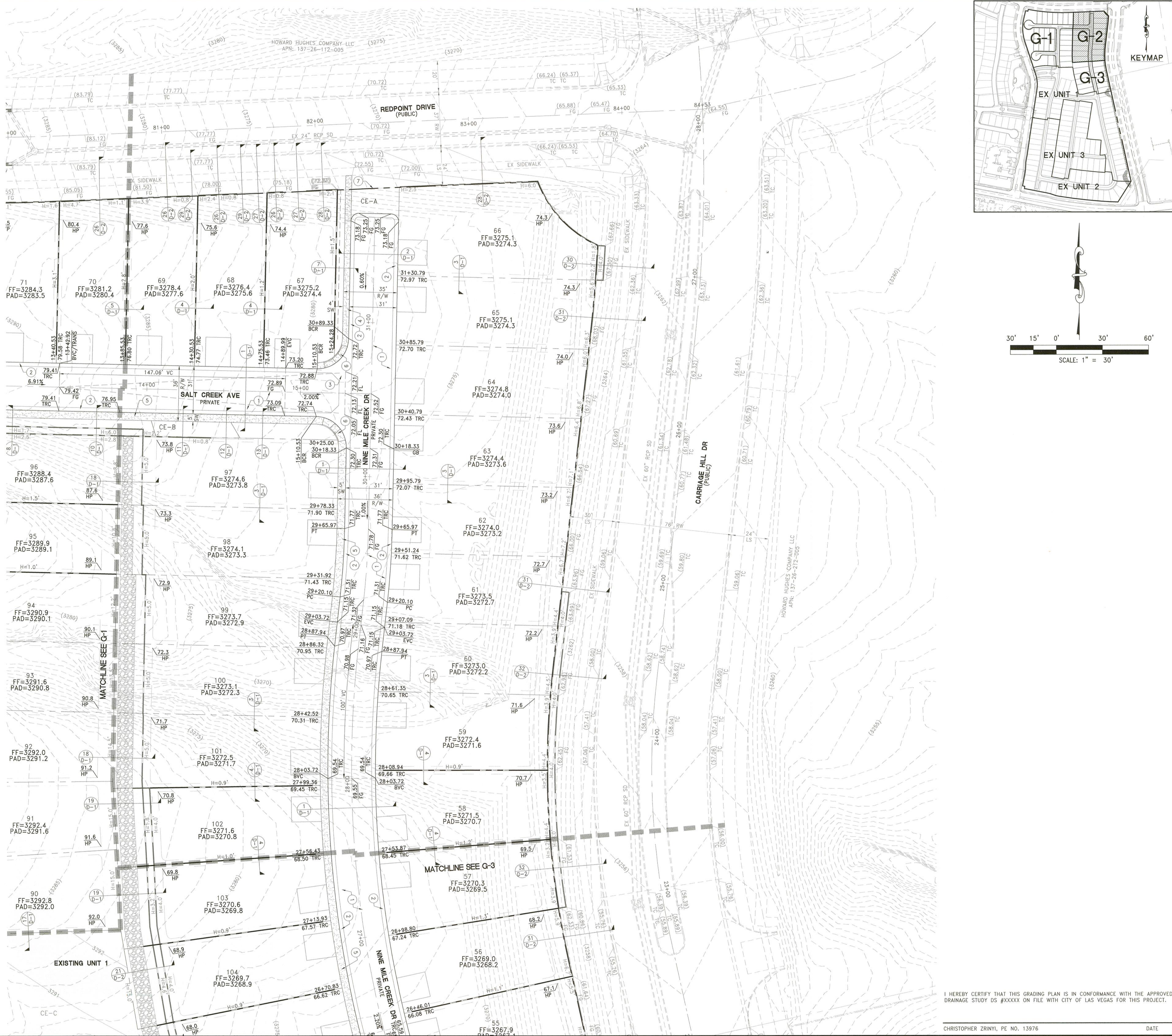
ALL PRIVATE STREETS ARE P.O.E., PUBLIC
SEWER EASEMENTS AND PUBLIC DRAINAGE
EASEMENTS TO BE PRIVATELY MAINTAINED
BY HOA.

SEWER EASEMENT NOTE

NO STRUCTURES AND NO TREES OR VEGETATION TALLER
THAN THREE FEET ALLOWED WITHIN CLV SEWER EASEMENT

CONSTRUCTION NOTES

1. CONSTRUCT AC PAVEMENT PER DETAILS 1 THRU 2 ON SHEET D-1
2. CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CCAUSD 2127.2.51
3. CONSTRUCT 8" CROSS GUTTER PER SUMMERLIN IMPROVEMENT STD DWG #S-64
4. CONSTRUCT 4" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
5. CONSTRUCT 5" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
6. CONSTRUCT SIDEWALK RAMPS USING #235 (CASE I) DOMES OR EQUIVALENT PER CCAUSD #235 (CASE I)
7. CONSTRUCT 6" HIGH WROUGHT IRON FENCE AND/OR GATES
8. REMOVE EXISTING RIPRAP
9. CONSTRUCT 5" TRANSITION FROM "L" TYPE CURB AND GUTTER TO "R" TYPE CURB AND GUTTER PER DETAIL 34 SHEET D-2



I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

CHRISTOPHER ZRINYI, PE NO. 13976

DATE _____

WOODSIDE HOMES OF NEVADA LLC

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 4
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 2 OF 3)

Professional Engineer
STATE OF NEVADA
CHRISTOPHER R. ZRINYI
Exp. 6/30/2020
CIVIL
No. 13976

DATE: 11-21-19

DRAWING

G-2

SHT 4 OF 7

CLV DRAWING NUMBER

011 000 1505 H

CLV PROJECT # _____

DISCLAIMER NOTE:

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR 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. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.

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SYSTEM OF TRANSPORTATION

AVOID HITTING OVERHEAD
POWER LINES. IT'S COSTLY.

**CALL BEFORE
YOU DO
OVERHEAD**

1-702-227-2929

BENCHMARK

CITY OF LAS VEGAS BENCHMARK, MONUMENT ID 5LV0926W6,
RIVET AND PLATE IN TOP OF CURB AT THE SE CORNER OF
CARRIAGE HILL AND FAR HILLS.
ELEVATION = 984.288 METERS
ELEVATION = 3229.29 U.S. SURVEY FEET (NAVD 88)

BASIS OF BEARINGS

NORTH 79°08'32" WEST, BEING THE BEARING OF A PORTION OF
"FAR HILLS AVENUE," AS SHOWN BY MAP THEREOF IN BOOK 158,
PAGE 87 OF PLATS, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BUILDING PERMIT NOTE

ALL STRUCTURES SHOWN OR INDICATED ON THIS SUBMITTAL
WITHIN THE PROPERTY REQUIRE A BUILDING PERMIT
APPLICATION AND SUBMITTAL. THIS INCLUDES BUILDINGS, ABOVE
GROUND TANKS, SIGNS, RETAINING WALLS, FENCES, TRASH
ENCLOSURES, SHADE STRUCTURES, STAIRWAYS, RAMPS, LIGHT
POLES, LIGHT BOLLARDS, ETC. THIS DOES NOT INCLUDE ANY
FLOOD CONTROL STRUCTURE SUCH AS PIPES, CULVERTS, ARCH
CULVERTS, HEADWALLS, ETC. THIS DOES NOT INCLUDE ANY
WORK WITHIN A PUBLIC STREET RIGHT-OF-WAY. THIS DOES
NOT INCLUDE PRIVATE STREETS. THE REVIEW OF CIVIL
IMPROVEMENT AND/OR GRADING PLANS DOES NOT INCLUDE
ANY REVIEW OF ANY STRUCTURE THAT REQUIRES A BUILDING
PERMIT APPLICATION."

FLOOD ZONE NOTE

ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP
(FIRM) COMMUNITY PANEL NUMBERS 320032150E AND
320032125E DATED SEPTEMBER 27, 2002, THE SITE IS
LOCATED IN A ZONE "X".

SURVEY MONUMENT NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS
REQUIRED BY CITY OF LAS VEGAS AND CLARK COUNTY UNIFORM
STANDARD DRAWING NUMBER 243. OWNER IS ALSO RESPONSIBLE TO
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OBSOLETE DURING CONSTRUCTION.

SIGHT VISIBILITY NOTE

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ENGINEERS NOTES

- CONTRACTOR IS RESPONSIBLE FOR DUST AND EROSION CONTROL DURING CONSTRUCTION.
- SEE DETAIL SHEET FOR ON-SITE PAVEMENT SECTIONS. CONTRACTOR TO VERIFY WITH SOILS REPORT.
- SEE FINAL MAP FOR EXACT PROPERTY LINE DIMENSIONS.
- ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES IMMEDIATELY.
- THESE PLANS SHALL NOT, IN PART OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY THE GOVERNING AGENCIES.
- ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
- DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
- SOIL REPORT NOTE:
GRADING SHALL BE IN ACCORDANCE
WITH SOILS REPORT PREPARED BY:
ENGINEER: GEOTEK
PROJECT NO. 14740-LV
DATED: APRIL 10, 2019
- CUT/FILL ESTIMATES
EXISTING TO FINISH GRADE ELEVATIONS
NET CUT: 68,691 CY
NET FILL: 79,411 CY
- SEE DETAIL 33/D-2 FOR TYPICAL LOT DRAINAGE
- FOR STORMWATER RUNOFF MANAGEMENT NOTES REFER TO SHEET N-1

NOTE
ALL ON-SITE STORM DRAINS AND THE
ASSOCIATED FACILITIES ARE PRIVATELY
OWNED AND TO BE PRIVATELY MAINTAINED
BY THE HOA

