DS #: 05267

APN: 137-27-215-061

PROJECT: Summerlin Village 25 - Parcel D

SUBMITTAL: 2nd

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS NEVADA

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: July 9, 2020
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 Village 25 – Parcel D**			**COPIES TO:** GCW Engineers / Surveyors
Cross Streets:	NEC of Sky Vista Drive & Far Hills Boulevard			Pulte Homes
File Number:	F:\Depot\DSMemos\DS5267B.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-27-215-001			CCRFCD
Zoning Action:	TMP-78592			
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	4/10/2020	4/30/2020	Not Approved	$400.00	3811743: $400
2nd Submittal	6/22/2020	7/9/2020	See Comments Below	$400.00	3889199: $400
			TOTAL FEES (LDDRS):	**$800.00**	----

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.

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

   http://gustfront.ccrfcd.org/LandDev/LandDev.aspx

2. **Second Request:** *Provide a copy of the zoning/planning conditions associated with this site (**TMP-78592**) 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.*

   The material provided in the last submittal was *Planning Department* staff recommended approval only. An approval letter must be obtained from the *City Council / Planning Commission* prior to the final approval of the subject drainage study.

3. The subject development is under the premise of flood protection by the improved perimeter streets, *Sky Vista Drive and Far Hill Boulevard.* No occupancy permit of the houses will be issued prior to the substantial buildout of the perimeter facilities.

4. **Second Request:** ***Figure 5 & Figure 6****: Provide names of the perimeter streets and identify with all existing regional facilities. Show with size and label with* ***City of Las Vegas*** *recorded drawing numbers on the map.*

   The street names provided are not legible and the existing regional facilities are still not identified and labeled with *City of Las Vegas* recorded drawing numbers. Review and revise accordingly.

5. Per previous comment, provide a minimum 3'-clearance between the edge of the storm drains to the lip of the concrete curb. However, for example, but not limited to: Per **Sheet U4**, a 36"-RCP in front of Lot 19 does not meet the 3'-minimum criteria. Review and revise the overall onsite storm drain system in the next submittal.

6. **Previous Comment #9:** ***Sheet G3****: The central point of the Entry Driveway to Sky Vista Drive does not provide adequate freeboard to the 100-year flow depth in Sky Vista. Note that the hump must provide a minimum of six inches (6") of freeboard. Review and resolve in the next submittal.*

   It is noted that the interface between the entry driveway and *Sky Vista Drive* has been lowered by 0.39' from the previous submittal. However, *Sky Vista Drive* is supposed to be existing in the sense of being built prior to the subject improvements. Therefore, how can you lower an existing street? Address and resolve in the next submittal.

In an effort to increase administrative efficiency, for all original and re-submittal packages including updates and the addenda, the City of Las Vegas Public Works Department requires both a hardcopy and a digital copy (PDF) on CD for the drainage study.

A letter sealed and signed by a Nevada registered civil engineer must be included in every submittal certifying documents on the electronic CD matches 100% of the hardcopy submittal. The new submittal requirement is effective on May 1, 2019. If there are any questions regarding these new requirements, please contact Albert Sung in the City Flood Control Section at (702) 229-6541.



Sample Letter to certify CD.pdf

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

END OF REMARKS
ays

T/R/S: T20S/R59E/27
AREA K-27

764-A173-001

June 3, 2020

GCW
ENGINEERS \ SURVEYORS

Ms. Linda Maynard
City Planning and Development
City of Las Vegas
333 North Rancho Drive
Las Vegas, Nevada 89106

RE: Summerlin Village 25 Parcel D

Dear Ms. Maynard:

We are currently preparing civil improvement plans for Summerlin Village 25 Parcel D which is a 111 unit residential development located at Far Hills and Sky Vista (APN: 137-27-215-01). We have submitted and received comments for the Technical Drainage Study (DS- 5267A). Comment #3 to the Technical Drainage Study references the need for an approval of the grade differential I excess of 2 feet from the existing ground surface.

The existing terrain of this site is such that it is a steep site, with a massive drainage area through the middle of it. We were restricted by criteria requirements along the perimeter, which is why many pads are predictably > 2 ft above or below existing ground.

We have worked diligently to minimize the impact of our project to this site and the surrounding area. We would ask for your support and approval of our grading plan included with this package.

Thank you for your consideration. Please call me at 702-785-2299 or email me at cgee@gcwengineering.com.

Cordially,

GCW, INC.

Cindie Gee
Project Coordinator

Attachments

PLANS APPROVED
PLANNING
Dept. of Planning
City of Las Vegas, Nevada
2-foot +/- GRADE DIFFERENCE ONLY
LHM JUN 15 2020

Conforms to the minimum requirement of LVMC Title 19; applicable Master Plan Development standards and/or Conditions of Approval. Make No Change Without Approval. Plan is Not a Permit to Violate Any Ordinance.

1555 South Rainbow Boulevard
Las Vegas, Nevada 89146
O 702.804.2000
F 702.804.2299
info@gcwengineering.com
gcwengineering.com

TMP-78592
PRJ-78571

Technical Drainage Study
for
Summerlin Village 25 Parcel D

764-A173-001

April 2020

Prepared for:

Pulte Homes
7255 S Tenaya Way
Las Vegas, NV 89113
Phone: (702) 914-4800
Fax: (702) 914-3100

Prepared By:

GCW, Inc.
1555 S. Rainbow Blvd.
Las Vegas, Nevada 89146
Phone: (702) 804-2000
Fax: (702) 804-2299

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin Village 25 - Parcel D Date: April 2020

Location of Development: a) Descriptive (Cross Streets) North/South: Sky Vista Drive

East/West: Far Hills Drive

b) Section: 27 Township: 20S Range: 59E

c) APN : 137-27-215-001

Name of Owner: Owner: Howard Hughes Company, LLC Developer: Pulte Homes

Telephone No.: 702.914-4800 Fax No.: 702.804.2299 E-Mail Address:

Address: 7255 S Tenaya Way Las Vegas Nevada, 89113

Contact Person-Name: Cody Beck, PE **Telephone No.:** 702.804.2000

* **E-Mail Address:** cbeck@gcwengineering.com **Fax No.:** 702.804.2299

Firm: GCW

Address: 1555 South Rainbow Boulevard Las Vegas, Nevada 89146

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: +/- 27.16 acres Being Developed/Disturbed: +/- 27.16 acres
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ **Yes**** ☒ **No**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ **Yes**** ☐ **No**
4. Proposed type of development (Residential, Commercial, Etc.): Residential
5. Approximate upstream land area which drains to the subject site: +/- 0.00 acres
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: Master Conceptual Drainage Study for Summerlin West Village 25
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Existing 36" RCP stub in Far Hills Drive
8. Briefly describe your proposed schedule for the subject project: The Client intends to start construction as soon as practical. Any expediting of this process is appreciated.



4/09/20

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.**

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

764-A173-001

April 7, 2020

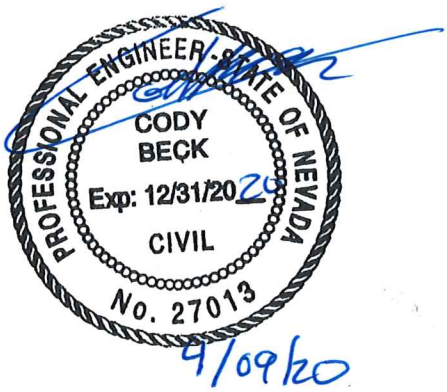
Albert Y. Sung, P.E.
Flood Control Project Engineer
City of Las Vegas Land Development Services
Flood Control Division
333 North Rancho Drive – 7th Floor
Las Vegas, Nevada 89106

Re: Technical Drainage Study for Summerlin Village 25 – Parcel D

Dear Mr. Sung,

This letter is to certify that all documents provided in the Technical Drainage Study for Summerlin Village 25 – Parcel B electronic submittal (CD) matches 100% the hardcopy version of the study.

Respectfully submitted,



Cody Beck, P.E.
Flood Control Project Engineer

1555 South Rainbow Boulevard
Las Vegas, Nevada 89146

O 702.804.2000
F 702.804.2299

info@gcwengineering.com
gcwengineering.com

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Summerlin Village 25 - Parcel D	Map ID: 137-27-215-001	
Firm Name: GCW	Engineer: Cody Beck, PE	
Address: 1555 South Rainbow Boulevard		
City: Las Vegas	State: Nevada	Zip: 89146
Phone Number: 702.804.2000	Fax Number: 702.804.2299	
Property Owner: Howard Hughes Company, LLC Developer: Pulte Homes		
Address: 7255 South Tenaya Way		
City: Las Vegas	State: NV	Zip: 89113
Reviewed By:	Date Received:	Date Accepted for Review:

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

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

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

I. GENERAL REQUIREMENT

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

II. MAPS AND EXHIBITS

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

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS (Continued)

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

III. DRAINAGE PLAN

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

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
_____	N/A	Streets with off-set crowns.
X	_____	Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
X	_____	Property lines.
X	_____	Right-of-way lines and widths, existing and proposed.
X	_____	Existing improvements and their elevations.
X	_____	Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
X	_____	Concentration points and drainage flow direction with Q100 and V100 and D100 in streets.
X	_____	Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
X	_____	Location and cross-section of street capacity calculations.
X	_____	Cross-sectional detail for channels, including cutoff wall locations.
X	_____	Existing and proposed drainage facilities, appurtenances, and connections (i.e., sidewalk, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, material, shape, and slope with plan and profile and HGL calculations.
X	_____	Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
_____	N/A	Location and detail of existing, proposed, and future block wall openings. Minimum size is 16" x 48". Wrought iron gate is required for flows > 10 cfs.
_____	N/A	Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.
X	_____	Perimeter retaining wall locations. All existing and proposed walls (retaining screen and flood) must be shown with adjacent ground elevations. Flood walls with 8-inch concrete masonry unit.
X	_____	Building and/or lot numbers.
X	_____	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
_____	N/A	Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
_____	N/A	For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table. Finish floor elevations must be a minimum of 18 inches above BFE.
X	_____	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 Q100 flows.
X	_____	Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.
_____	N/A	Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).

IV. HYDROLOGIC ANALYSIS

Yes	No	
_____	N/A	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.
_____	N/A	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.
_____	N/A	Use of correct precipitation values in and around the McCarran Airport rainfall area.
X	_____	A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
X	_____	A summary table of stormwater flows showing basin area, Q10 and Q100 for both individual basins and combined basin flows, where applicable.
X	_____	Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.
X	_____	On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners in accordance with current Nevada Drainage Law.
_____	N/A	Calculation for impervious area for parking lots and LIDs (if required).

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

Yes	No	
_____	N/A	Flow split calculations and supporting documentation or reference for the method of flow split calculations used.
X	_____	Normal depth street flow calculations and cross section diagrams for all interior and perimeter streets. Provide "d x v" products for the Q100 and Q10 flows representing the worst case for interior and all perimeter streets. Q100 d x v < 8. Q10 d x v < 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, Q100 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 Q100 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.
_____	N/A	Provide BMP type, size and supporting calculations for parking lots and LIDs (if required).

REFERENCE:	**STANDARD FORM 2**

CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA
STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

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

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

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

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

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

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

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

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

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

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

Technical Drainage Study
for
Summerlin Village 25 Parcel B

764-A173-001

April 2020

Author:
Cody Beck, PE
GCW, Inc.

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I. INTRODUCTION

Pulte Homes is proposing to construct a single family residential subdivision within the Summerlin Village 25 community at the northeast corner of Far Hills Drive and Sky Vista Drive. The project is identified as *Summerlin Village 25 - Parcel D* (hereafter referred to as the project). The project site encompasses approximately 27.15 acres which will be developed into a single family residential development.

The purpose of this study is to accompany the improvement plans and provide a detailed hydrologic and hydraulic analysis of the site in accordance with the CCRFCD HCDDM (Reference 1, hereafter referred to as the Manual) and local drainage criteria. The following tasks were performed in the preparation of this report:

- Determine the FEMA floodplain designation for the project site.
- Identify existing and proposed CCRFCD regional drainage facilities adjacent to the project site.
- Review pertinent approved drainage studies in the area for evaluation of drainage impacts affecting the project site.
- Determine the runoff flow rates generated by the onsite and offsite drainage areas for the existing, proposed, and ultimate condition.
- Perform hydraulic calculations to show that the proposed improvements are protected from onsite and offsite runoff.
- Prove that development of the project site does not adversely impact the existing downstream improvements.

II. LOCATION AND DESCRIPTION OF IMPROVEMENTS

The project site is located on APN 137-27-215-001 within Section 27 of Township 20 South, Range 59 East, in Clark County, Nevada. The project site has been indicated on Figure 1 located in Appendix D. The project site is currently undeveloped and generally slopes from the west to the east. Improvements to the project site include: 111 single family residential lots, private residential streets and storm drain improvements.

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

Figure 2 located in Appendix D shows the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) containing Community Panel Number 32003C2150E, dated September 27, 2002. The project site lies within a FEMA designated Zone X area. Areas designated as Zone X are described as areas outside the 0.2 percent annual chance floodplain. Therefore, the project site is not located within a FEMA designated Special Flood Hazard Area (SFHA).

IV. CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT (CCRFCD) FACILITIES

Figures 3 and 4 are referenced from the CCRFCD 2018 Las Vegas Valley Master Plan Update (Reference 2, hereinafter referred to as the 2018 MPU). As shown on Figure 4, the project site is adjacent to CCRFCD facilities APFH0089 and APFH0144. APFH0089 is described as an existing 8'x6' RCB and APFH0144 is described as a proposed 5'x4' RCB. However, the project is not considered regionally significant.

V. REFERENCED STUDIES

GCW has reviewed several technical drainage studies for properties adjacent to the project site and other planning documents to determine the flow rates that will impact the proposed storm drain facilities. Hydrologic and hydraulic information has been referenced from the below studies for the purposes of this report.

- *Flood Control Master Plan Update for Summerlin West Planning Area* (Summerlin West MPU) provided a hydrologic and hydraulic master plan for the full build-out ultimate condition of the SWPA (Reference 3).
- *Master Conceptual Drainage Study for Summerlin West Village 25* (Reference 4, hereinafter referred to as the Master Drainage Study for Village 25) serves to establish ultimate condition drainage patterns for the development and recommend storm drain facilities to convey flow through the site on a conceptual level.

VI. HYDROLOGY

In this project, hydrology has been referenced from previously approved projects. Below is more information regarding existing, interim, and ultimate drainage conditions.

VII. EXISTING CONDITION

The existing condition is defined as the project site undeveloped and the offsite watershed in its current state. The existing condition hydrology for the project site was performed in the Summerlin West Study and is included in Appendix C. Therefore, no additional hydrological analysis has been performed for the existing condition of the project site.

VIII. INTERIM CONDITION

The interim condition is defined as the project site developed and the offsite watershed in its current state. The interim condition assumes the conditions stated in the existing conditions along with adjacent roadways Far Hills Drive and Sky Vista Drive being fully developed. All runoff from the proposed development will discharge into proposed storm drain inlets which will convey runoff to the existing 36” RCP lateral in Far Hills Drive. The flow rates for the onsite basins have been determined using prorated flow rates from the Master Drainage Study for Village 25. Prorated flow rates are located in Appendix A. The interim condition has been shown on Figure 5 located in Appendix D.

IX. ULTIMATE CONDITION

The ultimate condition is defined as the project developed and the offsite watershed also developed, as previously established in the master studies for the area: Summerlin West MPU and Master Drainage Study for Summerlin Village 25. The Master Drainage Study for Village 25 provides ultimate condition drainage map for the project area. Therefore, a site specific ultimate condition hydrology analysis is not necessary for this study. Refer to Appendix C for the ultimate condition hydrologic analysis for this project area.

X. SURFACE HYDRAULICS

Hydraulic cross sections have been prepared or referenced to show the water surface elevations at key locations throughout the project site and along the perimeter. The hydraulics for each section have been analyzed to determine if the proposed improvements are adequately raised above or flood protected against the adjacent water surface elevations and to ensure the proposed improvements do not adversely impact the existing improvements downstream of the project site. Refer to Figure 5 for the location of each hydraulic section. The results of the surface hydraulic analysis shows that the proposed improvements are adequately raised above the adjacent water surface elevations and the proposed improvements do not adversely impact the existing downstream improvements.

XI. STORM DRAIN DESIGN AND HYDRAULICS

The proposed residential development will construct three storm drain branches that will combine and discharge into the existing storm drain lateral in Far Hill Drive. The storm drain branches have been modeled with WSPG and the results are located in Appendix B. The proposed storm drain systems will meet all City of Las Vegas drainage requirements and CCRFCD storm drain criteria.

XII. FLOOD PROTECTION AND FINISH FLOOR ELEVATION

All finished floor elevations proposed for this project will meet CCRFCD finish floor criteria. The building lots have been raised above twice the depth of flow in the adjacent flow lines. Additionally, all finished floor elevations have been elevated 18-inches above the adjacent top of curb elevations.

XIII. CONCLUSIONS AND RECOMMENDATIONS

1. Methodology used in this report is in compliance with the Clark County Regional Flood Control District (CCRFCD) criteria.

2. The project site lies within a Zone X.

3. The project site is adjacent to CCRFCD facilities APFH0089 and APFH0144. APFH0089 is described as an existing 8'x6' RCB and APFH0144 is described as a proposed 5'x4' RCB. However, the project is not considered regionally significant.

4. The development of the project site, as proposed, does not adversely impact the downstream facilities.

XIV. REFERENCES

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

2. *CCRFCD 2018 Las Vegas Valley Master Plan Update*. 2018.

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

4. VTN Nevada. *Update #2 to the Flood Control Master Plan Update for Summerlin West Planning Area.* December 2019.

5. VTN Nevada. *Master Conceptual Drainage Study for Summerlin West Village 25.* February 2019.

Summerlin Village 25 - Parcel D

Appendix A. Hydrologic Calculations

1. Summerlin Village 25 – Parcel D Prorated Flow Rate Calculations

Appendix B. Hydraulic Calculations

1. Hydraulic Sections
2. Inlet Calculations
3. WSPGW Models
4. Lateral Calculations

Appendix C. Reference Material

1. *Flood Control Master Plan Update for Summerlin West Planning Area*
2. *Master Conceptual Drainage Study for Summerlin West Village 25*

Appendix D. Figures

1. Figure 1 - Vicinity Map
2. Figure 2 - FEMA FIRMette Panel 32003C2545F
3. Figure 3 - CCRFCD Las Vegas Valley Flood Control Master Plan Update Subbasin Map
4. Figure 4 - CCRFCD Las Vegas Valley Flood Control Master Plan Update Facility Map
5. Figure 5 - Proposed Condition Onsite Drainage Map

APPENDIX A

Hydrologic Calculations

Summerlin Village 25 – Parcel D Prorated Flow Rate Calculations

SUMMERLIN
VILLAGE 25
PARCEL D

PRORATED FLOW RATES

PRORATED FLOW RATE SUMMARY			
Onsite Parent Basins			
Subbasin	Q_{100} (cfs)	Area (acres)	cfs/acre
*D	105	27.15	3.87
Onsite Prorated Basins			
Subbasin	Q_{100} (cfs)	Area (acres)	cfs/acre
D-1	16	4.24	3.87
D-2	24	6.14	3.87
D-3	7	1.75	3.87
D-4	8	2.07	3.87
D-5	8	2.11	3.87
D-6	14	3.52	3.87
D-7	10	2.70	3.87
D-8	9	2.30	3.87
D-9	9	2.32	3.87
TOTAL	**105**	**27.15**	**N/A**

APPENDIX B

Hydraulic Calculations

Hydraulic Sections

Cross Section for Section 1 - Sunset Virga

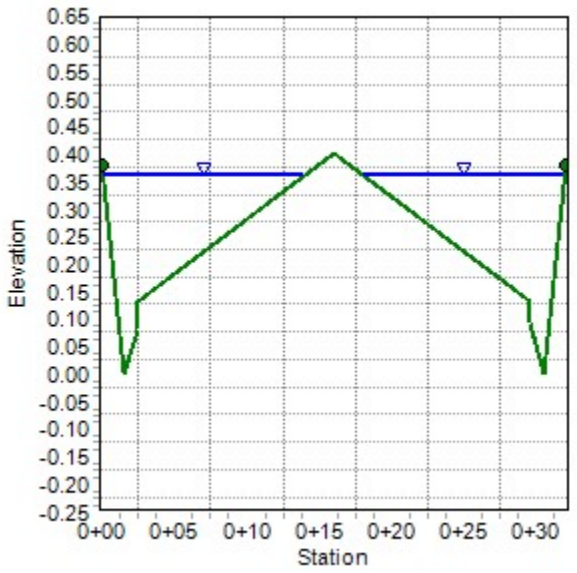
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	3.00	%
Normal Depth	0.36	ft
Discharge	16.00	ft³/s

Cross Section Image



Worksheet for Section 1 - Sunset Virga

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	3.00	%
Discharge	16.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.36	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	3.78	ft²
Wetted Perimeter	27.98	ft

Worksheet for Section 1 - Sunset Virga

Results

Hydraulic Radius		0.14	ft
Top Width		27.79	ft
Normal Depth		0.36	ft
Critical Depth		0.44	ft
Critical Slope		0.00649	ft/ft
Velocity		4.24	ft/s
Velocity Head		0.28	ft
Specific Energy		0.64	ft
Froude Number		2.03	
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	0.36	ft
Critical Depth	0.44	ft
Channel Slope	3.00	%
Critical Slope	0.00649	ft/ft

Cross Section for Section 2 - Sunset Virga

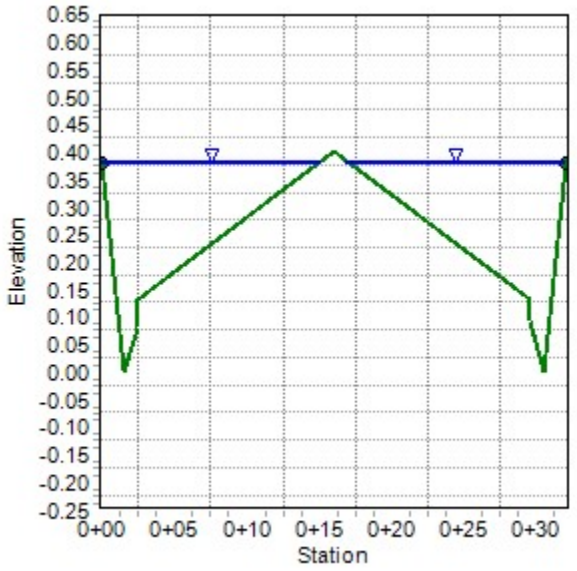
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	4.31	%
Normal Depth	0.38	ft
Discharge	24.00	ft³/s

Cross Section Image



Worksheet for Section 2 - Sunset Virga

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	4.31	%
Discharge	24.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.38	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	4.47	ft²
Wetted Perimeter	30.54	ft

Worksheet for Section 2 - Sunset Virga

Results

Hydraulic Radius		0.15	ft
Top Width		30.34	ft
Normal Depth		0.38	ft
Critical Depth		0.50	ft
Critical Slope		0.00596	ft/ft
Velocity		5.37	ft/s
Velocity Head		0.45	ft
Specific Energy		0.83	ft
Froude Number		2.46	
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	0.38	ft
Critical Depth	0.50	ft
Channel Slope	4.31	%
Critical Slope	0.00596	ft/ft

Cross Section for Section 2.1 - Desert Bloom Min Slope

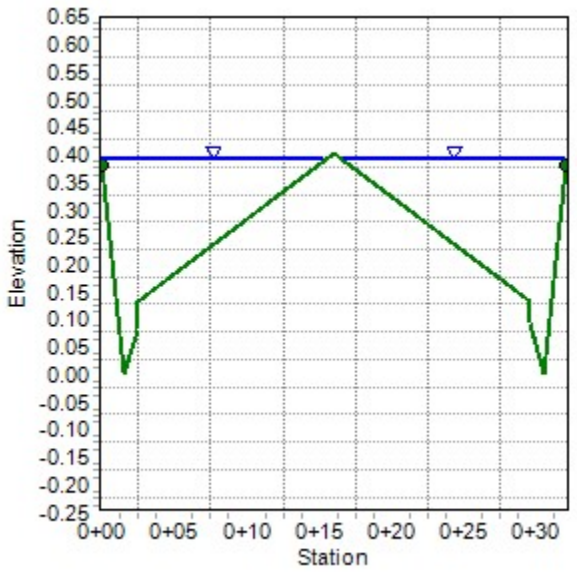
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	4.12	%
Normal Depth	0.39	ft
Discharge	24.00	ft³/s

Cross Section Image



Worksheet for Section 2.1 - Desert Bloom Min Slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	4.12	%
Discharge	24.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.39	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	4.55	ft²
Wetted Perimeter	30.80	ft

Worksheet for Section 2.1 - Desert Bloom Min Slope

Results

Hydraulic Radius		0.15	ft
Top Width		30.59	ft
Normal Depth		0.39	ft
Critical Depth		0.50	ft
Critical Slope		0.00596	ft/ft
Velocity		5.28	ft/s
Velocity Head		0.43	ft
Specific Energy		0.82	ft
Froude Number		2.41	
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	0.39	ft
Critical Depth	0.50	ft
Channel Slope	4.12	%
Critical Slope	0.00596	ft/ft

Cross Section for Section 2.1 - Desert Bloom Max Slope

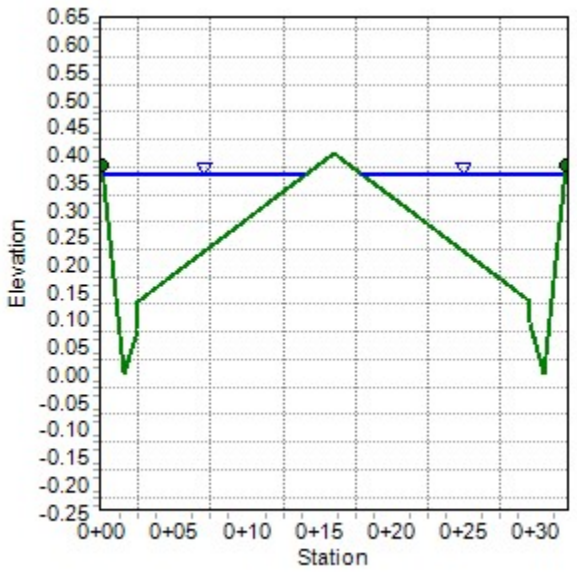
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.50	%
Normal Depth	0.36	ft
Discharge	24.00	ft³/s

Cross Section Image



Worksheet for Section 2.1 - Desert Bloom Max Slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.50	%
Discharge	24.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.36	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	3.83	ft²
Wetted Perimeter	28.19	ft

Worksheet for Section 2.1 - Desert Bloom Max Slope

Results

Hydraulic Radius		0.14	ft
Top Width		28.00	ft
Normal Depth		0.36	ft
Critical Depth		0.50	ft
Critical Slope		0.00596	ft/ft
Velocity		6.26	ft/s
Velocity Head		0.61	ft
Specific Energy		0.97	ft
Froude Number		2.98	
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	0.36	ft
Critical Depth	0.50	ft
Channel Slope	6.50	%
Critical Slope	0.00596	ft/ft

Cross Section for Section 2.1 - Desert Bloom @ Inlet

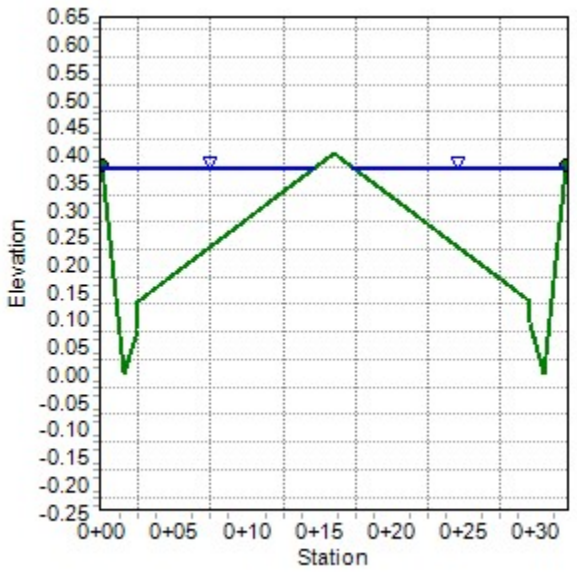
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	5.05	%
Normal Depth	0.37	ft
Discharge	24.00	ft³/s

Cross Section Image



Worksheet for Section 2.1 - Desert Bloom @ Inlet

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	5.05	%
Discharge	24.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.37	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	4.22	ft²
Wetted Perimeter	29.64	ft

Worksheet for Section 2.1 - Desert Bloom @ Inlet

Results

Hydraulic Radius		0.14	ft
Top Width		29.45	ft
Normal Depth		0.37	ft
Critical Depth		0.50	ft
Critical Slope		0.00596	ft/ft
Velocity		5.69	ft/s
Velocity Head		0.50	ft
Specific Energy		0.88	ft
Froude Number		2.65	
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	5.05	%
Critical Slope	0.00596	ft/ft

Cross Section for Section 3 - Cactus Sunrise

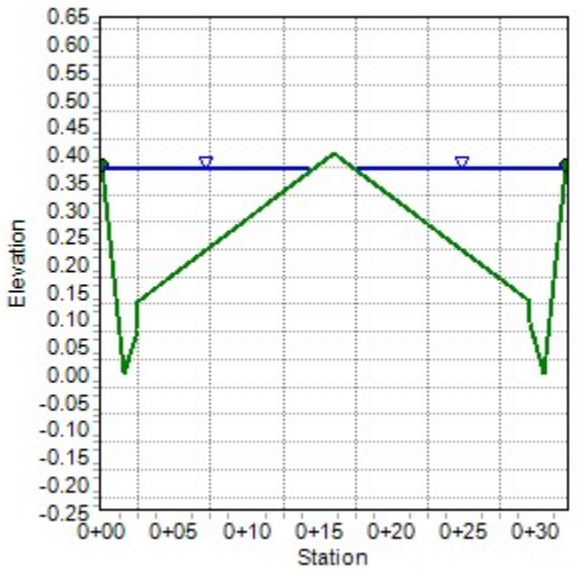
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50	%
Normal Depth	0.37	ft
Discharge	7.00	ft³/s

Cross Section Image



Worksheet for Section 3 - Cactus Sunrise

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50	%
Discharge	7.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.37	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	3.98	ft²
Wetted Perimeter	28.75	ft

Worksheet for Section 3 - Cactus Sunrise

Results

Hydraulic Radius		0.14	ft
Top Width		28.55	ft
Normal Depth		0.37	ft
Critical Depth		0.35	ft
Critical Slope		0.00744	ft/ft
Velocity		1.76	ft/s
Velocity Head		0.05	ft
Specific Energy		0.41	ft
Froude Number		0.83	
Flow Type	Subcritical		

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	0.35	ft
Channel Slope	0.50	%
Critical Slope	0.00744	ft/ft

Cross Section for Section 4 - Cactus Sunrise

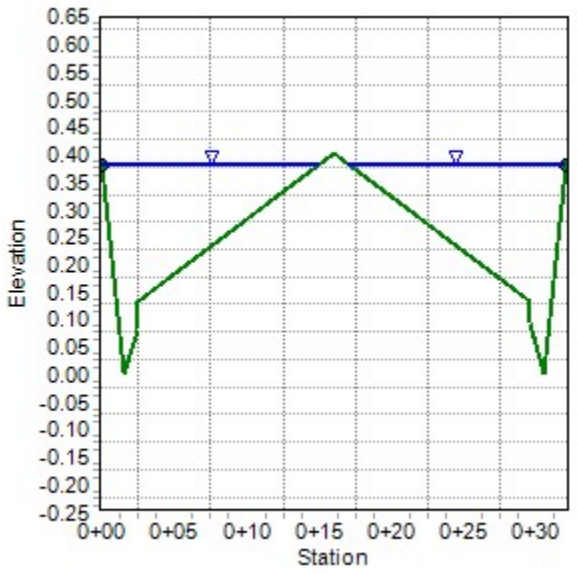
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50	%
Normal Depth	0.38	ft
Discharge	8.00	ft³/s

Cross Section Image



Worksheet for Section 4 - Cactus Sunrise

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50	%
Discharge	8.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.38	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	4.40	ft²
Wetted Perimeter	30.30	ft

Worksheet for Section 4 - Cactus Sunrise

Results

Hydraulic Radius		0.15	ft
Top Width		30.10	ft
Normal Depth		0.38	ft
Critical Depth		0.36	ft
Critical Slope		0.00731	ft/ft
Velocity		1.82	ft/s
Velocity Head		0.05	ft
Specific Energy		0.43	ft
Froude Number		0.84	
Flow Type	Subcritical		

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	0.38	ft
Critical Depth	0.36	ft
Channel Slope	0.50	%
Critical Slope	0.00731	ft/ft

Cross Section for Section 5 - Cactus Sunrise Min Slope

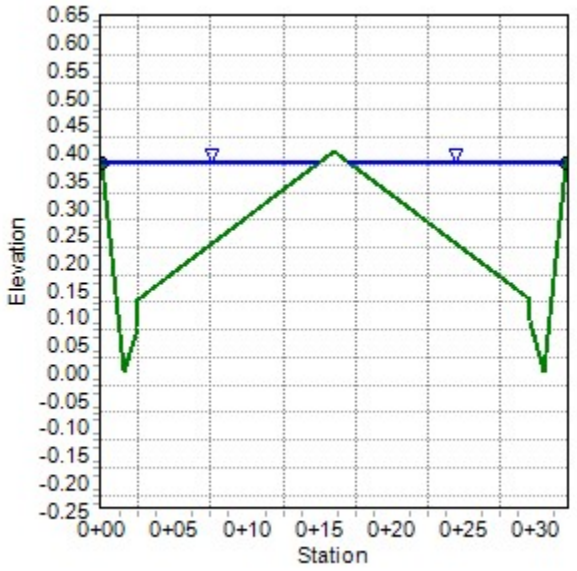
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50	%
Normal Depth	0.38	ft
Discharge	8.00	ft³/s

Cross Section Image



Worksheet for Section 5 - Cactus Sunrise Min Slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50	%
Discharge	8.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.38	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	4.40	ft²
Wetted Perimeter	30.30	ft

Worksheet for Section 5 - Cactus Sunrise Min Slope

Results

Hydraulic Radius		0.15	ft
Top Width		30.10	ft
Normal Depth		0.38	ft
Critical Depth		0.36	ft
Critical Slope		0.00731	ft/ft
Velocity		1.82	ft/s
Velocity Head		0.05	ft
Specific Energy		0.43	ft
Froude Number		0.84	
Flow Type	Subcritical		

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	0.38	ft
Critical Depth	0.36	ft
Channel Slope	0.50	%
Critical Slope	0.00731	ft/ft

Cross Section for Section 5 - Cactus Sunrise Max Slope

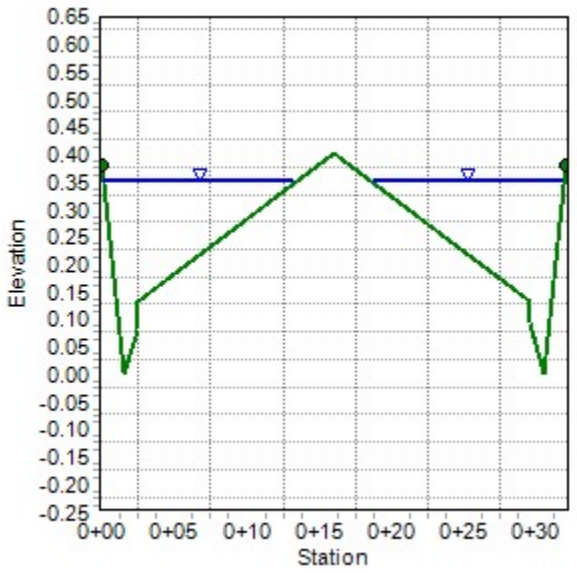
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	1.00	%
Normal Depth	0.35	ft
Discharge	8.00	ft³/s

Cross Section Image



Worksheet for Section 5 - Cactus Sunrise Max Slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	1.00	%
Discharge	8.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.35	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	3.39	ft²
Wetted Perimeter	26.41	ft

Worksheet for Section 5 - Cactus Sunrise Max Slope

Results

Hydraulic Radius		0.13	ft
Top Width		26.22	ft
Normal Depth		0.35	ft
Critical Depth		0.36	ft
Critical Slope		0.00731	ft/ft
Velocity		2.36	ft/s
Velocity Head		0.09	ft
Specific Energy		0.43	ft
Froude Number		1.16	
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	0.35	ft
Critical Depth	0.36	ft
Channel Slope	1.00	%
Critical Slope	0.00731	ft/ft

Cross Section for Section 6 - Sagecrest Min Slope

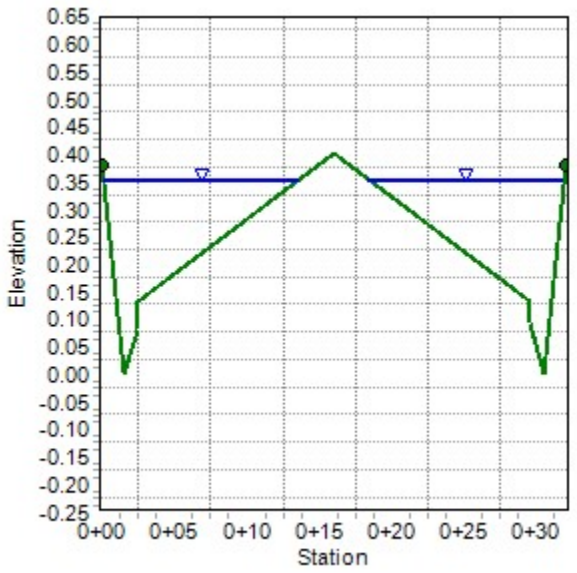
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	2.60	%
Normal Depth	0.35	ft
Discharge	14.00	ft³/s

Cross Section Image



Worksheet for Section 6 - Sagecrest Min Slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	2.60	%
Discharge	14.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.35	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	3.60	ft²
Wetted Perimeter	27.28	ft

Worksheet for Section 6 - Sagecrest Min Slope

Results

Hydraulic Radius		0.13	ft
Top Width		27.09	ft
Normal Depth		0.35	ft
Critical Depth		0.43	ft
Critical Slope		0.00667	ft/ft
Velocity		3.89	ft/s
Velocity Head		0.24	ft
Specific Energy		0.59	ft
Froude Number		1.88	
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	0.35	ft
Critical Depth	0.43	ft
Channel Slope	2.60	%
Critical Slope	0.00667	ft/ft

Cross Section for Section 6 - Sagecrest Max Slope

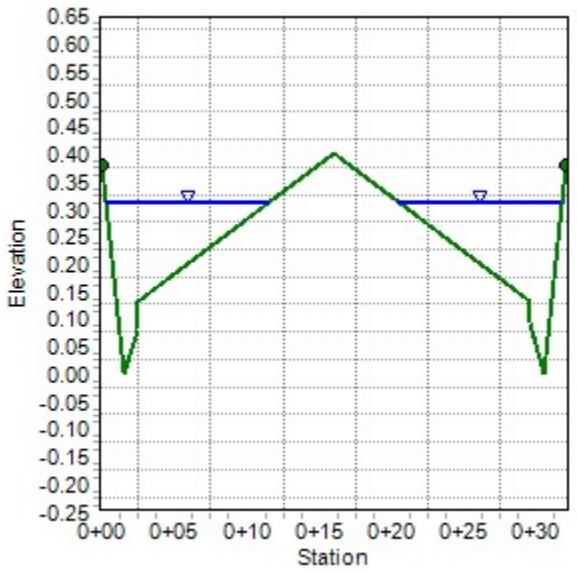
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.50	%
Normal Depth	0.31	ft
Discharge	14.00	ft³/s

Cross Section Image



Worksheet for Section 6 - Sagecrest Max Slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	6.50	%
Discharge	14.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.31	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	2.54	ft²
Wetted Perimeter	22.65	ft

Worksheet for Section 6 - Sagecrest Max Slope

Results

Hydraulic Radius		0.11	ft
Top Width		22.47	ft
Normal Depth		0.31	ft
Critical Depth		0.43	ft
Critical Slope		0.00667	ft/ft
Velocity		5.51	ft/s
Velocity Head		0.47	ft
Specific Energy		0.78	ft
Froude Number		2.89	
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	0.31	ft
Critical Depth	0.43	ft
Channel Slope	6.50	%
Critical Slope	0.00667	ft/ft

Cross Section for Section 7 - Stone Cactus

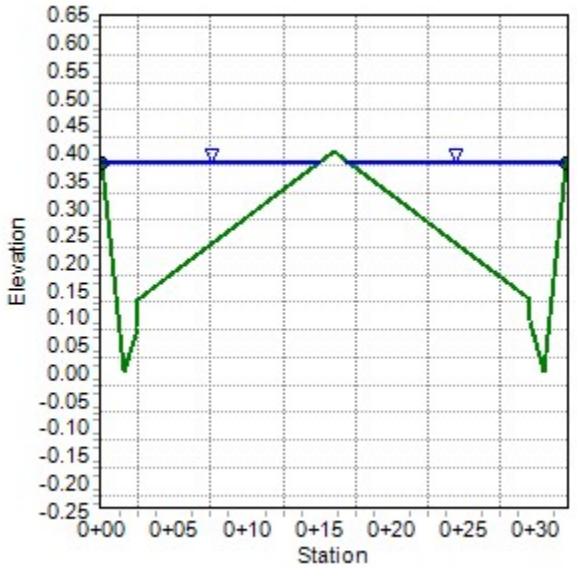
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.75	%
Normal Depth	0.38	ft
Discharge	10.00	ft³/s

Cross Section Image



Worksheet for Section 7 - Stone Cactus

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.75	%
Discharge	10.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.38	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	4.47	ft²
Wetted Perimeter	30.53	ft

Worksheet for Section 7 - Stone Cactus

Results

Hydraulic Radius		0.15	ft
Top Width		30.33	ft
Normal Depth		0.38	ft
Critical Depth		0.39	ft
Critical Slope		0.00710	ft/ft
Velocity		2.24	ft/s
Velocity Head		0.08	ft
Specific Energy		0.46	ft
Froude Number		1.03	
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	0.38	ft
Critical Depth	0.39	ft
Channel Slope	0.75	%
Critical Slope	0.00710	ft/ft

Cross Section for Section 8 - Mojave Yuca

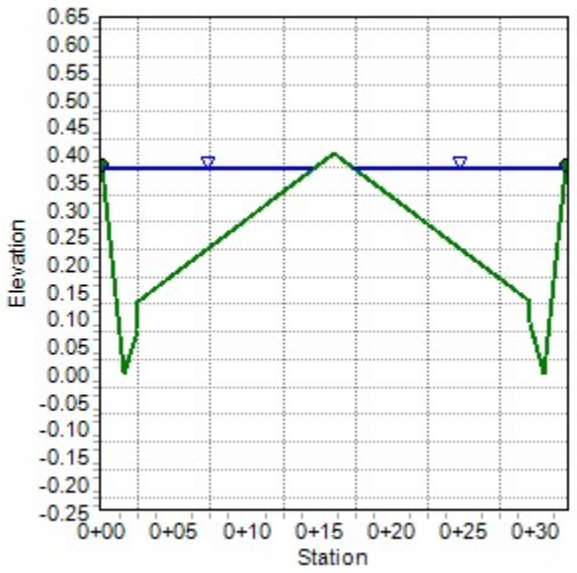
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.74	%
Normal Depth	0.37	ft
Discharge	9.00	ft³/s

Cross Section Image



Worksheet for Section 8 - Mojave Yuca

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.74	%
Discharge	9.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.37	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	4.15	ft²
Wetted Perimeter	29.39	ft

Worksheet for Section 8 - Mojave Yuca

Results

Hydraulic Radius		0.14	ft
Top Width		29.20	ft
Normal Depth		0.37	ft
Critical Depth		0.37	ft
Critical Slope		0.00720	ft/ft
Velocity		2.17	ft/s
Velocity Head		0.07	ft
Specific Energy		0.45	ft
Froude Number		1.01	
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	0.37	ft
Channel Slope	0.74	%
Critical Slope	0.00720	ft/ft

Cross Section for Section 9 - Mojave Yuca Min Slope

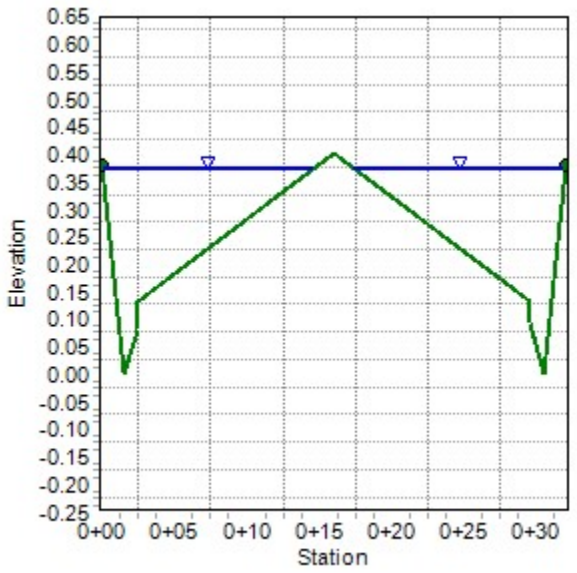
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.74	%
Normal Depth	0.37	ft
Discharge	9.00	ft³/s

Cross Section Image



Worksheet for Section 9 - Mojave Yuca Min Slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.74	%
Discharge	9.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.37	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	4.15	ft²
Wetted Perimeter	29.39	ft

Worksheet for Section 9 - Mojave Yuca Min Slope

Results

Hydraulic Radius		0.14	ft
Top Width		29.20	ft
Normal Depth		0.37	ft
Critical Depth		0.37	ft
Critical Slope		0.00720	ft/ft
Velocity		2.17	ft/s
Velocity Head		0.07	ft
Specific Energy		0.45	ft
Froude Number		1.01	
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	0.37	ft
Channel Slope	0.74	%
Critical Slope	0.00720	ft/ft

Cross Section for Section 9 - Mojave Yuca Max Slope

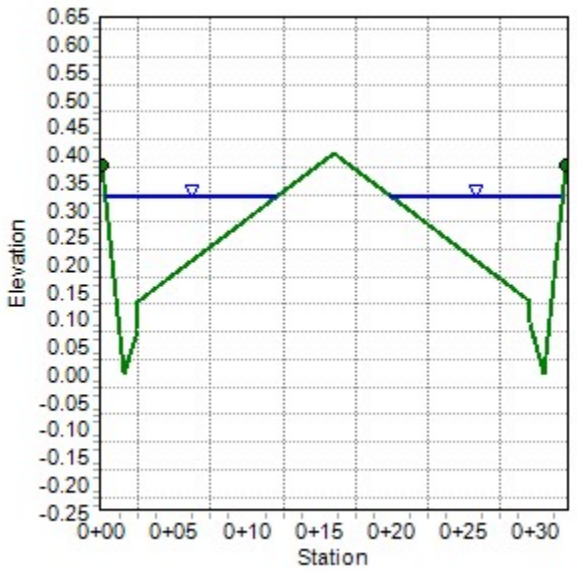
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	2.00	%
Normal Depth	0.32	ft
Discharge	9.00	ft³/s

Cross Section Image



Worksheet for Section 9 - Mojave Yuca Max Slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	2.00	%
Discharge	9.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.38
0+02	0.00
0+03	0.08
0+03	0.13
0+16	0.40
0+30	0.13
0+30	0.09
0+31	0.00
0+32	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.38)	(0+32, 0.38)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.32	ft
Elevation Range	0.00 to 0.40 ft	
Flow Area	2.84	ft²
Wetted Perimeter	24.06	ft

Worksheet for Section 9 - Mojave Yuca Max Slope

Results

Hydraulic Radius		0.12	ft
Top Width		23.88	ft
Normal Depth		0.32	ft
Critical Depth		0.37	ft
Critical Slope		0.00720	ft/ft
Velocity		3.17	ft/s
Velocity Head		0.16	ft
Specific Energy		0.48	ft
Froude Number		1.62	
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	0.32	ft
Critical Depth	0.37	ft
Channel Slope	2.00	%
Critical Slope	0.00720	ft/ft

Inlet Calculations

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Drop Inlet Sizing Calculation

Project Name: Summerlin Village 25 Parcel D
By: CB
Date: 03/18/2020

Drop Inlet Sizing in Sump

10.0-ft. Type DM2

DI#1

Known:

Q=	Design Flow	16.0	cfs
D_p=	Ponding Depth at Inlet	0.5	ft
W=	Grate Width	1.5	ft
L_g=	Length of Grate	7.5	ft
L_c=	Length of Curb Opening	10.0	ft
H_c=	Curb Opening Height	0.5	ft
C_{wc}=	Weir coefficient for curb opening	2.3	
C_{wg}=	Weir coefficient for grate	3.0	
C_o=	Orifice coefficient	0.67	
R_o=	Grate opening factor	0.60	
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

P_g=	Active grate weir length (agwl) = 2*W+Lg	10.50	ft
P_{agl}	Adjusted agwl = 2*(1-Cfg/100)*W+Lg	9.00	ft
A_g=	Grate area = W*L_g	11.25	ft^2
A_{aga}=	Adjusted open grate area = Ag*Ro*(1-Cfg/100)	3.38	ft^2
	check - If Dp<1.792*Aaga/Pagl; weir; else orifice	weir	
Q_{ig}=	Flow intercepted by grate If "weir" controls Qig=Cwg*Pagl*$Dp^{1.5}$ If "orifice" controls Qig=Co*Aaga*$(64.4*Dp)^{0.5}$	9.5	cfs

Curb Opening Capacity Calculations

Pc =	Active curb opening weir length (acowl) = Lc+1.8*W	12.70	ft
Pacl	Adjusted acowl = Lc+1.8*(1-Cfc/100)*W	11.35	ft
Ac=	curb opening area (coa) = Lc*Hc	5.00	ft^2
A_{aca}=	Adjusted coa = Ac*(1-Cfc/100)	2.50	ft^2
	check - If Dp<Hc; weir; else orifice	orifice	
Qic=	Flow intercepted by curb opening If "weir" controls Qic=Cwc*Pacl*Dp1.5 If "orifice" controls Qic=Co*Aaca*(64.4*Dp-Hc/2)0.5	9.5	cfs

Total Inlet Calculations

Qti =	Flow Interception Capacity = Qig+Qic	19.0	cfs
q =	Interception per unit ratio = Q_{ti}/L_g	1.90	cfs/ft

Actual Flow Collected by Drop Inlet 16 cfs

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Drop Inlet Sizing Calculation

Project Name: Summerlin Village 25 Parcel D
By: CB
Date: 03/18/2020

Drop Inlet Sizing on a Continuous Grade

(2) 20-ft Type DM2
DI #2 & DI #2.1

Known:

Q_s=	Street Flow	12.0	cfs
S_o=	Longitudinal Slope	0.0505	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	5.69	fps
D=	Flow Depth	0.37	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	17.5	ft
L_c=	Length of Curb Opening	20.0	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

R_f=	Frontal flow factor = 1-0.09*(V_s-V_o) if V_s>V_o; else R_f=1	1.00	
	V_o= Splash over velocity=p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3†	14.70	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.23	
	Q_w= Frontal flow=A_w*V_s	2.80	cfs
	Q_x= Side flow = Q_s-Q_w	9.20	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.46	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	7.0	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.087	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = 0.60*$Q_s^{0.42}$*$So^{0.30}$*(1/n*S_e)$^{0.6}$	36.08	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	5.3	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**12.0**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**0.0**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.60	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	100	%

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Drop Inlet Sizing Calculation

Project Name: Summerlin Village 25 Parcel D
By: CB
Date: 03/18/2020

Drop Inlet Sizing on a Continuous Grade

(2) 7.5-ft Type DM2
DI #3 & DI #3.1

Known:

Q_s=	Street Flow	3.5	cfs
S_o=	Longitudinal Slope	0.005	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	1.76	fps
D=	Flow Depth	0.37	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	5.0	ft
L_c=	Length of Curb Opening	7.5	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

R_f=	Frontal flow factor = 1-0.09*(V_s-V_o) if V_s>V_o; else R_f=1	1.00	
	V_o= Splash over velocity=p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3†	7.22	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.25	
	Q_w= Frontal flow=A_w*V_s	0.87	cfs
	Q_x= Side flow = Q_s-Q_w	2.63	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.28	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	1.6	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.091	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = 0.60*$Q_s^{0.42}$*$So^{0.30}$*(1/n*S_e)$^{0.6}$	10.46	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	1.9	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**3.5**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**0.0**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.47	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	100	%

ENGINEERS \ SURVEYORS

Drop Inlet Sizing Calculation

Project Name: Summerlin Village 25 Parcel D
By: CB
Date: 03/18/2020

Drop Inlet Sizing on a Continuous Grade

(2) 7.5-ft Type DM2
DI #3 & DI #3.1

Known:

Q_s=	Street Flow	4.0	cfs
S_o=	Longitudinal Slope	0.005	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	1.82	fps
D=	Flow Depth	0.38	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	5.0	ft
L_c=	Length of Curb Opening	7.5	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

R_f=	Frontal flow factor = 1-0.09*(V_s-V_o) if V_s>V_o; else R_f=1	1.00	
	V_o= Splash over velocity=p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3†	7.22	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.23	
	Q_w= Frontal flow=A_w*V_s	0.92	cfs
	Q_x= Side flow = Q_s-Q_w	3.08	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.27	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	1.8	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.086	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = 0.60*$Q_s^{0.42}$*$So^{0.30}$*(1/n*S_e)$^{0.6}$	11.42	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	2.0	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**3.8**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**0.2**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.51	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	95	%

ENGINEERS \ SURVEYORS

Drop Inlet Sizing Calculation

Project Name: Summerlin Village 25 Parcel D
By: CB
Date: 03/18/2020

Drop Inlet Sizing in Sump

5-ft. Type DM2
DI#5

Known:

Q=	Design Flow	8.0	cfs
D_p=	Ponding Depth at Inlet	0.5	ft
W=	Grate Width	1.5	ft
L_g=	Length of Grate	2.5	ft
L_c=	Length of Curb Opening	5.0	ft
H_c=	Curb Opening Height	0.5	ft
C_{wc}=	Weir coefficient for curb opening	2.3	
C_{wg}=	Weir coefficient for grate	3.0	
C_o=	Orifice coefficient	0.67	
R_o=	Grate opening factor	0.60	
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

P_g=	Active grate weir length (agwl) = 2*W+Lg	5.50	ft
P_{agl}	Adjusted agwl = 2*(1-Cfg/100)*W+Lg	4.00	ft
A_g=	Grate area = W*L_g	3.75	ft^2
A_{aga}=	Adjusted open grate area = Ag*Ro*(1-Cfg/100)	1.13	ft^2
	check - If Dp<1.792*Aaga/Pagl; weir; else orifice	weir	
Q_{ig}=	Flow intercepted by grate If "weir" controls Qig=Cwg*Pagl*$Dp^{1.5}$ If "orifice" controls Qig=Co*Aaga*$(64.4*Dp)^{0.5}$	4.2	cfs

Curb Opening Capacity Calculations

Pc =	Active curb opening weir length (acowl) = Lc+1.8*W	7.70	ft
Pacl	Adjusted acowl = Lc+1.8*(1-Cfc/100)*W	6.35	ft
Ac=	curb opening area (coa) = Lc*Hc	2.50	ft^2
A_{aca}=	Adjusted coa = Ac*(1-Cfc/100)	1.25	ft^2
	check - If Dp<Hc; weir; else orifice	orifice	
Qic=	Flow intercepted by curb opening If "weir" controls Qic=Cwc*Pacl*Dp1.5 If "orifice" controls Qic=Co*Aaca*(64.4*Dp-Hc/2)0.5	4.7	cfs

Total Inlet Calculations

Qti =	Flow Interception Capacity = Qig+Qic	9.0	cfs
q =	Interception per unit ratio = Q_{ti}/L_g	1.80	cfs/ft

Actual Flow Collected by Drop Inlet 8 cfs

ENGINEERS \ SURVEYORS

Drop Inlet Sizing Calculation

Project Name: Summerlin Village 25 Parcel D
By: CB
Date: 03/18/2020

Drop Inlet Sizing on a Continuous Grade

(2) 15-ft Type DM2
DI #6 & DI #6.1

Known:

Q_s=	Street Flow	7.0	cfs
S_o=	Longitudinal Slope	0.026	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	3.89	fps
D=	Flow Depth	0.35	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	12.5	ft
L_c=	Length of Curb Opening	15.0	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

R_f=	Frontal flow factor = 1-0.09*(V_s-V_o) if V_s>V_o; else R_f=1	1.00	
	V_o= Splash over velocity=p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3†	11.01	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.26	
	Q_w= Frontal flow=A_w*V_s	1.80	cfs
	Q_x= Side flow = Q_s-Q_w	5.20	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.44	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	4.1	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.093	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = 0.60*$Q_s^{0.42}$*$So^{0.30}$*(1/n*S_e)$^{0.6}$	22.55	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	3.6	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**7.0**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**0.0**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.47	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	100	%

ENGINEERS \ SURVEYORS

Drop Inlet Sizing Calculation

Project Name: Summerlin Village 25 Parcel D
By: CB
Date: 03/18/2020

Drop Inlet Sizing on a Continuous Grade

(2) 10-ft Type DM2
DI #7 & DI #7.1

Known:

Q_s=	Street Flow	5.0	cfs
S_o=	Longitudinal Slope	0.0075	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	2.24	fps
D=	Flow Depth	0.38	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	7.5	ft
L_c=	Length of Curb Opening	10.0	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

R_f=	Frontal flow factor = 1-0.09*(V_s-V_o) if V_s>V_o; else R_f=1	1.00	
	V_o= Splash over velocity=p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3†	8.71	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.23	
	Q_w= Frontal flow=A_w*V_s	1.14	cfs
	Q_x= Side flow = Q_s-Q_w	3.86	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.39	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	2.7	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.085	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = 0.60*$Q_s^{0.42}$*$So^{0.30}$*(1/n*S_e)$^{0.6}$	14.27	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	2.7	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**5.0**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**0.0**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.50	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	100	%

ENGINEERS \ SURVEYORS

Drop Inlet Sizing Calculation

Project Name: Summerlin Village 25 Parcel D
By: CB
Date: 03/18/2020

Drop Inlet Sizing on a Continuous Grade

(2) 10-ft Type DM2
DI #8 & DI #8.1

Known:

Q_s=	Street Flow	4.5	cfs
S_o=	Longitudinal Slope	0.0074	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	2.17	fps
D=	Flow Depth	0.37	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	7.5	ft
L_c=	Length of Curb Opening	10.0	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

R_f=	Frontal flow factor = $1-0.09*(V_s-V_o)$ if $V_s>V_o$; else $R_f=1$	1.00	
	V_o= Splash over velocity=$p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3$†	8.71	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.24	
	Q_w= Frontal flow=A_w*V_s	1.07	cfs
	Q_x= Side flow = Q_s-Q_w	3.43	cfs
R_s=	Side flow factor = $1/(1+(0.15*V_s^{1.8})/(S_x*(L_g*(1-C_{fg}/100))^{2.3}))$	0.41	
Q_{ig}=	Flow intercepted = $[R_f*E_o+R_s*(1-E_o)]*Q_s$	2.5	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.088	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = $0.60*Q_s^{0.42}*So^{0.30}*(1/n*S_e)^{0.6}$	13.33	ft
Q_{ic}=	Flow intercepted = $(1-(1-(L_c*(1-C_{fc}/100))/L_t)^{1.8})*Q_s$	2.6	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = $Q_{ig}+Q_{ic}$**	**4.5**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**0.0**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.45	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	100	%

ENGINEERS \ SURVEYORS

Drop Inlet Sizing Calculation

Project Name: Summerlin Village 25 Parcel D
By: CB
Date: 03/18/2020

Drop Inlet Sizing on a Continuous Grade

(2) 10-ft Type DM2
DI #9 & DI #9.1

Known:

Q_s=	Street Flow	4.5	cfs
S_o=	Longitudinal Slope	0.02	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	3.17	fps
D=	Flow Depth	0.32	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	7.5	ft
L_c=	Length of Curb Opening	10.0	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

R_f=	Frontal flow factor = 1-0.09*(V_s-V_o) if V_s>V_o; else R_f=1	1.00	
	V_o= Splash over velocity=p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3†	8.71	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.29	
	Q_w= Frontal flow=A_w*V_s	1.32	cfs
	Q_x= Side flow = Q_s-Q_w	3.18	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.26	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	2.1	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.104	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = 0.60*$Q_s^{0.42}$*$So^{0.30}$*(1/n*S_e)$^{0.6}$	16.23	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	2.2	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**4.3**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**0.2**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.43	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	96	%

