DS #: 5120

APN: 137-22-101-001

PROJECT: Summerlin V25 Sky Vista Drive Imp.

SUBMITTAL: 1st

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: April 22, 2019
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin V25 Sky Vista Drive Improvements – Phase 1**			**COPIES TO:** GCW Engineers / Surveyors
Cross Streets:	Sky Vista Drive between Far Hills & Redpoint			Howard Hughes Company
File Number:	F:\Depot\DSMemos\DS5120A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-22-101-001			CCRFCD
Zoning Action:				
FEMA Flood Zone	YES	NO	X	
Proposed Storm Drain	YES	NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	4/8/2019	4/22/2019	See Comments Below	$400.00	3083957: $400
			TOTAL FEES (LDDRS):		----

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

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

3. The segment of the subject *Sky Vista Drive* is within *Summerlin West Village 25*. A Master Conceptual Drainage Study for Village 25 was submitted to the City for review and has not been approved yet. The subject drainage study for *Sky Vista Drive* will not be approved prior to the final approval of the Conceptual Study for Village 25.

4. The proposed improvement plans show drainage facilities (junction structure connecting the proposed 6'x6' RCB in Sky Vista and the existing 8'x6' RCB in Far Hills) of a size that must be reviewed for Maintenance and Access concerns. The engineer must submit an extra set of improvement plans to *City of Las Vegas Streets & Sanitation Department* for their review. *Streets & Sanitation* approval must be secured prior to drainage study approval.

5. Structural plans for the storm drain improvements such as the junction structure must be submitted for review. Provide a soils report, structural calculations and specifications, two wet stamped structural sets, and a grading plan to the *City of Las Vegas Building Department* for processing. The engineer must provide a copy of *Building Department* approval of the structures to *Flood Control* prior to conditional approval of the drainage study.

6. The flow in the junction structure exceeds the maximum velocity allowed (25 fps) per the *CCRFCD Hydrologic & Hydraulic Design Manual*. The Engineer must provide a detail showing additional sacrificial concrete (1-inch minimum) on the plans. A Special Construction Note must be added to the Improvement Plans and the Plan and Profile Sheet that calls out the special construction requirement for the additional sacrificial concrete.

7. Identify the *LVVWD Zone 3665 Reservoir* site on the *Interim Condition Drainage Map (FIG 5)* in the next submittal.

8. The proposed north and south storm drains in *Sky Vista Drive*, 24"-36" RCP in the north and 6'x6' RCB in the south do not match the proposed sizes in the *Summerlin West Village 25 Master Drainage Study* prepared by VTN Nevada. Per *Figure 7 (Local Storm Drain Facilities Map)* of the said *Study,* the north storm drain, *Facility 9A* is a 42"-RCP while the south storm drain, *Facility SD-L* is a 7'x6' RCB. Address in the next submittal.

9. **Sheet PP4**: Provide nominal drop inlets at approximately Station 419+50 on both sides of *Sky Vista Drive*.

10. **Sheet PP5**: Provide a nominal drop inlet at SDMH #8 on the east side of *Sky Vista Drive* in order to satisfy the 600' maximum spacing for nuisance inlets requirement.

11. All offsite interim flood control facilities such as but not limited to berms/ditches and temporary sump are privately owned and to be privately maintained by the *Howard Hughes Company.* Provide a note as such on the grading plans.

12. Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).

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/22
AREA K-22

TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
PHASE 1

62025-203

April 2019

Prepared for:

Hughes Howard Company, LLC
10801 Charleston Blvd., 3Rd Floor
Las Vegas, Nevada 89146
Phone: (702) 791-4300

GCW 50 YEARS
ENGINEERS \ SURVEYORS 1969-2019

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin Village 25 Sky Vista Drive Improvements Phase I Date: March 2019

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

East/West: Far Hills

b) Section: 22, 27 Township: 20 S Range: 59 E

c) APN : 137-22-101-001

Name of Owner: Hughes Howard Company, LLC

Telephone No.: 702-791-4300 Fax No.: 702-791-4385 E-Mail Address: chris.anderson@howardhughes.com

Address: 10801 Charleston Blvd., 3Rd Floor, Las Vegas, Nevada 89146

Contact Person-Name: Steve Jones **Telephone No.:** (702) 804-2130

* **E-Mail Address:** sjones@gcwengineering.com **Fax No.:** (702) 804-2299

Firm: GCW, Inc.

Address: 1555 South Rainbow Blvd, Las Vegas, Nevada 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	x	Building Permit		

1. Total Owned Land Area: At Site: +/- 1,800 Acres Being Developed/Disturbed: +/- 15 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.): Road Improvement
5. Approximate upstream land area which drains to the subject site: +/- 5 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: South portion drains into the existing 8'X6' RCB on Far Hills, north portion drains into an existing wash
8. Briefly describe your proposed schedule for the subject project: ASAP

PROFESSIONAL ENGINEER-STATE OF NEVADA
STEPHEN M. JONES
EXP. 6-30-19
CIVIL
No. 19638
3/18/2019

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

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Summerlin Village 25 Sky Vista Drive Improvements Phase I	Map ID: 137-22-101-001
Firm Name: GCW, Inc.	Engineer: Steve Jones
Address: 1555 S. Rainbow Blvd	
City: Las Vegas	State: Nevada Zip: 89146
Phone Number: (702) 804-2130	Fax Number: (702) 804-2299
Property Owner: Hughes Howard Company, LLC	
Address: 10801 Charleston Blvd., 3Rd Floor	
City: Las Vegas	State: Nevada Zip: 89146

Reviewed By:	Date Received:	Date Accepted for Review:

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

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

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

I. GENERAL REQUIREMENT

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

II. MAPS AND EXHIBITS

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

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS (Continued)

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

III. DRAINAGE PLAN

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

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
X		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.
	N/A	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.
	N/A	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.
	N/A	Building and/or lot numbers.
X		Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
	NA	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	
_____	NA	For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table. Finish floor elevations must be a minimum of 18 inches above BFE.
_____	N/A	Appropriately elevated "humps" 6 inches above the 100 year water surface elevation at site accesses where the intent is to protect the site from the Q100 flows.
X	_____	Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.
_____	NA	Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).

IV. HYDROLOGIC ANALYSIS

Yes	No	
X	_____	Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
X	_____	Input and output information for existing conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
X	_____	Input and output information for future conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
X	_____	Use of correct precipitation values in and around the McCarran Airport rainfall area.
X	_____	A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
X	_____	A summary table of stormwater flows showing basin area, 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.
X	_____	Calculation for impervious area for parking lots and LIDs (if required).

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

Yes	No	
_____	X	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.)
_____	N/A	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.
_____	N/A	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. _____ 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.
	N/A	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.
	N/A	On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners. (The project must pass flows through the site every 600 feet where the project is blocking flow paths.)
	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.
	N/A	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.
	N/A	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.
	N/A	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 SKY VISTA DRIVE IMPROVEMENTS
PHASE 1

62025-203

April 2019

Authored by:

Masih Edalat, PhD, EI

Prepared for:

Summerlin Development, LLC
10801 Charleston Blvd., 3Rd Floor
Las Vegas, Nevada 89135
Phone: (702) 791-4362

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I. INTRODUCTION

The Howard Hughes Company, LLC (THHC) is proposing to construct roadway and storm drain improvements for Sky Vista Drive in Summerlin Village 25, from Far Hills Drive to Redpoint Drive. The project is identified as Sky Vista Drive Improvements Phase 1 (hereafter referred to as the project), and is located on the north of the intersection of Far Hills Drive and Sky Vista Drive. The purpose of this report is to provide detailed hydrologic and hydraulic analyses for the site, and to propose storm drain facilities to convey runoff in accordance with the Village 25 Master Drainage Study, the CCRFCD Manual (Reference 1, hereafter referred to as HCDDM) and local drainage criteria. The following tasks were performed in the preparation of this study:

- Determine the FEMA floodplain designation for the project site.
- Identify CCRFCD regional facilities adjacent or affected by the project.
- Review pertinent approved drainage studies in the area for evaluation of drainage impacts affecting the project.
- Estimate runoff generated for the peak 10-year and 100-year return period storms
- Recommend drainage facilities required to protect the project from storm runoff.

II. LOCATION AND DESCRIPTION OF IMPROVEMENTS

The proposed site is located within Section 22 and 27, Township 20 South, Range 59 East on APN 137-22-101-001, within the jurisdictional limits of City of Las Vegas (CLV). Please refer to Figure 1 in Appendix C for location of the project. For this study, the proposed improvements consist of street and storm drain improvements for the conveyance of flow.

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

Figure 2 in Appendix C shows the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) containing Community Panel 32003C2150E dated September 27, 2002. The project site lies within a Zone X. Areas designated as Zone X are described as being outside the 500-year floodplain. Therefore, this project is not located in a FEMA designated Special Flood Hazard Area (SFHA).

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

Figures 3 and 4, included in Appendix D, show subbasins and facilities based on the 2018 Las Vegas Valley Master Plan Update, respectively (Reference 2, hereafter referred to as the 2018 MPU). As shown on Figure 4, the site is adjacent to existing CCRFCD Facility APFH0089. The 2018 MPU describes the existing CCRFCD Facility APFH0089 as an 8’ by 6’ RCB.

For Summerlin West area, 2018 MPU has been superseded by Drainage Study for Summerlin West Planning Area (SWPA) Master Plan Update (hereafter referred to as the Summerlin West MPU). Summerlin West MPU is a flood control master plan update that restudied hydrologic patterns of the SWPA according to a revised land plan and reconfigured the overall conceptual storm drain layout. Pertinent reference material has been included in Appendix B.

V. REFERENCED STUDIES

In preparation of this study, the following approved drainage studies and improvement plans were referenced to complete hydrologic and hydraulic analyses. These studies have been reviewed and accepted as suitable for reference material. A brief synopsis of the pertinence of each of the referenced items is as follows:

- Summerlin West Planning Area Master Plan Update (the Summerlin West MPU) provided master plan and hydrologic pattern for drainage ultimate condition for the project area (Reference 3).
- Village 23B Far Hills Avenue RCB Improvements (Reference 4, hereinafter referred to as the Far Hills RCB Study), provided existing storm drain information in Far Hills Avenue.
- Master Conceptual Drainage Study for Summerlin West Village 25 (Reference 5, 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.
- TDS for Summerlin West Zone 3665 Reservoir and Inlet/Outlet Pipeline (Reference 6, hereinafter referred to as the Reservoir Study) was approved on August 3, 2017 by City of Las Vegas. The Reservoir Study provided ½ south rough graded for this project. Additionally, two ditches are constructed upstream of the proposed Sky Vista Drive by the Reservoir Study to protect the site from offsite flow.
- Technical Drainage Study for Summerlin Village 21 Redpoint Drive (Reference 7, hereinafter referred to as the V21 Redpoint Study) provided information regarding the existing ditch and the rough graded road on the ½ north portion of this project.
- Update to the Technical Drainage Study for Summerlin Village 23B Sky Vista Drive (Reference 8, hereinafter referred to as the V23B Sky Vista Study) provided flow rate information in the exiting storm drain in Sky Vista drive during the interim and ultimate condition. The storm drain is connected to the Far Hills storm drain from south.

VI. HYDROLOGY

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

VII. EXISTING DRAINAGE CONDITION

The Reservoir Study provides existing condition drainage map for the project area. Therefore, a site specific existing condition hydrology analysis is not necessary for this study. Refer to the Existing Conditions Drainage Map in Appendix B for the subbasins and drainage patterns for the existing condition hydrologic analysis for this project. Note that there are two ditches existed on the upstream side of the proposed road, one on the northern half (constructed by the V21 Redpoint Study), and one on the southern half (constructed by the Reservoir Study).

VIII. INTERIM DRAINAGE CONDITION

The interim condition is defined as the offsite watershed in its current state and the project is developed. Per the Reservoir Study and Village 21 Redpoint, the proposed road is protected from offsite runoff by the existing ditches in the interim condition. As a result, all the storm drain laterals are capped. Note that since the southern ditch (constructed by the Reservoir Study) was too close to the proposed road, it has been regraded with the same geometry on the back side of common lot area. The northern ditch is also proposed to be extended up to where the proposed road ends. As a result, no analysis is necessary, since the hydraulics for these interim ditches were previously approved and this study does not modify the parameters. Refer to Figure 5 in Appendix C for an illustration of the interim condition drainage map.

IX. ULTIMATE DRAINAGE CONDITION

The ultimate condition is defined as the project developed and the offsite watershed also developed. During the ultimate condition, with the storm drain and street improvements in place, hydrologic analysis subbasins have been changed based on Master Drainage Study for Village 25. In general, the drainage patterns for the ultimate conditions subbasins are consistent with interim conditions but with larger flow rates to account for future development. 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 B for the ultimate condition hydrologic analysis for this project area.

X. STREET HYDRAULICS

The resulting street flow data is based on the ultimate condition flow rates. The flowrates used in the street flow normal depth calculations have been referenced from The Master Drainage Study for Village 25. Note that subbasins SKY0 and SKY1 have been used to obtain street 100-year flowrate. Street sections have been provided with the flow evenly distributed through the cross sections. Note that the drop inlets on both side of Sky Vista Drive are able to collect all the flows. Hydraulic calculations have been included in Appendix A.

Based on the calculated street flow characteristics, the criteria for depth (D) and velocity times depth (D*V) for the 100-year storm event will be met. Since the 10-year storm event criteria for (D*V) is met during the 100-year storm event, a 10-year flow analysis has not been provided.

XI. STORM DRAIN FACILITIES

WSPG models have been used to ensure the proposed storm drain system could safely convey the ultimate condition runoff. Here are brief descriptions for main storm drain models:

1- Far_Hills_INT.WSW; this model provides hydraulic characteristic of storm runoff in the existing 8'X6' RCB in Far Hills Avenue in the interim condition. The starting flow rate has been obtained from the Reservoir Study. Note that the proposed storm drain only discharges street flow in the interim condition (SKY0 subbasin) to the existing facility in Far Hills Avenue.

2- Far_Hills.WSW; Master Drainage Study for Village 25 released new flowrates in the Summerlin west area. As a result, the existing 8'X6' RCB in Far Hills Avenue is conveying new flowrates. A WSPG model is created for Far Hills Avenue storm drain from Sky Vista Drive to Fox Hill Drive to show revised flowrates and flow characteristics in the ultimate condition. The results of this model have been used as the basis for the starting water surface of the proposed storm drain models that connect into Far Hills. Note that HGL in Far Hills is higher in the interim condition, but once Sky Vista storm drain operating in the ultimate condition, Far Hills storm drain also conveying the ultimate condition flow.

Table 1 compares flow rates during interim and ultimate condition with the design flow rate in the existing storm drain in Far Hills from Sky Vista to Fox Hill.

Table 1: Flowrate Comparison in the Far Hills Avenue Storm Drain

Location	Design Flow Rate (cfs)	Interim Condition Flow Rate (cfs)	Ultimate Condition Flow Rate (cfs)
Upstream of Sky Vista	711	506	78
Downstream of Sky Vista	872	807 (14 from north + 287 from south)	701 (416 from north + 207 from south)
Downstream of Parcel D	917	912	806
Downstream of Fox Hill	1014	1023	917

According to the results, although the velocities are high, the flow rates are comparable and the existing storm drain has enough capacity based on the resulting HGLs.

3- SkyV_South.WSW; this model is created to simulate the proposed storm drain on the south portion of Sky Vista Drive. The proposed SD will tie into existing SD facilities on Far Hills. Flowrates have been referenced from the Master Drainage Study for Village 25 in the ultimate condition. Note that the flow velocity is higher than 25 ft/s in a small portion of the pipe (at the bend) and 1 inch sacrificial concrete is proposed in that portion.

4- SkyV_North.WSW; this model is created to simulate the proposed storm drain on the north portion of Sky Vista Drive. Note that flowrates have been referenced from the Master Drainage Study for Village 25 in the ultimate condition.

All drop inlet calculations contain a 50 percent clogging factor. Since the bypass flow from the inlets in Sky Vista Drive is zero, this project will not negatively impact downstream facilities. Refer to hydraulic calculation provided in Appendix A.

XII. CONCLUSIONS AND RECOMMENDATIONS

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

2. The project area lies within a designated FEMA Flood Zone X. Therefore, the project is not currently located in a FEMA-designated Special Flood Hazard Area.

3. The site is adjacent and discharges into laterals from CCRFCD Facility APM5 APFH0089. This study re-models the hydraulics in this facility due to Village 25 master drainage changes proposed by VTN.

4. The proposed drainage patterns in this report are generally consistent with the existing condition, Summerlin Village 25 Master Drainage Study and the 2018 Summerlin West area MPU.

XIII. 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. VTN Nevada. *Summerlin West Planning Area Master Plan Update.* February 2018.

4. G.C.Wallace. *Far Hills Avenue RCB Improvements*. August 2013.

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

6. Atkins. *TDS for Summerlin West Zone 3665 reservoir and Inlet/Outlet Pipeline*. May 2017

7. GCW. *Technical Drainage Study for Summerlin Village 21 Redpoint Drive Improvements*. February 2019

8. GCW. *Update to the Technical Drainage Study for Summerlin Village 23B Sky Vista Drive.* December 2018.

SUMMERLIN VILLAGE 25
SKY VISTA DRIVE IMPROVEMENTS PHASE I
APPENDIX LAYOUT

Appendix A. Hydraulic Calculations and Information

1. Normal Depth Street Calculations
2. Drop Inlet Calculations
3. Minor SD Lateral Loss Calculations
4. WSPG calculations

Appendix B. Referenced Material and Supporting Documents

1. Summerlin West Planning Area Master Plan Update

    a. Figure A.6.3 DB5/Alta Tributary
    b. Figure A.6.5 Regional Flood Control Facilities Map

2. Village 23B Far Hills Avenue RCB Improvements

    a. Cover Sheet
    b. Sheets P1-P6 Plan and Profiles

3. Master Conceptual Drainage Study for Summerlin West Village 25

    a. Cover Sheet
    b. Figure 6 Ultimate Condition Basin Map
    c. Figure 7 Local Storm Drain Facilities Map

4. TDS for Summerlin West Zone 3665 Reservoir and Inlet/Outlet Pipeline

    a. Approval Letter
    b. Drainage Map
    c. Improvement Plans

5. Technical Drainage Study for Summerlin Village 21 Redpoint Dirve

    a. Cover Sheet
    b. Approval Letter
    c. Sheets MG1, GD3, DT2

6. Update to the Technical Drainage Study for Summerlin Village 23B Sky Vista Dirve

    a. Cover Sheet
    b. Approval Letter
    c. Interim Condition Drainage Map
    d. Ultimate Condition Drainage Map

Appendix C. Drainage Figures and Plans

1. Vicinity Map
2. F.I.R.M Map
3. 2018 MPU Subbasins Map
4. 2018 MPU SD Facility Map
5. Interim Condition Drainage Map

APPENDIX A

Hydraulic Calculations and Information

Worksheet for Section A -100-yr Half Street

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+00.00	0.50
0+00.50	0.50
0+00.50	0.00
0+02.00	0.13
0+02.00	0.17
0+30.00	0.73

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.50)	(0+02.00, 0.13)	0.013
(0+02.00, 0.13)	(0+30.00, 0.73)	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	0.49	ft
Elevation Range	0.00 to 0.73 ft	
Flow Area	3.28	ft²
Wetted Perimeter	18.28	ft
Hydraulic Radius	0.18	ft
Top Width	17.74	ft

Worksheet for Section A -100-yr Half Street

Results

Normal Depth		0.49	ft
Critical Depth		0.48	ft
Critical Slope		0.00668	ft/ft
Velocity		2.13	ft/s
Velocity Head		0.07	ft
Specific Energy		0.57	ft
Froude Number		0.87	
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	0.49	ft
Critical Depth	0.48	ft
Channel Slope	0.50	%
Critical Slope	0.00668	ft/ft

Cross Section for Section A -100-yr Half Street

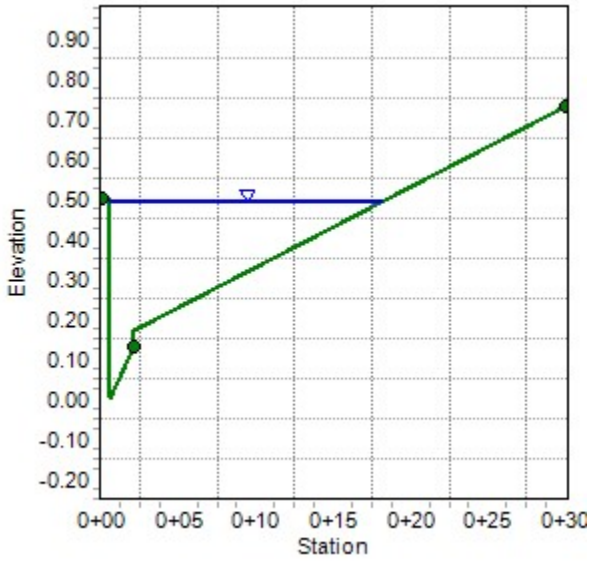
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50	%
Normal Depth	0.49	ft
Discharge	7.00	ft³/s

Cross Section Image



Worksheet for Section B -100-yr Half Street

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	1.81	%
Discharge	8.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.50
0+00.50	0.50
0+00.50	0.00
0+02.00	0.13
0+02.00	0.17
0+30.00	0.73

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.50)	(0+02.00, 0.13)	0.013
(0+02.00, 0.13)	(0+30.00, 0.73)	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	0.43	ft
Elevation Range	0.00 to 0.73 ft	
Flow Area	2.23	ft²
Wetted Perimeter	14.95	ft
Hydraulic Radius	0.15	ft
Top Width	14.47	ft

Worksheet for Section B -100-yr Half Street

Results

Normal Depth		0.43	ft
Critical Depth		0.49	ft
Critical Slope		0.00652	ft/ft
Velocity		3.59	ft/s
Velocity Head		0.20	ft
Specific Energy		0.63	ft
Froude Number		1.61	
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	0.43	ft
Critical Depth	0.49	ft
Channel Slope	1.81	%
Critical Slope	0.00652	ft/ft

Cross Section for Section B -100-yr Half Street

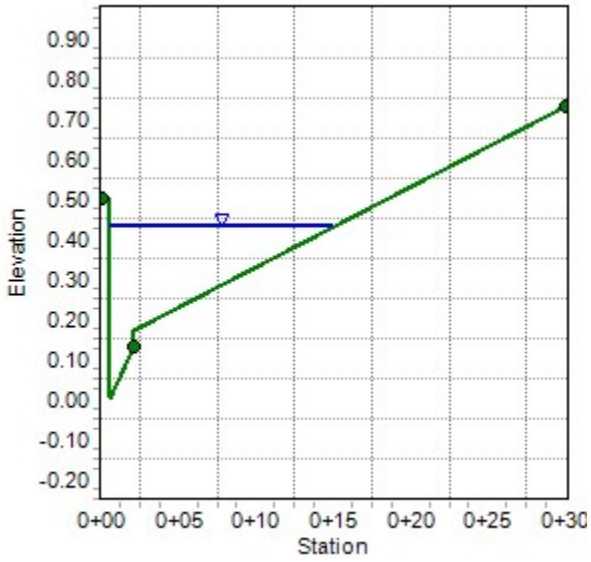
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	1.81	%
Normal Depth	0.43	ft
Discharge	8.00	ft³/s

Cross Section Image



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Drop Inlet Sizing Calculation

Project Name: V25 Sky Vista Drive Improvements Phase 1
By: Masih Edalat
Date: 02/28/2019

Drop Inlet Sizing on a Continuous Grade

DI #1.2
10' Type "CM2"

Known:

Q_s=	Street Flow	7.0	cfs
S_o=	Longitudinal Slope	0.005	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	2.13	fps
D=	Flow Depth	0.49	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	0.20	
	Q_w= Frontal flow=A_w*V_s	1.43	cfs
	Q_x= Side flow = Q_s-Q_w	5.57	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.42	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	3.8	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	0.078	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)$^{0.6}$	15.27	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	0.70	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	100	%

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Drop Inlet Sizing Calculation

Project Name: V25 Sky Vista Drive Improvements Phase 1
By: Masih Edalat
Date: 02/28/2019

Drop Inlet Sizing in Sump

DI #3.1
5' Type "C"

Known:

Q=	Design Flow	7.0	cfs
D_p=	Ponding Depth at Inlet	0.83	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	orifice	
Q_{ig}=	Flow intercepted by grate If "weir" controls Qig=Cwg*Pagl*$Dp^{1.5}$ If "orifice" controls Qig=Co*Aaga*$(64.4*Dp)^{0.5}$	5.5	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	6.1	cfs

Total Inlet Calculations

Qti =	Flow Interception Capacity = Qig+Qic	11.6	cfs
q =	Interception per unit ratio = Q_{ti}/L_g	2.32	cfs/ft

Actual Flow Collected by Drop Inlet 7 cfs

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Drop Inlet Sizing Calculation

Project Name: V25 Sky Vista Drive Improvements Phase 1
By: Masih Edalat
Date: 02/28/2019

Drop Inlet Sizing on a Continuous Grade

DI #11.2
10' Type "CM2"

Known:

Q_s=	Street Flow	8.0	cfs
S_o=	Longitudinal Slope	0.0181	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	3.59	fps
D=	Flow Depth	0.43	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	0.26	
	Q_w= Frontal flow=A_w*V_s	2.09	cfs
	Q_x= Side flow = Q_s-Q_w	5.91	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.22	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	3.4	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	0.095	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)$^{0.6}$	21.22	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	3.1	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**6.4**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**1.6**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.64	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	81	%

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Drop Inlet Sizing Calculation

Project Name: V25 Sky Vista Drive Improvements Phase 1
By: Masih Edalat
Date: 02/28/2019

Drop Inlet Sizing on a Continuous Grade

DI #11.3
15' Type "CM2"

Known:

Q_s=	Street Flow	8.0	cfs
S_o=	Longitudinal Slope	0.0181	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	3.59	fps
D=	Flow Depth	0.43	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	2.09	cfs
	Q_x= Side flow = Q_s-Q_w	5.91	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.47	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	4.9	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	0.095	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)$^{0.6}$	21.22	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	4.4	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**8.0**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**0.0**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.53	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	100	%

GCW
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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.[1]	PARTIAL FLOW?	LATERAL
7	2	0.013	3546.59	3551.39	21.6	3.14	0.5	0.004925	2.23	0.077092	0.000954466	0.021	3556.74	3556.7	3556.7	No	18" LATERAL @ 405+92.68
7	2	0.013	3551.39	3552	42.39	3.14	0.5	0.004925	2.23	0.077092	0.000954466	0.040	3556.74	3556.7	3556.7	No	18" LATERAL @ 405+92.68
7	1.5	0.013	3547.81	3551.36	30.07	1.77	0.375	0.004925	3.96	0.243649	0.004422666	0.133	3558.67	3558.7	3558.7	No	18" LATERAL @ 408+48.43
16	1.5	0.013	3530.18	3531.8	14.23	1.77	0.375	0.004925	9.05	1.272944	0.023106173	0.329	3534.62	3534.6	3534.6	No	18" LATERAL @ 433+52.22
8	1.5	0.013	3531.8	3532.12	53.71	1.77	0.375	0.004925	4.53	0.318236	0.005776543	0.310	3534.62	3534.6	3534.6	No	18" LATERAL @ 433+52.22