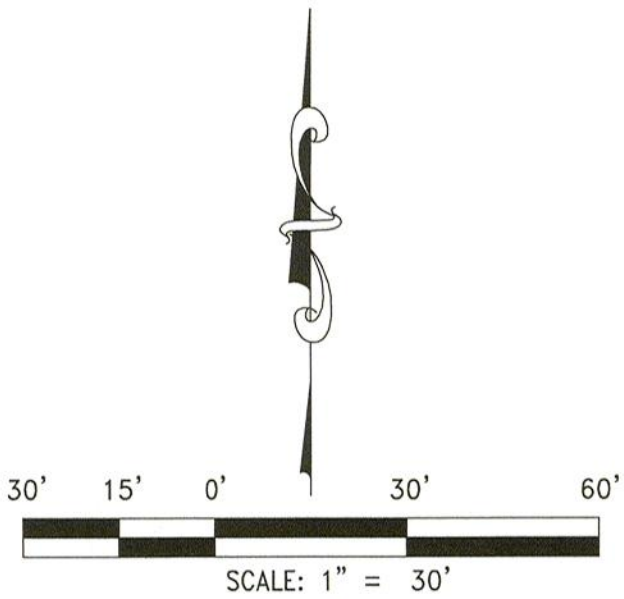
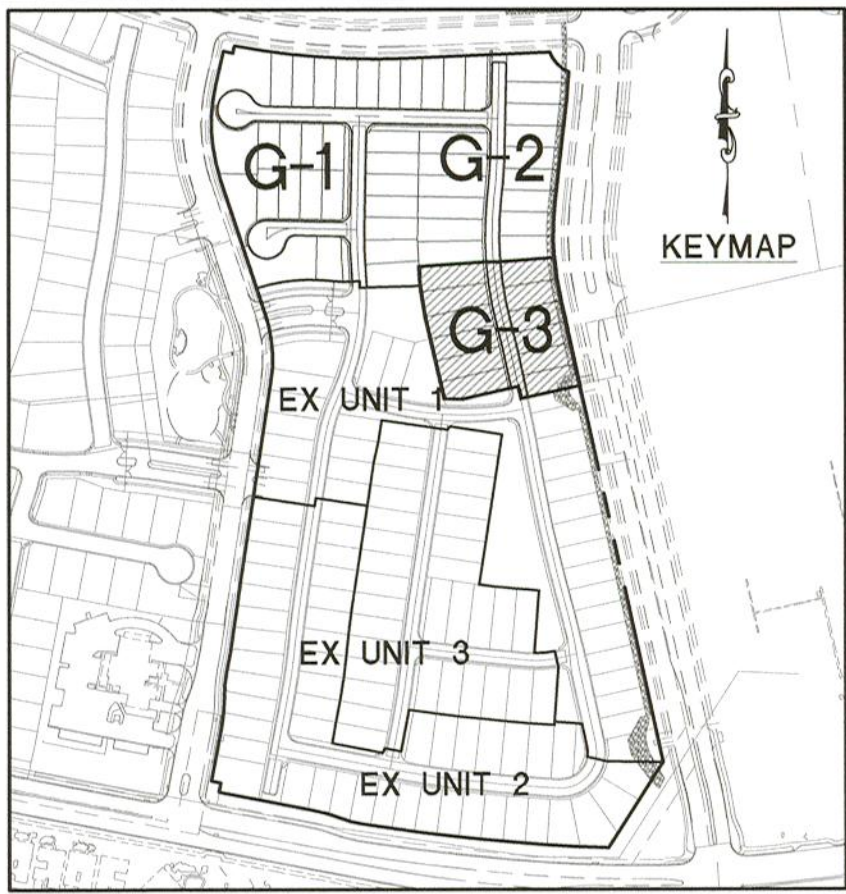
NOTE
ALL PRIVATE STREETS ARE P.U.E., PUBLIC
SEWER EASEMENTS AND PUBLIC DRAINAGE
EASEMENTS TO BE PRIVATELY MAINTAINED
BY HOA

SEWER EASEMENT NOTE

NO STRUCTURES AND NO TREES OR VEGETATION TALLER
THAN THREE FEET ALLOWED WITHIN CLV SEWER EASEMENT

CONSTRUCTION NOTES

- CONSTRUCT AC PAVEMENT PER DETAILS 1 THRU 2 ON SHEET D-1
- CONSTRUCT "ROLL" TYPE CURB AND GUTTER PER CCAUSD #217.2.51
- CONSTRUCT 8" CROSS GUTTER PER SUMMERLIN
- IMPROVEMENT STD DWG #5-64
- CONSTRUCT 4" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- CONSTRUCT 5" SIDEWALK PER CCAUSD #234 (5-INCH THICK WHEN CONTIGUOUS TO "ROLL" TYPE CURB)
- CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235 (CASE 3)
- CONSTRUCT 6" HIGH WROUGHT IRON FENCE AND/OR GATES
- REMOVE EXISTING RIPRAP
- CONSTRUCT 5" TRANSITION FROM "L" TYPE CURB AND GUTTER TO "R" TYPE CURB AND GUTTER PER DETAIL 34 SHEET D-2



REV	DESCRIPTION	DATE
1	1"=30'	11/20/19
2	VERT. SCALE:	1"=30'
3	HORIZ. SCALE:	1"=30'
4	DRAWN BY:	SRC
5	DESIGNED BY:	MJD
6	CHECKED BY:	CRZ
7	APPROVED BY:	CRZ
8	PROJECT #:	4320.0009

WOODSIDE HOMES OF NEVADA LLC

7895 W. SUNSET RD., SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-889-7824

RCI ENGINEERING

500 SOUTH RANCHO DRIVE, SUITE 217, LAS VEGAS, NV 89106
PHONE: 702.453.0800 FAX: 702.453.0801
www.rciengineers.com

IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 4
SUMMERLIN VILLAGE 21 PARCELA AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING PLANS (SHEET 3 OF 3)

PROFESSIONAL ENGINEER
CHRISTOPHER R. ZRINYI
Exp. 6/30/2020
CIVIL
No. 13976

DATE: 11-21-19

G-3

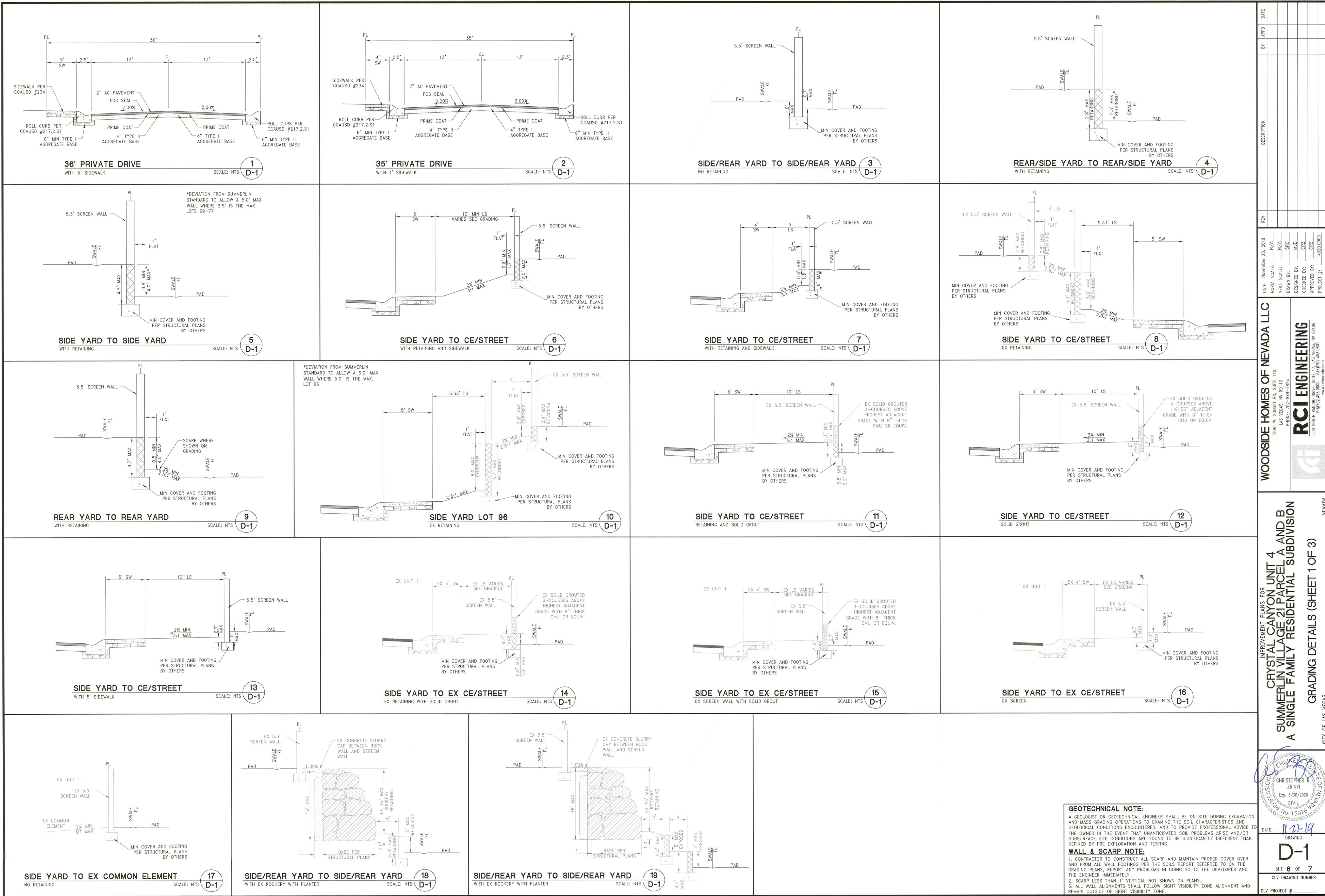
SHT 5 OF 7

CLV DRAWING NUMBER

CLV PROJECT #

I HEREBY CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY DS #XXXXX ON FILE WITH CITY OF LAS VEGAS FOR THIS PROJECT.