WSPGW Models

```
T1  Summerlin Village 25 - Parcel D

T2  Pulte Homes - Mainline

T3  Starting HGL = Top of Pipe
SO   1000.00 3494.13   4                          3497.13
R    1029.00 3494.71   4      .013                                          1
TS   1029.01 3494.71   4      .013
WE   1029.01 3494.71   7
R    1145.29 3495.29   7      .013                                          1
JX   1145.30 3495.29   4  4  4.013    8.0     58.0  3495.29 3495.29   0.0-90.0
R    1220.32 3495.67   4      .013                                          1
TS   1220.33 3495.67   4      .013                                   7.0
R    1431.96 3496.73   4      .013                                          1
JX   1431.97 3496.73   4  2  2.013    4.0      4.0  3496.73 3496.73  45.0-90.0
R    1614.22 3497.64   4      .013                                          1
TS   1614.23 3497.64   4      .013                                   3.0
R    1754.54 3498.34   4      .013                                          1
JX   1754.55 3498.34   4  2  2.013    3.5      3.5  3498.34 3498.34  45.0-90.0
R    1927.61 3499.21   4      .013                                          1
TS   1927.62 3499.21   4      .013                                -41.0
R    1989.42 3499.70   4      .013                                          1
JX   1989.43 3499.70   4  2   .013   12.0           3501.20         -90.0
R    2026.62 3502.40   4      .013                                          1
          1
SH   2026.62 3502.40   4
CD   1  4   0    .000   1.500     .000  .000  .000   .00
CD   2  4   0    .000   2.000     .000  .000  .000   .00
CD   3  4   0    .000   2.500     .000  .000  .000   .00
CD   4  4   0    .000   3.000     .000  .000  .000   .00
CD   5  4   0    .000   3.500     .000  .000  .000   .00
CD   6  4   0    .000   4.000     .000  .000  .000   .00
CD   7  4   0    .000   4.500     .000  .000  .000   .00
Q          12.000
```

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	0		1.500														
CD	2	4	0		2.000														
CD	3	4	0		2.500														
CD	4	4	0		3.000														
CD	5	4	0		3.500														
CD	6	4	0		4.000														
CD	7	4	0		4.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
Summerlin Village 25 - Parcel D
HEADING LINE NO 2 IS -
Pulte Homes - Mainline
HEADING LINE NO 3 IS -
Starting HGL = Top of Pipe

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	3494.130	4	3497.130

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1029.000	3494.710	4	.013	.000	.000	.000	1

ELEMENT NO 3 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1029.010	3494.710	4	.013	.000	.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1029.010	3494.710	7	.500

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1145.290	3495.290	7	.013	.000	.000	.000	1

ELEMENT NO 6 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1145.300	3495.290	4	4	4	.013	8.000	58.000	3495.290	3495.290	.000	-90.000

RADIUS	ANGLE
.000	.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1220.320	3495.670	4	.013	.000	.000	.000	1

ELEMENT NO 8 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1220.330	3495.670	4	.013	.082	7.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1431.960	3496.730	4	.013	.000	.000	.000	1

ELEMENT NO 10 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1431.970	3496.730	4	2	2	.013	4.000	4.000	3496.730	3496.730	45.000	-90.000

RADIUS	ANGLE
.000	.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1614.220	3497.640	4	.013	.000	.000	.000	1

ELEMENT NO 12 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1614.230	3497.640	4	.013	.191	3.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 13 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1754.540	3498.340	4	.013	.000	.000	.000	1

ELEMENT NO 14 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1754.550	3498.340	4	2	2	.013	3.500	3.500	3498.340	3498.340	45.000	-90.000

RADIUS	ANGLE
.000	.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 15 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1927.610	3499.210	4	.013	.000	.000	.000	1

ELEMENT NO 16 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1927.620	3499.210	4	.013	.014	-41.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 17 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1989.420	3499.700	4	.013	.000	.000	.000	1

```
 ELEMENT NO  18 IS A JUNCTION          *         *     *     *                 *                  *              *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               1989.430 3499.700    4     2     0   .013    12.000      .000  3501.200      .000 -90.000     .000
                                                                                                 RADIUS    ANGLE
                                                                                                   .000    .000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
                                                  W S P G W                                                          PAGE NO   4
                           WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  19 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                               2026.620 3502.400    4               .013                           .000     .000      .000     1
 ELEMENT NO  20 IS A SYSTEM HEADWORKS                 *                     *
                    U/S DATA   STATION    INVERT  SECT                                  W S ELEV
                               2026.620 3502.400    4                                      .000
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Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 1-2020 Time: 1:52:34

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = Top of Pipe

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	
1000.000	3494.130	3.000	3497.130	105.00	14.85	3.43	3500.56	.00	2.91	.00	3.000	.000	.00	0 .0
29.000	.0200				.0248	.72	3.00	.00	3.00	.013	.00	.00	PIPE	
1029.000	3494.710	3.310	3498.020	105.00	14.85	3.43	3501.45	.00	2.91	.00	3.000	.000	.00	0 .0
TRANS STR	.0000				.0248	.00	3.31	.00		.013	.00	.00	PIPE	
1029.010	3494.710	3.310	3498.020	105.00	14.85	3.43	3501.45	.00	2.91	.00	3.000	.000	.00	0 .0
WALL	ENTRANCE													
1029.010	3494.710	7.435	3502.145	105.00	6.60	.68	3502.82	.00	3.01	.00	4.500	.000	.00	0 .0
116.280	.0050				.0029	.33	7.43	.00	2.92	.013	.00	.00	PIPE	
1145.290	3495.290	7.220	3502.510	105.00	6.60	.68	3503.19	.00	3.01	.00	4.500	.000	.00	0 .0
JUNCT STR	.0000				.0031	.00	7.22	.00		.013	.00	.00	PIPE	
1145.300	3495.290	8.488	3503.778	39.00	5.52	.47	3504.25	.00	2.03	.00	3.000	.000	.00	0 .0
75.020	.0051				.0034	.26	8.49	.00	2.07	.013	.00	.00	PIPE	
1220.320	3495.670	8.388	3504.058	39.00	5.52	.47	3504.53	.00	2.03	.00	3.000	.000	.00	0 .0
TRANS STR	.0000				.0034	.00	.00	.00		.013	.00	.00	PIPE	
1220.330	3495.670	8.388	3504.058	39.00	5.52	.47	3504.53	.00	2.03	.00	3.000	.000	.00	0 .0
211.630	.0050				.0034	.72	8.39	.00	2.08	.013	.00	.00	PIPE	
1431.960	3496.730	8.075	3504.805	39.00	5.52	.47	3505.28	.00	2.03	.00	3.000	.000	.00	0 .0
JUNCT STR	.0000				.0028	.00	8.08	.00		.013	.00	.00	PIPE	

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 1-2020 Time: 1:52:34

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = Top of Pipe

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	
1431.970	3496.730	8.408	3505.138	31.00	4.39	.30	3505.44	.00	1.80	.00	3.000	.000	.00	0 .0
182.250	.0050				.0022	.39	8.41	.00	1.78	.013	.00	.00	PIPE	
1614.220	3497.640	7.906	3505.546	31.00	4.39	.30	3505.84	.00	1.80	.00	3.000	.000	.00	0 .0
TRANS STR	.0000				.0022	.00	.00	.00		.013	.00	.00	PIPE	
1614.230	3497.640	7.906	3505.546	31.00	4.39	.30	3505.84	.00	1.80	.00	3.000	.000	.00	0 .0
140.310	.0050				.0022	.30	7.91	.00	1.78	.013	.00	.00	PIPE	
1754.540	3498.340	7.524	3505.865	31.00	4.39	.30	3506.16	.00	1.80	.00	3.000	.000	.00	0 .0
JUNCT STR	.0000				.0017	.00	7.52	.00		.013	.00	.00	PIPE	
1754.550	3498.340	7.752	3506.092	24.00	3.40	.18	3506.27	.00	1.58	.00	3.000	.000	.00	0 .0
173.060	.0050				.0013	.22	7.75	.00	1.51	.013	.00	.00	PIPE	
1927.610	3499.210	7.115	3506.324	24.00	3.40	.18	3506.50	.00	1.58	.00	3.000	.000	.00	0 .0
TRANS STR	.0000				.0013	.00	.00	.00		.013	.00	.00	PIPE	
1927.620	3499.210	7.115	3506.325	24.00	3.40	.18	3506.50	.00	1.58	.00	3.000	.000	.00	0 .0
61.800	.0079				.0013	.08	7.11	.00	1.33	.013	.00	.00	PIPE	
1989.420	3499.700	6.714	3506.414	24.00	3.40	.18	3506.59	.00	1.58	.00	3.000	.000	.00	0 .0

```
 JUNCT STR   .0000                                        .0008      .00    6.71     .00            .013       .00   .00  PIPE
         |         |        |         |         |               |         |       |        |        |       |       |       |
  1989.430  3499.700    6.982  3506.682     12.00    1.70     .04  3506.73     .00    1.10      .00    3.000     .000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-     -|-     -|-     -|-     -|-
    37.190    .0726                                    .0003      .01     6.98     .00     .53    .013       .00   .00  PIPE
♠ FILE: ParcelDMain1.WSW                    W S P G W - CIVILDESIGN Version 14.08                                      PAGE    3
                              Program Package Serial Number: 3074
                                            WATER SURFACE PROFILE LISTING                  Date: 4- 1-2020  Time: 1:52:34
                          Summerlin Village 25 - Parcel D
                            Pulte Homes - Mainline
                              Starting HGL = Top of Pipe
 ********************************************************************************************************************** ********
          | Invert  |  Depth |  Water  |    Q    |  Vel     Vel  |  Energy | Super |Critical|Flow Top|Height/|Base Wt|       |No Wth
  Station |  Elev   |  (FT)  |  Elev   |  (CFS)  | (FPS)    Head |  Grd.El.|  Elev | Depth  | Width  |Dia.-FT|or I.D.|  ZL   |Prs/Pip
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-     -|-     -|-     -|-    -|
  L/Elem  |Ch Slope |        |         |         |         SF Ave|    HF   |SE Dpth|Froude N|Norm Dp |  "N"  | X-Fall|  ZR   |Type Ch
 *********|*********|********|*********|*********|*******|*******|*********|*******|********|********|*******|*******|*****  |*******
          |         |        |         |         |               |         |       |        |        |       |       |       |
  2026.620  3502.400    4.297  3506.696     12.00    1.70     .04  3506.74     .00    1.10      .00    3.000     .000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-     -|-     -|-     -|-     -|-
♠
♠
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Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = Top of Pipe


```
   1000.00    .I                    H                       E                                                .    R

   1020.95    .                                                                                              .

   1041.90    .    I                    CH W                       E                                        .    TX

   1062.85    .    IYYYYYYYYYYYYYYYYYYYYCH W                       E                                        .    WE

   1083.81    .    I                     C          H                   W    E                              .    R

   1104.76    .                                                                                              .

   1125.71    .                                                                                              .

   1146.66    .         I                    C          H                   W    E                         .    JX

   1167.61    .         I              C     H                                      W   E                     .    R

   1188.56    .                                                                                              .

   1209.51    .                                                                                              .

   1230.47    .           I              C     H                                      W   E                     .    TX

   1251.42    .           I              C     H                                      W   E                     .    R

   1272.37    .                                                                                              .

   1293.32    .                                                                                              .

   1314.27    .                                                                                              .

   1335.22    .                                                                                              .

   1356.17    .                                                                                              .

   1377.13    .                                                                                              .
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1398.08   .                                                                .
1419.03   .                                                                .
1439.98   .                I             C      H                          W   E          .   JX
1460.93   .                I           C        H                             W E         .   R
1481.88   .                                                                .
1502.83   .                                                                .
1523.79   .                                                                .
1544.74   .                                                                .
1565.69   .                                                                .
1586.64   .                                                                .
1607.59   .                                                                .
1628.54   .                      I            C       H                       W E       .   TX
1649.49   .                      I            C       H                       W E       .   R
1670.45   .                                                                .
1691.40   .                                                                .
1712.35   .                                                                .
1733.30   .                                                                .
1754.25   .                                                                .
1775.20   .                           I           C        H                    W E    .   JX
1796.15   .                           I          C          H                    W E   .   R
1817.11   .                                                                .
1838.06   .                                                                .
1859.01   .                                                                .
1879.96   .                                                                .
1900.91   .                                                                .
1921.86   .                                                                .
1942.81   .                                 I          C          H                    W E .   TX
1963.77   .                                 I          C          H                    W E .   R
1984.72   .                                                                .
2005.67   .                                    I          C         H                     WE  .   JX
```

2026.62 . I C H W . R

3494.130 3495.391 3496.652 3497.913 3499.174 3500.435 3501.696 3502.957 3504.218 3505.479 3506.741

N O T E S
1. GLOSSARY
   I = INVERT ELEVATION
   C = CRITICAL DEPTH
   W = WATER SURFACE ELEVATION
   S = SUPER-ELEVATION
   H = HEIGHT OF CHANNEL
   E = ENERGY GRADE LINE
   X = CURVES CROSSING OVER
   B = BRIDGE ENTRANCE OR EXIT
   Y = WALL ENTRANCE OR EXIT
2. STATIONS FOR POINTS AT A JUMP MAY NOT BE PLOTTED EXACTLY

```
T1  Summerlin Village 25 - Parcel D

T2  Pulte Homes - Mainline

T3  Starting HGL = HGL @ Station 1145.30 of ParcelDMain1ine1 Model

SO   1145.29 3495.29   4                          3503.778
R    1191.71 3496.00   4      .013                                                  1
JX   1191.72 3496.00   4  2   .013    7.0           3497.00          60.0
R    1231.89 3496.94   4      .013                                                  1
JX   1231.90 3496.94   4  2   .013    7.0           3497.94         -37.0
R    1397.13 3501.90   3      .013                                                  1
JX   1397.14 3501.90   3  3   .013   18.0           3501.90          57.0
R    1588.70 3515.43   3      .013                                                  1
TS   1588.71 3515.43   2      .013                                   7.0
R    1695.40 3519.93   2      .013                                                  1
TS   1695.41 3519.93   2      .013                                  33.0
R    1732.69 3520.30   2      .013                                                  1
JX   1732.70 3520.30   2  2   .013   16.0           3520.30         -45.0       62.0
R    1951.34 3524.40   2      .013                                                  1
JX   1954.35 3524.40   2  2   .013    5.0           3525.40         -90.0       79.0
R    1980.79 3525.20   2      .013                                                  1
SH   1980.79 3525.20   2
CD   1  4   0    .000   1.500     .000  .000  .000   .00
CD   2  4   0    .000   2.000     .000  .000  .000   .00
CD   3  4   0    .000   2.500     .000  .000  .000   .00
CD   4  4   0    .000   3.000     .000  .000  .000   .00
CD   5  4   0    .000   3.500     .000  .000  .000   .00
CD   6  4   0    .000   4.000     .000  .000  .000   .00
Q           5.000
```

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	0		1.500														
CD	2	4	0		2.000														
CD	3	4	0		2.500														
CD	4	4	0		3.000														
CD	5	4	0		3.500														
CD	6	4	0		4.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
Summerlin Village 25 - Parcel D

HEADING LINE NO 2 IS -
Pulte Homes - Mainline

HEADING LINE NO 3 IS -
Starting HGL = HGL @ Station 1145.30 of ParcelDMain1line1 Model

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1145.290	3495.290	4	3503.770

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1191.710	3496.000	4	.013	.000	.000	.000	1

ELEMENT NO 3 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1191.720	3496.000	4	2	0	.013	7.000	.000	3497.000	.000	60.000	.000

RADIUS	ANGLE
.000	.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1231.890	3496.940	4	.013	.000	.000	.000	1

ELEMENT NO 5 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1231.900	3496.940	4	2	0	.013	7.000	.000	3497.940	.000	-37.000	.000

RADIUS	ANGLE
.000	.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1397.130	3501.900	3	.013	.000	.000	.000	1

ELEMENT NO 7 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1397.140	3501.900	3	3	0	.013	18.000	.000	3501.900	.000	57.000	.000

RADIUS	ANGLE
.000	.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1588.700	3515.430	3	.013	.000	.000	.000	1

ELEMENT NO 9 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1588.710	3515.430	2	.013	.082	7.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1695.400	3519.930	2	.013	.000	.000	.000	1

ELEMENT NO 11 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1695.410	3519.930	2	.013	.017	33.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 12 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1732.690	3520.300	2	.013	.000	.000	.000	1

ELEMENT NO 13 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1732.700	3520.300	2	2	0	.013	16.000	.000	3520.300	.000	-45.000	.000

RADIUS	ANGLE
.009	62.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 14 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1951.340	3524.400	2	.013	.000	.000	.000	1

ELEMENT NO 15 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1954.350	3524.400	2	2	0	.013	5.000	.000	3525.400	.000	-90.000	.000

RADIUS	ANGLE
2.183	79.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 16 IS A REACH * * *

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	1980.790	3525.200	2	.013	.000	.000	.000	1

ELEMENT NO 17 IS A SYSTEM HEADWORKS * *

	STATION	INVERT	SECT	W S ELEV
U/S DATA	1980.790	3525.200	2	.000

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 1-2020 Time: 2: 2:39

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = HGL @ Station 1145.30 of ParcelDMain1ine1 Model

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1145.290	3495.290	8.480	3503.770	58.00	8.21	1.05	3504.82	.00	2.47	.00	3.000	.000	.00	0 .0
46.420	.0153					.0076	.35	8.48	.00	1.86	.013	.00	.00	PIPE
1191.710	3496.000	8.173	3504.173	58.00	8.21	1.05	3505.22	.00	2.47	.00	3.000	.000	.00	0 .0
JUNCT STR	.0000					.0067	.00	8.17	.00		.013	.00	.00	PIPE
1191.720	3496.000	8.613	3504.613	51.00	7.22	.81	3505.42	.00	2.32	.00	3.000	.000	.00	0 .0
40.170	.0234					.0058	.23	8.61	.00	1.50	.013	.00	.00	PIPE
1231.890	3496.940	7.949	3504.889	51.00	7.22	.81	3505.70	.00	2.32	.00	3.000	.000	.00	0 .0
JUNCT STR	.0000					.0051	.00	7.95	.00		.013	.00	.00	PIPE
1231.900	3496.940	8.307	3505.247	44.00	8.96	1.25	3506.49	.00	2.21	.00	2.500	.000	.00	0 .0
165.230	.0300					.0115	1.90	8.31	.00	1.42	.013	.00	.00	PIPE
1397.130	3501.900	5.311	3507.211	44.00	8.96	1.25	3508.46	.00	2.21	.00	2.500	.000	.00	0 .0
JUNCT STR	.0000					.0078	.00	5.31	.00		.013	.00	.00	PIPE
1397.140	3501.900	6.708	3508.608	26.00	5.30	.44	3509.04	.00	1.74	.00	2.500	.000	.00	0 .0
49.066	.0706					.0040	.20	6.71	.00	.83	.013	.00	.00	PIPE
1446.206	3505.365	3.443	3508.808	26.00	5.30	.44	3509.24	.00	1.74	.00	2.500	.000	.00	0 .0
HYDRAULIC JUMP														
1446.206	3505.365	.837	3506.203	26.00	18.04	5.05	3511.26	.00	1.74	2.36	2.500	.000	.00	0 .0
36.064	.0706					.0680	2.45	.84	4.07	.83	.013	.00	.00	PIPE

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 1-2020 Time: 2: 2:39

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = HGL @ Station 1145.30 of ParcelDMain1ine1 Model

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1482.270	3507.913	.842	3508.755	26.00	17.89	4.97	3513.73	.00	1.74	2.36	2.500	.000	.00	0 .0
55.576	.0706					.0630	3.50	.84	4.02	.83	.013	.00	.00	PIPE
1537.846	3511.838	.871	3512.709	26.00	17.06	4.52	3517.23	.00	1.74	2.38	2.500	.000	.00	0 .0
24.607	.0706					.0552	1.36	.87	3.76	.83	.013	.00	.00	PIPE
1562.453	3513.576	.903	3514.479	26.00	16.27	4.11	3518.59	.00	1.74	2.40	2.500	.000	.00	0 .0
15.391	.0706					.0484	.75	.90	3.51	.83	.013	.00	.00	PIPE
1577.844	3514.663	.935	3515.598	26.00	15.51	3.74	3519.33	.00	1.74	2.42	2.500	.000	.00	0 .0
10.856	.0706					.0425	.46	.94	3.28	.83	.013	.00	.00	PIPE
1588.700	3515.430	.969	3516.399	26.00	14.79	3.40	3519.80	2.50	1.74	2.44	2.500	.000	.00	0 .0
TRANS STR	.0000					.0387	.00	2.50	3.07		.013	.00	.00	PIPE
1588.710	3515.430	1.108	3516.538	26.00	14.56	3.29	3519.83	.00	1.79	1.99	2.000	.000	.00	0 .0
26.926	.0422					.0363	.98	1.11	2.71	1.07	.013	.00	.00	PIPE
1615.636	3516.566	1.133	3517.699	26.00	14.15	3.11	3520.81	.00	1.79	1.98	2.000	.000	.00	0 .0
25.441	.0422					.0329	.84	1.13	2.59	1.07	.013	.00	.00	PIPE
1641.077	3517.639	1.179	3518.818	26.00	13.49	2.83	3521.64	.00	1.79	1.97	2.000	.000	.00	0 .0

15.957	.0422				.0291	.46	1.18	2.40	1.07	.013	.00	.00	PIPE		
1657.034	3518.312	1.227	3519.539	26.00	12.86	2.57	3522.11	.00	1.79	1.95	2.000	.000	.00	0	.0
11.121	.0422				.0258	.29	1.23	2.22	1.07	.013	.00	.00	PIPE		

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	
1668.154	3518.781	1.278	3520.059	26.00	12.26	2.33	3522.39	.00	1.79	1.92	2.000	.000	.00	0	.0
8.194	.0422				.0229	.19	1.28	2.06	1.07	.013	.00	.00	PIPE		
1676.348	3519.127	1.332	3520.459	26.00	11.69	2.12	3522.58	.00	1.79	1.89	2.000	.000	.00	0	.0
6.134	.0422				.0203	.12	1.33	1.90	1.07	.013	.00	.00	PIPE		
1682.482	3519.385	1.391	3520.777	26.00	11.15	1.93	3522.71	.00	1.79	1.84	2.000	.000	.00	0	.0
4.718	.0422				.0181	.09	1.39	1.75	1.07	.013	.00	.00	PIPE		
1687.200	3519.584	1.453	3521.038	26.00	10.63	1.75	3522.79	.00	1.79	1.78	2.000	.000	.00	0	.0
3.487	.0422				.0162	.06	1.45	1.60	1.07	.013	.00	.00	PIPE		
1690.687	3519.731	1.522	3521.254	26.00	10.13	1.59	3522.85	.00	1.79	1.71	2.000	.000	.00	0	.0
2.538	.0422				.0146	.04	1.52	1.46	1.07	.013	.00	.00	PIPE		
1693.225	3519.838	1.597	3521.436	26.00	9.66	1.45	3522.89	.00	1.79	1.60	2.000	.000	.00	0	.0
1.582	.0422				.0132	.02	1.60	1.31	1.07	.013	.00	.00	PIPE		
1694.807	3519.905	1.683	3521.588	26.00	9.21	1.32	3522.91	.00	1.79	1.46	2.000	.000	.00	0	.0
.593	.0422				.0122	.01	1.68	1.17	1.07	.013	.00	.00	PIPE		
1695.400	3519.930	1.786	3521.716	26.00	8.78	1.20	3522.91	2.00	1.79	1.24	2.000	.000	.00	0	.0
TRANS STR	.0000				.0116	.00	2.00	1.00		.013	.00	.00	PIPE		
1695.410	3519.930	1.843	3521.773	26.00	8.59	1.15	3522.92	.00	1.79	1.08	2.000	.000	.00	0	.0
37.275	.0099				.0119	.45	1.84	.90	2.00	.013	.00	.00	PIPE		

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	
1732.690	3520.300	2.000	3522.300	26.00	8.28	1.06	3523.36	.00	1.79	.00	2.000	.000	.00	0	.0
JUNCT STR	.0000				.0076	.00	.00	.00		.013	.00	.00	PIPE		
1732.700	3520.300	3.243	3523.543	10.00	3.18	.16	3523.70	.00	1.13	.00	2.000	.000	.00	0	.0
74.157	.0188				.0019	.14	3.24	.00	.78	.013	.00	.00	PIPE		
1806.857	3521.691	2.000	3523.691	10.00	3.18	.16	3523.85	.00	1.13	.00	2.000	.000	.00	0	.0
9.987	.0188				.0018	.02	2.00	.00	.78	.013	.00	.00	PIPE		
1816.844	3521.878	1.814	3523.692	10.00	3.34	.17	3523.86	.00	1.13	1.16	2.000	.000	.00	0	.0
5.340	.0188				.0018	.01	1.81	.37	.78	.013	.00	.00	PIPE		
1822.185	3521.978	1.706	3523.684	10.00	3.50	.19	3523.87	.00	1.13	1.42	2.000	.000	.00	0	.0
4.096	.0188				.0019	.01	1.71	.43	.78	.013	.00	.00	PIPE		
1826.281	3522.055	1.618	3523.673	10.00	3.67	.21	3523.88	.00	1.13	1.57	2.000	.000	.00	0	.0
1.029	.0188				.0020	.00	1.62	.49	.78	.013	.00	.00	PIPE		
1827.310	3522.074	1.618	3523.692	10.00	3.67	.21	3523.90	.00	1.13	1.57	2.000	.000	.00	0	.0

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HYDRAULIC JUMP
 1827.310  3522.074     .781  3522.856     10.00    8.79    1.20  3524.06     .00    1.13     1.95    2.000     .000   .00   0   .0
     .155    .0188                                      .0188      .00      .78    2.03     .78    .013       .00   .00  PIPE
 1827.464  3522.077     .781  3522.859     10.00    8.79    1.20  3524.06     .00    1.13     1.95    2.000     .000   .00   0   .0
   70.843    .0188                                      .0176     1.25      .78    2.03     .78    .013       .00   .00  PIPE
↟ FILE: ParcelDMain2.WSW                    W S P G W - CIVILDESIGN Version 14.08                                        PAGE    5
                              Program Package Serial Number: 3074
                                             WATER SURFACE PROFILE LISTING                  Date: 4- 1-2020  Time: 2: 2:39
                                 Summerlin Village 25 - Parcel D
                                   Pulte Homes - Mainline
                                     Starting HGL = HGL @ Station 1145.30 of ParcelDMain1ine1 Model
 ********************************************************************************************************************** ********
         | Invert  |  Depth |  Water  |    Q    |  Vel     Vel  |  Energy | Super |Critical|Flow Top|Height/|Base Wt|      |No Wth
 Station |  Elev   |  (FT)  |  Elev   |  (CFS)  | (FPS)    Head |  Grd.El.|  Elev | Depth  | Width  |Dia.-FT|or I.D.|  ZL  |Prs/Pip
 L/Elem  |Ch Slope |        |         |         |          SF Ave|    HF   |SE Dpth|Froude N|Norm Dp |  "N"  | X-Fall|  ZR  |Type Ch
 ********|*********|********|*********|*********|*******|*******|*********|*******|********|********|*******|*******|******|*******
 1898.308  3523.406     .809  3524.215     10.00    8.39    1.09  3525.31     .00    1.13     1.96    2.000     .000   .00   0   .0
    21.014    .0188                                      .0155      .32      .81    1.90     .78    .013       .00   .00  PIPE
 1919.322  3523.800     .839  3524.639     10.00    8.00     .99  3525.63     .00    1.13     1.97    2.000     .000   .00   0   .0
    11.448    .0188                                      .0136      .16      .84    1.77     .78    .013       .00   .00  PIPE
 1930.769  3524.014     .870  3524.885     10.00    7.62     .90  3525.79     .00    1.13     1.98    2.000     .000   .00   0   .0
     7.333    .0188                                      .0119      .09      .87    1.65     .78    .013       .00   .00  PIPE
 1938.102  3524.152     .902  3525.054     10.00    7.27     .82  3525.87     .00    1.13     1.99    2.000     .000   .00   0   .0
     4.909    .0188                                      .0105      .05      .90    1.54     .78    .013       .00   .00  PIPE
 1943.012  3524.244     .936  3525.180     10.00    6.93     .75  3525.93     .00    1.13     2.00    2.000     .000   .00   0   .0
     3.443    .0188                                      .0092      .03      .94    1.44     .78    .013       .00   .00  PIPE
 1946.454  3524.308     .971  3525.280     10.00    6.61     .68  3525.96     .00    1.13     2.00    2.000     .000   .00   0   .0
     2.317    .0188                                      .0081      .02      .97    1.34     .78    .013       .00   .00  PIPE
 1948.771  3524.352    1.008  3525.360     10.00    6.30     .62  3525.98     .00    1.13     2.00    2.000     .000   .00   0   .0
     1.554    .0188                                      .0071      .01     1.01    1.25     .78    .013       .00   .00  PIPE
 1950.325  3524.381    1.046  3525.427     10.00    6.01     .56  3525.99     .00    1.13     2.00    2.000     .000   .00   0   .0
      .798    .0188                                      .0063      .01     1.05    1.16     .78    .013       .00   .00  PIPE
 1951.123  3524.396    1.087  3525.483     10.00    5.73     .51  3525.99     .00    1.13     1.99    2.000     .000   .00   0   .0
     .217    .0188                                      .0056      .00     1.09    1.08     .78    .013       .00   .00  PIPE
↟ FILE: ParcelDMain2.WSW                    W S P G W - CIVILDESIGN Version 14.08                                        PAGE    6
                              Program Package Serial Number: 3074
                                             WATER SURFACE PROFILE LISTING                  Date: 4- 1-2020  Time: 2: 2:39
                                 Summerlin Village 25 - Parcel D
                                   Pulte Homes - Mainline
                                     Starting HGL = HGL @ Station 1145.30 of ParcelDMain1ine1 Model
 ********************************************************************************************************************** ********
         | Invert  |  Depth |  Water  |    Q    |  Vel     Vel  |  Energy | Super |Critical|Flow Top|Height/|Base Wt|      |No Wth
 Station |  Elev   |  (FT)  |  Elev   |  (CFS)  | (FPS)    Head |  Grd.El.|  Elev | Depth  | Width  |Dia.-FT|or I.D.|  ZL  |Prs/Pip
 L/Elem  |Ch Slope |        |         |         |          SF Ave|    HF   |SE Dpth|Froude N|Norm Dp |  "N"  | X-Fall|  ZR  |Type Ch
 ********|*********|********|*********|*********|*******|*******|*********|*******|********|********|*******|*******|******|*******
 1951.340  3524.400    1.132  3525.531     10.00    5.46     .46  3525.99     .84    1.13     1.98    2.000     .000   .00   0   .0
JUNCT STR   .0000                                      .0028      .01    1.97    1.00              .013       .00   .00  PIPE
 1954.350  3524.400    1.820  3526.220      5.00    1.67     .04  3526.26     .00     .79     1.14    2.000     .000   .00   0   .0
     3.519    .0303                                      .0004      .00    1.82     .18     .48    .013       .00   .00  PIPE
 1957.869  3524.506    1.711  3526.218      5.00    1.75     .05  3526.26     .00     .79     1.41    2.000     .000   .00   0   .0
     2.863    .0303                                      .0005      .00    1.71     .22     .48    .013       .00   .00  PIPE
 1960.732  3524.593    1.621  3526.214      5.00    1.83     .05  3526.27     .00     .79     1.57    2.000     .000   .00   0   .0
     2.448    .0303                                      .0005      .00    1.62     .24     .48    .013       .00   .00  PIPE
 1963.179  3524.667    1.543  3526.210      5.00    1.92     .06  3526.27     .00     .79     1.68    2.000     .000   .00   0   .0
     2.166    .0303                                      .0006      .00    1.54     .27     .48    .013       .00   .00  PIPE
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1965.345	3524.732	1.473	3526.206	5.00	2.02	.06	3526.27	.00	.79	1.76	2.000	.000	.00	0	.0				
1.948	.0303					.0006	.00	1.47	.30	.48	.013	.00	.00	PIPE					
1967.293	3524.791	1.409	3526.200	5.00	2.11	.07	3526.27	.00	.79	1.82	2.000	.000	.00	0	.0				
1.797	.0303					.0007	.00	1.41	.33	.48	.013	.00	.00	PIPE					
1969.090	3524.846	1.349	3526.195	5.00	2.22	.08	3526.27	.00	.79	1.87	2.000	.000	.00	0	.0				
1.609	.0303					.0008	.00	1.35	.36	.48	.013	.00	.00	PIPE					
1970.699	3524.894	1.294	3526.188	5.00	2.33	.08	3526.27	.00	.79	1.91	2.000	.000	.00	0	.0				
1.486	.0303					.0009	.00	1.29	.39	.48	.013	.00	.00	PIPE					

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 1-2020 Time: 2: 2:39

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = HGL @ Station 1145.30 of ParcelDMain1ine1 Model

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1972.185	3524.939	1.242	3526.181	5.00	2.44	.09	3526.27	.00	.79	1.94	2.000	.000	.00	0	.0
1.361	.0303					.0010	.00	1.24	.42	.48	.013	.00	.00	PIPE	
1973.546	3524.980	1.193	3526.174	5.00	2.56	.10	3526.28	.00	.79	1.96	2.000	.000	.00	0	.0
1.232	.0303					.0012	.00	1.19	.45	.48	.013	.00	.00	PIPE	
1974.778	3525.018	1.147	3526.165	5.00	2.68	.11	3526.28	.00	.79	1.98	2.000	.000	.00	0	.0
1.135	.0303					.0013	.00	1.15	.49	.48	.013	.00	.00	PIPE	
1975.913	3525.052	1.103	3526.155	5.00	2.81	.12	3526.28	.00	.79	1.99	2.000	.000	.00	0	.0
1.033	.0303					.0015	.00	1.10	.52	.48	.013	.00	.00	PIPE	
1976.946	3525.083	1.061	3526.145	5.00	2.95	.14	3526.28	.00	.79	2.00	2.000	.000	.00	0	.0
.892	.0303					.0017	.00	1.06	.56	.48	.013	.00	.00	PIPE	
1977.839	3525.111	1.022	3526.133	5.00	3.09	.15	3526.28	.00	.79	2.00	2.000	.000	.00	0	.0
.817	.0303					.0019	.00	1.02	.61	.48	.013	.00	.00	PIPE	
1978.655	3525.135	.984	3526.119	5.00	3.25	.16	3526.28	.00	.79	2.00	2.000	.000	.00	0	.0
.700	.0303					.0022	.00	.98	.65	.48	.013	.00	.00	PIPE	
1979.355	3525.156	.948	3526.104	5.00	3.40	.18	3526.28	.00	.79	2.00	2.000	.000	.00	0	.0
.577	.0303					.0025	.00	.95	.70	.48	.013	.00	.00	PIPE	
1979.932	3525.174	.914	3526.088	5.00	3.57	.20	3526.29	.00	.79	1.99	2.000	.000	.00	0	.0
.482	.0303					.0028	.00	.91	.75	.48	.013	.00	.00	PIPE	

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 1-2020 Time: 2: 2:39

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = HGL @ Station 1145.30 of ParcelDMain1ine1 Model

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1980.413	3525.188	.881	3526.070	5.00	3.74	.22	3526.29	.00	.79	1.99	2.000	.000	.00	0	.0
.341	.0303					.0032	.00	.88	.80	.48	.013	.00	.00	PIPE	
1980.755	3525.199	.850	3526.049	5.00	3.93	.24	3526.29	.00	.79	1.98	2.000	.000	.00	0	.0
.035	.0303					.0035	.00	.85	.86	.48	.013	.00	.00	PIPE	
1980.790	3525.200	.846	3526.046	5.00	3.95	.24	3526.29	.00	.79	1.98	2.000	.000	.00	0	.0

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Pulte Homes - Mainline

Starting HGL = HGL @ Station 1145.30 of ParcelDMain1ine1 Model

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1145.29   .I     C H               W  E                                                .   R
1151.67   .                                                                           .
1158.05   .                                                                           .
1164.42   .                                                                           .
1170.80   .                                                                           .
1177.18   .                                                                           .
1183.56   .                                                                           .
1189.94   .                                                                           .
1196.31   . I     C H              W   E                                              .   JX
1202.69   . I     C H                W E                                              .   R
1209.07   .                                                                           .
1215.45   .                                                                           .
1221.82   .                                                                           .
1228.20   .                                                                           .
1234.58   .    I     C H              W E                                             .   JX
1240.96   .    I     CH                W   E                                         .   R
1247.34   .                                                                           .
1253.71   .                                                                           .
1260.09   .                                                                           .
1266.47   .                                                                           .
1272.85   .                                                                           .
1279.23   .                                                                           .
1285.60   .                                                                           .
1291.98   .                                                                           .
1298.36   .                                                                           .
1304.74   .                                                                           .
1311.11   .                                                                           .
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1317.49 . .

1323.87 . .

1330.25 . .

1336.63 . .

1343.00 . .

1349.38 . .

1355.76 . .

1362.14 . .

1368.52 . .

1374.89 . .

1381.27 . .

1387.65 . .

1394.03 . .

1400.40 . I CH W E . JX

1406.78 . I C H W E . R

1413.16 . .

1419.54 . .

1425.92 . .

1432.29 . .

1438.67 . .

1445.05 . .

1451.43 . I C H WE . R

1457.81 . I W C H E . R

1464.18 . .

1470.56 . .

1476.94 . .

1483.32 . I W C H E . R

1489.69 . .

1496.07 . .

1502.45 . .

1508.83 . .

```
1515.21   .                                                                .
1521.58   .                                                                .
1527.96   .                                                                .
1534.34   .                                                                .
1540.72   .                                  I  W  C H       E             .   R
1547.10   .                                                                .
1553.47   .                                                                .
1559.85   .                                                                .
1566.23   .                                        I  W C  H      E         .   R
1572.61   .                                                                .
1578.98   .                                           I  W  C H     E       .   R
1585.36   .                                                                .
1591.74   .                                              I  W C H    E      .   TX
1598.12   .                                              I  W CH     E      .   R
1604.50   .                                                                .
1610.87   .                                                                .
1617.25   .                                                 I   W H     E  .   R
1623.63   .                                                                .
1630.01   .                                                                .
1636.39   .                                                                .
1642.76   .                                                    I  W CH    E  .   R
1649.14   .                                                                .
1655.52   .                                                                .
1661.90   .                                                      I  W CH    E  .   R
1668.27   .                                                      I   W H   E  .   R
1674.65   .                                                                .
1681.03   .                                                       I   W H   E  .   R
1687.41   .                                                       I   W H   E  .   R
1693.79   .                                                       I   WCH   E  .   R
1700.16   .                                                       I    WH   E  .   R
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1706.54    .                                                I    WCH  E            .    R
1712.92    .                                                 I    WH  E            .    R
1719.30    .                                                 I    WH  E            .    TX
1725.68    .                                                 I    WH  E            .    R
1732.05    .                                                                      .
1738.43    .                                                  I    CH  E          .    JX
1744.81    .                                                  I  C  H   WE         .    R
1751.19    .                                                                      .
1757.56    .                                                                      .
1763.94    .                                                                      .
1770.32    .                                                                      .
1776.70    .                                                                      .
1783.08    .                                                                      .
1789.45    .                                                                      .
1795.83    .                                                                      .
1802.21    .                                                                      .
1808.59    .                                                     I   C  H         .    R
1814.97    .                                                                      .
1821.34    .                                                       I  C  H        .    R
1827.72    .                                                       I   CWH        .    R
1834.10    .                                                       I   CWEH       .    R
1840.48    .                                                       I   C WH       .    R
1846.85    .                                                       I  WC  H       .    R
1853.23    .                                                       I  WC  H       .    R
1859.61    .                                                                      .
1865.99    .                                                                      .
1872.37    .                                                                      .
1878.74    .                                                                      .
1885.12    .                                                                      .
1891.50    .                                                                      .
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   1897.88    .                                                                                    .

   1904.26    .                                                                                I WC  H      .    R

   1910.63    .                                                                                    .

   1917.01    .                                                                                    .

   1923.39    .                                                                                 I WC  H     .    R

   1929.77    .                                                                                    .

   1936.15    .                                                                                  I WC EH    .    R

   1942.52    .                                                                                  I  W EH    .    R

   1948.90    .                                                                                  I  WC EH   .    R

   1955.28    .                                                                                  I  WC EH   .    R

   1961.66    .                                                                                   I  W EH   .    R

   1968.03    .                                                                                   I  W EH   .    R

   1974.41    .                                                                                   I  W EH   .    R

   1980.79    .                                                                                   I  W EH   .    JX

            3495.290  3498.481  3501.672  3504.863  3508.054  3511.245  3514.436  3517.626  3520.817  3524.008  3527.200
```

N O T E S
1. GLOSSARY
   I = INVERT ELEVATION
   C = CRITICAL DEPTH
   W = WATER SURFACE ELEVATION
   S = SUPER-ELEVATION
   H = HEIGHT OF CHANNEL
   E = ENERGY GRADE LINE
   X = CURVES CROSSING OVER
   B = BRIDGE ENTRANCE OR EXIT
   Y = WALL ENTRANCE OR EXIT
2. STATIONS FOR POINTS AT A JUMP MAY NOT BE PLOTTED EXACTLY

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T1  Summerlin Village 25 - Parcel D

T2  Pulte Homes - Mainline

T3  Starting HGL = HGL @ Station 1397.14 of ParcelDMain1ine2 Model

SO   1397.14 3501.90   3                          3508.608
R    1444.08 3506.80   3      .013                                          1
JX   1444.09 3506.80   3  2   .013    4.5           3506.80         -45.0       43.0
R    1474.73 3507.38   3      .013                                          1
JX   1474.74 3507.38   3  2   .013    4.5           3508.38          45.0
R    1789.42 3510.20   3      .013                                          1
JX   1789.43 3510.20   3  2   .013    4.5           3511.20          45.0
R    1822.08 3510.39   3      .013                                          1
TS   1822.09 3510.39   3      .013                                 -44.0
R    1864.72 3510.85   3      .013                                          1
SH   1864.72 3510.85   3
CD   1  4   0    .000   1.500     .000  .000  .000   .00
CD   2  4   0    .000   2.000     .000  .000  .000   .00
CD   3  4   0    .000   2.500     .000  .000  .000   .00
CD   4  4   0    .000   3.000     .000  .000  .000   .00
CD   5  4   0    .000   3.500     .000  .000  .000   .00
CD   6  4   0    .000   4.000     .000  .000  .000   .00
Q           4.500
```

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	0		1.500														
CD	2	4	0		2.000														
CD	3	4	0		2.500														
CD	4	4	0		3.000														
CD	5	4	0		3.500														
CD	6	4	0		4.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
Summerlin Village 25 - Parcel D

HEADING LINE NO 2 IS -
Pulte Homes - Mainline

HEADING LINE NO 3 IS -
Starting HGL = HGL @ Station 1397.14 of ParcelDMain1line2 Model

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1397.140	3501.900	3	3508.608

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1444.080	3506.800	3	.013	.000	.000	.000	1

ELEMENT NO 3 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1444.090	3506.800	3	2	0	.013	4.500	.000	3506.800	.000	-45.000	.000

RADIUS	ANGLE
.013	43.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1474.730	3507.380	3	.013	.000	.000	.000	1

ELEMENT NO 5 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1474.740	3507.380	3	2	0	.013	4.500	.000	3508.380	.000	45.000	.000

RADIUS	ANGLE
.000	.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1789.420	3510.200	3	.013	.000	.000	.000	1

ELEMENT NO 7 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1789.430	3510.200	3	2	0	.013	4.500	.000	3511.200	.000	45.000	.000

RADIUS	ANGLE
.000	.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1822.080	3510.390	3	.013	.000	.000	.000	1

ELEMENT NO 9 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1822.090	3510.390	3	.013	.013	-44.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1864.720	3510.850	3	.013	.000	.000	.000	1

ELEMENT NO 11 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1864.720	3510.850	3	.000

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 1-2020 Time: 2: 6:19

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = HGL @ Station 1397.14 of ParcelDMain1ine2 Model

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1397.140	3501.900	6.708	3508.608	18.00	3.67	.21	3508.82	.00	1.44	.00	2.500	.000	.00	0 .0
41.157	.1044					.0019	.08	6.71	.00	.62	.013	.00	.00	PIPE
1438.297	3506.196	2.500	3508.696	18.00	3.67	.21	3508.91	.00	1.44	.00	2.500	.000	.00	0 .0
2.047	.1044					.0018	.00	2.50	.00	.62	.013	.00	.00	PIPE
1440.344	3506.410	2.268	3508.678	18.00	3.85	.23	3508.91	.00	1.44	1.45	2.500	.000	.00	0 .0
1.091	.1044					.0017	.00	2.27	.38	.62	.013	.00	.00	PIPE
1441.435	3506.524	2.133	3508.657	18.00	4.03	.25	3508.91	.00	1.44	1.77	2.500	.000	.00	0 .0
.836	.1044					.0019	.00	2.13	.45	.62	.013	.00	.00	PIPE
1442.271	3506.611	2.022	3508.634	18.00	4.23	.28	3508.91	.00	1.44	1.97	2.500	.000	.00	0 .0
.676	.1044					.0021	.00	2.02	.51	.62	.013	.00	.00	PIPE
1442.948	3506.682	1.925	3508.607	18.00	4.44	.31	3508.91	.00	1.44	2.10	2.500	.000	.00	0 .0
.563	.1044					.0023	.00	1.93	.56	.62	.013	.00	.00	PIPE
1443.510	3506.741	1.837	3508.578	18.00	4.65	.34	3508.91	.00	1.44	2.21	2.500	.000	.00	0 .0
.455	.1044					.0026	.00	1.84	.62	.62	.013	.00	.00	PIPE
1443.966	3506.788	1.757	3508.545	18.00	4.88	.37	3508.92	.00	1.44	2.29	2.500	.000	.00	0 .0
.114	.1044					.0028	.00	1.76	.68	.62	.013	.00	.00	PIPE
1444.080	3506.800	1.735	3508.535	18.00	4.95	.38	3508.92	2.50	1.44	2.30	2.500	.000	.00	0 .0
JUNCT STR	.0000					.0019	.00	2.50	.69		.013	.00	.00	PIPE

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 1-2020 Time: 2: 6:19

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = HGL @ Station 1397.14 of ParcelDMain1ine2 Model

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1444.090	3506.800	2.154	3508.954	13.50	3.00	.14	3509.09	.00	1.24	1.73	2.500	.000	.00	0 .0
5.601	.0189					.0010	.01	2.15	.33	.83	.013	.00	.00	PIPE
1449.691	3506.906	2.040	3508.946	13.50	3.15	.15	3509.10	.00	1.24	1.94	2.500	.000	.00	0 .0
4.704	.0189					.0011	.01	2.04	.37	.83	.013	.00	.00	PIPE
1454.395	3506.995	1.941	3508.936	13.50	3.30	.17	3509.11	.00	1.24	2.08	2.500	.000	.00	0 .0
4.084	.0189					.0013	.01	1.94	.42	.83	.013	.00	.00	PIPE
1458.479	3507.073	1.852	3508.925	13.50	3.46	.19	3509.11	.00	1.24	2.19	2.500	.000	.00	0 .0
3.621	.0189					.0014	.01	1.85	.46	.83	.013	.00	.00	PIPE
1462.100	3507.141	1.770	3508.911	13.50	3.63	.20	3509.12	.00	1.24	2.27	2.500	.000	.00	0 .0
3.145	.0189					.0016	.00	1.77	.50	.83	.013	.00	.00	PIPE
1465.245	3507.201	1.695	3508.896	13.50	3.81	.23	3509.12	.00	1.24	2.34	2.500	.000	.00	0 .0
2.770	.0189					.0018	.00	1.70	.54	.83	.013	.00	.00	PIPE
1468.015	3507.253	1.625	3508.878	13.50	3.99	.25	3509.13	.00	1.24	2.38	2.500	.000	.00	0 .0
2.378	.0189					.0020	.00	1.63	.59	.83	.013	.00	.00	PIPE
1470.393	3507.298	1.560	3508.858	13.50	4.19	.27	3509.13	.00	1.24	2.42	2.500	.000	.00	0 .0

2.086	.0189					.0023	.00	1.56	.64	.83	.013	.00	.00	PIPE					
1472.479	3507.338	1.498	3508.836	13.50	4.39	.30	3509.14	.00	1.24	2.45	2.500	.000	.00	0	.0				
1.713	.0189					.0026	.00	1.50	.69	.83	.013	.00	.00	PIPE					

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1474.192	3507.370	1.440	3508.810	13.50	4.61	.33	3509.14	.00	1.24	2.47	2.500	.000	.00	0	.0
.538	.0189					.0028	.00	1.44	.75	.83	.013	.00	.00	PIPE	
1474.730	3507.380	1.420	3508.800	13.50	4.69	.34	3509.14	.00	1.24	2.48	2.500	.000	.00	0	.0
JUNCT STR	.0000							1.42	.77		.013	.00	.00	PIPE	
1474.740	3507.380	.819	3508.198	9.00	6.44	.64	3508.84	.00	1.00	2.35	2.500	.000	.00	0	.0
223.971	.0090					.0090	2.01	.82	1.47	.82	.013	.00	.00	PIPE	
1698.711	3509.387	.819	3510.205	9.00	6.44	.64	3510.85	.00	1.00	2.35	2.500	.000	.00	0	.0
55.566	.0090					.0086	.48	.82	1.47	.82	.013	.00	.00	PIPE	
1754.277	3509.885	.837	3510.722	9.00	6.24	.60	3511.33	.00	1.00	2.36	2.500	.000	.00	0	.0
19.692	.0090					.0077	.15	.84	1.41	.82	.013	.00	.00	PIPE	
1773.969	3510.061	.867	3510.928	9.00	5.95	.55	3511.48	.00	1.00	2.38	2.500	.000	.00	0	.0
8.544	.0090					.0067	.06	.87	1.31	.82	.013	.00	.00	PIPE	
1782.513	3510.138	.898	3511.036	9.00	5.67	.50	3511.54	.00	1.00	2.40	2.500	.000	.00	0	.0
4.393	.0090					.0059	.03	.90	1.23	.82	.013	.00	.00	PIPE	
1786.906	3510.177	.930	3511.107	9.00	5.41	.45	3511.56	.00	1.00	2.42	2.500	.000	.00	0	.0
1.924	.0090					.0052	.01	.93	1.15	.82	.013	.00	.00	PIPE	
1788.830	3510.195	.964	3511.159	9.00	5.15	.41	3511.57	.00	1.00	2.43	2.500	.000	.00	0	.0
.590	.0090					.0045	.00	.96	1.07	.82	.013	.00	.00	PIPE	

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1789.420	3510.200	1.000	3511.200	9.00	4.91	.37	3511.57	.00	1.00	2.45	2.500	.000	.00	0	.0
JUNCT STR	.0000					.0023	.00	1.00	1.00		.013	.00	.00	PIPE	
1789.430	3510.200	1.330	3511.530	4.50	1.70	.04	3511.57	.00	.70	2.49	2.500	.000	.00	0	.0
8.403	.0058					.0004	.00	1.33	.29	.64	.013	.00	.00	PIPE	
1797.833	3510.249	1.280	3511.529	4.50	1.78	.05	3511.58	.00	.70	2.50	2.500	.000	.00	0	.0
7.876	.0058					.0005	.00	1.28	.31	.64	.013	.00	.00	PIPE	
1805.710	3510.295	1.233	3511.528	4.50	1.87	.05	3511.58	.00	.70	2.50	2.500	.000	.00	0	.0
7.501	.0058					.0005	.00	1.23	.33	.64	.013	.00	.00	PIPE	
1813.210	3510.338	1.188	3511.526	4.50	1.96	.06	3511.59	.00	.70	2.50	2.500	.000	.00	0	.0
7.119	.0058					.0006	.00	1.19	.36	.64	.013	.00	.00	PIPE	
1820.329	3510.380	1.145	3511.525	4.50	2.05	.07	3511.59	.00	.70	2.49	2.500	.000	.00	0	.0
1.751	.0058					.0007	.00	1.15	.39	.64	.013	.00	.00	PIPE	
1822.080	3510.390	1.135	3511.525	4.50	2.08	.07	3511.59	2.50	.70	2.49	2.500	.000	.00	0	.0

TRANS STR	.0000						.0007	.00	2.50	.39			.013	.00	.00	PIPE			
1822.090	3510.390	1.136	3511.525	4.50	2.08	.07	3511.59	.00	.70	2.49	2.500	.000	.00	0	.0				
3.451	.0108						.0007	.00	1.14	.39	.55	.013	.00	.00	PIPE				
1825.541	3510.427	1.094	3511.521	4.50	2.18	.07	3511.59	.00	.70	2.48	2.500	.000	.00	0	.0				
3.071	.0108						.0008	.00	1.09	.42	.55	.013	.00	.00	PIPE				

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 1-2020 Time: 2: 6:19

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = HGL @ Station 1397.14 of ParcelDMain1ine2 Model

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1828.612	3510.460	1.056	3511.517	4.50	2.28	.08	3511.60	.00	.70	2.47	2.500	.000	.00	0 .0
3.032	.0108					.0009	.00	1.06	.45	.55	.013	.00	.00	PIPE
1831.643	3510.493	1.018	3511.511	4.50	2.39	.09	3511.60	.00	.70	2.46	2.500	.000	.00	0 .0
2.681	.0108					.0011	.00	1.02	.48	.55	.013	.00	.00	PIPE
1834.324	3510.522	.983	3511.505	4.50	2.51	.10	3511.60	.00	.70	2.44	2.500	.000	.00	0 .0
2.629	.0108					.0012	.00	.98	.52	.55	.013	.00	.00	PIPE
1836.953	3510.551	.948	3511.499	4.50	2.63	.11	3511.61	.00	.70	2.43	2.500	.000	.00	0 .0
2.360	.0108					.0014	.00	.95	.55	.55	.013	.00	.00	PIPE
1839.313	3510.576	.915	3511.491	4.50	2.76	.12	3511.61	.00	.70	2.41	2.500	.000	.00	0 .0
2.076	.0108					.0016	.00	.92	.59	.55	.013	.00	.00	PIPE
1841.390	3510.598	.884	3511.482	4.50	2.90	.13	3511.61	.00	.70	2.39	2.500	.000	.00	0 .0
1.885	.0108					.0018	.00	.88	.63	.55	.013	.00	.00	PIPE
1843.274	3510.619	.854	3511.473	4.50	3.04	.14	3511.62	.00	.70	2.37	2.500	.000	.00	0 .0
.455	.0108					.0020	.00	.85	.68	.55	.013	.00	.00	PIPE
1843.729	3510.624	.824	3511.448	4.50	3.19	.16	3511.61	.00	.70	2.35	2.500	.000	.00	0 .0
HYDRAULIC JUMP														
1843.729	3510.624	.569	3511.193	4.50	5.35	.45	3511.64	.00	.70	2.10	2.500	.000	.00	0 .0
10.074	.0108					.0087	.09	.57	1.49	.55	.013	.00	.00	PIPE

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 1-2020 Time: 2: 6:19

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = HGL @ Station 1397.14 of ParcelDMain1ine2 Model

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1853.803	3510.732	.588	3511.320	4.50	5.10	.40	3511.72	.00	.70	2.12	2.500	.000	.00	0 .0
4.942	.0108					.0076	.04	.59	1.39	.55	.013	.00	.00	PIPE
1858.745	3510.786	.609	3511.395	4.50	4.86	.37	3511.76	.00	.70	2.15	2.500	.000	.00	0 .0
3.235	.0108					.0067	.02	.61	1.31	.55	.013	.00	.00	PIPE
1861.980	3510.821	.629	3511.450	4.50	4.64	.33	3511.78	.00	.70	2.17	2.500	.000	.00	0 .0
1.679	.0108					.0058	.01	.63	1.22	.55	.013	.00	.00	PIPE
1863.659	3510.839	.651	3511.490	4.50	4.42	.30	3511.79	.00	.70	2.19	2.500	.000	.00	0 .0
.805	.0108					.0051	.00	.65	1.14	.55	.013	.00	.00	PIPE
1864.464	3510.847	.674	3511.521	4.50	4.22	.28	3511.80	.00	.70	2.22	2.500	.000	.00	0 .0
.256	.0108					.0044	.00	.67	1.07	.55	.013	.00	.00	PIPE

```
  1864.720  3510.850     .699  3511.549      4.50    4.01     .25  3511.80     .00     .70     2.24    2.500     .000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     -|-     |-
↟
↟
```

Summerlin Village 25 - Parcel D

Pulte Homes - Mainline

Starting HGL = HGL @ Station 1397.14 of ParcelDMain1ine2 Model

```
  1397.14    .I          C        H                                W E                                    .    R
  1401.77    .                                                                                            .
  1406.40    .                                                                                            .
  1411.03    .                                                                                            .
  1415.66    .                                                                                            .
  1420.29    .                                                                                            .
  1424.92    .                                                                                            .
  1429.55    .                                                                                            .
  1434.18    .                                                                                            .
  1438.81    .                                  I           C        H E                                  .    R
  1443.44    .                                    I          C       W H                                   .    R
  1448.06    .                                     I          C      W EH                                  .    R
  1452.69    .                                      I          C    W  EH                                  .    R
  1457.32    .                                      I          C   W  E H                                 .    R
  1461.95    .                                       I          C   W  E  H                               .    R
  1466.58    .                                       I          C  W  E  H                               .    R
  1471.21    .                                       I          C W   E  H                               .    JX
  1475.84    .                                       I         C      WE H                               .    R
  1480.47    .                                        I         C     WE  H                               .    R
  1485.10    .                                         I         C    WE   H                              .    R
  1489.73    .                                          I        C    WE    H                             .    R
  1494.36    .                                         I         C    W E   H                             .    R
  1498.99    .                                          I         C   W E    H                            .    R
  1503.62    .                                         I         C  W  E    H                            .    R
  1508.25    .                                           I        C  W  E    H                            .    R
```

1512.88 . I C W E H . R

1517.51 . I C W E H . R

1522.14 . I C W E H . JX

1526.77 . I WC E H . R

1531.40 . .

1536.03 . .

1540.65 . .

1545.28 . .

1549.91 . .

1554.54 . .

1559.17 . .

1563.80 . .

1568.43 . .

1573.06 . .

1577.69 . .

1582.32 . .

1586.95 . .

1591.58 . .

1596.21 . .

1600.84 . .

1605.47 . .

1610.10 . .

1614.73 . .

1619.36 . .

1623.99 . .

1628.62 . .

1633.24 . .

1637.87 . .

1642.50 . .

1647.13 . .