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 (PARTIAL FLOW), assume HGL is at top of pipe.

```
                                                                  Far_Hills.WSW
T1 Far Hills Avenue RCB                                                  0
T2 Foxhill to Sky Vista
T3 Mainline
SO  21752.3803415.300  1                          3421.300
R   22095.8003427.240  1      .013                                  .000    .000 1
JX  22095.8103427.241  1  2   .013  111.000         3427.240         45.000      .000
R   22505.9903441.500  1      .013                                  .000    .000 1
R   23128.9603487.929  1      .013                                  .000    .000 1
JX  23128.9703487.930  1  4   .013  105.000         3490.430         90.0         .000
R   23166.1203490.700  1      .013                                  .000    .000 1
R   23636.2103525.800  1      .013                                  .000    .000 1
R   23836.9303536.700  1      .013                                13.180    .000 1
R   24167.4603545.780  1      .013                                  .000    .000 1
JX  24167.4703545.781  1  6  5.013  416.000  207.0003545.7803546.280 45.0-45.0    .000
R   24236.2203547.880  1      .013                                  .000    .000 1
R   24246.2203548.180  1      .013                                  .000    .000 1
SH  24246.2203548.180  1                          3548.180
CD   1  3   0    .000   6.000    8.000  .000  .000   .00
CD   2  4   1    .000   3.500     .000  .000  .000   .00
CD   3  4   1    .000   2.000     .000  .000  .000   .00
CD   4  4   1    .000   3.000     .000  .000  .000   .00
CD   5  4   1    .000   5.500     .000  .000  .000   .00
CD   6  3   0    .000   6.000    6.000  .000  .000   .00
Q            78.000   .0
```

FILE: Far_Hills.WSW W S P G W - EDIT LISTING - Version 14.10 Date: 4- 3-2019 Time: 1:23:16

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

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	3	0	.000	6.000	8.000	.000	.000	.00										
CD	2	4	1		3.500														
CD	3	4	1		2.000														
CD	4	4	1		3.000														
CD	5	4	1		5.500														
CD	6	3	0	.000	6.000	6.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
Far Hills Avenue RCB
HEADING LINE NO 2 IS -
Foxhill to Sky Vista
HEADING LINE NO 3 IS -
Mainline

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	21752.380	3415.300	1	3421.300

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	22095.800	3427.240	1	.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
	22095.810	3427.241	1	2	0	.013	111.000	.000	3427.240	.000	45.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	22505.990	3441.500	1	.013	.000	.000	.000	1

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	23128.960	3487.929	1	.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
	23128.970	3487.930	1	4	0	.013	105.000	.000	3490.430	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	23166.120	3490.700	1	.013	.000	.000	.000	1

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	23636.210	3525.800	1	.013	.000	.000	.000	1

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	23836.930	3536.700	1	.013	872.560	13.180	.000	1

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	24167.460	3545.780	1	.013	.000	.000	.000	1

W S P G W PAGE NO 3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 11 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	24167.470	3545.781	1	6	5	.013	416.000	207.000	3545.780	3546.280	45.000	-45.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 12 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	24236.220	3547.880	1	.013	.000	.000	.000	1

ELEMENT NO 13 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	24246.220	3548.180	1	.013	.000	.000	.000	1

ELEMENT NO 14 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	24246.220	3548.180	1	3548.180

Far Hills Avenue RCB
Foxhill to Sky Vista
Mainline

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
21752.380	3415.300	3.628	3418.928	917.00	31.60	15.50	3434.43	.00	6.00	8.00	6.000	8.000	.00	0 .0
119.896	.0348					.0319	3.82	3.63	2.92	3.53	.013	.00	.00	BOX
21872.280	3419.469	3.675	3423.143	917.00	31.19	15.11	3438.25	.00	6.00	8.00	6.000	8.000	.00	0 .0
223.523	.0348					.0294	6.58	3.67	2.87	3.53	.013	.00	.00	BOX
22095.800	3427.240	3.854	3431.094	917.00	29.74	13.73	3444.83	.00	6.00	8.00	6.000	8.000	.00	0 .0
JUNCT STR	.1000					.0349	.00	3.85	2.67		.013	.00	.00	BOX
22095.810	3427.241	2.995	3430.236	806.00	33.64	17.58	3447.81	.00	6.00	8.00	6.000	8.000	.00	0 .0
153.041	.0348					.0452	6.92	2.99	3.43	3.22	.013	.00	.00	BOX
22248.850	3432.561	2.856	3435.417	806.00	35.27	19.32	3454.74	.00	6.00	8.00	6.000	8.000	.00	0 .0
106.711	.0348					.0516	5.51	2.86	3.68	3.22	.013	.00	.00	BOX
22355.560	3436.271	2.723	3438.994	806.00	37.00	21.25	3460.25	.00	6.00	8.00	6.000	8.000	.00	0 .0
82.545	.0348					.0590	4.87	2.72	3.95	3.22	.013	.00	.00	BOX
22438.110	3439.140	2.597	3441.737	806.00	38.80	23.38	3465.11	.00	6.00	8.00	6.000	8.000	.00	0 .0
67.883	.0348					.0674	4.58	2.60	4.24	3.22	.013	.00	.00	BOX
22505.990	3441.500	2.476	3443.976	806.00	40.69	25.72	3469.69	.00	6.00	8.00	6.000	8.000	.00	0 .0
183.379	.0745					.0704	12.91	2.48	4.56	2.44	.013	.00	.00	BOX
22689.370	3455.167	2.515	3457.682	806.00	40.06	24.92	3482.60	.00	6.00	8.00	6.000	8.000	.00	0 .0
213.748	.0745					.0645	13.79	2.51	4.45	2.44	.013	.00	.00	BOX

Far Hills Avenue RCB
Foxhill to Sky Vista
Mainline

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
22903.120	3471.097	2.638	3473.735	806.00	38.20	22.65	3496.39	.00	6.00	8.00	6.000	8.000	.00	0 .0
106.715	.0745					.0564	6.02	2.64	4.14	2.44	.013	.00	.00	BOX
23009.830	3479.051	2.766	3481.817	806.00	36.42	20.59	3502.41	.00	6.00	8.00	6.000	8.000	.00	0 .0
69.170	.0745					.0494	3.42	2.77	3.86	2.44	.013	.00	.00	BOX
23079.000	3484.206	2.901	3487.107	806.00	34.72	18.72	3505.83	.00	6.00	8.00	6.000	8.000	.00	0 .0
49.961	.0745					.0433	2.16	2.90	3.59	2.44	.013	.00	.00	BOX
23128.960	3487.929	3.043	3490.972	806.00	33.11	17.02	3507.99	.00	6.00	8.00	6.000	8.000	.00	0 .0
JUNCT STR	.1000					.0556	.00	3.04	3.34		.013	.00	.00	BOX
23128.970	3487.930	2.257	3490.187	701.00	38.83	23.41	3513.60	.00	6.00	8.00	6.000	8.000	.00	0 .0
37.148	.0746					.0704	2.62	2.26	4.56	2.22	.013	.00	.00	BOX
23166.120	3490.700	2.264	3492.965	701.00	38.70	23.25	3516.22	.00	6.00	8.00	6.000	8.000	.00	0 .0
137.732	.0747					.0681	9.38	2.26	4.53	2.21	.013	.00	.00	BOX
23303.850	3500.984	2.312	3503.296	701.00	37.90	22.31	3525.60	.00	6.00	8.00	6.000	8.000	.00	0 .0
149.967	.0747					.0619	9.28	2.31	4.39	2.21	.013	.00	.00	BOX

23453.820	3512.182	2.425	3514.606	701.00	36.14	20.28	3534.89	.00	6.00	8.00	6.000	8.000	.00	0	.0	
83.828	.0747					.0541	4.53	2.42	4.09	2.21	.013	.00	.00	BOX		
23537.650	3518.441	2.543	3520.984	701.00	34.46	18.44	3539.42	.00	6.00	8.00	6.000	8.000	.00	0	.0	
56.695	.0747					.0473	2.68	2.54	3.81	2.21	.013	.00	.00	BOX		

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 3-2019 Time: 1:23:22

Far Hills Avenue RCB
Foxhill to Sky Vista
Mainline

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
23594.340	3522.674	2.667	3525.341	701.00	32.85	16.76	3542.10	.00	6.00	8.00	6.000	8.000	.00	0	.0	
41.869	.0747					.0414	1.73	2.67	3.55	2.21	.013	.00	.00	BOX		
23636.210	3525.800	2.797	3528.598	701.00	31.32	15.24	3543.83	.28	6.00	8.00	6.000	8.000	.00	0	.0	
44.174	.0543					.0372	1.64	3.08	3.30	2.48	.013	.00	.00	BOX		
23680.380	3528.199	2.877	3531.076	701.00	30.45	14.40	3545.48	.26	6.00	8.00	6.000	8.000	.00	0	.0	
56.227	.0543					.0335	1.88	3.14	3.16	2.48	.013	.00	.00	BOX		
23736.610	3531.252	3.018	3534.270	701.00	29.04	13.09	3547.36	.24	6.00	8.00	6.000	8.000	.00	0	.0	
41.854	.0543					.0294	1.23	3.26	2.95	2.48	.013	.00	.00	BOX		
23778.460	3533.525	3.165	3536.690	701.00	27.69	11.90	3548.59	.22	6.00	8.00	6.000	8.000	.00	0	.0	
32.520	.0543					.0258	.84	3.38	2.74	2.48	.013	.00	.00	BOX		
23810.980	3535.291	3.319	3538.611	701.00	26.40	10.82	3549.43	.20	6.00	8.00	6.000	8.000	.00	0	.0	
25.947	.0543					.0226	.59	3.52	2.55	2.48	.013	.00	.00	BOX		
23836.930	3536.700	3.482	3540.182	701.00	25.17	9.84	3550.02	.00	6.00	8.00	6.000	8.000	.00	0	.0	
45.873	.0275					.0206	.95	3.48	2.38	3.16	.013	.00	.00	BOX		
23882.800	3537.960	3.552	3541.512	701.00	24.67	9.45	3550.96	.00	6.00	8.00	6.000	8.000	.00	0	.0	
79.568	.0275					.0189	1.50	3.55	2.31	3.16	.013	.00	.00	BOX		
23962.370	3540.146	3.725	3543.871	701.00	23.52	8.59	3552.46	.00	6.00	8.00	6.000	8.000	.00	0	.0	
55.041	.0275					.0166	.91	3.72	2.15	3.16	.013	.00	.00	BOX		

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 3-2019 Time: 1:23:22

Far Hills Avenue RCB
Foxhill to Sky Vista
Mainline

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
24017.410	3541.658	3.907	3545.565	701.00	22.43	7.81	3553.38	.00	6.00	8.00	6.000	8.000	.00	0	.0	
40.350	.0275					.0146	.59	3.91	2.00	3.16	.013	.00	.00	BOX		
24057.760	3542.767	4.097	3546.864	701.00	21.39	7.10	3553.97	.00	6.00	8.00	6.000	8.000	.00	0	.0	
30.498	.0275					.0129	.39	4.10	1.86	3.16	.013	.00	.00	BOX		
24088.260	3543.604	4.297	3547.902	701.00	20.39	6.46	3554.36	.00	6.00	8.00	6.000	8.000	.00	0	.0	
23.377	.0275					.0113	.27	4.30	1.73	3.16	.013	.00	.00	BOX		
24111.640	3544.247	4.507	3548.754	701.00	19.44	5.87	3554.62	.00	6.00	8.00	6.000	8.000	.00	0	.0	
17.951	.0275					.0100	.18	4.51	1.61	3.16	.013	.00	.00	BOX		
24129.590	3544.740	4.727	3549.467	701.00	18.54	5.34	3554.80	.00	6.00	8.00	6.000	8.000	.00	0	.0	
13.645	.0275					.0088	.12	4.73	1.50	3.16	.013	.00	.00	BOX		
24143.230	3545.115	4.958	3550.072	701.00	17.67	4.85	3554.92	.00	6.00	8.00	6.000	8.000	.00	0	.0	

```
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
   10.117    .0275                                          .0078      .08     4.96    1.40    3.16    .013       .00   .00  BOX
         |         |        |         |         |              |         |       |        |        |       |       |      |
24153.350  3545.392    5.200  3550.592    701.00   16.85    4.41  3555.00     .00    6.00    8.00    6.000    8.000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
    7.150    .0275                                          .0069      .05     5.20    1.30    3.16    .013       .00   .00  BOX
         |         |        |         |         |              |         |       |        |        |       |       |      |
24160.500  3545.589    5.454  3551.042    701.00   16.07    4.01  3555.05     .00    6.00    8.00    6.000    8.000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
    4.598    .0275                                          .0061      .03     5.45    1.21    3.16    .013       .00   .00  BOX
                      -------------------- WARNING - Flow depth near top of box conduit --------------------
↑ FILE: Far_Hills.WSW                        W S P G W - CIVILDESIGN Version 14.08                                    PAGE    5
                              Program Package Serial Number: 3074
                                                  WATER SURFACE PROFILE LISTING                    Date: 4- 3-2019  Time: 1:23:22
                        Far Hills Avenue RCB
                          Foxhill to Sky Vista
                            Mainline
******************************************************************************************************************** ********
         | 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
*********|*********|********|*********|*********|*******|*******|*********|*******|********|********|*******|*******|*****|*******
         |         |        |         |         |              |         |       |        |        |       |       |      |
24165.100  3545.715    5.720  3551.435    701.00   15.32    3.64  3555.08     .00    6.00    8.00    6.000    8.000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
    2.361    .0275                                          .0054      .01     5.72    1.13    3.16    .013       .00   .00  BOX
                      -------------------- WARNING - Flow depth near top of box conduit --------------------
         |         |        |         |         |              |         |       |        |        |       |       |      |
24167.460  3545.780    6.000  3551.780    701.00   14.60    3.31  3555.09     .00    6.00    8.00    6.000    8.000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
JUNCT STR   .1000                                          .0001      .00    6.00    1.05            .013       .00   .00  BOX
                      -------------------- WARNING - Flow depth near top of box conduit --------------------
         |         |        |         |         |              |         |       |        |        |       |       |      |
24167.470  3545.781    9.516  3555.297     78.00    1.63     .04  3555.34     .00    1.43    8.00    6.000    8.000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
   68.750    .0305                                          .0001      .01     9.52     .12     .69    .013       .00   .00  BOX
         |         |        |         |         |              |         |       |        |        |       |       |      |
24236.220  3547.880    7.426  3555.306     78.00    1.63     .04  3555.35     .00    1.43    8.00    6.000    8.000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
   10.000    .0300                                          .0001      .00     7.43     .12     .70    .013       .00   .00  BOX
         |         |        |         |         |              |         |       |        |        |       |       |      |
24246.220  3548.180    7.129  3555.309     78.00    1.63     .04  3555.35     .00    1.43    8.00    6.000    8.000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
↑
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T1 Far Hills Avenue RCB Interim Condition                                                0
T2 Foxhill to Sky Vista
T3 Mainline
SO  21752.3803415.300  1                          3421.300
R   22095.8003427.240  1      .013                                  .000    .000 1
JX  22095.8103427.241  1  2   .013  111.000         3427.240         45.000      .000
R   22505.9903441.500  1      .013                                  .000    .000 1
R   23128.9603487.929  1      .013                                  .000    .000 1
JX  23128.9703487.930  1  4   .013  105.000         3490.430         90.0         .000
R   23166.1203490.700  1      .013                                  .000    .000 1
R   23636.2103525.800  1      .013                                  .000    .000 1
R   23836.9303536.700  1      .013                                13.180    .000 1
R   24167.4603545.780  1      .013                                  .000    .000 1
JX  24167.4703545.781  1  6  5.013   14.000  287.0003545.7803546.280 45.0-45.0    .000
R   24236.2203547.880  1      .013                                  .000    .000 1
R   24246.2203548.180  1      .013                                  .000    .000 1
R   24425.8923553.660  1      .013                                  .000    .000 1
SH  24425.8923553.660  1                          3443.760
CD   1  3   0    .000   6.000    8.000  .000  .000   .00
CD   2  4   1    .000   3.500     .000  .000  .000   .00
CD   3  4   1    .000   2.000     .000  .000  .000   .00
CD   4  4   1    .000   3.000     .000  .000  .000   .00
CD   5  4   1    .000   5.500     .000  .000  .000   .00
CD   6  3   0    .000   6.000    6.000  .000  .000   .00
Q           506.000   .0
```

FILE: Far_Hills_INT.WSW W S P G W - EDIT LISTING - Version 14.10 Date: 3-12-2019 Time:10:41:18

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

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	3	0	.000	6.000	8.000	.000	.000	.00										
CD	2	4	1		3.500														
CD	3	4	1		2.000														
CD	4	4	1		3.000														
CD	5	4	1		5.500														
CD	6	3	0	.000	6.000	6.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
Far Hills Avenue RCB Interim Condition
HEADING LINE NO 2 IS -
Foxhill to Sky Vista
HEADING LINE NO 3 IS -
Mainline

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * *

U/S DATA STATION	INVERT	SECT	W S ELEV
21752.380	3415.300	1	3421.300

ELEMENT NO 2 IS A REACH * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
22095.800	3427.240	1	.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
22095.810	3427.241	1	2	0	.013	111.000	.000	3427.240	.000	45.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 4 IS A REACH * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
22505.990	3441.500	1	.013	.000	.000	.000	1

ELEMENT NO 5 IS A REACH * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
23128.960	3487.929	1	.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
23128.970	3487.930	1	4	0	.013	105.000	.000	3490.430	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 7 IS A REACH * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
23166.120	3490.700	1	.013	.000	.000	.000	1

ELEMENT NO 8 IS A REACH * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
23636.210	3525.800	1	.013	.000	.000	.000	1

ELEMENT NO 9 IS A REACH * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
23836.930	3536.700	1	.013	872.560	13.180	.000	1

ELEMENT NO 10 IS A REACH * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
24167.460	3545.780	1	.013	.000	.000	.000	1

W S P G W PAGE NO 3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 11 IS A JUNCTION * * * * * *

U/S DATA STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
24167.470	3545.781	1	6	5	.013	14.000	287.000	3545.780	3546.280	45.000	-45.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 12 IS A REACH * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
24236.220	3547.880	1	.013	.000	.000	.000	1

ELEMENT NO 13 IS A REACH * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
24246.220	3548.180	1	.013	.000	.000	.000	1

ELEMENT NO 14 IS A REACH * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
24425.890	3553.660	1	.013	.000	.000	.000	1

ELEMENT NO 15 IS A SYSTEM HEADWORKS * *

U/S DATA STATION	INVERT	SECT	W S ELEV
24425.890	3553.660	1	3443.760

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 3-12-2019 Time:10:41:22

Far Hills Avenue RCB Interim Condition
Foxhill to Sky Vista
Mainline

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
21752.380	3415.300	3.905	3419.205	1023.00	32.75	16.65	3435.86	.00	6.00	8.00	6.000	8.000	.00	0 .0
343.420	.0348					.0313	10.77	3.90	2.92	3.83	.013	.00	.00	BOX
22095.800	3427.240	4.072	3431.312	1023.00	31.40	15.31	3446.62	.00	6.00	8.00	6.000	8.000	.00	0 .0
JUNCT STR	.1000					.0364	.00	4.07	2.74		.013	.00	.00	BOX
22095.810	3427.241	3.250	3430.491	912.00	35.08	19.11	3449.60	.00	6.00	8.00	6.000	8.000	.00	0 .0
136.129	.0348					.0458	6.24	3.25	3.43	3.52	.013	.00	.00	BOX
22231.940	3431.973	3.119	3435.092	912.00	36.55	20.75	3455.84	.00	6.00	8.00	6.000	8.000	.00	0 .0
113.242	.0348					.0518	5.87	3.12	3.65	3.52	.013	.00	.00	BOX
22345.180	3435.910	2.973	3438.883	912.00	38.34	22.82	3461.71	.00	6.00	8.00	6.000	8.000	.00	0 .0
88.094	.0348					.0591	5.21	2.97	3.92	3.52	.013	.00	.00	BOX
22433.280	3438.972	2.835	3441.807	912.00	40.21	25.11	3466.91	.00	6.00	8.00	6.000	8.000	.00	0 .0
72.715	.0348					.0675	4.91	2.84	4.21	3.52	.013	.00	.00	BOX
22505.990	3441.500	2.703	3444.203	912.00	42.17	27.62	3471.82	.00	6.00	8.00	6.000	8.000	.00	0 .0
325.928	.0745					.0679	22.12	2.70	4.52	2.67	.013	.00	.00	BOX
22831.920	3465.791	2.822	3468.613	912.00	40.39	25.33	3493.94	.00	6.00	8.00	6.000	8.000	.00	0 .0
147.377	.0745					.0598	8.82	2.82	4.24	2.67	.013	.00	.00	BOX
22979.290	3476.775	2.960	3479.735	912.00	38.51	23.03	3502.76	.00	6.00	8.00	6.000	8.000	.00	0 .0
88.262	.0745					.0524	4.63	2.96	3.94	2.67	.013	.00	.00	BOX

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 3-12-2019 Time:10:41:22

Far Hills Avenue RCB Interim Condition
Foxhill to Sky Vista
Mainline

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
23067.560	3483.353	3.105	3486.457	912.00	36.72	20.94	3507.39	.00	6.00	8.00	6.000	8.000	.00	0 .0
61.404	.0745					.0460	2.82	3.10	3.67	2.67	.013	.00	.00	BOX
23128.960	3487.929	3.256	3491.185	912.00	35.01	19.03	3510.22	.00	6.00	8.00	6.000	8.000	.00	0 .0
JUNCT STR	.1000					.0563	.00	3.26	3.42		.013	.00	.00	BOX
23128.970	3487.930	2.506	3490.436	807.00	40.25	25.16	3515.59	.00	6.00	8.00	6.000	8.000	.00	0 .0
37.148	.0746					.0693	2.57	2.51	4.48	2.45	.013	.00	.00	BOX
23166.120	3490.700	2.516	3493.216	807.00	40.10	24.97	3518.18	.00	6.00	8.00	6.000	8.000	.00	0 .0
156.070	.0747					.0663	10.34	2.52	4.46	2.45	.013	.00	.00	BOX
23322.190	3502.353	2.588	3504.942	807.00	38.97	23.58	3528.53	.00	6.00	8.00	6.000	8.000	.00	0 .0
134.328	.0747					.0596	8.01	2.59	4.27	2.45	.013	.00	.00	BOX
23456.520	3512.383	2.715	3515.098	807.00	37.16	21.44	3536.54	.00	6.00	8.00	6.000	8.000	.00	0 .0
80.889	.0747					.0522	4.22	2.71	3.97	2.45	.013	.00	.00	BOX
23537.410	3518.423	2.847	3521.270	807.00	35.43	19.49	3540.76	.00	6.00	8.00	6.000	8.000	.00	0 .0
56.436	.0747					.0457	2.58	2.85	3.70	2.45	.013	.00	.00	BOX

23593.840	3522.636	2.986	3525.623	807.00	33.78	17.72	3543.34	.00	6.00	8.00	6.000	8.000	.00	0	.0	
42.369	.0747					.0401	1.70	2.99	3.44	2.45	.013	.00	.00	BOX		
23636.210	3525.800	3.132	3528.932	807.00	32.21	16.11	3545.04	.30	6.00	8.00	6.000	8.000	.00	0	.0	
38.529	.0543					.0362	1.40	3.43	3.21	2.74	.013	.00	.00	BOX		

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 3-12-2019 Time:10:41:22

Far Hills Avenue RCB Interim Condition
Foxhill to Sky Vista
Mainline

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
23674.740	3527.892	3.210	3531.102	807.00	31.43	15.34	3546.44	.28	6.00	8.00	6.000	8.000	.00	0	.0	
57.791	.0543					.0329	1.90	3.49	3.09	2.74	.013	.00	.00	BOX		
23732.530	3531.031	3.366	3534.397	807.00	29.97	13.94	3548.34	.26	6.00	8.00	6.000	8.000	.00	0	.0	
43.400	.0543					.0289	1.25	3.62	2.88	2.74	.013	.00	.00	BOX		
23775.930	3533.387	3.531	3536.918	807.00	28.57	12.68	3549.59	.23	6.00	8.00	6.000	8.000	.00	0	.0	
33.889	.0543					.0254	.86	3.76	2.68	2.74	.013	.00	.00	BOX		
23809.820	3535.228	3.703	3538.931	807.00	27.24	11.52	3550.45	.21	6.00	8.00	6.000	8.000	.00	0	.0	
27.109	.0543					.0223	.61	3.91	2.49	2.74	.013	.00	.00	BOX		
23836.930	3536.700	3.884	3540.584	807.00	25.97	10.48	3551.06	.00	6.00	8.00	6.000	8.000	.00	0	.0	
15.057	.0275					.0207	.31	3.88	2.32	3.51	.013	.00	.00	BOX		
23851.980	3537.114	3.907	3541.021	807.00	25.82	10.35	3551.37	.00	6.00	8.00	6.000	8.000	.00	0	.0	
92.355	.0275					.0193	1.79	3.91	2.30	3.51	.013	.00	.00	BOX		
23944.340	3539.651	4.097	3543.748	807.00	24.62	9.41	3553.16	.00	6.00	8.00	6.000	8.000	.00	0	.0	
62.867	.0275					.0170	1.07	4.10	2.14	3.51	.013	.00	.00	BOX		
24007.210	3541.378	4.297	3545.675	807.00	23.47	8.56	3554.23	.00	6.00	8.00	6.000	8.000	.00	0	.0	
45.645	.0275					.0150	.69	4.30	2.00	3.51	.013	.00	.00	BOX		
24052.850	3542.632	4.507	3547.139	807.00	22.38	7.78	3554.92	.00	6.00	8.00	6.000	8.000	.00	0	.0	
34.271	.0275					.0133	.45	4.51	1.86	3.51	.013	.00	.00	BOX		

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 3-12-2019 Time:10:41:22

Far Hills Avenue RCB Interim Condition
Foxhill to Sky Vista
Mainline

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
24087.120	3543.573	4.727	3548.300	807.00	21.34	7.07	3555.37	.00	6.00	8.00	6.000	8.000	.00	0	.0	
26.141	.0275					.0117	.31	4.73	1.73	3.51	.013	.00	.00	BOX		
24113.260	3544.291	4.958	3549.249	807.00	20.35	6.43	3555.68	.00	6.00	8.00	6.000	8.000	.00	0	.0	
19.992	.0275					.0103	.21	4.96	1.61	3.51	.013	.00	.00	BOX		
24133.260	3544.840	5.200	3550.040	807.00	19.40	5.84	3555.88	.00	6.00	8.00	6.000	8.000	.00	0	.0	
15.143	.0275					.0091	.14	5.20	1.50	3.51	.013	.00	.00	BOX		
24148.400	3545.256	5.454	3550.710	807.00	18.50	5.31	3556.02	.00	6.00	8.00	6.000	8.000	.00	0	.0	
11.188	.0275					.0081	.09	5.45	1.40	3.51	.013	.00	.00	BOX		