CHRISTOPHER ZRINYI, PE NO. 13976 DATE



WOODSIDE HOMES OF NEVADA LLC
7895 W. SUNSET RD. SUITE 110
LAS VEGAS, NV 89113
PHONE: 702-882-7924

RCI ENGINEERING
500 SOUTH RANCHO DRIVE, SUITE 117, LAS VEGAS, NV 89106
PHONE: 702-453-0800
www.rcieng.com

DATE: November 20, 2019
HORIZ. SCALE: N/A
VERT. SCALE: N/A
DRAWN BY: JRC
CHECKED BY: MJD
DESIGNED BY: CRZ
APPROVED BY: CRZ
PROJECT #: 4320.0009

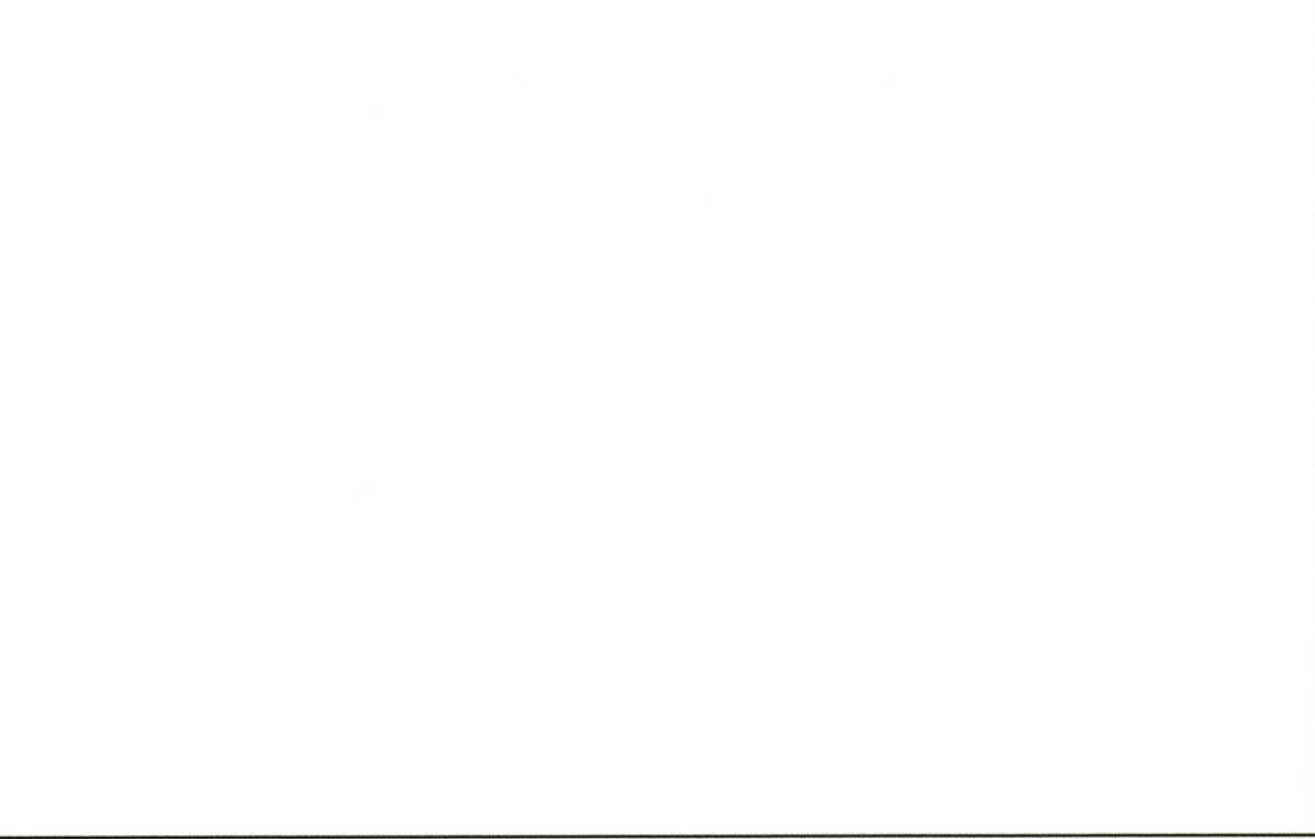
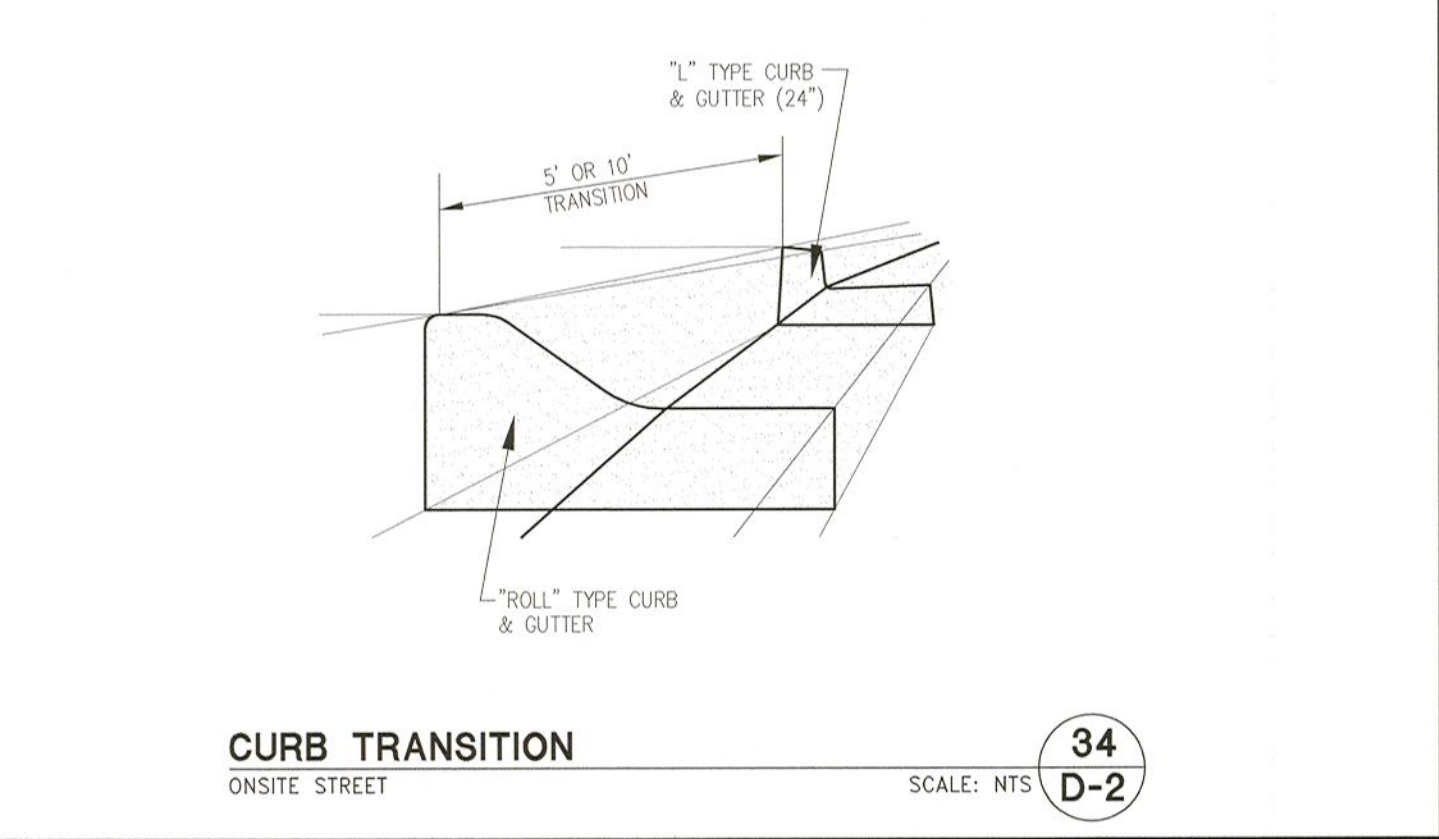