```
1651.76    .                                                                .
1656.39    .                                                                .
1661.02    .                                                                .
1665.65    .                                                                .
1670.28    .                                                                .
1674.91    .                                                                .
1679.54    .                                                                .
1684.17    .                                                                .
1688.80    .                                                                .
1693.43    .                                                                .
1698.06    .                                                                .
1702.69    .                                  I     W C   E       H         .   R
1707.32    .                                                                .
1711.95    .                                                                .
1716.58    .                                                                .
1721.21    .                                                                .
1725.83    .                                                                .
1730.46    .                                                                .
1735.09    .                                                                .
1739.72    .                                                                .
1744.35    .                                                                .
1748.98    .                                                                .
1753.61    .                                                                .
1758.24    .                                    I      WC   E       H        .   R
1762.87    .                                                                .
1767.50    .                                                                .
1772.13    .                                                                .
1776.76    .                                      I     W C  E        H      .   R
1781.39    .                                                                .
1786.02    .                                      I      WC   E       H      .   R
1790.65    .                                       I      WC  E        H     .   R
```

```
   1795.28    .                                                                I       WC  E        H      .    R

   1799.91    .                                                                I        W  E        H      .    JX

   1804.54    .                                                                I    C     W        H      .    R

   1809.17    .                                                                I     C    W        H      .    R

   1813.80    .                                                                 I    C    W         H     .    R

   1818.42    .                                                                 I    C    W         H     .    R

   1823.05    .                                                                  I    C   W         H     .    R

   1827.68    .                                                                  I    C   W         H     .    TX

   1832.31    .                                                                  I    C   W         H     .    R

   1836.94    .                                                                  I    C   W          H    .    R

   1841.57    .                                                                  I    C  WE          H    .    R

   1846.20    .                                                                   I    C WE          H    .    R

   1850.83    .                                                                   I    C WE           H   .    R

   1855.46    .                                                                   I    C WE           H   .    R

   1860.09    .                                                                   I    C WE           H   .    R

   1864.72    .                                                                   I     CWE           H   .    R

            3501.900  3503.045  3504.190  3505.335  3506.480  3507.625  3508.770  3509.915  3511.060  3512.205  3513.350
```

N O T E S
1. GLOSSARY
   I = INVERT ELEVATION
   C = CRITICAL DEPTH
   W = WATER SURFACE ELEVATION
   S = SUPER-ELEVATION
   H = HEIGHT OF CHANNEL
   E = ENERGY GRADE LINE
   X = CURVES CROSSING OVER
   B = BRIDGE ENTRANCE OR EXIT
   Y = WALL ENTRANCE OR EXIT
2. STATIONS FOR POINTS AT A JUMP MAY NOT BE PLOTTED EXACTLY

Lateral Calculations

GCW
ENGINEERS \ SURVEYORS

MINOR STORM DRAIN LATERAL - CCRFCD MANUAL FRICTION LOSS CALCULATION SHEET

STORM DRAIN DESIGN						PIPE HYDRAULIC CHARACTERISTICS						LOSS	HGL			DESCRIPTION	
Q_{DESIGN}			INVERTS			A	R		V	H_V =	S_f	PIPE	PIPE				
(CFS)	DIAMETER (FT)	MANNING'S 'n'	D / S ELEV.	U / S ELEV.	LENGTH	(FT^2)	(FT)	Φ	(FPS)	$V^2/2g$ (FT)	(FT/FT)	H_f (FT)	TRUNK WSE (from Model)	LATERAL PIPE D/S HGL ELEV.[1]	LATERAL PIPE U/S HGL ELEV.	PARTIAL FLOW?	LATERAL
7	2	0.013	3497.00	3497.51	33.82	3.14	0.5	0.004925	2.23	0.077092	0.000954466	0.032	3504.61	3504.61	3504.64	No	24" RCP Lateral for DI#6.1
7	2	0.013	3497.94	3500.25	11.57	3.14	0.5	0.004925	2.23	0.077092	0.000954466	0.011	3505.25	3505.25	3505.26	No	24" RCP Lateral for DI#6
16	2	0.013	3520.30	3539.00	126.44	3.14	0.5	0.004925	5.09	0.402767	0.0049866	0.631	3523.54	3523.54	3524.17	Yes	24" RCP Lateral for DI#1
5	2	0.013	3525.40	3527.21	9.06	3.14	0.5	0.004925	1.59	0.039333	0.000486973	0.004	3526.22	3527.40	3527.40	Yes	24" RCP Lateral for DI#7
4.5	2	0.013	3506.80	3507.66	31.35	3.14	0.5	0.004925	1.43	0.03186	0.000394448	0.012	3508.95	3508.95	3508.96	Yes	24" RCP Lateral for DI#9
4.5	2	0.013	3508.38	3510.30	9.60	3.14	0.5	0.004925	1.43	0.03186	0.000394448	0.004	3508.20	3510.38	3510.38	Yes	24" RCP Lateral for DI#9.1
4.5	2	0.013	3511.20	3512.91	8.54	3.14	0.5	0.004925	1.43	0.03186	0.000394448	0.003	3511.53	3513.20	3513.20	Yes	24" RCP Lateral for DI#8
4	2	0.013	3496.73	3498.90	30.08	3.14	0.5	0.004925	1.27	0.025173	0.000311663	0.009	3505.14	3505.14	3505.15	No	24" RCP Lateral for DI#4
4	2	0.013	3496.73	3500.49	11.31	3.14	0.5	0.004925	1.27	0.025173	0.000311663	0.004	3505.14	3505.14	3505.14	No	24" RCP Lateral for DI#4.1
3.5	2	0.013	3498.34	3500.50	30.01	3.14	0.5	0.004925	1.11	0.019273	0.000238617	0.007	3506.09	3506.09	3506.10	No	24" RCP Lateral for DI#3
3.5	2	0.013	3498.34	3501.95	10.57	3.14	0.5	0.004925	1.11	0.019273	0.000238617	0.003	3506.09	3506.09	3506.09	No	24" RCP Lateral for DI#3.1
12	2	0.013	3501.20	3505.30	20.52	3.14	0.5	0.004925	3.82	0.226557	0.002804963	0.058	3506.68	3506.68	3506.74	Yes	24" RCP Lateral for DI#2

Pipe Friction Loss Calculations per CCRFCD Manual 804.2.1

$\Phi = 2g\,(n^2) / 2.21$

$Sf = \Phi\, Hv / R^{1.33}$

$H_f = \text{Length} \times S_f$

1 - Where HGL in lateral is below top of pipe, assume HGL is at top of pipe.

APPENDIX C

Reference Material

Flood Control Master Plan Update for Summerlin West Planning Area

Addendum #1 to Update #2 to the FLOOD CONTROL MASTER PLAN UPDATE

SUMMERLIN WEST PLANNING AREA

Las Vegas, Nevada

W.O. # 7809

Prepared for:
The Howard Hughes Company, LLC

Submitted to:
Public Works Department
City of Las Vegas

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin West Planning Area Master Plan Update Date: December 17, 2019

Location of Development: a) Descriptive (Cross Streets) North/South: I215

East/West: Between Lake Mead Blvd./Charleston Blvd.

b) Section: 14-15,21-23,26-28,32-3 3 Township: 20S Range: 59E

c) APN : See attached sheet for list of APN #s

Name of Owner: The Howard Hughes Company, LLC

Telephone No.: (702) 791-4336 Fax No.: (702) 791-4453 E-Mail Address: chris.anderson@howardhughes.com

Address: 10801 W. Charleston Blvd. LV, NV, 89135

Contact Person-Name: Joanna Ayson / Brian Ruiz **Telephone No.:** (702)-873-7550

* **E-Mail Address:** jayson@vtnnv.com / bruiz@vtnnv.com **Fax No.:** (702)-362-2597

Firm: VTN Nevada

Address: 2727 S. Rainbow Blvd, LV, NV, 89146

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		

1. Total Owned Land Area: At Site: 5100+/- Acres Being Developed/Disturbed: +/-5100 Acres
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☒ **Yes**** ☐ **No**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ **Yes**** ☐ **No**
4. Proposed type of development (Residential, Commercial, Etc.): Mixed Use
5. Approximate upstream land area which drains to the subject site: +/- 11.5 sq.mi.
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: 2006 Summerlin West Master Plan Update, 2017 Summerlin West Master Plan Update
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: I-215 Western Beltway Channel, Detention Basin 5, Far Hills Avenue, Summerlin Village 26 Detention Basin, Summerlin Village 24 (Red Rock Detention Basin),
8. Briefly describe your proposed schedule for the subject project: As soon as possible



12/17/19

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.

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: February 27, 2020
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 #2**		**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\DS4926M.doc		Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-017 & more		CCRFCD
Zoning Action:	N/A		CCPW
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	10/9/2017 & 10/25/2017	11/8/2017	Not Approved	$400.00	490518: $400
2nd Submittal	12/6/2017	12/20/2017 & 1/10/2018	Not Approved	$400.00	492005: $400
3rd Submittal	2/27/2018	3/24/2018	Not Approved	$400.00	493739: $400
4th Submittal & Supplement	4/23/2018 & 5/22/2018	5/22/2018	See Comments Below	$400.00	495223: $400
CCPW & CCRFCD	7/30/2018	7/30/2018	Concurrence Recv'd	N/C	N/C
5th Submittal	1/3/2019 (Paid on 1/7/2019)	1/30/2019	Not Approved	$100.00	502286: $100
6th Submittal	2/19/2019	3/13/2019	Conditional Approval	$400.00	503267: $400
CCPW & CCRFCD	4/15/2019	4/17/2019	Concurrence Recv'd	N/C	N/C
7th Submittal	10/28/2019	12/2/2019	Not Approved	$100.00	3625174: $100
8th Submittal – Mass Grading	11/19/2019 & 11/27/2019	11/25/2019	Conditionally Approved	$100.00	3645141: $100
9th Submittal & Supplement	12/17/2019 & 1/21/2020	1/21/2019	Conditional Approval	$400.00	3679639: $400
Revised Memo	1/23/2020	1/23/2020	Conditional Approval	N/C	N/C
CCRFCD	2/24/2020	2/27/2020	Concurrence Recv'd	N/C	N/C
			TOTAL FEES (LDDRS):	**$2,700.00**	**----**

REMARKS:

9th Submittal: Addendum & Supplement to Update #2

8th Submittal: Update for Mass Grading ONLY within V21 and V25

7th Submittal: Update #2 to refine the overall drainage basins model

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:

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.

Note that the Clark County Regional Flood Control District (District) has begun efforts to update the *Hydrologic Criteria and Drainage Design Manual* (HCDDM) and is requesting participation from the engineering community. The District is collecting comments and suggestions on errors, clarifications, or changes needed to the current Manual and/or content and usability enhancements to be incorporated into the updated Manual. Additional information on procedures and deadline to provide feedback and comments are available online at (http://www.ccrfcd.org/hcddmupdate.html).

1. The subject Update #2 to the Summerlin West Planning Area is premised on the *DB5 Modifications* (ie, Enhancement) for regulating the downstream outflows. A technical drainage study for *DB5 Modifications* must be submitted for review and approval prior to any upstream Villages development with the exception of Villages 21 and 22.

The following comments are repeated until they are complete:

1. Flood Control supports the Mass Grading concept with the understanding that these are interim improvements and are the responsibility of the Master Developer. Mass Grading shall not place any fill material in the proposed embankment area of the detention basin. State Dam Safety Permit approval is required prior to any other detention basin work.
2. The Mass Grading Plans shall be revised to show no grading work within the area of the future detention basin embankment & spillway areas. This exclusion area needs to be clearly delineated on the plans and added as a Note on each Sheet of the Grading Plans.
3. Howard Hughes Company (Summerlin) is solely responsible for the maintenance and erosion control of the interim facilities based upon the Mass Grading.

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.

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/PBJ

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

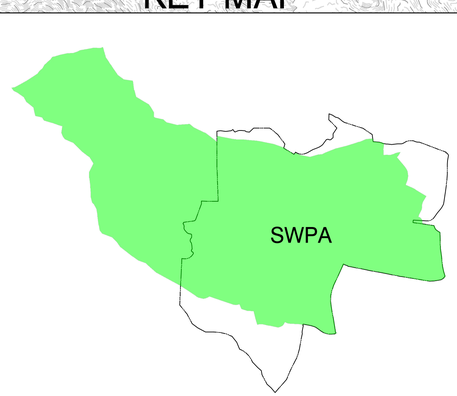
HEC-1 SUMMARY TABLE
DB5/ALTA TRIBUTARY
ULTIMATE CONDITION

Basin / Concentration Point	Area (Acre)			Q_{100} (cfs)			SDN	Basin / Concentration Point	Area (Acre)			Q_{100} (cfs)			SDN
	Update	Previous	Difference	Update	Previous	Difference			Update	Previous	Difference	Update	Previous	Difference	
3-1	1422.67	1422.67	0.00	2117	2117	0	SDN3	CP3-L	-	-	-	1828	2221	-393	SDN3
3-2	145.16	144.58	0.58	428	429	-1	SDN3	RCSWAA-1	3033.6	4636.55	-1602.95	1827	2220	-393	SDN3
CP3.1	-	-	-	2172	2172	0	SDN3	SWAA-2	448	449	-1	948	948	0	SDN3
3-3	111.13	111.16	-0.03	392	392	0	SDN3	CSWAA-2	5158.4	5085.55	72.85	2230	2884	-654	SDN4
CP3.2	-	-	-	2222	-	-	SDN3	SWAA-3	371.2	372.2	-1	668	668	0	SDN3
3-4	222.38	221.26	1.12	761	757	4	SDN3	CSWAA-3	5529.6	5457.75	71.85	2710	3121	-411	SDN4
3-5	187.91	187.91	0.00	625	625	0	SDN3	3-G2	103.69	82.23	21.46	359	432	-73	SDN3
CP3.3	-	-	-	1358	-	-	SDN3	3-L2	98.49	59.53	38.96	317	186	131	SDN3
3-6	56.74	56.74	0.00	201	203	-2	SDN3	CP3.8	-	-	-	677	602	6.02	SDN3
3-7	83.21	109.69	-26.48	290	423	-133	SDN3	3-A1	359.79	-	-	688	-	-	SDN3
3-J	221.68	157.02	64.66	555	414	141	SDN3	3-A2	117.88	-	-	379	-	-	SDN3
CP3.J	-	-	-	2128	-	-	SDN3	CP3.A	-	-	-	975	-	-	SDN3
WOUS-4	81.26	-	-	193	-	-	SDN3	3-B	167.27	446.26	-278.99	490	332	158	SDN3
CP3.4A	-	-	-	3464	-	-	SDN3	3-C	140.11	184.83	-44.72	414	389	25	SDN3
3-D	116.88	213.04	-96.16	342	614	-272	SDN3	CPDBA-B	768	864.3	-96.3	1721	1785	-64	SDN3
CP3.4B	-	-	-	3680	-	-	SDN3	GPDB	768	864.3	-96.3	91	184	-93	SDN3
WOUS-5	114.29	-	-	341	-	-	SDN3	3-G1	108.64	110.4	-1.76	353	407	-54	SDN3
CP3.5A	-	-	-	3855	-	-	SDN3	CP3-G1	-	-	-	408	529	-121	SDN3
3-E	84.60	362.34	-277.74	264	855	-591	SDN3	3-Q2	81.18	95.5	-14.32	245	204	41	SDN3
3-F	225.79	138.17	87.62	583	476	107	SDN3	CP3-Q2	-	-	-	631	713	-82	SDN3
CP3.5B	-	-	-	4599	-	-	SDN3	3-H1	76.22	80.61	-4.39	253	257	-4	SDN3
WOUS-4B	13.48	-	-	35	-	-	SDN3	CP3-H1	-	-	-	857	958	-101	SDN3
CP3.5C	-	-	-	4565	-	-	SDN3	3-I1	193.02	187.75	5.27	565	538	27	SDN3
3-8	448.61	408.73	39.88	1145	1113	32	SDN3	CP3.9	-	-	-	1953	1950	3	SDN3
3-K1	298.04	-	-	980	-	-	SDN3	3-H2	64.21	64.21	0	198	197	1	SDN3
3-K2	245.96	-	-	678	-	-	SDN3	3-I2	74.15	74.15	0	211	211	0	SDN3
WOUS-3	24.20	-	-	61	-	-	SDN3	CP3.10A	-	-	-	399	398	1	SDN3
CP3.6A	-	-	-	2562	-	-	SDN3	CP3.10	-	-	-	2265	2301	-36	SDN3
3-N1	127.88	-	-	324	-	-	SDN3	3-O	46.97	55.79	-8.82	153	187	-34	SDN3
CP3.6B	-	-	-	2762	-	-	SDN3	3-P1	119.49	85.52	33.97	397	419	-22	SDN3
3-M	157.57	149.46	8.11	436	485	-49	SDN3	CP3-P	-	-	-	548	596	-48	SDN3
3-N2	116.34	-	-	343	-	-	SDN3	3-Q	83.47	65.66	17.81	244	202	42	SDN3
CP3.7	-	-	-	756	-	-	SDN3	CP3-Q	-	-	-	763	779	-16	SDN3
3-DB5	45.50	-	-	100	-	-	SDN3	3-H3	92.46	89.8	2.66	254	252	2	SDN3
CPDB5	-	-	-	7649	7787	-138	SDN3	CP3.11	-	-	-	3123	3191	-68	SDN3
DB5MOD	4582.40	4510.94	71.46	1778	2148	-370	SDN3	ANGLPKIN	14547.2	14451.2	96	8685	8949	-264	SDN5
3-L	126.43	152.22	-25.79	392	486	-94	SDN3	ANGLPKDB	14547.2	14451.2	96	407	877	-470	SDN5

LEGEND

- CONCENTRATION POINT
- BASIN BOUNDARY
- LOT BOUNDARY
- 3-A ONSITE BASIN ID
- 3-3 OFFSITE BASIN ID
- LM3 LOT ID
- FLOW ARROW

KEY MAP



GRAPHIC SCALE
1000 0 500 1000 2000
1" = 1000'

THE HOWARD HUGHES CORPORATION
1980 FESTIVAL PLAZA DRIVE, SUITE BLVD, 3RD FLOOR
LAS VEGAS, NV 89135

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7500 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

REVISION	BY	DATE
ADDENDUM #1	JYA	8/2017

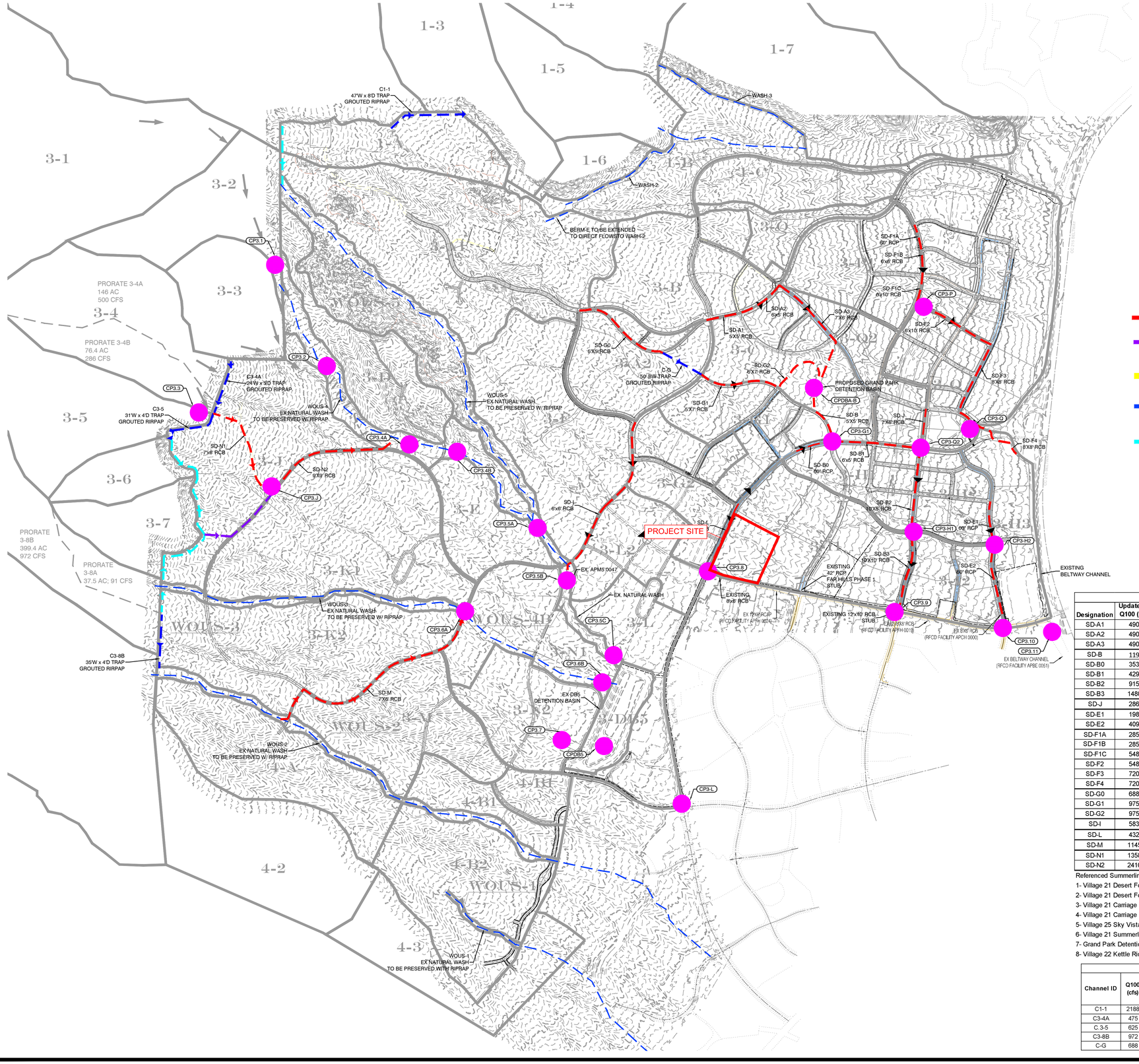
2019 UPDATE #2 TO SUMMERLIN WEST PLANNING AREA

A.6.3 DB5/Alta Tributary

DRAWN BY: PLM
DESIGNED BY:
CHECKED BY:
PROJECT NO: 7809
SCALE: 1" = 1000'
HORIZ. DATUM:
11/2018

SHEET A.6.3 OF SHEETS
DRAWING NO.

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NORTH

GRAPHIC SCALE

1000 0 500 1000 2000

1" = 1000'

LEGEND

- REGIONAL STORM DRAIN FACILITY
- ANTICIPATED LOCAL STORM DRAIN
- EXISTING FACILITY ALIGNMENT
- REGIONAL OPEN CHANNEL / WASH FACILITIY
- ANTICIPATED LOCAL CHANNEL
- CONCENTRATION POINT
- BASIN BOUNDARY
- 3-A ONSITE BASIN
- 3-1 OFFSITE BASIN

REGIONAL FLOOD CONTROL FACILITY SUMMARY TABLE

Designation	Update #2 Q100 (cfs)	Previous Q100 (cfs)	Basin/CP	Size	Type	Velocity	Remarks
SD-A1	490	628	3-B	5'x5'	RCB	33.03	
SD-A2	490	628	3-B	6'x5'	RCB	33.70	
SD-A3	490	1255	3-B	7'x6'	RCB	31.48	
SD-B	119	184	GPDB	5'X5'	RCB	N/A	Reference 7
SD-B0	353	407	3-G1	60"	RCP	28.5	Reference 7
SD-B1	429	529	CP3-G1	6'x5'	RCB	N/A	
SD-B2	915	958	CP3-H1	10'x8'	RCB	N/A	Reference 2
SD-B3	1480	1496	CP3-H1, 3-I1	10'x10'	RCB	N/A	Reference 1
SD-J	286	204	3-Q2	7'x6'	RCB	13.11	Reference 6
SD-E1	198	197	3-H2	60"	RCP	N/A	Reference 4
SD-E2	409	408	3-H2, 3-I2	60"	RCP	N/A	Reference 3
SD-F1A	285	596	3-O, 1/3 3-P1	60"	RCP	N/A	Reference 8
SD-F1B	285	596	3-O, 1/3 3-P1	6'x6'	RCB	N/A	Reference 8
SD-F1C	548	596	CP3-P	6'x5'	RCB	N/A	Reference 8
SD-F2	548	596	CP3-P	6'x10'	RCB	28.23	
SD-F3	720	779	CP3-Q	8'x8'	RCB	17.12	
SD-F4	720	779	CP3-Q	8'x8'	RCB	19.38	
SD-G0	688	N/A	3-A1	5'x5'	RCB	32.74	
SD-G1	975	332	CP3.A	5'x7'	RCB	34.92	
SD-G2	975	332	CP3.A	6'x7'	RCB	33.44	
SD-I	583	476	3-F	6'X6'	RCB	18.13	
SD-L	432	416	3-G2	6'x6'	RCB	13.30	Reference 5
SD-M	1145	N/A	3-8	7'x6'	RCB	34.02	
SD-N1	1358	N/A	CP3.3	7'x6'	RCB	34.96	
SD-N2	2410	N/A	CP3.J	9'x9'	RCB	34.94	

Referenced Summerlin West Technical Drainage Studies:

1- Village 21 Desert Foothills Drive (Far Hills to Street A)
2- Village 21 Desert Foothills Drive (Redpoint to Summerlin Pkwy)
3- Village 21 Carriage Hill Drive (Far Hills to Street A)
4- Village 21 Carriage Hill Drive (Redpoint to Summerlin Pkwy)
5- Village 25 Sky Vista Drive Improvments- Phase 1 (DS5120A) by GCW
6- Village 21 Summerlin Parkway Extension
7- Grand Park Detention Basin
8- Village 22 Kettle Ridge Drive

REGIONAL CHANNEL SUMMARY

Channel ID	Q100 (cfs)	EG Slope	Modified Slope	# of 3' Drops for New Slope	Normal Depth	Min Freeboard	Channel Dimensions					
							Depth (ft)	Velocity (ft/s)	Side Slopes	Bottom Width (ft)	Top Width (ft)	Riprap
C1-1	2188	5.1%	1.5%	25	5.7	1.65	8.0	14.55	2:1/2:1	15	47	Grouted
C3-4A	475	2.8%	-	-	3.08	1.46	4.5	12.69	2:1/2:1	6	24	Grouted
C.3-5	625	9.1%	4.5%	17	2.16	1.48	4.0	14.94	2:1/2:1	15	31	Grouted
C3-8B	972	4.7%	3.1%	12	3.07	1.54	5.0	15.00	2:1/2:1	15	35	Grouted
C-G	688	7.7%	-	-	0.99	1.33	2.5	13.12	3:1/3:1	50	65	Grouted

REV	DATE	BY	REVISION

CLV

THE HOWARD HUGHES COMPANY, LLC
10801 WEST CHARLESTON BLVD, 3RD FLOOR
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2019 UPDATE #2 TO SUMMERLIN WEST PLANNING AREA

A.6.5 REGIONAL FLOOD CONTROL FACILITIES MAP

DRAWN BY:
DESIGNED BY:
CHECKED BY:
PROJECT NO: 7809
SCALE: HORIZ: VERT:

SHEET A.6.5 OF SHEETS

DRAWING NO.

H:\7809\Drainage\10_UP2 ADD1\A Figures\A.6.5_Regional Flood Control Facility Map\A.6.5_Regional Flood Control Facility Map UP2.dwg,12/13/2019 10:37 AM,rachelr

Master Conceptual Drainage Study for Summerlin West Village 25

Addendum #2 to the Master Conceptual Drainage Study for

Summerlin West Village 25

Las Vegas, Nevada

W.O. # 7919-A

Prepared for:
Howard Hughes Company, LLC

Submitted to:
City of Las Vegas
Public Works

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin West Village 25 Date: April 25, 2019

Location of Development: a) Descriptive (Cross Streets) North/South: Sky Vista Drive

East/West: Far Hills Avenue

b) Section: 21 and 22 Township: 20S Range: 59E

c) APN : 137-22-101-001; 137-21-000-002

Name of Owner: The Howard Hughes Company, LLC

Telephone No.: (702) 791-4336 Fax No.: (702) 791-4453 E-Mail Address: chris.anderson@howardhughes.com

Address: 10801 W. Charleston Blvd. LV, NV, 89135

Contact Person-Name: Joanna Ayson **Telephone No.:** (702)-873-7550

* **E-Mail Address:** jayson@vtnnv.com **Fax No.:** (702)-362-2597

Firm: VTN Nevada

Address: 2727 S. Rainbow Blvd, LV, NV, 89146

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		

1. Total Owned Land Area: At Site: +/-548 Acres Being Developed/Disturbed: +/-548 Acres
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ **Yes**** ☒ **No**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ **Yes**** ☐ **No**
4. Proposed type of development (Residential, Commercial, Etc.): Mixed-use master plan
5. Approximate upstream land area which drains to the subject site: +/- 819 acres
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: SWPA MPU (DS4926), TDS for Summerlin West Desert Foothills Drive (Far Hills to Street A) (DS5013
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: 10'X10' RCB storm drain in Desert Foothills Drive (CCRFCD Master Planned Facility)
8. Briefly describe your proposed schedule for the subject project: As soon as possible

PROFESSIONAL ENGINEER - STATE OF NEVADA
BRIAN TROY RUIZ
EXP: 12/31/19
CIVIL
No. 15967
4/25/19

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.

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: May 9, 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: **Master Conceptual Drainage Study For Summerlin West Village 25**			**COPIES TO:** VTN Nevada
Cross Streets:	Sky Vista Drive and Far Hills Avenue		Howard Hughes Company, LLC
File Number:	F:\Depot\DSMemos\DS5104C.doc		Bart Anderson, P.E., DevCo
Parcel Number:	137-22-101-001, 137-21-000-002		CCRFCD
Zoning Action:	MDR-75107 & PMP-74780		
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	2/20/2019	2/27/2019 & 3/20/2019	Not Approved	$400.00	503292: $400
2nd Submittal	4/4/2019	4/17/2019	Not Approved	$400.00	3081574: $400
3rd Submittal	4/25/2019	5/9/2019	See Comments Below	$400.00	3105175: $400
			TOTAL FEES (LDDRS):	**$1,200.00**	**----**

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

1. **This drainage study is acceptable in concept;** however, *City of Las Vegas* will not formally accept the study until the *Clark County Regional Flood Control District (CCRFCD)* has issued a letter of concurrence. The engineer should contact the CCRFCD to confirm that they have begun their review.

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

   http://gustfront.ccrfcd.org/LandDev/LandDev.aspx

2. The *Grand Park Detention Basin* is proposed to regulate and meter outflow to match the previously approved downstream flow conditions at the junction of *Far Hills* storm drain and the *Beltway Channel*. Without the *Grand Park Detention Basin*, there will be a net increase in flows at the *Beltway Channel* downstream of *Far Hills* intersection exceeding the previously approved flow.

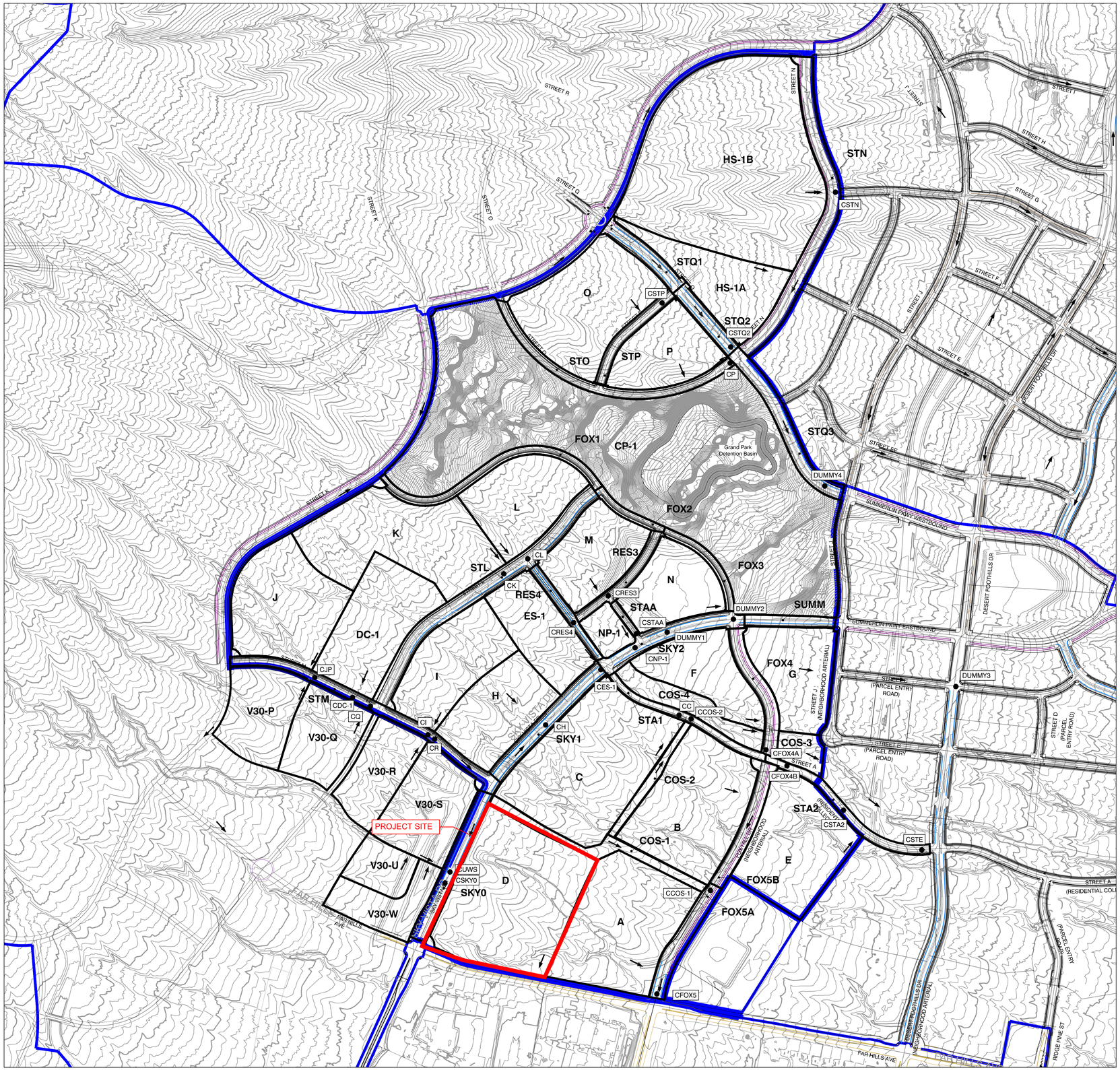
   A technical drainage study for the analysis, design and construction plans for the *Grand Park Detention Basin* must be submitted and approved by the City prior to the individual onsite parcel developments.

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: T20S/R59E/22
AREA K-22



GRAPHIC SCALE

400 0 200 400 800

1" = 400'

NORTH

LEGEND

- BASIN BOUNDARY
- W51 BASIN DESIGNATION
- CONCENTRATION POINT
- FLOW ARROW

ULTIMATE CONDITION HEC-1 SUMMARY TABLE