---------- WARNING - Flow depth near top of box conduit ----------

24159.590	3545.564	5.720	3551.283	807.00	17.64	4.83	3556.11	.00	6.00	8.00	6.000	8.000	.00	0	.0	
7.875	.0275					.0091	.07	5.72	1.30	3.51	.013	.00	.00	BOX		

---------- WARNING - Flow depth near top of box conduit ----------

24167.460	3545.780	6.000	3551.780	807.00	16.81	4.39	3556.17	.00	6.00	8.00	6.000	8.000	.00	0	.0
JUNCT STR	.1000					.0041	.00	6.00	1.21		.013	.00	.00	BOX	
24167.470	3545.781	9.738	3555.519	506.00	10.54	1.73	3557.24	.00	4.99	8.00	6.000	8.000	.00	0	.0
68.750	.0305					.0041	.28	9.74	.76	2.41	.013	.00	.00	BOX	

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
24236.220	3547.880	8.010	3555.890	506.00	10.54	1.73	3557.62	.00	4.99	8.00	6.000	8.000	.00	0 .0
10.000	.0300					.0041	.04	8.01	.76	2.43	.013	.00	.00	BOX
24246.220	3548.180	7.838	3556.018	506.00	10.54	1.73	3557.74	.00	4.99	8.00	6.000	8.000	.00	0 .0
16.439	.0305					.0041	.07	7.84	.76	2.41	.013	.00	.00	BOX
24262.660	3548.681	7.412	3556.093	506.00	10.54	1.73	3557.82	.00	4.99	8.00	6.000	8.000	.00	0 .0
HYDRAULIC JUMP														
24262.660	3548.681	2.889	3551.570	506.00	21.90	7.44	3559.01	.00	4.99	8.00	6.000	8.000	.00	0 .0
21.451	.0305					.0179	.38	2.89	2.27	2.41	.013	.00	.00	BOX
24284.110	3549.335	2.954	3552.289	506.00	21.41	7.12	3559.41	.00	4.99	8.00	6.000	8.000	.00	0 .0
35.297	.0305					.0162	.57	2.95	2.20	2.41	.013	.00	.00	BOX
24319.410	3550.412	3.098	3553.510	506.00	20.42	6.47	3559.98	.00	4.99	8.00	6.000	8.000	.00	0 .0
26.906	.0305					.0142	.38	3.10	2.04	2.41	.013	.00	.00	BOX
24346.310	3551.233	3.249	3554.482	506.00	19.47	5.88	3560.37	.00	4.99	8.00	6.000	8.000	.00	0 .0
20.920	.0305					.0125	.26	3.25	1.90	2.41	.013	.00	.00	BOX
24367.230	3551.871	3.408	3555.278	506.00	18.56	5.35	3560.63	.00	4.99	8.00	6.000	8.000	.00	0 .0
16.400	.0305					.0110	.18	3.41	1.77	2.41	.013	.00	.00	BOX
24383.630	3552.371	3.574	3555.945	506.00	17.70	4.86	3560.81	.00	4.99	8.00	6.000	8.000	.00	0 .0
12.844	.0305					.0097	.12	3.57	1.65	2.41	.013	.00	.00	BOX

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
24396.480	3552.763	3.748	3556.511	506.00	16.87	4.42	3560.93	.00	4.99	8.00	6.000	8.000	.00	0 .0
9.953	.0305					.0085	.08	3.75	1.54	2.41	.013	.00	.00	BOX
24406.430	3553.066	3.931	3556.997	506.00	16.09	4.02	3561.02	.00	4.99	8.00	6.000	8.000	.00	0 .0
7.537	.0305					.0075	.06	3.93	1.43	2.41	.013	.00	.00	BOX
24413.970	3553.296	4.123	3557.419	506.00	15.34	3.65	3561.07	.00	4.99	8.00	6.000	8.000	.00	0 .0
5.477	.0305					.0066	.04	4.12	1.33	2.41	.013	.00	.00	BOX
24419.450	3553.463	4.324	3557.788	506.00	14.63	3.32	3561.11	.00	4.99	8.00	6.000	8.000	.00	0 .0
3.682	.0305					.0058	.02	4.32	1.24	2.41	.013	.00	.00	BOX
24423.130	3553.575	4.535	3558.111	506.00	13.95	3.02	3561.13	.00	4.99	8.00	6.000	8.000	.00	0 .0
2.096	.0305					.0051	.01	4.54	1.15	2.41	.013	.00	.00	BOX

```
24425.220  3553.639    4.757  3558.396    506.00   13.30    2.75  3561.14     .00    4.99     8.00    6.000    8.000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
     .670    .0305                                          .0045      .00     4.76    1.07    2.41    .013       .00   .00  BOX
         |         |        |         |         |              |         |       |        |        |       |       |      |
24425.890  3553.660    4.990  3558.650    506.00   12.68    2.49  3561.14     .00    4.99     8.00    6.000    8.000   .00   0   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
```

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T1 Sky Vista Drive Improvements Phase I (62025-203)                                                    0
T2 Far Hills to Redpoint
T3 North
SO    1000.0003526.870  4                          3526.865
R     1074.3603528.750  4      .013                                -2.710    .000 1
JX    1074.3703528.751  5  5   .013   49.00          3528.750         45.000      .000
R     1143.7103530.180  5      .013                                -1.480    .000 1
JX    1143.7203530.181  5  6   .013   16.00          3530.181        -45.000      .000
R     1422.9403533.280  5      .013                                -8.020    .000 1
R     1784.6503542.380  5      .013                                  .000  45.000 1
R     1827.8203546.700  5      .013                                  .000  45.000 1
R     1855.3303548.350  5      .013                                  .000    .000 1
SH    1855.3303548.350  5                          3557.330
CD    4  4   1    .000   4.000     .000  .000  .000   .00
CD    5  4   1    .000   3.000     .000  .000  .000   .00
CD    6  4   1    .000   1.500     .000  .000  .000   .00
Q            48.000   .0
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FILE: SkyV_North.WSW W S P G W - EDIT LISTING - Version 14.10 Date: 3-18-2019 Time: 8:10:30

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

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	4	4	1		4.000														
CD	5	4	1		3.000														
CD	6	4	1		1.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

Sky Vista Drive Improvements Phase I (62025-203)

HEADING LINE NO 2 IS -

Far Hills to Redpoint

HEADING LINE NO 3 IS -

North

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	3526.870	4	3526.865

ELEMENT NO 2 IS A REACH * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1074.360	3528.750	4	.013	1572.145	-2.710	.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
	1074.370	3528.751	5	5	0	.013	49.000	.000	3528.750	.000	45.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 4 IS A REACH * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1143.710	3530.180	5	.013	2684.384	-1.480	.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
	1143.720	3530.181	5	6	0	.013	16.000	.000	3530.181	.000	-45.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A REACH * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1422.940	3533.280	5	.013	1994.779	-8.020	.000	1

ELEMENT NO 7 IS A REACH * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1784.650	3542.380	5	.013	.000	.000	45.000	1

ELEMENT NO 8 IS A REACH * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1827.820	3546.700	5	.013	.000	.000	45.000	1

ELEMENT NO 9 IS A REACH * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1855.330	3548.350	5	.013	.000	.000	.000	1

ELEMENT NO 10 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1855.330	3548.350	5	3557.330

WATER SURFACE PROFILE - ELEMENT CARD LISTING

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 3-18-2019 Time: 8:10:33

Sky Vista Drive Improvements Phase I (62025-203)
Far Hills to Redpoint
North

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	3526.870	2.289	3529.159	113.00	15.20	3.59	3532.74	.02	3.21	3.96	4.000	.000	.00	1 .0
19.517	.0253					.0151	.29	2.31	1.95	1.99	.013	.00	.00	PIPE
1019.517	3527.363	2.366	3529.729	113.00	14.60	3.31	3533.04	.02	3.21	3.93	4.000	.000	.00	1 .0
17.287	.0253					.0135	.23	2.38	1.83	1.99	.013	.00	.00	PIPE
1036.804	3527.800	2.463	3530.263	113.00	13.92	3.01	3533.27	.01	3.21	3.89	4.000	.000	.00	1 .0
12.864	.0253					.0120	.15	2.48	1.70	1.99	.013	.00	.00	PIPE
1049.668	3528.125	2.565	3530.691	113.00	13.27	2.73	3533.43	.01	3.21	3.84	4.000	.000	.00	1 .0
9.513	.0253					.0106	.10	2.58	1.57	1.99	.013	.00	.00	PIPE
1059.181	3528.366	2.674	3531.040	113.00	12.65	2.49	3533.53	.01	3.21	3.77	4.000	.000	.00	1 .0
6.816	.0253					.0094	.06	2.69	1.45	1.99	.013	.00	.00	PIPE
1065.997	3528.538	2.792	3531.330	113.00	12.06	2.26	3533.59	.01	3.21	3.67	4.000	.000	.00	1 .0
4.711	.0253					.0084	.04	2.80	1.33	1.99	.013	.00	.00	PIPE
1070.708	3528.657	2.918	3531.576	113.00	11.50	2.05	3533.63	.01	3.21	3.55	4.000	.000	.00	1 .0
2.748	.0253					.0075	.02	2.93	1.22	1.99	.013	.00	.00	PIPE
1073.457	3528.727	3.056	3531.783	113.00	10.97	1.87	3533.65	.01	3.21	3.40	4.000	.000	.00	1 .0
.903	.0253					.0068	.01	3.06	1.11	1.99	.013	.00	.00	PIPE
1074.360	3528.750	3.210	3531.960	113.00	10.45	1.70	3533.66	.00	3.21	3.18	4.000	.000	.00	1 .0
JUNCT STR	.0976					.0078	.00	3.21	1.00		.013	.00	.00	PIPE

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 3-18-2019 Time: 8:10:33

Sky Vista Drive Improvements Phase I (62025-203)
Far Hills to Redpoint
North

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1074.370	3528.751	4.466	3533.217	64.00	9.05	1.27	3534.49	.00	2.57	.00	3.000	.000	.00	1 .0
69.340	.0206					.0092	.64	.00	.00	1.79	.013	.00	.00	PIPE
1143.710	3530.180	3.771	3533.951	64.00	9.05	1.27	3535.22	.00	2.57	.00	3.000	.000	.00	1 .0
JUNCT STR	.0976					.0072	.00	.00	.00		.013	.00	.00	PIPE
1143.720	3530.181	4.434	3534.615	48.00	6.79	.72	3535.33	.00	2.26	.00	3.000	.000	.00	1 .0
225.849	.0111					.0052	1.17	.00	.00	1.82	.013	.00	.00	PIPE
1369.569	3532.688	3.162	3535.850	48.00	6.79	.72	3536.57	.00	2.26	.00	3.000	.000	.00	1 .0
HYDRAULIC JUMP														
1369.569	3532.688	1.547	3534.235	48.00	13.06	2.65	3536.88	.01	2.26	3.00	3.000	.000	.00	1 .0
11.504	.0111					.0191	.22	1.56	2.08	1.82	.013	.00	.00	PIPE
1381.073	3532.815	1.523	3534.339	48.00	13.31	2.75	3537.09	.01	2.26	3.00	3.000	.000	.00	1 .0
22.214	.0111					.0210	.47	1.53	2.14	1.82	.013	.00	.00	PIPE
1403.287	3533.062	1.467	3534.529	48.00	13.96	3.03	3537.56	.01	2.26	3.00	3.000	.000	.00	1 .0
19.653	.0111					.0238	.47	1.48	2.30	1.82	.013	.00	.00	PIPE

1422.940	3533.280	1.414	3534.695	48.00	14.64	3.33	3538.02	.00	2.26	3.00	3.000	.000	.00	1	.0		
93.399	.0252					.0256	2.39	1.41	2.47	1.42	.013	.00	.00	PIPE			
1516.339	3535.630	1.406	3537.036	48.00	14.75	3.38	3540.41	.00	2.26	2.99	3.000	.000	.00	1	.0		
116.850	.0252					.0276	3.23	1.41	2.49	1.42	.013	.00	.00	PIPE			

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 3-18-2019 Time: 8:10:33

Sky Vista Drive Improvements Phase I (62025-203)
Far Hills to Redpoint
North

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
1633.189	3538.570	1.355	3539.925	48.00	15.47	3.72	3543.64	.00	2.26	2.99	3.000	.000	.00	1	.0
51.752	.0252					.0314	1.63	1.36	2.67	1.42	.013	.00	.00	PIPE	
1684.941	3539.872	1.307	3541.179	48.00	16.23	4.09	3545.27	.00	2.26	2.98	3.000	.000	.00	1	.0
34.220	.0252					.0358	1.22	1.31	2.87	1.42	.013	.00	.00	PIPE	
1719.161	3540.732	1.261	3541.993	48.00	17.02	4.50	3546.49	.00	2.26	2.96	3.000	.000	.00	1	.0
26.011	.0252					.0407	1.06	1.26	3.07	1.42	.013	.00	.00	PIPE	
1745.172	3541.387	1.216	3542.603	48.00	17.85	4.95	3547.55	.00	2.26	2.95	3.000	.000	.00	1	.0
21.323	.0252					.0464	.99	1.22	3.29	1.42	.013	.00	.00	PIPE	
1766.495	3541.923	1.174	3543.097	48.00	18.72	5.44	3548.54	.00	2.26	2.93	3.000	.000	.00	1	.0
18.155	.0252					.0529	.96	1.17	3.53	1.42	.013	.00	.00	PIPE	
1784.650	3542.380	1.133	3543.513	48.00	19.63	5.99	3549.50	.00	2.26	2.91	3.000	.000	.00	1	.0
9.359	.1001					.0533	.50	1.13	3.77	.97	.013	.00	.00	PIPE	
1794.009	3543.317	1.168	3544.485	48.00	18.85	5.51	3550.00	.00	2.26	2.93	3.000	.000	.00	1	.0
8.694	.1001					.0472	.41	1.17	3.56	.97	.013	.00	.00	PIPE	
1802.704	3544.187	1.210	3545.397	48.00	17.97	5.01	3550.41	.00	2.26	2.94	3.000	.000	.00	1	.0
7.025	.1001					.0415	.29	1.21	3.32	.97	.013	.00	.00	PIPE	
1809.728	3544.890	1.254	3546.144	48.00	17.13	4.56	3550.70	.00	2.26	2.96	3.000	.000	.00	1	.0
5.785	.1001					.0364	.21	1.25	3.10	.97	.013	.00	.00	PIPE	

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 3-18-2019 Time: 8:10:33

Sky Vista Drive Improvements Phase I (62025-203)
Far Hills to Redpoint
North

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
1815.513	3545.469	1.300	3546.769	48.00	16.33	4.14	3550.91	.00	2.26	2.97	3.000	.000	.00	1	.0
4.827	.1001					.0320	.15	1.30	2.90	.97	.013	.00	.00	PIPE	
1820.340	3545.951	1.348	3547.300	48.00	15.57	3.77	3551.07	.00	2.26	2.98	3.000	.000	.00	1	.0
4.050	.1001					.0281	.11	1.35	2.70	.97	.013	.00	.00	PIPE	
1824.390	3546.357	1.399	3547.756	48.00	14.85	3.42	3551.18	.00	2.26	2.99	3.000	.000	.00	1	.0
3.430	.1001					.0247	.08	1.40	2.52	.97	.013	.00	.00	PIPE	
1827.820	3546.700	1.452	3548.152	48.00	14.16	3.11	3551.26	.00	2.26	3.00	3.000	.000	.00	1	.0
5.387	.0600					.0219	.12	1.45	2.35	1.11	.013	.00	.00	PIPE	
1833.207	3547.023	1.501	3548.524	48.00	13.57	2.86	3551.38	.00	2.26	3.00	3.000	.000	.00	1	.0
5.001	.0600					.0194	.10	1.50	2.20	1.11	.013	.00	.00	PIPE	
1838.208	3547.323	1.558	3548.881	48.00	12.94	2.60	3551.48	.00	2.26	3.00	3.000	.000	.00	1	.0

4.088	.0600					.0171	.07	1.56	2.05	1.11	.013	.00	.00	PIPE			
1842.297	3547.568	1.619	3549.188	48.00	12.33	2.36	3551.55	.00	2.26	2.99	3.000	.000	.00	1	.0		
3.381	.0600					.0151	.05	1.62	1.91	1.11	.013	.00	.00	PIPE			
1845.678	3547.771	1.682	3549.453	48.00	11.76	2.15	3551.60	.00	2.26	2.98	3.000	.000	.00	1	.0		
2.728	.0600					.0133	.04	1.68	1.77	1.11	.013	.00	.00	PIPE			
1848.405	3547.935	1.750	3549.685	48.00	11.21	1.95	3551.64	.00	2.26	2.96	3.000	.000	.00	1	.0		
2.230	.0600					.0118	.03	1.75	1.64	1.11	.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 or "N"	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall	ZR	Type Ch
1850.636	3548.069	1.820	3549.889	48.00	10.69	1.77	3551.66	.00	2.26	2.93	3.000	.000	.00	1	.0		
1.723	.0600					.0104	.02	1.82	1.52	1.11	.013	.00	.00	PIPE			
1852.358	3548.172	1.896	3550.068	48.00	10.19	1.61	3551.68	.00	2.26	2.89	3.000	.000	.00	1	.0		
1.315	.0600					.0093	.01	1.90	1.41	1.11	.013	.00	.00	PIPE			
1853.673	3548.251	1.976	3550.227	48.00	9.72	1.47	3551.69	.00	2.26	2.84	3.000	.000	.00	1	.0		
.934	.0600					.0082	.01	1.98	1.30	1.11	.013	.00	.00	PIPE			
1854.607	3548.307	2.061	3550.368	48.00	9.27	1.33	3551.70	.00	2.26	2.78	3.000	.000	.00	1	.0		
.536	.0600					.0073	.00	2.06	1.20	1.11	.013	.00	.00	PIPE			
1855.143	3548.339	2.154	3550.493	48.00	8.84	1.21	3551.71	.00	2.26	2.70	3.000	.000	.00	1	.0		
.187	.0600					.0066	.00	2.15	1.10	1.11	.013	.00	.00	PIPE			
1855.330	3548.350	2.255	3550.605	48.00	8.42	1.10	3551.71	.00	2.26	2.59	3.000	.000	.00	1	.0		

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T1 Sky Vista Drive Improvements Phase I (62025-203)                                                    0
T2 Far Hills to Redpoint
T3 Lateral at 433+94.66
SO   1000.0003528.750  1                          3533.217
R    1033.7803529.760  1      .013                                .000  45.000 1
R    1068.7803530.810  1      .013                                .000    .000 1
SH   1068.7803530.810  1                          3530.810
CD   1  4   1    .000   3.000     .000  .000  .000   .00
Q            49.000   .0
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FILE: Lat_433_94_66.WSW W S P G W - EDIT LISTING - Version 14.10 Date: 3-18-2019 Time: 8:23:12

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

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	1		3.000														

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
Sky Vista Drive Improvements Phase I (62025-203)
HEADING LINE NO 2 IS -
Far Hills to Redpoint
HEADING LINE NO 3 IS -
Lateral at 433+94.66

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	3528.750	1	3533.217

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1033.780	3529.760	1	.013	.000	.000	45.000	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1068.780	3530.810	1	.013	.000	.000	.000	1

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1068.780	3530.810	1	3530.810

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 3-18-2019 Time: 8:23:15

Sky Vista Drive Improvements Phase I (62025-203)
Far Hills to Redpoint
Lateral at 433+94.66

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	3528.750	4.467	3533.217	49.00	6.93	.75	3533.96	.00	2.28	.00	3.000	.000	.00	1 .0
33.780	.0299				.0054	.18	4.47	.00	1.37	.013		.00	.00	PIPE
1033.780	3529.760	3.787	3533.547	49.00	6.93	.75	3534.29	.00	2.28	.00	3.000	.000	.00	1 .0
33.454	.0300				.0054	.18	3.79	.00	1.36	.013		.00	.00	PIPE
1067.234	3530.764	3.000	3533.764	49.00	6.93	.75	3534.51	.00	2.28	.00	3.000	.000	.00	1 .0
1.546	.0300				.0051	.01	3.00	.00	1.36	.013		.00	.00	PIPE
1068.780	3530.810	2.956	3533.767	49.00	6.95	.75	3534.52	.00	2.28	.72	3.000	.000	.00	1 .0

```
T1 Sky Vista Drive Improvements Phase I (62025-203)                                                    0
T2 Far Hills to Redpoint
T3 South
SO   1000.0003545.380  1                          3555.297
R    1008.8503545.574  1      .013                                    .000    .000 1
R    1036.8003546.170  1      .013                                  42.140    .000 1
R    1120.7203546.590  1      .013                                    .000    .000 1
JX   1120.7303546.591  1  2   .013    7.00          3546.590         -45.000      .000
R    1183.6303546.909  1      .013                                    .000    .000 1
JX   1183.6403546.910  1  2   .013   25.00          3546.910          45.000      .000
R    1363.0403547.809  1      .013                                    .000    .000 1
JX   1363.0503547.810  1  2   .013    7.00          3547.810          45.000      .000
R    1714.9303549.569  1      .013                                    .000    .000 1
JX   1714.9403549.570  1  2   .013   20.00          3552.570          45.000      .000
R    1903.0303550.509  1      .013                                    .000    .000 1
JX   1903.0403550.510  1  3   .013   49.00          3553.510          45.000      .000
R    2151.8403551.750  1      .013                                    .000    .000 1
R    2398.8403552.990  1      .013                                    .000    .000 1
R    2515.8003553.569  1      .013                                   5.500    .000 1
JX   2515.8103553.570  4      .013                                       .000      .000
R    2515.8203553.571  4      .013                                    .000 -45.000 1
R    2554.2803555.560  4      .013                                    .000 -45.000 1
R    2588.5003557.330  4      .013                                    .000    .000 1
SH   2588.5003557.330  4                        3557.330
CD   1  3   0    .000   6.000    6.000  .000  .000   .00
CD   2  4   1    .000   2.000     .000  .000  .000   .00
CD   3  4   1    .000   2.500     .000  .000  .000   .00
CD   4  4   1    .000   4.000     .000  .000  .000   .00
CD   5  4   1    .000   1.500     .000  .000  .000   .00
Q           308.000   .0
```

FILE: SkyV_South.WSW W S P G W - EDIT LISTING - Version 14.10 Date: 4- 3-2019 Time: 1:27:31

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

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	3	0	.000	6.000	6.000	.000	.000	.00										
CD	2	4	1		2.000														
CD	3	4	1		2.500														
CD	4	4	1		4.000														
CD	5	4	1		1.500														

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
Sky Vista Drive Improvements Phase I (62025-203)

HEADING LINE NO 2 IS -
Far Hills to Redpoint

HEADING LINE NO 3 IS -
South

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	3545.380	1	3555.297

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1008.850	3545.574	1	.013	.000	.000	.000	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1036.800	3546.170	1	.013	38.002	42.140	.000	1

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1120.720	3546.590	1	.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
	1120.730	3546.591	1	2	0	.013	7.000	.000	3546.590	.000	-45.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1183.630	3546.909	1	.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
	1183.640	3546.910	1	2	0	.013	25.000	.000	3546.910	.000	45.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1363.040	3547.809	1	.013	.000	.000	.000	1

ELEMENT NO 9 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1363.050	3547.810	1	2	0	.013	7.000	.000	3547.810	.000	45.000	.000

RADIUS	ANGLE
.000	.000

W S P G W PAGE NO 3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1714.930	3549.569	1	.013	.000	.000	.000	1

ELEMENT NO 11 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1714.940	3549.570	1	2	0	.013	20.000	.000	3552.570	.000	45.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 12 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1903.030	3550.509	1	.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
	1903.040	3550.510	1	3	0	.013	49.000	.000	3553.510	.000	45.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 14 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2151.840	3551.750	1	.013	.000	.000	.000	1

ELEMENT NO 15 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2398.840	3552.990	1	.013	.000	.000	.000	1

ELEMENT NO 16 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2515.800	3553.569	1	.013	1218.420	5.500	.000	1

ELEMENT NO 17 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2515.810	3553.570	4	0	0	.013	.000	.000	.000	.000	.000	.000

RADIUS	ANGLE
.000	.000

W S P G W PAGE NO 4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 18 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H

```
                              2515.820 3553.571    4              .013                          .000     .000   -45.000     1
ELEMENT NO  19 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              2554.280 3555.560    4              .013                          .000     .000   -45.000     1
ELEMENT NO  20 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                              2588.500 3557.330    4              .013                          .000     .000      .000     1
ELEMENT NO  21 IS A SYSTEM HEADWORKS                 *                     *
                    U/S DATA   STATION    INVERT  SECT                                  W S ELEV
                              2588.500 3557.330    4                                  3557.330
```

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	3545.380	9.917	3555.297	416.00	11.56	2.07	3557.37	.00	5.31	6.00	6.000	6.000	.00	0 .0
8.850	.0219					.0060	.05	9.92	.83	3.09	.013	.00	.00	BOX
1008.850	3545.574	9.879	3555.453	416.00	11.56	2.07	3557.53	.00	5.31	6.00	6.000	6.000	.00	0 .0
27.950	.0213					.0060	.17	.00	.83	3.13	.013	.00	.00	BOX
1036.800	3546.170	9.837	3556.007	416.00	11.56	2.07	3558.08	.00	5.31	6.00	6.000	6.000	.00	0 .0
83.920	.0050					.0060	.50	9.84	.83	5.51	.013	.00	.00	BOX
1120.720	3546.590	10.020	3556.610	416.00	11.56	2.07	3558.68	.00	5.31	6.00	6.000	6.000	.00	0 .0
JUNCT STR	.0976					.0058	.00	10.02	.83		.013	.00	.00	BOX
1120.730	3546.591	10.148	3556.739	409.00	11.36	2.00	3558.74	.00	5.25	6.00	6.000	6.000	.00	0 .0
62.900	.0051					.0058	.36	10.15	.82	5.41	.013	.00	.00	BOX
1183.630	3546.909	10.292	3557.201	409.00	11.36	2.00	3559.21	.00	5.25	6.00	6.000	6.000	.00	0 .0
JUNCT STR	.0976					.0051	.00	10.29	.82		.013	.00	.00	BOX
1183.640	3546.910	10.645	3557.555	384.00	10.67	1.77	3559.32	.00	5.03	6.00	6.000	6.000	.00	0 .0
179.400	.0050					.0051	.91	10.65	.77	5.16	.013	.00	.00	BOX
1363.040	3547.809	10.744	3558.553	384.00	10.67	1.77	3560.32	.00	5.03	6.00	6.000	6.000	.00	0 .0
JUNCT STR	.0976					.0049	.00	10.74	.77		.013	.00	.00	BOX
1363.050	3547.810	10.861	3558.671	377.00	10.47	1.70	3560.37	.00	4.97	6.00	6.000	6.000	.00	0 .0
351.880	.0050					.0049	1.72	10.86	.75	5.09	.013	.00	.00	BOX