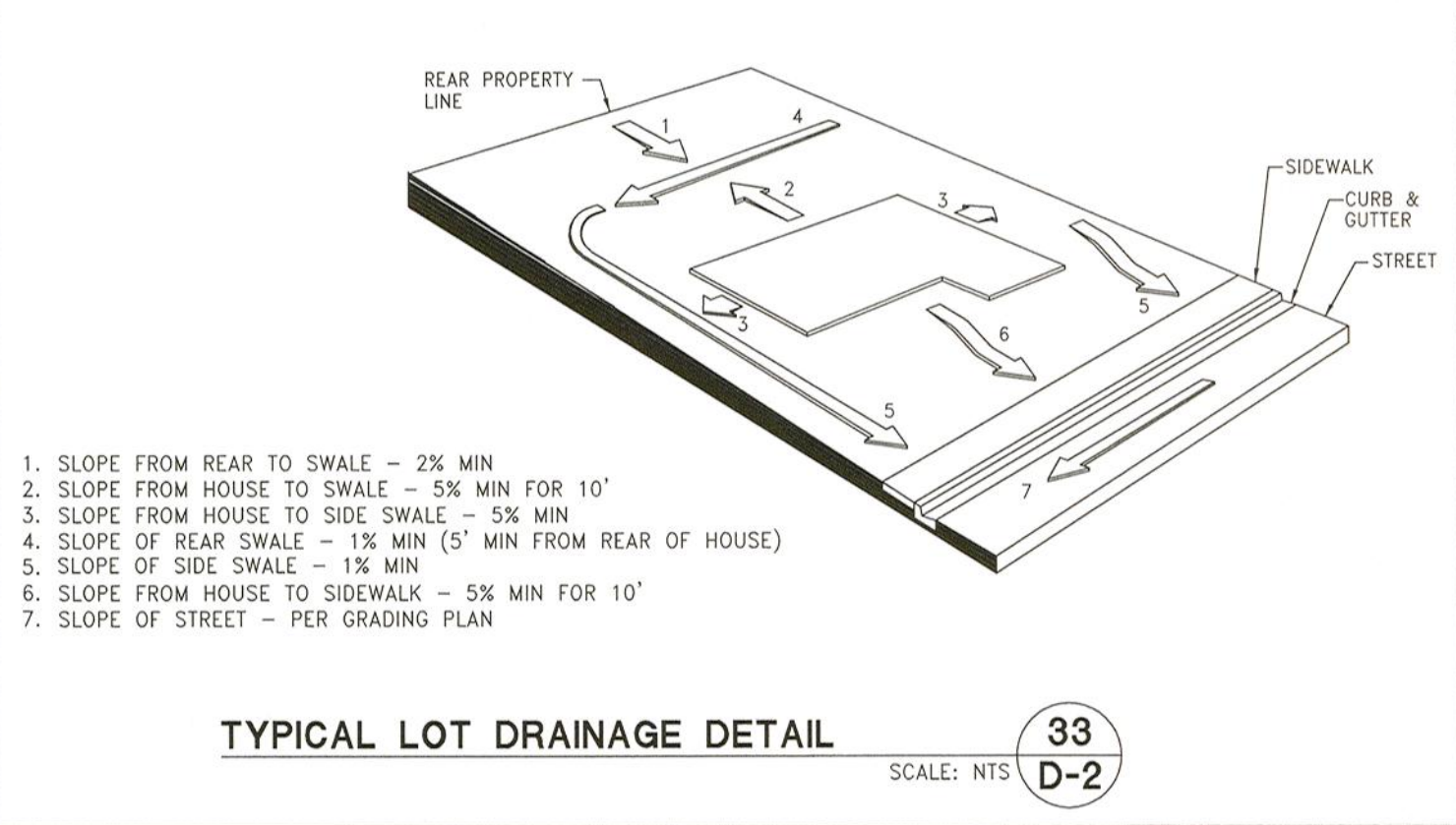
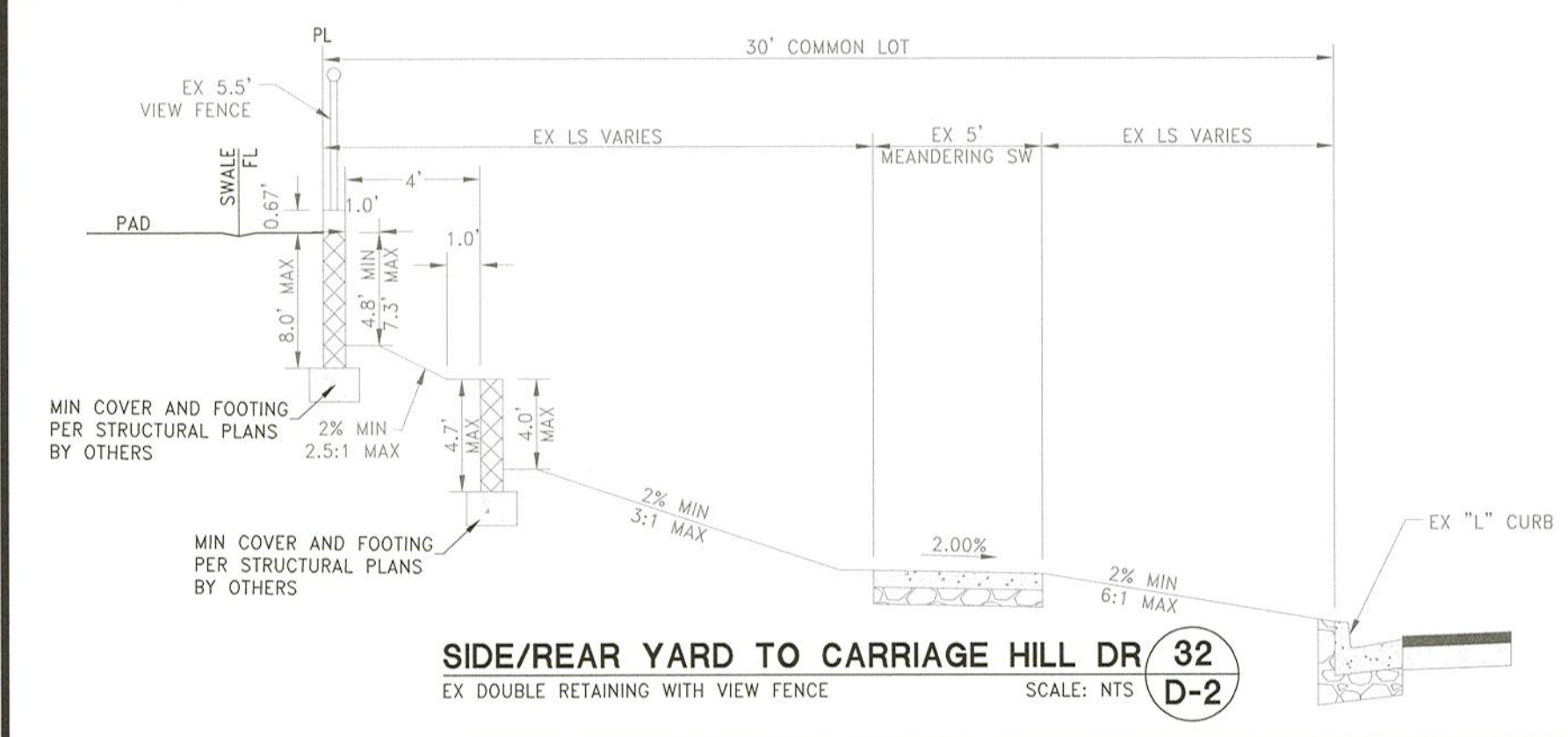
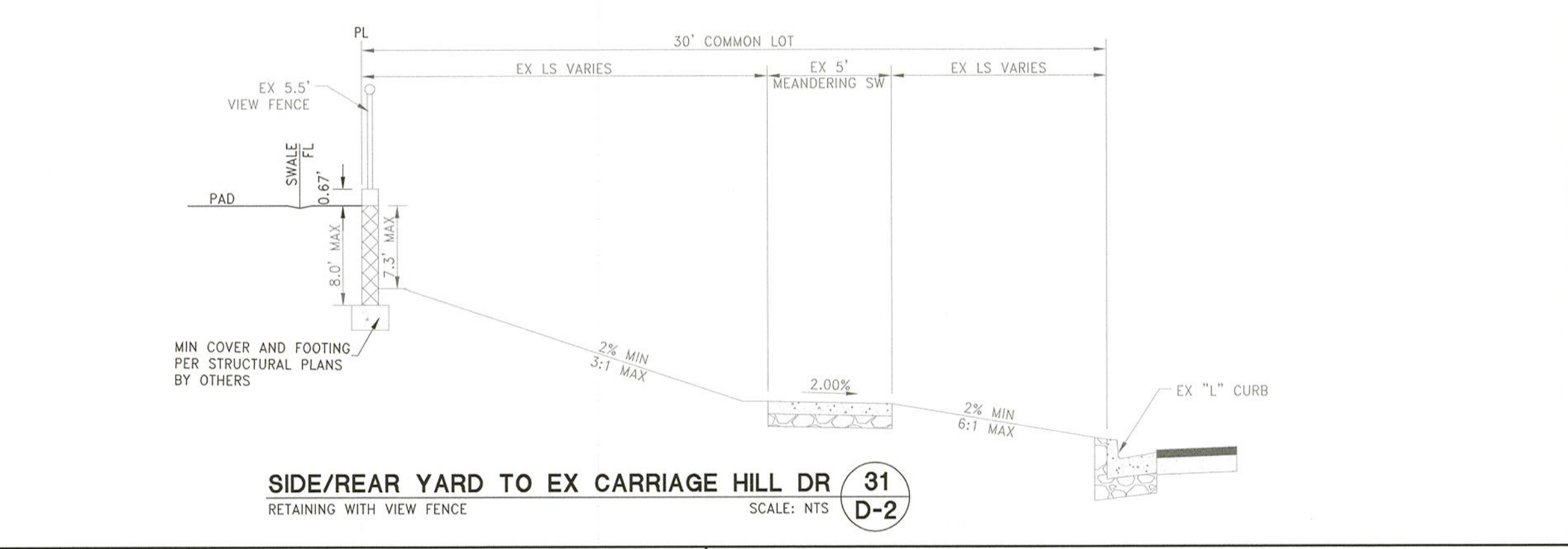
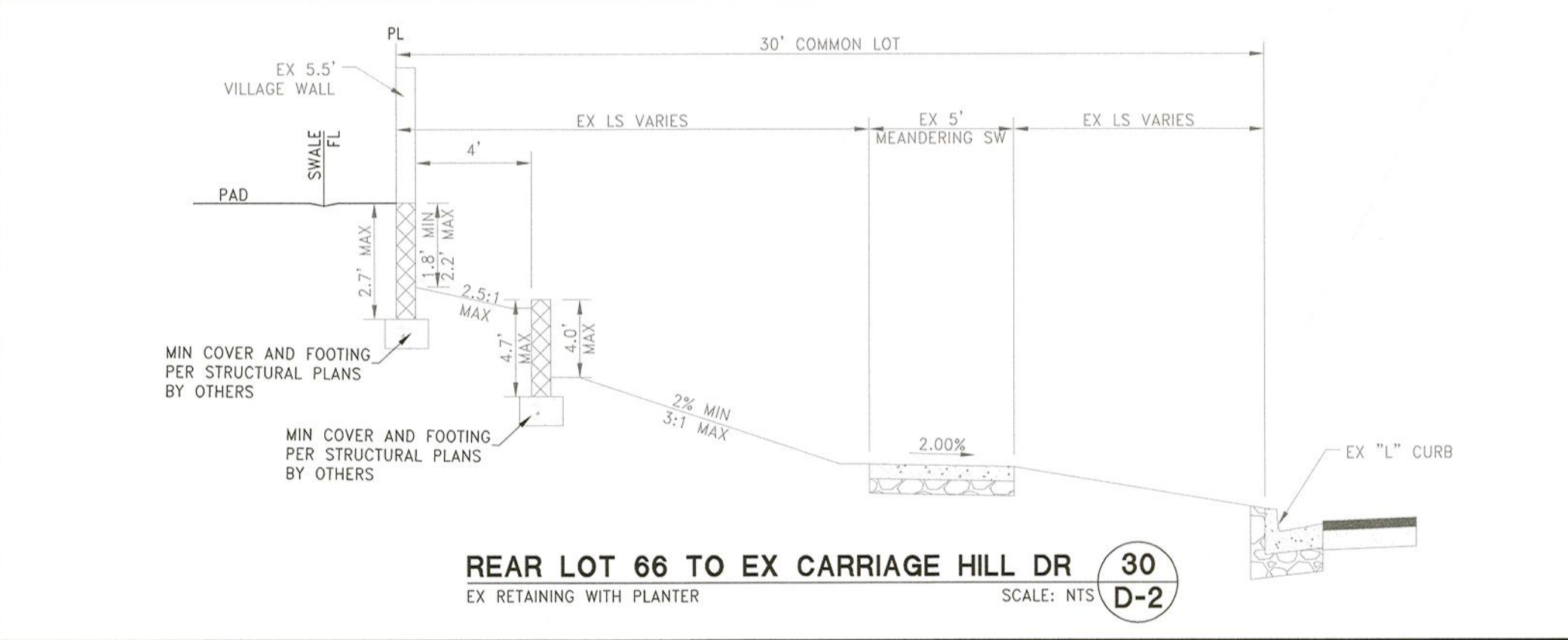
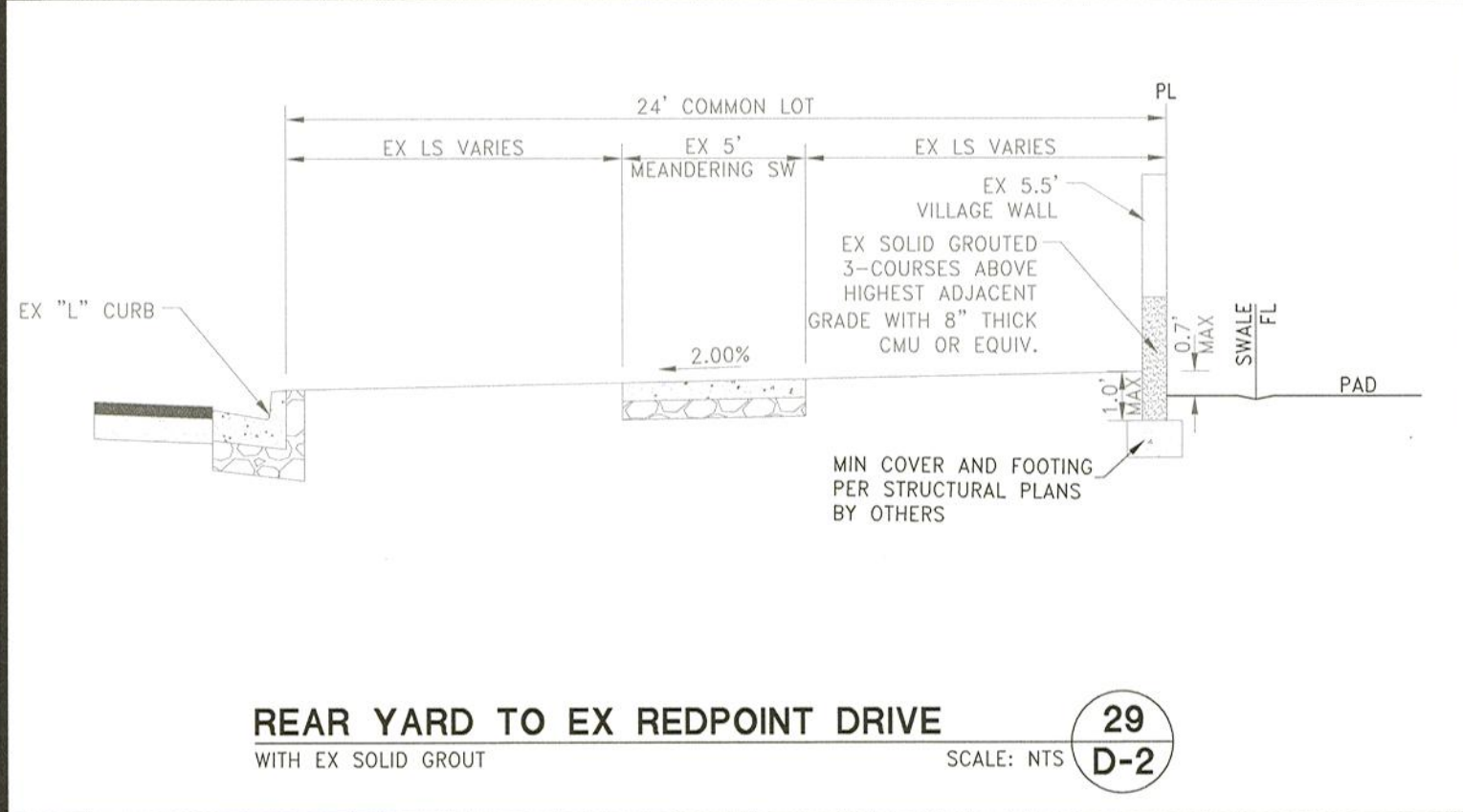
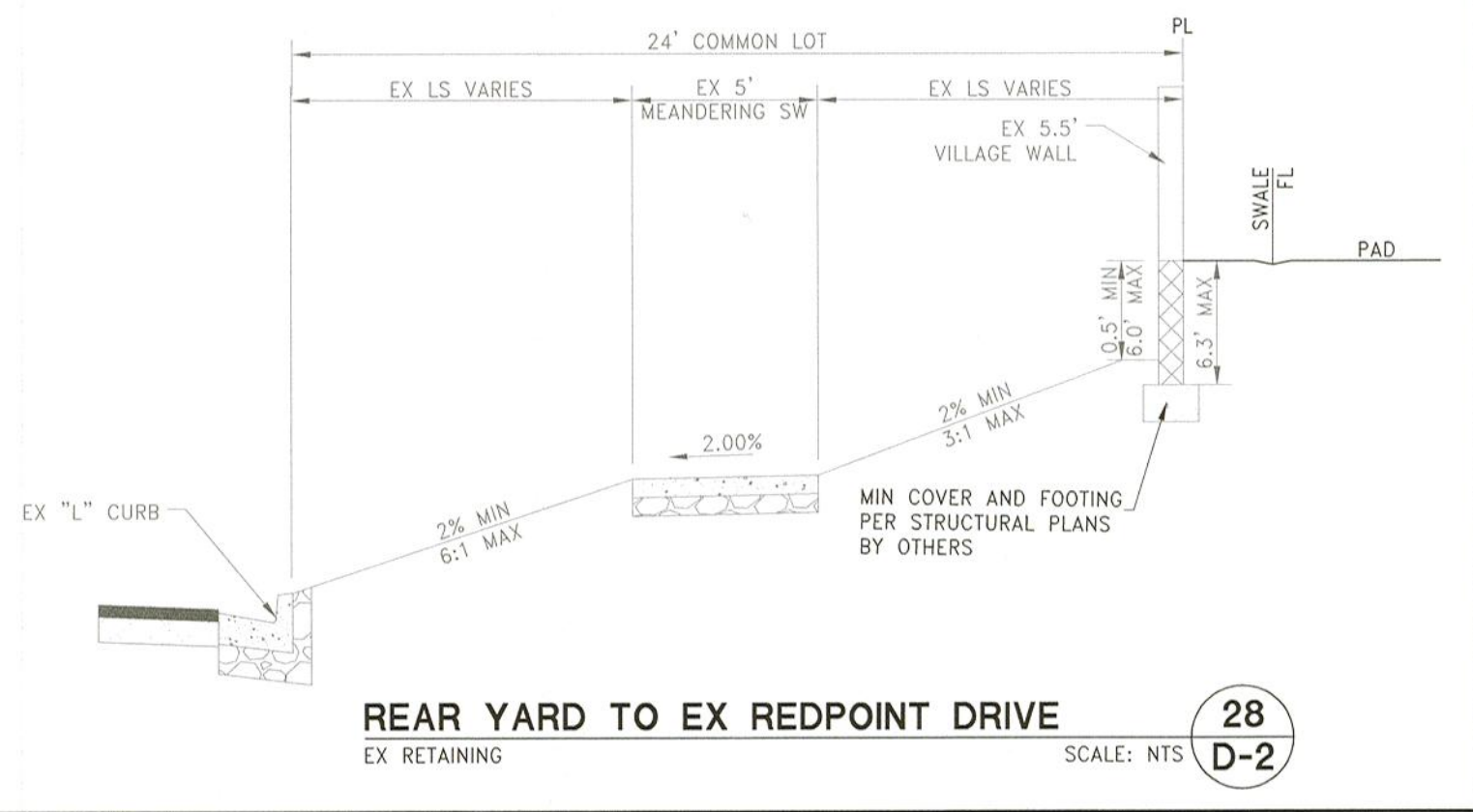