BASIN ID	Area (a.c.)	Q100 (cfs)	BASIN ID	Area (a.c.)	Q100 (cfs)
J	16.90	69	FOX3	1.51	7
STM	4.76	20	N	9.91	40
V30-P	10.30	39	SUMM	1.65	7
CJP	-	128	G	11.44	45
DC-1	15.02	56	D	27.15	105
CDC-1	-	184	FOX5B	3.19	12
V30-Q	9.60	37	COS-1	3.48	9
CQ	-	221	CCOS-1	-	20
I	13.23	53	FOX5A	3.15	11
CI	-	274	A	21.35	81
V30-R	8.57	35	CFOX5	-	111
CR	-	308	C	26.54	99
V30-S	11.91	49	STA1	2.29	10
V30-U	4.74	20	CC	-	109
V30-W	6.85	25	COS-2	1.72	5
CUWS	-	403	CCOS-2	-	114
SKY0	4.16	14	FOX4	3.20	14
CSKY0	-	416	F	10.44	43
SKY1	3.91	16	COS-4	5.04	16
H	12.11	48	CFOX4A	-	73
CH	-	64	B	19.86	76
ES-1	10.20	42	CFOX4B	-	263
CES-1	-	106	STA2	2.84	12
SKY2	3.78	17	CSTA2	-	275
NP-1	2.70	9	COS-3	2.40	8
CNP-1	-	132	E	17.14	65
STL	7.86	28	CSTE	-	348
K	21.91	86	STP	2.05	9
CK	-	113	O	19.18	46
L	12.79	53	CSTP	-	55
CL	-	167	STQ1	2.49	11
RES4	1.60	7	STQ2	2.11	10
CRES4	-	174	CSTQ2	-	76
RES3	1.97	9	STO	4.10	17
M	10.88	46	P	10.31	42
CRES3	-	229	CP	-	59
STAA	0.44	2	STQ3	4.22	18
CSTAA	-	231	STN	7.67	27
FOX1	3.39	14	HS-1A	11.70	47
FOX2	1.06	5	HS-1B	49.79	195
CP-1	94.28	282	CSTN	-	266

REVISION | BY | DATE | REV

THE HOWARD HUGHES CORPORATION
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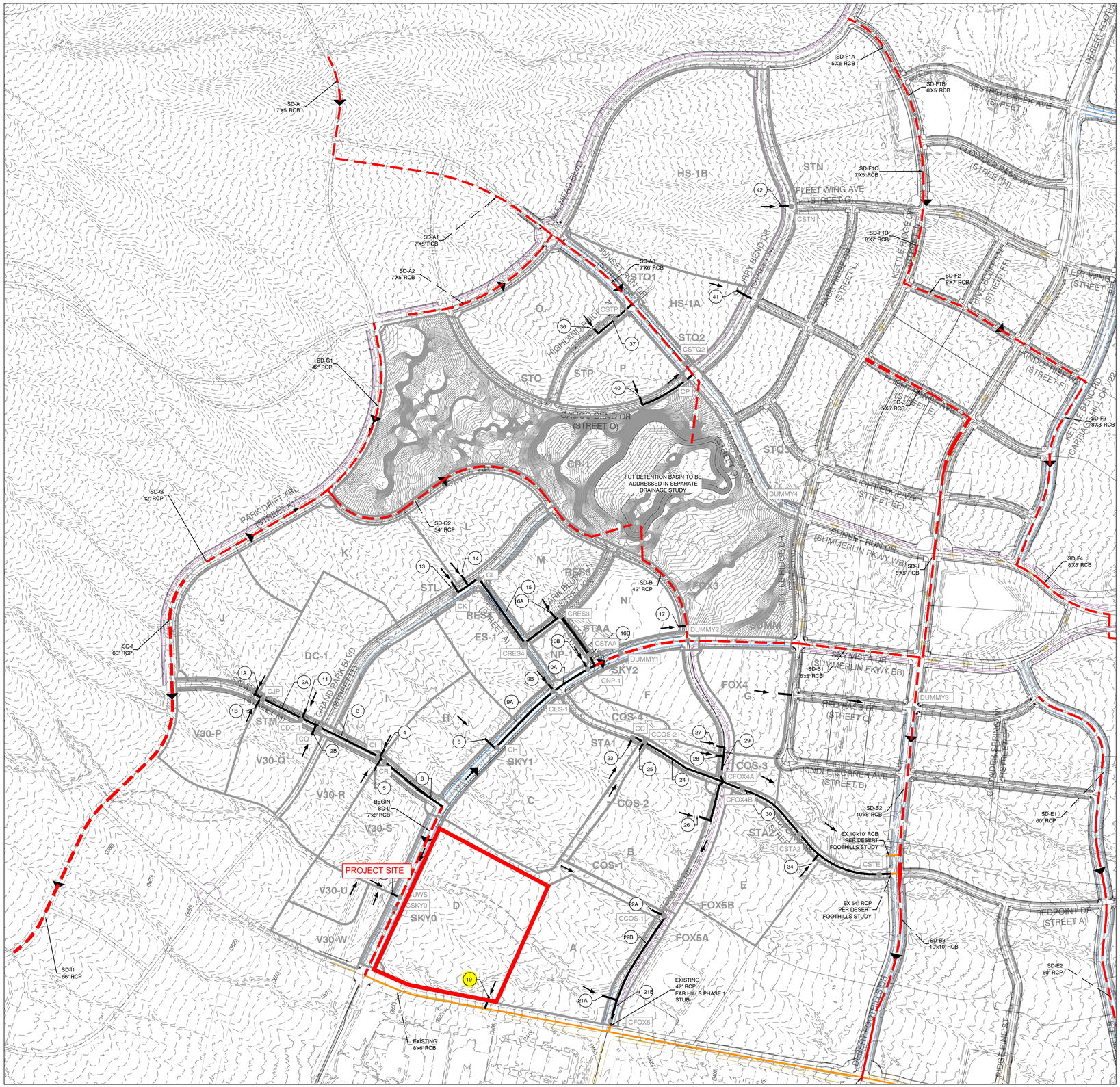
FIGURE 6
ULTIMATE CONDITION BASIN MAP

SUMMERLIN WEST VILLAGE 25

DRAWN BY: ATM/AH — JULY 2018
DESIGNED BY: JYA — JULY 2018
CHECKED BY: JYA — JULY 2018
SCALE: 1" = 400' HORIZ. N/A VERT.
PROJECT NO: 2919

SHEET
OF SHEETS
DRAWING NO.

H:\2919\Drainage\3_Arch\2A_Figures\Figure 6 - Village 25 Drainage Basin Map.dwg



GRAPHIC SCALE

400 0 200 400 800

1" = 400'

NORTH

LEGEND

- CCRFCD STORM DRAIN ALIGNMENT
- EXISTING FACILITY
- VILLAGE 25 LOCAL STORM DRAIN
- W51 BASIN DESIGNATION
- CONCENTRATION POINT
- (1) LOCAL FACILITY DESIGNATION
- DEVELOPED CONDITION FLOW ARROW

VILLAGE 25 LOCAL FLOOD PROTECTION FACILITIES

Facility #	Design Slope	Q100	Tributary Basin/CP	Facility	Velocity
	%	cfs			fps
1A	6.00%	69	J	42" RCP	21.97
1B	3.78%	39	V30-P	30" RCP	16.15
2A	0.50%	128	CJP	54" RCP	9.92
2B	0.50%	37	V30-Q	36" RCP	7.39
3	6.00%	221	CQ	54" RCP	29.63
4	0.50%	53	I	42" RCP	8.10
5	2.84%	35	V30-R	30" RCP	14.12
6	5.18%	308	CR	66" RCP	30.44
7	1.00%	403	CUWS	72" RCP	17.05
8	6.00%	48	H	36" RCP	20.09
9A	0.50%	64	CH	42" RCP	8.37
9B	0.99%	42	ES-1	36" RCP	9.93
10A	6.00%	106	CES-1	42" RCP	24.65
10B	5.78%	9	NP-1	24" RCP	12.81
11	1.62%	56	DC-1	36" RCP	12.83
13	0.50%	86	K	48" RCP	9.07
14	6.00%	53	L	36" RCP	20.64
15	5.98%	167	CL	48" RCP	27.60
16A	6.00%	46	M	36" RCP	19.85
16B	4.05%	231	CSTAA	48" RCP	25.55
17	2.55%	40	N	30" RCP	14.00
19	0.50%	105	D	36" RCP	24.04
21A	1.00%	81	A	42" RCP	11.63
21B	2.02%	111	CFOX5	42" RCP	16.42
22A	4.00%	9	COS-1	24" RCP	11.23
22B	1.00%	20	CCOS-1	24" RCP	8.13
23	0.50%	99	C	48" RCP	9.21
24	5.13%	114	CCOS-2	48" RCP	23.60
25	0.50%	5	COS-2	24" RCP	4.50
26	1.00%	76	B	48" RCP	11.59
27	1.33%	43	F	30" RCP	10.92
29	1.50%	73	CFOX4A	36" RCP	13.07
30	5.50%	263	CFOX4B	54" RCP	29.95
31	4.27%	8	COS-3	24" RCP	11.12
34	0.50%	65	E	42" RCP	8.38
36	6.00%	46	O	36" RCP	19.85
37	6.00%	55	CSTP	36" RCP	20.85
40	6.00%	42	P	36" RCP	19.36
41	1.00%	47	HS-1A	36" RCP	10.22
42	1.00%	195	HS-1B	54" RCP	14.09

REVISION | BY | DATE | REV

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2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH: (702) 873-7550 FAX (702) 362-2597 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

FIGURE 7
LOCAL STORM DRAIN FACILITIES MAP

SUMMERLIN WEST VILLAGE 25

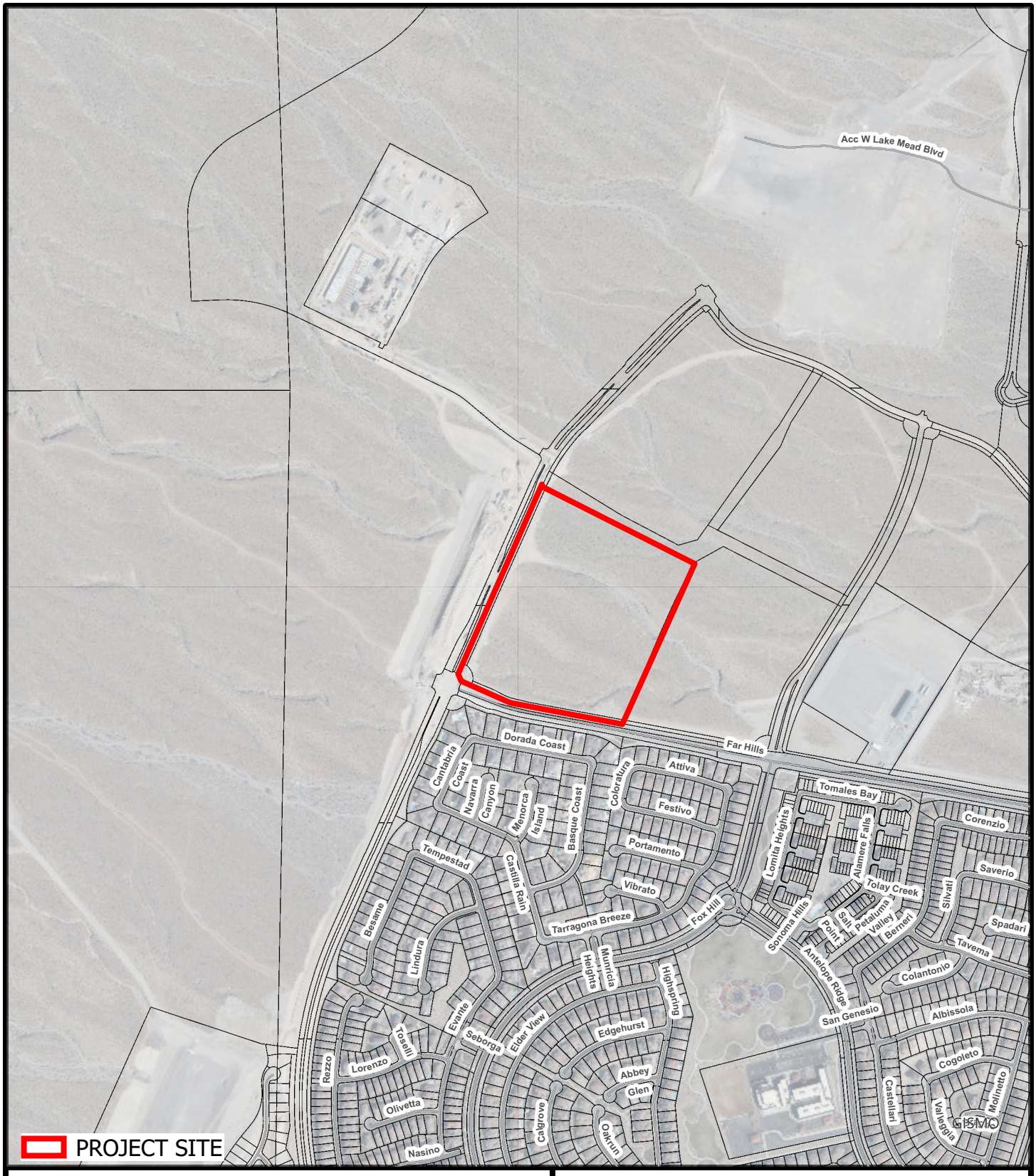
DRAWN BY: ATM/AH — JULY 2018
DESIGNED BY: SVB/JYA — JULY 2018
CHECKED BY: J?A — JULY 2018
SCALE: 1"=400' HORIZ. NA VERT.
PROJECT NO: 7991

SHEET
OF SHEETS
DRAWING NO.

H:\7991\Drawings\3_Art\2A_Figures\Figure 7 - Local Flood Control Facilities Map V25-REV.dwg

APPENDIX D

Figures



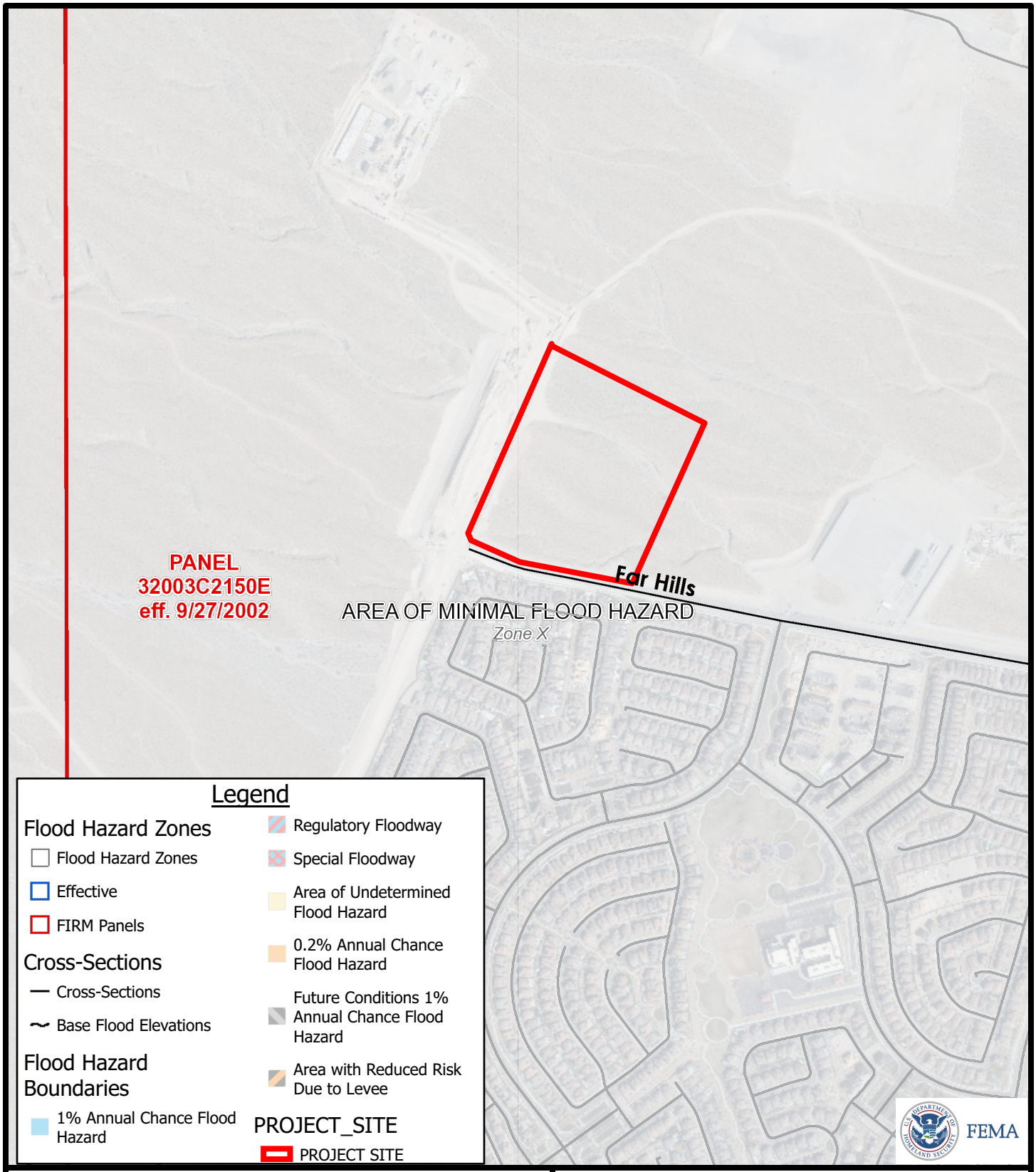
0 1,000 2,000 Feet

Scale: 1:10,000

NORTH

FIGURE 1
VICINITY MAP

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com



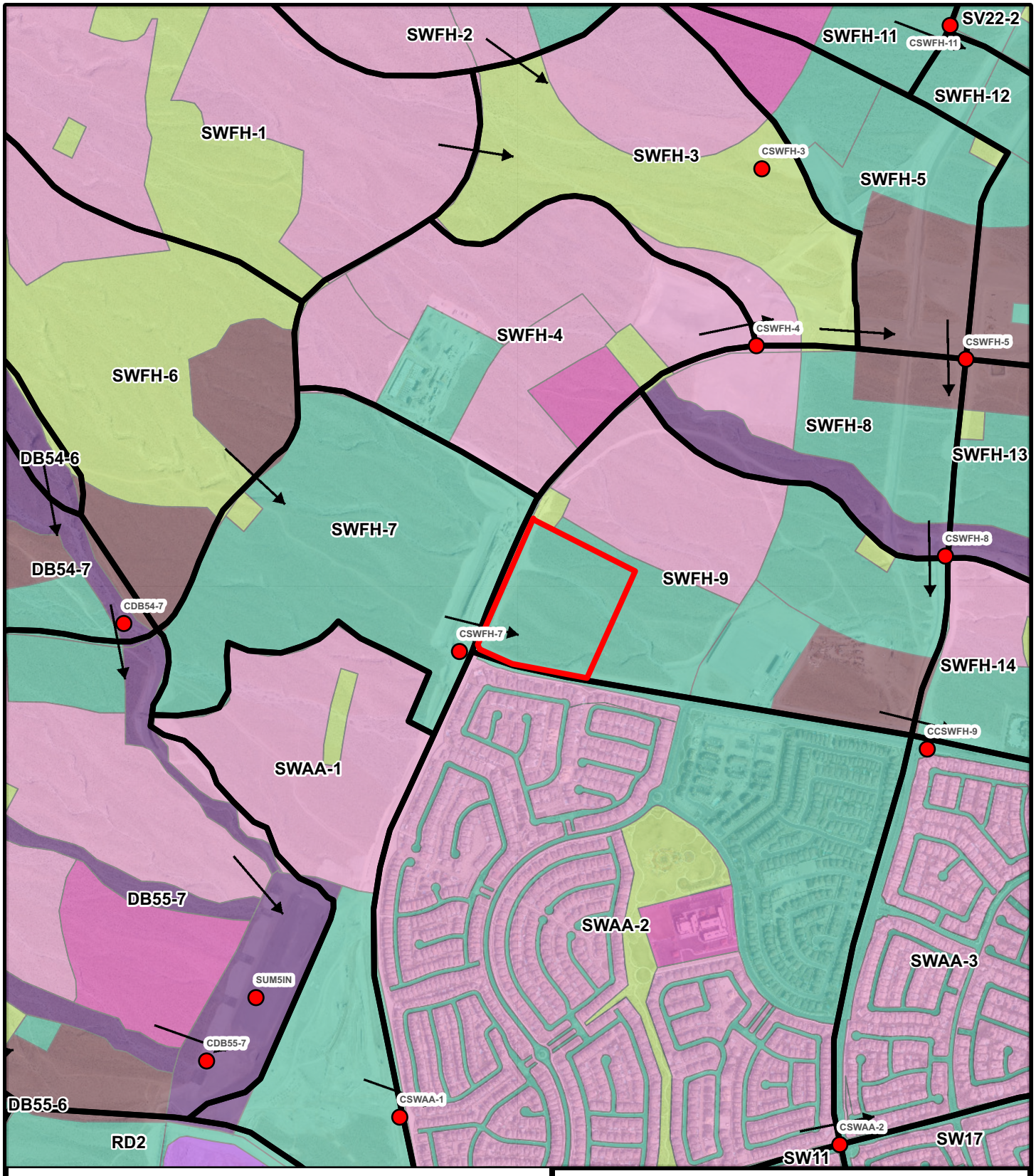
0 1,000 2,000 Feet

NORTH

Scale: 1:10,000

FIGURE 2
FEMA FIRM

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

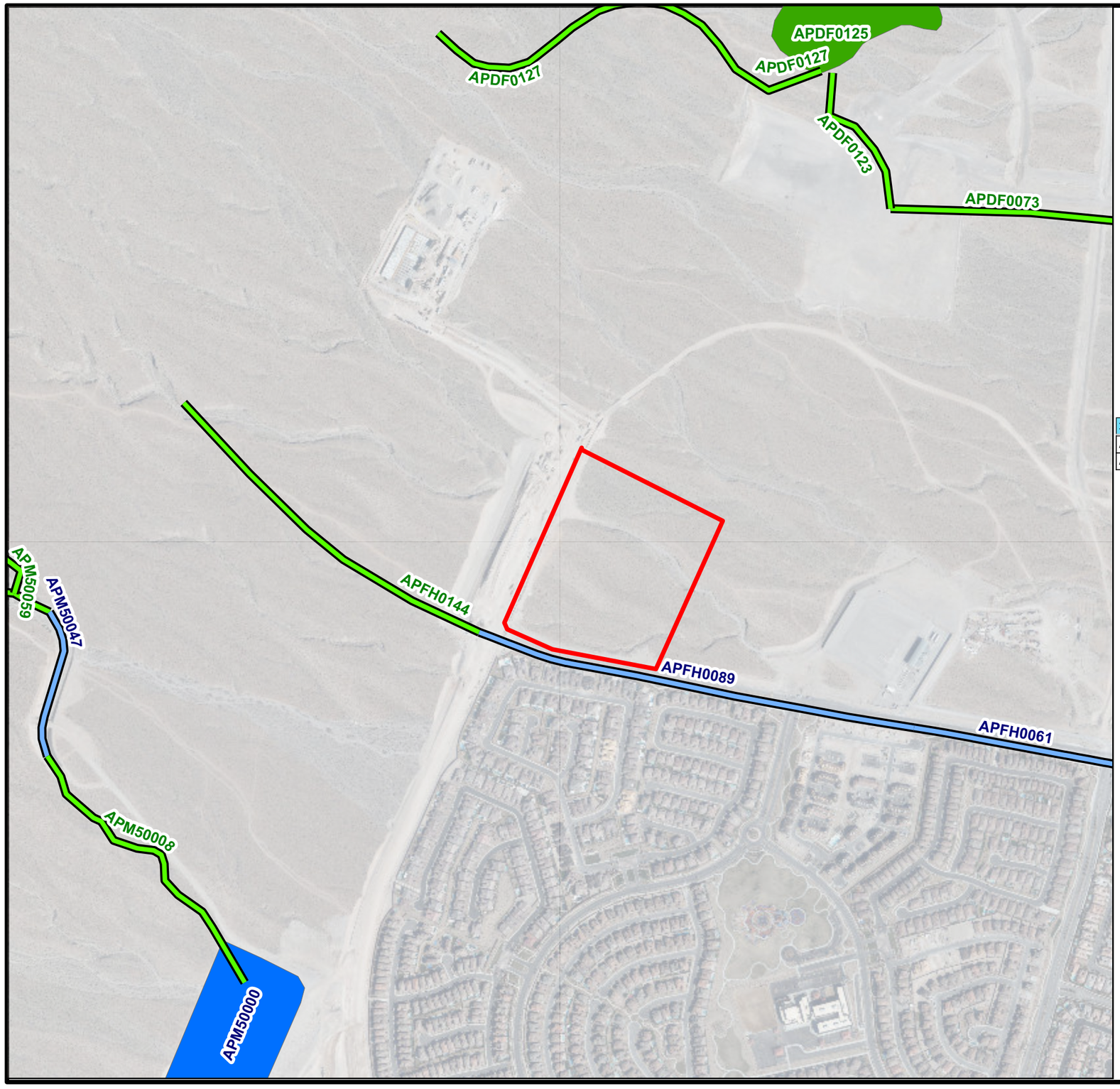


- Undeveloped Land, Open desert
- Parks, Golf Courses
- Rural
- Low-Density Residential
- Medium-Density Residential
- High-Density Residential
- Public Facility and Residential
- Very High-Density Residential
- Commercial
- Light Industrial
- Heavy Industrial
- Schools
- Lakes
- PROJECT SITE

FIGURE 3

2018 MPU SUBBASIN MAP

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com



ID_MILE	FAC_DESC	WATERSHED	LENGTH_FT	W_FT	SLOPE_FTFT	HEC1_MODEL	HEC1_NODE	HEC1_FLOW	TRIB_AREA	FACNAME
APDF0000	10' X 6' RCB	GOWAN	1788	10	0.0355	GOW3B	CSWFH-9	1428	0.8	ANGEL PARK - DESERT FOOTHILLS BRANCH
APDF0073	6' X 4' RCB	GOWAN	1922	6	0.044	GOW3A	CSWFH-4	486	1.52	ANGEL PARK - DESERT FOOTHILLS BRANCH
APDF0123	42" RCP	GOWAN	1076	0	0.06	GOW3A	GPDB	141	1.29	ANGEL PARK - DESERT FOOTHILLS BRANCH
APDF0127	6' X 6' RCB	GOWAN	2977	6	0.038	GOW3A	SWFH-1	853	0.69	ANGEL PARK - DESERT FOOTHILLS BRANCH
APFH0024	16' X 8' RCAP	GOWAN	1951	16	0.051	GOW3B	CCSWFH-9	2149	1.3	ANGEL PARK - FAR HILLS BRANCH
APFH0061	8' X 6' RCB	GOWAN	1435	8	0.02	GOW3A	CSWFH-7	839	0.5	ANGEL PARK - FAR HILLS BRANCH
APFH0089	8' X 6' RCB	GOWAN	2946	8	0.02	GOW3A	CSWFH-7	839	0.5	ANGEL PARK - FAR HILLS BRANCH
APFH0144	5' X 4' RCB	GOWAN	2497	5	0.055	GOW3A	SWFH-6	456	0.28	ANGEL PARK - FAR HILLS BRANCH
APM50008	CONC CHNL 50'W 4.5'D 2:1 SS	GOWAN	2102	50	0.052	GOW3A	CCDB54-7	3634	4.13	ANGEL PARK - MIDDLE 5 BRANCH
APM50047	DIVERSION BERM WITH GABION BANK PROTECTION	GOWAN	1000	0	0.013	GOW3A	CCDB54-7	3634	4.13	ANGEL PARK - MIDDLE 5 BRANCH
APM50056	CONC CHNL 80'W 4'D 2:1 SS	GOWAN	264	80	0.013	GOW3A	CCDB54-7	3634	4.13	ANGEL PARK - MIDDLE 5 BRANCH
APM50057	CONC CHNL 50'W 3'D 2:1 SS	GOWAN	9922	50	0.068	GOW3A	CDB54-4	1664	0.81	ANGEL PARK - MIDDLE 5 BRANCH
APM50059	CONC CHNL 100'W 3'D 2:1 SS	GOWAN	9075	100	0.07	GOW3A	CDB54-7	2606	3.31	ANGEL PARK - MIDDLE 5 BRANCH

ID_MILE	FAC_DESC	WATERSHED	ACRE_FT	HEC1_MODEL	HEC1_NODE	HEC1_FLOW	TRIB_AREA
APDF0125	130 AC-FT GRAND PARK DETENTION BASIN	GOWAN	130	GOW3A	CSWFH-3	1543	1.29
APM50000	384 AC-FT DETENTION BASIN #5	GOWAN	384.1	GOW3A	SUM5IN	6856	6.73

CCRFCD Facilities
STATUS
- COM
- CON
- PRO
- TN1
- TN2

CCRFCD Basins
STATUS
- COM
- CON
- PRO
- TN1
- TN2
- PROJECT SITE

FIGURE 4
2018 MPU FACILITY MAP

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F: 702.804.2299
gcwengineering.com



PRORATED FLOW RATE SUMMARY

Onsite Parent Basins			
Subbasin	Q_{100} (cfs)	Area (acres)	cfs/acre
*D	105	27.15	3.87
Onsite Prorated Basins			
Subbasin	Q_{100} (cfs)	Area (acres)	cfs/acre
D-1	16	4.24	3.87
D-2	24	6.14	3.87
D-3	7	1.75	3.87
D-4	8	2.07	3.87
D-5	8	2.11	3.87
D-6	14	3.52	3.87
D-7	10	2.70	3.87
D-8	9	2.30	3.87
D-9	9	2.32	3.87
TOTAL	**105**	**27.15**	**N/A**

100-Year Onsite Summary Min. Slope

Section ID	Tributary Sources	Slope (%)	Q_{100} (cfs)	Depth (ft)	Velocity (fps)	D*V
Section 1	D-1	3.00	16	0.36	4.24	1.53
Section 2	D-2	4.31	24	0.38	5.37	2.04
Section 2.1 Min Slope	D-2	4.12	24	0.39	5.28	2.06
Section 2.1 Max Slope	D-2	6.50	24	0.36	6.26	2.25
Section 3	D-3	0.50	7	0.37	1.76	0.65
Section 4	D-4	0.50	8	0.38	1.82	0.69
Section 5 Min Slope	D-5	0.50	8	0.38	1.82	0.69
Section 5 Max Slope	D-5	1.00	8	0.35	2.36	0.83
Section 6 Min Slope	D-6	2.60	14	0.35	3.89	1.36
Section 6 Max Slope	D-6	6.50	14	0.31	5.51	1.71
Section 7	D-7	0.75	10	0.38	2.24	0.85
Section 8	D-8	0.74	9	0.37	2.17	0.80
Section 9 Min Slope	D-9	0.74	9	0.37	2.17	0.80
Section 9 Max Slope	D-9	2.00	9	0.32	3.17	1.01

% COMPLETE

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-06-20
PLOT TIME: 11:45:09

GCW
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
ENGINEERS \ SURVEYORS

F:\Projects\700\764-A173-001\Division\Civil\Figures\764-A173-001_Figure 5.dwg
Cody Beck

PULTE HOMES
SUMMERLIN VILLAGE 25 - PARCEL D
INTERIM CONDITION
ONSITE DRAINAGE MAP

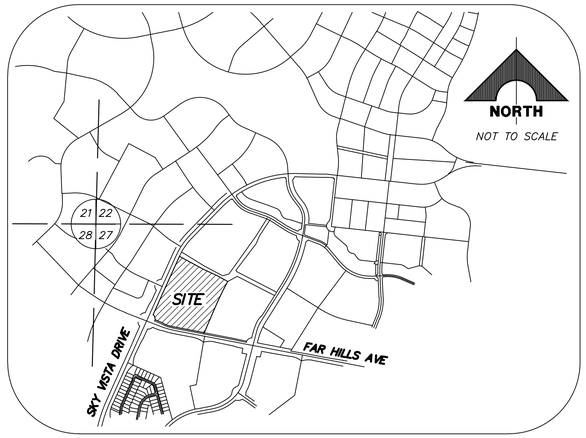
DRAWING
FIGURE 5
1 OF 1 SHTS

GROSS ACREAGE:	27.16
NO. OF LOTS:	111
DENSITY (UNIT/AC):	4.09

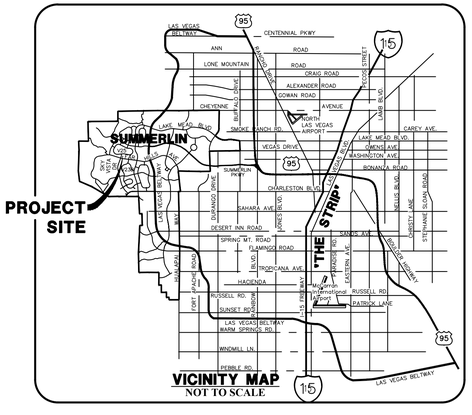
SHEET INDEX		
NO.	DWG	DESCRIPTION
1	C1	COVER SHEET
2	C2	GENERAL NOTES
3	C3	LEGEND, ABBREVIATIONS AND QUANTITIES
4	G1	GRADING PLAN 1
5	G2	GRADING PLAN 2
6	G3	GRADING PLAN 3
7	G4	GRADING PLAN 4
8	G5	GRADING PLAN 5
9	G6	GRADING PLAN 6
10	D1	GRADING SECTIONS & DETAILS 1
11	D2	GRADING SECTIONS & DETAILS 2
12	P1	CACTUS SUNRISE ST PLAN & PROFILE 8+00 TO 13+00
13	P2	CACTUS SUNRISE ST PLAN & PROFILE 13+00 TO 19+00
14	P3	MOJAVE YUCCA ST PLAN & PROFILE 9+50 TO 14+00
15	P4	MOJAVE YUCCA ST PLAN & PROFILE 14+00 TO 19+50
16	P5	STONE CACTUS ST PLAN & PROFILE 9+00 TO 13+50
17	P6	STONE CACTUS ST PLAN & PROFILE 13+50 TO 19+50
18	P7	SUNSET VIRGA ST PLAN & PROFILE 9+50 TO 14+50
19	P8	SUNSET VIRGA ST PLAN & PROFILE 14+50 TO 20+00
20	P9	DESERT BLOOM AVE PLAN & PROFILE 8+50 TO 14+00
21	P10	DESERT BLOOM AVE PLAN & PROFILE 14+00 TO 19+00
22	P11	CARMEL CLIFF AVE PLAN & PROFILE 9+50 TO 12+50
23	P12	SAGECREST AVE PLAN & PROFILE 7+00 TO 11+00
24	P13	SAGECREST AVE PLAN & PROFILE 11+00 TO 15+50
25	P14	KNUCKLE A AND KNUCKLE B TC PLAN & PROFILES
26	LAT1	STORM DRAIN LATERAL PLAN & PROFILE
27	LAT2	STORM DRAIN LATERAL PLAN & PROFILE
28	LAT3	STORM DRAIN LATERAL PLAN & PROFILE
29	MU	MASTER UTILITY PLAN
30	U1	UTILITY PLAN
31	U2	UTILITY PLAN
32	U3	UTILITY PLAN
33	U4	UTILITY PLAN
34	U5	UTILITY PLAN
35	U6	UTILITY PLAN
36	T1	TRAFFIC PLAN
37	T2	TRAFFIC PLAN
38	T3	TRAFFIC PLAN
39	T4	TRAFFIC PLAN
40	T5	TRAFFIC PLAN
41	T6	TRAFFIC PLAN

IMPROVEMENT PLANS
FOR

SUMMERLIN VILLAGE 25 - PARCEL D
APN # 137-27-215-001



VICINITY MAP



BASIS OF BEARING AND COORDINATES

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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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:
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

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

OWNER
THE HOWARD HUGHES COMPANY LLC
10845 GRIFFITH PEAK DRIVE, SUITE 160
LAS VEGAS, NV 89135
(702) 791-4000

DEVELOPER
PULTE HOMES
7255 S. TENAYA WAY
SUITE 200
LAS VEGAS, NV 89113
(702) 914-4800

ENGINEER
GCW, INC.
1555 SOUTH RAINBOW BLVD.
LAS VEGAS, NEVADA 89146
(702) 804-2000
(702) 804-2299 (FAX)

UTILITY/AGENCY APPROVALS

COX COMMUNICATIONS LAS VEGAS, INC. — DATE

CENTRAL TELEPHONE COMPANY, DBA CENTURY LINK — DATE

THE AFFIXED CENTRAL TELEPHONE COMPANY, DBA CENTURY LINK 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.

NV ENERGY — DATE

NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

NV ENERGY – TRANSMISSION ENGINEERING — DATE

SOUTHWEST GAS CORP. — DATE

CLV PLANNING DEPARTMENT
THIS PLAN MEETS THE APPLICABLE STANDARDS OF THE CITY OF LAS VEGAS PLANNING DEPARTMENT

PLANNING DEPARTMENT — DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE, FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL — DATE

SUMMERLIN DESIGN REVIEW COMMITTEE — DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM
SHEETS: C1-C3, P1-P14, LAT1-LAT3, U1-U6

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-642-2444

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

FAST
Call before you UnderGround
1-702-433-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

L# XXX-XXXXX | CLV DWG#

ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
No. 16369
1/31/2001
PROFESSIONAL ENGINEER
DATE: 04-08-20

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:21:46

GCW
ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
f:\Projects\700\764-a173-001\DWG\production\764-A173-CV.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
COVER SHEET

DRAWING
C1
1 OF 41 SHTS

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 REVISED EDITION; THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD 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 (½") 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 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 GEOTEK RESIDENTIAL, LLC, REPORT # 15244-LVR, DATE JANUARY 16TH, 2020 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 IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.380 & CITY OF LAS VEGAS TITLE 18, APPENDIX D.
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, 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 RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC., TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF 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 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. AFTER HAUNCHING AND PRIOR TO BACKFILL OPERATIONS WHICH WOULD COVER SANITARY SEWER AND STORM DRAIN FACILITIES, CONTRACTOR IS REQUIRED TO SCHEDULE CLV OPEN-TRENCH UTILITY SURVEY INSPECTION FOR DETERMINATION OF FINAL LOCATION COORDINATES. FACILITIES TO BE LOCATED BY CLV SHALL INCLUDE AT A MINIMUM 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 SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY, SEWER AND STORM DRAIN ALIGNMENT, INCLUDING DEFLECTION POINTS.

OR

(MAY BE USED ONLY ON PROJECTS ASSOCIATED WITH A TENTATIVE MAP CONTAINING 5 LOTS OR MORE)

- 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 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 SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY, SEWER AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS. THE LOCATION SHALL BE DESCRIBED BY COORDINATES WHICH SHALL BE BASED ON THE OFFICIAL HORIZONTAL AND VERTICAL CONTROL NETWORKS OF THE CITY OF LAS VEGAS. FINAL LOCATION MAPS MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIONAL CERTAINTIES 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 CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.
23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

REVISED 06/04/18

CITY OF LAS VEGAS FIRE AND RESCUE GENERAL NOTES FOR HYDRANTS AND ACCESS

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 DISTRICT'S – 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 SECTION 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 SECTION 3310, SECTION 3312]
5. TO IDENTIFY FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. [IFC SECTION 507.5.7.3]
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 SECTION 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 SECTION 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 SECTION 507]
9. PRIVATE FIRE HYDRANTS SHALL BE PAINTED RED. [IFC SECTION 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 SECTION 507]
11. FIRE HYDRANTS SPACING SHALL BE AS FOLLOWS: [IFC SECTION C102]
    RESIDENTIAL – 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
    COMMERCIAL – 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1,000 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 ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. [IFC SECTION 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 SECTION 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 SECTION 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 SECTION C102.7]
17. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. [IFC SECTION C102.6]
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. 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 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 OF SERVICE DUE TO A SERVICE INTERRUPTION. [IFC SECTION 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 SECTION 503.2.3]
20. 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 OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%. [IFC SECTION 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 503.2.4]
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13 FT 6 IN. [IFC SECTION 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 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 THROUGH PARKING LOTS SHALL NOT BE LESS THAN 24 FT. [IFC SECTION 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 SECTION 503.1.1]
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS OR SINGLE POINT OF ACCESS IN EXCESS of 600 FT. CLV REGULATION AND MOU.
26. 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. CLV REGULATION
27. 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 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 OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. [IFC SECTION 503.3]
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. [IFC SECTION 503.6]
29. 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 PROPOSED LOCATION SHALL BE LOCATED ON THE SAME SIDE OF THE STREET AS THE PROPOSED DEVELOPMENT. CLV REGULATION.

REVISED FEBRUARY 4, 2019

FLOOD ZONE NOTE

THIS PROJECT IS LOCATED WITHIN A FEMA DESIGNATED FLOOD ZONE X PER FIRM PANEL 32003C2150E, DATED SEPTEMBER 27, 2002. A ZONE X IS DEFINED AS BEING OUTSIDE THE 100-YEAR FLOODPLAIN AND NOT LOCATED WITHIN A FEMA-DESIGNATED SPECIAL FLOOD HAZARD AREA.

LAS VEGAS VALLEY WATER DISTRICT LVVWD PROJECT # XXXXXX

(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 (258-7171) TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION. FOR FUTURE INSPECTIONS, NOTICE MUST BE GIVEN BY 2:00 P.M. THE BUSINESS DAY PRIOR TO THE REQUESTED LVVWD INSPECTION. WHEN REQUESTING INSPECTIONS, PLEASE REFER TO THE PROJECT # IDENTIFIED ABOVE.
2. ALL WORK SHALL CONFORM TO LVVWD STANDARD PLATES, DRAWINGS, AND SPECIFICATIONS, AND TO THE 2010 EDITION OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS). THE LATEST EDITION OF UDACS SHALL SUPERSEDE ANY CONFLICTS CONTAINED IN THE APPROVED DRAWINGS AND/OR SPECIFICATIONS.
3. ALL WORK, EXCEPT AS MODIFIED BY THESE PLANS OR BY NOTE 2 ABOVE, SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT DRAFT OR EDITION OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENT, CLARK COUNTY AREA.
4. A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE LVVWD.
5. ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING WITH LVVWD APPROVED SERVICE SADDLES.
6. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS.
7. ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB GUTTERS.
8. ALL WATER AND STORM DRAIN OR SANITARY SEWER CROSSINGS SHALL CONFORM TO SECTION 2.22 OF THE 2010 EDITION OF THE UDACS
9. ALL WATER FACILITIES 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 258-3152 OR 258-3802, TWO (2) WORKING DAYS PRIOR TO METER PICKUP.
11. ANY INTERRUPTION OF SERVICE MUST BE PERFORMED IN ACCORDANCE WITH UDACS SECTION 3.14.01, AND APPROVED BY THE LVVWD INSPECTION DIVISION PRIOR TO SHUTDOWN. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.
12. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE 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 ON THE STREET SURFACE.

    ANY DECORATIVE PAVING SURFACE WITHIN THE STREET IS THE RESPONSIBILITY OF THE OWNER'S ASSOCIATION, OR THE INDIVIDUAL PROPERTY OWNERS IF NO OWNER'S ASSOCIATION IS IN EXISTENCE, OR THE AGENCY HAVING JURISDICTION. DECORATIVE SURFACE MATERIALS PLACED WITHIN THE TEN FOOT EASEMENT ABUTTING A PUBLIC OR PRIVATE STREET, IF DISTURBED BY THE LVVWD DURING THE REPAIR OR OPERATION OF ITS FACILITIES, WILL BE REPLACED BY LVVWD WITH AN APPROPRIATELY SIZED PLAIN FINISH CONCRETE PATCH. THE LVVWD WILL NOT RESTORE, AND WILL NOT BE RESPONSIBLE FOR THE RESTORATION OF, ANY DECORATIVE PAVING SURFACE WITHIN THE STREET. THE LVVWD WILL NOT ATTEMPT TO MATCH COLOR OR FINISH OF ANY ADJACENT MATERIALS.

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

ADDTIONAL WATER NOTES

1. INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE 15.
2. 24" MINIMUM DEPTH OF COVER OVER WATER LINE MUST BE MAINTAINED DURING CONSTRUCTION.
3. THE DISTRICT CANNOT GUARANTEE A WATERTIGHT SHUTDOWN WHERE CONNECTIONS OR REPAIRS TO EXISTING FACILITIES ARE REQUIRED. THE CONTRACTOR SHALL ENSURE ALL LABOR AND EQUIPMENT IS AVAILABLE TO REMOVE FUGITIVE WATER THAT MAY IMPEDE CONSTRUCTION AT ALL TIMES. COORDINATION WITH INSPECTION DIVISION MUST TAKE PLACE PRIOR TO ANY TRIAL SHUTDOWN. CONTRACTOR TO INSTALL TEMPORARY SERVICE TO ENSURE PROPER SHUTDOWN IN THE EVENT NO OTHER APPURTENANCES ARE AVAILABLE.
4. THIS PROJECT PROVIDES FOR THE INSTALLATION OF OFF-SITE MAINS ONLY, AND DOES NOT PROVIDE OR IMPLY ANY WATER COMMITMENT.

CONDITIONAL APPROVAL OF VALVED OUTLET (6" AND LARGER)

THE WATER PLANS SHOW ONE OR MORE VALVED OUTLETS EXTENDING OUT OF PAVED AREAS. INSTALLATION OF THESE OUTLETS IS ACCEPTABLE. HOWEVER, IF THE OUTLETS ARE INCORRECTLY LOCATED OR NOT USED FOR ANY REASON WHEN THE PROPERTY IS ACTUALLY DEVELOPED, THE DEVELOPER SHALL ABANDON THE OUTLETS AT THE CONNECTION TO THE ACTIVE MAIN IN ACCORDANCE WITH LVVWD STANDARDS AND AT THE DEVELOPER'S EXPENSE. APPROVAL OF THE VALVED OUTLET DOES NOT PROVIDE OR IMPLY A WATER COMMITMENT.

WATER MAIN JOINT NOTES (PVC 4"-24")

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.

WATER MAIN JOINT NOTES (DIP 4"-12")

DIP PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE TWO AND ONE-HALF (2.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 415 FEET, PER UDACS 2.07.03.

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

DEVIATION FROM STANDARDS

- NONE

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/VERTICAL	COMPACTION
A.	PAVEMENT AREA SUBGRADE	0.1'± +0.0' TO -0.1'	SEE SOILS REPORT
B.	ENGINEERED FILL	0.5'± +0.1' TO -0.1'	SEE SOILS REPORT

- 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. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLIC 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 HIW OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

REVISED 4/15/10

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 CONNEC

ABBREVIATIONS

A	AIR
AC	ASPHALT CONCRETE, ACRE
ACP	ASBESTOS CEMENT PIPE
ADD'L	ADDITIONAL
AP	ANGLE POINT
APN	ASSESSOR'S PARCEL NUMBER
APPROX	APPROXIMATELY
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AVE	AVENUE
AVAR	AIR VALVE, AIR RELEASE ASSEMBLY
AWWA	AMERICAN WATER WORKS ASSOCIATION
BC	BACK OF CURB
BCR	BEGIN CURB RETURN
BLM	BUREAU OF LAND MANAGEMENT
BLVD	BOULEVARD
BM	BENCHMARK
BO	BLOW-OFF
BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
BVP	BEGIN VERTICAL POINT
BW	BACK OF SIDEWALK
C, ℄	CENTERLINE
C&G	CURB AND GUTTER
CATV	UNDERGROUND CABLE TV
CCBM	CLARK COUNTY BENCH MARK
CCPW	CLARK COUNTY PUBLIC WORKS
CCTV	CLOSED-CIRCUIT TELEVISION
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT
CE	COMMON ELEMENT
CFS	CUBIC FEET PER SECOND
CIP	CAPITAL IMPROVEMENTS PROJECT, CORRUGATED IRON PIPE
CIPM	CURED-IN-PLACE MANHOLE
CIPP	CURED-IN-PLACE PIPE
CIR	CIRCLE
CLR	CLEAR OR CLEARANCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CLV	CITY OF LAS VEGAS
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CNLV	CITY OF NORTH LAS VEGAS
CO	CLEANOUT
CONC	CONCRETE
COND	CONDUIT
CONST	CONSTRUCT OR CONSTRUCTION
COORD	COORDINATE
COR	CORNER
CPEP	CORRUGATED POLYETHELYNE PIPE
CT	COURT
CY	CUBIC YARD(S)
Δ	DELTA
DBL	DOUBLE
DCSWCS	DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEM (LATEST ED.)
DE	DRAINAGE EASEMENT
DEFL	DEFLECTION
DG	DESIGN GRADE
DI/D.I.	DROP INLET
DIA, ø	DIAMETER
DIP	DUCTILE IRON PIPE
DIST	DISTANCE
DR	DRIVE
DS	DOWNSPOUT
DTL	DETAIL
DW	DRIVEWAY
DWG	DRAWING
E	EAST
ECR	END CURB RETURN
ELEC,ELE	ELECTRICAL
ELEV	ELEVATION
EP,EOP	EDGE OF PAVEMENT
ESMT	EASEMENT
EVC	END VERTICAL CURVE
EVP	END VERTICAL POINT
EX,EXIST	EXISTING
EXP	EXPANSION JOINT
FC	FACE OF CURB
FF, FFE	FINISH FLOOR ELEVATION
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FO	FIBER OPTIC
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FINISH SURFACE
FT	FOOT/FEET
FTG	FOOTING
FUT	FUTURE
G	GAS
GA	GAGE, GUY ANCHOR
GB	GRADE BREAK
GND	GROUND
GRD	GRADE, GROUND
H, HGT	HEIGHT
HDWL	HEADWALL
HGL	HYDRAULIC GRADE LINE
HORIZ	HORIZONTAL
HP	HIGH POINT, HIGH PRESSURE
HPS	HIGH PRESSURE SODIUM
IBC	INTERNATIONAL BUILDING CODE
INV	INVERT
INT	INTERIM
JT	JOINT
L	LENGTH
LT	LEFT
LF	LINEAR FEET
LIP	LIP OF GUTTER
LN	LANE
LP	LOW POINT, LIGHT POLE
LS,LSCP	LANDSCAPE
LVWD	LAS VEGAS VALLEY WATER DISTRICT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MLTMCP	MORTAR LINED TAPE & MORTAR COATED PIPE