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1714.930	3549.569	10.907	3560.477	377.00	10.47	1.70	3562.18	.00	4.97	6.00	6.000	6.000	.00	0 .0
JUNCT STR	.0988					.0044	.00	10.91	.75		.013	.00	.00	BOX
1714.940	3549.570	11.181	3560.751	357.00	9.92	1.53	3562.28	.00	4.79	6.00	6.000	6.000	.00	0 .0
188.090	.0050					.0044	.82	11.18	.71	4.88	.013	.00	.00	BOX
1903.030	3550.509	11.142	3561.652	357.00	9.92	1.53	3563.18	.00	4.79	6.00	6.000	6.000	.00	0 .0
JUNCT STR	.0976					.0033	.00	11.14	.71		.013	.00	.00	BOX
1903.040	3550.510	11.624	3562.134	308.00	8.56	1.14	3563.27	.00	4.34	6.00	6.000	6.000	.00	0 .0
248.800	.0050					.0033	.81	11.62	.62	4.34	.013	.00	.00	BOX
2151.840	3551.750	11.253	3563.003	308.00	8.56	1.14	3564.14	.00	4.34	6.00	6.000	6.000	.00	0 .0
247.000	.0050					.0033	.81	11.25	.62	4.33	.013	.00	.00	BOX
2398.840	3552.990	10.875	3563.865	308.00	8.56	1.14	3565.00	.00	4.34	6.00	6.000	6.000	.00	0 .0
116.960	.0050					.0033	.38	.00	.62	4.35	.013	.00	.00	BOX
2515.800	3553.569	10.791	3564.360	308.00	8.56	1.14	3565.50	.00	4.34	6.00	6.000	6.000	.00	0 .0
JUNCT STR	.0976							10.79	.62		.013	.00	.00	BOX

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 2515.810  3553.570    3.561  3557.131    308.00   26.07   10.55  3567.68     .00    3.97     2.50    4.000     .000   .00   1   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
     .010    .0976                                          .0409      .00     3.56    2.11    2.43    .013       .00   .00  PIPE
         |         |        |         |         |              |         |       |        |        |       |       |      |
 2515.820  3553.571    3.561  3557.132    308.00   26.07   10.55  3567.68     .00    3.97     2.50    4.000     .000   .00   1   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
HYDRAULIC DROP
↑ FILE: SkyV_South.WSW                       W S P G W - CIVILDESIGN Version 14.08                                        PAGE    3
                                Program Package Serial Number: 3074
                                                WATER SURFACE PROFILE LISTING                    Date: 4- 3-2019  Time: 1:27:36
                          Sky Vista Drive Improvements Phase I (62025-203)
                            Far Hills to Redpoint
                              South
******************************************************************************************************************** ********
         | 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
*********|*********|********|*********|*********|*******|*******|*********|*******|********|********|*******|*******|*****|*******
         |         |        |         |         |              |         |       |        |        |       |       |      |
 2515.820  3553.571    6.357  3559.928    308.00   24.51    9.33  3569.26     .00    3.97      .00    4.000     .000   .00   1   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
   38.460    .0517                                          .0460     1.77     6.36     .00    3.09    .013       .00   .00  PIPE
         |         |        |         |         |              |         |       |        |        |       |       |      |
 2554.280  3555.560    7.988  3563.548    308.00   24.51    9.33  3572.88     .00    3.97      .00    4.000     .000   .00   1   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
   34.220    .0517                                          .0460     1.57     7.99     .00    3.09    .013       .00   .00  PIPE
         |         |        |         |         |              |         |       |        |        |       |       |      |
 2588.500  3557.330    8.257  3565.588    308.00   24.51    9.33  3574.92     .00    3.97      .00    4.000     .000   .00   1   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
↑
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T1 Sky Vista Drive Improvements Phase I (62025-203)                                                  0
T2 Far Hills to Redpoint
T3 Lateral at V30-S
SO   1000.0003553.510  1                          3562.134
R    1024.6603555.780  1      .013                                  .000  45.000 1
R    1066.6603556.620  1      .013                                  .000    .000 1
SH   1066.6603556.620  1                         3556.620
CD   1  4   1    .000   2.500     .000  .000  .000   .00
Q            49.000   .0
```

FILE: V30-S.WSW W S P G W - EDIT LISTING - Version 14.10 Date: 4- 3-2019 Time: 1:46:24

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

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	1		2.500														

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
Sky Vista Drive Improvements Phase I (62025-203)
HEADING LINE NO 2 IS -
Far Hills to Redpoint
HEADING LINE NO 3 IS -
Lateral at V30-S

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	3553.510	1	3562.134

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1024.660	3555.780	1	.013	.000	.000	45.000	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1066.660	3556.620	1	.013	.000	.000	.000	1

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1066.660	3556.620	1	3556.620

Program Package Serial Number: 3074
WATER SURFACE PROFILE LISTING Date: 4- 3-2019 Time: 1:46:28
Sky Vista Drive Improvements Phase I (62025-203)
Far Hills to Redpoint
Lateral at V30-S

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	3553.510	8.624	3562.134	49.00	9.98	1.55	3563.68	.00	2.29	.00	2.500	.000	.00	1 .0
24.660	.0921					.0143	.35	8.62	.00	1.09	.013	.00	.00	PIPE
1024.660	3555.780	7.013	3562.793	49.00	9.98	1.55	3564.34	.00	2.29	.00	2.500	.000	.00	1 .0
42.000	.0200					.0143	.60	7.01	.00	1.76	.013	.00	.00	PIPE
1066.660	3556.620	6.850	3563.470	49.00	9.98	1.55	3565.02	.00	2.29	.00	2.500	.000	.00	1 .0

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T1 Sky Vista Drive Improvements Phase I (62025-203)                                                    0
T2 Far Hills to Redpoint
T3 Lateral at V30-U
SO   1000.0003552.570  1                          3560.751
R    1037.8203553.350  1      .013                                  .000  45.000 1
R    1065.8203553.630  1      .013                                  .000    .000 1
SH   1065.8203553.630  1                          3553.630
CD   1  4   1    .000   2.000     .000  .000  .000   .00
Q            20.000   .0
```

FILE: V30-U.WSW W S P G W - EDIT LISTING - Version 14.10 Date: 4- 3-2019 Time: 1:38:50

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

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	1		2.000														

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
Sky Vista Drive Improvements Phase I (62025-203)
HEADING LINE NO 2 IS -
Far Hills to Redpoint
HEADING LINE NO 3 IS -
Lateral at V30-U

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	3552.570	1	3560.751

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1037.820	3553.350	1	.013	.000	.000	45.000	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1065.820	3553.630	1	.013	.000	.000	.000	1

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1065.820	3553.630	1	3553.630

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 3-2019 Time: 1:38:56

Sky Vista Drive Improvements Phase I (62025-203)
Far Hills to Redpoint
Lateral at V30-U

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	3552.570	8.181	3560.751	20.00	6.37	.63	3561.38	.00	1.61	.00	2.000	.000	.00	1 .0
37.820	.0206				.0078	.30	8.18	.00	1.13	.013		.00	.00	PIPE
1037.820	3553.350	7.821	3561.171	20.00	6.37	.63	3561.80	.00	1.61	.00	2.000	.000	.00	1 .0
28.000	.0100				.0078	.22	7.82	.00	1.46	.013		.00	.00	PIPE
1065.820	3553.630	7.792	3561.422	20.00	6.37	.63	3562.05	.00	1.61	.00	2.000	.000	.00	1 .0

```
T1 Sky Vista Drive Improvements Phase I (62025-203)                                                    0
T2 Far Hills to Redpoint
T3 Lateral at V30-W
SO   1000.0003546.910  1                          3557.555
R    1050.6003551.920  1      .013                                    .000  45.000 1
R    1092.6003552.760  1      .013                                    .000    .000 1
SH   1092.6003552.760  1                         3552.760
CD   1  4   1    .000   2.000     .000  .000  .000   .00
Q            25.000   .0
```

FILE: V30-W.WSW W S P G W - EDIT LISTING - Version 14.10 Date: 4- 3-2019 Time: 1:31:36

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

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	1		2.000														

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
Sky Vista Drive Improvements Phase I (62025-203)
HEADING LINE NO 2 IS -
Far Hills to Redpoint
HEADING LINE NO 3 IS -
Lateral at V30-W

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	3546.910	1	3557.555

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1050.600	3551.920	1	.013	.000	.000	45.000	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1092.600	3552.760	1	.013	.000	.000	.000	1

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1092.600	3552.760	1	3552.760

Program Package Serial Number: 3074

WATER SURFACE PROFILE LISTING Date: 4- 3-2019 Time: 1:31:39

Sky Vista Drive Improvements Phase I (62025-203)
Far Hills to Redpoint
Lateral at V30-W

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip Type Ch
1000.000	3546.910	10.645	3557.555	25.00	7.96	.98	3558.54	.00	1.76	.00	2.000	.000	.00	1 .0
50.600	.0990				.0122	.62	10.65	.00	.82	.013		.00	.00	PIPE
1050.600	3551.920	6.448	3558.368	25.00	7.96	.98	3559.35	.00	1.76	.00	2.000	.000	.00	1 .0
42.000	.0200				.0122	.51	6.45	.00	1.33	.013		.00	.00	PIPE
1092.600	3552.760	6.170	3558.930	25.00	7.96	.98	3559.91	.00	1.76	.00	2.000	.000	.00	1 .0

APPENDIX B

Referenced Material and Supporting Documents

Update #1 to the FLOOD CONTROL MASTER PLAN UPDATE

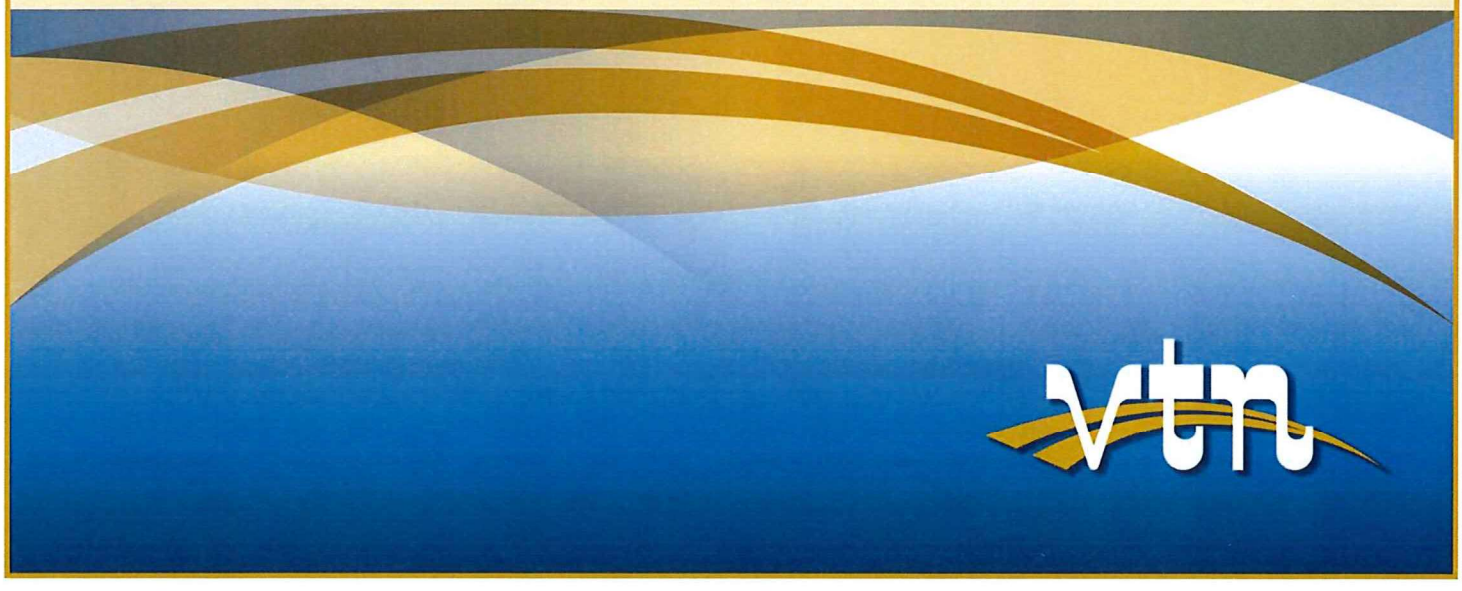
SUMMERLIN WEST PLANNING AREA

Las Vegas, Nevada

W.O. # 7809

Prepared for:
Howard Hughes Corp.

Submitted to:
Public Works Department
City of Las Vegas



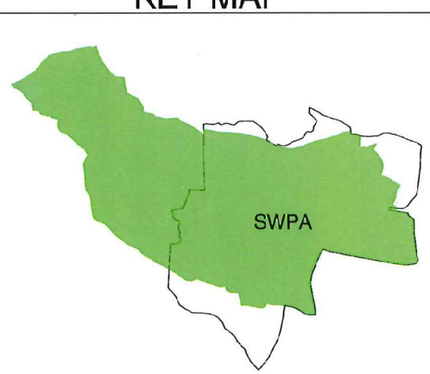
HEC-1 SUMMARY TABLE
DB5/ALTA TRIBUTARY
ULTIMATE CONDITION

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	2117	2117	0	SDN3	3-G2	83.48	82.23	1.25	295	286	9	SDN3
3-2	144.58	144.58	0	429	429	0	SDN3	3-L2	57.71	59.53	-1.82	186	178	8	SDN3
CP3.1	1567.25	1567.25	0	2172	2172	0	SDN3	CP3.8	141.19	141.76	-0.57	465	896	-431	SDN3
3-D	213.04	213.07	-0.03	614	488	126	SDN3	3-A	616.53	233.21	383.32	1255	458	797	SDN3
CP3.3	1780.29	1780.32	-0.03	2332	2319	13	SDN3	3-B	100.29	446.26	-345.97	332	853	-521	SDN3
3-3	111.16	111.16	0	392	392	0	SDN3	3-C	141.55	184.83	-43.28	389	363	26	SDN3
3-4	221.26	221.26	0	757	757	0	SDN3	CPDBA-B	858.37	864.3	-5.93	1785	1561	224	SDN3
3-5	187.91	187.91	0	625	625	0	SDN3	GPD8	858.37	864.3	-5.93	184	142	42	SDN3
CP3.2	520.33	520.33	0	1666	1666	0	SDN3	3-G1	153.84	110.4	43.44	534	476	58	SDN3
3-E	362.34	348.31	14.03	855	792	63	SDN3	CP3-G1	1012.21	974.7	37.51	650	529	121	SDN3
3-F	138.17	180.16	-41.99	476	472	4	SDN3	3-Q2	95.51	95.5	0.01	204	341	-137	SDN3
CP3.4	2601.13	2829.12	-27.99	4139	3596	543	SDN3	CP3-C2	1107.72	1070.2	37.52	840	796	44	SDN3
3-6	56.74	56.74	0	203	203	0	SDN3	3-H1	77.17	80.61	-3.44	257	295	-38	SDN3
3-7	109.69	109.69	0	423	423	0	SDN3	CP3-H1	1184.89	1150.81	34.08	1080	1053	27	SDN3
3-J	157.02	97.87	59.15	414	200	214	SDN3	3-I1	192.91	187.75	5.16	538	501	37	SDN3
CP3.5	323.45	264.3	59.15	872	689	183	SDN3	CP3.9	1518.99	1480.32	38.67	1950	2269	-319	SDN3
3-K	406.73	406.73	0	1113	1113	0	SDN3	3-H2	64.21	64.21	0	197	209	-12	SDN3
3-K	537.27	568.98	-31.71	1378	1226	152	SDN3	3-I2	74.15	75.83	-1.68	211	201	10	SDN3
CP3.6	1269.45	1242.01	27.44	3188	2804	384	SDN3	CP3.10A	134.36	140.04	-1.68	398	406	-8	SDN3
3-H	290.9	290.04	0.86	747	681	66	SDN3	CP3.10	1657.35	1620.36	36.99	2300	2626	-326	SDN3
3-M	149.46	123.16	26.3	485	362	123	SDN3	3-O	51.51	55.79	-4.28	187	182	5	SDN3
CPDB5	4510.94	4484.33	26.61	7787	6857	930	SDN3	3-P2	0	55.73	-55.73	0	155	-155	SDN3
DB5	4510.94	4484.33	26.61	2148	2137	11	SDN3	3-P1	119.43	85.52	33.91	419	283	136	SDN3
3-L	150.92	152.22	-1.3	486	396	90	SDN3	CP3-P	170.94	141.31	29.63	596	612	-16	SDN3
CP3-L	4661.66	4636.55	25.31	2221	2206	15	SDN3	3-Q	65.66	65.66	0	202	197	5	SDN3
RCSWAA-1	4661.66	4636.55	25.31	2220	2205	15	SDN3	CP3-Q	236.6	206.97	29.63	779	804	-25	SDN3
SWAA-2	448	449	-1	948	948	0	SDN3	3-H3	89.8	89.8	0	252	256	-4	SDN3
CSWAA-2	5109.66	5085.55	24.31	2884	2838	46	SDN3	CP3.11	326.4	296.77	29.63	3190	3515	-325	SDN3
SWAA-3	371.2	372.2	-1	668	668	0	SDN3	ANGLPKIN	14553.6	14451.2	102.4	8951	6875	76	SDN5
CSWAA-3	5481.06	5457.75	23.31	3121	3074	47	SDN4	ANGLPKDB	14553.6	14451.2	102.4	877	405	472	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



PROJECT SITE

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

NORTH

REV	DATE	BY	REVISION
ADD'N #1	6/2017	JYA	

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

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

2018 UPDATE TO SUMMERLIN WEST PLANNING AREA

A.6.3
DB5/Alta Tributary

DRAWN BY:	DESIGNED BY:	CHECKED BY:	PROJECT NO:	SCALE:	HORIZ.	VERT.
PLM			7369	1"=1000'		

11/2018

SHEET
A.6.3
OF SHEETS
DRAWING NO.

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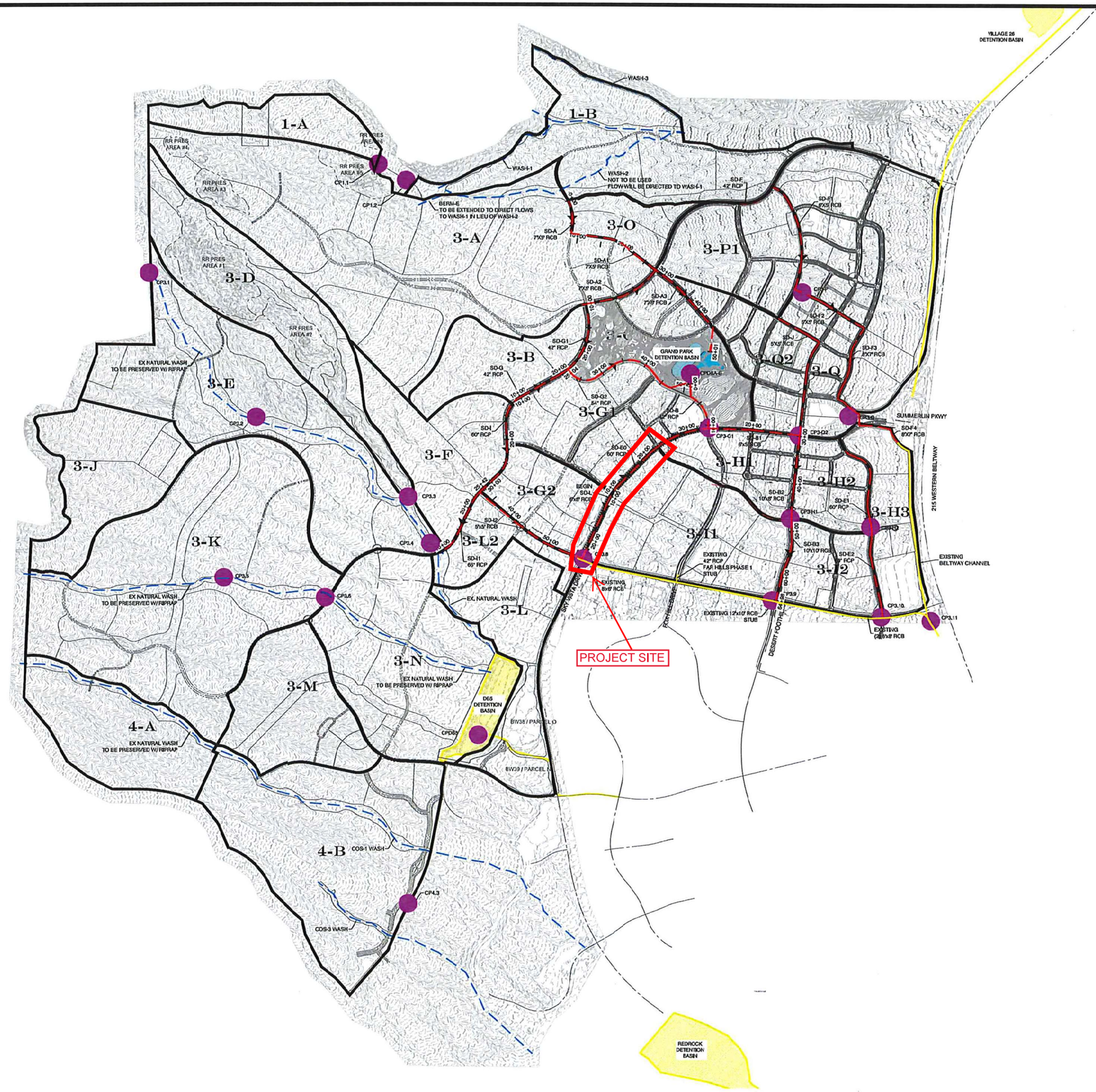



GRAPHIC SCALE

1000 0 500 1000 2000

1" = 1000'

REGIONAL FLOOD CONTROL FACILITY SUMMARY TABLE						
Designation	Q (cfs)	Basin/CP	Size	Type	Velocity	Remarks
SD-A	627.5	1/2 3-A	7'x5'	RCB	19.93	
SD-A1	627.5	1/2 3-A	7'x5'	RCB	29.18	
SD-A2	627.5	1/2 3-A	7'x5'	RCB	29.18	
SD-A3	1255	3-A	7'x6'	RCB	37.73	
SD-B	184	GPDB	42"	RCP	24.97	
SD-B0	534	3-G1	60"	RCP	30.19	
SD-B1	650	CP3-G1	6'x5'	RCB	28.67	
SD-B2	1080	CP3-H1	10'x8'	RCB	24.66	Reference 2
SD-B3	1618	CP3-H1, 3-I1	10'x10'	RCB	24.39	Reference 1
SD-J	204	3-Q2	5'x5'	RCB	9.50	
SD-E1	197	3-H2	60"	RCP	16.31	Reference 4
SD-E2	408	3-H2, 3-I2	60"	RCP	22.47	Reference 3
SD-F	187	3-O	42"	RCP	26.25	
SD-F1	596	CP3-P	6'x5'	RCB	24.63	
SD-F2	779	CP3-Q	6'x5'	RCB	30.60	
SD-F3	779	CP3-Q	8'x7'	RCB	17.42	
SD-F4	779	CP3-Q	8'x7'	RCB	19.74	
SD-G	166	1/2 3-B	42"	RCP	23.36	
SD-G1	166	1/2 3-B	42"	RCP	20.45	
SD-G2	332	3-B	54"	RCP	27.13	
SD-I	238	1/2 3-F	60"	RCP	21.05	
SD-I1	238	1/2 3-F	66"	RCP	15.33	
SD-I2	662	3-F,3-L2	5'x5'	RCB	31.38	
SD-L	295	3-G2	6'x6'	RCB	10.48	

References:
1- TDS for Desert Foothills Drive (Far Hills to Street A)
2- TDS for Desert Foothills Drive (Redpoint to Summerlin Pkwy)
3- TDS for Carriage Hill Drive (Far Hills to Street A)
4- TDS for Carriage Hill Drive (Redpoint to Summerlin Pkwy)

LEGEND

- STORM DRAIN FACILITY ALIGNMENT
- EXISTING FACILITY ALIGNMENT
- EXISTING WASHES TO BE DESIGNATED AS CCRFCD MPU FACILITIES
- CONCENTRATION POINT
- BASIN BOUNDARY
- 3-A ONSITE BASIN
- 3-1 OFFSITE BASIN

REV	DATE	BY	REVISION

THE HOWARD HUGHES CORPORATION
10801 WEST CHARLESTON BLVD, 3RD FLOOR
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2018 UPDATE TO SUMMERLIN WEST PLANNING AREA

A.6.5 REGIONAL FLOOD CONTROL FACILITIES MAP

DRAWN BY: JTA	11/2018	SCALE:	HORIZ.
DESIGNED BY:	JAN 201		VERT.
CHECKED BY: MJ		PROJECT NO: 7809	

SHEET A.6.5 OF SHEETS

DRAWING NO.

H:\7800\Drawings\5_UPA Figures\A.6.5 Regional Flood Control Facility Map\A.6.5_Regional Flood Control Facility Map.dwg

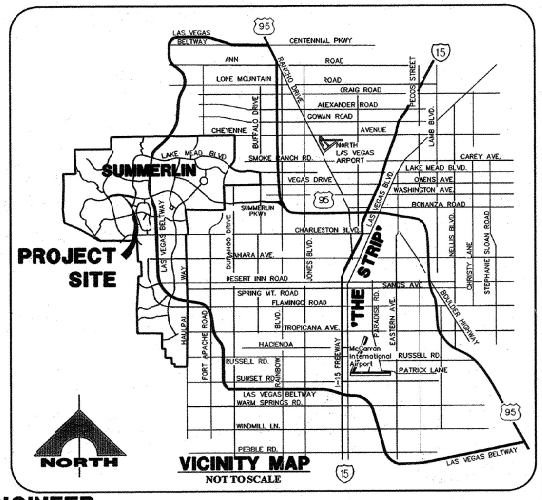
SUMMERLIN

SM

VILLAGE 23B
FAR HILLS AVENUE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE
2013

A.P.N. 137-22-000-015 (PORTION)

SID NO. 808 PROJECT 33



OWNER/DEVELOPER

THE HOWARD HUGHES COMPANY, LLC
10801 W. CHARLESTON BLVD., 3RD FLOOR
LAS VEGAS, NEVADA 89146
OFFICE PHONE NO. (702) 791-4300
OFFICE FAX NO. (702) 791-4450

ENGINEER

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

THE HOWARD HUGHES COMPANY, LLC

KEVIN ORRICK
TITLE: VICE PRESIDEN

8/6/13
DATE

DRAINAGE CERTIFICATION

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

JOSHUA L. JOHNSON P.E. 15789

7/16/13
DATE

DAVID BOWERS, PE, PTOE, PE# 16736
CITY ENGINEER
CITY OF LAS VEGAS, NEVADA

8/26/13
DATE

APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHTS-OF-WAY AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS, EXCEPT THOSE SPECIFICALLY LISTED UNDER "DEVIATIONS FROM STANDARDS". THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN "DEVIATIONS FROM STANDARDS" IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA NEVADA.