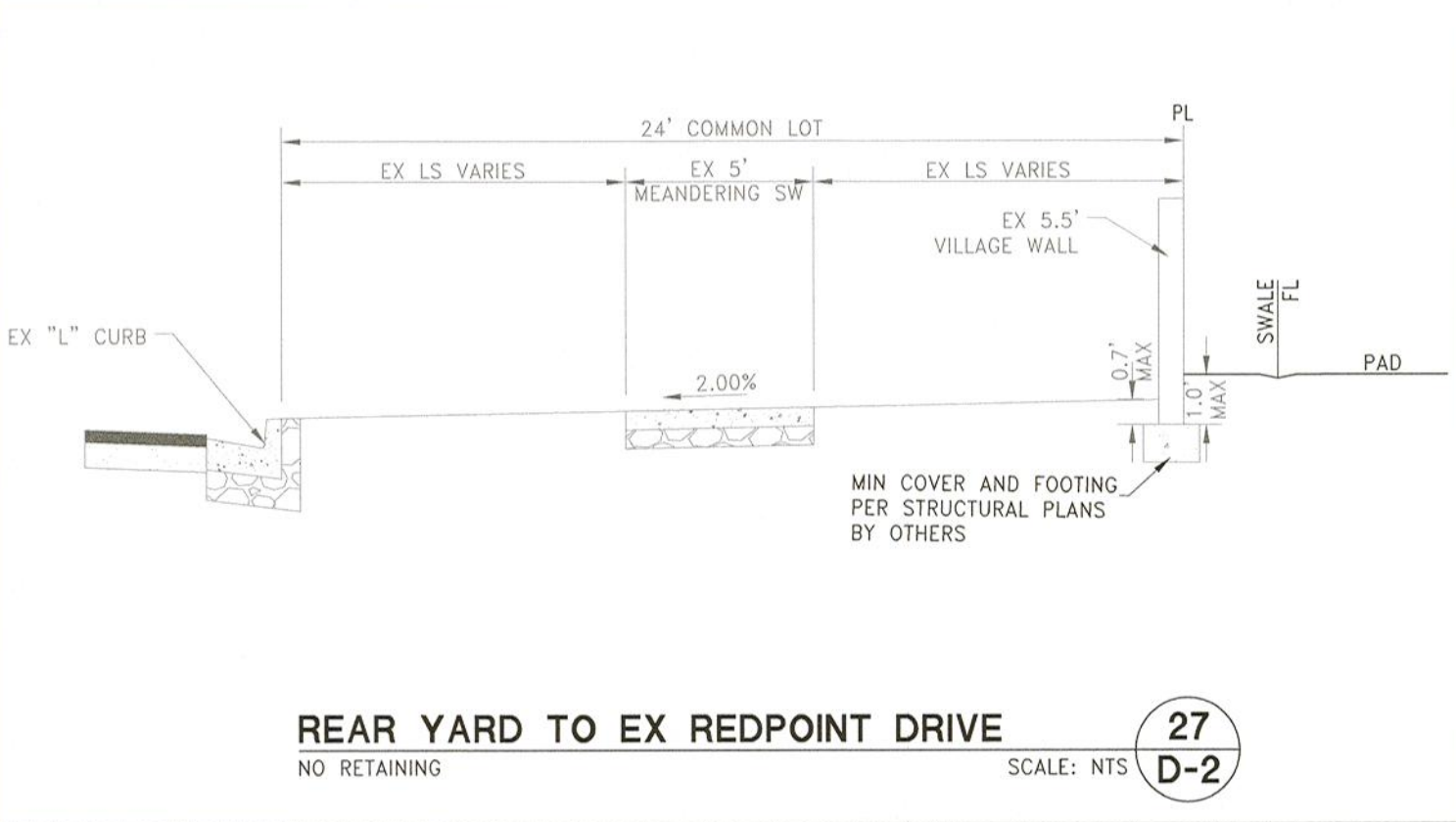
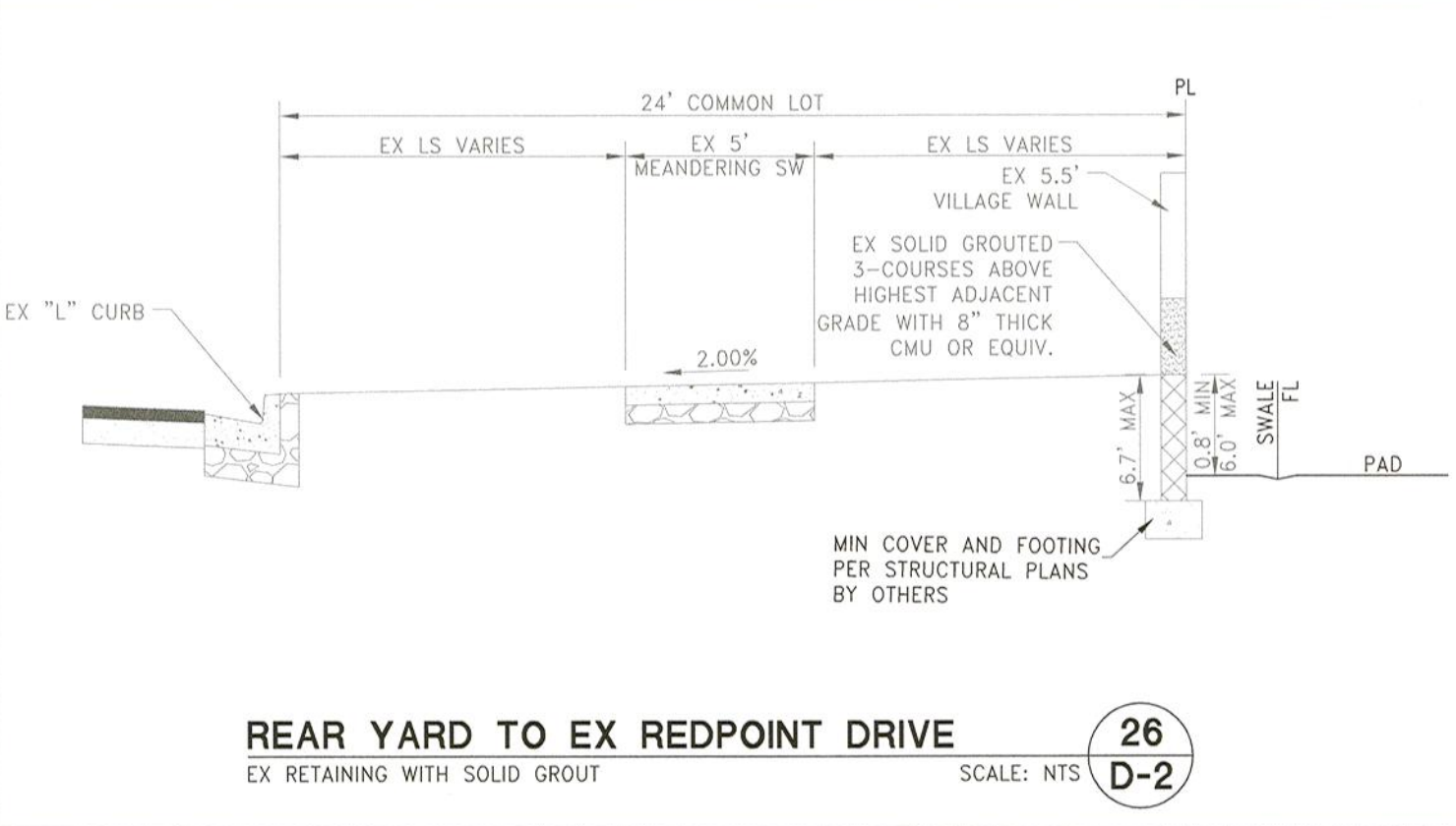
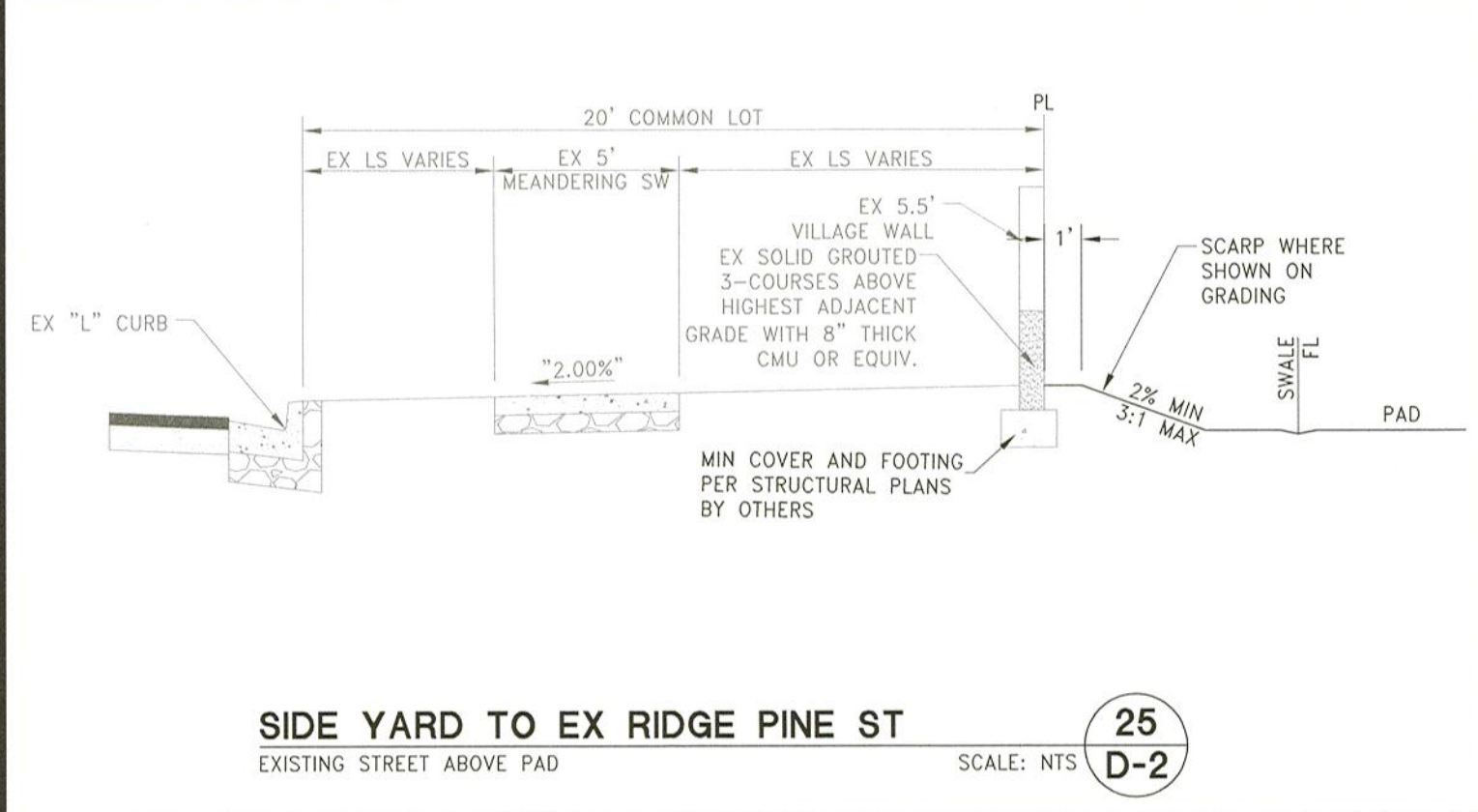
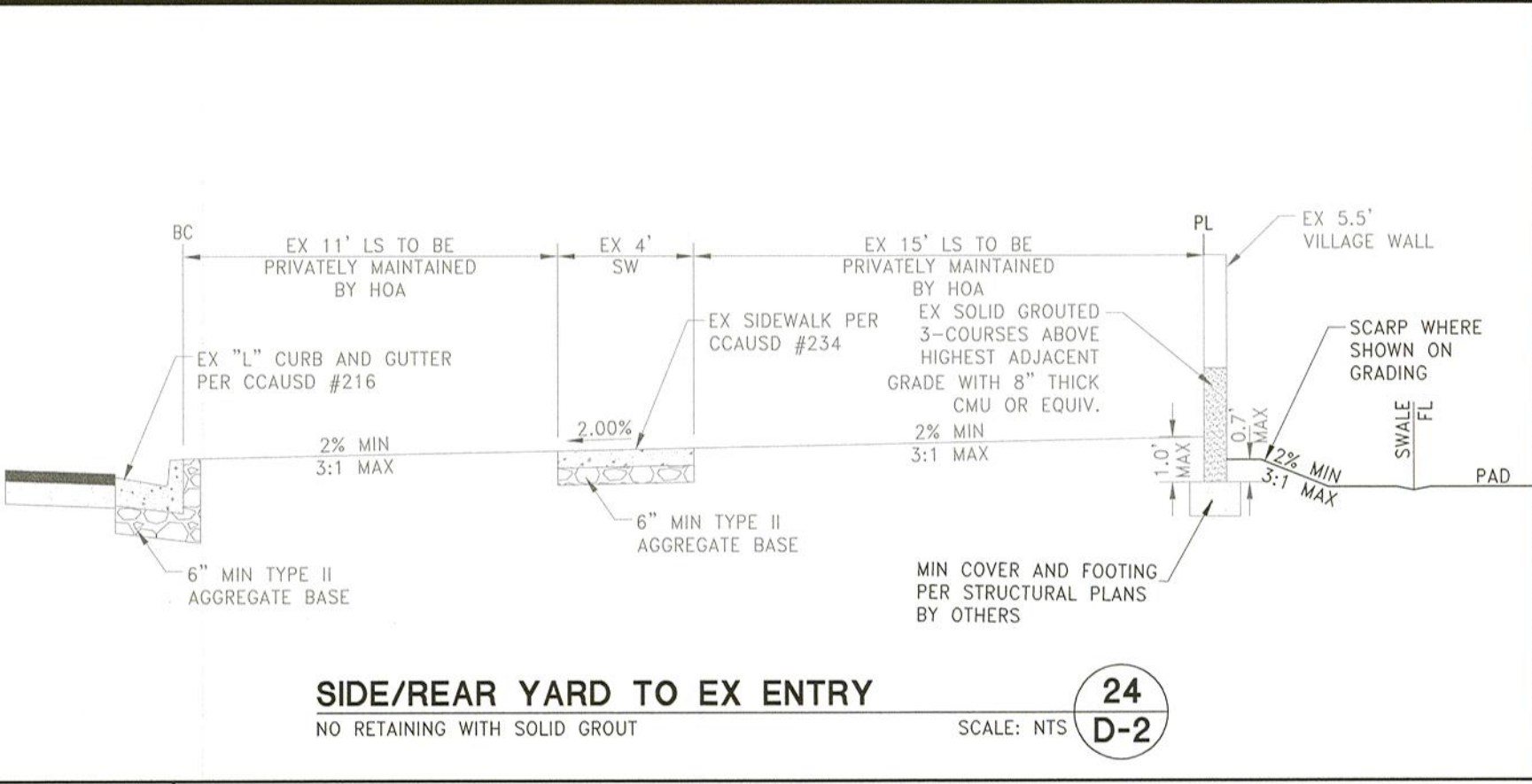
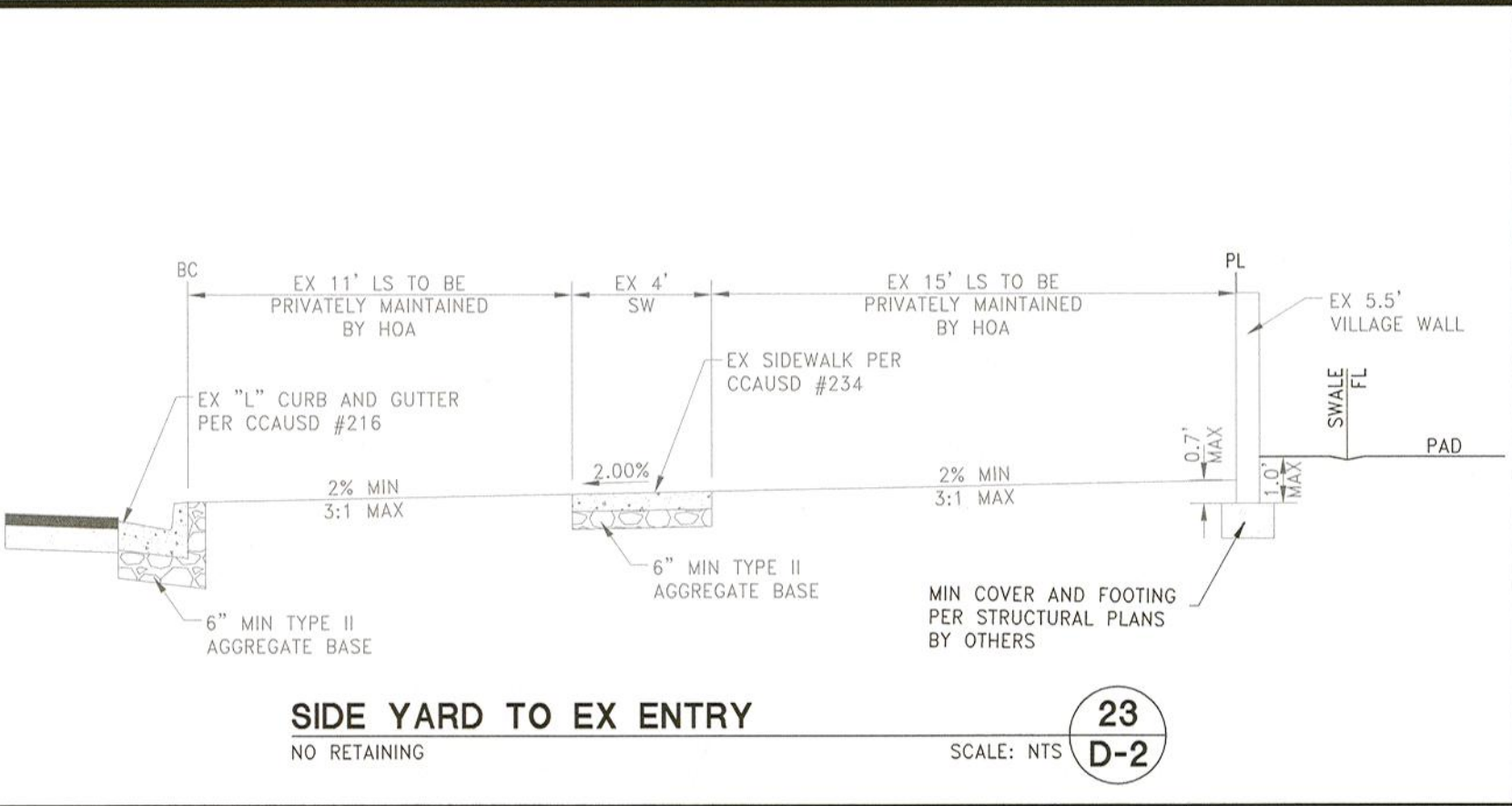
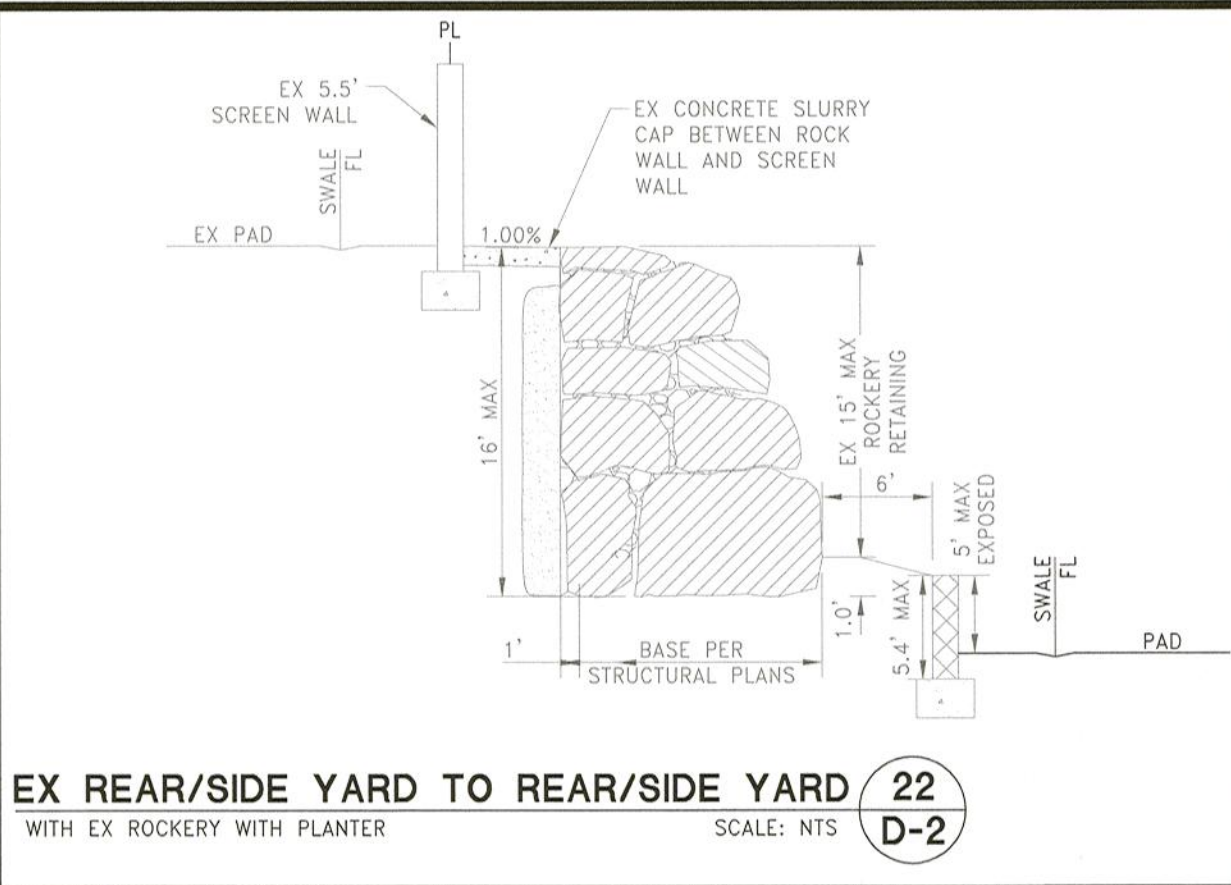