MP	MESA PARK
MOD	MODIFY/MODIFIED
MON	MONUMENT
MPH	MILES PER HOUR
N	NORTH
NAP	NOT A PART
NDOT	NEVADA DEPARTMENT OF TRANSPORTATION
N.I.C.	NOT IN CONTRACT
No.	NUMBER
NOSHA	STATE OF NEVADA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
NPC	NEVADA POWER COMPANY
NTS	NOT TO SCALE
NVE	NV ENERGY
OB	OVERBUILD
OC	ON CENTER
OHC	OVERHEAD COX COMMUNICATION
OHP	OVERHEAD POWER LINE
P	POWER LINE
PAC	PUBLIC ACCESS EASEMENT
PB	PULL BOX
PBS	PLANTMIX BITUMINOUS SURFACE
PDE	PUBLIC DRAINAGE EASEMENT
PLT	PLATE
PC	POINT OF CURVE, PRESSURE CLASS
PCC	POINT OF COMPOUND CURVE
PE	PROJECT ENGINEER OR POLYETHYLENE
PED	PEDESTRIAN
PGL	PROFILE GRADE LINE
PH	POTHOLE
PI	POINT OF INTERSECTION
PIV	POST INDICATOR VALVE
PL, P/L	PROPERTY LINE
PLCP	POLYURETHANE LINED AND COATED STEEL PIPE
PMF	PAVEMENT MARKING FILM
POB	POINT OF BEGINNING
POC	POINT ON CURVE, POINT OF CONNECTION
POT	POINT ON TANGENT
PP	POWER POLE
PROP	PROPOSED
PRC	POINT OF REVERSE CURVE
PRVC	POINT OF REVERSE VERTICAL CURVE
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PZ	PRESSURE ZONE
R, RAD	RADIAL, RADIUS
RT	RIGHT
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REC	RECTANGULAR
REF	REFERENCE
REINF	REINFORCED
REQD	REQUIRED
RIM	TOP OF RIM ELEVATION
RND	ROUND
R/W,ROW	RIGHT OF WAY
RP	RADIUS POINT
RPM	RAISED PAVEMENT MARKERS
RSGV	RESILIENT SEAT GATE VALVE
S	SEWER, SOUTH
SCH	SCHEDULE
SDWK	SIDEWALK
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SECT	SECTION
SF	SQUARE FOOT/FEET
SHLDR	SHOULDER
SHT	SHEET
SIS	SUMMERLIN IMPROVEMENT STANDARDS
SL	STREET LIGHT
SP	SERVICE POINT
SQ	SQUARE
SR	SEWER RECLAIM MAIN
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
STA	STATION
ST	STREET
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURE
SV	SKY VISTA DRIVE
SVZ	SIGHT VISIBILITY ZONE
SW	SIDEWALK
SWG	SOUTHWEST GAS
T	TELEPHONE OR TOP
TAN	TANGENT
TB	TOP OF BERM
TC	TOP OF CURB
TCE	TEMPORARY CONSTRUCTION ESMT
TEL,TELE	TELEPHONE
TEMP	TEMPORARY
TF	TOP OF FOOTING
TG	TOP OF GRATE
TMH	TOP OF MANHOLE
TOP	TOP OF PIPE
TP	TELEPHONE POLE
TRANS	TRANSITION
TRW	TOP OF RETAINING WALL
TS	TEST STATION
TS&V	TAPPING SLEEVE & VALVE
TW	TOP OF WALL
TYP,(TYP)	TYPICAL
UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS (LATEST EDITION)
UG	UNDERGROUND
ULT	ULTIMATE
USDCCA, USD	UNIFORM STD. DRAWINGS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA, NEVADA (LATEST EDITION)
UT	UNDERGROUND TELEPHONE
VAR	VARIABLE/VARIES
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VG	VALLEY GUTTER
VOL	VOLUME
W	WATER, WEST
W/	WITH
WMH	WATER MANHOLE
WS	WATER SUPPLY
WT	WEIGHT
WTR	WATER
XING	CROSSING
YD	YARD, YARD DRAIN
Z	PRESSURE ZONE

LEGEND

- TYPICAL PROPOSED LINEWORK
- TYPICAL EXISTING LINEWORK
- TYPICAL FUTURE LINEWORK
- SECTION LINE
- EASEMENT LINE
- EDGE OF PAVEMENT
- LOTLINE
- RIGHT-OF-WAY LINE
- PROPERTY LINE
- CENTERLINE
- TYPICAL UTILITY LINE 4" – 12" (SINGLE LINE)
- TYPICAL UTILITY LINE > THAN 12" (DOUBLE LINE)
- TYPICAL SEWER LINE W/MH
- TYPICAL WATER LINE W/GV
- TYPICAL STORM LINE W/MH
- 100 YR HYDRAULIC GRADE LINE
- CONCRETE OR STEEL ENCASEMENT
- TYPICAL STUB & BLOW-OFF
- EX. GAS LINE (–PE GAS–)
- EX. ELECTRICAL (–ELEC–)
- EX. CABLE TV (–CBL–)
- EX. TELEPHONE (–TEL–)
- EX. OVERHEAD POWER LINES (–OPL–)
- EX. ELEC & PWR POLES
- TYPICAL CURB & GUTTER, SIDEWALK AND RAMP
- POST AND CABLE FENCE
- WROUGHT IRON FENCE
- CHAIN LINK FENCE
- SAWCUT
- PAVEMENT RESORATION AREA
- PROPOSED ABANDONMENT
- EXISTING ABANDONMENT
- CUT LINE LIMITS
- FILL LINE LIMITS

- DETAIL BUBBLE W/ REF. (1 / C)
- BENCHMARK
- GATE VALVE
- PRESSURE REDUCING VALVE (PRV)
- BACK WATER VALVE (BWV)
- DROP INLET
- FIRE HYDRANT
- WATER METER
- WATER RPPA
- WATER RPDA
- TRAFFIC SIGNAL PULL BOX
- STREET LIGHT CLARK COUNTY
- STREET LIGHT SUMMERLIN STD
- TRAFFIC SIGNAL/FLASHER
- EXISTING TELE POLE (T)
- EXISTING POWER POLE
- EXISTING POLE
- EX. ELEC MARKER
- TRANSFORMER PAD
- SERVICE PEDESTAL
- PULLBOX
- 3005 — PROPOSED CONTOUR
- (3005) — EXISTING CONTOUR
- 60.50 TC — PROPOSED SPOT ELEVATION
- (60.50) TC — EXISTING SPOT ELEVATION
- 1.00% — PROPOSED SLOPE
- TOP SLOPE / TOE SLOPE — SLOPE DIRECTION
- FF = 2333.25 — FINISH FLOOR ELEVATION

CAUTION: HIGH PRESSURE GAS!!

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

SOUTHERN NEVADA - SOUTHWEST GAS CORPORATION GENERAL NOTES

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6020
2. MINIMUM HORIZONTAL AND VERTICAL CLEARANCES BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND FACILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRIC SHALL BE AT LEAST 12-INCHES OR GREATER AS DICTATED BY LOCAL CODES AND STANDARDS.
   a) ANY DEVIATION FROM SPECIFIED MINIMUM CLEARANCES MUST BE APPROVED BY ALL AFFECTED UTILITIES AND/OR MUNICIPALITIES
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 STRUCTURES CONTACT 702-365-2099

SOUTHWEST GAS APPROVAL

SOUTHWEST GAS CORPORATION — DATE

QUANTITY ESTIMATE

NOTE: CONTRACTOR TO VERIFY QUANTITIES FOR BIDDING PURPOSES

SEWER

DESCRIPTION	UNIT	PUBLIC	PRIVATE
4" SEWER	LF	–	2,978
8" SEWER	LF	5,155	–
SEWER MANHOLE 6 TO 18 FEET	EA	26	–
SEWER MANHOLE > 18 FEET	EA	1	–
BACKWATER VALVES	EA	–	22

WATER

DESCRIPTION	UNIT	PUBLIC	PRIVATE
6" PVC WATER MAIN	LF	351	–
8" PVC WATER MAIN	LF	3,380	–
8" C-900 WATER MAIN	LF	1,665	–
LANDSCAPE WATER SERVICE	EA	–	5
WATER LATERAL	LF	1,860	–
IRRIGATION SLEEVES	LF	–	417
WATER SERVICE TO LOTS 3/4" METER PER UDACS PLATE NO. 1	EA	111	–
FIRE HYDRANT	EA	10	–
3/4" IRRIGATION METER W/ 1" RPPA	EA	5	–

ROADWAY

DESCRIPTION	UNIT	PUBLIC	PRIVATE
CURB & GUTTER (TYPE "L" & "A")	LF	–	373
CURB & GUTTER (30" ROLL TYPE)	LF	–	10,033
CROSS GUTTER	SF	5,000	–
SIDEWALK 4"	SF	–	27,700
SIDEWALK RAMP	EA	–	19
TYPE II GRAVEL BASE	CY	–	2,087
2" ASPHALTIC CONCRETE PAVING	SY	–	18,785
PVMT BUTTON (REFLECTIVE)	EA	–	10
SURVEY MONUMENTS	EA	–	38

DRAINAGE

DESCRIPTION	UNIT	PUBLIC	PRIVATE
24" STORM DRAIN	LF	765	–
30" STORM DRAIN	LF	825	–
36" STORM DRAIN	LF	932	–
54" STORM DRAIN	LF	117	–
7.5' DM2 DROP INLET	EA	4	–
10.0' CM2 DROP INLET	EA	1	–
10.0' DM2 DROP INLET	EA	6	–
15.0' CM2 DROP INLET	EA	1	–
15.0' DM2 DROP INLET	EA	2	–
20.0' DM2 DROP INLET	EA	2	–
48" SD MANHOLE	EA	12	–
60" SD MANHOLE	EA	6	–

DRY UTILITIES AND OTHER IMPROVEMENTS

DESCRIPTION	UNIT	PUBLIC	PRIVATE
EXCAVATION & EMBANKMENT	CY	–	155,216
CABLE TO LOTS (RES SUBDIV ONLY)	EA	–	111
GAS TO LOTS (RES SUBDIV ONLY)	EA	–	111
PHONE TO LOTS (RES SUBDIV ONLY)	EA	–	111
POWER TO LOTS (RES SUBDIV ONLY)	EA	–	111

BASIS OF BEARING AND COORDINATES

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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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:
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BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX — FIRST APPROVAL DATE: _____

LVVWD APPROVED FIRE FLOW: TOTAL X,XXX GPM / ON-SITE XXXX GPM

L# XXX-XXXXX | CLV DWG#

ENGINEER - STATE OF NEVADA — WESLEY T. PETTY — 6/21/2021 — CIVIL — No. 16369 — DATE: 04-08-20

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:21:52

GCW
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
ENGINEERS \ SURVEYORS

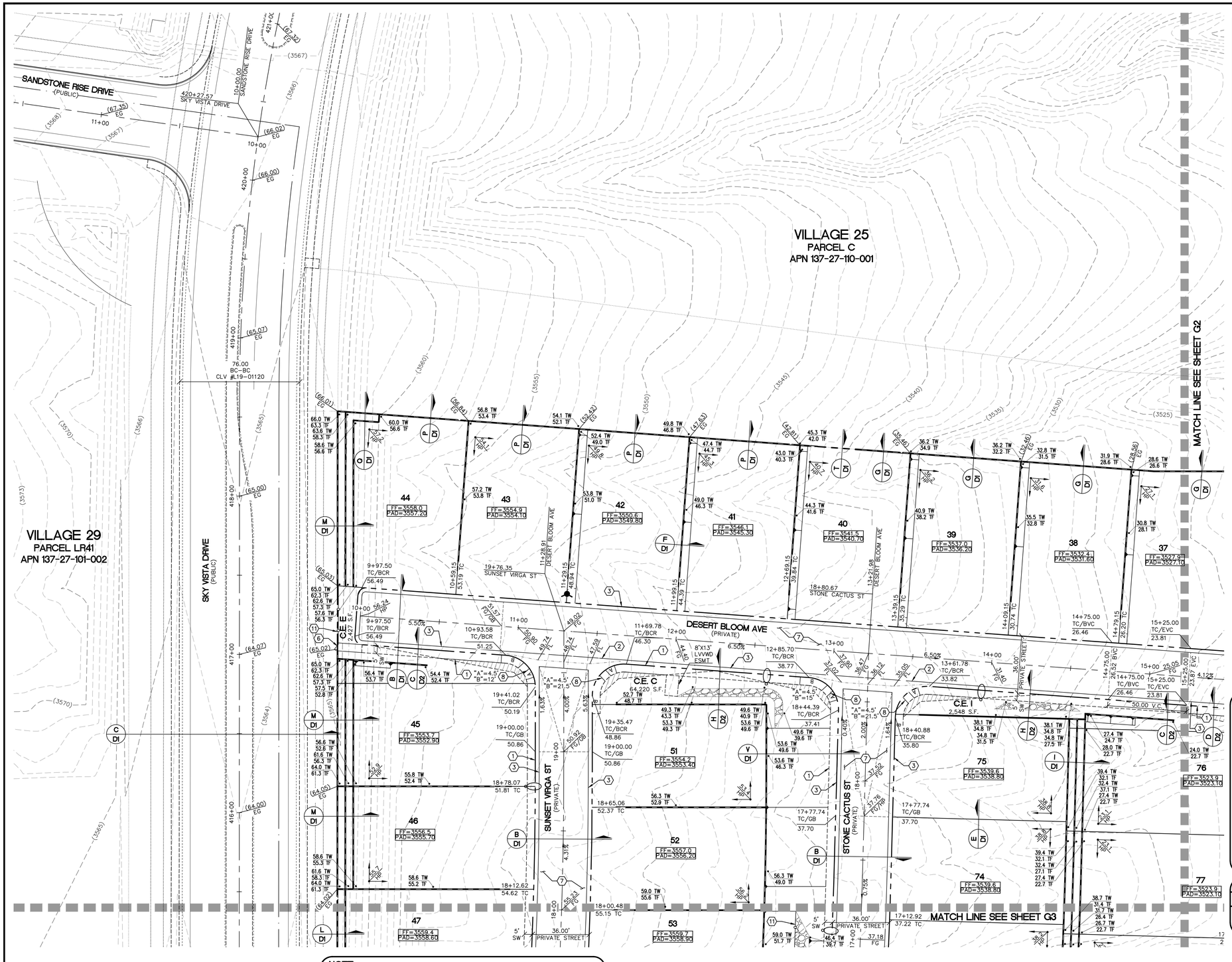
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Nicholas DeRosa

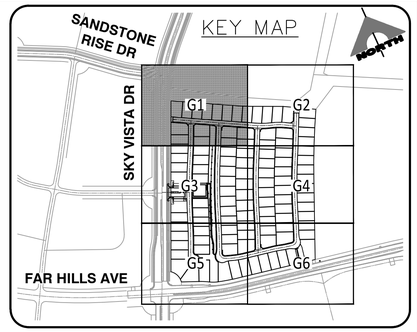
PULTE HOMES

SUMMERLIN VILLAGE 25
PARCEL D

LEGEND, ABBREVIATIONS AND QUANTITIES

DRAWING
C3
3 OF 41 SHTS





30' 0' 15' 30' 60'

SCALE: 1" = 30'

NORTH

EARTHWORKS

CUT-RAW	FILL-RAW
78,560 CY	155,216 CY

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER SUMMERLIN STD DWG NO. S-72 & S-48.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER SUMMERLIN STD DWG NO. S-64.
3. CONSTRUCT ROLL CURB PER SUMMERLIN STD DWG NO. S-48.
4. CONSTRUCT MEDIAN "A" TYPE PER SUMMERLIN STD DWG NO. S-50.
5. CONSTRUCT "L" CURB PER SUMMERLIN STD DWG NO. S-47.
6. INSTALL GATE - SEE LANDSCAPE.
7. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE SOIL REPORT PREPARED BY GEOTEK RESIDENTIAL, LLC PROJ. #15244-LVR FOR MORE DETAIL.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE I. SEE PLAN FOR "A" & "B" DIMENSION.
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1. CONNECT TO EXISTING STORM DRAIN.
2. CONSTRUCT MODIFIED TYPE "CM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
3. CONSTRUCT 48" TYPE II STORM DRAIN MANHOLE PER STD. DWG 405.
4. CONSTRUCT MODIFIED TYPE "DM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
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BASIS OF BEARING AND COORDINATES

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

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DRAINAGE STUDY COMPLIANCE

I CERTIFY THAT THIS GRADING PLAN ARE CONFORMANCE WITH THE APPROVED DRAINAGE STUDY _____ ON THE FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT

04-08-20
WESLEY T. PETTY, P.E. — DATE
NEVADA PE #16369

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-227-2600

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

NOTE
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L# XXX-XXXXX | CLV DWG#

ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
No. 16369
PROFESSIONAL ENGINEER
DATE: 04-08-20

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

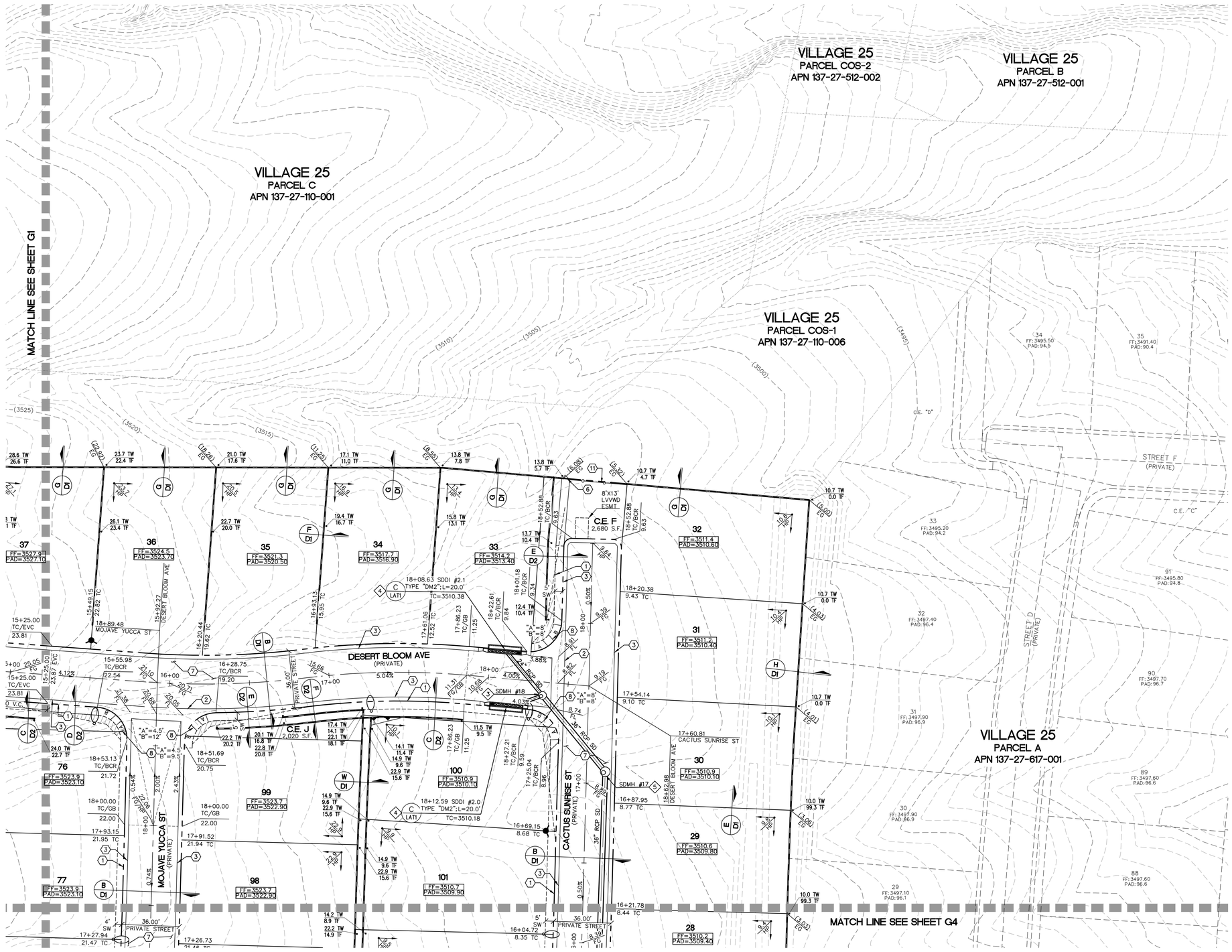
PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:22:34

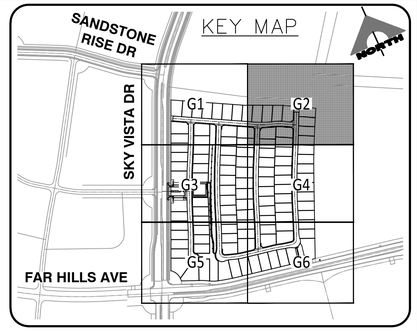
GCW
ENGINEERS\SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

f:\Projects\700\764-a173-001\DWG\production\764-A173-G2.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
GRADING PLAN 1

DRAWING
G1
4 OF 41 SHTS





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30' 0' 15' 30' 60'

SCALE: 1" = 30'

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04-08-20
WESLEY T. PETTY, P.E. — DATE
NEVADA PE #16369

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L# XXX-XXXXX | CLV DWG#

ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
No. 16369
PROFESSIONAL ENGINEER
DATE: 04-08-20

GCW
ENGINEERS \ SURVEYORS
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gcwengineering.com
I:\Projects\700\764-a173-001\DWG\production\764-A173-GD.dwg
Nicholas DeRosa

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

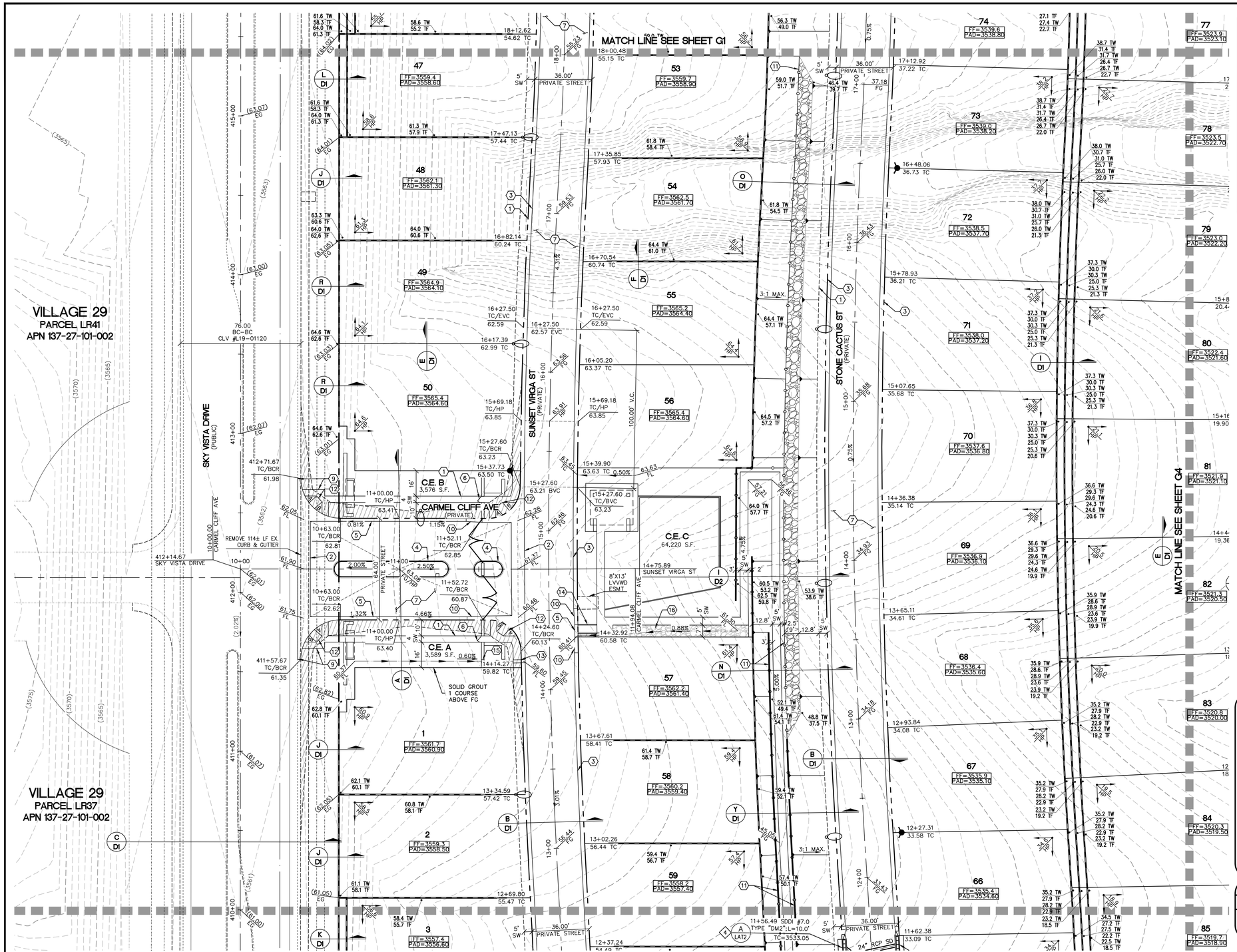
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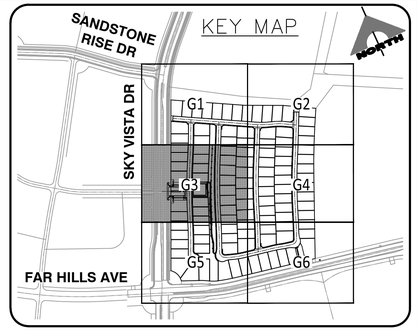
PULTE HOMES

SUMMERLIN VILLAGE 25
PARCEL D

GRADING PLAN 2

DRAWING
G2
5 OF 41 SHTS





30' 0' 15' 30' 60'

SCALE: 1" = 30'

NORTH

EARTHWORKS

CUT-RAW	FILL-RAW
78,560 CY	155,216 CY

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER SUMMERLIN STD DWG NO. S-72 & S-48.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER SUMMERLIN STD DWG NO. S-64.
3. CONSTRUCT ROLL CURB PER SUMMERLIN STD DWG NO. S-48.
4. CONSTRUCT MEDIAN "A" TYPE PER SUMMERLIN STD DWG NO. S-50.
5. CONSTRUCT "L" CURB PER SUMMERLIN STD DWG NO. S-47.
6. INSTALL GATE – SEE LANDSCAPE.
7. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE SOIL REPORT PREPARED BY GEOTEK RESIDENTIAL, LLC PROJ. #15244-LVR FOR MORE DETAIL.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE I. SEE PLAN FOR "A" & "B" DIMENSION.
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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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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)
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BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

DRAINAGE STUDY COMPLIANCE

I CERTIFY THAT THIS GRADING PLAN ARE CONFORMANCE WITH THE APPROVED DRAINAGE STUDY _____ ON THE FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT

04-08-20
WESLEY T. PETTY, P.E. — DATE
NEVADA PE #16369

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Call before you Dig — Avoid cutting underground utility lines. It's costly. Call 811 OR 1-800-227-2600

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L# XXX-XXXXX | CLV DWG#

PROJECT NO. 764-A173-001
DESIGN:
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PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
GRADING PLAN 3

DRAWING G3
6 OF 41 SHTS

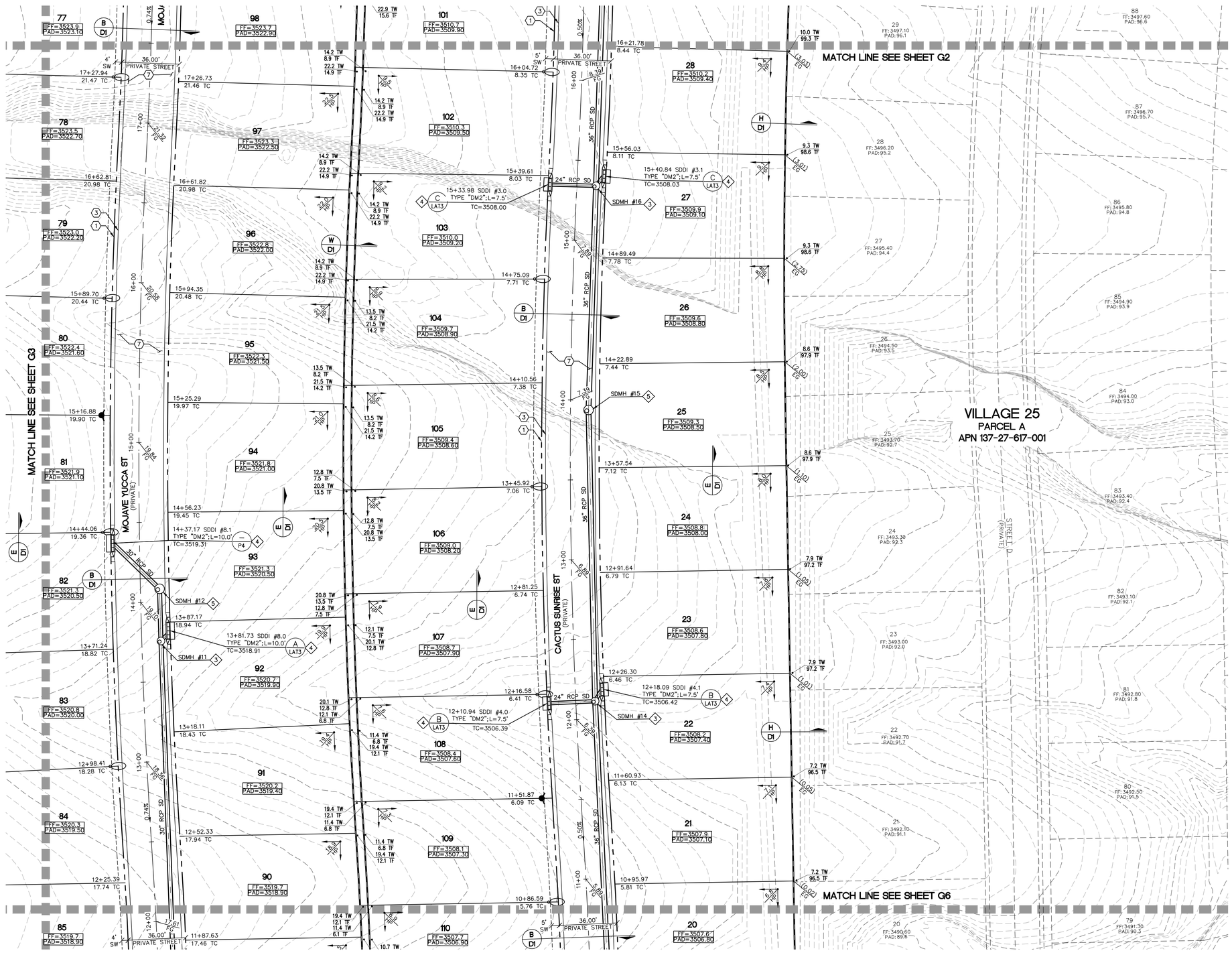
GCW ENGINEERS\SURVEYORS
1555 S. RAINBOW BLVD.
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T: 702.804.2000
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gcwengineering.com

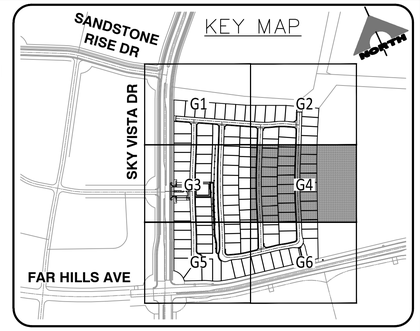
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Nicholas DeRosa

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

DATE: 04-08-20

ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
No. 16369
4/21/2021





30' 0' 15' 30' 60'

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04-08-20
WESLEY T. PETTY, P.E. — DATE
NEVADA PE #16369

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L# XXX-XXXXX | CLV DWG#

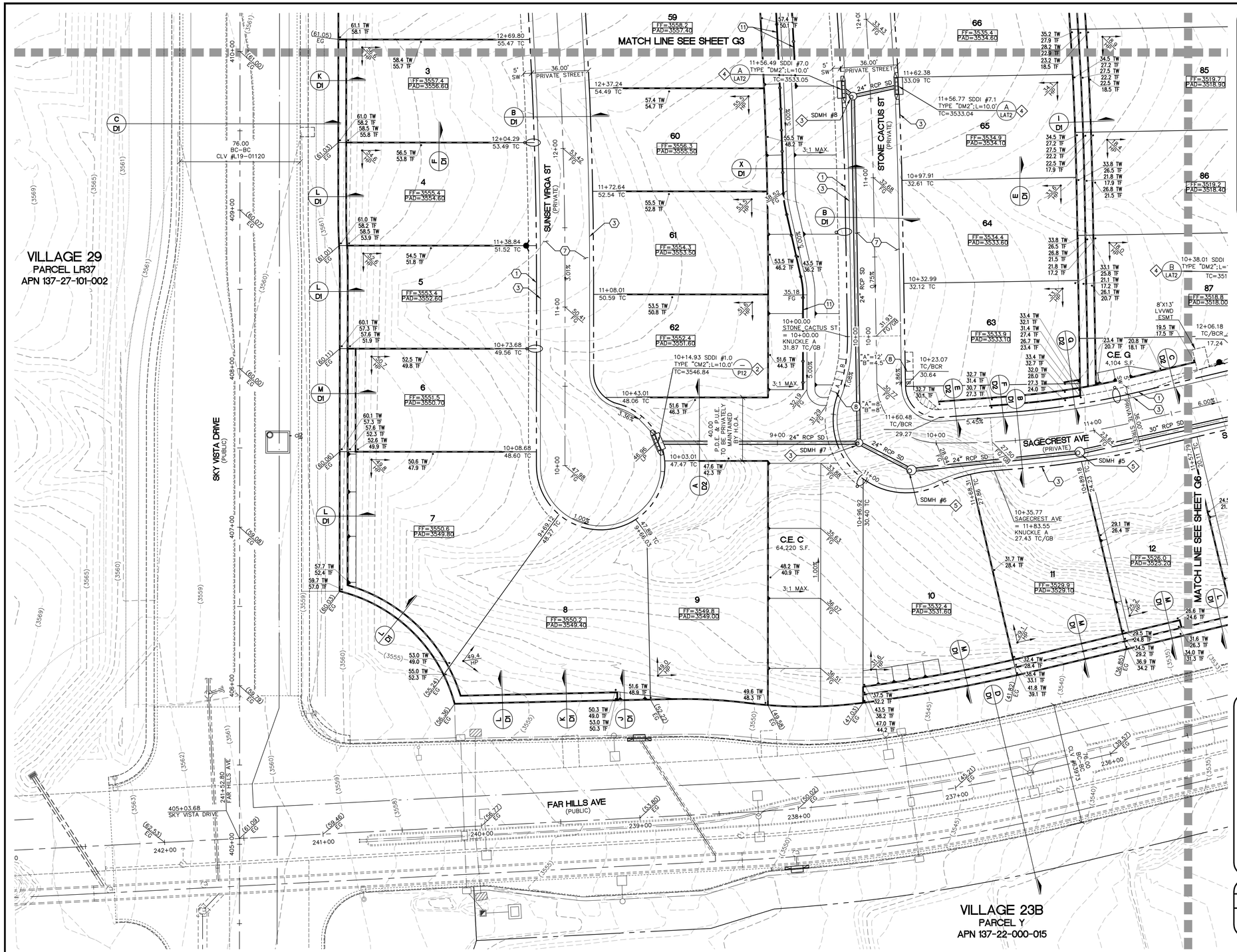
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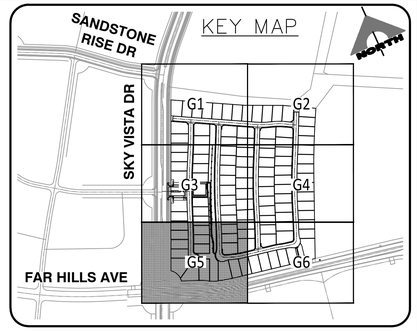
REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
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T: 702.804.2000
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gcwengineering.com
I:\Projects\700\764-a173-001\DWG\production\764-A173-G0.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
GRADING PLAN 4

DRAWING G4
7 OF 41 SHTS





30' 0' 15' 30' 60'

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L# XXX-XXXXX | CLV DWG#

NEVADA ENGINEER – STATE OF NEVADA – WESLEY T. PETTY – 16369 – 4/31/2021 – PROFESSIONAL ENGINEER
DATE: 04-08-20

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

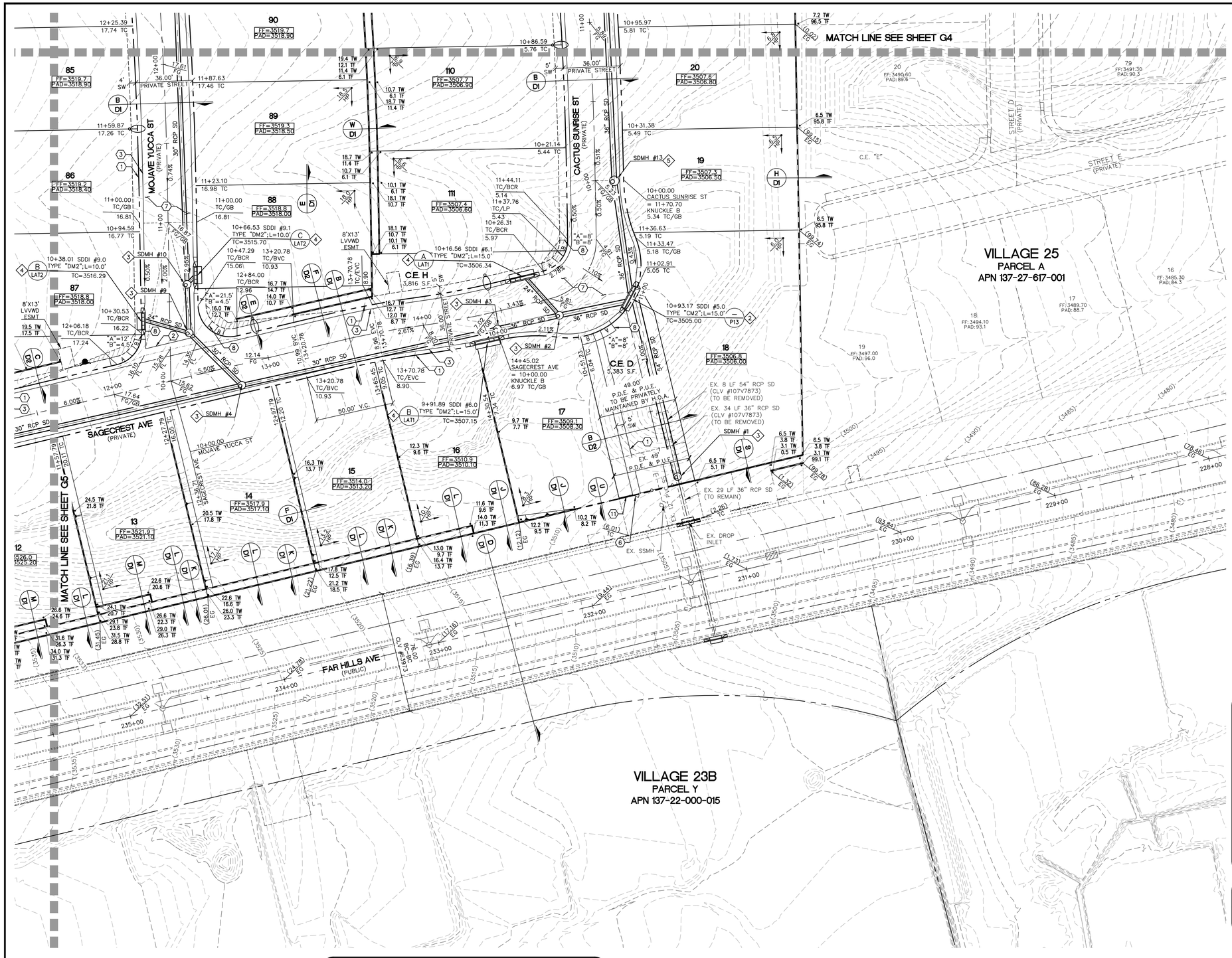
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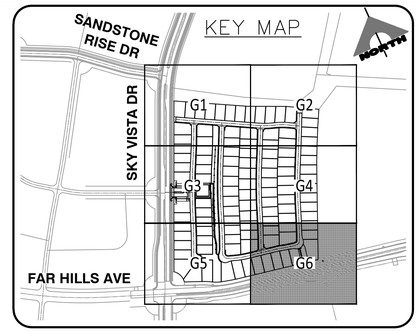
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Nicholas DeRosa

PULTE HOMES
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GRADING PLAN 5

DRAWING G5
8 OF 41 SHTS





EARTHWORKS

CUT-RAW	FILL-RAW
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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

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

DRAINAGE STUDY COMPLIANCE

I CERTIFY THAT THIS GRADING PLAN ARE CONFORMANCE WITH THE APPROVED DRAINAGE STUDY _____ ON THE FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT

04-08-20
WESLEY T. PETTY, P.E. — DATE
NEVADA PE #16369

NOTES TO CONTRACTOR

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

NOTE
ALL STORM DRAIN DROP INLETS PER NEWLY ADOPTED UCSCCA DRAWING NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL.)

NOTE
ALL ONSITE STORM DRAINS AND ASSOCIATED STORM FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE HOA.

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

FAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig Avoid cutting underground utility lines. It's costly. Call 811 OR 1-800-227-2600

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

L# XXX-XXXXX | CLV DWG#

NEVADA ENGINEER – STATE OF NEVADA – WESLEY T. PETTY – 16369 – 4/31/2021 – DATE: 04-08-20

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

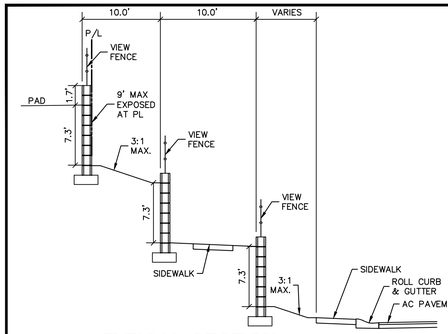
PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:23:25

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

f:\Projects\700\764-a173-001\DWG\production\764-A173-G2.dwg
Nicholas DeRosa

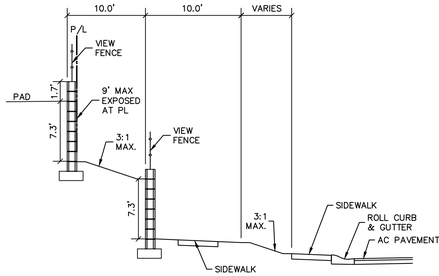
PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
GRADING PLAN 6

DRAWING G6
9 OF 41 SHTS



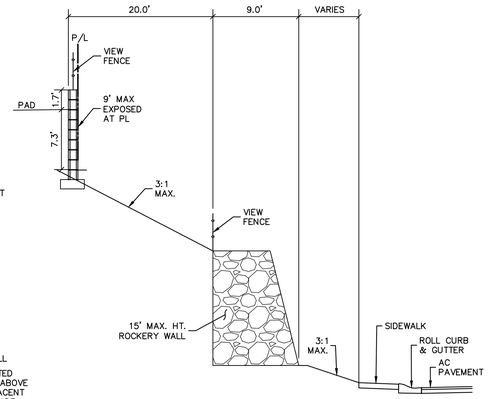
TYPICAL SECTION Y

SCALE: NTS



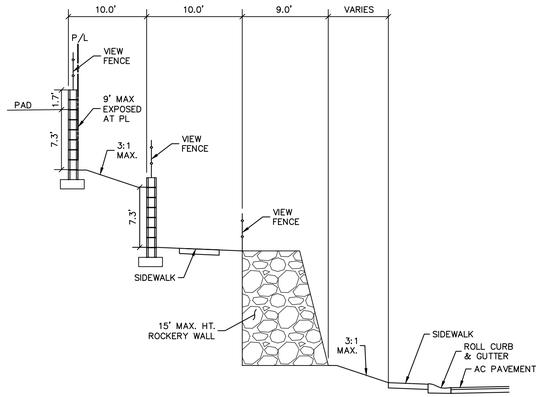
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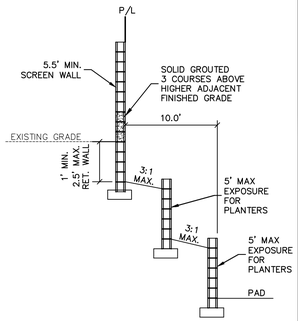
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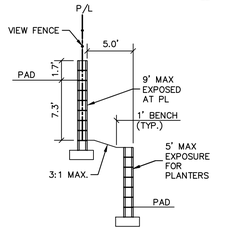
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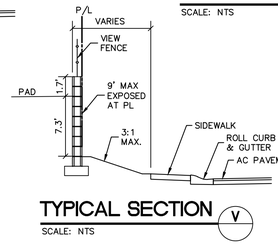
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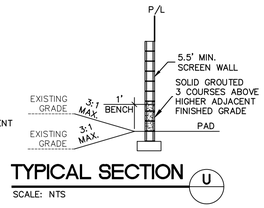
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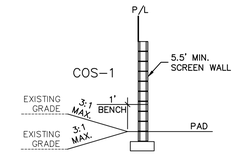
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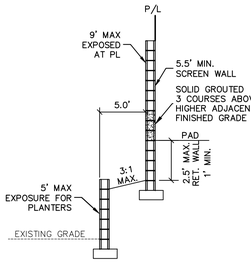
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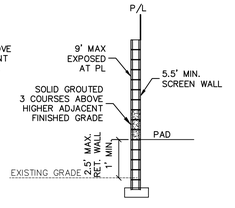
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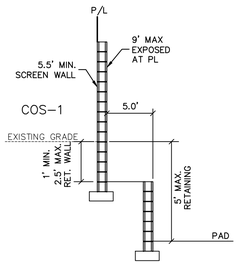
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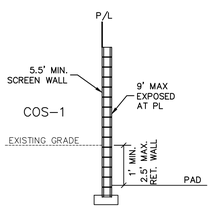
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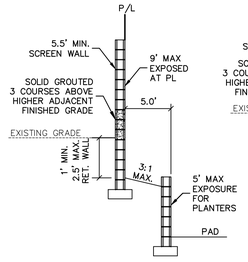
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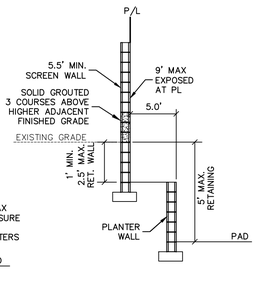
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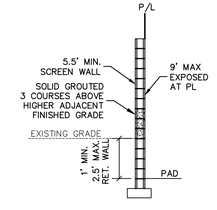
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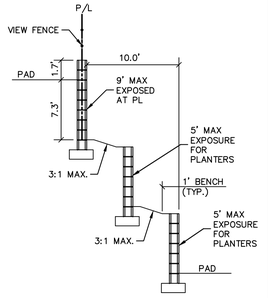
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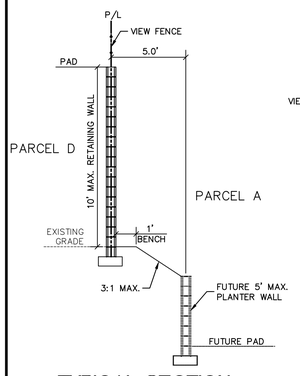
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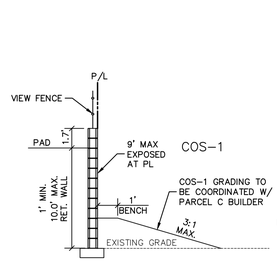
TYPICAL SECTION I

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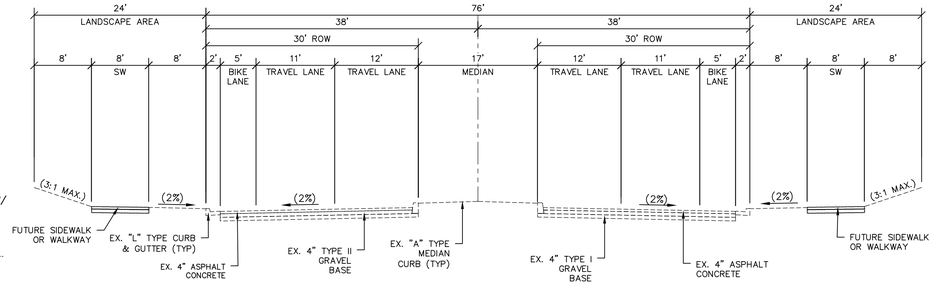
TYPICAL SECTION H

SCALE: NTS



TYPICAL SECTION G

SCALE: NTS



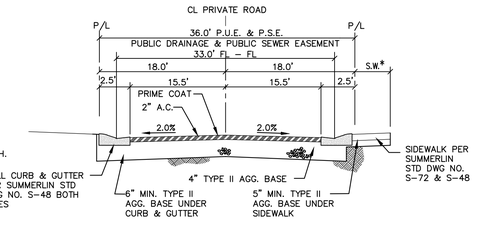
FAR HILLS AVE (PUBLIC)

SCALE: NTS

NOTE: ALL AGGREGATE BASES SHALL BE COMPACTED PER SOILS REPORT PREPARED BY NOVA GEOTECHNICAL PROJECT #G-18-066. PRELIMINARY PAVEMENT SECTIONS SHALL BE VERIFIED WITH THE FINAL PAVEMENT SECTION RECOMMENDATION REPORT PRIOR TO CONSTRUCTION. IF FINAL PAVEMENT SECTIONS ARE DIFFERENT, A REVISION TO THE IMPROVEMENT PLANS WILL BE REQUIRED.

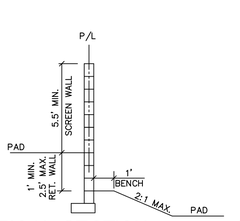
*SIDEWALK NOTE

SIDEWALK WIDTH SHALL BE 5 FT FOR PRIMARY STREETS AND 4 FT FOR SECONDARY AND TERTIARY STREETS. SEE PLAN FOR PROPOSED SIDEWALK WIDTH.



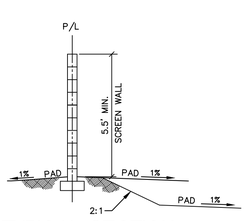
36' PRIVATE STREET SECTION

SCALE: NTS



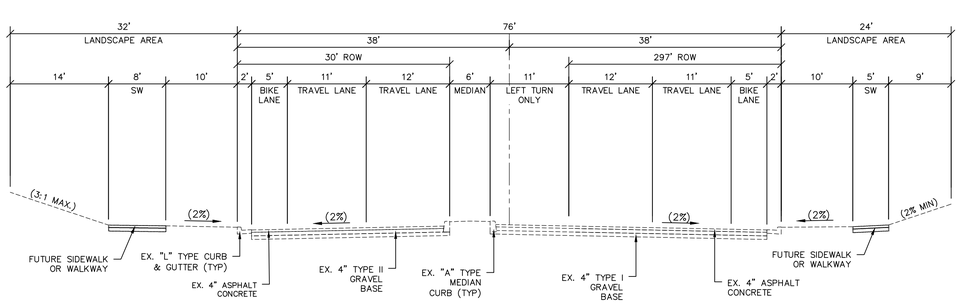
TYPICAL SECTION F

SCALE: NTS



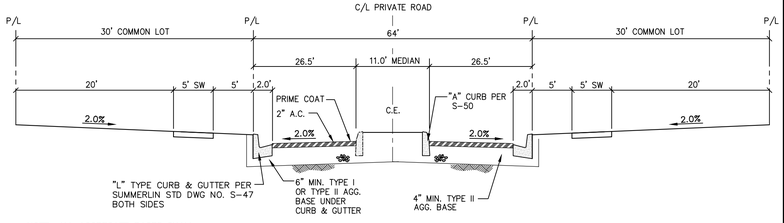
TYPICAL SECTION E

SCALE: NTS



SKY VISTA DRIVE (PUBLIC)

SCALE: NTS



NOTE: ALL AGGREGATE BASES SHALL BE COMPACTED PER SOILS REPORT PREPARED BY NOVA GEOTECHNICAL PROJECT #G-18-066. PRELIMINARY PAVEMENT SECTIONS SHALL BE VERIFIED WITH THE FINAL PAVEMENT SECTION RECOMMENDATION REPORT PRIOR TO CONSTRUCTION. IF FINAL PAVEMENT SECTIONS ARE DIFFERENT, A REVISION TO THE IMPROVEMENT PLANS WILL BE REQUIRED.

64' PRIVATE ENTRY

SCALE: NTS

L# XXX-XXXXX | CLV DWG#

GCW ENGINEERS \ SURVEYORS
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LAS VEGAS, NV 89146
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gcwengineering.com

ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
7/31/2021
No. 16369
PROFESSIONAL ENGINEER
DATE: 04-08-20

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

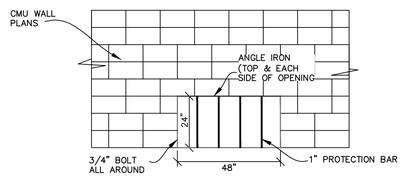
PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:23:31

I:\Projects\700\764-a173-001\DWG\production\764-A173-D1.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D

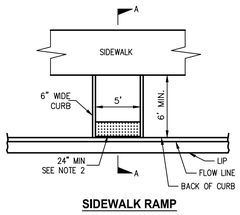
GRADING SECTIONS & DETAILS 1

DRAWING
D1
10 OF 41 SHTS

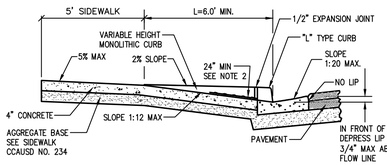


48" X 24" BLOCK WALL OPENING 5

SCALE: NTS



SIDEWALK RAMP



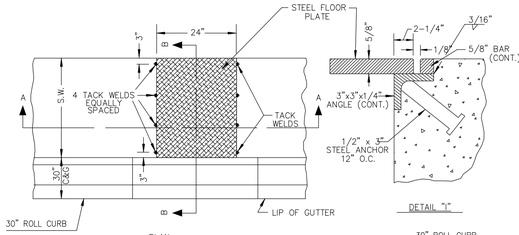
SECTION A-A

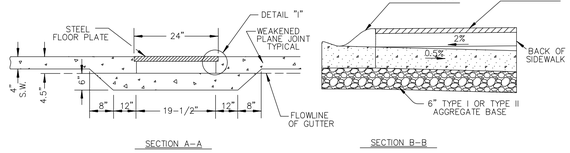
SIDEWALK RAMP DETAIL 4

SCALE: NTS

NOTES:

1. FLOWLINE IS TO BE MAINTAINED ACROSS RAMP AREA.
2. DETECTABLE WARNING CONSISTING OF RAISED TRUNCATED DOMES WHICH COMPLY WITH DETAILS ON SHEET 4 OF CCAUSD DRAWING NO. 235 AND CONTRASTING VISUALLY WITH ADJOINING SURFACES SHALL BE PLACED ON BOTTOM PORTION OF RAMP EXTENDING THE FULL WIDTH OF THE RAMP AND EXTENDING A MINIMUM DISTANCE OF 24 INCHES UP THE RAMP.



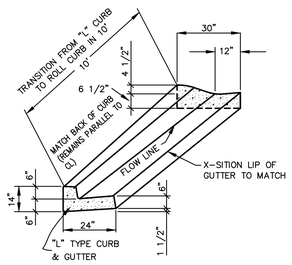


NOTES:

1. IF WIDTH OF PLATE IS GREATER THAN 24", A SPECIAL DESIGN IS REQUIRED.
2. ALL EXPOSED METAL PARTS SHALL BE GALVANIZED AND ALL GALVANIZING DAMAGED BY FABRICATION OR INSTALLATION SHALL RECEIVE TWO COATS OF ALUMINUM PAINT (GALVONOX OR EQUAL).

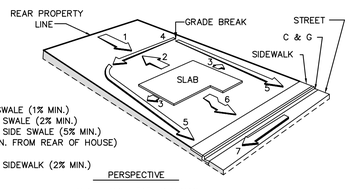
SIDEWALK DRAIN DETAIL 3

SCALE: NTS



10' TRANSITION FROM "L" CURB TO ROLL CURB 2

SCALE: NTS



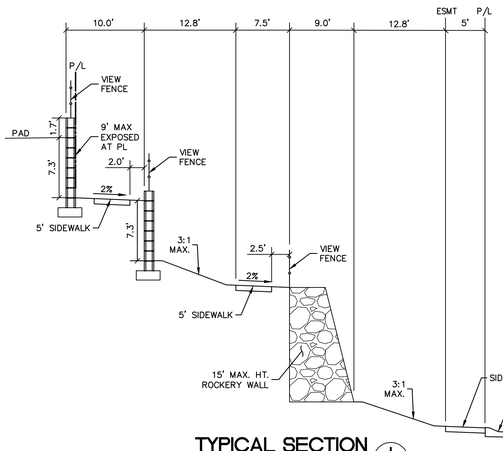
NOTES:

1. SLOPE FROM REAR TO SWALE (1% MIN.)
2. SLOPE FROM HOUSE TO SWALE (2% MIN.)
3. SLOPE FROM HOUSE TO SIDE SWALE (5% MIN.)
4. REAR SWALE 1% (10' MIN. FROM REAR OF HOUSE)
5. SIDE SWALE 1%
6. SLOPE FROM HOUSE TO SIDEWALK (2% MIN.)
7. SLOPE OF STREET

F.H.A. TYPE "A" DRAINAGE

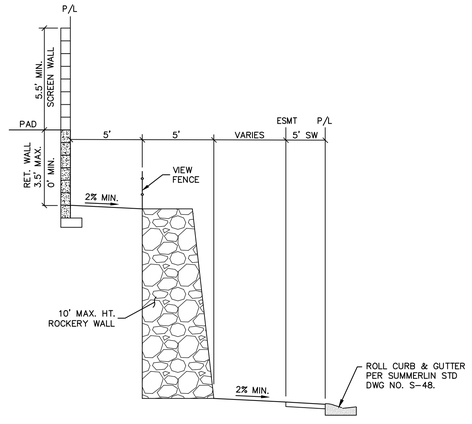
TYPICAL TYPE "A" DRAINAGE DETAIL 1

SCALE: NTS



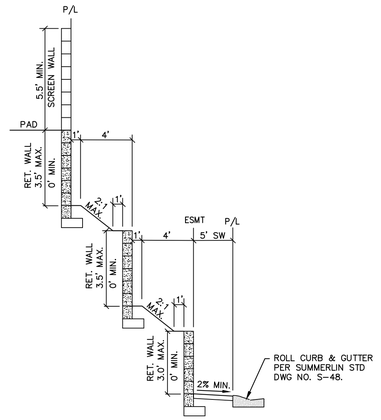
TYPICAL SECTION I

SCALE: NTS (SHEETS G3)



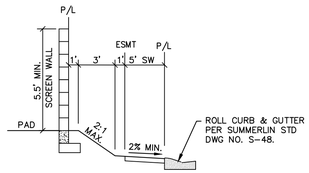
TYPICAL SECTION H

SCALE: NTS (SHEET G1)



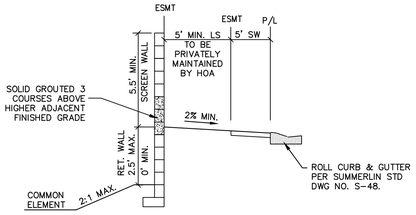
TYPICAL SECTION G

SCALE: NTS (SHEETS G5)



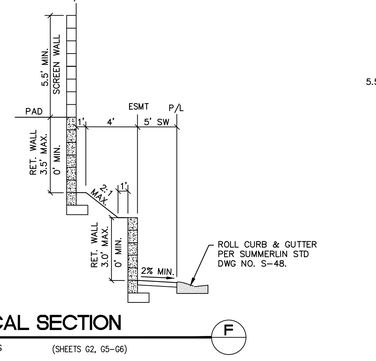
TYPICAL SECTION D

SCALE: NTS (SHEETS G1-G2)



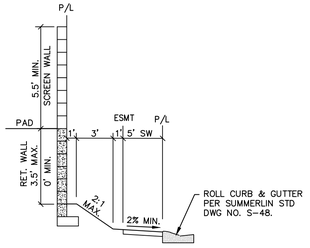
TYPICAL SECTION C

SCALE: NTS (SHEETS G1-G2, G5-G6)



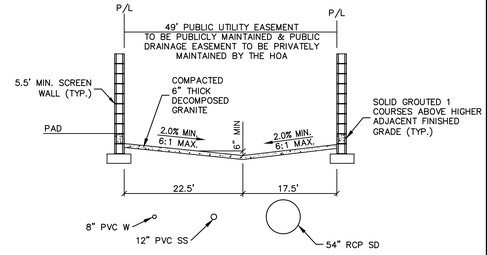
TYPICAL SECTION F

SCALE: NTS (SHEETS G2, G5-G6)



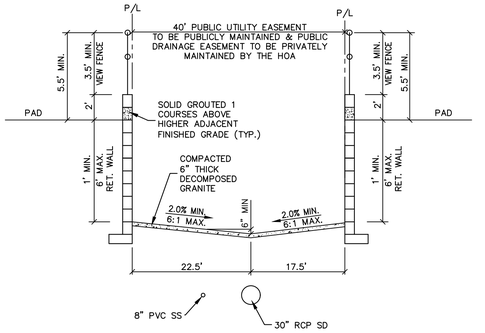
TYPICAL SECTION E

SCALE: NTS (SHEETS G2, G5, G6)



49' P.D.E. AND P.U.E. B

SCALE: NTS (SHEET G6)



40' P.D.E. AND P.U.E. A

SCALE: NTS (SHEET G5)

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

PROJECT NO. 764-A173-001

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:23:34

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Nicholas DeRosa

PULTE HOMES

SUMMERLIN VILLAGE 25
PARCEL D

GRADING SECTIONS & DETAILS 2

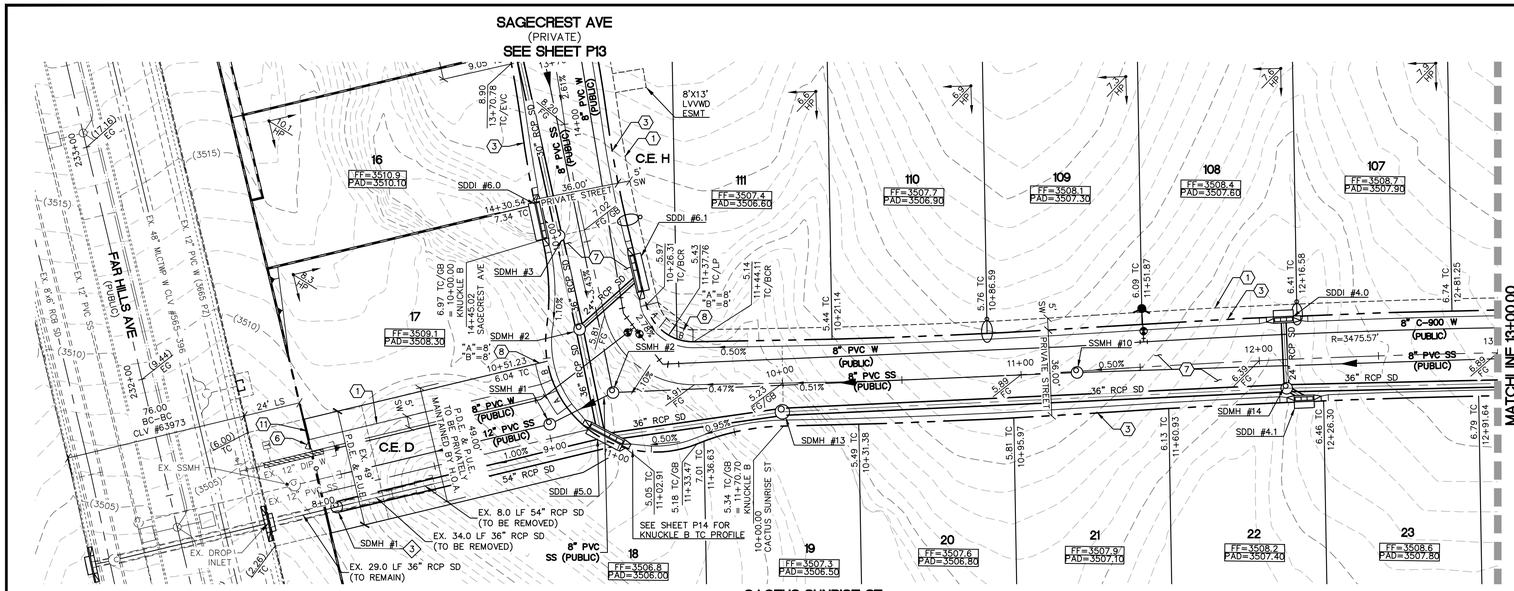
DRAWING D2

11 OF 41 SHTS

L# XXX-XXXXX | CLV DWG#

REV | DESCRIPTION | DATE | AGEN APP | DATE | GCW APP | DATE

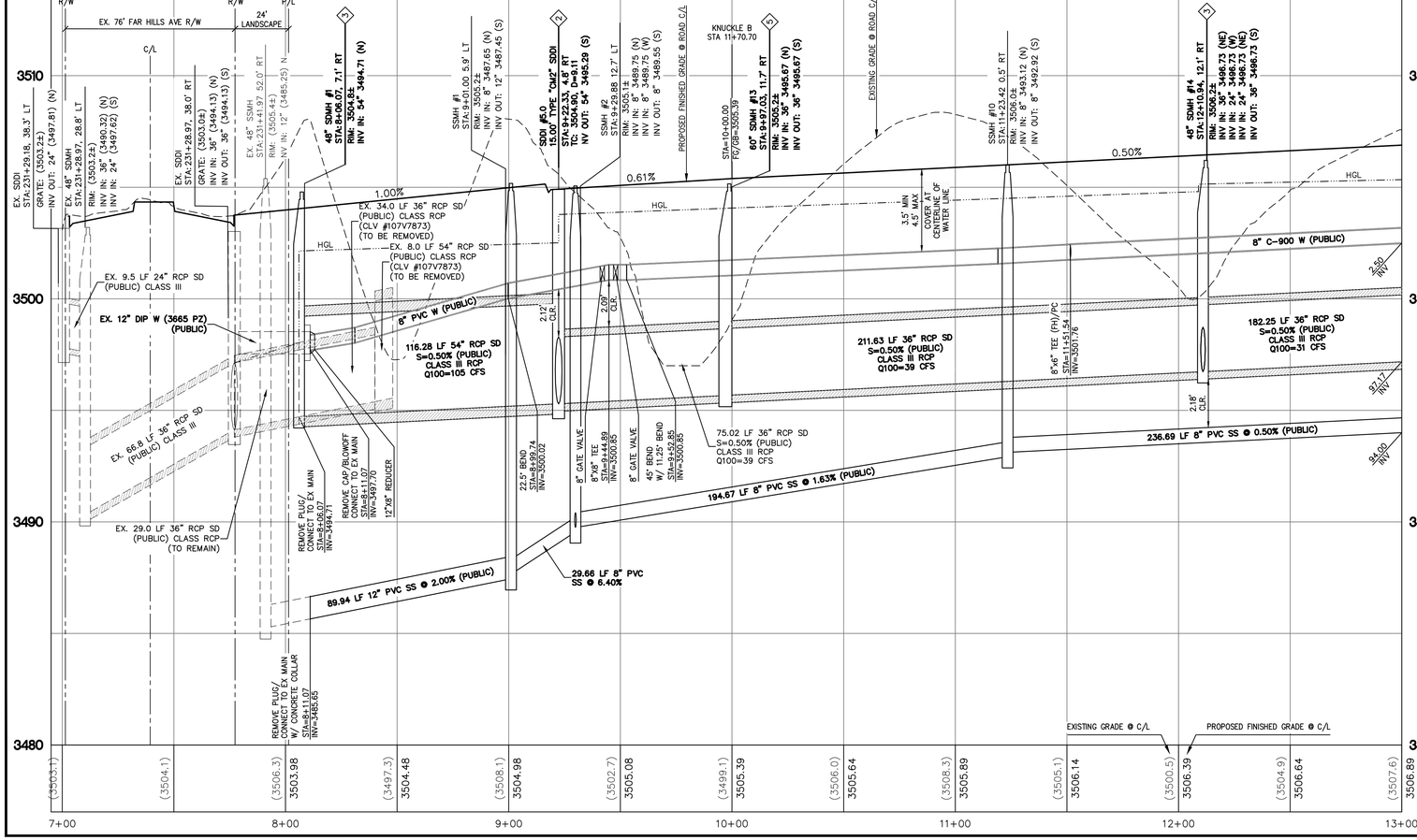
DATE: 04-08-20



CACTUS SUNRISE ST
(PRIVATE)

PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



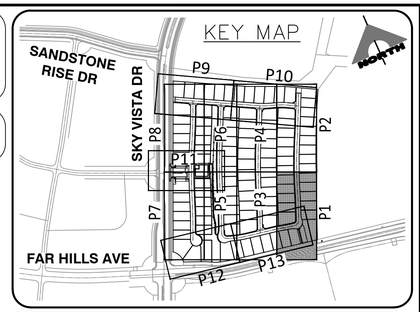
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CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS. BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP. (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

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Call before you Dig
Avoid cutting underground utility lines. It's costly.
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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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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:
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BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

UTILITY APPROVAL
SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX–XXXXX | CLV DWG#

NORTH
30' 0' 15' 30' 60'
SCALE: 1" = 30'

ENGINEER – STATE OF NEVADA – WESLEY L. PETTY – 16369 – 4/21/2021 – DATE: 04–08–20

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

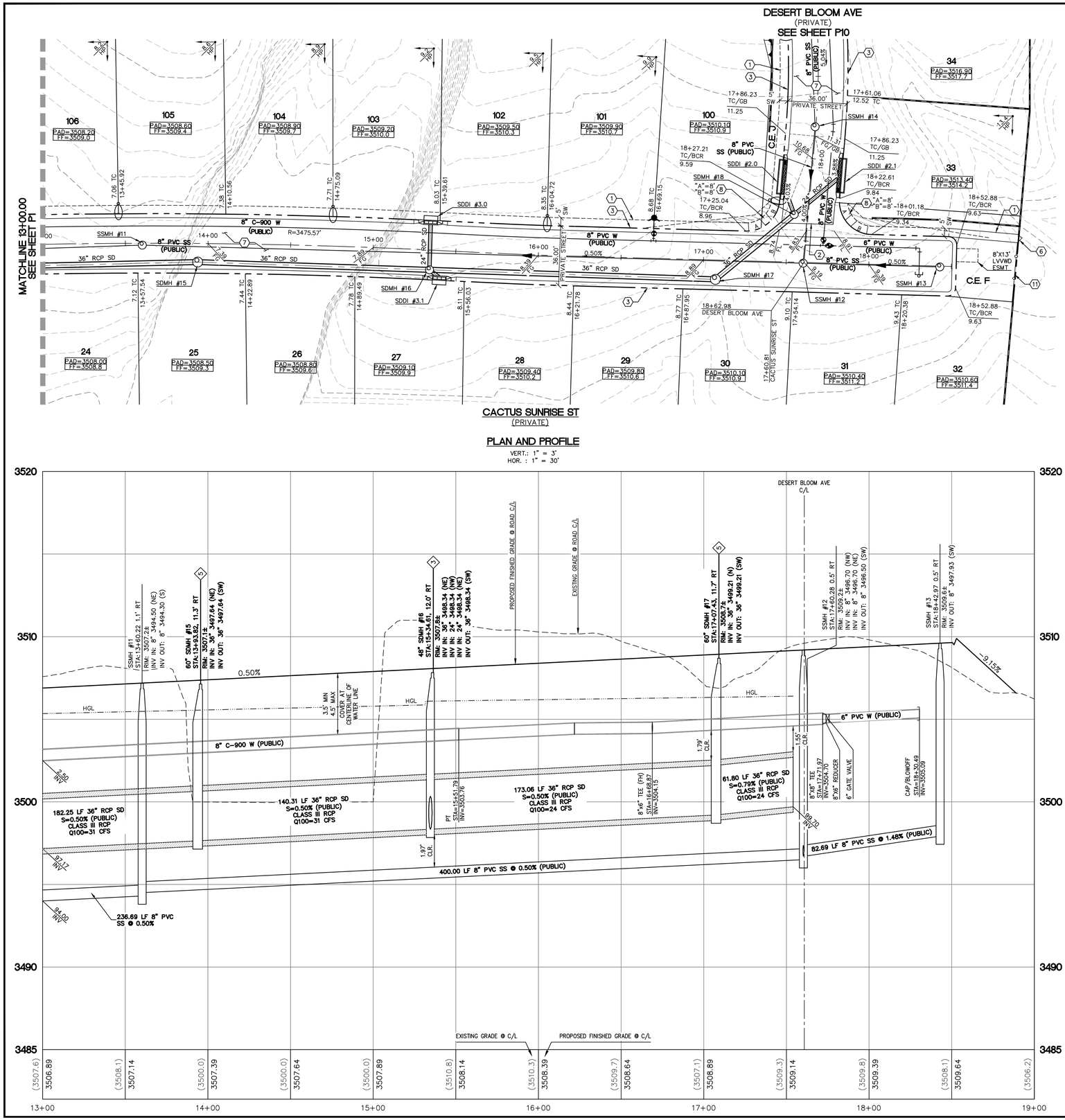
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DESIGN:
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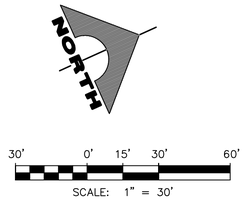
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Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D

CACTUS SUNRISE ST PLAN & PROFILE 8+00 TO 13+00

DRAWING
P1
12 OF 41 SHTS





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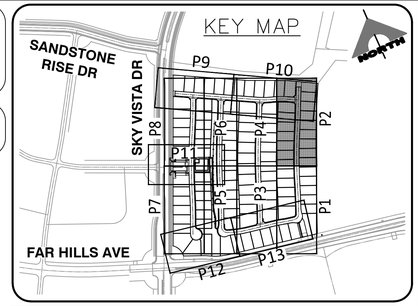
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UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

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ENGINEER – STATE OF NEVADA
WESLEY T. PETTY
No. 16369
PROFESSIONAL ENGINEER
DATE: 04-08-20

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PROJECT NO. 764-A173-001
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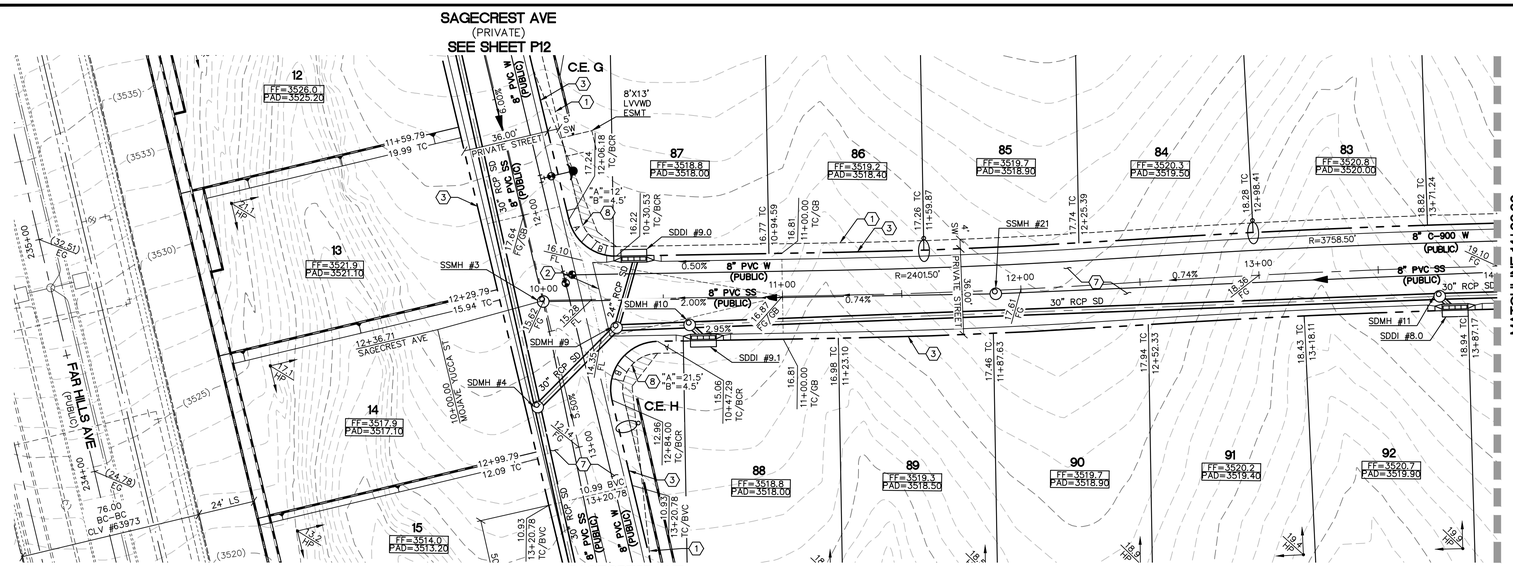