CLV BUILDING AND SAFETY DEPARTMENT

THIS PLAN CONFORMS TO THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT

N/A
CHRIS KNIGHT, DIRECTOR, BUILDING AND SAFETY

8/27/13
DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 12/1128 DATE: 7/30/13
DRAWINGS C1, C3, P1-P11, L1-L2, C2, A1, E1-E3

UTILITY/AGENCY APPROVALS

COX COMMUNICATIONS LAS VEGAS, INC. — DATE 7/17/13

CENTRAL TELEPHONE CO. DBA CENTURYLINK — DATE 7-17-13

THE AFFIXED CENTURYLINK APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

NV ENERGY — DATE 7-19-2013

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 7-19-2013

SOUTHWEST GAS CORP. — DATE 7/18/13

H #50002
CLV # 10745996

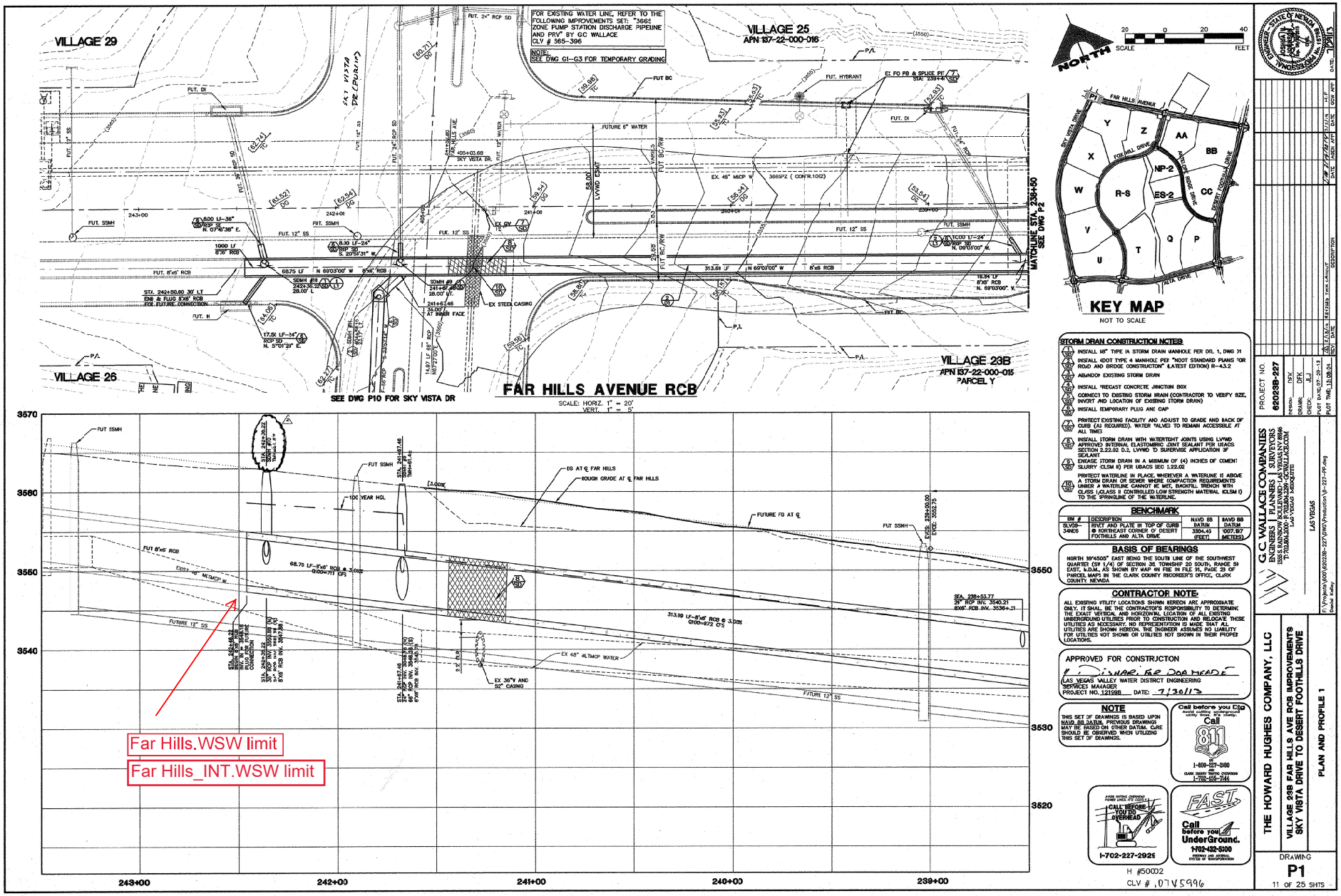
G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: (702) 804-2000 · F: (702) 804-2299 · LAS VEGAS · RENO · PHOENIX

PROJECT NO. 62023B-227
DESIGN: DPK
DRAWN: DPK
CHECK: KJ
PLOT DATE: 07-25-13
PLOT TIME: 16:41:13

REV	DATE	DESCRIPTION	DATE	MGR APP	DATE	CITY APP
1	7/16/13	PER CLV COMMENTS DATED 7/15/13	7/16/13			

THE HOWARD HUGHES COMPANY, LLC
VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE
COVER SHEET

DRAWING
C1
1 OF 25 SHTS



KEY MAP

NOT TO SCALE

STORM DRAIN CONSTRUCTION NOTES

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG 31
2. INSTALL 4DOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-43.2
3. ABANDON EXISTING STORM DRAIN
4. INSTALL "RECAST CONCRETE JUNCTION BOX
5. CONNECT TO EXISTING STORM MAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
6. INSTALL TEMPORARY PLUG AND CAP
7. PROTECT EXISTING FACILITY AND ADJUST TO GRADE AND BACK OF CURB (AS REQUIRED). WATER VALVES TO REMAIN ACCESSIBLE AT ALL TIMES
8. INSTALL STORM DRAIN WITH WATERTIGHT JOINTS USING LVWD APPROVED INTERNAL ELASTOMERIC JOINT SEALANT PER UAACS SECTION 2.22.02 D.2. LVWD 'D SUPERVISE APPLICATION 3F SEALANT
9. ENCASE STORM DRAIN IN A MIMIMUM OF (4) INCHES OF CEMENT SLURRY (CLSM II) PER UBACS SEC 1.22.02
10. PROTECT WATERLINE IN PLACE. WHEREVER A WATERLINE IS ABOVE A STORM DRAIN OR SEWER WHERE COMPACTION REQUIREMENTS UNDER A WATERLINE CANNOT BE MET, BACKFILL TRENCH WITH CLASS I/CLASS II CONTROLLED LOW STRENGTH MATERIAL (CLSM I) TO THE SPRINGLINE OF THE WATERLINE.

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
SLV39-34NE6	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER O' DESERT FOOTHILLS AND ALTA DRIVE	3304.43 (FEET)	1007.197 (METERS)

BASIS OF BEARINGS

NORTH 90°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 26, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP IN FILE 91, PAGE 25 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

CONTRACTOR NOTE:

ALL 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 CONSTRUCTION AND RELOCATE THOSE UTILITIES AS NECESSARY. NO REPRESENTATION IS MADE THAT ALL UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO LIABILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT NO. 121998 DATE: 7/26/13

NOTE

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H #50032
CLV # 107V5996

PROJECT NO. 62023B-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 07-26-13
PLOT TIME: 13:08:04

NO	DESCRIPTION	DATE	APP
1	REVISED TITLE & AMOUNT	7/11/14	H.F
2	REVISED PER CITY COMMENTS	7/18/14	CDW

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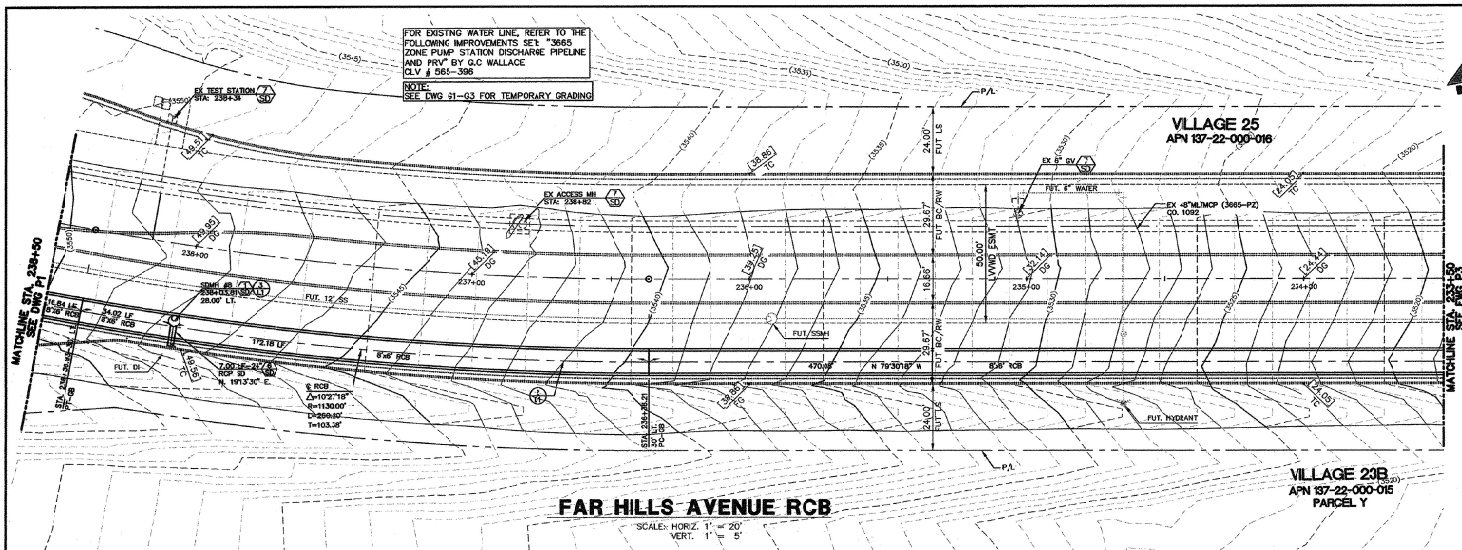
F:\Projects\6200\62023B-227\DWG\Production\P-227-PP.dwg
Daniel Kelley

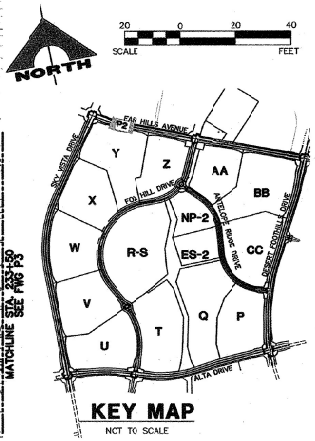
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PLAN AND PROFILE 1

DRAWING
P1
11 OF 25 SHTS





KEY MAP
NOT TO SCALE

NORTH

SCALE 20 0 20 40 FEET

STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER STL 1, DWG D1
2. INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-4.3.2
3. ABANDON EXISTING STORM DRAIN
4. INSTALL PRECAST CONCRETE JUNCTION BOX
5. CONNECT TO EXISTING STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
6. INSTALL TEMPORARY PLUG AND CAP
7. PROTECT EXISTING FACILITY AND ADJUST TO GRADE AND BACK OF CURB (AS REQUIRED). WATER VALVES TO REMAIN ACCESSIBLE AT ALL TIMES
8. INSTALL STORM DRAIN WITH WATERTIGHT JOIN'S USING LVVWD APPROVED INTERNAL ELASTOMERIC JOINT SEALANT PER UDACS SECTION 2.22.02 E.2, LVVWD TO SUPERVISE APPLICATION OF SEALANT.
9. ENCASE STORM DRAIN IN A MINIMUM OF (4) INCHES OF CEMENT SLURRY (CLSM II) PER UDACS SEC 2.22.12
10. PROTECT WATERLINE IN PLACE. WHEREVER A WATERLINE IS ABOVE A STORM DRAIN OR SEWER WHERE COMPACTION REQUIREMENTS UNDER A WATERLINE CANNOT BE MET, BACKFILL TRENCH WITH CLASS I/CLASS II CONTROLLED LOW STRENGTH MATERIAL (CLSM I) TO THE SPRINGLINE OF THE WATERLINE.

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM (FEET)	NAVD 88 DATUM (METERS)
SLV09-3466B	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45	1007.197

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

CONTRACTOR NOTE:

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APPROVED FOR CONSTRUCTION
DISHAR FOR DON MEADE
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 121998 DATE: 7/30/13

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD_88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

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H #50002
CLV # 10TV5996

REVISED PER CLIENT COMMENTS — 7/11/13 — KEB — CDW — APP

PROJECT NO. 62023B-227
DESIGN: DPK
DRAWN: DPK
CHECK: JJJ
PLOT DATE: 07-29-13
PLOT TIME: 15:06:12

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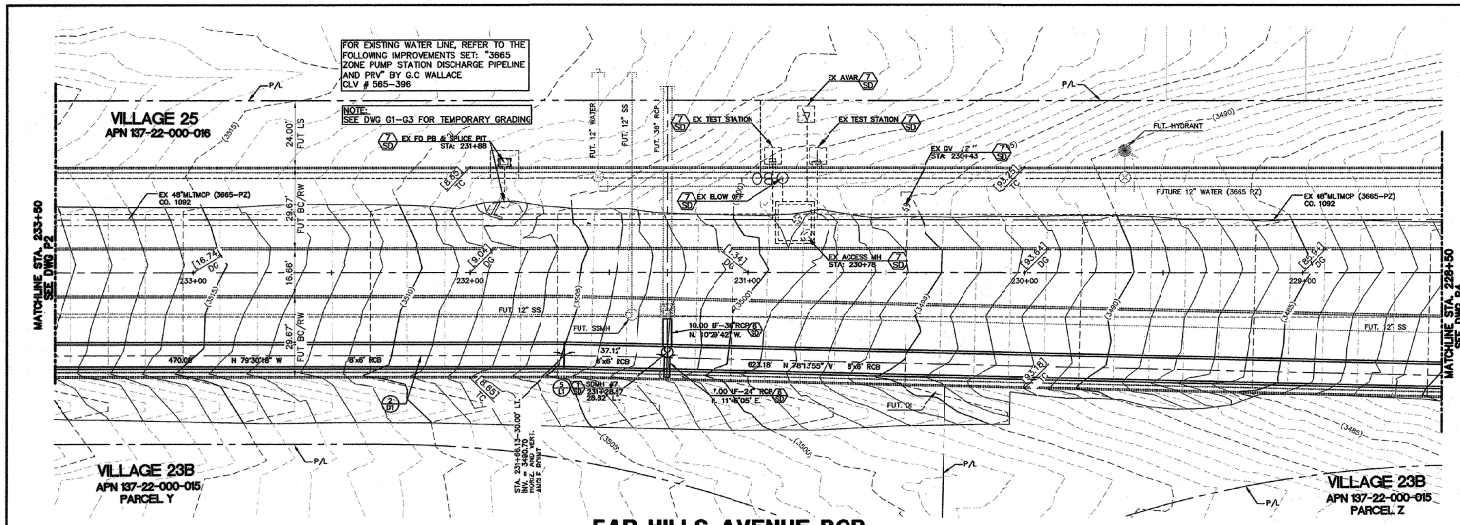
Daniel Kelley

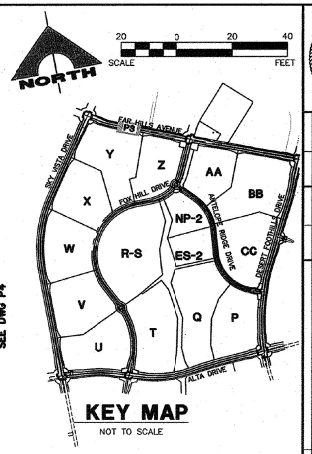
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PLAN AND PROFILE 2

DRAWING
P2
12 OF 25 SHTS



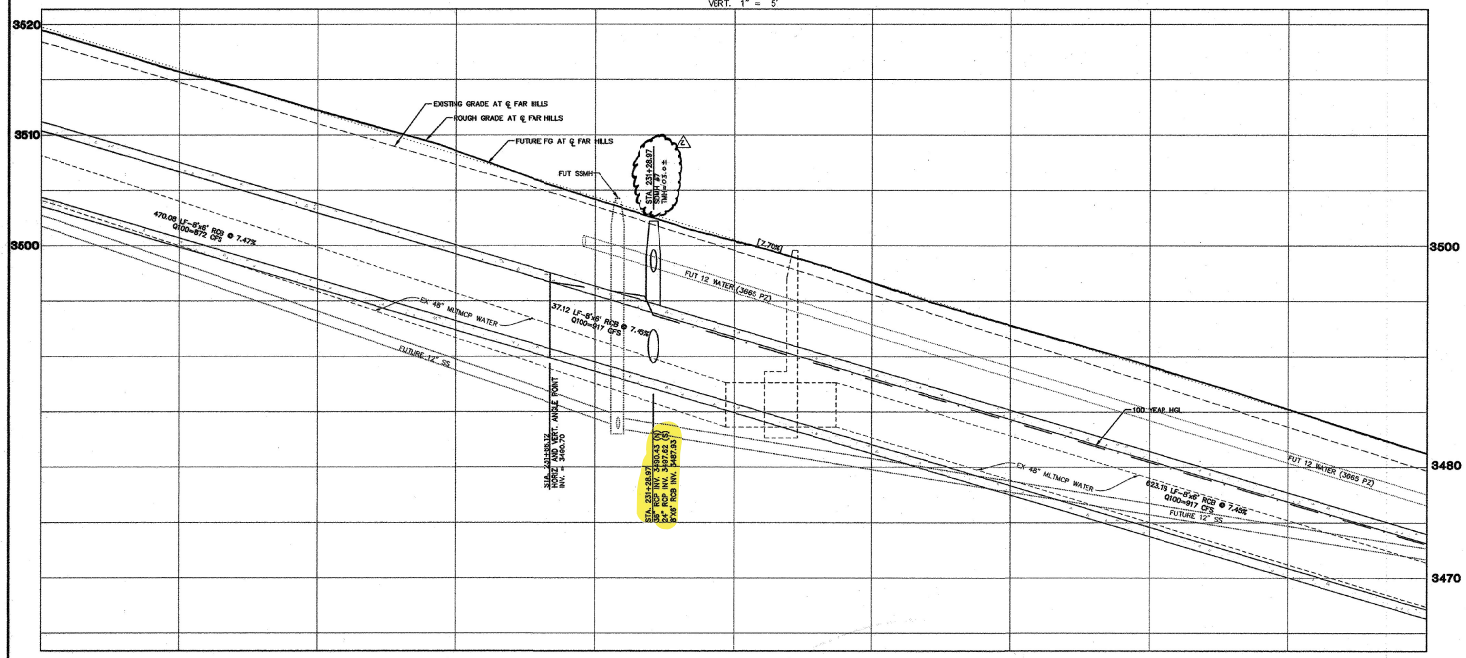


KEY MAP

NOT TO SCALE

FAR HILLS AVENUE RCB

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER D'IL 1, DWG D1
2. INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-4.3.2
3. ABANDON EXISTING STORM DRAIN
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8. INSTALL STORM DRAIN WITH WATERTIGHT JOINTS USING LVVWD APPROVED INTERNAL ELASTOMERIC JOINT SEALANT PER UDACS SECTION 2.22.02 D.2, LVVWD TO SUPERVISE APPLICATION OF SEALANT.
9. ENCASE STORM DRAIN IN A MINIMUM OF (4) INCHES OF CEMENT SLURRY (CLSM II) PER UDACS SEC 2.22.02
10. PROTECT WATERLINE IN PLACE. WHEREVER A WATERLINE IS ABOVE A STORM DRAIN OR SEWER WHERE COMPACTION REQUIREMENTS UNDER A WATERLINE CANNOT BE MET, BACKFILL TRENCH WITH CLASS I/CLASS II CONTROLLED LOW STRENGTH MATERIAL (CLSM I) TO THE SPRINGLINE OF THE WATERLINE.

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM (FEET)	NAVD 88 DATUM (METERS)
SLV09-34NE8	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45	1007.197

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

CONTRACTOR NOTE:

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 121988 DATE: 7/30/13

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

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H #50002
CLV # 10745996

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PROJECT NO. 62023B-227
DESIGN: DPK
DRAWN: DPK
CHECK: JAS
PLOT DATE: 07-29-13
PLOT TIME: 13:58:34
F:\Projects\62023B-227\civil\Production\P-227-PP.dwg
Donnie Kelley

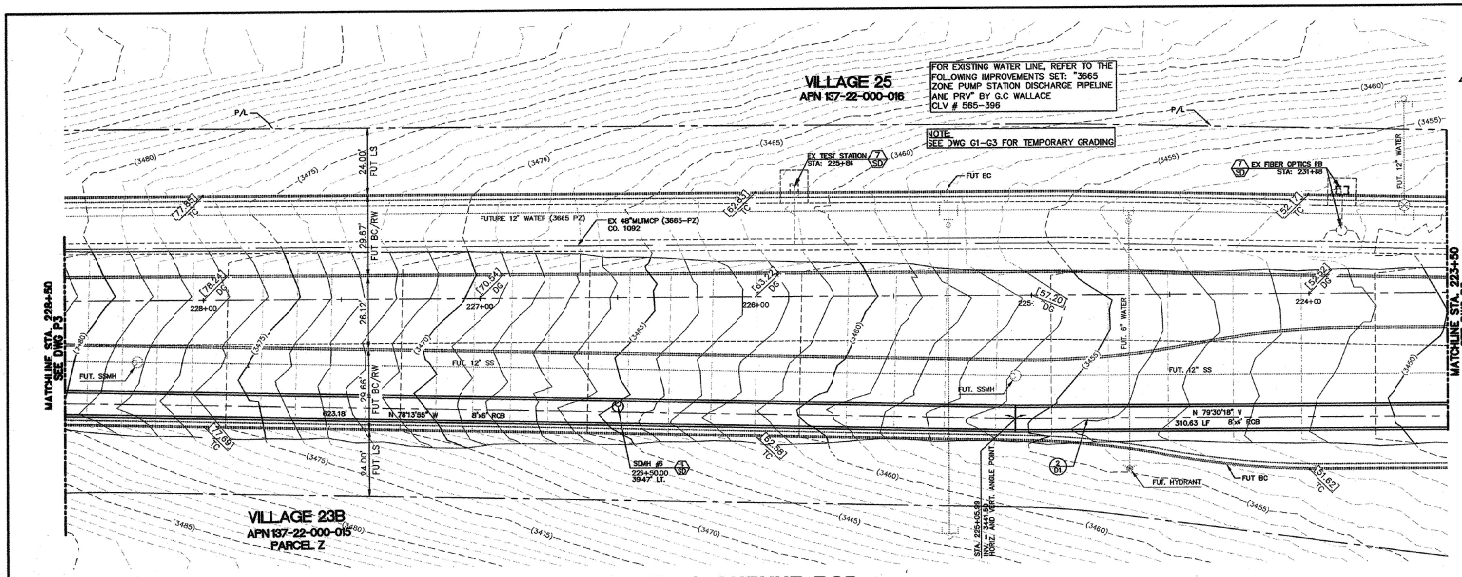
REV	DATE	DESCRIPTION	BY	CHK'D	APP'D	DATE
1	7/30/13	REVISED TITLE BLOCK	DPK	JAS	DGF	7/30/13

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

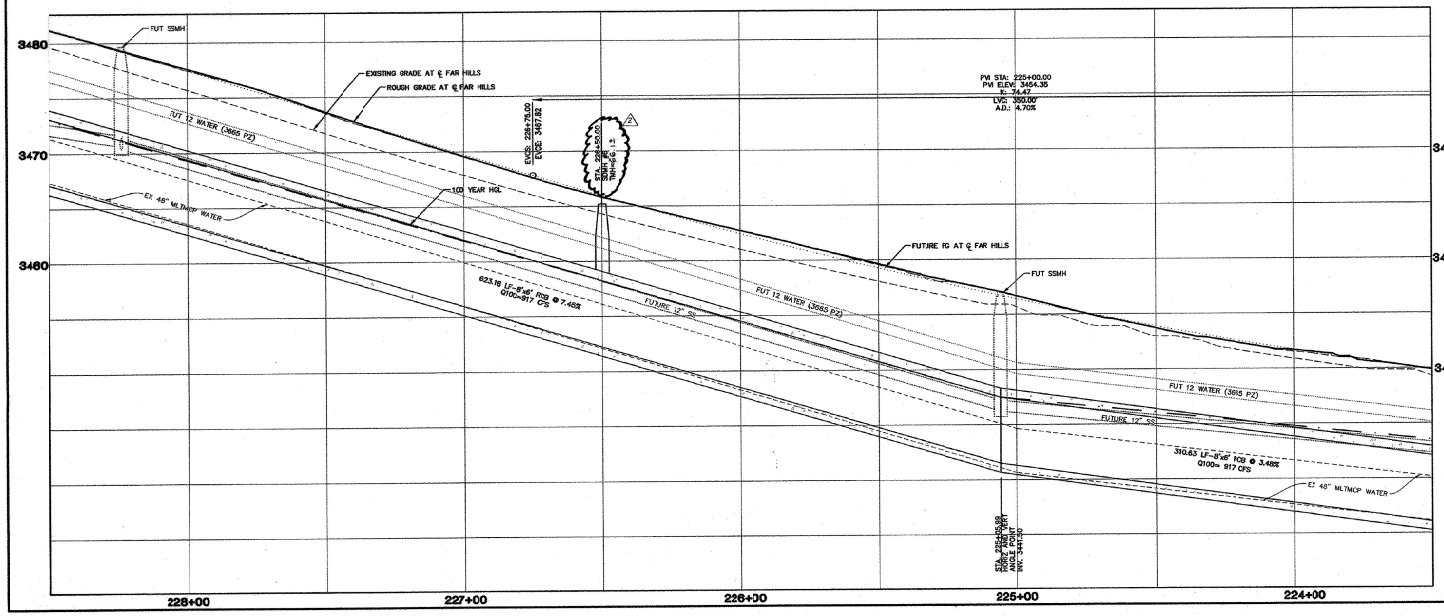
PLAN AND PROFILE 3

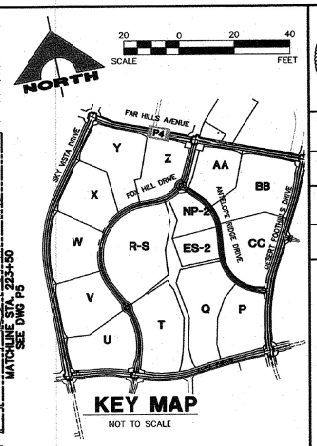
DRAWING
P3
13 OF 25 SHTS



FAR HILLS AVENUE RCB

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'





KEY MAP
NOT TO SCALE

STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
2. INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-43.2
3. ABANDON EXISTING STORM DRAIN
4. INSTALL PRECAST CONCRETE JUNCTION BOX
5. CONNECT TO EXISTING STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EXISTING STORM DRAIN)
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BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM (FEET)	NAVD 88 DATUM (METERS)
SLV09-34E9	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45	1007.197

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 34, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 18 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