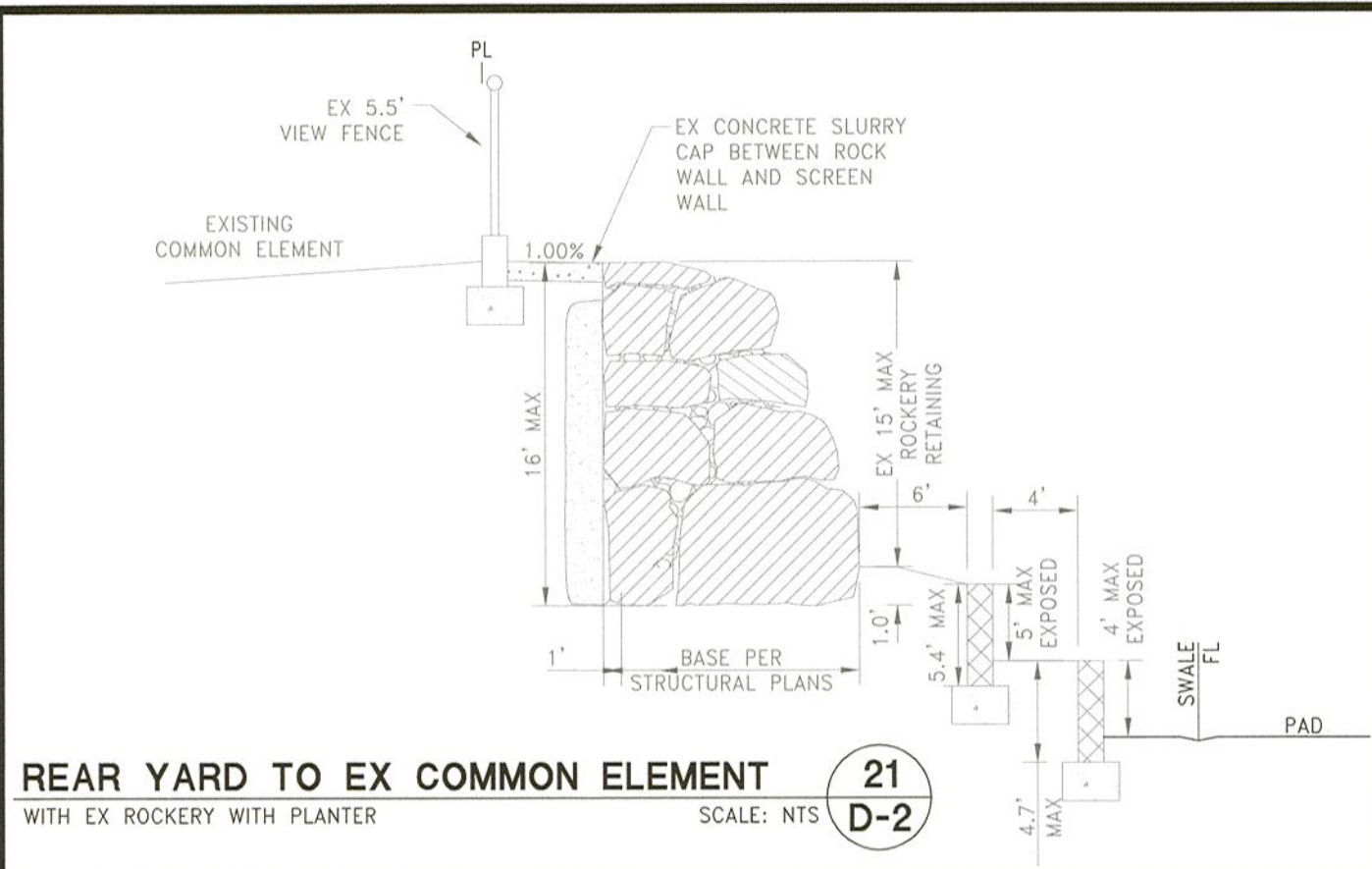
IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 4
SUMMERLIN VILLAGE 21 PARCELA AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION
GRADING DETAILS (SHEET 1 OF 3)
CITY OF LAS VEGAS