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f:\Projects\700\764-a173-001\GWK\production\764-A173-PP-NS.dwg
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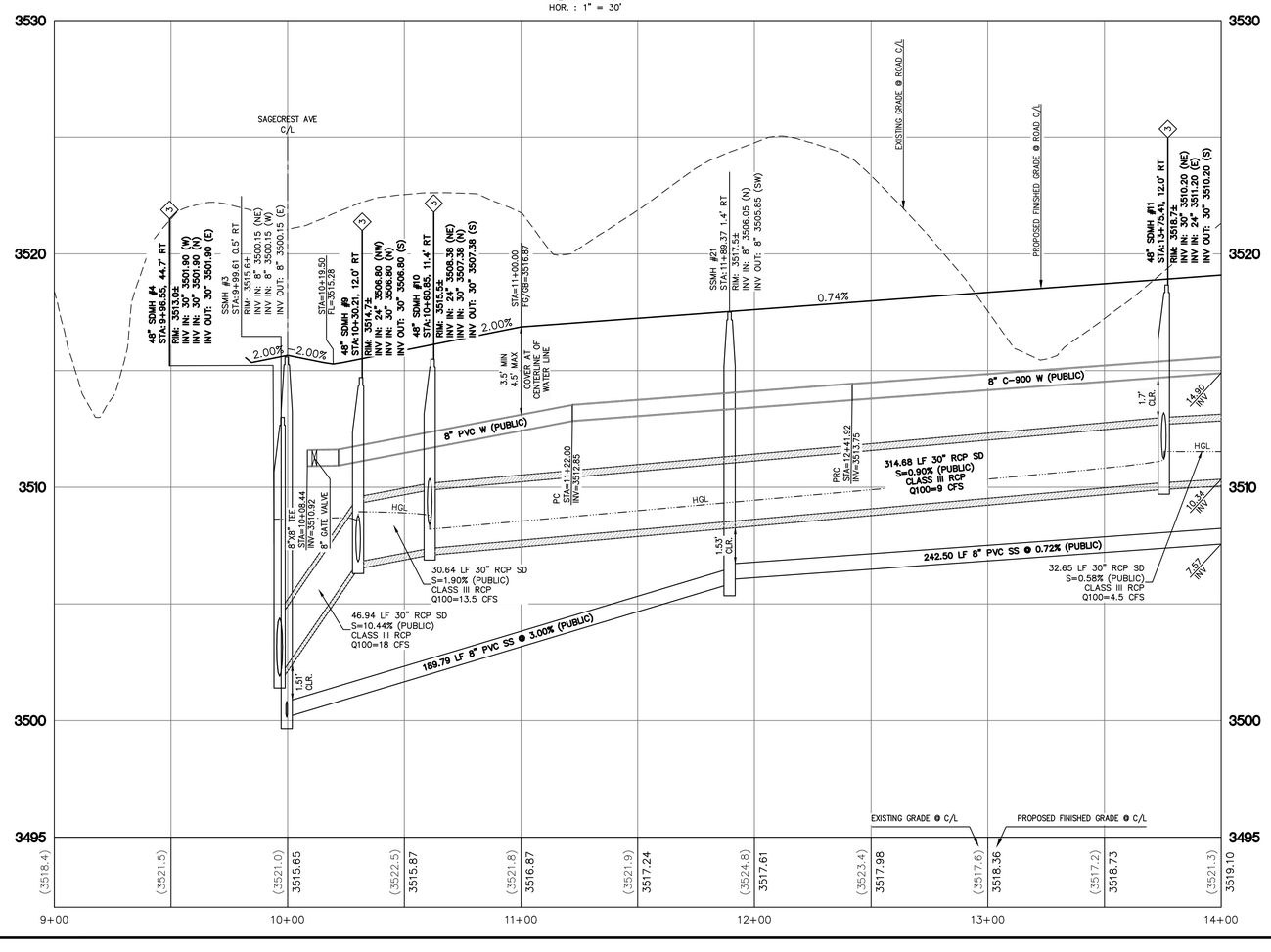
CACTUS SUNRISE ST PLAN & PROFILE 13+00 TO 19+00

DRAWING
P2
13 OF 41 SHTS



MOJAVE YUCCA ST
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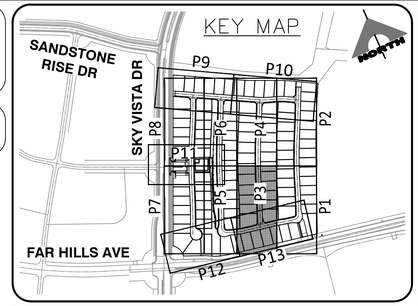
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NORTH

30' 0' 15' 30' 60'
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MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX-XXXXX | CLV DWG#

ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
No. 16369
PROFESSIONAL ENGINEER
1/31/2021
DATE: 04-08-20

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

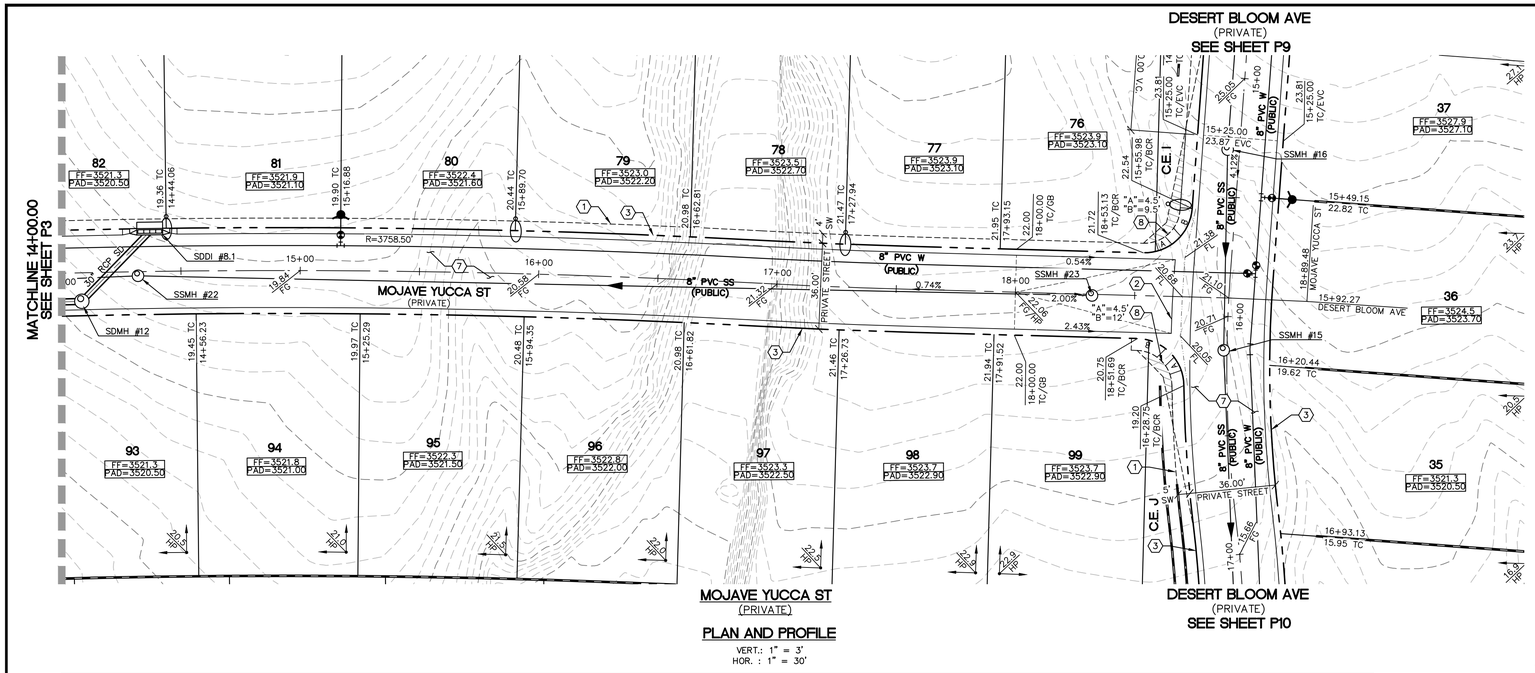
PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:25:11

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
f:\Projects\700\764-a173-001\GWK\production\764-A173-PP-NS.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D

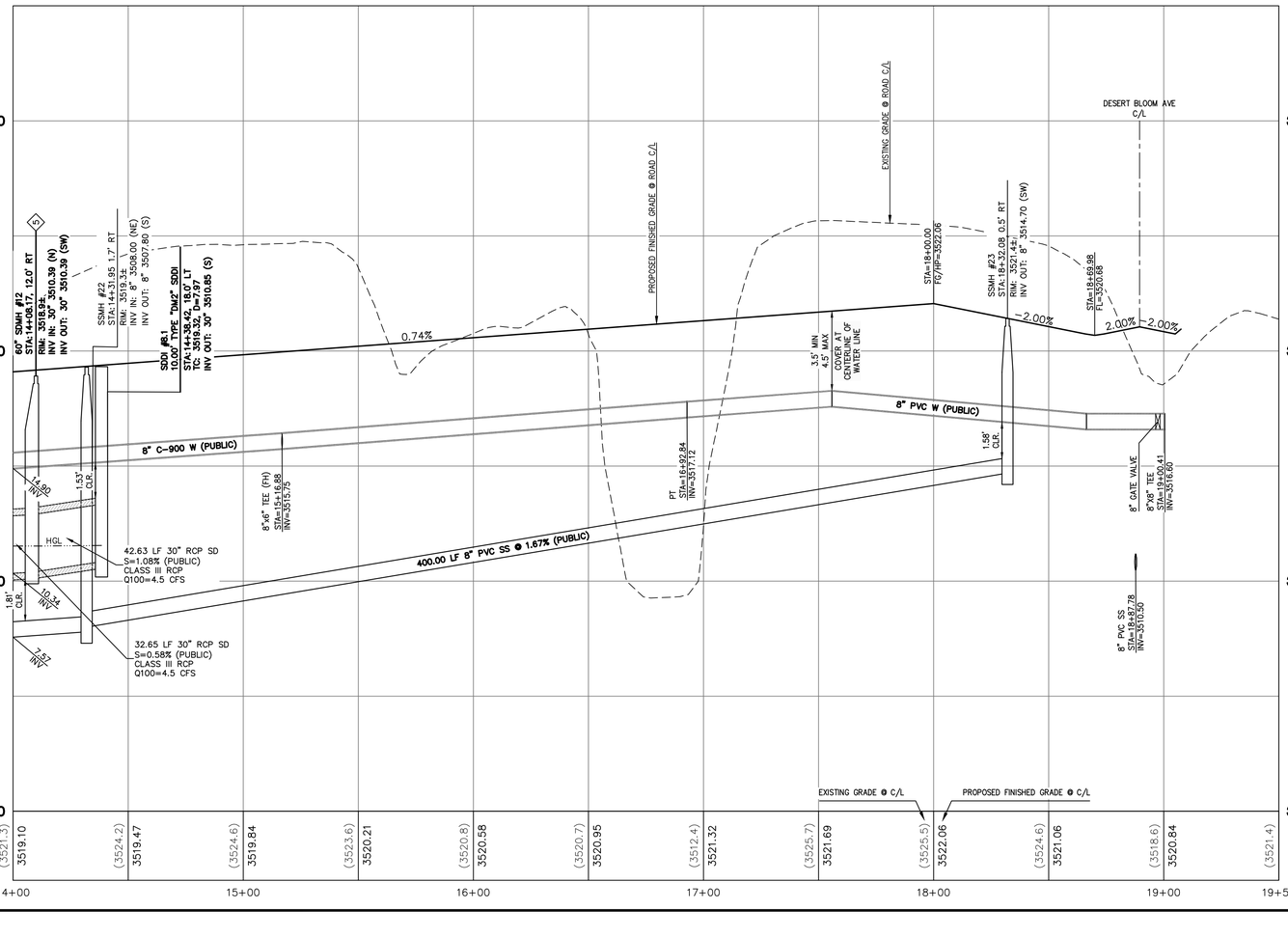
MOJAVE YUCCA ST PLAN & PROFILE 9+50 TO 14+00

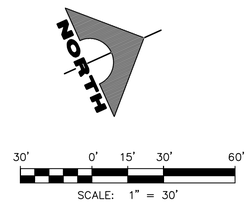
DRAWING
P3
14 OF 41 SHTS



PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'





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. (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

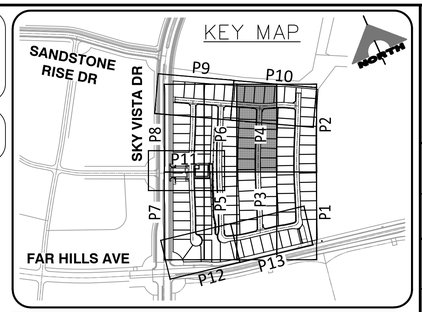
DEPTH OF COVER DURING CONSTRUCTION

MAINTAIN MINUMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

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

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CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER SUMMERLIN STD DWG NO. S-72 & S-48.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER SUMMERLIN STD DWG NO. S-64.
3. CONSTRUCT ROLL CURB PER SUMMERLIN STD DWG NO. S-48.
4. CONSTRUCT MEDIAN "A" TYPE PER SUMMERLIN STD DWG NO. S-50.
5. CONSTRUCT "L" CURB PER SUMMERLIN STD DWG NO. S-47.
6. INSTALL GATE – SEE LANDSCAPE.
7. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE SOIL REPORT PREPARED BY GEOTEK RESIDENTIAL, LLC PROJ. #15244-LVR FOR MORE DETAIL.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE I. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
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NOTE:

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BASIS OF BEARING AND COORDINATES

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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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:
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BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX-XXXXX | CLV DWG#

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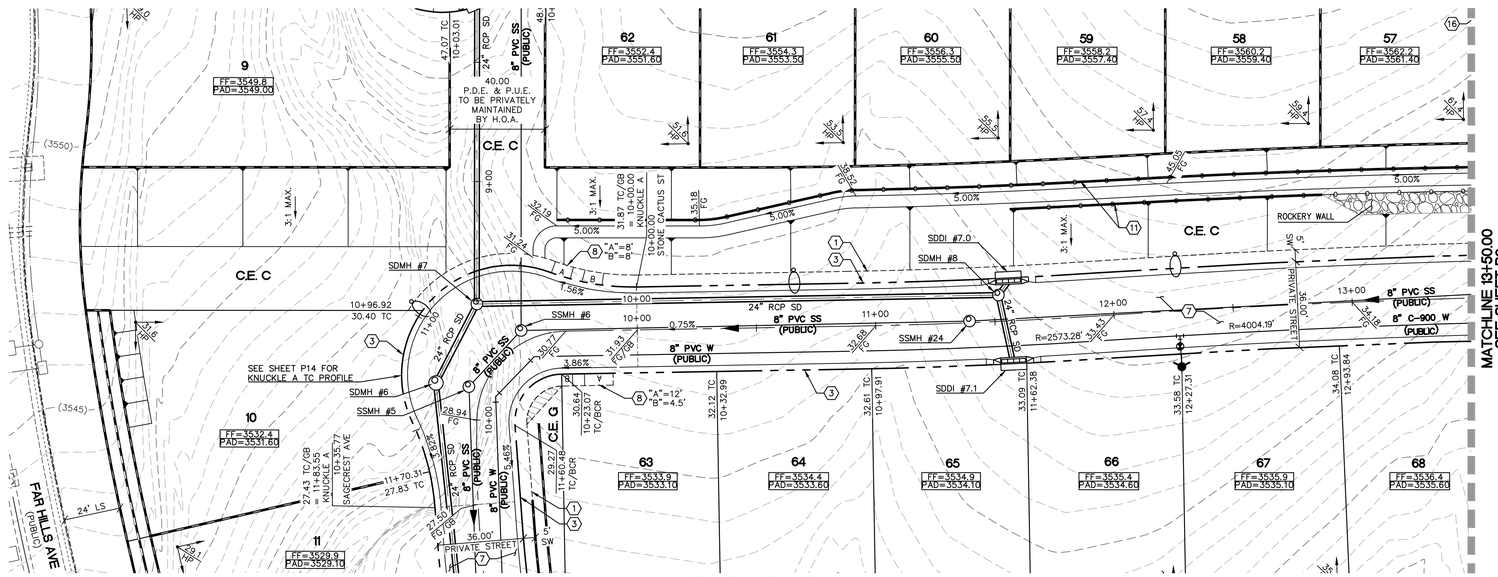
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Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
MOJAVE YUCCA ST PLAN & PROFILE 14+00 TO 19+50

DRAWING
P4
15 OF 41 SHTS



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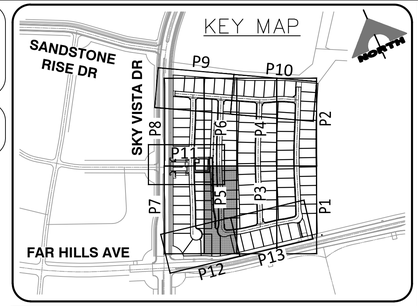
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UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX-XXXXX | CLV DWG#

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Nicholas DeRosa

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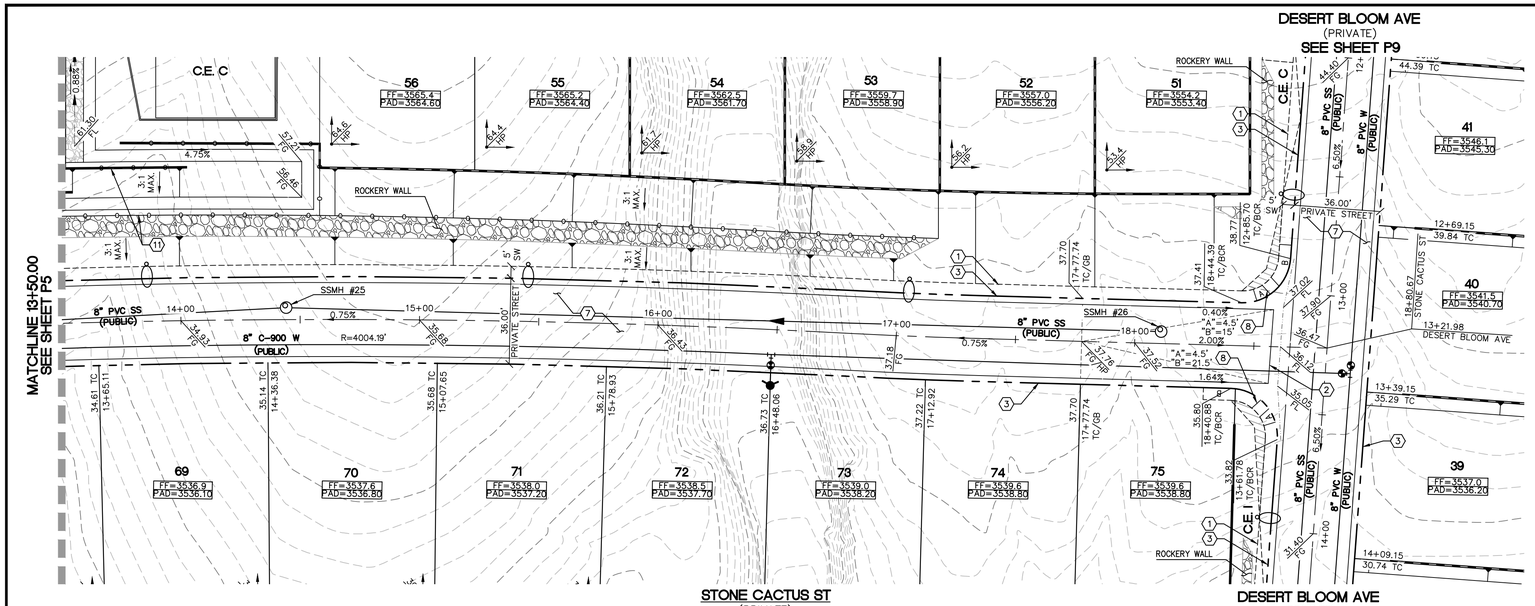
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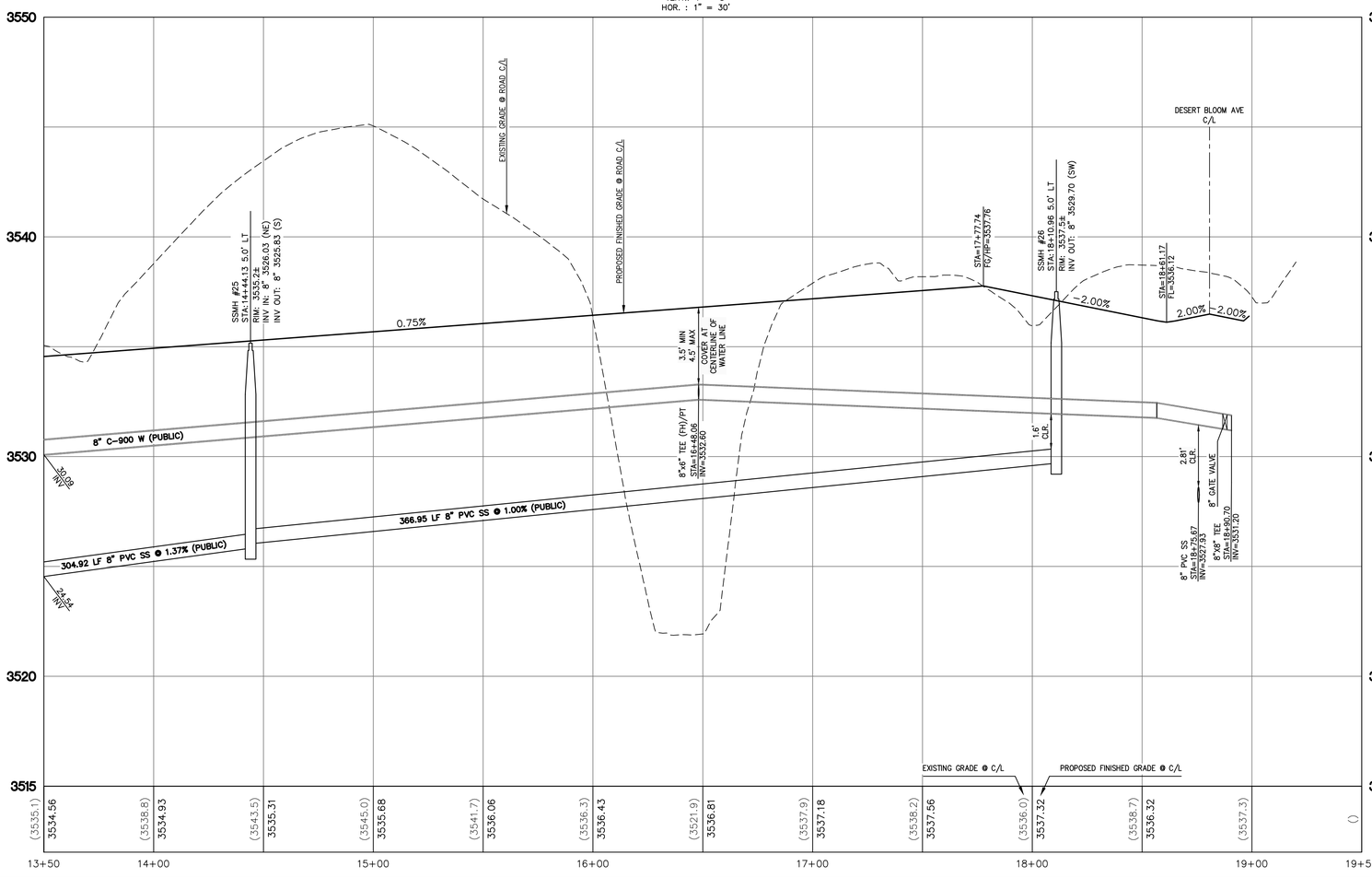
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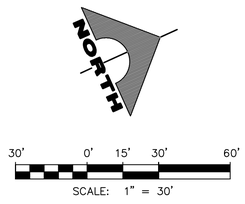
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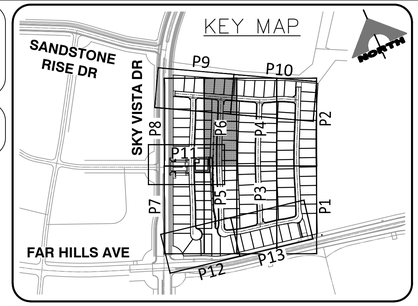
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gcwengineering.com
ENGINEERS \ SURVEYORS
f:\Projects\700\764-a173-001\GWK\production\764-A173-PP-NS.dwg
Nicholas DeRosa

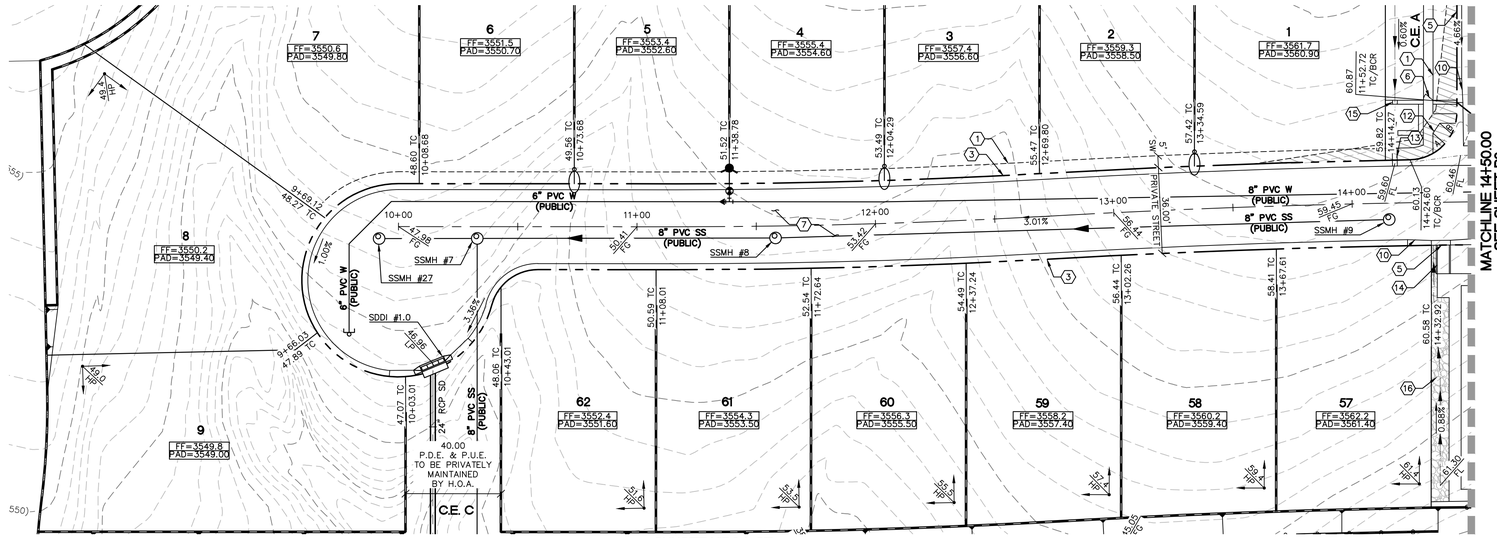
REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:26:03

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D

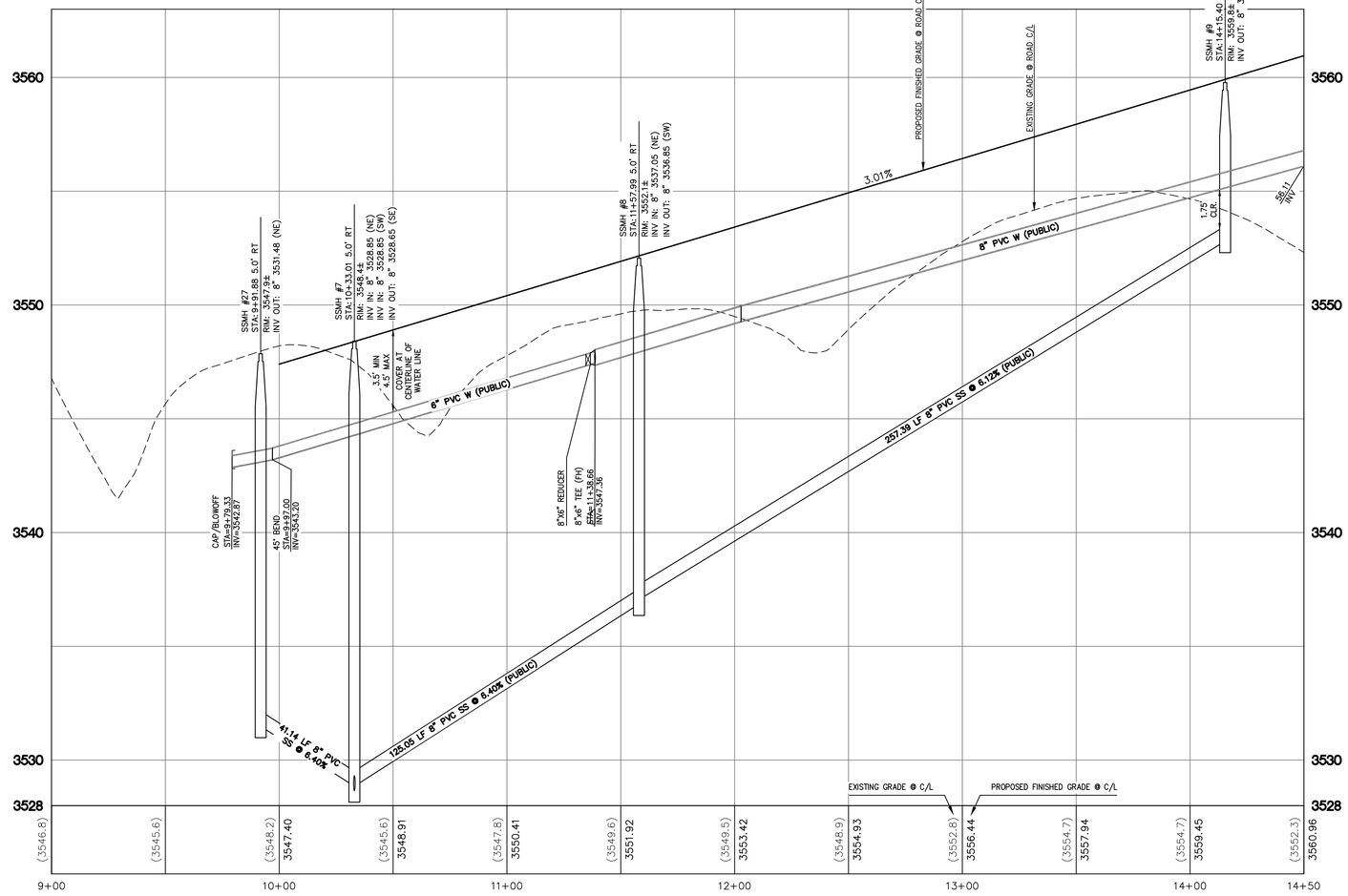
STONE CACTUS ST PLAN & PROFILE 13+50 TO 19+50

DRAWING P6
17 OF 41 SHTS



PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



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. (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

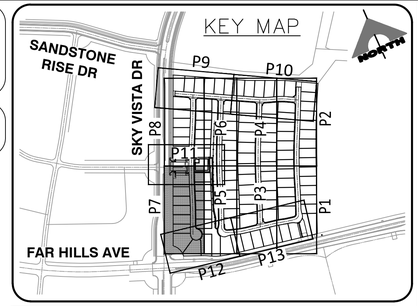
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Call before you Dig
Avoid cutting underground utility lines. It's costly.
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1-800-227-2600

FAST
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1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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CONSTRUCTION NOTES

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30' 0' 15' 30' 60'
SCALE: 1" = 30'

NOTE:

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

TO ENSURE LVVWD ACCESS WITHIN EASEMENT

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BASIS OF BEARING AND COORDINATES

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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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:
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BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX-XXXXX	CLV DWG#



REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:26:21

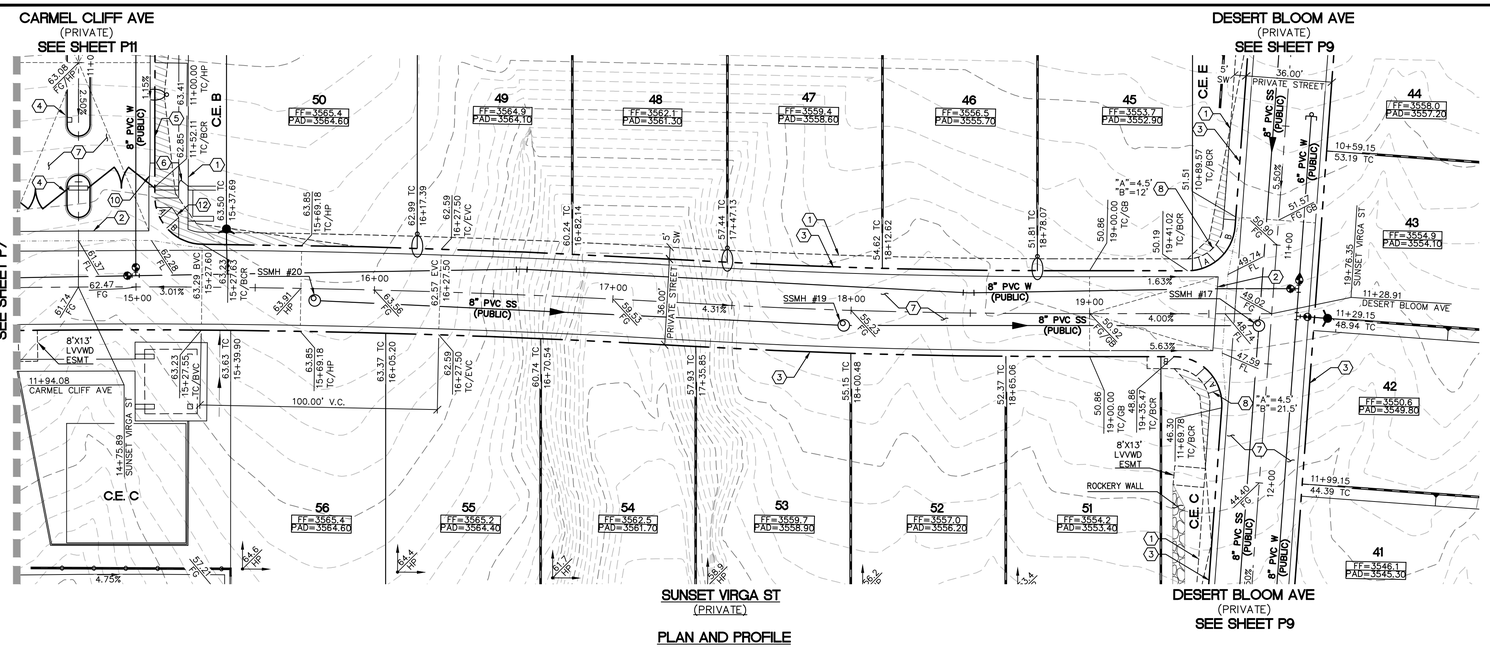
GCW
ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
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gcwengineering.com

f:\Projects\700\764-a173-001\DWG\production\764-A173-PP-NS.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D

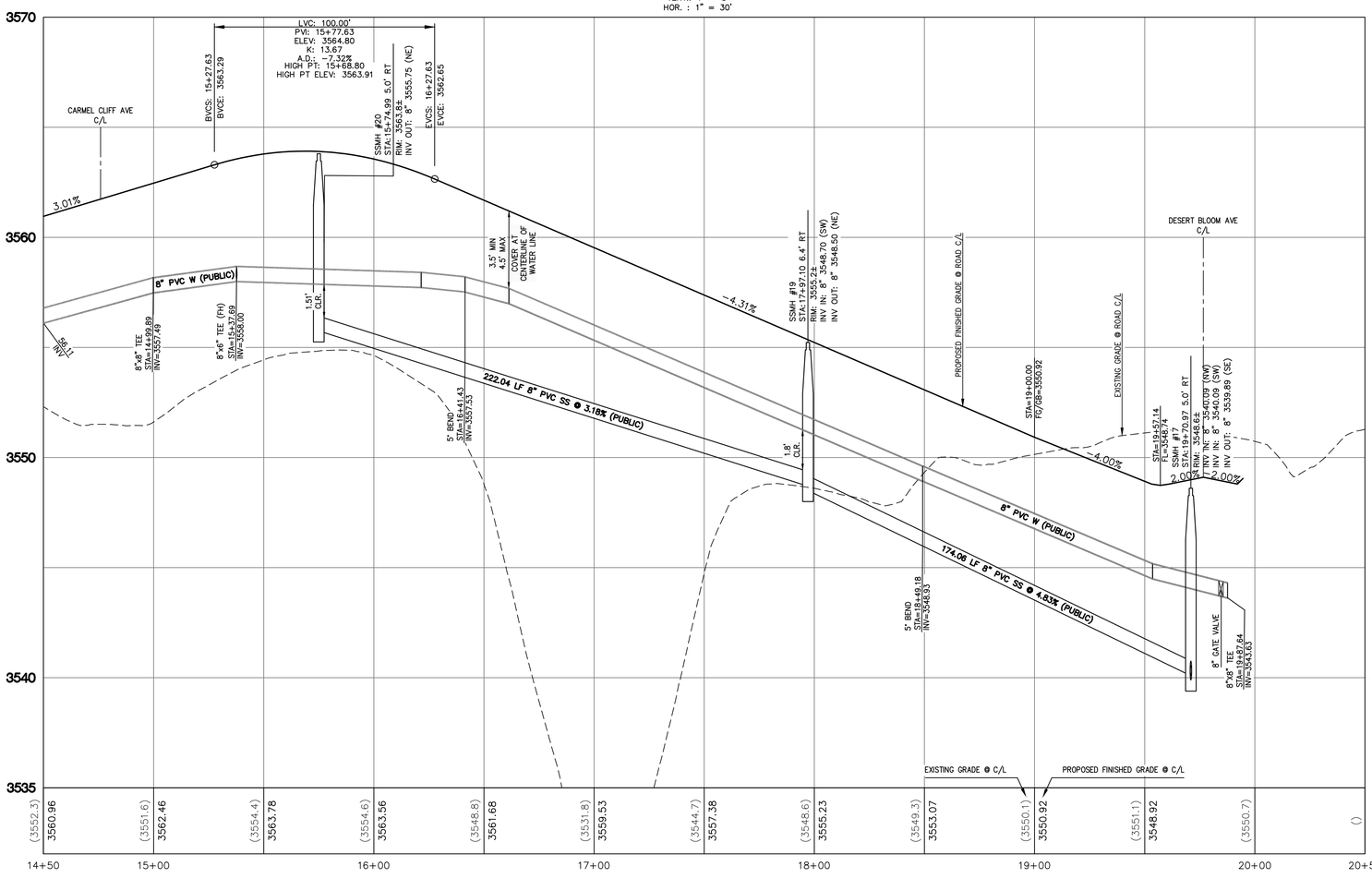
SUNSET VIRGA ST PLAN & PROFILE 9+50 TO 14+50

DRAWING
P7
18 OF 41 SHTS



PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



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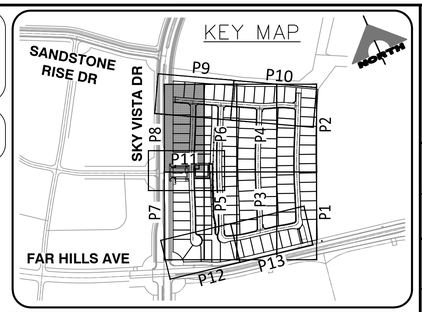
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LINEAR UNIT: US SURVEY FOOT (FTUS)
DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)
ZONE:LAS VEGAS HIGH ELEVATION ZONE

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BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX–XXXXX | CLV DWG#

NORTH

30' 0' 15' 30' 60'
SCALE: 1" = 30'

GCV
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
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f: \Projects \700 \764–a173–001 \DWG \production \764–A173–PP–NS.dwg
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PARCEL D

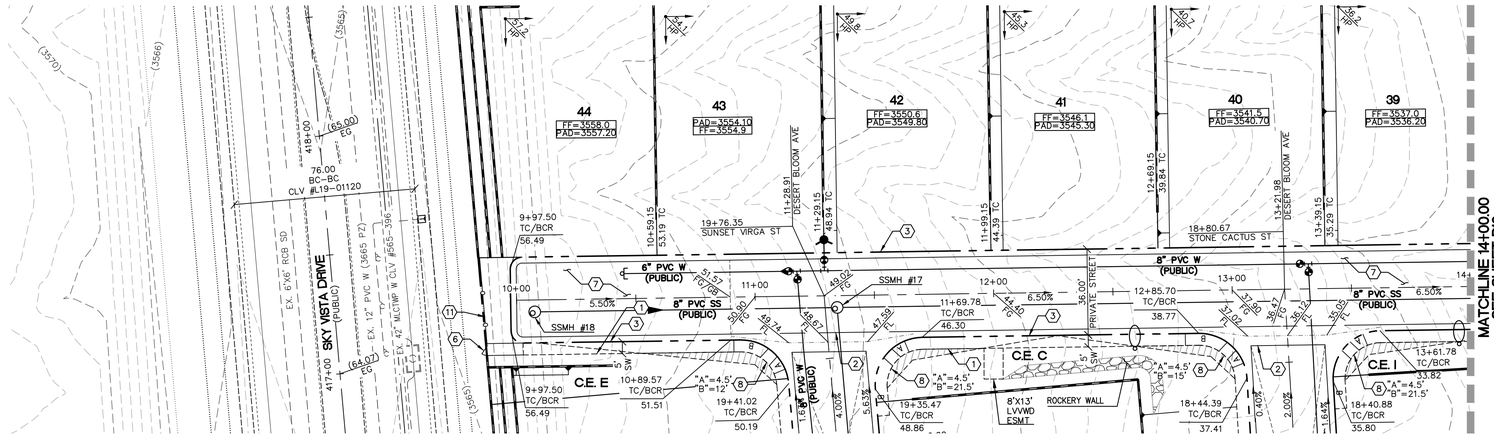
SUNSET VIRGA ST PLAN & PROFILE 14+50 TO 20+00

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04–08–20
PLOT TIME: 20:26:43

DRAWING P8
19 OF 41 SHTS

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

NEVADA — STATE OF NEVADA — PROFESSIONAL ENGINEER — WESLEY T. PETTY — No. 16369 — 4/21/2021 — CIVIL
DATE: 04–08–20



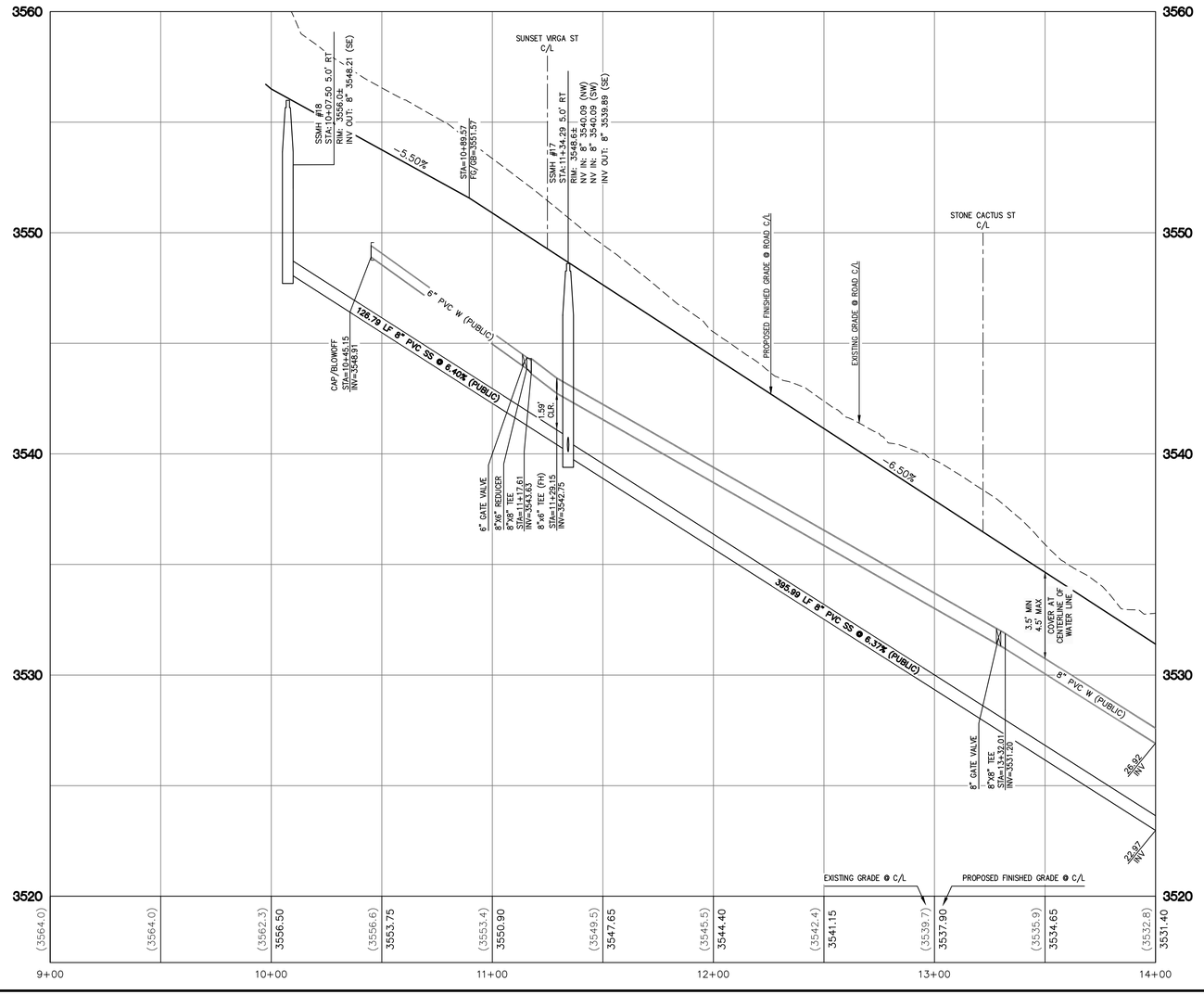
SUNSET VIRGA ST
(PRIVATE)
SEE SHEET P8

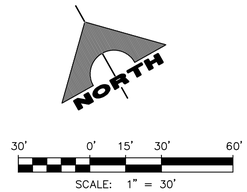
DESERT BLOOM AVE
(PRIVATE)

STONE CACTUS ST
(PRIVATE)
SEE SHEET P6

PLAN AND PROFILE

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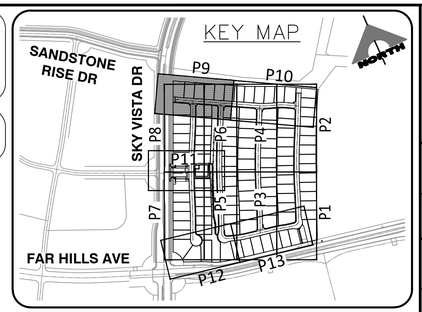
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LINEAR UNIT: US SURVEY FOOT (FTUS)
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L# XXX–XXXXX | CLV DWG#

STATE OF NEVADA – REGISTERED ENGINEER – WESLEY T. PETTY – No. 16369 – 1/31/2021 – CIVIL – PROFESSIONAL ENGINEER
DATE: 04–08–20

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
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PLOT DATE: 04–08–20
PLOT TIME: 20:27:55

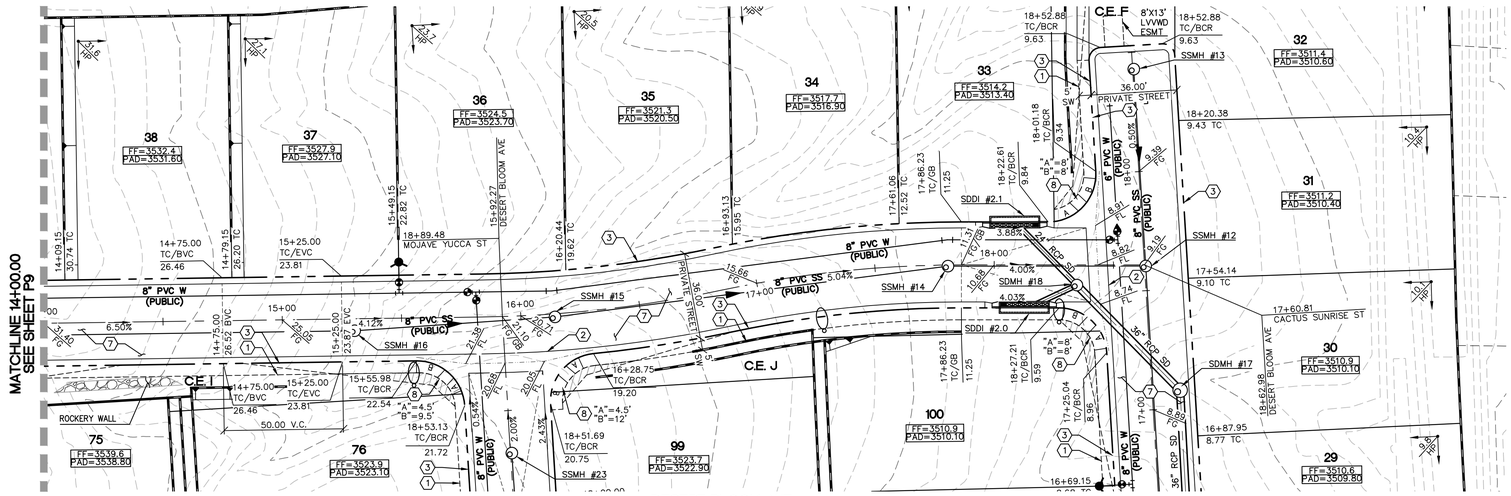
GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

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Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D

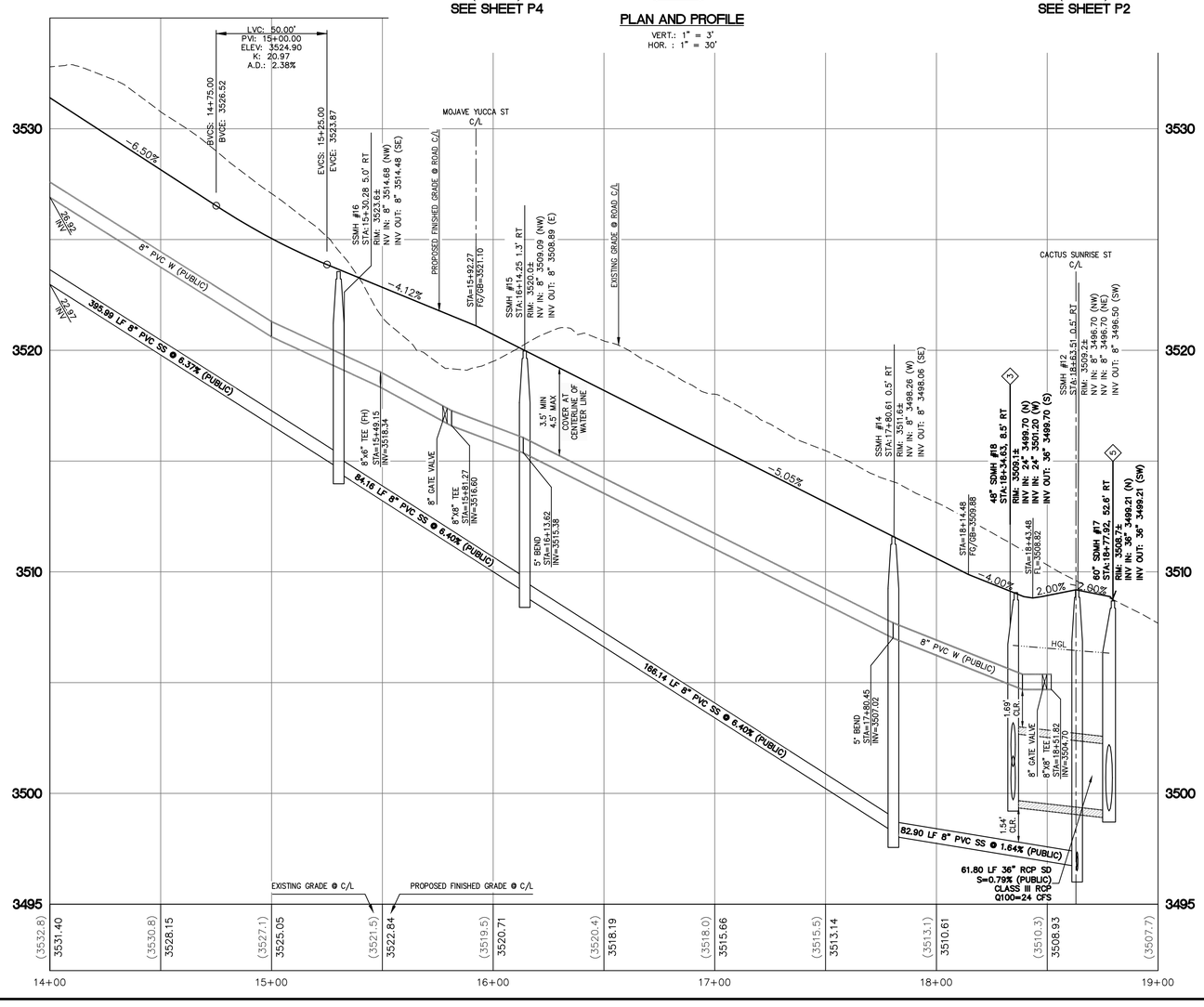
DESERT BLOOM AVE PLAN & PROFILE 8+50 TO 14+00

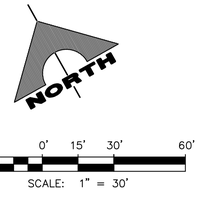
DRAWING
P9
20 OF 41 SHTS



PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'





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. (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

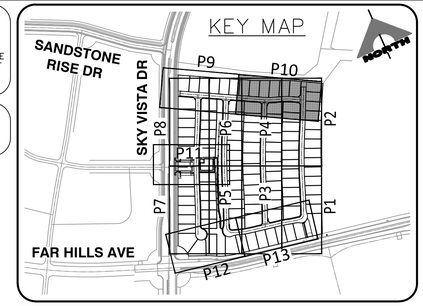
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Call 811
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NOTE:

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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:
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BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX–XXXXX | CLV DWG#



REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:28:13

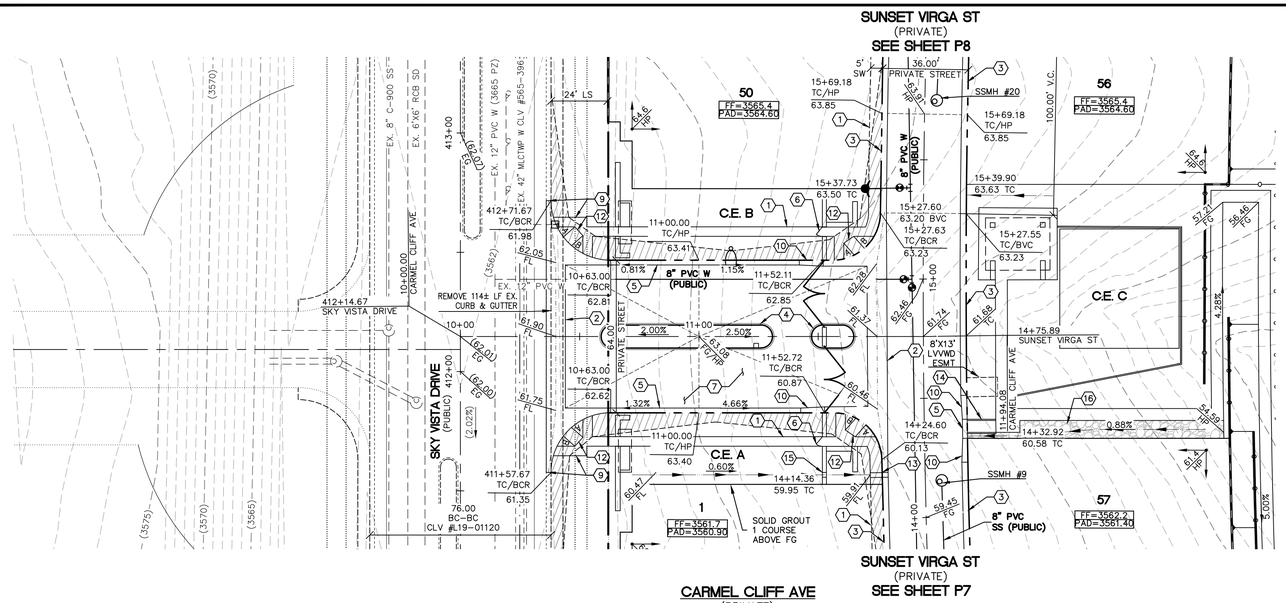
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J:\Projects\700\764-a173-001\DWG\production\764-A173-PP-ME.dwg
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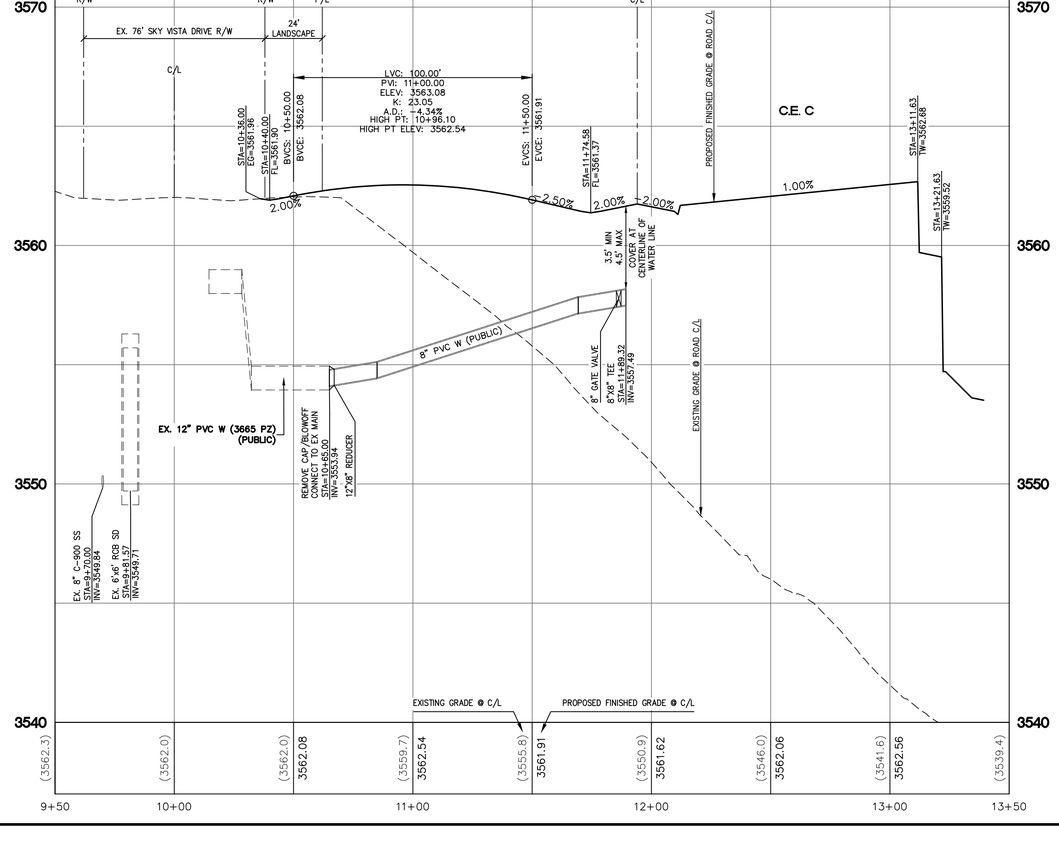
DESERT BLOOM AVE PLAN & PROFILE 14+00 TO 19+00

DRAWING
P10
21 OF 41 SHTS



CARMEL CLIFF AVE
(PRIVATE)

PLAN AND PROFILE
VERT.: 1" = 3'
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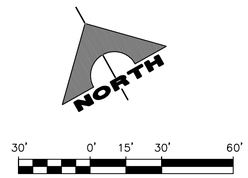
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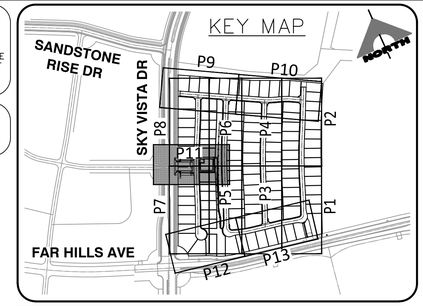
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LINEAR UNIT: US SURVEY FOOT (FTUS)
DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)
ZONE: LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
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BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
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UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX-XXXXX | CLV DWG#

ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
No. 16369
1/31/2021
DATE: 04-08-20

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 764-A173-001
DESIGN:
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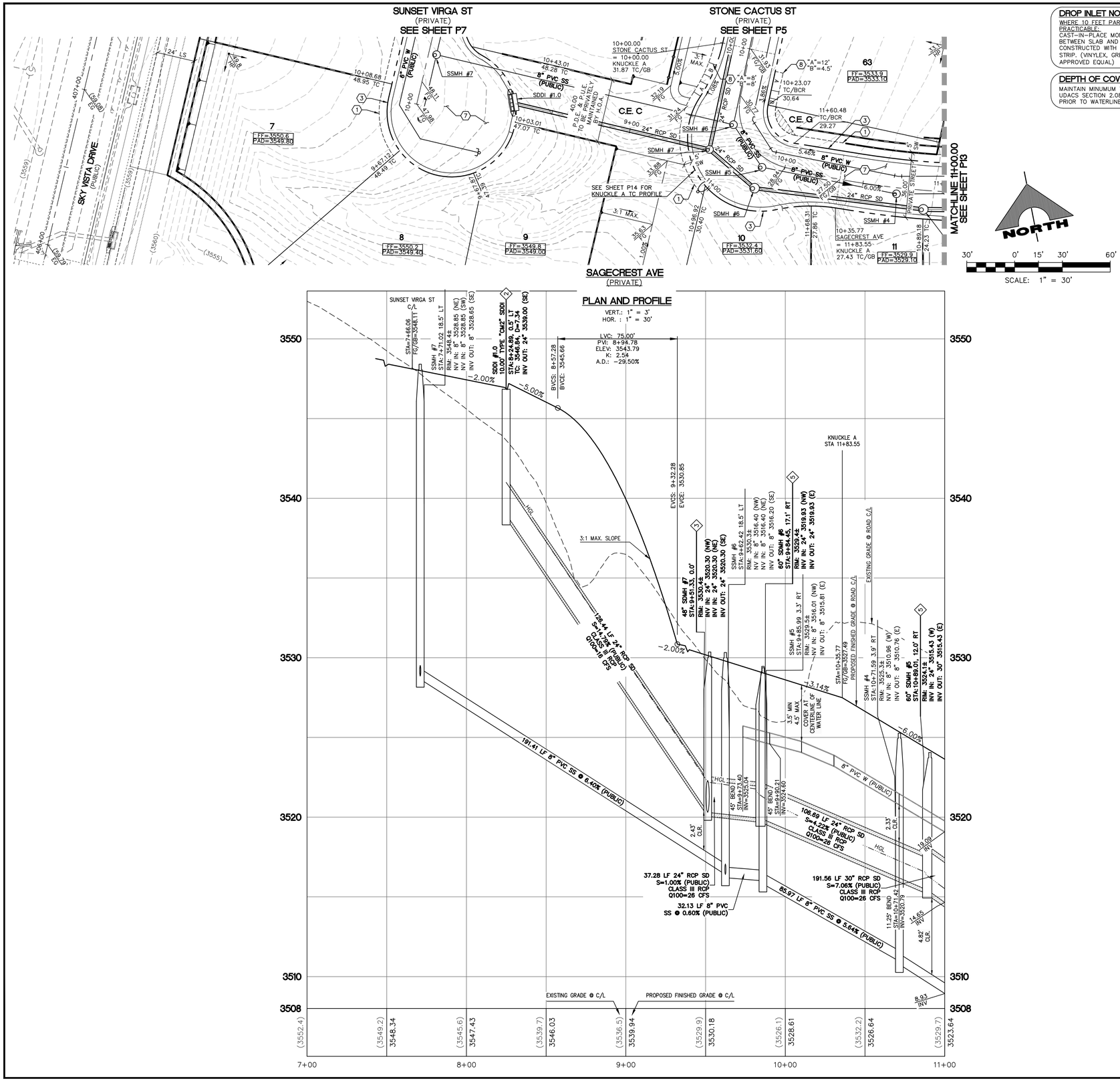
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f:\Projects\700\764-a173-001\GW\production\764-A173-PP-WE.dwg
Nicholas DeRosa

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PARCEL D

CARMEL CLIFF AVE PLAN & PROFILE 9+50 TO 12+50

DRAWING
P11
22 OF 41 SHTS



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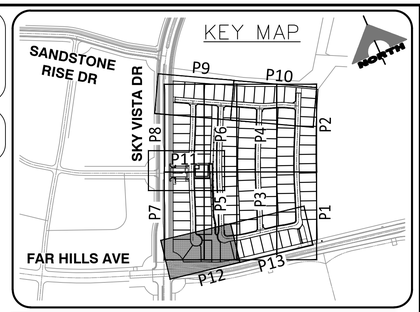
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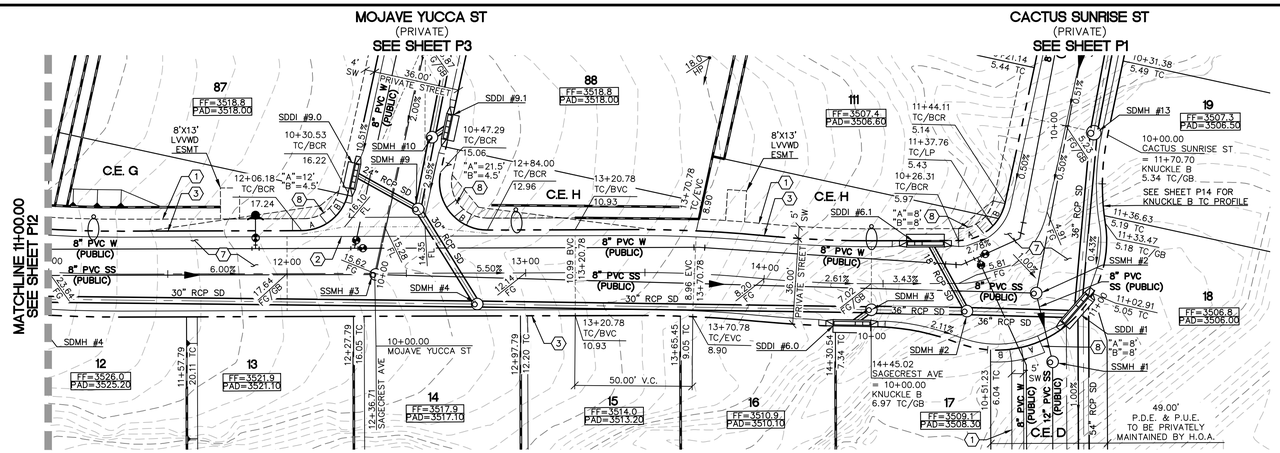
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F: 702.804.2299
gcwengineering.com

f: \Projects\700\764-a173-001\DWG\production\764-A173-PP-WE.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D

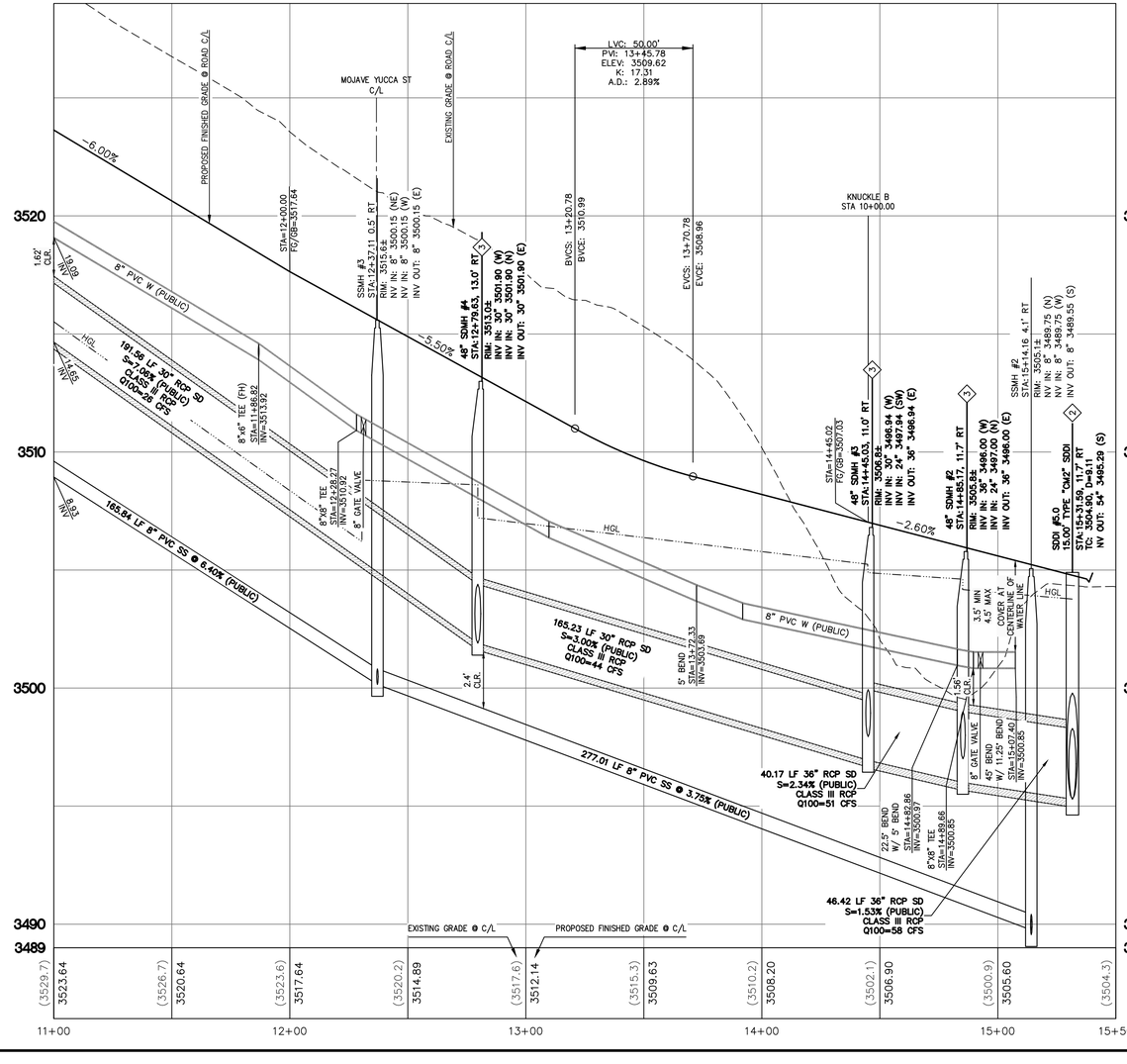
SAGECREST AVE PLAN & PROFILE 7+00 TO 11+00

DRAWING
P12
23 OF 41 SHTS



SAGECREST AVE (PRIVATE)
PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



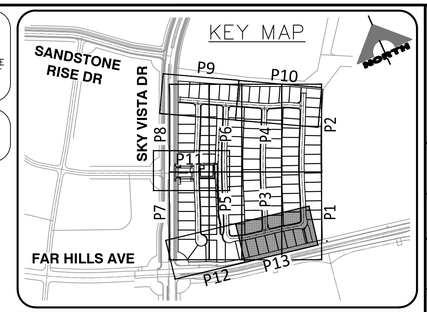
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FAST
Call before you UnderGround 1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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1-702-227-2929



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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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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)

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BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LVO934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

UTILITY APPROVAL
SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX–XXXXX | CLV DWG#

ENGINEER – STATE OF NEVADA
WESLEY T. PETTY
1/31/2021
No. 16369
DATE: 04–08–20

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

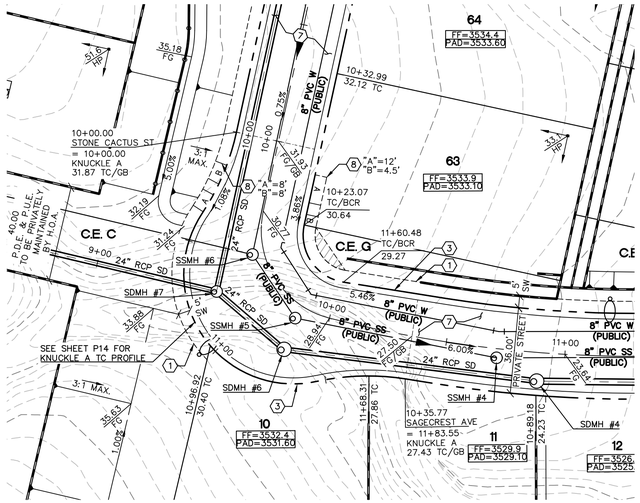
PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04–08–20
PLOT TIME: 20:29:06

F:\Projects\700\764-a173-001\DWG\production\764-A173-PP--WE.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D

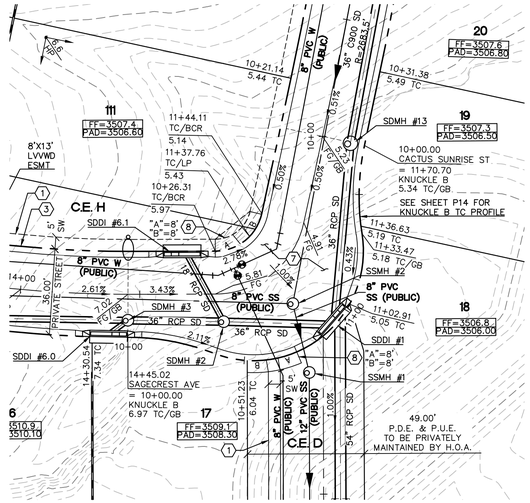
SAGECREST AVE PLAN & PROFILE 11+00 TO 15+50

DRAWING
P13
24 OF 41 SHTS



KNUCKLE A TC
PLAN AND PROFILE

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HOR. : 1" = 30'



KNUCKLE B TC
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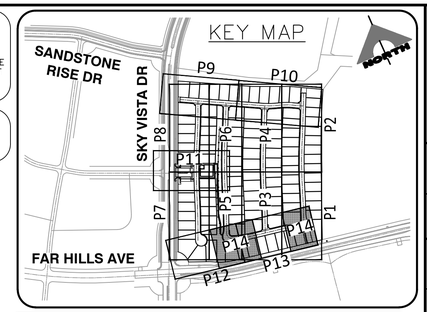
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LINEAR UNIT: US SURVEY FOOT (FTUS)
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BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
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UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX–XXXXX | CLV DWG#

GCW
ENGINEERS \ SURVEYORS
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LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:29:36
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Nicholas DeRosa

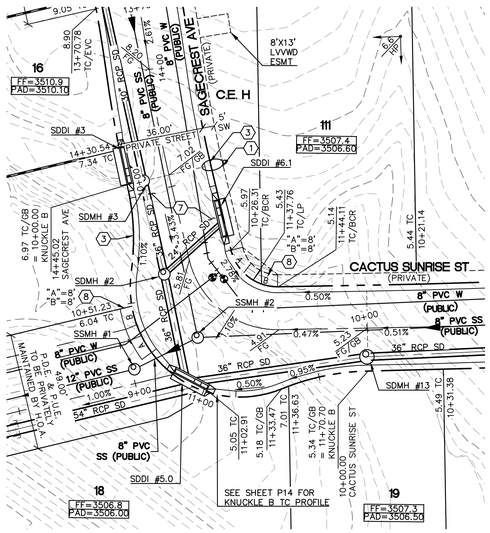
REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

DATE: 04-08-20

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D

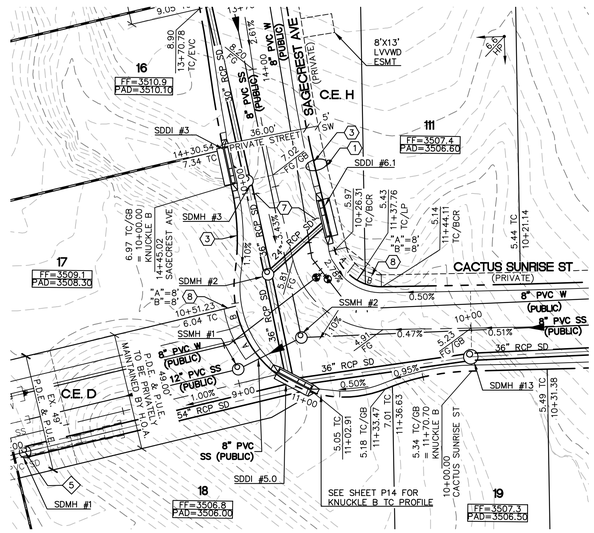
KNUCKLE A AND KNUCKLE B TC PLAN & PROFILES

DRAWING
P14
25 OF 41 SHTS



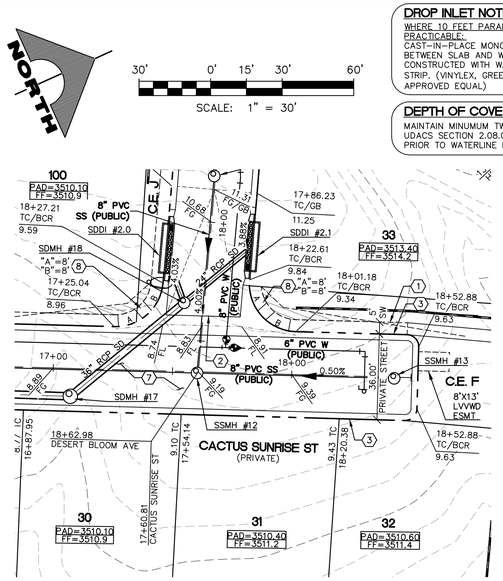
LATERAL A

VERT.: 1" = 3'
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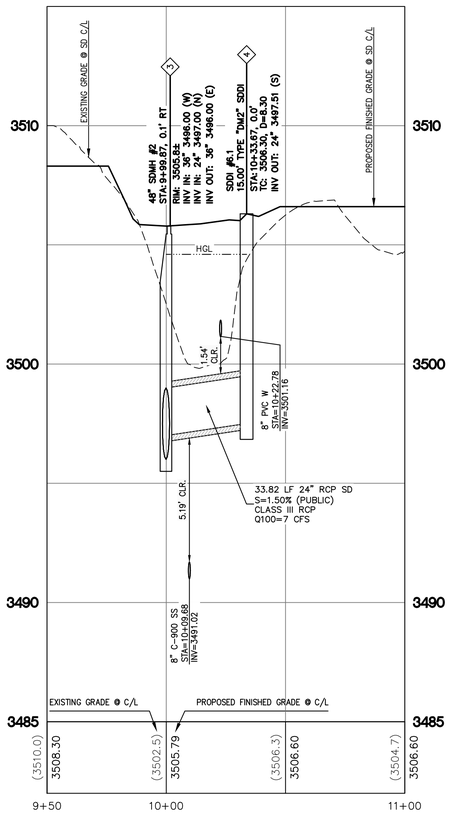
LATERAL B

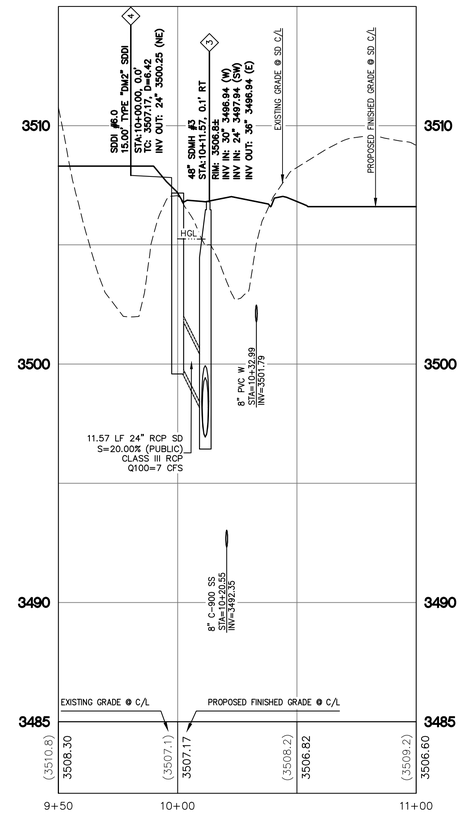
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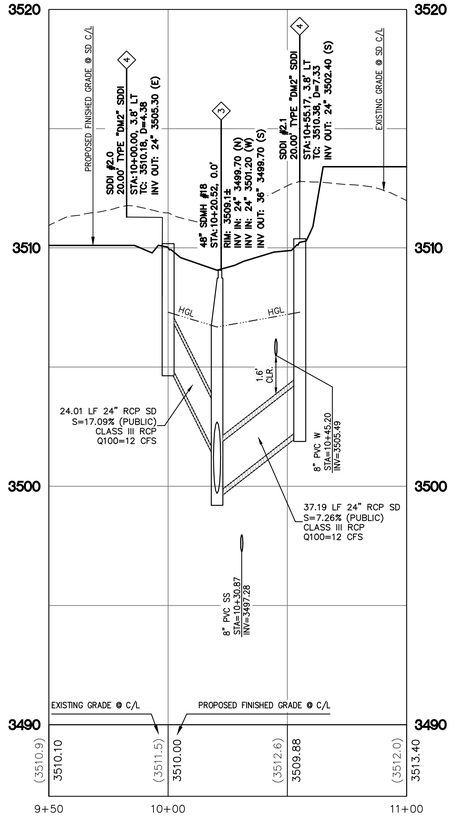


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30' 0' 15' 30' 60'

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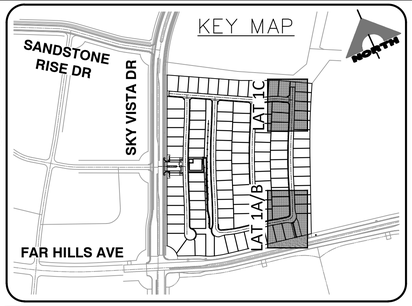
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PROJECT NO. XXXXXX FIRST APPROVED DATE:
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MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX–XXXXX | CLV DWG#

ENGINEER – STATE OF NEVADA – WESLEY T. PETTY – No. 16369 – 4/21/2021 – PROFESSIONAL ENGINEER
DATE: 04-08-20

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

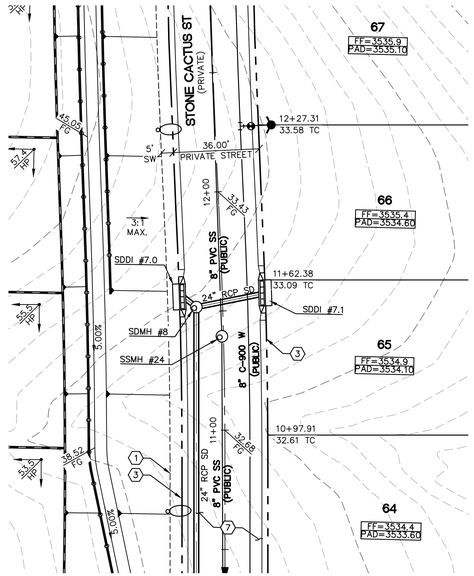
PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:30:53

GCW ENGINEERS\SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
f:\Projects\700\764-a173-001\DWG\production\764-A173-LAT1.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D

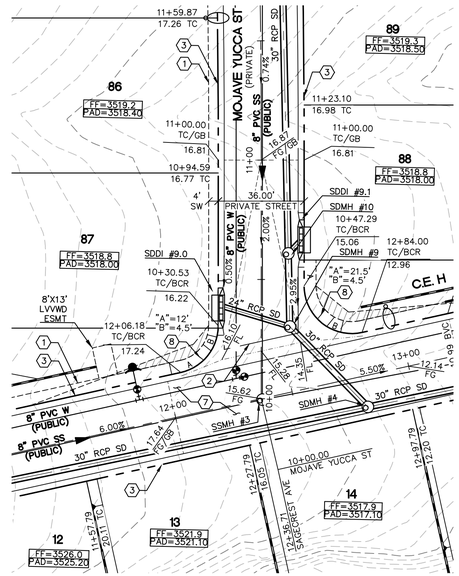
STORM DRAIN LATERAL PLAN & PROFILE

DRAWING
LAT1
26 OF 41 SHTS



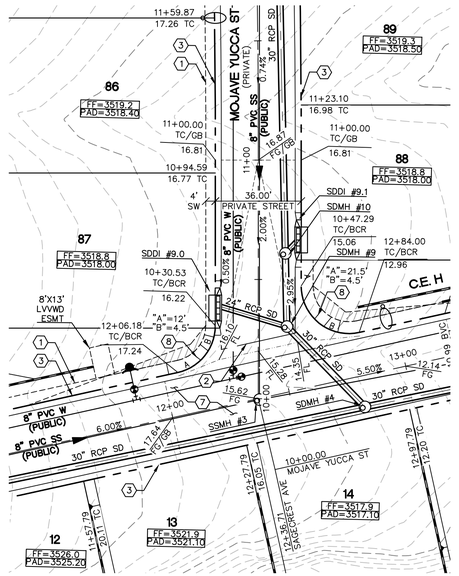
LATERAL A

VERT.: 1" = 3'
HOR. : 1" = 30'



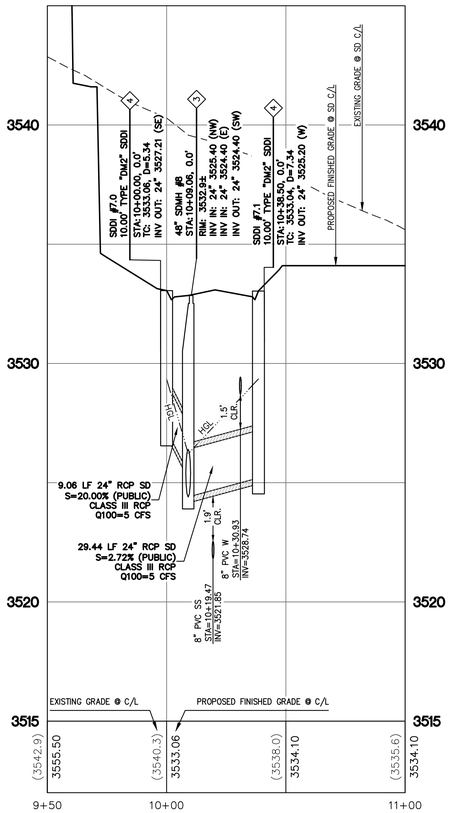
LATERAL B

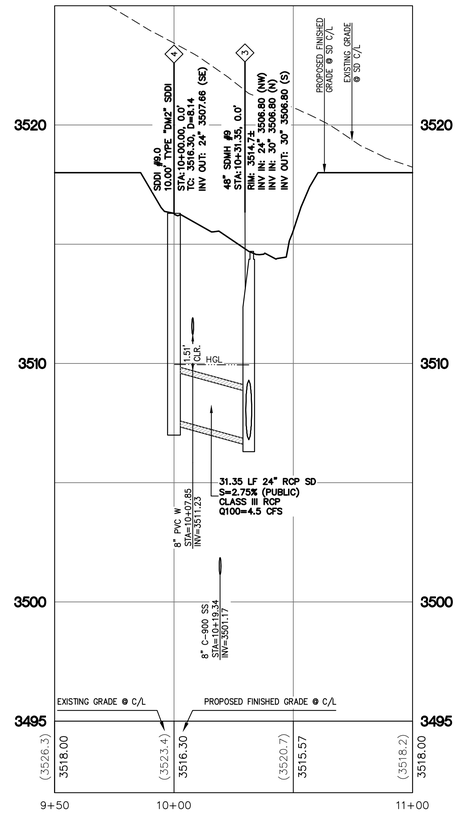
VERT.: 1" = 3'
HOR. : 1" = 30'

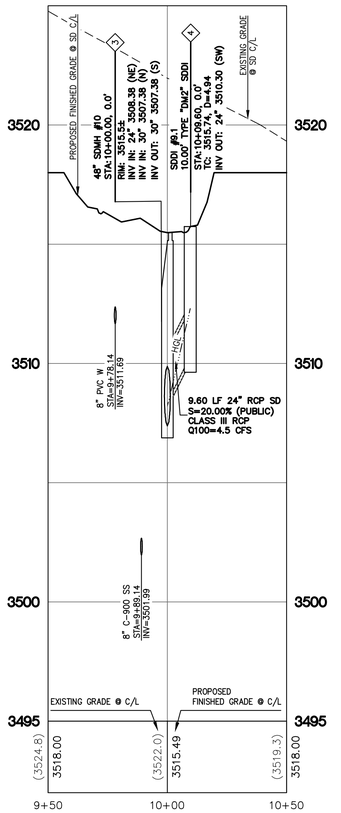


LATERAL C

VERT.: 1" = 3'
HOR. : 1" = 30'







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. (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

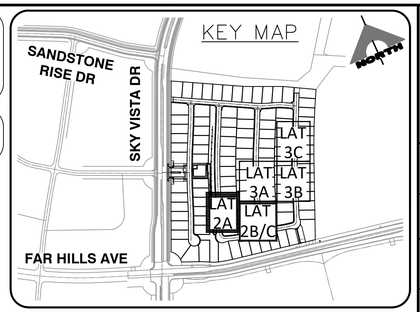
DEPTH OF COVER DURING CONSTRUCTION

MAINTAIN MINUMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

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



CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER SUMMERLIN STD DWG NO. S-72 & S-48.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER SUMMERLIN STD DWG NO. S-64.
3. CONSTRUCT ROLL CURB PER SUMMERLIN STD DWG NO. S-48.
4. CONSTRUCT MEDIAN "A" TYPE PER SUMMERLIN STD DWG NO. S-50.
5. CONSTRUCT "L" CURB PER SUMMERLIN STD DWG NO. S-47.
6. INSTALL GATE – SEE LANDSCAPE.
7. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE SOIL REPORT PREPARED BY GEOTEK RESIDENTIAL, LLC PROJ. #15244–LVR FOR MORE DETAIL.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE I. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL 2 ON SHEET D2.
11. CONSTRUCT REMOVABLE WROUGHT IRON FENCE PER USDCCA NO. 425.S1.
12. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE II. SEE PLAN FOR "A" & "B" DIMENSION.
13. CONSTRUCT SIDEWALK DRAIN PER DETAIL 3 ON SHEET D2.
14. CONSTRUCT SIDEWALK RAMP PER DETAIL 4 ON SHEET D2.

STORM DRAIN CONSTRUCTION NOTES

1. CONNECT TO EXISTING STORM DRAIN.
2. CONSTRUCT MODIFIED TYPE "CM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
3. CONSTRUCT 48" TYPE II STORM DRAIN MANHOLE PER STD. DWG 405.
4. CONSTRUCT MODIFIED TYPE "DM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
5. CONSTRUCT 60" TYPE III STORM DRAIN MANHOLE PER STD. DWG 406.1.

NORTH

30' 0' 15' 30' 60'
SCALE: 1" = 30'

NOTE:

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

TO ENSURE LVVWD ACCESS WITHIN EASEMENT

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NOTE

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BASIS OF BEARING AND COORDINATES

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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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:
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2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX–XXXXX | CLV DWG#

STATE OF NEVADA — PROFESSIONAL ENGINEER — WESLEY T. PETTY — 16369 — CIVIL — 1/31/2021
DATE: 04–08–20

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE:04–08–20
PLOT TIME: 20:32:17

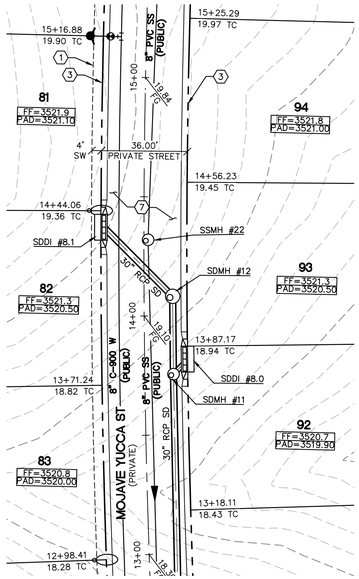
GCW
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T: 702.804.2000
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f:\Projects\700\764-a173-001\DWG\production\764-A173-LAT2-3.dwg
Nicholas DeRosa

PULTE HOMES

SUMMERLIN VILLAGE 25
PARCEL D

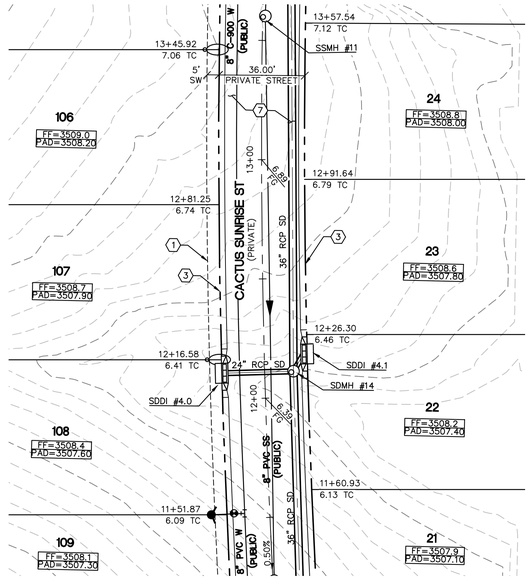
STORM DRAIN LATERAL PLAN & PROFILE

DRAWING
LAT2
27 OF 41 SHTS



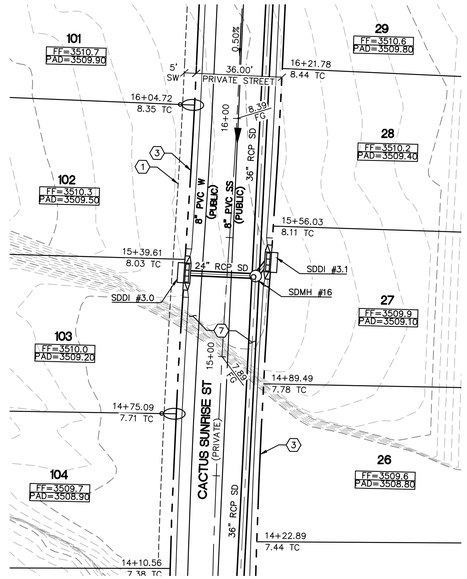
LATERAL A

VERT.: 1" = 3'
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LATERAL B

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HOR. : 1" = 30'



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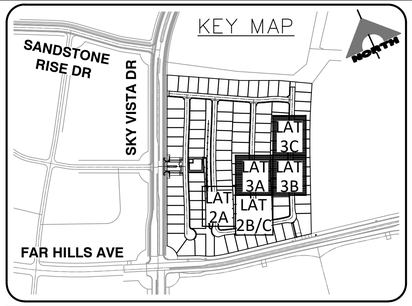
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LINEAR UNIT: US SURVEY FOOT (FTUS)
DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00
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PROJECTION: TRANSVERSE MERCATOR
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UTILITY APPROVAL

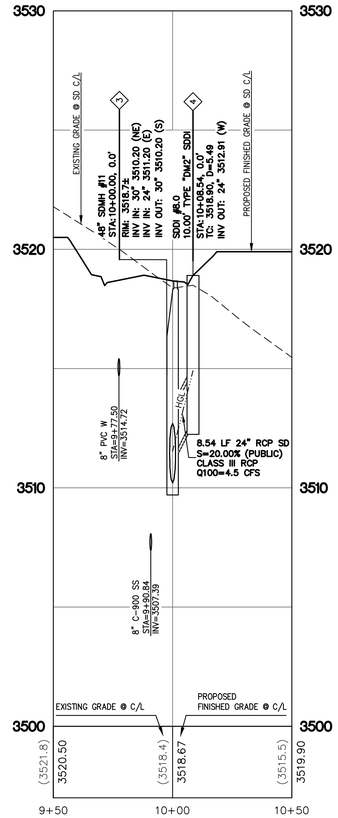
SOUTHWEST GAS CORP. DATE:

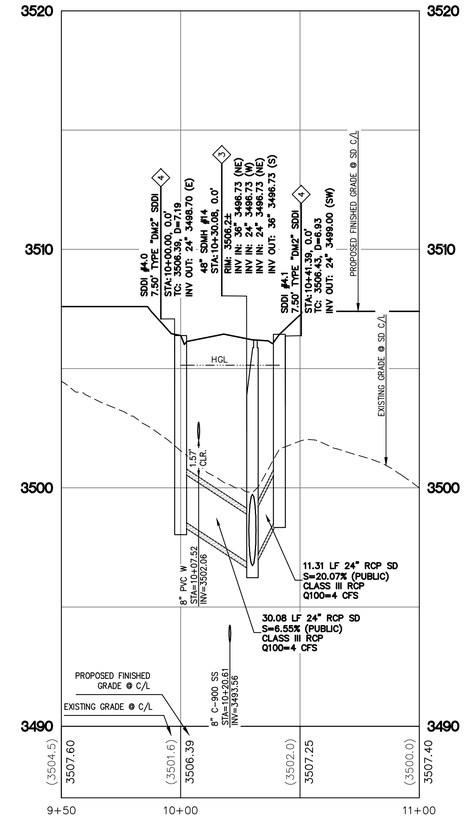
APPROVED FOR CONSTRUCTION

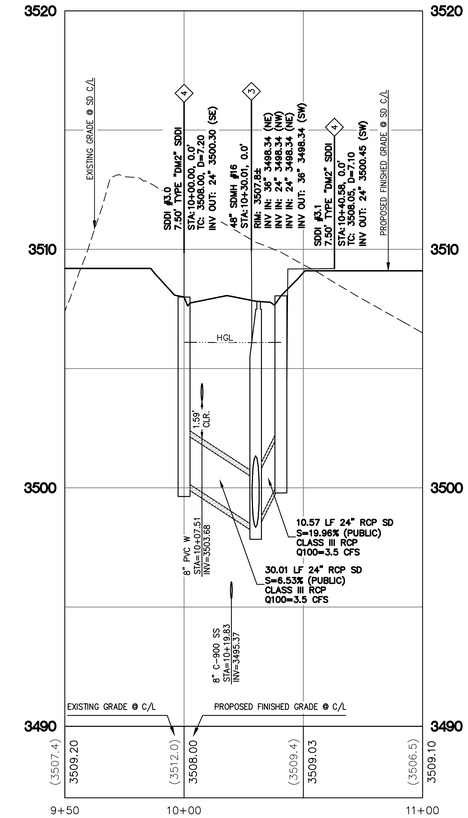
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX-XXXXX | CLV DWG#







ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
No. 16369
1/31/2021
PROFESSIONAL ENGINEER
DATE: 04-08-20

DATE | DESCRIPTION | REV
DATE | AGEN APP
DATE | GCW APP

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
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PLOT TIME: 20:33:12

GCW
ENGINEERS & SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
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gcwengineering.com
f:\Projects\700\764-a173-001\DWG\production\764-A173-LAT2-3.dwg
Nicholas DeRosa

PULTE HOMES

SUMMERLIN VILLAGE 25
PARCEL D

STORM DRAIN LATERAL PLAN & PROFILE

DRAWING
LAT3
28 OF 41 SHTS

VILLAGE 25
PARCEL COS-1
APN 137-27-110-006

VILLAGE 29
PARCEL LR41
APN 137-27-101-002

VILLAGE 29
PARCEL LR37
APN 137-27-101-002

VILLAGE 25
PARCEL A
APN 137-27-617-001

VILLAGE 23B
PARCEL Y
APN 137-22-000-015

DESERT BLOOM AVE (PRIVATE)
SKY VISTA DRIVE (PUBLIC)
SUNSET VIRGA ST (PRIVATE)
STONE CACTUS ST (PRIVATE)
MOJAVE YUCCA ST (PRIVATE)
CACTUS SUNRISE ST (PRIVATE)
CARMEL CLIFF AVE (PRIVATE)
SAGECREST AVE (PRIVATE)
FAR HILLS AVE (PUBLIC)

C.E. A, C.E. B, C.E. C, C.E. D, C.E. E, C.E. F, C.E. G, C.E. H, C.E. I, C.E. J

8"X13' LVVWD ESMT

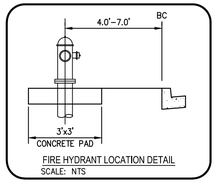
EX. 6"X6' RCB SD
EX. 12" PVC W (3665 PZ)
EX. 42" MLCTWP W CLV #565-396
EX. 8" C-900 SS
EX. 12" C-900 SS

6" PVC W
8" PVC W
8" PVC SS (PUBLIC)
24" RCP SD
30" RCP SD
36" RCP SD
SDDI #1.0 – SDDI #8.1
SSMH #1 – SSMH #27
SDMH #1 – SDMH #17
EX. 54" RCP SD (TO BE REMOVED)
EX. 36" RCP SD (TO BE REMOVED)
EX. 36" RCP SD (TO REMAIN)
EX. DROP INLET



60' 0' 30' 60' 120'

SCALE: 1" = 60'



FIRE HYDRANT LOCATION DETAIL
SCALE: NTS

FAST
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NOTE:

ANY EXCAVATION AT BACK OF CURB MUST REMAIN OPEN FOR INSPECTION OF COPPER SERVICE LATERALS. ANY COPPER SERVICE LATERAL KINKED, BENT OR OTHERWISE DAMAGED BUST BE REPLACED FROM THE MAIN TO THE ANGLE METER STOP.

FOR ALL DRY UTILITY CROSSINGS

- MAINTAIN MINIMUM 12" VERTICAL SEPARATION AT ALL POINTS OF CROSSING
- MAINTAIN MINIMUM 3' PARALLEL SEPARATION.
- ANY EXCAVATION AT BACK OF CURB MUST REMAIN OPEN FOR INSPECTION OF COPPER SERVICE LATERALS. ANY COPPER SERVICE LATERAL KINKED, BENT OR OTHERWISE DAMAGED MUST BE REPLACED FROM THE MAIN TO THE ANGLE METER STOP.

FIRE SPRINKLER SYSTEM SHALL BE PLUMBED TO THE MASTER TOILET. NO EXCEPTIONS ALLOWED

BASIS OF BEARING AND COORDINATES

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.

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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 (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 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

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5S\R59E\S34	3318.31 (FEET)	1,011.422 (METERS)

FIRE FLOW CALCULATIONS

FIRE FLOW REQUIREMENTS IS 1,000 GPM @ 20 PSI RESIDUAL FOR HOMES WITH SQUARE FOOTAGES LESS THAN 3,000 S.F.

FIRE FLOW REQUIREMENTS IS 1,500 GPM @ 20 PSI RESIDUAL FOR HOMES WITH SQUARE FOOTAGES GREATER THAN 3,001 S.F.

BASED ON:
SQUARE FOOTAGE: 3,000 SQUARE FEET
NUMBER OF STORIES/FLOORS: 2

AUTOMATIC FIRE SPRINKLER SYSTEM: YES ☒ NO ☐

ANTICIPATED FIRE SPRINKLER FLOW DEMAND: 30 GPM

OF HYDRANTS PROVIDED: 10

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE DATE
FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

L# XXX–XXXXX | CLV DWG#

ENGINEER – STATE OF NEVADA
WESLEY T. PETTY
No. 16369
1/31/2021
DATE: 04-08-20

REV	DATE	DESCRIPTION	DRAWN	CHECK	APP	DATE	APP

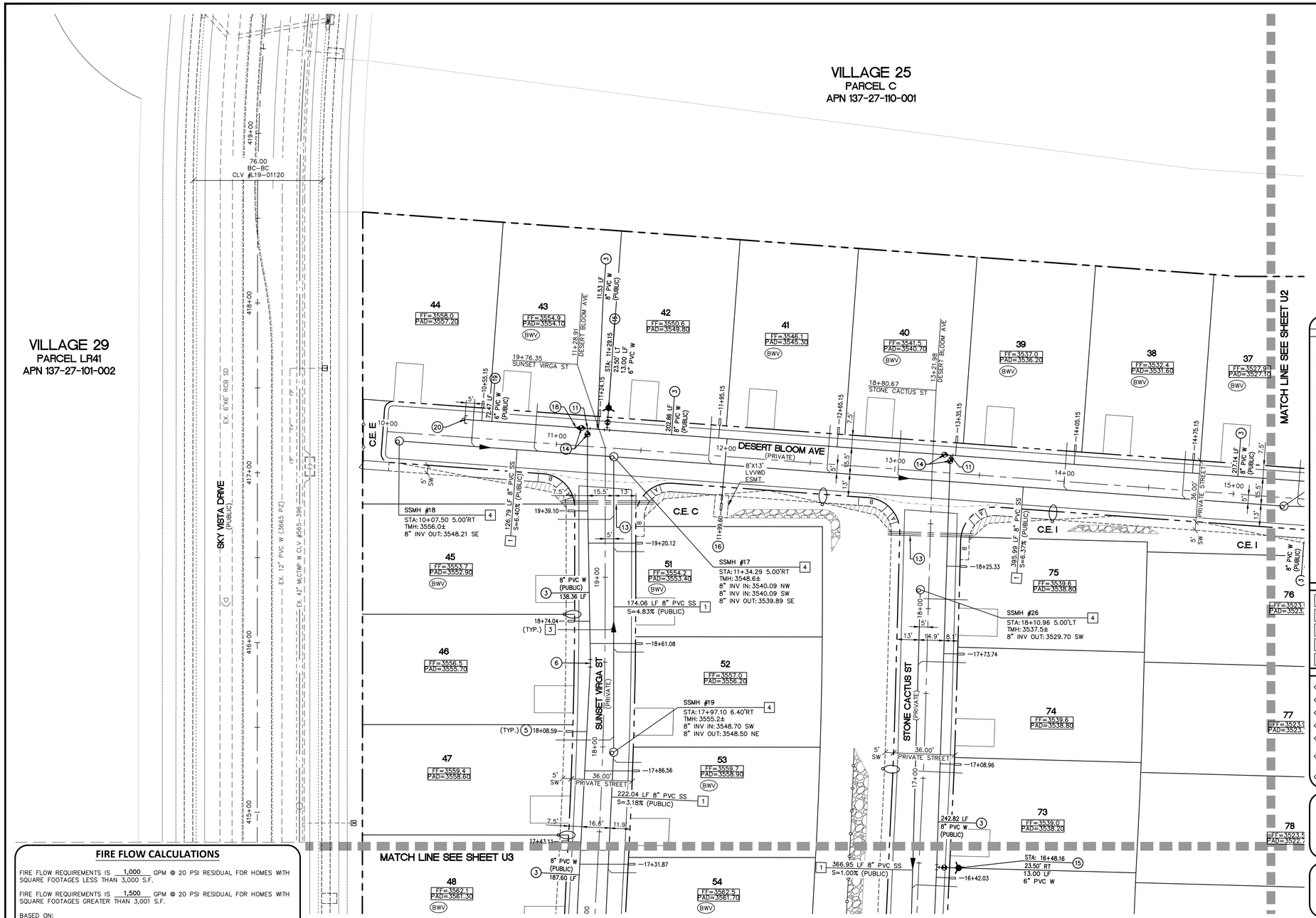
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PLOT TIME: 20:33:46

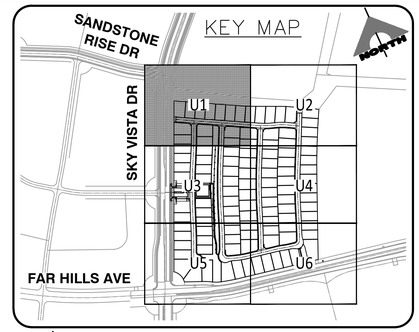
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gcwengineering.com

I:\Projects\700\764-a173-001\DWG\production\764-A173-MU.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
MASTER UTILITY PLAN

DRAWING
MU
29 OF 41 SHTS





CONSTRUCTION NOTES

WATER

1. REMOVE CAP/BLOW-OFF PER UDACS PLATE NO. 36 AND CONNECT TO EXIST MAIN.
2. INSTALL 8" DIP WATER PIPE PER UDACS PLATE 17.
3. INSTALL 8" PVC WATER PIPE PER UDACS PLATE 17.
4. INSTALL 12" PVC WATER PIPE PER UDACS PLATE 17.
5. INSTALL 1" WATER SERVICE WITH 3/4" WATER METER PER UDACS PLATE NO. 1
6. INSTALL 5' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
7. INSTALL 11.25' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
8. INSTALL 22.5' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
9. INSTALL 45' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
10. INSTALL 90' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
11. INSTALL 8" X 8" TEE PER UDACS PLATE NO. 31.
12. INSTALL 12" X 8" REDUCER PER UDACS PLATE NO. 30.
13. INSTALL IRRIGATION SLEEVES 1-6" AND 2-4" SCH. 40 PVC (VERIFIY ALL IRRIGATION CROSSING WITH LANDSCAPE PLANS.
14. INSTALL GATE VALVE SAME SIZE AS LINE, BOX, AND COVER PER UDACS PLATE NO. 30 & 39.
15. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39 & 40.
16. INSTALL 3/4" IRRIGATION METER WITH 1" RPPA PER UDACS PLATE NO. 4 AND 8. MAINTAIN A SLOPE OF NO GREATER THAN 2%, FREE OF SHRUBBERY AND OBSTRUCTIONS, WITHIN AT LEAST THREE (3) FEET ADJACENT TO THE BACKFLOW ASSEMBLY PAD.
17. INSTALL 6" CAP & 2" BLOW-OFF PER UDACS PLATE NO. 31.
18. INSTALL 8" X 6" REDUCER PER UDACS PLATE NO. 30.
19. INSTALL 6" PVC WATER PIPE PER UDACS PLATE 17.
20. INSTALL 6" CAP PER UDACS PLATE NO. 31.

SEWER

1. INSTALL 8" SANITARY SEWER PIPE.
2. REMOVE CAP AND CONNECT TO EXISTING 8" SEWER STUB. CONTRACTOR TO VERIFY LOCATION AND ELEVATION.
3. INSTALL 4" SEWER LATERAL PER DCSWCS SD-20. (TYP).