CONTRACTOR NOTE:

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APPROVED FOR CONSTRUCTION
[signature] DISHARI FREEMAN
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO.: 121998 DATE: 7/30/13

NOTE

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R #50302
CLV # 107V5996

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PLOT TIME: 13:08:49
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Diane Kelley

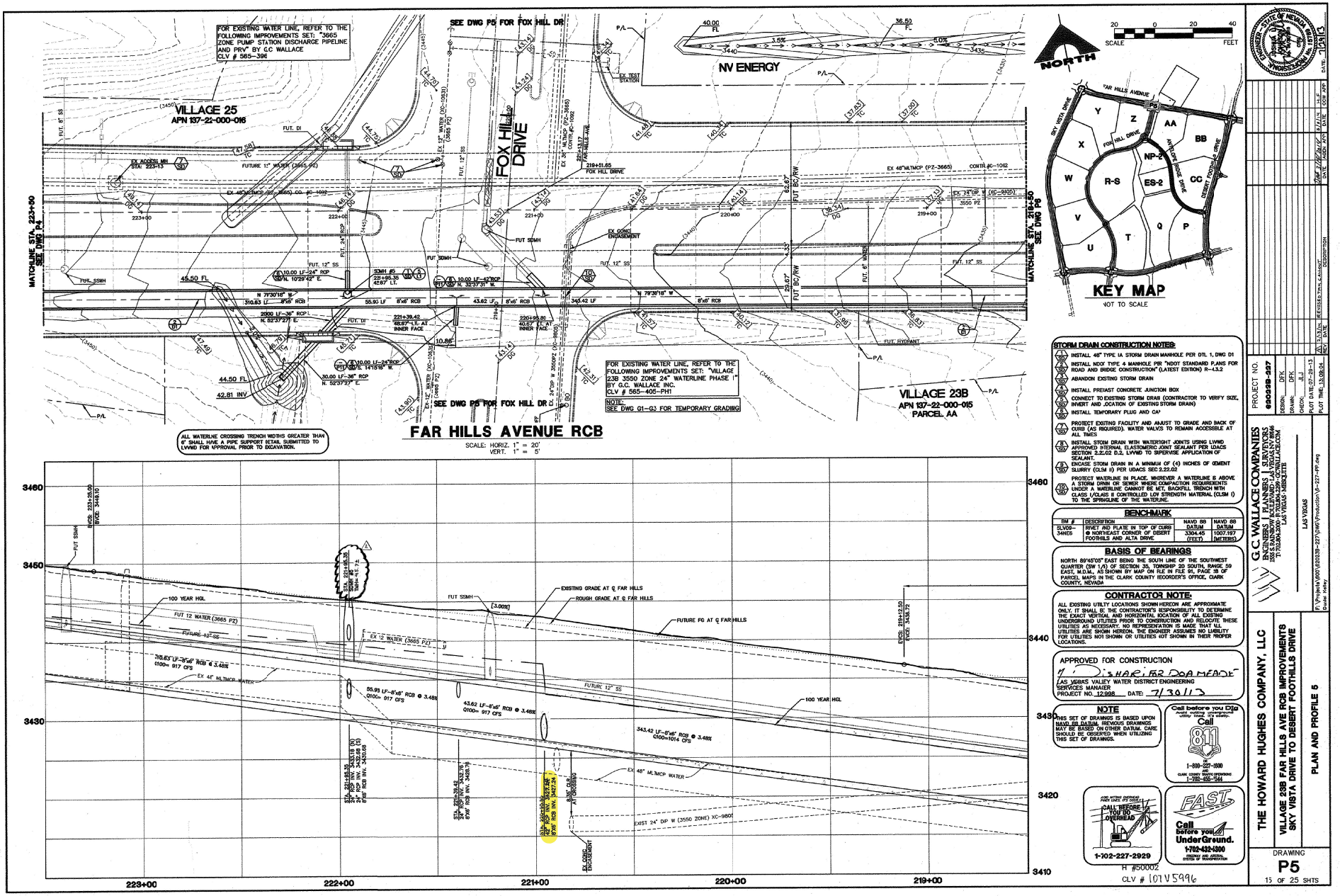
NO.	DATE	REVISIONS, DESCRIPTION	BY	CHK'D	APP'D
1	7/31/13	PER LVWD COMMENTS	DFK	JLJ	GCW

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PLAN AND PROFILE 4

DRAWING
P4
14 OF 25 SHTS



STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
2. INSTALL NDOT TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-43.2
3. ABANDON EXISTING STORM DRAIN
4. INSTALL PRECAST CONCRETE JUNCTION BOX
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8. INSTALL STORM DRAIN WITH WATERTIGHT JOINTS USING LVWD APPROVED INTERNAL ELASTOMERIC JOINT SEALANT PER UDACS SECTION 2.22.02 D.2. LVWD TO SUPERVISE APPLICATION OF SEALANT.
9. ENCASE STORM DRAIN IN A MINIMUM OF (4) INCHES OF CEMENT SLURRY (CLSM II) PER UDACS SEC 2.22.02
10. PROTECT WATERLINE IN PLACE. WHEREVER A WATERLINE IS ABOVE A STORM DRAIN OR SEWER WHERE COMPACTION REQUIREMENTS UNDER A WATERLINE CANNOT BE MET, BACKFILL TRENCH WITH CLASS I/CLASS II CONTROLLED LOW STRENGTH MATERIAL (CLSM I) TO THE SPRINGLINE OF THE WATERLINE.

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
SLV09—34MD9	RIVET AND PLATE IN TOP OF CURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45 (FEET)	1007.197 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 15 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 12998 DATE: 7/30/13

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

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H #50002

CLV # 101V5996

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PROJECT NO. 120238-227
DESIGN: DFK
DRAWN: DFK
CHECK: JLJ
PLOT DATE: 07-29-13
PLOT TIME: 13:08:04
F:\Projects\600\120238-227\DWG\Production\P-227-PP.dwg
Dustin Kelley

NO.	DATE	REVISED/INITIAL/DESCRIPTION
1	7/31/13	PER LVWD COMMENTS - JLJ

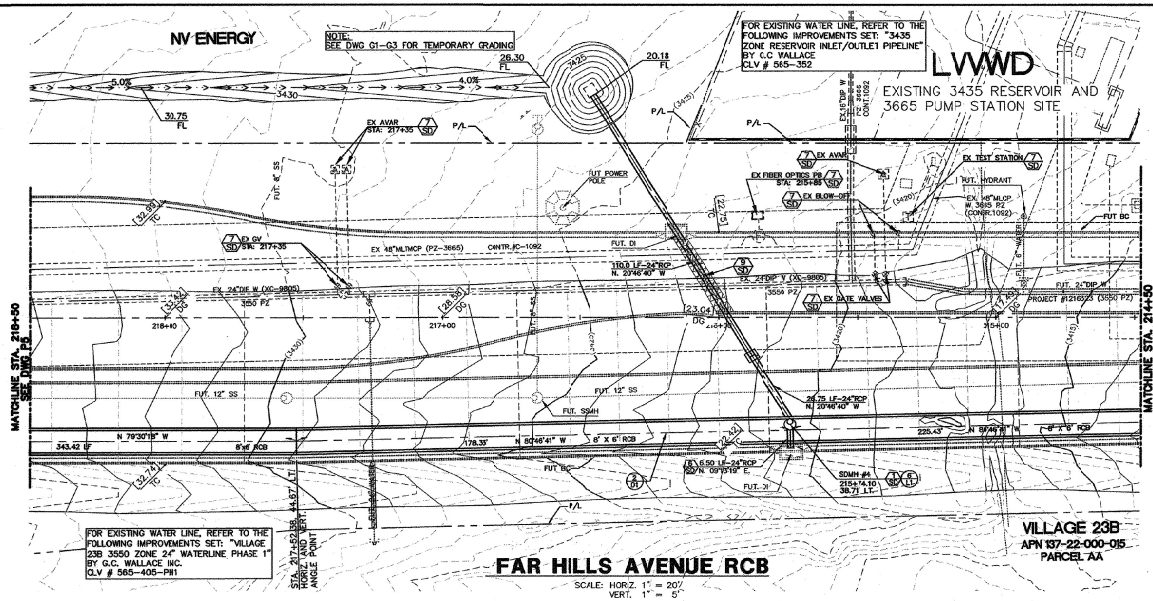
ENGINEER	STATE OF NEVADA No. 19183	DATE: 10/9/13
		DATE: 7/31/13 LVWD APP
		DATE: 6/12/13 CCRF APP
		DATE: 3/26/13

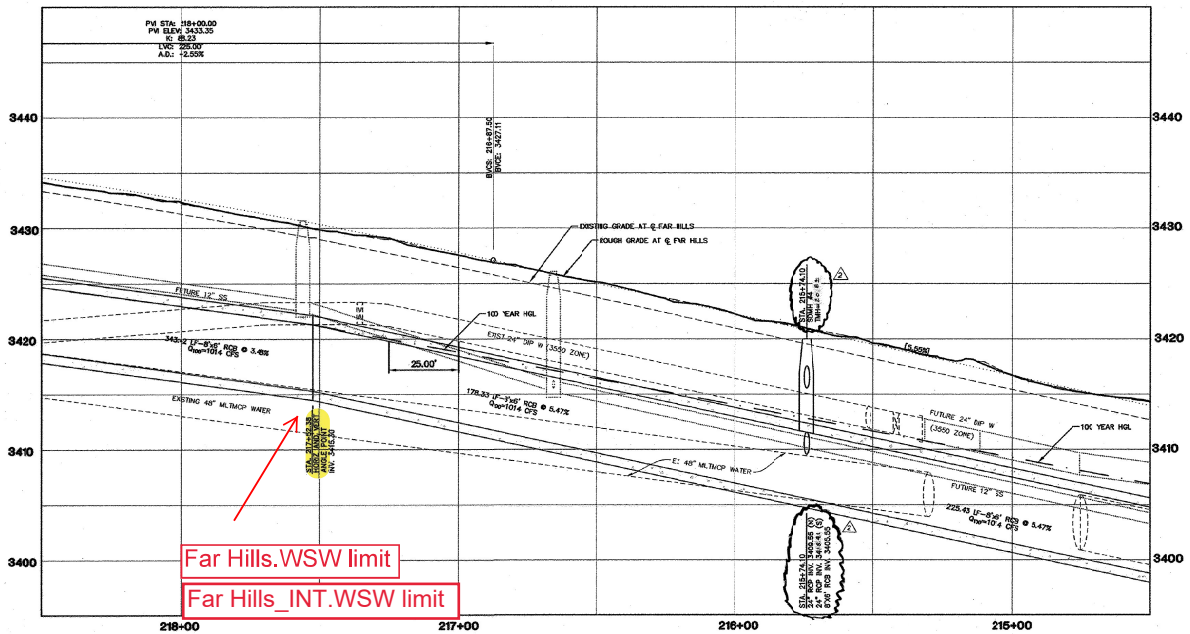
THE HOWARD HUGHES COMPANY, LLC

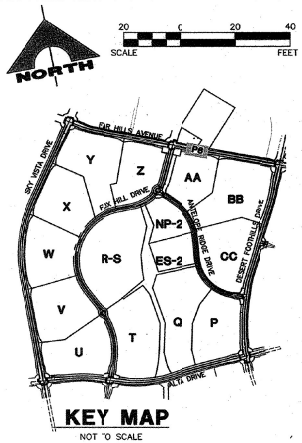
VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PLAN AND PROFILE 5

DRAWING P5
15 OF 25 SHTS







STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL 48" TYPE IA STORM DRAIN MANHOLE PER DTL 1, DWG D1
2. INSTALL NDO TYPE 4 MANHOLE PER "NDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) R-43.2
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8. INSTALL STORM DRAIN WITH WATERTIGHT JOINTS USING LVWD APPROVED INTERNAL ELASTOMERIC JOINT SEALANT PER UMCS SECTION 2.22.02 D.2. LVWD TO SUPERVISE APPLICATION OF SEALANT.
9. ENCASE STORM DRAIN IN A MINIMUM OF (4) INCHES OF CEMENT SLURRY (CLSM II) PER UDACS SEC 2.22.02
10. PROTECT WATERLINE IN PLACE. WHEREVER A WATERLINE IS ABOVE A STORM DRAIN OR SEWER WHERE COMPACTION REQUIREMENTS UNDER A WATERLINE CANNOT BE MET, BACKFILL TRENCH WITH CLASS I/CLASS II CONTROLLED LOW STRENGTH MATERIAL (CLSM I) TO THE SPRINGLINE OF THE WATERLINE.

BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM (FEET)	14VD 88 DATUM (METERS)
SLV09—5465	RIVET AND PLATE IN TOP OF XURB @ NORTHEAST CORNER OF DESERT FOOTHILLS AND ALTA DRIVE	3304.45	1007.197

BASIS OF BEARINGS

NORTH 89°46'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT NO. 12998 DATE: 7/30/13

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD_88_DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Call before you Dig
Avoid cutting underground utility lines in the county.
811
1-800-227-2600
CLARK COUNTY RESIDENTS
1-702-455-7144

ANY ACTIVITY WITHIN 10 FEET OF POWER LINES IT'S EVEN!
CALL BEFORE YOU DIG OVERHEAD
1-702-227-2929

FAST
Call before you UnderGround.
1-702-432-5100
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

H #50002

CLV # 10175996

G.C. WALLACE COMPANIES
ENGINEERS / PLANNERS / SURVEYORS
2030 E. FLAMINGO RD., SUITE 230, LAS VEGAS, NEVADA 89119
T: 702.804.3000 F: 702.804.3299 GCWALLACE.COM
LAS VEGAS LAS VEGAS ABERDEEN

PROJECT NO. 620038-227
DESIGN: DFK
DRAWN: DFK
CHECK: JJJ
PLOT DATE: 07-29-13
PLOT TIME: 13:09:18

NO.	DATE	DESCRIPTION	DRAWN	CHECK	APP'D
1	7/15/13	PER NDOT & LVWD COMMENTS	DFK	JJJ	K.F.
2	7/30/13	PER LVWD COMMENTS	DFK	JJJ	K.F.

F:\Projects\620\620038-227\DWG\Production\G-227-PP.dwg
Daniel Kelley

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 23B FAR HILLS AVE RCB IMPROVEMENTS
SKY VISTA DRIVE TO DESERT FOOTHILLS DRIVE

PLAN AND PROFILE 6

DRAWING
P6
16 OF 25 SHTS

Master Conceptual Drainage Study for

Summerlin West Village 25

Las Vegas, Nevada

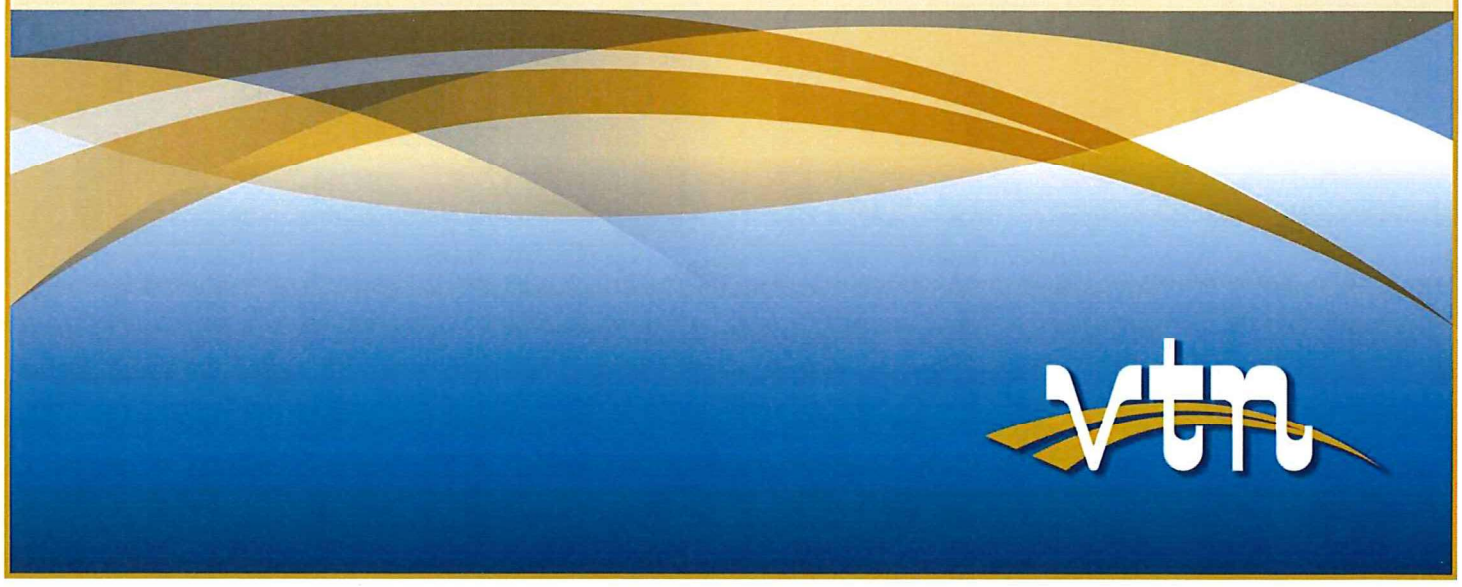
W.O. # 7919-A

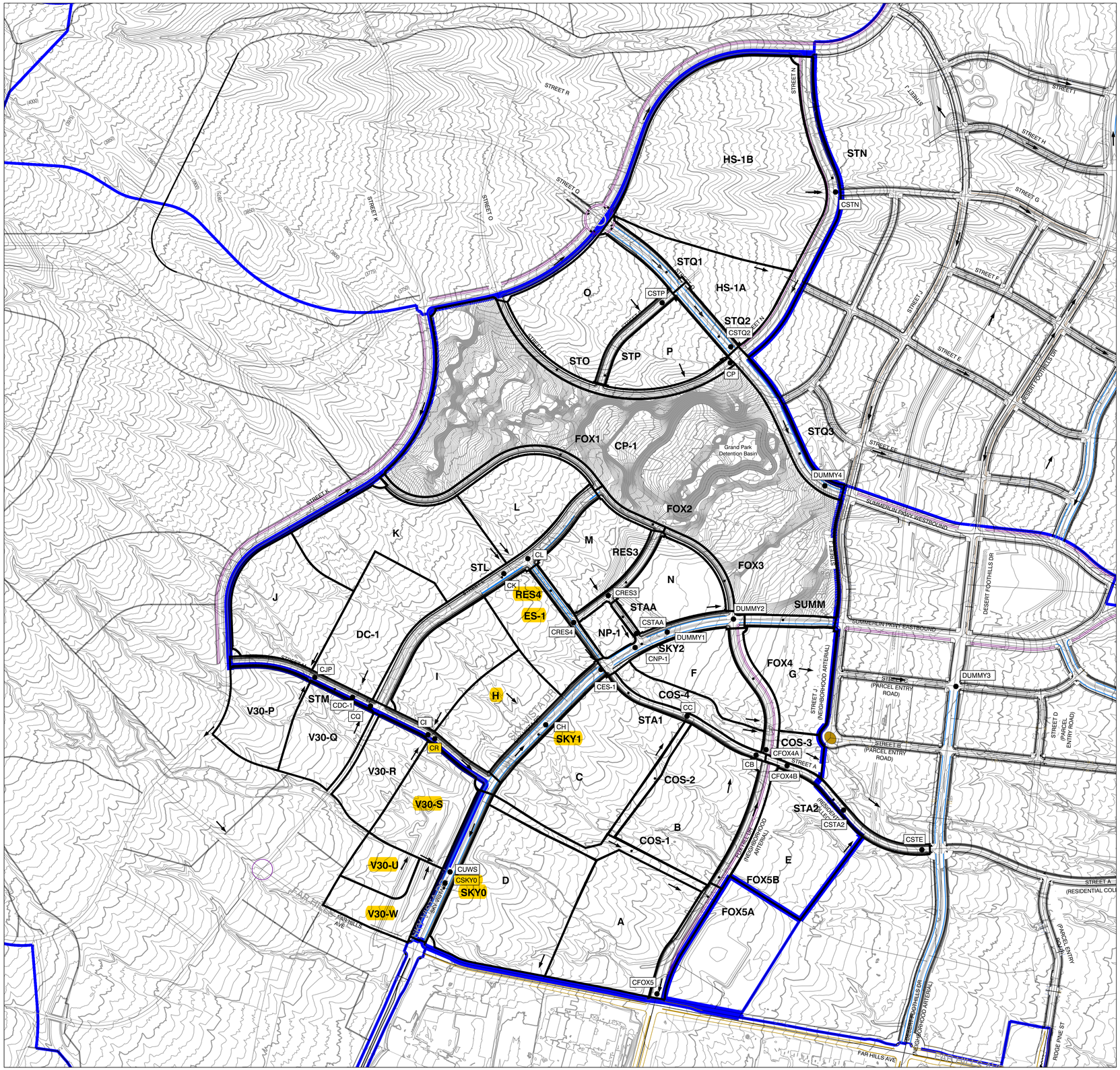
Prepared for:

Howard Hughes Company, LLC

Submitted to:

City of Las Vegas
Public Works





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	FOX5A	3.15	11
V30-Q	9.60	37	COS-1	3.48	9
CQ	-	221	A	21.35	81
I	13.23	53	CFOX5A	-	99
CI	-	274	C	26.54	99
V30-R	8.57	35	STA1	2.29	10
CR	-	308	CC	-	109
V30-S	11.91	49	COS-2	1.72	5
V30-U	4.74	20	CCOS-2	-	114
V30-W	6.85	25	B	19.86	76
CUWS	-	403	CB	-	190
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	FOX5B	3.19	12
ES-1	10.20	42	CFOX4B	-	275
CES-1	-	106	STA2	2.84	12
SKY2	3.78	17	CSTA2	-	287
NP-1	2.70	9	COS-3	2.40	8
CNP-1	-	132	E	17.14	65
STL	7.86	28	CSTE	-	360
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

REV	DATE	BY	REVISION

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

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH: (702) 873-7550 FAX (702) 362-2397 WEB WWW.VTNNV.COM
CONSULTING ENGINEERS ● PLANNERS ● LAND SURVEYORS

FIGURE 6
ULTIMATE CONDITION BASIN MAP

SUMMERLIN WEST VILLAGE 25

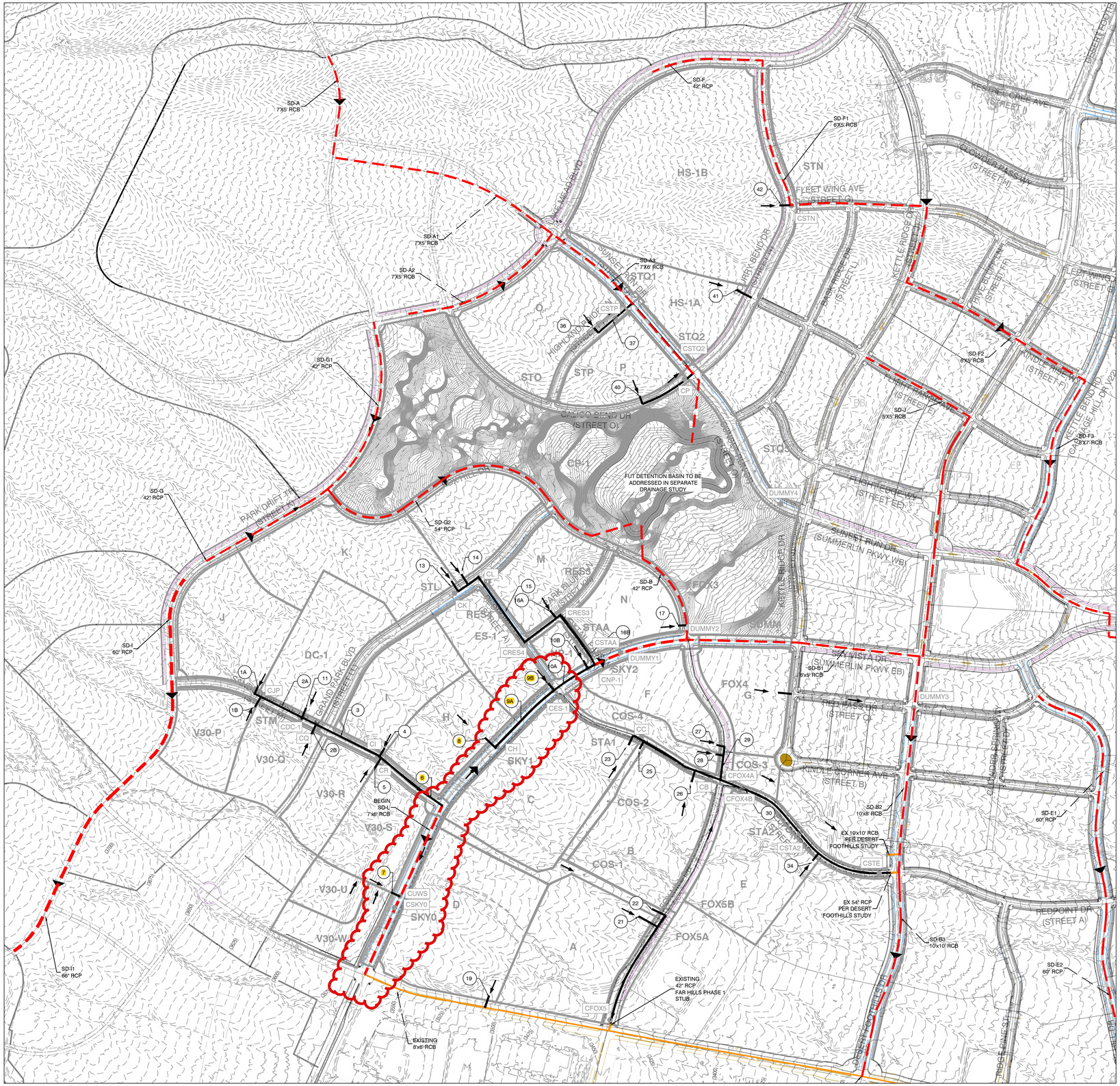
DRAWN BY: ATM/AH	JULY 2018	
DESIGNED BY: JYA	JULY 2018	
CHECKED BY: JYA	JULY 2018	
PROJECT NO: 7910	SCALE:	1" = 400' HORIZ. N/A VERT.

SHEET

OF SHEETS

DRAWING NO.