PROFESSIONAL ENGINEER
CHRISTOPHER R. ZIRINYI
Exp. 6/30/2020
CIVIL
No. 13976

DATE: 11-22-19
DRAWING
D-1
SHT 6 OF 7
CLV DRAWING NUMBER
CLV PROJECT #

GEOTECHNICAL NOTE:
A GEOLOGIST OR GEOTECHNICAL ENGINEER SHALL BE ON SITE DURING EXCAVATION AND MASS GRADING OPERATIONS TO EXAMINE THE SOIL CHARACTERISTICS AND GEOLOGICAL CONDITIONS ENCOUNTERED, AND TO PROVIDE PROFESSIONAL ADVICE TO THE OWNER IN THE EVENT THAT UNANTICIPATED SOIL PROBLEMS ARISE AND/OR SUBSURFACE SITE CONDITIONS ARE FOUND TO BE SIGNIFICANTLY DIFFERENT THAN DEFINED BY PRE EXPLORATION AND TESTING.

WALL & SCARP NOTE:
1. CONTRACTOR TO CONSTRUCT ALL SCARP AND MAINTAIN PROPER COVER OVER AND FROM ALL WALL FOOTINGS PER THE SOILS REPORT REFERRED TO ON THE GRADING PLANS. REPORT ANY PROBLEMS IN DOING SO TO THE DEVELOPER AND THE ENGINEER IMMEDIATELY.
2. SCARP LESS THAN 1' VERTICAL NOT SHOWN ON PLANS.
3. ALL WALL ALIGNMENTS SHALL FOLLOW SIGHT VISIBILITY ZONE ALIGNMENT AND REMAIN OUTSIDE OF SIGHT VISIBILITY ZONE.



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DATE	BY	DESCRIPTION	REV
November 20, 2019	N/A	VERT. SCALE: N/A	1
November 20, 2019	N/A	HORIZ. SCALE: N/A	2
November 20, 2019	N/A	DRAWN BY: SRC	3
November 20, 2019	N/A	DESIGNED BY: MJD	4
November 20, 2019	N/A	CHECKED BY: CRZ	5
November 20, 2019	N/A	APPROVED BY: CRZ	6
November 20, 2019	N/A	PROJECT #:	7

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**IMPROVEMENT PLANS FOR
CRYSTAL CANYON UNIT 4
SUMMERLIN VILLAGE 21 PARCEL A AND B
A SINGLE FAMILY RESIDENTIAL SUBDIVISION**

GRADING DETAILS (SHEET 2 OF 3)

QITY OF LAS VEGAS

DATE: 11-21-19

DRAWING
D-2
SHT 7 OF 7
CLV DRAWING NUMBER
CLV PROJECT #