4. INSTALL 48" DIAMETER SANITARY SEWER MANHOLE WITH SINGLE 24" LID PER DCSWCS SD-3.
5. CONSTRUCT CORROSION PROTECTION PER 3.16.8 OF DCSWCS.

STORM DRAIN

1. CONNECT TO EXISTING STORM DRAIN.
2. CONSTRUCT MODIFIED TYPE "CM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
3. CONSTRUCT 48" TYPE II STORM DRAIN MANHOLE PER STD. DWG 405.
4. CONSTRUCT MODIFIED TYPE "DM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
5. CONSTRUCT 60" TYPE III STORM DRAIN MANHOLE PER STD. DWG 406.1.
6. 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 (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)
7. CONSTRUCT FULL STRENGTH GROUT PER DCSWCS 3.16.4, WATERTIGHT JOINTS USING AGENCY-APPROVED SEALS AT MANHOLE SECTIONS AND GRADE RINGS PER DCSWCS 3.16.2, AND RAVEN LINING SYSTEM OR WARREN ENVIRONMENTAL LINING SYSTEMS.

NOTE TO CONTRACTOR

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

NOTE

ALL ONSITE STORM DRAINS AND ASSOCIATED STORM FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE HOA.

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

FIRE FLOW CALCULATIONS

FIRE FLOW REQUIREMENTS IS 1,000 GPM @ 20 PSI RESIDUAL FOR HOMES WITH SQUARE FOOTAGES LESS THAN 3,000 S.F.

FIRE FLOW REQUIREMENTS IS 1,500 GPM @ 20 PSI RESIDUAL FOR HOMES WITH SQUARE FOOTAGES GREATER THAN 3,001 S.F.

BASED ON:
SQUARE FOOTAGE: 3,000 SQUARE FEET
NUMBER OF STORIES/FLOORS: 2

AUTOMATIC FIRE SPRINKLER SYSTEM: YES ☒ NO ☐

ANTICIPATED FIRE SPRINKLER FLOW DEMAND: 30 GPM

OF HYDRANTS PROVIDED: 10

(BWV) SEWER BACKWATER VALVE (PRIVATE)
(PRV) WATER PRESSURE-REDUCING VALVE (PRIVATE)

FAST
Call before you Dig
Call 811 OR 1-800-227-2600
AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

LVVWD CANNOT GUARANTEE A WATERTIGHT SHUTDOWN WHERE CONNECTIONS OR REPAIRS TO EXISTING FACILITIES ARE REQUIRED. THE CONTRACTOR SHALL ENSURE ALL LABOR AND EQUIPMENT IS AVAILABLE TO REMOVE REMAINING WATER. COORDINATION WITH INSPECTION DIVISION MUST TAKE PLACE PRIOR TO ANY TRIAL SHUTDOWN,

CONTRACTOR TO INSTALL TEMPORARY SERVICE TO ENSURE PROPER SHUTDOWN IN THE EVENT NO OTHER APPURTENANCES ARE AVAILABLE.

ESTIMATE WASTEWATER DEMAND

111 UNITS X 250 GPD/UNIT = 27,750 GPD

TOTAL AVERAGE CONTRIBUTION = 27,750 GPD = 0.027750 MGD

TOTAL PEAK FLOW = 0.027750 MGD X 3.76 (PEAK FACTOR) = 0.1043 MGD

SEWER CONNECTION NOTE

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND/OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND/OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE, OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

FOR ALL DRY UTILITY CROSSINGS

- MAINTAIN MINIMUM 12" VERTICAL SEPARATION AT ALL POINTS OF CROSSING
- MAINTAIN MINIMUM 3" PARALLEL SEPARATION
- ANY EXCAVATION AT BACK OF CURB MUST REMAIN OPEN FOR INSPECTION OF COPPER SERVICE LATERALS. ANY COPPER SERVICE LATERAL KINKED, BENT OR OTHERWISE DAMAGED MUST BE REPLACED FROM THE MAIN TO THE ANGLE METER STOP.

CONTRACTOR NOTE:

1. REPLACE ALL TRAFFIC CONTROL DEVICES (SIGNS AND/OR PAVEMENT MARKINGS), UNDER CLARK COUNTY'S JURISDICTION, THAT ARE DISTURBED, DESTROYED, MOVED OR MODIFIED BY TRENCHING ACTIVITIES TO CLARK COUNTY'S SATISFACTION. ALL MATERIAL USED SHALL MEET CLARK COUNTY'S SPECIFICATIONS OR WILL BE AN APPROVED EQUIVALENT.
2. IN THE EVENT THAT THE TRAFFIC SIGNAL CONDUITS, LOOP DETECTORS OR ASSOCIATED EQUIPMENT ARE DAMAGED BY CONTRACTOR, THE CONTRACTOR WILL HIRE AN IMSA LEVEL II ELECTRICAL CONTRACTOR TO MAKE REPAIRS PER UNIFORM SPECIFICATION NO. 623.G.01.02.
3. ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST COMPLY WITH UDACS SECTION 2.22.
4. THE CONTRACTOR IS TO VERIFY THE ACTUAL FIELD CONDITIONS OF ALL LOTS AND INSTALL SEWER CHECK VALVES WHERE REQUIRED PER THE LATEST EDITION OF THE UNIFORM PLUMBING CODE.
5. FITTINGS SHALL NOT FALL UNDER CURBS, GUTTERS OR SIDEWALK.
6. ALL NEW MANHOLES TO HAVE PRE-CAST BASES.
7. INSTALL PIPELINE MARKER BALLS, PER UDACTS PLATE NO. 15.

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. (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

FIRE SPRINKLER SYSTEM SHALL BE PLUMBED TO THE MASTER TOILET. NO EXCEPTIONS ALLOWED

TO ENSURE LVVWD ACCESS WITHIN EASEMENT

ALL ABOVE GROUND OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO LANDSCAPE BOULDERS, FENCE/ WALLS, AND SIGNS ARE STRICTLY PROHIBITED WITHIN EASEMENT.

GCW, INC. ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITIES SHOWN OR NOT SHOWN. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM RECORD INFORMATION AND ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND DEPTH OF ALL RELEVANT UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION. IF A CONFLICT OR DISCREPANCY IS DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING IMMEDIATELY.

CONTRACTOR NOTE:

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE DATE
FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

L# XXX-XXXXX | CLV DWG#

ENGINEER - STATE OF NEVADA - WESLEY T. PETTY - 16369 - 1/31/2021 - PROFESSIONAL ENGINEER - DATE: 04-08-20

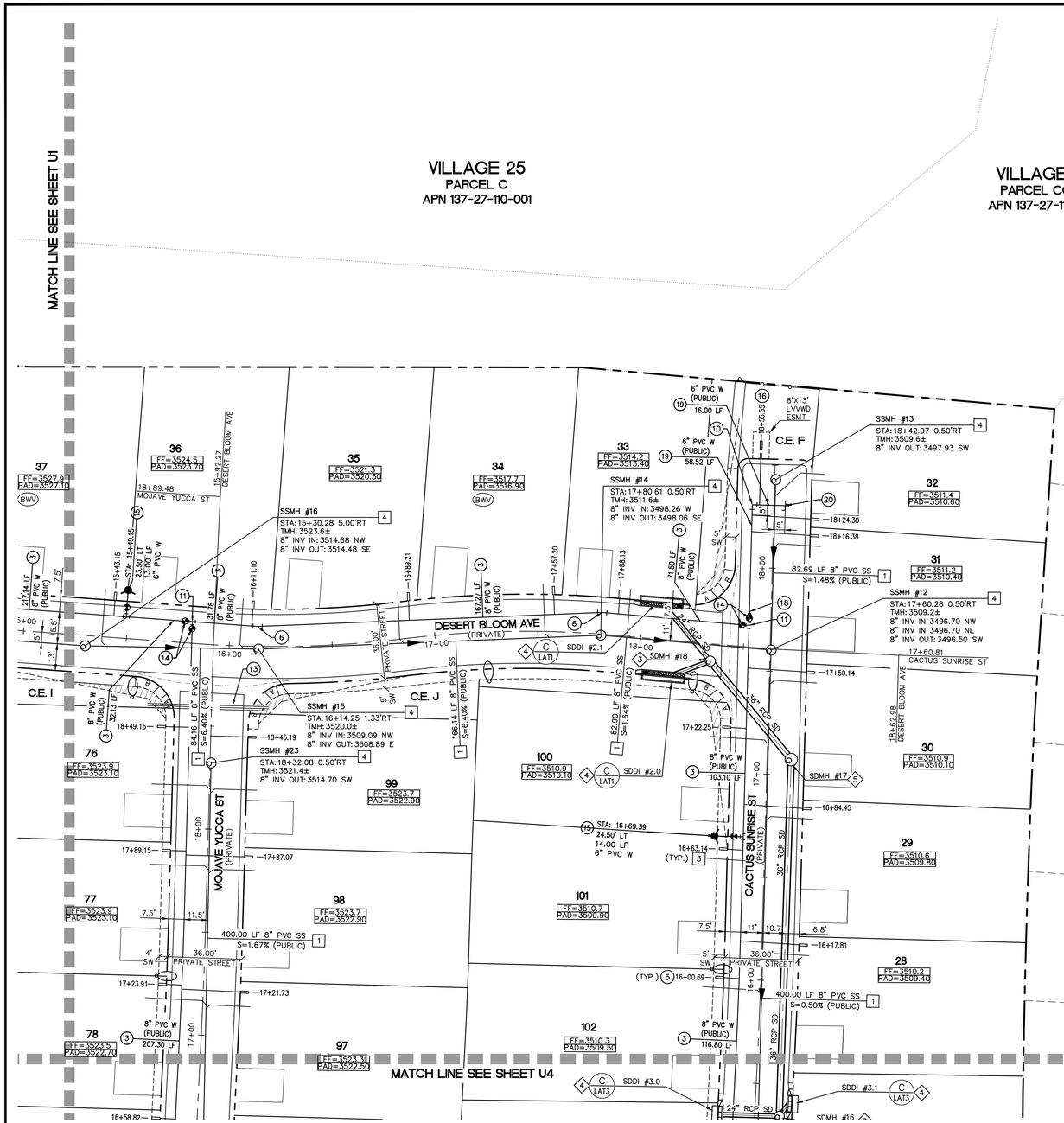
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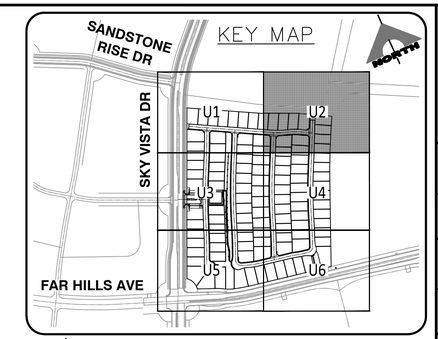
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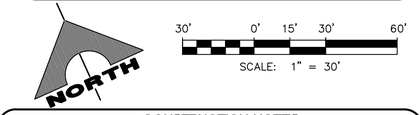
GCW ENGINEERS\SURVEYORS
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gcwengineering.com
f:\Projects\700\764-a173-001\DWG\production\764-A173-UT.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
UTILITY PLAN 1

DRAWING U1
30 OF 41 SHTS







CONSTRUCTION NOTES

WATER

1. REMOVE CAP/BLOW-OFF PER UDACS PLATE NO. 36 AND CONNECT TO EXIST MAIN.
2. INSTALL 8" DIP WATER PIPE PER UDACS PLATE 17.
3. INSTALL 8" PVC WATER PIPE PER UDACS PLATE 17.
4. INSTALL 12" PVC WATER PIPE PER UDACS PLATE 17.
5. INSTALL 1" WATER SERVICE WITH 3/4" WATER METER PER UDACS PLATE NO. 1
6. INSTALL 5' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
7. INSTALL 11.25' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
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11. INSTALL 8" X 8" TEE PER UDACS PLATE NO. 31.
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13. INSTALL IRRIGATION SLEEVES 1-6" AND 2-4" SCH. 40 PVC (VERIFIY ALL IRRIGATION CROSSING WITH LANDSCAPE PLANS.
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17. INSTALL 6" CAP & 2" BLOW-OFF PER UDACS PLATE NO. 31.
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19. INSTALL 6" PVC WATER PIPE PER UDACS PLATE 17.
20. INSTALL 6" CAP PER UDACS PLATE NO. 31.

SEWER

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2. REMOVE CAP AND CONNECT TO EXISTING 8" SEWER STUB. CONTRACTOR TO VERIFY LOCATION AND ELEVATION.
3. INSTALL 4" SEWER LATERAL PER DCSWCS SD-20. (TYP).
4. INSTALL 48" DIAMETER SANITARY SEWER MANHOLE WITH SINGLE 24" LID PER DCSWCS SD-3.
5. CONSTRUCT CORROSION PROTECTION PER 3.16.8 OF DCSWCS.

STORM DRAIN

1. CONNECT TO EXISTING STORM DRAIN.
2. CONSTRUCT MODIFIED TYPE "CM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
3. CONSTRUCT 48" TYPE II STORM DRAIN MANHOLE PER STD. DWG 405.
4. CONSTRUCT MODIFIED TYPE "DM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
5. CONSTRUCT 60" TYPE III STORM DRAIN MANHOLE PER STD. DWG 406.1.
6. 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 (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)
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UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE DATE
FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

L# XXX-XXXXX | CLV DWG#

(BWV) SEWER BACKWATER VALVE (PRIVATE)
(PRV) WATER PRESSURE-REDUCING VALVE (PRIVATE)

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 OR 1-800-227-2600

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

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CONTRACTOR TO INSTALL TEMPORARY SERVICE TO ENSURE PROPER SHUTDOWN IN THE EVENT NO OTHER APPURTENANCES ARE AVAILABLE.

ESTIMATE WASTEWATER DEMAND

111 UNITS X 250 GPD/UNIT = 27,750 GPD

TOTAL AVERAGE CONTRIBUTION = 27,750 GPD = 0.027750 MGD

TOTAL PEAK FLOW = 0.027750 MGD X 3.76 (PEAK FACTOR) = 0.1043 MGD

SEWER CONNECTION NOTE

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FOR ALL DRY UTILITY CROSSINGS

- MAINTAIN MINIMUM 12" VERTICAL SEPARATION AT ALL POINTS OF CROSSING
- MAINTAIN MINIMUM 3" PARALLEL SEPARATION
- ANY EXCAVATION AT BACK OF CURB MUST REMAIN OPEN FOR INSPECTION OF COPPER SERVICE LATERALS. ANY COPPER SERVICE LATERAL KINKED, BENT OR OTHERWISE DAMAGED MUST BE REPLACED FROM THE MAIN TO THE ANGLE METER STOP.

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3. ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST COMPLY WITH UDACS SECTION 2.22.
4. THE CONTRACTOR IS TO VERIFY THE ACTUAL FIELD CONDITIONS OF ALL LOTS AND INSTALL SEWER CHECK VALVES WHERE REQUIRED PER THE LATEST EDITION OF THE UNIFORM PLUMBING CODE.
5. FITTINGS SHALL NOT FALL UNDER CURBS, GUTTERS OR SIDEWALK.
6. ALL NEW MANHOLES TO HAVE PRE-CAST BASES.
7. INSTALL PIPELINE MARKER BALLS, PER UDACTS PLATE NO. 15.

DROP INLET NOTE

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FIRE SPRINKLER SYSTEM SHALL BE PLUMBED TO THE MASTER TOILET. NO EXCEPTIONS ALLOWED

TO ENSURE LVVWD ACCESS WITHIN EASEMENT

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CONTRACTOR NOTE:

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

GCW
ENGINEERS \ SURVEYORS
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LAS VEGAS, NV 89146
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F: 702.804.2299
gcwengineering.com

PROJECT NO. 764-A173-001
DESIGN:
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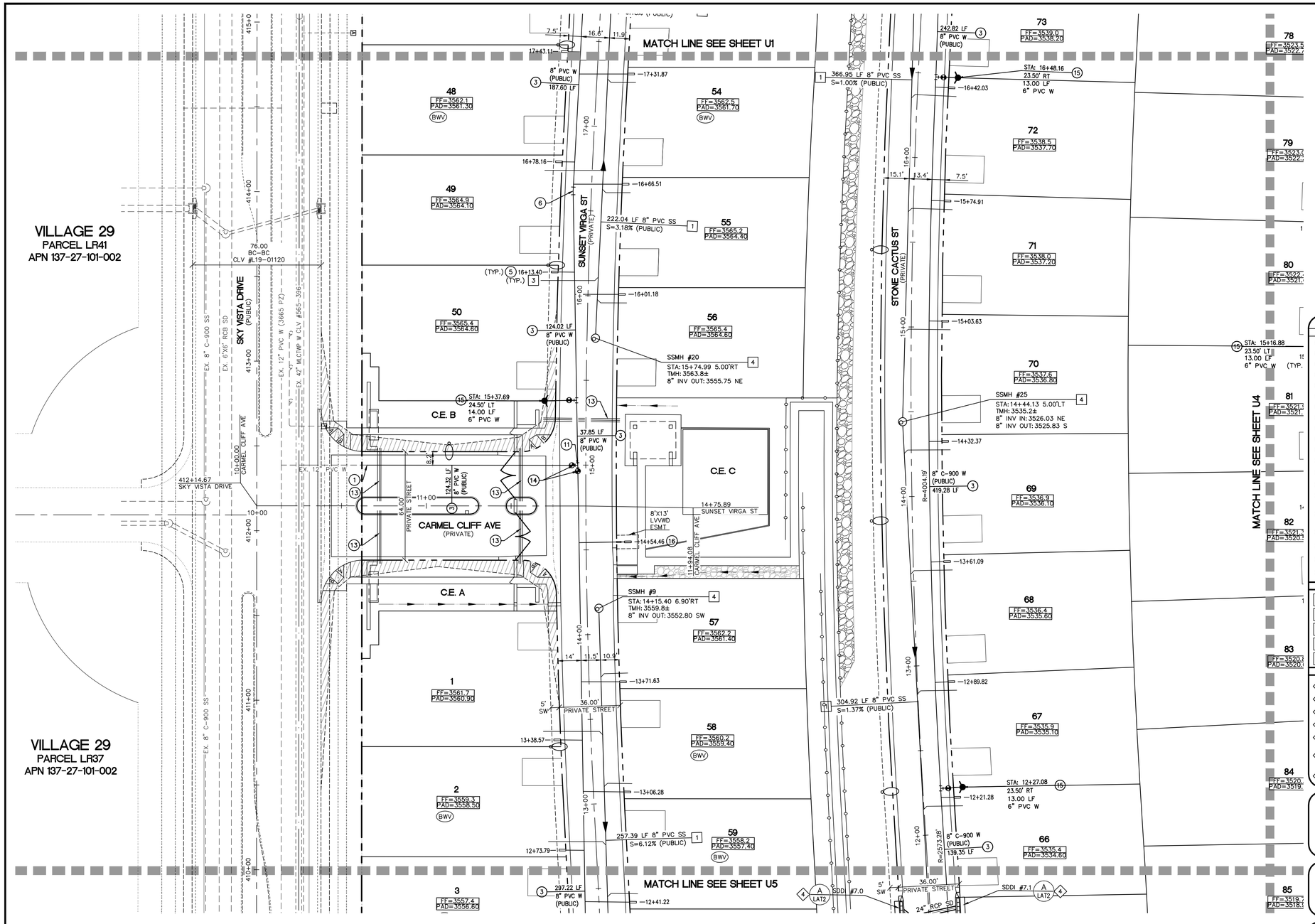
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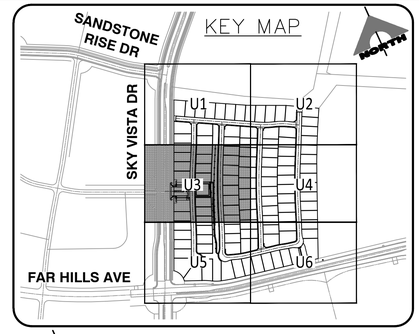
ENGINEER - STATE OF NEVADA - WESLEY T. PETTY - 16369 - CIVIL - 04-08-20
DATE: 04-08-20

f:\Projects\700\764-a173-001\DWG\production\764-A173-UT.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
UTILITY PLAN 2

DRAWING
U2
31 OF 41 SHTS





30' 0' 15' 30' 60'

SCALE: 1" = 30'

CONSTRUCTION NOTES

WATER

1. REMOVE CAP/BLOW-OFF PER UDACS PLATE NO. 36 AND CONNECT TO EXIST MAIN.
2. INSTALL 8" DIP WATER PIPE PER UDACS PLATE 17.
3. INSTALL 8" PVC WATER PIPE PER UDACS PLATE 17.
4. INSTALL 12" PVC WATER PIPE PER UDACS PLATE 17.
5. INSTALL 1" WATER SERVICE WITH 3/4" WATER METER PER UDACS PLATE NO. 1
6. INSTALL 5" BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
7. INSTALL 11.25° BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
8. INSTALL 22.5° BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
9. INSTALL 45° BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
10. INSTALL 90° BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
11. INSTALL 8" X 8" TEE PER UDACS PLATE NO. 31.
12. INSTALL 12" X 8" REDUCER PER UDACS PLATE NO. 30.
13. INSTALL IRRIGATION SLEEVES 1-6" AND 2-4" SCH. 40 PVC (VERIFIY ALL IRRIGATION CROSSING WITH LANDSCAPE PLANS.
14. INSTALL GATE VALVE SAME SIZE AS LINE, BOX, AND COVER PER UDACS PLATE NO. 30 & 39.
15. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39 & 40.
16. INSTALL 3/4" IRRIGATION METER WITH 1" RPPA PER UDACS PLATE NO. 4 AND 8. MAINTAIN A SLOPE OF NO GREATER THAN 2%, FREE OF SHRUBBERY AND OBSTRUCTIONS, WITHIN AT LEAST THREE (3) FEET ADJACENT TO THE BACKFLOW ASSEMBLY PAD.
17. INSTALL 6" CAP & 2" BLOW-OFF PER UDACS PLATE NO. 31.
18. INSTALL 8" X 6" REDUCER PER UDACS PLATE NO. 30.
19. INSTALL 6" PVC WATER PIPE PER UDACS PLATE 17.
20. INSTALL 6" CAP PER UDACS PLATE NO. 31.

SEWER

1. INSTALL 8" SANITARY SEWER PIPE.
2. REMOVE CAP AND CONNECT TO EXISTING 8" SEWER STUB. CONTRACTOR TO VERIFY LOCATION AND ELEVATION.
3. INSTALL 4" SEWER LATERAL PER DCSWCS SD-20. (TYP).
4. INSTALL 48" DIAMETER SANITARY SEWER MANHOLE WITH SINGLE 24" LID PER DCSWCS SD-3.
5. CONSTRUCT CORROSION PROTECTION PER 3.16.8 OF DCSWCS.

STORM DRAIN

1. CONNECT TO EXISTING STORM DRAIN.
2. CONSTRUCT MODIFIED TYPE "CM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
3. CONSTRUCT 48" TYPE II STORM DRAIN MANHOLE PER STD. DWG 405.
4. CONSTRUCT MODIFIED TYPE "DM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
5. CONSTRUCT 60" TYPE III STORM DRAIN MANHOLE PER STD. DWG 406.1.
6. 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 (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)
7. CONSTRUCT FULL STRENGTH GROUT PER DCSWCS 3.16.4, WATERTIGHT JOINTS USING AGENCY-APPROVED SEALS AT MANHOLE SECTIONS AND GRADE RINGS PER DCSWCS 3.16.2, AND RAVEN LINING SYSTEM OR WARREN ENVIRONMENTAL LINING SYSTEMS.

NOTE TO CONTRACTOR

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

NOTE

ALL ONSITE STORM DRAINS AND ASSOCIATED STORM FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE HOA.

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

UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE DATE
FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

L# XXX-XXXXX | CLV DWG#

(BWV) SEWER BACKWATER VALVE (PRIVATE)

(PRV) WATER PRESSURE-REDUCING VALVE (PRIVATE)

FAST Call before you Dig Underground 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig Avoid cutting underground utility lines. It's costly. Call 811 OR 1-800-227-2600

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

LVVWD CANNOT GUARANTEE A WATERTIGHT SHUTDOWN WHERE CONNECTIONS OR REPAIRS TO EXISTING FACILITIES ARE REQUIRED. THE CONTRACTOR SHALL ENSURE ALL LABOR AND EQUIPMENT IS AVAILABLE TO REMOVE REMAINING WATER. COORDINATION WITH INSPECTION DIVISION MUST TAKE PLACE PRIOR TO ANY TRIAL SHUTDOWN,

CONTRACTOR TO INSTALL TEMPORARY SERVICE TO ENSURE PROPER SHUTDOWN IN THE EVENT NO OTHER APPURTENANCES ARE AVAILABLE.

ESTIMATE WASTEWATER DEMAND

111 UNITS X 250 GPD/UNIT = 27,750 GPD

TOTAL AVERAGE CONTRIBUTION = 27,750 GPD = 0.027750 MGD

TOTAL PEAK FLOW = 0.027750 MGD X 3.76 (PEAK FACTOR) = 0.1043 MGD

SEWER CONNECTION NOTE

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND/OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND/OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE, OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

FOR ALL DRY UTILITY CROSSINGS

- MAINTAIN MINIMUM 12" VERTICAL SEPARATION AT ALL POINTS OF CROSSING
- MAINTAIN MINIMUM 3" PARALLEL SEPARATION
- ANY EXCAVATION AT BACK OF CURB MUST REMAIN OPEN FOR INSPECTION OF COPPER SERVICE LATERALS. ANY COPPER SERVICE LATERAL KINKED, BENT OR OTHERWISE DAMAGED MUST BE REPLACED FROM THE MAIN TO THE ANGLE METER STOP.

CONTRACTOR NOTE:

1. REPLACE ALL TRAFFIC CONTROL DEVICES (SIGNS AND/OR PAVEMENT MARKINGS), UNDER CLARK COUNTY'S JURISDICTION, THAT ARE DISTURBED, DESTROYED, MOVED OR MODIFIED BY TRENCHING ACTIVITIES TO CLARK COUNTY'S SATISFACTION. ALL MATERIAL USED SHALL MEET CLARK COUNTY'S SPECIFICATIONS OR WILL BE AN APPROVED EQUIVALENT.
2. IN THE EVENT THAT THE TRAFFIC SIGNAL CONDUITS, LOOP DETECTORS OR ASSOCIATED EQUIPMENT ARE DAMAGED BY CONTRACTOR, THE CONTRACTOR WILL HIRE AN IMSA LEVEL II ELECTRICAL CONTRACTOR TO MAKE REPAIRS PER UNIFORM SPECIFICATION NO. 623.G.01.02.
3. ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST COMPLY WITH UDACS SECTION 2.22.
4. THE CONTRACTOR IS TO VERIFY THE ACTUAL FIELD CONDITIONS OF ALL LOTS AND INSTALL SEWER CHECK VALVES WHERE REQUIRED PER THE LATEST EDITION OF THE UNIFORM PLUMBING CODE.
5. FITTINGS SHALL NOT FALL UNDER CURBS, GUTTERS OR SIDEWALK.
6. ALL NEW MANHOLES TO HAVE PRE-CAST BASES.
7. INSTALL PIPELINE MARKER BALLS, PER UDACTS PLATE NO. 15.

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. (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

FIRE SPRINKLER SYSTEM SHALL BE PLUMBED TO THE MASTER TOILET. NO EXCEPTIONS ALLOWED

TO ENSURE LVVWD ACCESS WITHIN EASEMENT

ALL ABOVE GROUND OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO LANDSCAPE BOULDERS, FENCE/ WALLS, AND SIGNS ARE STRICTLY PROHIBITED WITHIN EASEMENT.

GCW, INC. ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITIES SHOWN OR NOT SHOWN. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM RECORD INFORMATION AND ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND DEPTH OF ALL RELEVANT UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION. IF A CONFLICT OR DISCREPANCY IS DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING IMMEDIATELY.

CONTRACTOR NOTE:

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:34:56

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
UTILITY PLAN 3

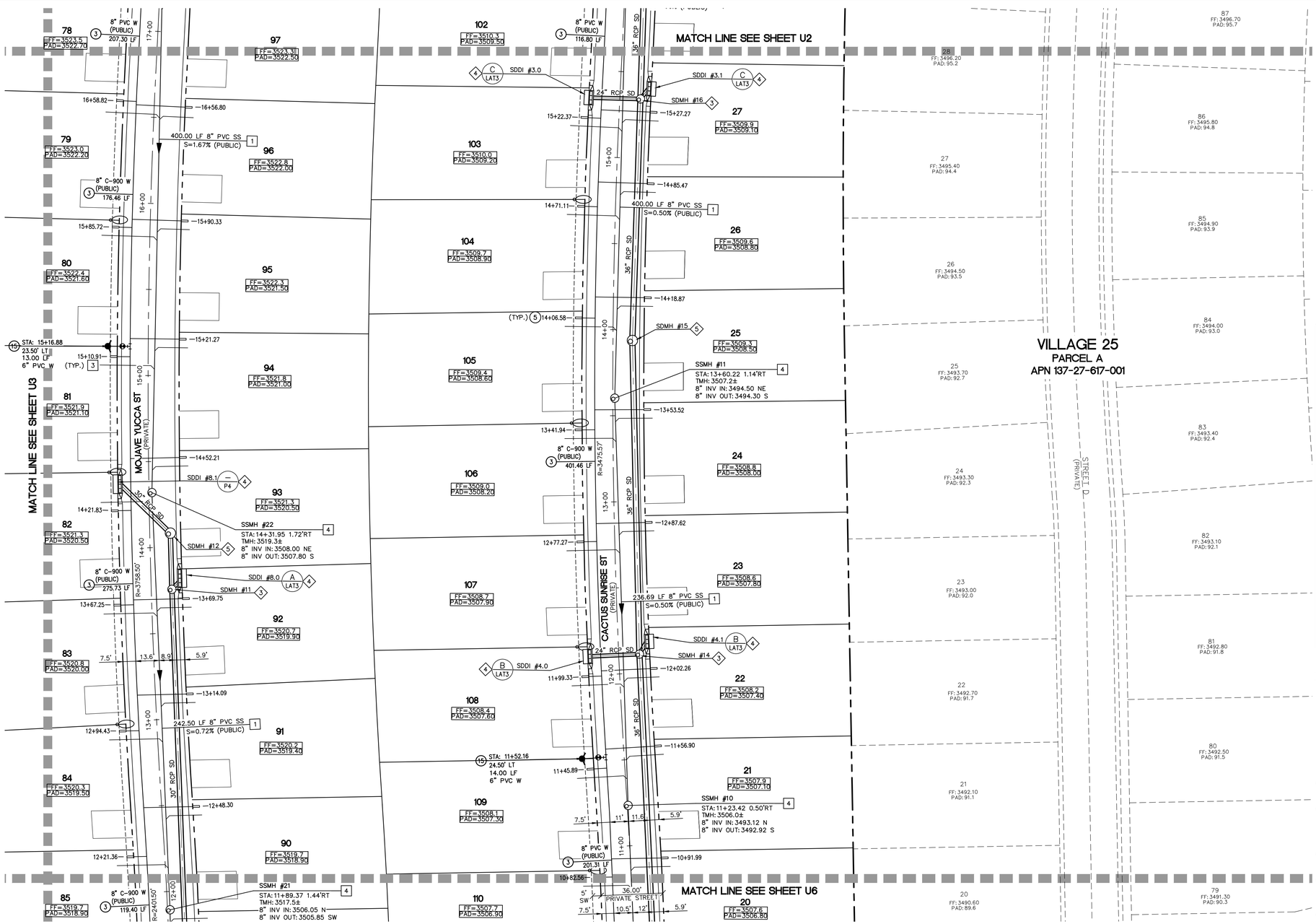
DRAWING U3
32 OF 41 SHTS

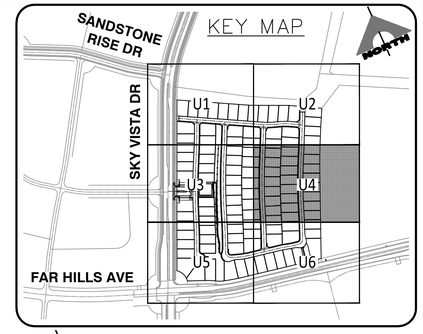
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Nicholas DeRosa

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

DATE: 04-08-20

REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
8/31/2021
No. 16369





NORTH

30' 0' 15' 30' 60'

SCALE: 1" = 30'

CONSTRUCTION NOTES

WATER

1. REMOVE CAP/BLOW-OFF PER UDACS PLATE NO. 36 AND CONNECT TO EXIST MAIN.
2. INSTALL 8" DIP WATER PIPE PER UDACS PLATE 17.
3. INSTALL 8" PVC WATER PIPE PER UDACS PLATE 17.
4. INSTALL 12" PVC WATER PIPE PER UDACS PLATE 17.
5. INSTALL 1" WATER SERVICE WITH 3/4" WATER METER PER UDACS PLATE NO. 1
6. INSTALL 5° BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
7. INSTALL 11.25° BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
8. INSTALL 22.5° BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
9. INSTALL 45° BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
10. INSTALL 90° BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
11. INSTALL 8" X 8" TEE PER UDACS PLATE NO. 31.
12. INSTALL 12" X 8" REDUCER PER UDACS PLATE NO. 30.
13. INSTALL IRRIGATION SLEEVES 1-6" AND 2-4" SCH. 40 PVC (VERIFIY ALL IRRIGATION CROSSING WITH LANDSCAPE PLANS.
14. INSTALL GATE VALVE SAME SIZE AS LINE, BOX, AND COVER PER UDACS PLATE NO. 30 & 39.
15. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39 & 40.
16. INSTALL 3/4" IRRIGATION METER WITH 1" RPPA PER UDACS PLATE NO. 4 AND 8. MAINTAIN A SLOPE OF NO GREATER THAN 2% FREE OF SHRUBBERY AND OBSTRUCTIONS, WITHIN AT LEAST THREE (3) FEET ADJACENT TO THE BACKFLOW ASSEMBLY PAD.
17. INSTALL 6" CAP & 2" BLOW-OFF PER UDACS PLATE NO. 31.
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19. INSTALL 6" PVC WATER PIPE PER UDACS PLATE 17.
20. INSTALL 6" CAP PER UDACS PLATE NO. 31.

SEWER

1. INSTALL 8" SANITARY SEWER PIPE.
2. REMOVE CAP AND CONNECT TO EXISTING 8" SEWER STUB. CONTRACTOR TO VERIFY LOCATION AND ELEVATION.
3. INSTALL 4" SEWER LATERAL PER DCSWCS SD-20. (TYP).
4. INSTALL 48" DIAMETER SANITARY SEWER MANHOLE WITH SINGLE 24" LID PER DCSWCS SD-3.
5. CONSTRUCT CORROSION PROTECTION PER 3.16.8 OF DCSWCS.

STORM DRAIN

1. CONNECT TO EXISTING STORM DRAIN.
2. CONSTRUCT MODIFIED TYPE "CM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
3. CONSTRUCT 48" TYPE II STORM DRAIN MANHOLE PER STD. DWG 405.
4. CONSTRUCT MODIFIED TYPE "DM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
5. CONSTRUCT 60" TYPE III STORM DRAIN MANHOLE PER STD. DWG 406.1.
6. 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 (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)
7. CONSTRUCT FULL STRENGTH GROUT PER DCSWCS 3.16.4, WATERTIGHT JOINTS USING AGENCY-APPROVED SEALS AT MANHOLE SECTIONS AND GRADE RINGS PER DCSWCS 3.16.2, AND RAVEN LINING SYSTEM OR WARREN ENVIRONMENTAL LINING SYSTEMS.

NOTE TO CONTRACTOR

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NOTE

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UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE DATE
FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

L# XXX-XXXXX | CLV DWG#

(BWV) SEWER BACKWATER VALVE (PRIVATE)
(PRV) WATER PRESSURE-REDUCING VALVE (PRIVATE)

FAST
Call before you Under Ground 1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 OR 1-800-227-2600

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

LVVWD CANNOT GUARANTEE A WATERTIGHT SHUTDOWN WHERE CONNECTIONS OR REPAIRS TO EXISTING FACILITIES ARE REQUIRED. THE CONTRACTOR SHALL ENSURE ALL LABOR AND EQUIPMENT IS AVAILABLE TO REMOVE REMAINING WATER. COORDINATION WITH INSPECTION DIVISION MUST TAKE PLACE PRIOR TO ANY TRIAL SHUTDOWN,

CONTRACTOR TO INSTALL TEMPORARY SERVICE TO ENSURE PROPER SHUTDOWN IN THE EVENT NO OTHER APPURTENANCES ARE AVAILABLE.

ESTIMATE WASTEWATER DEMAND

111 UNITS X 250 GPD/UNIT = 27,750 GPD

TOTAL AVERAGE CONTRIBUTION = 27,750 GPD = 0.027750 MGD

TOTAL PEAK FLOW = 0.027750 MGD X 3.76 (PEAK FACTOR) = 0.1043 MGD

SEWER CONNECTION NOTE

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND/OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND/OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE, OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

FOR ALL DRY UTILITY CROSSINGS

- MAINTAIN MINIMUM 12" VERTICAL SEPARATION AT ALL POINTS OF CROSSING
- MAINTAIN MINIMUM 3" PARALLEL SEPARATION
- ANY EXCAVATION AT BACK OF CURB MUST REMAIN OPEN FOR INSPECTION OF COPPER SERVICE LATERALS. ANY COPPER SERVICE LATERAL KINKED, BENT OR OTHERWISE DAMAGED MUST BE REPLACED FROM THE MAIN TO THE ANGLE METER STOP.

CONTRACTOR NOTE:

1. REPLACE ALL TRAFFIC CONTROL DEVICES (SIGNS AND/OR PAVEMENT MARKINGS), UNDER CLARK COUNTY'S JURISDICTION, THAT ARE DISTURBED, DESTROYED, MOVED OR MODIFIED BY TRENCHING ACTIVITIES TO CLARK COUNTY'S SATISFACTION. ALL MATERIAL USED SHALL MEET CLARK COUNTY'S SPECIFICATIONS OR WILL BE AN APPROVED EQUIVALENT.
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3. ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST COMPLY WITH UDACS SECTION 2.22.
4. THE CONTRACTOR IS TO VERIFY THE ACTUAL FIELD CONDITIONS OF ALL LOTS AND INSTALL SEWER CHECK VALVES WHERE REQUIRED PER THE LATEST EDITION OF THE UNIFORM PLUMBING CODE.
5. FITTINGS SHALL NOT FALL UNDER CURBS, GUTTERS OR SIDEWALK.
6. ALL NEW MANHOLES TO HAVE PRE-CAST BASES.
7. INSTALL PIPELINE MARKER BALLS, PER UDACTS PLATE NO. 15.

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. (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

FIRE SPRINKLER SYSTEM SHALL BE PLUMBED TO THE MASTER TOILET. NO EXCEPTIONS ALLOWED

TO ENSURE LVVWD ACCESS WITHIN EASEMENT

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CONTRACTOR NOTE:

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

ENGINEER - STATE OF NEVADA - PROFESSIONAL ENGINEER - WESLEY T. PETTY - No. 16369 - 4/31/2021 - DATE: 04-08-20

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

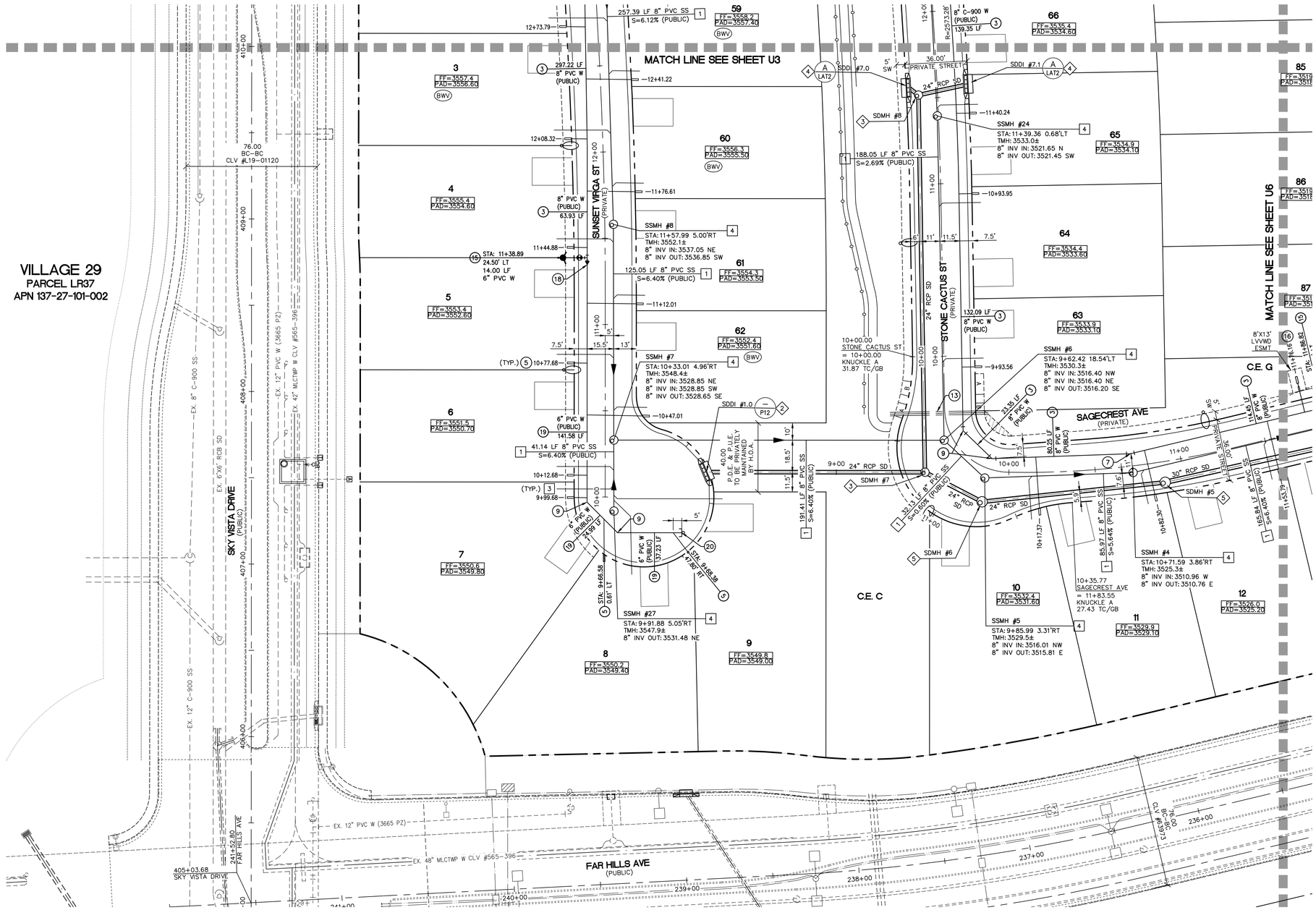
PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:35:11

GCW
ENGINEERS\SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

f:\Projects\700\764-a173-001\DWG\production\764-A173-UT.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
UTILITY PLAN 4

DRAWING U4
33 OF 41 SHTS



CONSTRUCTION NOTES

WATER

1. REMOVE CAP/BLOW-OFF PER UDACS PLATE NO. 36 AND CONNECT TO EXIST MAIN.
2. INSTALL 8" DIP WATER PIPE PER UDACS PLATE 17.
3. INSTALL 8" PVC WATER PIPE PER UDACS PLATE 17.
4. INSTALL 12" PVC WATER PIPE PER UDACS PLATE 17.
5. INSTALL 1" WATER SERVICE WITH 3/4" WATER METER PER UDACS PLATE NO. 1
6. INSTALL 5' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
7. INSTALL 11.25' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
8. INSTALL 22.5' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
9. INSTALL 45' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
10. INSTALL 90' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
11. INSTALL 8" X 8" TEE PER UDACS PLATE NO. 31.
12. INSTALL 12" X 8" REDUCER PER UDACS PLATE NO. 30.
13. INSTALL IRRIGATION SLEEVES 1-6" AND 2-4" SCH. 40 PVC (VERIFIY ALL IRRIGATION CROSSING WITH LANDSCAPE PLANS.
14. INSTALL GATE VALVE SAME SIZE AS LINE, BOX, AND COVER PER UDACS PLATE NO. 30 & 39.
15. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39 & 40.
16. INSTALL 3/4" IRRIGATION METER WITH 1" RPPA PER UDACS PLATE NO. 4 AND 8. MAINTAIN A SLOPE OF NO GREATER THAN 2%, FREE OF SHRUBBERY AND OBSTRUCTIONS, WITHIN AT LEAST THREE (3) FEET ADJACENT TO THE BACKFLOW ASSEMBLY PAD.