H:\7910\Drainage\2_Acd\1A Figures\Figure 6- Village 25 Drainage Basin Map.dwg


SD-A 7X5' RCB
SD-A1 7X5' RCB
SD-A2 7X5' RCB
SD-A3 7X6' RCB
SD-F 42" RCP
SD-F1 6'X5' RCB
SD-F2 6'X5' RCB
SD-F3 8'X7' RCB
SD-G 42" RCP
SD-G1 42" RCP
SD-G2 54" RCP
SD-I 60" RCP
SD-J 9'X5' RCB
SD-I 7'X6' RCB
SD-11 66" RCP
SD-B 42" RCP
SD-B1 6'X5' RCB
SD-B2 10'X8' RCB
SD-B3 10'X10' RCB
SD-E1 60" RCP
SD-E2 60" RCP
EX 10'X10' RCB PER DESERT FOOTHILLS STUDY
EX 54" RCP PER DESERT FOOTHILLS STUDY
EXISTING 42" RCP FAR HILLS PHASE 1 STUB
EXISTING 6'x6' RCB
FUT DETENTION BASIN TO BE ADDRESSED IN SEPARATE DRAINAGE STUDY
BEGIN SD-I 7'x6' RCB
LAKE MEAD BLVD
SUNSET RUN DR (STREET M)
HIGHLAND RIDGE DR (STREET K)
CALICO BEND DR (STREET O)
PARK DRIFT TR (STREET N)
GRAND PARK BLVD (STREET E)
FLEET WING AVE (STREET Q)
KESTREL CREST AVE (STREET I)
KETTLE RIDGE DR (STREET L)
BASIN RIDGE DR (STREET U)
FLEET WING (STREET G)
KINDLE HIGH WAY (STREET F)
KINDLE CORNER AVE (STREET B)
FLEET FRAME AVE (STREET E)
FLEET EDGE WAY (STREET EE)
SUNSET RUN DR (SUMMERLIN PKWY WB)
SKY VISTA DR (SUMMERLIN PKWY EB)
TREE PASS DR (STREET C)
REDPOINT DR (STREET A)
DESERT FOOTHILLS DR
RIDGE PINE ST
HS-1B
HS-1A
STN
CSTN
STQ1
STQ2
CSTQ2
STO
STP
CP
STQ3
STL
CSTL
RES-1
ES-1
DC-1
V30-P
V30-Q
V30-R
V30-S
V30-U
V30-W
STM
CDC-1
CJP
CQ
CI
CR
CH
CK
CL
SKY1
SKY0
CUWS
CSKY0
RES-3
CRES3
CRES4
STAA
CSTAA
SKY2
CNP-1
CES-1
COS-4
CC
STA1
COS-3
CFOX4A
CB
CFOX4B
COS-2
COS-1
STA2
CSTA2
CSTE
FOX4
FOX6B
FOX5A
CFOX5
DUMMY1
DUMMY2
DUMMY3
DUMMY4
CB-1
FCX3
RES-5
RES-5A
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JJ
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CSTP
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CSTQ2
CSTA2
CSTE
CFOX4A
CFOX4B
CSTAA
CSTL
CSKY0
CUWS
CDC-1
CJP
CQ
CI
CR
CH
CK
CL
CNP-1
CES-1
CRES4
CRES3
CFOX5
DUMMY1
DUMMY2
DUMMY3
DUMMY4
CB-1
FCX3
RES-5
RES-5A
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TDS for Summerlin West

Zone 3665 Reservoir and Inlet/Outlet Pipeline

Addendum 1

Prepared for the Howard Hughes Company, LLC

May 24, 2017

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: August 3, 2017
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin West Zone 3665 Reservoir & Inlet/Outlet Pipeline**			**COPIES TO:** Atkins
Cross Streets:	NWQ of Far Hills Drive & Sky Vista Drive			Howard Hughes Properties Inc.
File Number:	F:\Depot\DSMemos\DS4872C.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-017			
Zoning Action:	CRG-68105			
FEMA Flood Zone	YES	NO	X	
Proposed Storm Drain	YES	NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	4/6/2017 & 4/20/2017	4/29/2017	Not Approved	$400.00	481026: $400
2nd Submittal	5/24/2017	6/14/2017	Not Approved	$400.00	486258: $400
Supplement	7/24/2017	8/3/2017	See Comments Below	N/C	N/C
			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:
	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.
X	is conditionally approved subject to the final approval of the *Update to Summerlin Village 23B Far Hills Avenue Improvement – RCB Improvements*

1. The study proposed extension of an existing 8'x6' RCB in Far Hills Avenue for approximately 185' to the west. The original drainage study "***Summerlin Village 23B Far Hills Avenue Improvement – RCB Improvements***" must be updated and approved prior to the final approval of the subject improvement plans.

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/22
AREA K-22

HEC-1 Node	Tributary Area (sq mi)	Tributary Area (ac)	100-Year Discharge (cfs)	10-Year Discharge (cfs)
INT-1a/1	0.00098	0.63	3	1
INT-1a/2	0.00036	0.23	1	<1
INT-1a/3	0.00101	0.64	3	1
INT-1a/5	0.00181	1.16	5	2
INT-1a/6	0.00081	0.52	2	1
INT-1a/7	0.00019	0.12	<1	<1
CP1a/2	0.00515	3.30	13	7
INT-1a/4	0.00075	0.48	2	1
INT-1c	0.00098	0.63	2	1
CP1a/1	0.00173	1.11	4	2
CP1a	0.00688	4.40	17	9
INT-1b/1	0.00089	0.57	2	1
INT-1b/2	0.00139	0.89	4	2
INT-1b/3	0.00012	0.08	<1	<1
CP1b	0.00239	1.53	6	3
INT-1	0.26662	170.64	223	76
INT-1a	0.00131	0.84	3	1
INT-1d	0.00073	0.47	1	<1
INT-1e	0.00025	0.16	1	<1
CP1	0.27131	173.64	227	78
INT-5a/1	0.34487	220.72	391	154
INT-5a/2	0.07640	48.89	111	44
INT-5a/3	0.00518	3.32	9	4
CP5a	0.42645	272.93	485	193
INT-5b	0.02067	13.23	37	16
CP5	0.44712	286.16	506	202

USED IN THE INTERIM CONDITION SD MODEL

PROJECT SITE

INT-1d
INT-1e
INT-1b/1
INT-5a/3
INT-1b/3
INT-5a/2
INT-1a/7
INT-1b/2
INT-1a/2
INT-1a/6
CP1b
INT-1c
INT-1
INT-1a/5
INT-1a/1
INT-1a/4
INT-1a/3
INT-1a
CP1a/2
CP1a/1
CP1a
INT-5a/1
INT-5b
INT-CP5b
INT-1
INT-5a/2
INT-5a/3
INT-5a/1
INT-1
CP1
CP5a
INT-5b
FUTURE FAR HILLS AVE
CP5
FUTURE SKY VISTA DR

TECHNICAL DRAINAGE STUDY FOR SUMMERLIN WEST
ZONE 3665 RESERVOIR AND INLET/OUTLET PIPELINE

Legend
- Interim Combination Points
- Temporary Access Road
- Interim Condition Subbasins
- Onsite Property Boundary
- Proposed Site Plan
- Major Contour (5')

Aerial Source: Clark County Nevada 2016

1 inch = 500 feet

ATKINS

FIGURE 6:
INTERIM CONDITION HYDROLOGY MAP

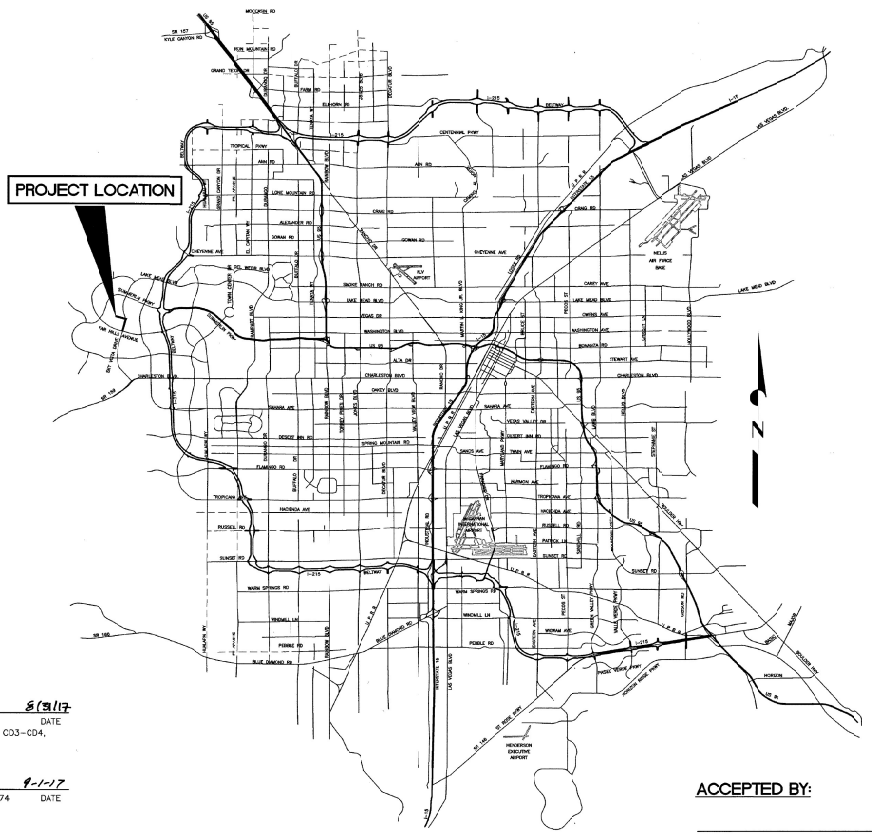
LAS VEGAS VALLEY WATER DISTRICT

CONTRACT NO. C1473

SUMMERLIN 3665 ZONE RESERVOIR INLET/OUTLET PIPELINE

LIST OF DRAWINGS

SHEET NO	DRAWING NO	DESCRIPTION
1	G1	PROJECT TITLE, LOCATION MAP AND LIST OF DRAWINGS
2	G2	CITY OF LAS VEGAS GENERAL NOTES I
3	G3	CITY OF LAS VEGAS GENERAL NOTES II
4	G4	ABBREVIATION LIST
5	G5	LEGEND AND ESTIMATED QUANTITIES
6	SV1	HORIZONTAL CONTROL PLAN I
7	SV2	HORIZONTAL CONTROL PLAN II
8	SV3	RIGHT-OF-WAY PLAN I
9	SV4	RIGHT-OF-WAY PLAN II
10	C1	SKY VISTA AVE PLAN AND PROFILE STA. 10+16.56 TO STA. 17+50
11	C2	SKY VISTA AVE PLAN AND PROFILE STA. 17+50 TO STA. 25+00
12	C3	UNNAMED ROAD PLAN AND PROFILE STA. 25+00 TO STA. 32+50
13	C4	UNNAMED ROAD PLAN AND PROFILE STA. 32+50 TO STA. 39+10.66
14	C5	UNNAMED ROAD PLAN AND PROFILE RESERVOIR FRONTAGE GRADING
15	C6	BERM PLAN AND PROFILE STA. 10+41.99 TO STA. 17+00
16	C7	BERM PLAN AND PROFILE STA. 17+00 TO STA. 12+47.27
17	CD1	ACCESS MANHOLE ASSEMBLY DETAILS
18	CD2	48-INCH LINE CONNECTION STRUCTURAL DETAILS
19	CD3	48-INCH LINE CONNECTION PIPING DETAILS I
20	CD4	48-INCH LINE CONNECTION PIPING DETAILS II
21	CD5	42-INCH VALVE VAULT STRUCTURAL DETAILS
22	CD6	42-INCH VALVE VAULT PIPING DETAILS
23	CD7	BLOW OFF AND MISCELLANEOUS DETAILS
24	CD8	FIBER OPTIC AND MISCELLANEOUS DETAILS
25	CD9	COMBINATION AIR VALVE DETAILS
26	CD10	VALVE BOX, CONNECTION AND MISCELLANEOUS DETAILS
27	CD11	MORTAR LINED AND COATED STEEL PIPE JOINT AND MISCELLANEOUS DETAILS
28	CD12	TRENCH, THRUST AND ANCHOR BLOCK DETAILS
29	CD13	CATHODIC PROTECTION DETAILS
30	CD14	MISCELLANEOUS DETAILS
31	CD15	ACCESS ROAD AND GRADING DETAILS
32	CD16	DRAINAGE DETAILS I
33	CD17	DRAINAGE DETAILS II



LOCATION MAP
NO SCALE

8/29/17
JONATHAN D. TULL, P.E. P.E. NO. 14581 DATE
RESPONSIBLE FOR SHTS G1-G5, C1-C7, CD1, CD3-CD4, CD6-CD17

9-1-17
PAUL BJRN, P.L.S. P.L.S. NO. 01174 DATE
RESPONSIBLE FOR SHTS SV1-SV2

8/21/17
ERIC CHRISTIANSON, P.L.S. P.L.S. NO. 8895 DATE
RESPONSIBLE FOR SHTS SV3-SV4

8/21/17
CHARLES JOSEPH, P.E. P.E. NO. 12258 DATE
RESPONSIBLE FOR SHTS CD2 AND CD5

CAUTION TO CONTRACTOR:
THE CONTRACTOR SHALL BE RESPONSIBLE TO INVESTIGATE AND VERIFY THE ACTUAL LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND FACILITIES AT LEAST 48 HOURS IN ADVANCE OF THE PERFORMANCE OF ANY WORK.

ACCEPTED BY:

PETER J. JAUCH, P.E., DIRECTOR OF ENGINEERING DATE
CITY OF LAS VEGAS PERMIT COPY

OWNER:

9/1/17
KEVIN ORROCK, EXECUTIVE VICE PRESIDENT DATE
THE HOWARD HUGHES COMPANY

CLV DWG # L17-00591
565-507

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811

Avoid overhead power line contact. It's costly.
Call before you OVERHEAD
1-702-593-6111

Call before you UnderGround
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

LAS VEGAS VALLEY WATER DISTRICT
ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Phone: +1702.263.7225
Fax: +1702.263.7200

VERIFY SCALE
1/2 0 1/2 1
BAR REPRESENTS ONE AND ONE-HALF INCHES ON ORIGINAL

SCALE HORIZONTAL NONE VERTICAL NONE

SUMMERLIN 3665 ZONE RESERVOIR
INLET/OUTLET PIPELINE
PROJECT TITLE, LOCATION MAP
AND LIST OF DRAWINGS

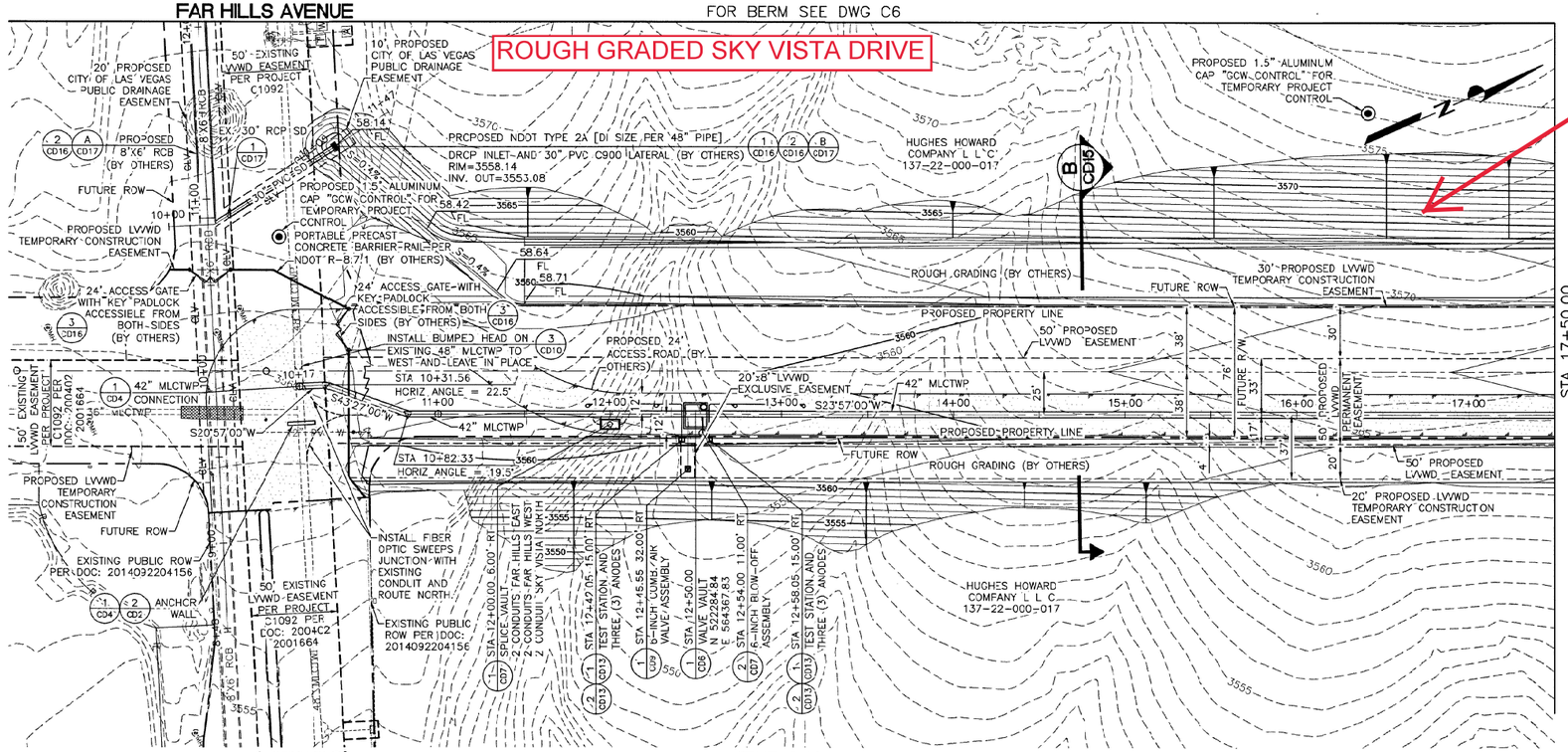
S:\Projects\SNR2501 Summerlin 3665 Reservoir\Sheets\CD1473 - 3665 ZONE RESERVOIR INLET-OUTLET PIPELINE\C1473-G1-Dwg Aug 31, 2017 - 3:04pm

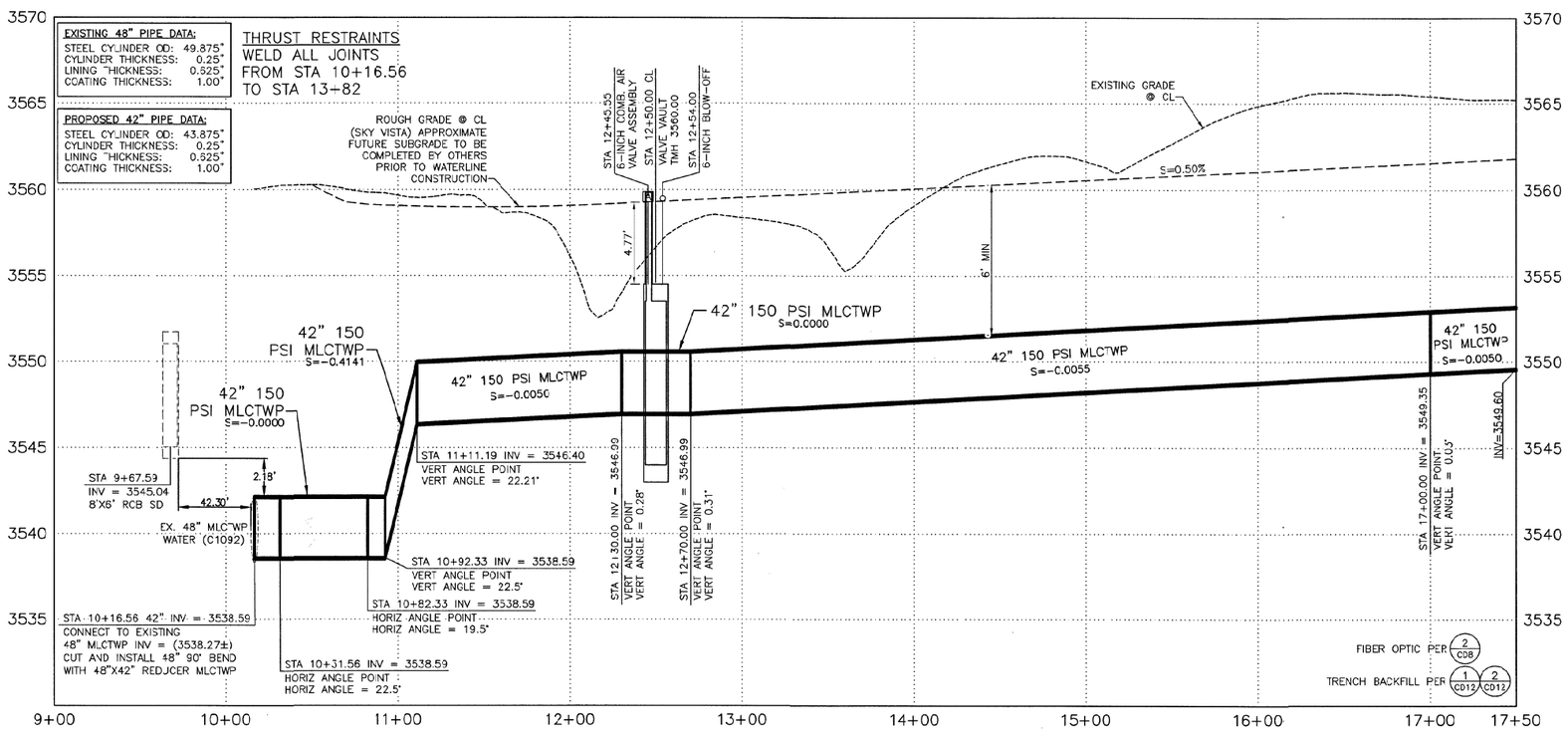
DRAWN BY: B. Dooms 11/16
CHECKED BY: J. Tull 8/17
RECOMMENDED BY: L. STEVEN ANDERSON DATE
ACCEPTED BY: RYAN C. PEARSON DATE

REVISIONS:

JONATHAN D. TULL
Exp. 06/30/2018
CIVIL
No. 14581
STATE OF NEVADA
8-11-17

CONTRACT NUMBER
C1473
DRAWING NUMBER G1
SHEET 1 OF 33





Call before you Dig
Avoid cutting underground utility lines. It's costly.
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Avoid overhead power line contact. It's costly.
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OVERHEAD
1-702-593-6111

Call before you UnderGround
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

L17-00591
CLV DWG # 565-507

LAS VEGAS VALLEY WATER DISTRICT

ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.2637275
Fax: +1702.2637200

VERIFY SCALE
BAR REPRESENTS ONE AND ONE-HALF INCHES ON ORIGINAL

SUMMERLIN 3665 ZONE RESERVOIR
INLET/OUTLET PIPELINE

SKY VISTA AVE PLAN AND PROFILE
STA 10+16.56 TO 17+50.00

SCALE HORIZ. SCALE 1"=40' VERT. SCALE 1"=4'

	DATE
DRAWN BY: R.Watson	11/16
CHECKED BY: J.Tull	8/17
RECOMMENDED BY: L. STEVEN ANDERSON	DATE
ACCEPTED BY: RYAN C. PEARSON	DATE

JONATHAN D TULL Exp. 06/30/2018 CIVIL STATE OF NEVADA No. 14581 ENGINEER

CONTRACT NUMBER
C1473
DRAWING NUMBER C1
SHEET 10 OF 33

REVISIONS:

P:\Projects\0205207 Summerlin 3665 Reservoir\Drawings\C1473 - 3665 ZONE RESERVOIR INLET-OUTLET PIPELINE\1 Sheet Set\C1473-A-Civ.dwg Sat, 28 Jul - 4:52p

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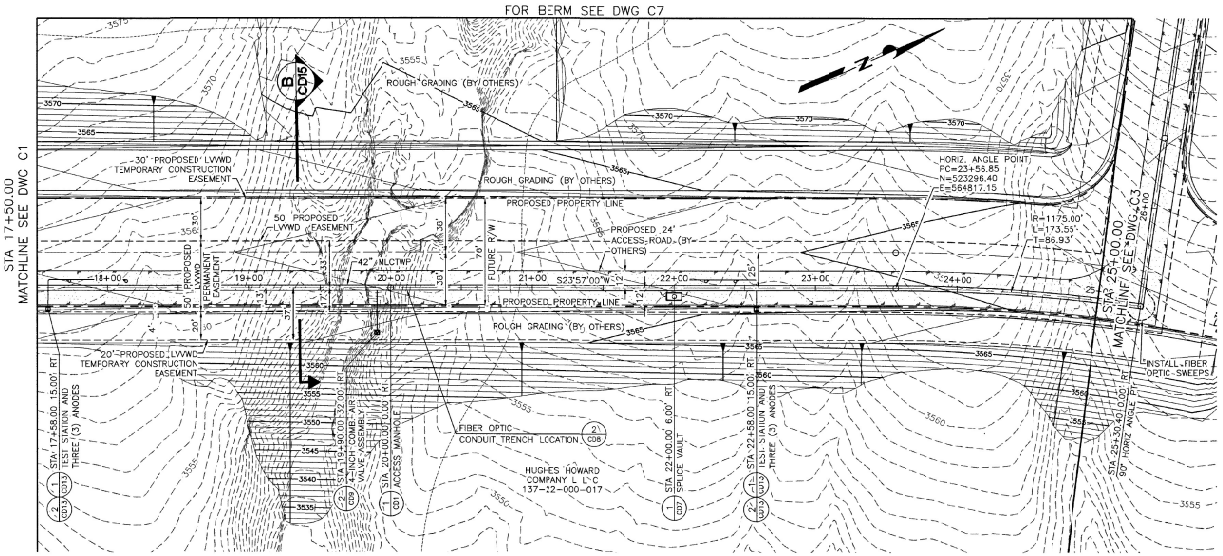
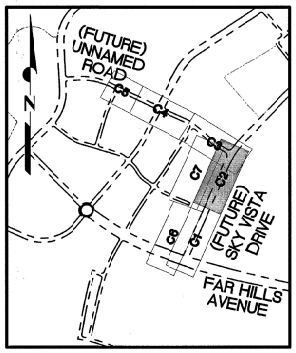
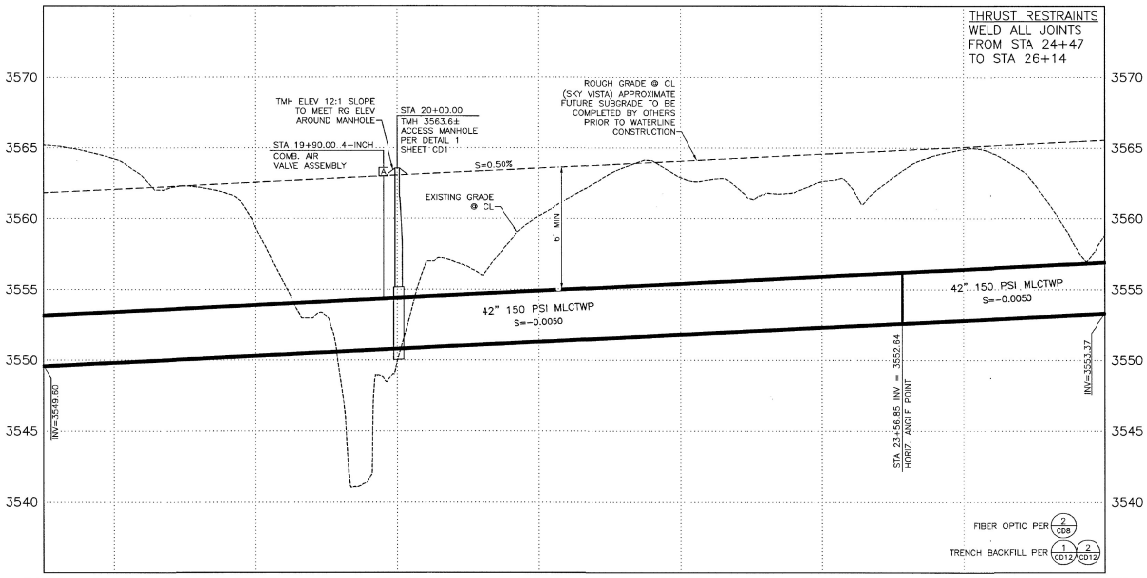