17. INSTALL 6" CAP & 2" BLOW-OFF PER UDACS PLATE NO. 31.
18. INSTALL 8" X 6" REDUCER PER UDACS PLATE NO. 30.
19. INSTALL 6" PVC WATER PIPE PER UDACS PLATE 17.
20. INSTALL 6" CAP PER UDACS PLATE NO. 31.

SEWER

1. INSTALL 8" SANITARY SEWER PIPE.
2. REMOVE CAP AND CONNECT TO EXISTING 8" SEWER STUB. CONTRACTOR TO VERIFY LOCATION AND ELEVATION.
3. INSTALL 4" SEWER LATERAL PER DCSWCS SD-20. (TYP).
4. INSTALL 48" DIAMETER SANITARY SEWER MANHOLE WITH SINGLE 24" LID PER DCSWCS SD-3.
5. CONSTRUCT CORROSION PROTECTION PER 3.16.8 OF DCSWCS.

STORM DRAIN

1. CONNECT TO EXISTING STORM DRAIN.
2. CONSTRUCT MODIFIED TYPE "CM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
3. CONSTRUCT 48" TYPE II STORM DRAIN MANHOLE PER STD. DWG 405.
4. CONSTRUCT MODIFIED TYPE "DM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
5. CONSTRUCT 60" TYPE III STORM DRAIN MANHOLE PER STD. DWG 406.1.
6. 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 (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)
7. CONSTRUCT FULL STRENGTH GROUT PER DCSWCS 3.16.4, WATERTIGHT JOINTS USING AGENCY-APPROVED SEALS AT MANHOLE SECTIONS AND GRADE RINGS PER DCSWCS 3.16.2, AND RAVEN LINING SYSTEM OR WARREN ENVIRONMENTAL LINING SYSTEMS.

NOTE TO CONTRACTOR

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

NOTE

ALL ONSITE STORM DRAINS AND ASSOCIATED STORM FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE HOA.

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

UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE DATE
FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

L# XXX-XXXXX | CLV DWG#

(BWV) SEWER BACKWATER VALVE (PRIVATE)
(PRV) WATER PRESSURE-REDUCING VALVE (PRIVATE)

FAST — Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig — Avoid cutting underground utility lines. It's costly. Call 811 or 1-800-227-2600

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

LVVWD CANNOT GUARANTEE A WATERTIGHT SHUTDOWN WHERE CONNECTIONS OR REPAIRS TO EXISTING FACILITIES ARE REQUIRED. THE CONTRACTOR SHALL ENSURE ALL LABOR AND EQUIPMENT IS AVAILABLE TO REMOVE REMAINING WATER. COORDINATION WITH INSPECTION DIVISION MUST TAKE PLACE PRIOR TO ANY TRIAL SHUTDOWN,

CONTRACTOR TO INSTALL TEMPORARY SERVICE TO ENSURE PROPER SHUTDOWN IN THE EVENT NO OTHER APPURTENANCES ARE AVAILABLE.

ESTIMATE WASTEWATER DEMAND

111 UNITS X 250 GPD/UNIT = 27,750 GPD

TOTAL AVERAGE CONTRIBUTION = 27,750 GPD = 0.027750 MGD

TOTAL PEAK FLOW = 0.027750 MGD X 3.76 (PEAK FACTOR) = 0.1043 MGD

SEWER CONNECTION NOTE

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND/OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND/OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE, OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

FOR ALL DRY UTILITY CROSSINGS

- MAINTAIN MINIMUM 12" VERTICAL SEPARATION AT ALL POINTS OF CROSSING
- MAINTAIN MINIMUM 3" PARALLEL SEPARATION
- ANY EXCAVATION AT BACK OF CURB MUST REMAIN OPEN FOR INSPECTION OF COPPER SERVICE LATERALS. ANY COPPER SERVICE LATERAL KINKED, BENT OR OTHERWISE DAMAGED MUST BE REPLACED FROM THE MAIN TO THE ANGLE METER STOP.

CONTRACTOR NOTE:

1. REPLACE ALL TRAFFIC CONTROL DEVICES (SIGNS AND/OR PAVEMENT MARKINGS), UNDER CLARK COUNTY'S JURISDICTION, THAT ARE DISTURBED, DESTROYED, MOVED OR MODIFIED BY TRENCHING ACTIVITIES TO CLARK COUNTY'S SATISFACTION. ALL MATERIAL USED SHALL MEET CLARK COUNTY'S SPECIFICATIONS OR WILL BE AN APPROVED EQUIVALENT.
2. IN THE EVENT THAT THE TRAFFIC SIGNAL CONDUITS, LOOP DETECTORS OR ASSOCIATED EQUIPMENT ARE DAMAGED BY CONTRACTOR, THE CONTRACTOR WILL HIRE AN IMSA LEVEL II ELECTRICAL CONTRACTOR TO MAKE REPAIRS PER UNIFORM SPECIFICATION NO. 623.0.01.02.
3. ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST COMPLY WITH UDACS SECTION 2.22.
4. THE CONTRACTOR IS TO VERIFY THE ACTUAL FIELD CONDITIONS OF ALL LOTS AND INSTALL SEWER CHECK VALVES WHERE REQUIRED PER THE LATEST EDITION OF THE UNIFORM PLUMBING CODE.
5. FITTINGS SHALL NOT FALL UNDER CURBS, GUTTERS OR SIDEWALK.
6. ALL NEW MANHOLES TO HAVE PRE-CAST BASES.
7. INSTALL PIPELINE MARKER BALLS, PER UDACTS PLATE NO. 15.

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. (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

FIRE SPRINKLER SYSTEM SHALL BE PLUMBED TO THE MASTER TOILET. NO EXCEPTIONS ALLOWED

TO ENSURE LVVWD ACCESS WITHIN EASEMENT

ALL ABOVE GROUND OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO LANDSCAPE BOULDERS, FENCE/ WALLS, AND SIGNS ARE STRICTLY PROHIBITED WITHIN EASEMENT.

GCW, INC. ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITIES SHOWN OR NOT SHOWN. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM RECORD INFORMATION AND ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND DEPTH OF ALL RELEVANT UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION. IF A CONFLICT OR DISCREPANCY IS DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING IMMEDIATELY.

CONTRACTOR NOTE:

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

STATE OF NEVADA — ENGINEER — WESLEY T. PETTY — 16369 — CIVIL — 4/21/2021 — REGISTERED PROFESSIONAL — DATE: 04-08-20

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

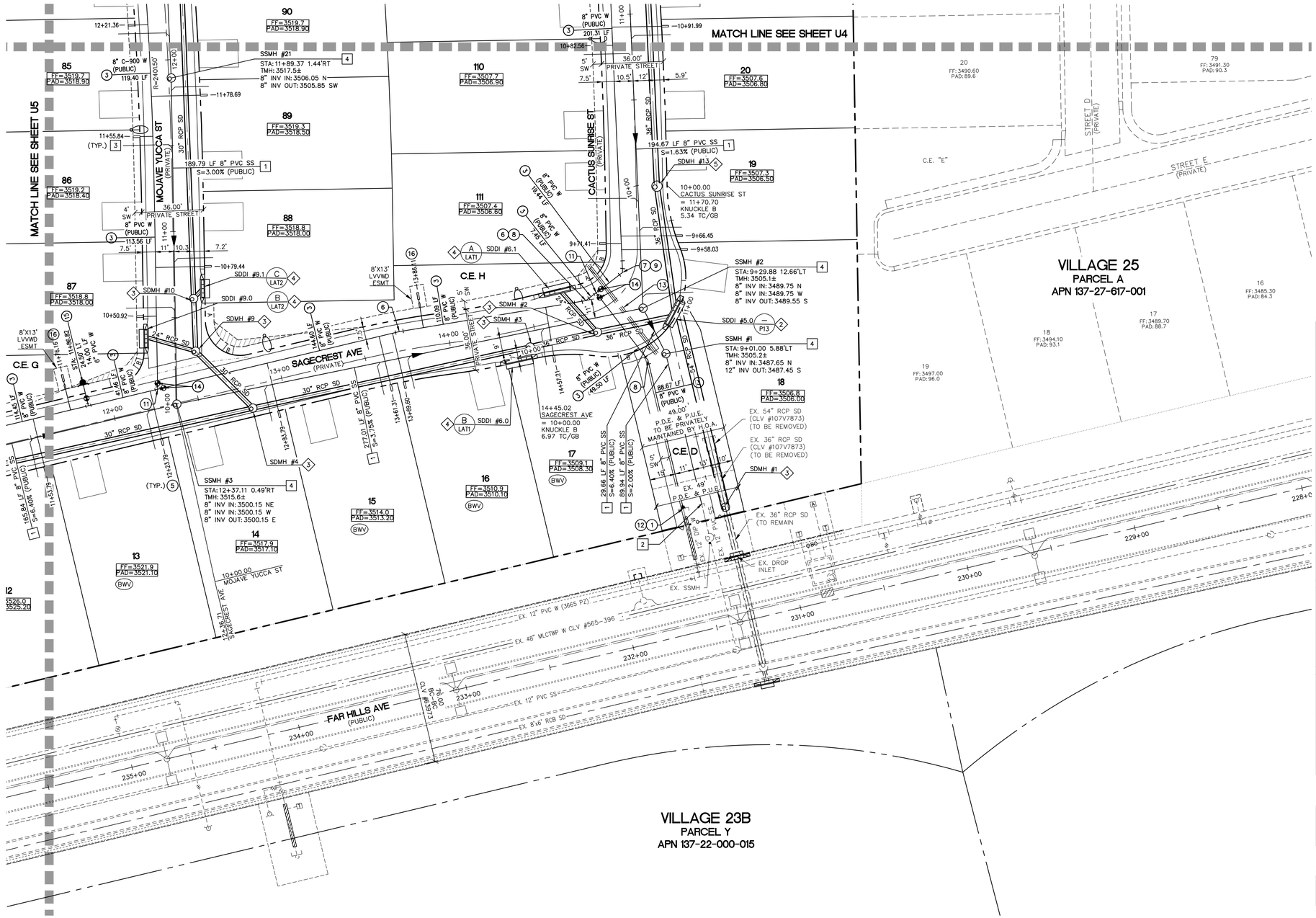
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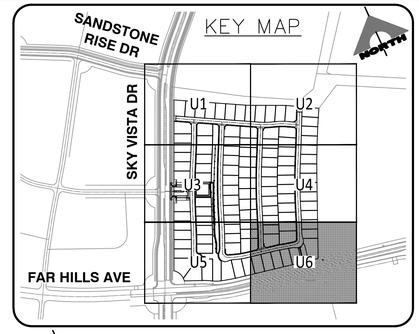
GCW ENGINEERS & SURVEYORS
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LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

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Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
UTILITY PLAN 5

DRAWING U5
34 OF 41 SHTS





CONSTRUCTION NOTES

WATER

1. REMOVE CAP/BLOW-OFF PER UDACS PLATE NO. 36 AND CONNECT TO EXIST MAIN.
2. INSTALL 8" DIP WATER PIPE PER UDACS PLATE 17.
3. INSTALL 8" PVC WATER PIPE PER UDACS PLATE 17.
4. INSTALL 12" PVC WATER PIPE PER UDACS PLATE 17.
5. INSTALL 1" WATER SERVICE WITH 3/4" WATER METER PER UDACS PLATE NO. 1
6. INSTALL 5' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
7. INSTALL 11.25' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
8. INSTALL 22.5' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
9. INSTALL 45' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
10. INSTALL 90' BEND PER UDACS PLATE NO. 31, SIZE PER PLAN.
11. INSTALL 8" X 8" TEE PER UDACS PLATE NO. 31.
12. INSTALL 12" X 8" REDUCER PER UDACS PLATE NO. 30.
13. INSTALL IRRIGATION SLEEVES 1-6" AND 2-4" SCH. 40 PVC (VERIFIY ALL IRRIGATION CROSSING WITH LANDSCAPE PLANS.
14. INSTALL GATE VALVE SAME SIZE AS LINE, BOX, AND COVER PER UDACS PLATE NO. 30 & 39.
15. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39 & 40.
16. INSTALL 3/4" IRRIGATION METER WITH 1" RPPA PER UDACS PLATE NO. 4 AND 8. MAINTAIN A SLOPE OF NO GREATER THAN 2%, FREE OF SHRUBBERY AND OBSTRUCTIONS, WITHIN AT LEAST THREE (3) FEET ADJACENT TO THE BACKFLOW ASSEMBLY PAD.
17. INSTALL 6" CAP & 2" BLOW-OFF PER UDACS PLATE NO. 31.
18. INSTALL 8" X 6" REDUCER PER UDACS PLATE NO. 30.
19. INSTALL 6" PVC WATER PIPE PER UDACS PLATE 17.
20. INSTALL 6" CAP PER UDACS PLATE NO. 31.

SEWER

1. INSTALL 8" SANITARY SEWER PIPE.
2. REMOVE CAP AND CONNECT TO EXISTING 8" SEWER STUB. CONTRACTOR TO VERIFY LOCATION AND ELEVATION.
3. INSTALL 4" SEWER LATERAL PER DCSWCS SD-20. (TYP).
4. INSTALL 48" DIAMETER SANITARY SEWER MANHOLE WITH SINGLE 24" LID PER DCSWCS SD-3.
5. CONSTRUCT CORROSION PROTECTION PER 3.16.8 OF DCSWCS.

STORM DRAIN

1. CONNECT TO EXISTING STORM DRAIN.
2. CONSTRUCT MODIFIED TYPE "CM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
3. CONSTRUCT 48" TYPE II STORM DRAIN MANHOLE PER STD. DWG 405.
4. CONSTRUCT MODIFIED TYPE "DM2" PER STD DWG 412.1 & 421. SEE PLAN PER SIZE.
5. CONSTRUCT 60" TYPE III STORM DRAIN MANHOLE PER STD. DWG 406.1.
6. 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 (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)
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UTILITY APPROVAL

SOUTHWEST GAS CORP. DATE:

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. XXXXXX FIRST APPROVED DATE:
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE DATE
FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

L# XXX-XXXXX | CLV DWG#

(BWV) SEWER BACKWATER VALVE (PRIVATE)
(PRV) WATER PRESSURE-REDUCING VALVE (PRIVATE)

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CONTRACTOR NOTE:

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3. ALL SEWER/STORM DRAINS CROSSING WATER LINES MUST COMPLY WITH UDACS SECTION 2.22.
4. THE CONTRACTOR IS TO VERIFY THE ACTUAL FIELD CONDITIONS OF ALL LOTS AND INSTALL SEWER CHECK VALVES WHERE REQUIRED PER THE LATEST EDITION OF THE UNIFORM PLUMBING CODE.
5. FITTINGS SHALL NOT FALL UNDER CURBS, GUTTERS OR SIDEWALK.
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7. INSTALL PIPELINE MARKER BALLS, PER UDACTS PLATE NO. 15.

DROP INLET NOTE

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CONTRACTOR NOTE:

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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Call before you Dig Avoid cutting underground utility lines. It's costly. Call 811 OR 1-800-227-2600

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

ENGINEER - STATE OF NEVADA - WESLEY T. PETTY - 16369 - 1/31/2021 - PROFESSIONAL ENGINEER
DATE: 04-08-20

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

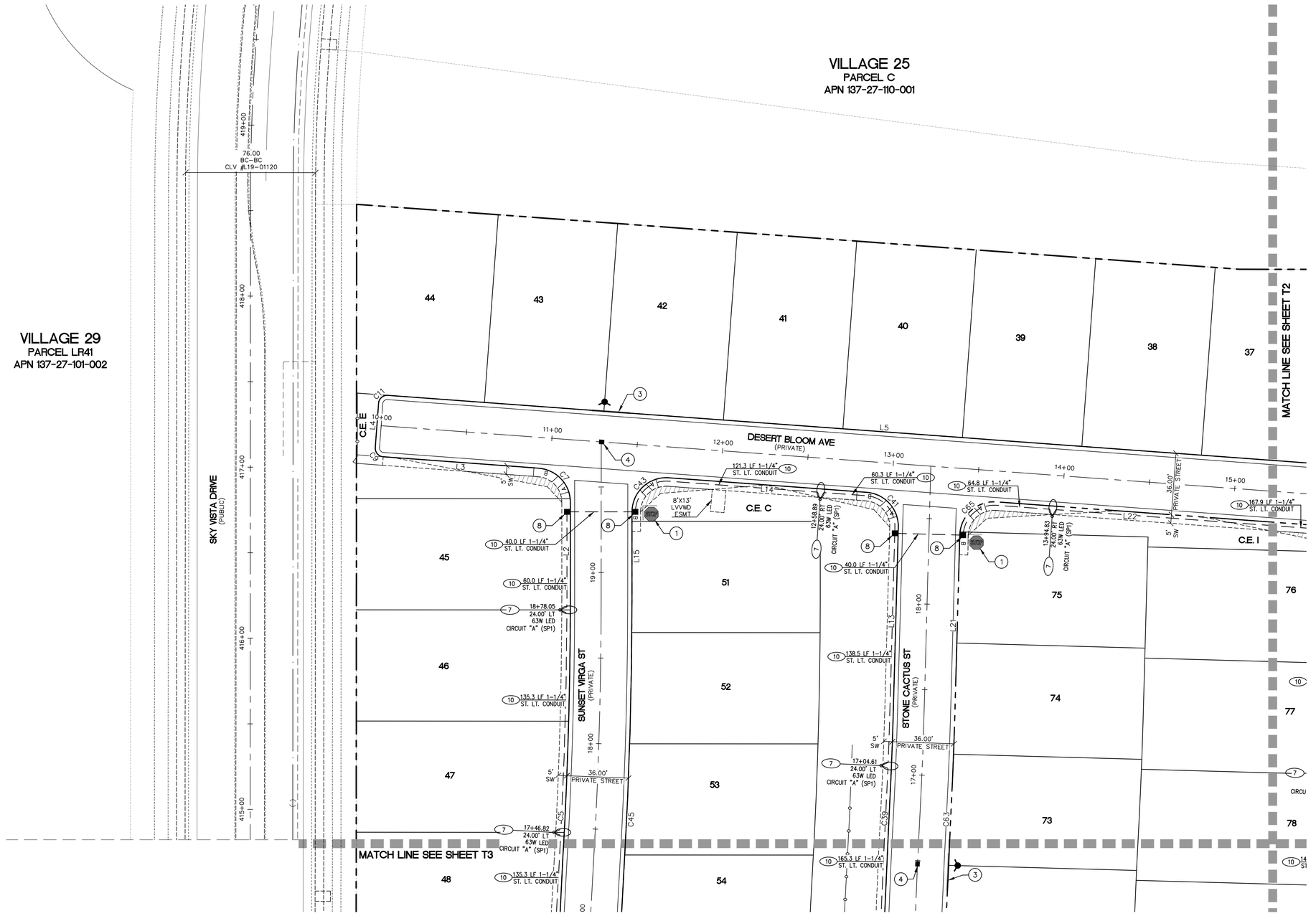
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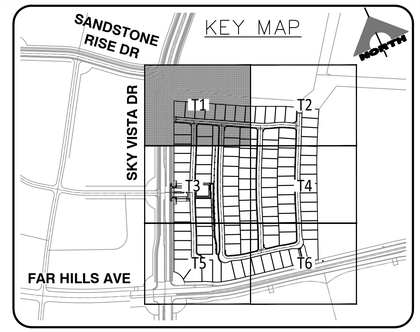
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Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
UTILITY PLAN 6

DRAWING U6
35 OF 41 SHTS





NORTH

30' 0' 15' 30'
SCALE: 1" = 30'

CONSTRUCTION NOTES

1. INSTALL (2) STREET NAME SIGN (D3)-BROWN BACK WITH WHITE LETTERS, WITH 30" STOP SIGN (R1-1) WITH THE WORDS "PRIVATELY MAINTAINED".
2. INSTALL (2) STREET NAME SIGN (D3)-BROWN BACK WITH WHITE LETTERS TO BE PRIVATELY MAINTAINED.
3. PAINT CURB RED (NO PARKING) 30' WIDE CENTERED ON HYDRANT EXCEPT DRIVEWAY.
4. INSTALL BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS.
5. INSTALL "ON-STREET PARKING IN MARKED FIRE LANES PROHIBITED" SIGN (TYPE B SIGNAGE)
6. PAINT CURB RED (NO PARKING FIRE LANE) FOR EMERGENCY ACCESS. (TYPE C SIGNAGE)
7. INSTALL SUMMERLIN TYPE 5 LED STREETLIGHT (MODEL #SUM-XGBM-LED-BL-SIL-2-UE-DIM-27-70CRI-BRZ-NR-4397-SMBRKT) PER SUMMERLIN LED LIGHTING ANALYSIS DRAWING NC-9
8. INSTALL 3 ½ PULL BOX
9. INSTALL 100 AMP SERVICE PEDESTAL PER USDCCA STD DWG NO. 330, 331, 332.1
10. INSTALL 1-1/4" STREETLIGHT CONDUIT WITH 2-#4 AND 1-#8 THW COPPER CONDUCTORS

LINE AND CURVE TABLE

SEE SHEET T6 FOR LINE AND CURVE TABLE

GENERAL NOTES

1. REPLACE ALL TRAFFIC CONTROL DEVICES (SIGNS AND/OR PAVEMENT MARKINGS), UNDER CITY OF LAS VEGAS'S JURISDICTION, THAT ARE DISTURBED, DESTROYED, MOVED OR MODIFIED BY TRENCHING ACTIVITIES TO CITY OF LAS VEGAS'S SATISFACTION. ALL MATERIAL USED SHALL MEET CITY OF LAS VEGAS'S SPECIFICATIONS OR WILL WILL BE AN APPROVED EQUIVALENT.
2. IN THE EVENT THAT THE TRAFFIC SIGNAL CONDUITS, LOOP DETECTORS OR ASSOCIATED EQUIPMENT ARE DAMAGED BY CONTRACTOR, THE CONTRACTOR WILL HIRE AN IMSA LEVEL II ELECTRICAL CONTRACTOR TO MAKE REPAIRS PER UNIFORM SPECIFICATION NO. 623.G.01.02
3. ALL SEWER/ STORM DRAINS CROSSING WATER LINES MUST CONFORM TO SECTION 2.22 OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES.
4. THE CONTRACTOR IS TO VERIFY THE ACTUAL FIELD CONDITIONS OF ALL LOTS AND INSTALL SEWER CHECK VALVES WHERE REQUIRED PER THE LATEST EDITION OF THE UNIFORM PLUMBING CODE.
5. FITTINGS SHALL NOT FALL UNDER CURBS, GUTTERS OR SIDEWALK.

BASIS OF BEARING AND COORDINATES

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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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:
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

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE — DATE

L# XXX-XXXXX | CLV DWG#

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
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Nicholas DeRosa

PROJECT NO. 764-A173-001
DESIGN:
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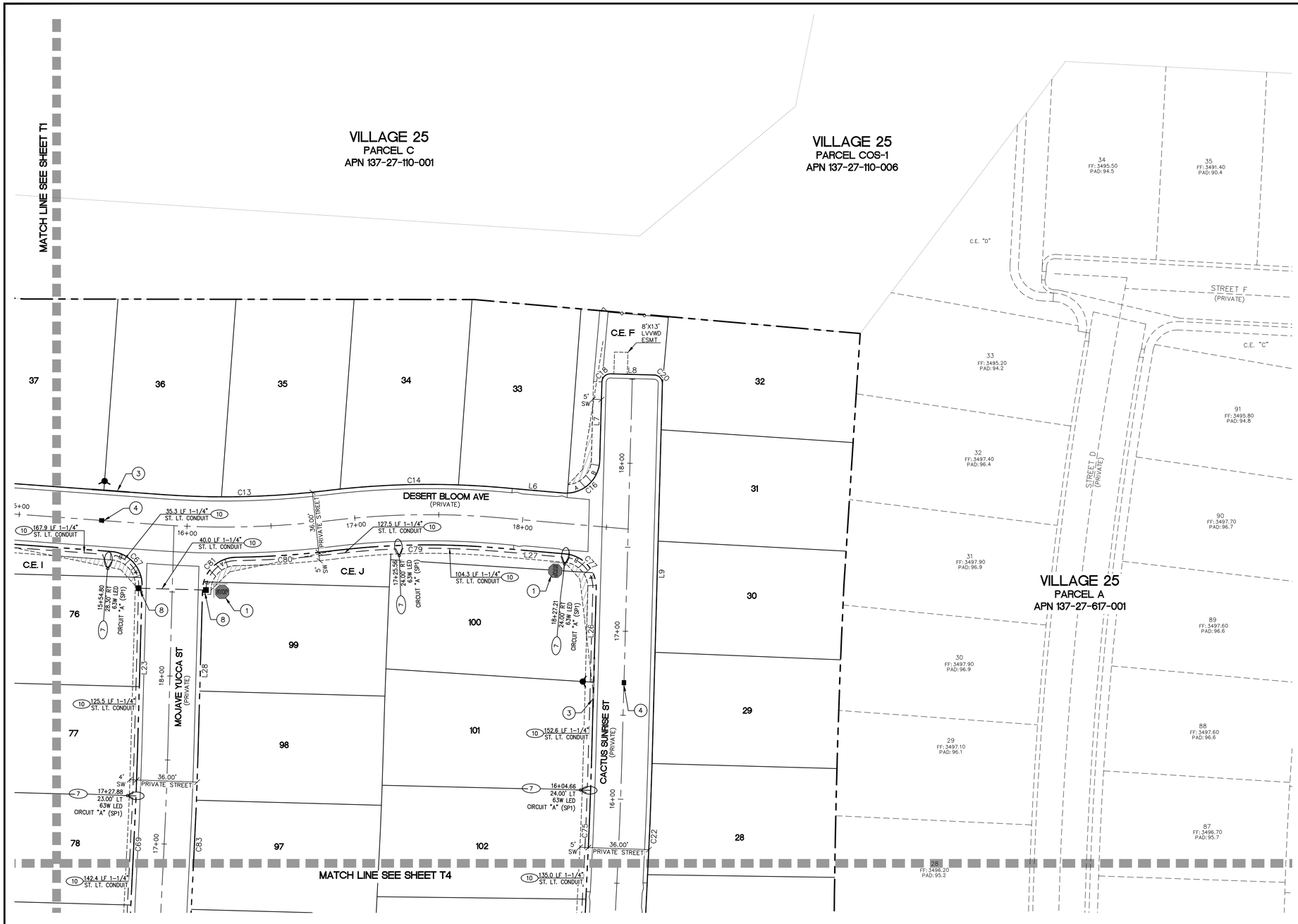
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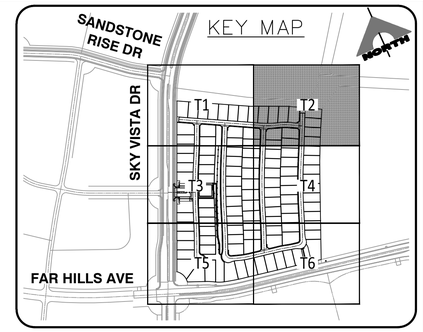
PULTE HOMES

SUMMERLIN VILLAGE 25
PARCEL D

TRAFFIC PLAN 1

DRAWING
T1
36 OF 41 SHTS





NORTH

30' 0' 15' 30'

SCALE: 1" = 30'

CONSTRUCTION NOTES

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3. PAINT CURB RED (NO PARKING) 30' WIDE CENTERED ON HYDRANT EXCEPT DRIVEWAY.
4. INSTALL BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS.
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8. INSTALL 3 ½ PULL BOX
9. INSTALL 100 AMP SERVICE PEDESTAL PER USDCCA STD DWG NO. 330, 331, 332.1
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LINE AND CURVE TABLE

SEE SHEET T6 FOR LINE AND CURVE TABLE

GENERAL NOTES

1. REPLACE ALL TRAFFIC CONTROL DEVICES (SIGNS AND/OR PAVEMENT MARKINGS), UNDER CITY OF LAS VEGAS'S JURISDICTION, THAT ARE DISTURBED, DESTROYED, MOVED OR MODIFIED BY TRENCHING ACTIVITIES TO CITY OF LAS VEGAS'S SATISFACTION. ALL MATERIAL USED SHALL MEET CITY OF LAS VEGAS'S SPECIFICATIONS OR WILL WILL BE AN APPROVED EQUIVALENT.
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BASIS OF BEARING AND COORDINATES

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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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:
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.
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BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE — DATE

L# XXX–XXXXX | CLV DWG#

FAST — Call before you UnderGround 1-702-432-5300 — FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

Call before you Dig — Avoid cutting underground utility lines. It's costly. Call 811 OR 1-800-227-2600

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ENGINEER – STATE OF NEVADA — WESLEY T. PETTY — 16369 — 04/31/2021 — DATE: 04-08-20

REV	DESCRIPTION	DATE	AGEN APP	DATE	GOV APP

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:36:12

GCV ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcvengineering.com

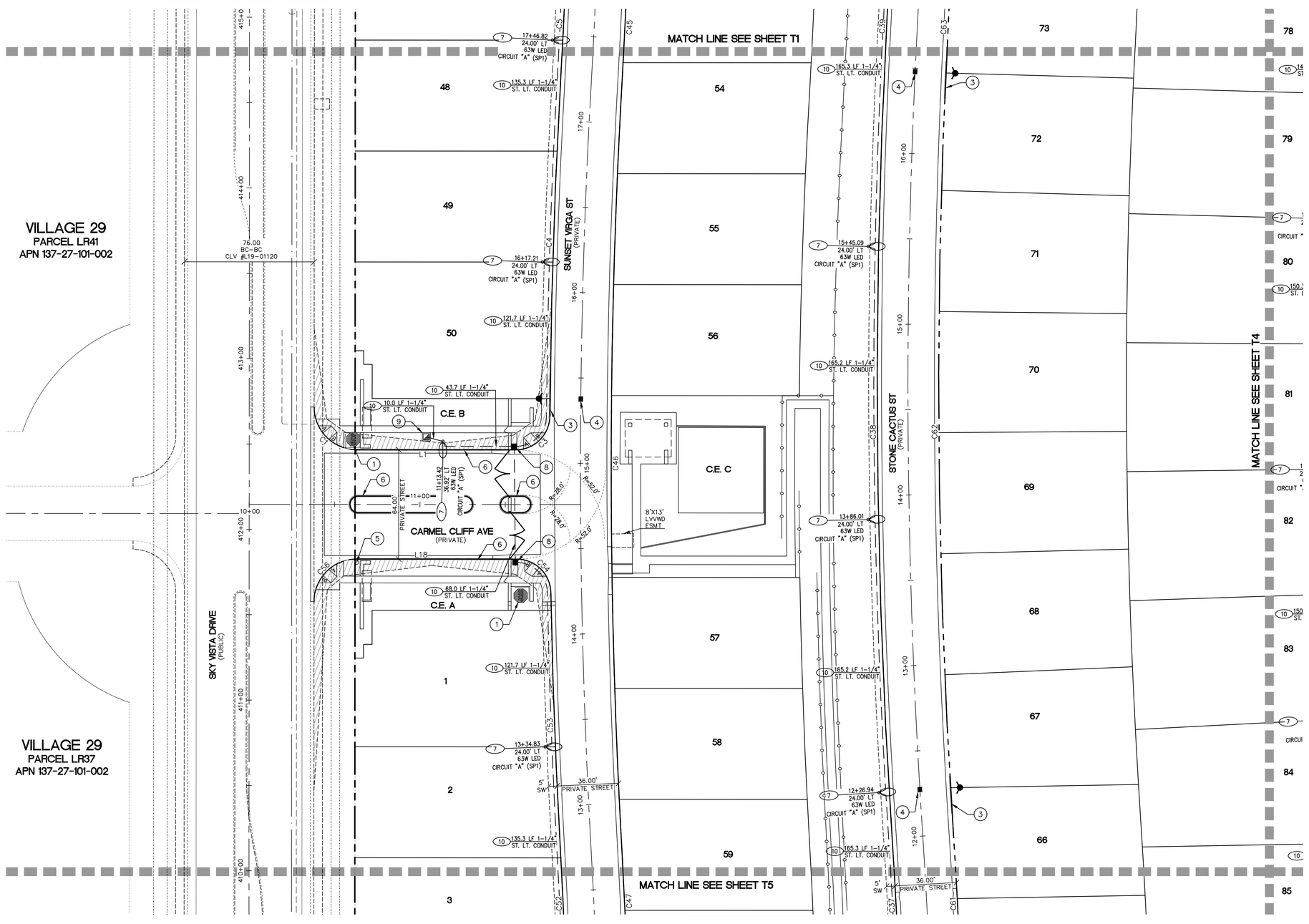
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Nicholas DeRosa

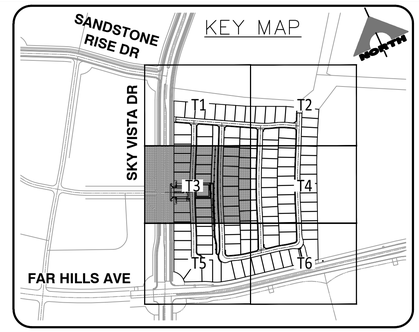
PULTE HOMES

SUMMERLIN VILLAGE 25
PARCEL D

TRAFFIC PLAN 2

DRAWING T2
37 OF 41 SHTS





NORTH

30' 0' 15' 30'
SCALE: 1" = 30'

CONSTRUCTION NOTES

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LINE AND CURVE TABLE

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BASIS OF BEARING AND COORDINATES

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

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STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°15'00"N
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SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

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APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE DATE

L# XXX-XXXXX | CLV DWG#

FAST
Call before you Dig
Under Ground
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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OR 1-800-227-2600

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ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
1/31/2021
No. 16369
PROFESSIONAL ENGINEER
DATE: 04-08-20

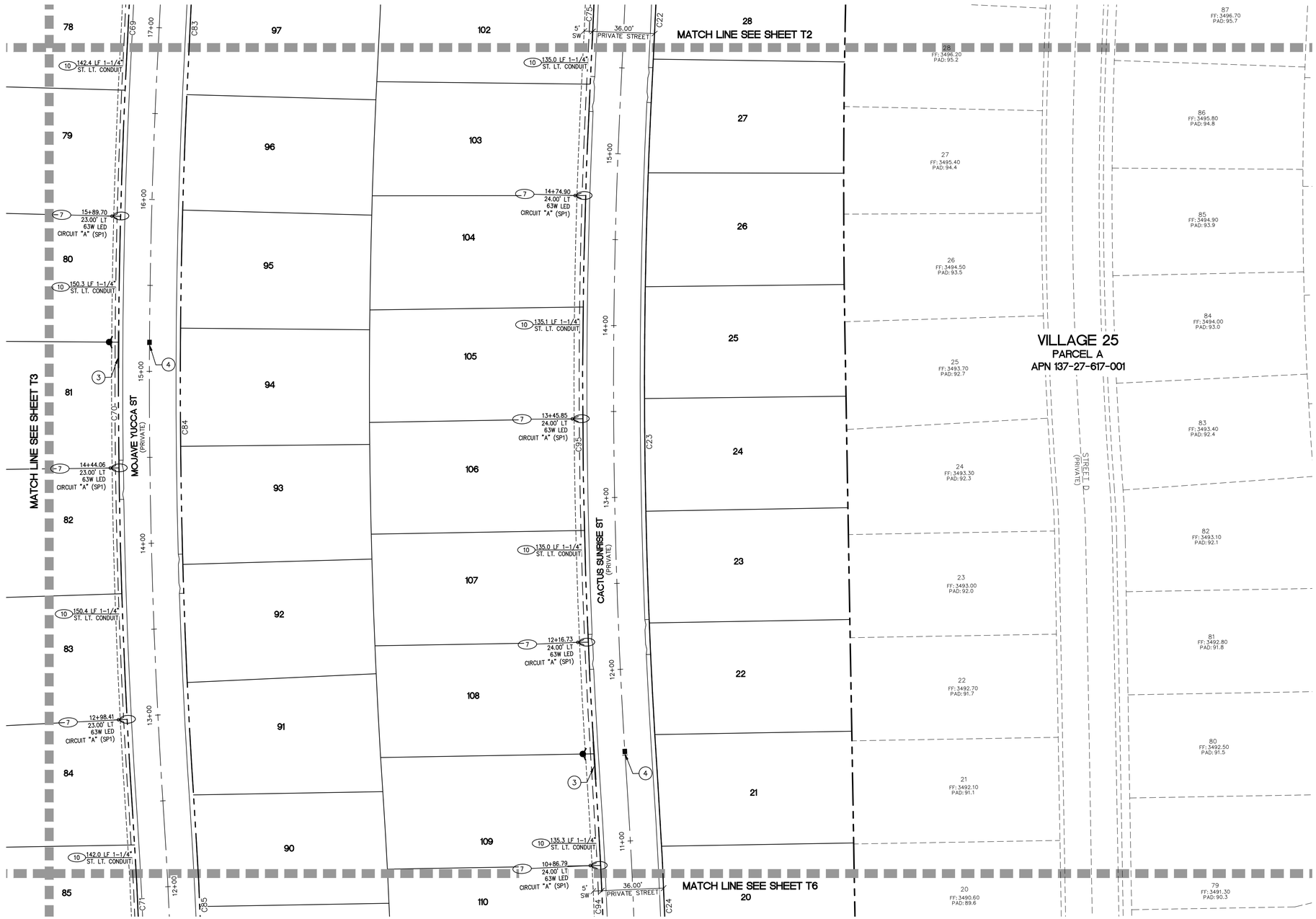
REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

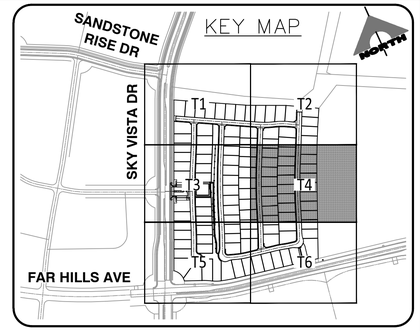
PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:36:22

GCW
ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
f:\Projects\700\764-a173-001\DWG\production\764-A173-T.dwg
Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
TRAFFIC PLAN 3

DRAWING
T3
38 OF 41 SHTS





NORTH

30' 0' 15' 30'
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BASIS OF BEARING AND COORDINATES

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LINEAR UNIT: US SURVEY FOOT (FTUS)
DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00
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APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE — DATE

L# XXX–XXXXX | CLV DWG#

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STATE OF NEVADA — PROFESSIONAL ENGINEER — WESLEY T. PETTY — 16369 — 1/31/2021 — DATE: 04-08-20

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

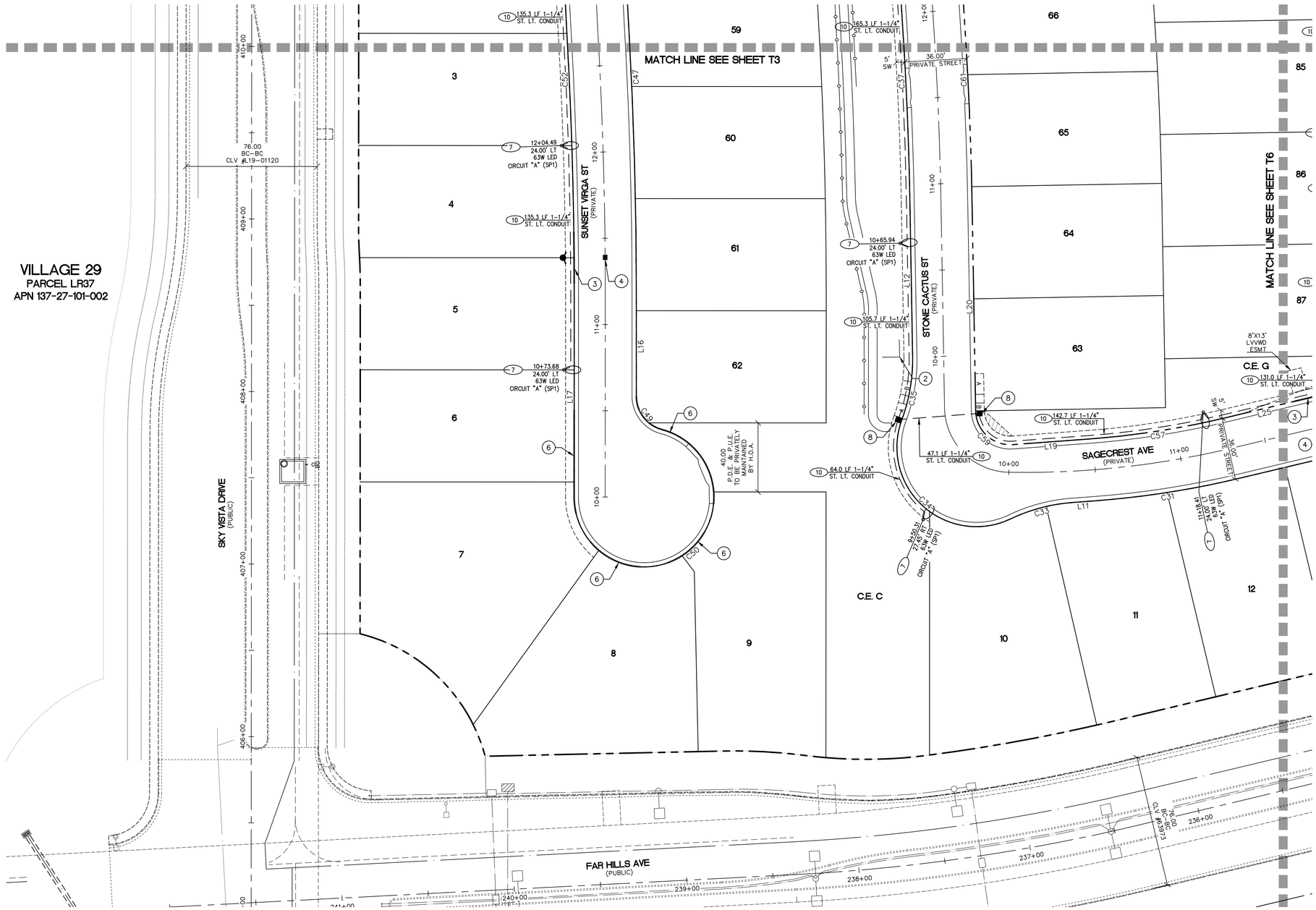
PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:36:32

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
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gcwengineering.com

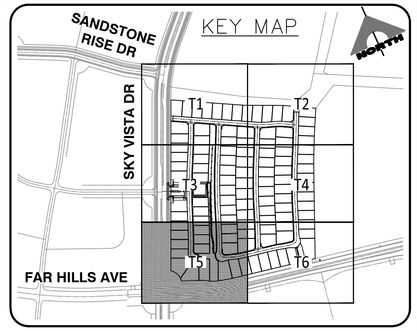
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Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
TRAFFIC PLAN 4

DRAWING T4
39 OF 41 SHTS



KEY MAP



NORTH

SCALE: 1" = 30'

CONSTRUCTION NOTES

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LINEAR UNIT: US SURVEY FOOT (FTUS)
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APPROVED FOR CONSTRUCTION

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L# XXX-XXXXX	CLV DWG#

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ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
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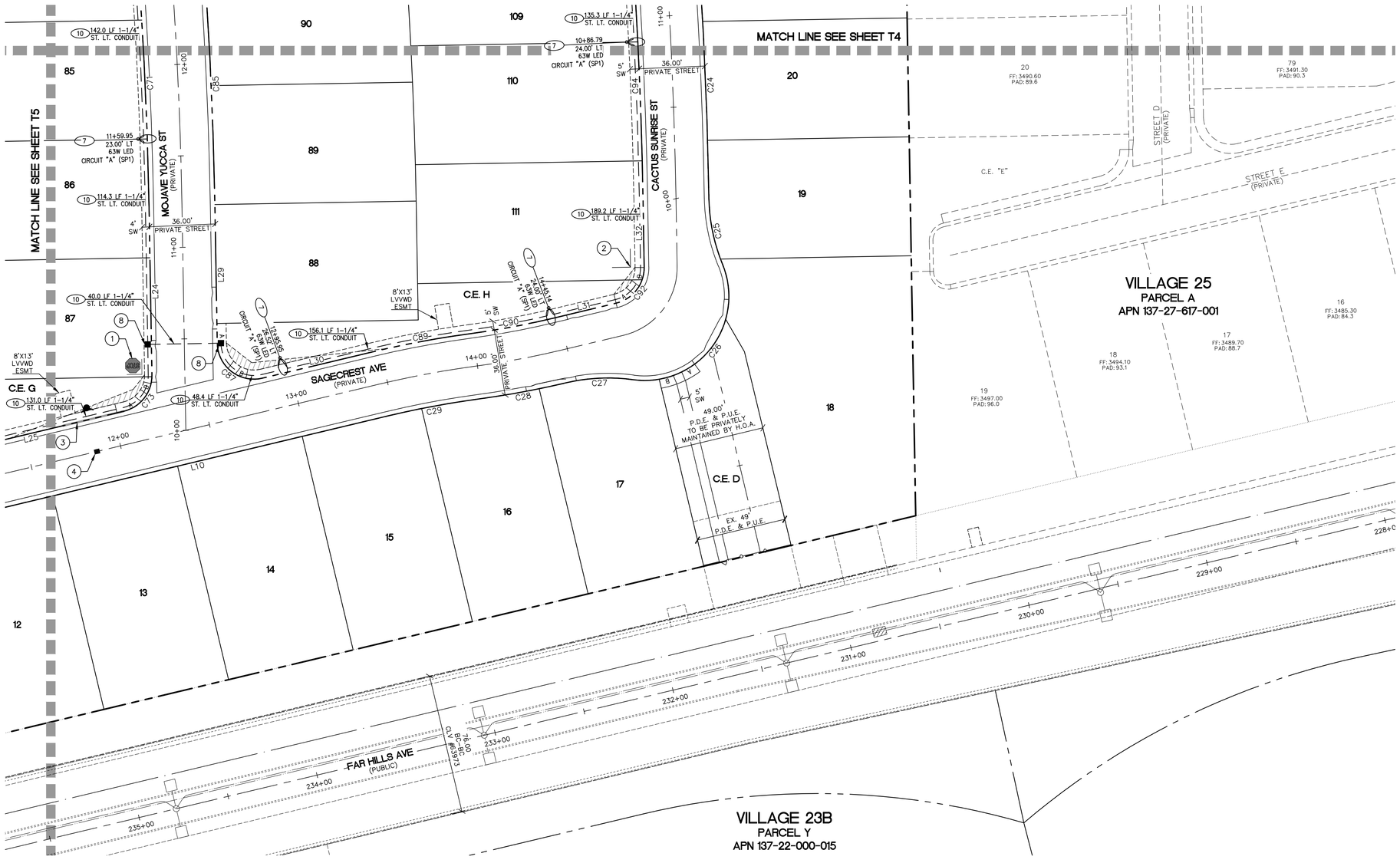
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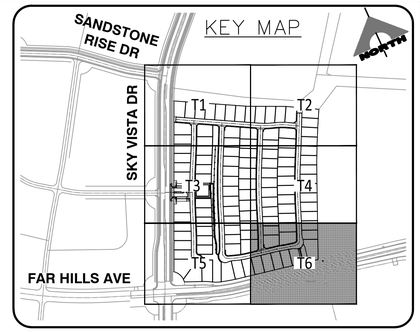
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Nicholas DeRosa

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
TRAFFIC PLAN 5

DRAWING
T5
40 OF 41 SHTS





NORTH

30' 0' 15' 30'

SCALE: 1" = 30'

CONSTRUCTION NOTES

1. INSTALL (2) STREET NAME SIGN (D3)-BROWN BACK WITH WHITE LETTERS, WITH 30" STOP SIGN (R1-1) WITH THE WORDS "PRIVATELY MAINTAINED".
2. INSTALL (2) STREET NAME SIGN (D3)-BROWN BACK WITH WHITE LETTERS TO BE PRIVATELY MAINTAINED.
3. PAINT CURB RED (NO PARKING) 30' WIDE CENTERED ON HYDRANT EXCEPT DRIVEWAY.
4. INSTALL BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKERS.
5. INSTALL "ON-STREET PARKING IN MARKED FIRE LANES PROHIBITED" SIGN (TYPE B SIGNAGE)
6. PAINT CURB RED (NO PARKING FIRE LANE) FOR EMERGENCY ACCESS. (TYPE C SIGNAGE)
7. INSTALL SUMMERLIN TYPE 5 LED STREETLIGHT (MODEL #SUM-XQBM-LED-BL-SIL-2-UE-DIM-27-70CRI-BRZ-NR-4397-SMBRKT) PER SUMMERLIN LED LIGHTING ANALYSIS DRAWING NC-9
8. INSTALL 3 ½ PULL BOX
9. INSTALL 100 AMP SERVICE PEDESTAL PER USDCCA STD DWG NO. 330, 331, 332.1
10. INSTALL 1-1/4" STREETLIGHT CONDUIT WITH 2-#4 AND 1-#8 THW COPPER CONDUCTORS

LINE AND CURVE TABLE

SEE SHEET T6 FOR LINE AND CURVE TABLE

GENERAL NOTES

1. REPLACE ALL TRAFFIC CONTROL DEVICES (SIGNS AND/OR PAVEMENT MARKINGS), UNDER CITY OF LAS VEGAS'S JURISDICTION, THAT ARE DISTURBED, DESTROYED, MOVED OR MODIFIED BY TRENCHING ACTIVITIES TO CITY OF LAS VEGAS'S SATISFACTION. ALL MATERIAL USED SHALL MEET CITY OF LAS VEGAS'S SPECIFICATIONS OR WILL WILL BE AN APPROVED EQUIVALENT.
2. IN THE EVENT THAT THE TRAFFIC SIGNAL CONDUITS, LOOP DETECTORS OR ASSOCIATED EQUIPMENT ARE DAMAGED BY CONTRACTOR, THE CONTRACTOR WILL HIRE AN IMSA LEVEL II ELECTRICAL CONTRACTOR TO MAKE REPAIRS PER UNIFORM SPECIFICATION NO. 623.G.01.02
3. ALL SEWER/ STORM DRAINS CROSSING WATER LINES MUST CONFORM TO SECTION 2.22 OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS) FOR WATER AND STORM MAIN CROSSINGS AND CLEARANCES.
4. THE CONTRACTOR IS TO VERIFY THE ACTUAL FIELD CONDITIONS OF ALL LOTS AND INSTALL SEWER CHECK VALVES WHERE REQUIRED PER THE LATEST EDITION OF THE UNIFORM PLUMBING CODE.
5. FITTINGS SHALL NOT FALL UNDER CURBS, GUTTERS OR SIDEWALK.

BASIS OF BEARING AND COORDINATES

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): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"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:
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

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV0934DW6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T5OS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE DATE

L# XXX-XXXXX | CLV DWG#

LINE TABLE		
#	LENGTH	BEARING
L1	93.11'	S65° 41' 13.82"E
L2	57.17'	N24° 18' 45.79"E
L3	91.08'	N61° 30' 43.92"W
L4	26.00'	N28° 29' 16.08"E
L5	581.59'	S61° 30' 43.92"E
L6	36.38'	S60° 41' 24.28"E
L7	46.70'	N25° 50' 43.24"E
L8	26.00'	S64° 09' 16.76"E
L9	226.10'	S25° 50' 43.24"W
L10	215.68'	N79° 08' 31.82"W
L11	12.01'	N69° 56' 02.57"W
L12	88.77'	N23° 17' 44.77"E
L13	109.81'	N25° 50' 43.24"E
L14	115.91'	N61° 30' 43.92"W
L15	51.62'	S24° 18' 45.79"W
L16	57.80'	S24° 18' 45.79"W
L17	116.28'	N24° 18' 45.79"E
L18	93.73'	N65° 41' 13.82"W
L19	43.96'	N69° 56' 02.57"W
L20	120.72'	N23° 17' 44.77"E

LINE TABLE		
#	LENGTH	BEARING
L21	106.30'	N25° 50' 43.24"E
L22	194.21'	S61° 30' 43.92"E
L23	97.34'	S25° 50' 43.24"W
L24	91.46'	S23° 17' 44.77"W
L25	75.55'	N79° 08' 31.82"W
L26	103.27'	N25° 50' 43.24"E
L27	40.98'	N60° 41' 24.28"W
L28	95.90'	S25° 50' 43.24"W
L29	74.70'	S23° 17' 44.77"W
L30	62.31'	S79° 08' 31.82"E
L31	35.38'	S79° 08' 31.82"E
L32	37.03'	N23° 17' 44.77"E

CURVE TABLE			
#	RADIUS	LENGTH	DELTA
C1	25.00'	39.27'	090°00'00"
C3	20.00'	31.28'	089°36'25"
C4	4036.00'	203.49'	002°53'20"
C5	2664.00'	152.60'	003°16'55"
C7	20.00'	29.96'	085°49'30"
C9	5.00'	7.85'	090°00'00"
C11	5.00'	7.85'	090°00'00"
C13	500.00'	97.61'	011°11'08"
C14	500.00'	104.79'	012°00'27"
C16	20.00'	32.63'	093°27'52"
C18	5.00'	7.85'	090°00'00"
C20	5.00'	7.85'	090°00'00"
C22	2700.00'	70.46'	001°29'43"
C23	3460.00'	416.28'	006°53'36"
C24	2700.00'	134.24'	002°50'55"
C25	100.00'	37.23'	021°19'45"
C26	46.00'	96.52'	120°13'22"
C27	100.00'	36.95'	021°10'22"
C28	500.00'	48.64'	005°34'24"
C29	500.00'	50.02'	005°43'55"

CURVE TABLE			
#	RADIUS	LENGTH	DELTA
C31	536.00'	86.14'	009°12'29"
C33	100.00'	37.23'	021°19'45"
C34	46.00'	109.10'	135°53'17"
C35	100.00'	37.23'	021°19'45"
C37	2124.00'	105.60'	002°50'55"
C38	4036.00'	485.58'	006°53'36"
C39	4036.00'	485.58'	006°53'36"
C41	20.00'	30.49'	087°21'27"
C43	20.00'	32.87'	094°10'30"
C45	2700.00'	154.66'	003°16'55"
C46	4000.00'	458.25'	006°33'50"
C47	2700.00'	154.66'	003°16'55"
C49	20.00'	26.23'	075°09'19"
C50	40.50'	180.36'	255°09'20"
C52	2664.00'	152.60'	003°16'55"
C53	4036.00'	155.39'	002°12'21"
C54	20.00'	31.04'	088°55'26"
C56	25.00'	39.27'	089°59'59"
C57	500.00'	80.36'	009°12'29"
C59	20.00'	32.54'	093°13'47"

CURVE TABLE			
#	RADIUS	LENGTH	DELTA
C61	2160.00'	107.39'	002°50'55"
C62	4000.00'	481.25'	006°53'36"
C63	4000.00'	481.25'	006°53'36"
C65	20.00'	32.34'	092°38'33"
C67	20.00'	30.49'	087°21'27"
C69	2394.00'	62.47'	001°29'43"
C70	3766.00'	453.09'	006°53'36"
C71	2394.00'	119.03'	002°50'56"
C73	20.00'	27.07'	077°33'43"
C75	2664.00'	69.52'	001°29'43"
C77	20.00'	30.21'	086°32'08"
C79	464.00'	97.24'	012°00'27"
C80	536.00'	58.43'	006°14'45"
C81	20.00'	30.61'	087°42'10"
C83	2430.00'	63.41'	001°29'43"
C84	3730.00'	448.76'	006°53'36"
C85	2430.00'	120.81'	002°50'55"
C87	20.00'	35.76'	102°26'17"
C89	536.00'	53.62'	005°43'55"
C90	464.00'	46.42'	005°43'55"

CURVE TABLE			
#	RADIUS	LENGTH	DELTA
C92	20.00'	27.07'	077°33'43"
C94	2664.00'	132.45'	002°50'55"
C95	3496.00'	420.61'	006°53'36"

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ENGINEER - STATE OF NEVADA
WESLEY T. PETTY
1/31/2021
No. 16369
DATE: 04-08-20

GCV
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f:\Projects\700\764-A173-001\DWG\production\764-A173-T.dwg
Nicholas DeRosa

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 764-A173-001
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04-08-20
PLOT TIME: 20:36:52

PULTE HOMES
SUMMERLIN VILLAGE 25
PARCEL D
TRAFFIC PLAN 6

DRAWING T6
41 OF 41 SHTS