(FUTURE) SKY VISTA DRIVE



Call before you Dig
Avoid cutting underground utility lines. It's easily.
Call 811

Avoid overhead power line contact. It's costly.
Call before you OVERHEAD
1-702-593-6111

Call before you UnderGround
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

L17-C0591
CLV DWG # 565-507

LAS VEGAS VALLEY WATER DISTRICT

ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7273
Fax: +1.702.263.7200

VERIFY SCALE
1/2 0 1/2 1
BAR REPRESENTS ONE INCH ON ORIGINAL

SUMMERLIN 3665 ZONE RESERVOIR
INLET/OUTLET PIPELINE

SKY VISTA AVE PLAN AND PROFILE
STA 17+50.00 TO 25+00.00

SCALE HORIZ. SCALE 1"=40' VERT. SCALE 1"=4'

DRAWN BY: R. Watson	11/16
CHECKED BY: J. Tull	8/17
RECOMMENDED BY: L. STEVEN ANDERSON	DATE
ACCEPTED BY: RYAN C. PEARSON	DATE

JONATHAN D. TULL
Exp. 06/30/2018
CIVIL
No. 14531
9-27-17

CONTRACT NUMBER
C1473

DRAWING NUMBER C2
SHEET 11 OF 33

REVISIONS

CAUTION TO CONTRACTOR

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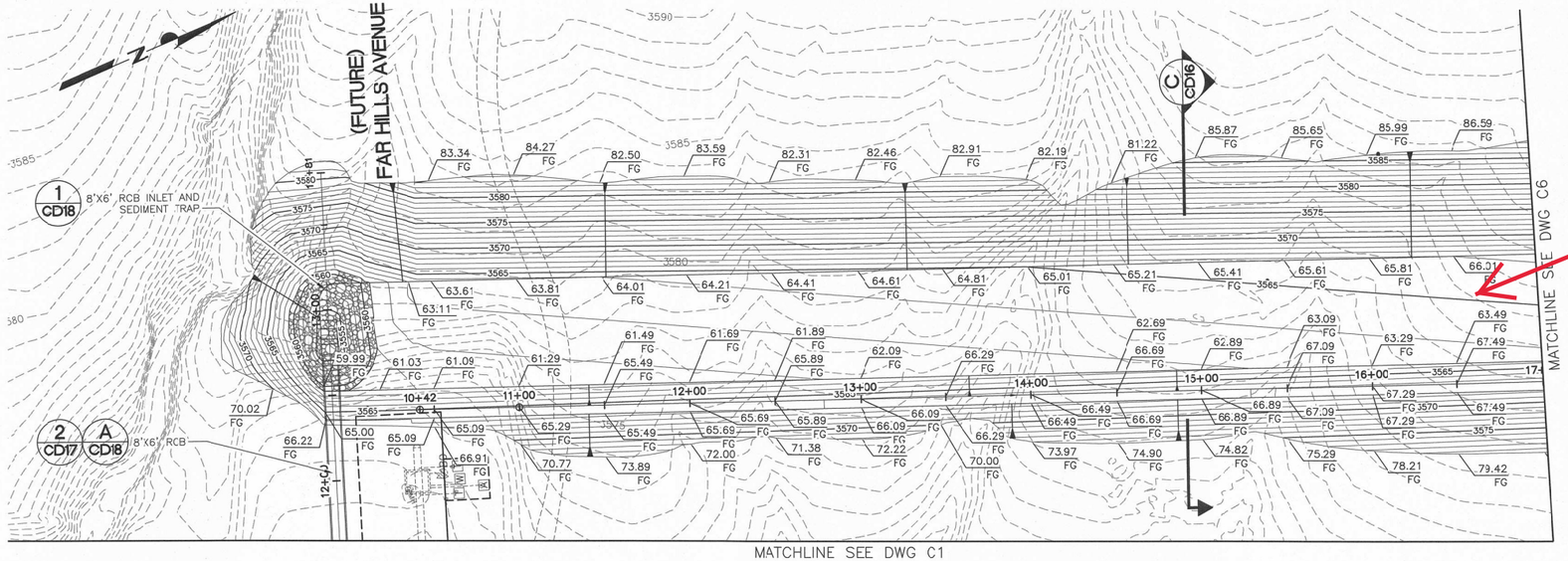
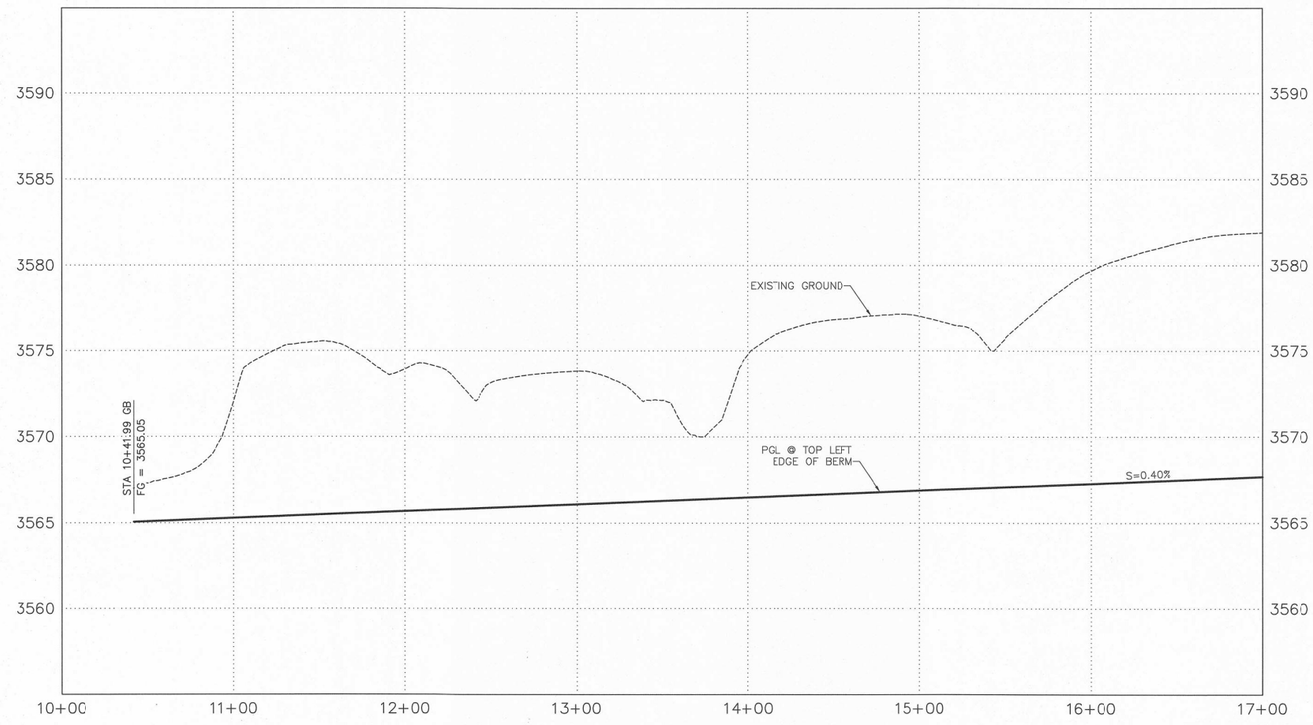


DESIGNED DITCH FOR 485 CFS (CP5A)

BERM



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1-702-593-6111

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL SYSTEMS AND STREET LIGHT SYSTEM CONDUITS IT'S COSTLY
CALL BEFORE YOU DO UNDERGROUND
Call before you UnderGround
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

CLV DWG # _____

60% SUBMITTAL

LAS VEGAS VALLEY WATER DISTRICT

ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

VERIFY SCALE
1/2 0 1/2 1
BAR REPRESENTS ONE AND ONE-HALF INCHES ON ORIGINAL

3665 ZONE RESERVOIR INLET-OUTLET PIPING

BERM PLAN AND PROFILE
10+41.75 TO 17+00.00

SCALE
HORIZ. SCALE 1"=40'
VERT. SCALE 1"=4'

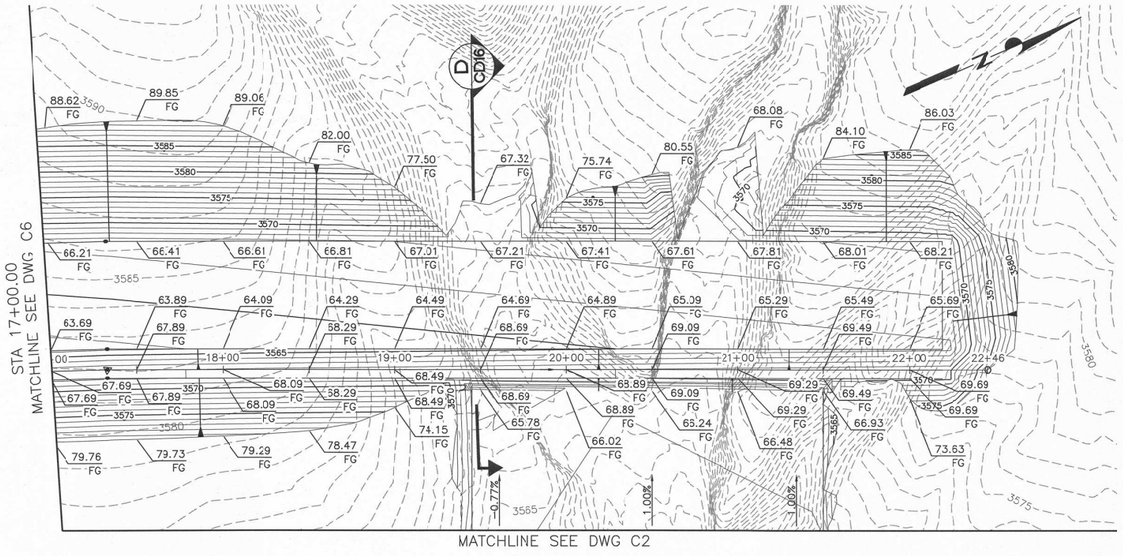
X:\Projects\00052897 Summerlin 3665 Reservoir\Sheets\C1473 - 3665 ZONE RESERVOIR INLET-OUTLET PIPELINE\C-1473-15-C-C6.dwg May 19, 2017 - 3:54pm

DRAWN BY: R.Watson 11/16
CHECKED BY: J.Tull 11/16
RECOMMENDED BY: _____ DATE
LVVWD SENIOR CIVIL ENGINEER
ACCEPTED BY: _____ DATE
DESIGN MANAGER

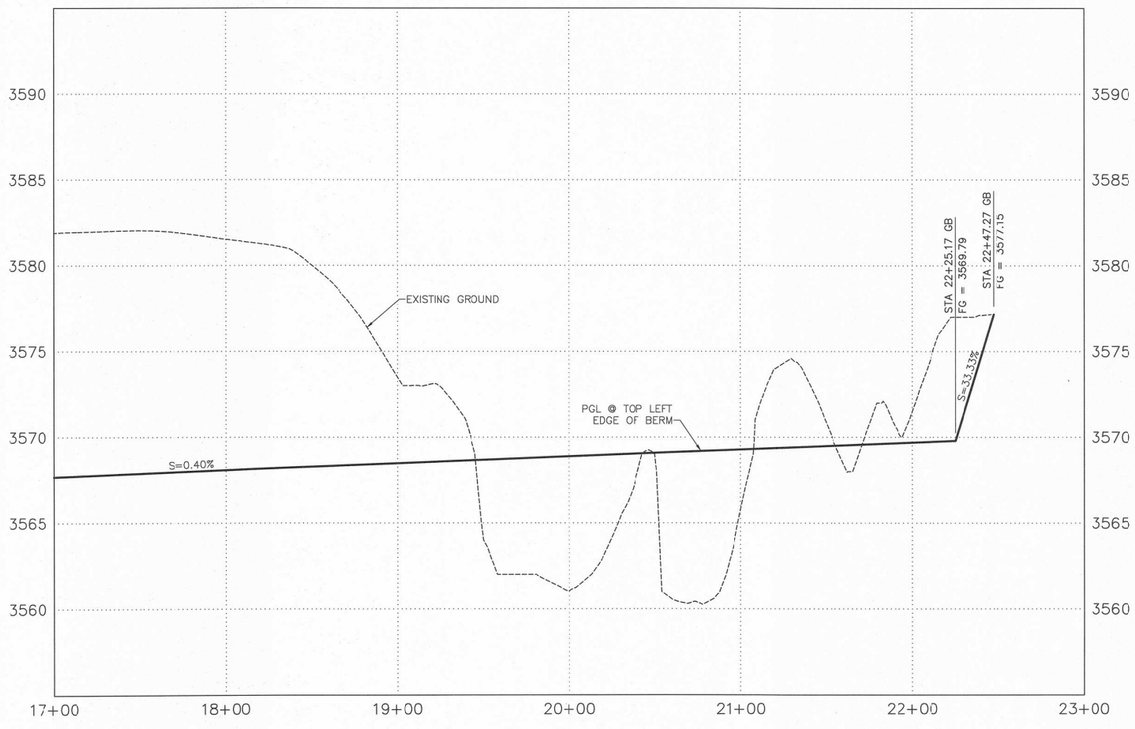
PROFESSIONAL ENGINEER - STATE OF NEVADA
JONATHAN D. TULL
Exp. 06/30/2018
CIVIL
No. 14581
5-23-17

REVISIONS:

CONTRACT NUMBER
C1473
DRAWING NUMBER C6
SHEET 15 OF 34



BERM



CAUTION TO CONTRACTOR

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Call before you UnderGround
1-702-455-7511
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-229-6611
LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

CLV DWG # _____

60% SUBMITTAL

LAS VEGAS VALLEY WATER DISTRICT

ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.2637275
Fax: +1702.2637200

VERIFY SCALE
1/2 0 1/2 1
BAR REPRESENTS ONE INCH ON ORIGINAL INCHES ON ORIGINAL

3665 ZONE RESERVOIR INLET-OUTLET PIPING

BERM PLAN AND PROFILE
17+00.00 TO 22+23.31

SCALE
HORIZ. 1" = 50'
VERT. 1" = 5'

N:\Projects\4100629\7 Submittals\3665 Reservoir\Sheets\C1473 - 3665 ZONE RESERVOIR INLET-OUTLET PIPELINE\C-4101-BK-C7.dwg, May 13, 2017 - 3:46pm

DRAWN BY: R.Watson	11/16	
CHECKED BY: J.Tull	11/16	
RECOMMENDED BY:	DATE	LVVWD SENIOR CIVIL ENGINEER
ACCEPTED BY:	DATE	DESIGN MANAGER

PROFESSIONAL ENGINEER STATE OF NEVADA
JONATHAN D TULL
No. 14581
Exp. 06/30/2018
CIVIL
5-23-17

CONTRACT NUMBER
C1473
DRAWING NUMBER C7
SHEET 16 OF 34

REVISIONS:

RESPONSE TO COMMENTS FOR THE TECHNICAL DRAINAGE STUDY FOR SUMMERLIN VILLAGE 21 REDPOINT DRIVE IMPROVEMENTS (FOX HILL DRIVE TO DESERT FOOTHILLS DRIVE)

62021-206

February 2019

Prepared for:

Hughes Howard Company, LLC
10801 Charleston Blvd., 3Rd Floor
Las Vegas, Nevada 89146
Phone: (702) 791-4300

GCW 50 YEARS
ENGINEERS \ SURVEYORS 1969-2019

CITY OF LAS VEGAS **INTER-OFFICE MEMORANDUM**			**DATE:** **March 12, 2019**
TO: **Land Development Services** Department of Building & Safety			**FROM:** Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin West Village 21 – Redpoint Drive Improvements (Desert Foothills Drive to Fox Hill Drive)**		**COPIES TO:** GCW Inc.
Cross Streets:	Desert Foothill Drive and Far Hill Drive		Howard Hughes Company, LLC
File Number:	F:\Depot\DSMemos\DS5088B.doc		Bart Anderson, P.E., DevCo
Parcel Number:	137-26-101-001; 137-22-101-001		
Zoning Action:	FMP-74490		
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	1/17/2019	2/7/2019	Not Approved	$400.00	502418: $400
2nd Submittal	2/26/2019	3/12/2019	See Comments Below	$400.00	503373: $400
			TOTAL FEES (LDDRS):	**$800.00**	**----**

REMARKS:

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

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

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

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

2. The subject drainage study is premised on the fully developed (ie constructed) *Desert Foothills Drive* (*Far Hills* to *Redpoint*). The subject improvement plans will not be approved prior to the buildout of *Desert Foothills Drive* (*Far Hills* to *Redpoint*) and the associated facilities.

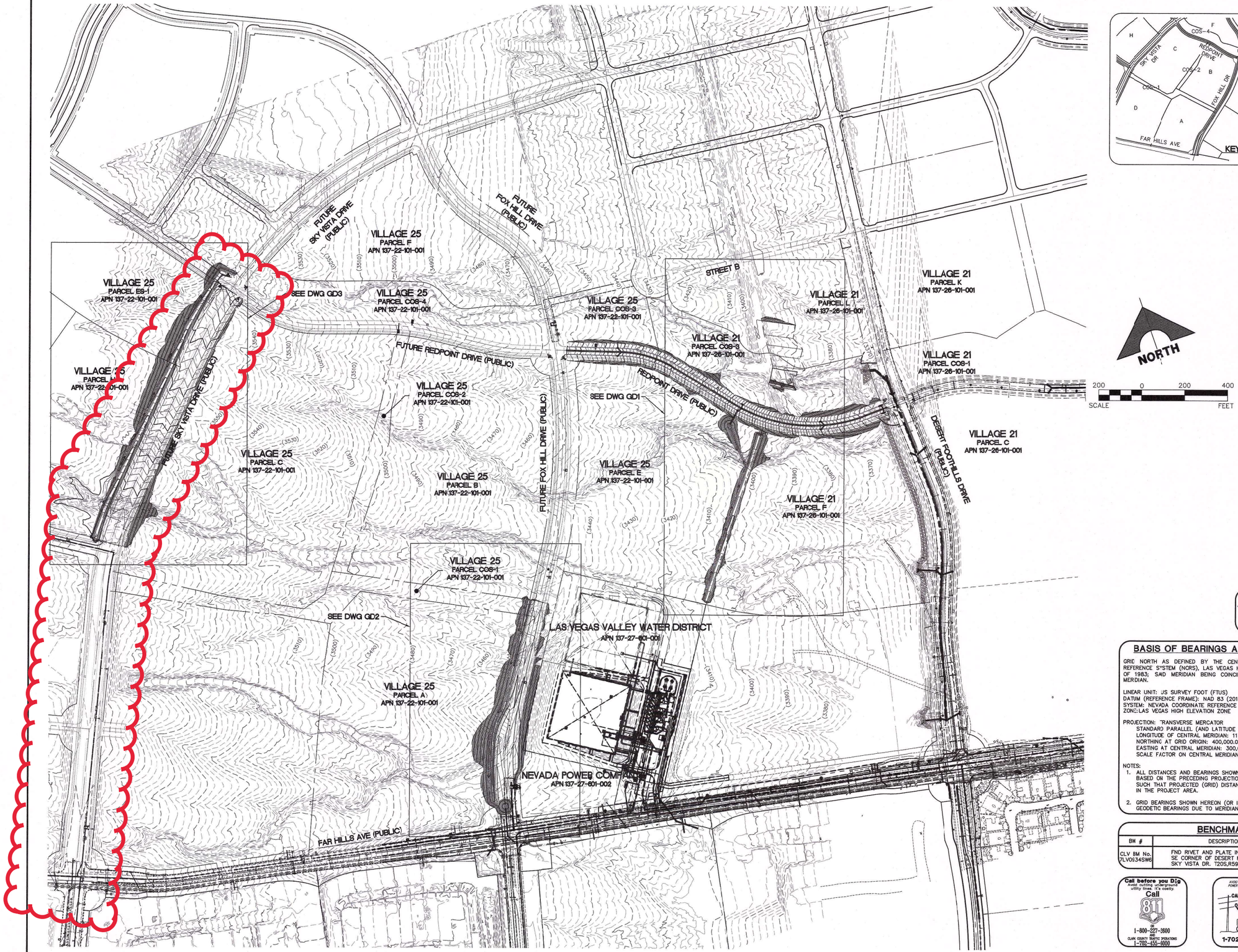
3. The flow in the storm drain exceeds the maximum velocity allowed (25 fps) per the *CCRFCD Hydrologic & Hydraulic Design Manual*. The Engineer must provide a detail showing additional sacrificial concrete (1-inch minimum) on the plans. A Special Construction Note must be added to the Grading Plans and the Plan and Profile Sheet that calls out the special construction requirement for the additional sacrificial concrete.

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/26
AREA K-26



OFF-SITE FLOOD CONTROL NOTE:

ALL OFF-SITE INTERIM FLOOD CONTROL FACILITIES SUCH AS, BUT NOT LIMITED TO, BERMS/DITCHES AND TEMPORARY SUMPS ARE PRIVATELY OWNED AND ARE TO BE PRIVATELY MAINTAINED BY THE HOWARD HUGHES COMPANY.

BASIS OF BEARINGS 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 MERDIAN.

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°1'5"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. 7LV0634SW6	FND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T20S,R59E,S34	3313.31 (FEET)	1,011.422 (METERS)

Call before you Dig — Avoid cutting underground utility lines. It's easy. Call 811 or 1-800-227-2600 and CLARK COUNTY TRAFFIC OPERATIONS 1-702-455-6000

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

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

CLV #

STATE OF NEVADA — PROFESSIONAL ENGINEER — MICHAEL L. GUBLER — No. 24464 — CIVIL — DATE: 2/25/19

FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GOW APP

PROJECT NO. 62021-206

DESIGN: LG
DRAWN: AS
CHECK: LG
PLOT DATE: 02-25-19
PLOT TIME: 15:43:14

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

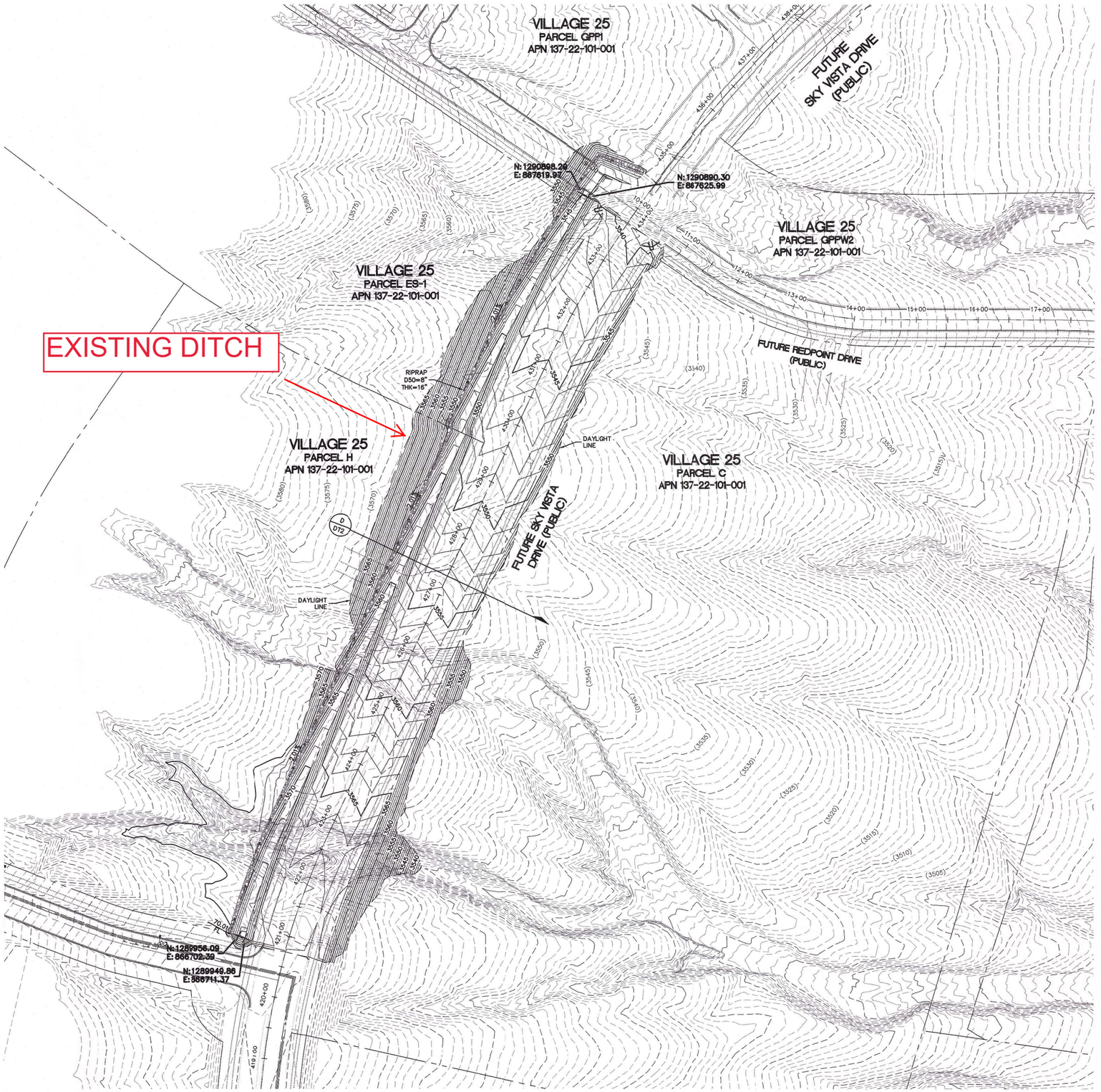
F:\Projects\6021\6021-206\DWG\Production\62021-206_MG0.dwg
Andrew Park-Murray

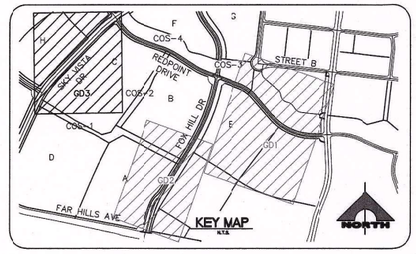
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 21 REDPOINT DRIVE IMPROVEMENTS
FOX HILL DRIVE TO DESERT FOOTHILLS DRIVE

MASTER GRADING PLAN

DRAWING MG1
5 OF 27 SHTS





NORTH

SCALE 80 0 80 160 FEET

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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
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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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CLV BM No. 7LV0934SW6	FND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. T20S,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

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and CLARK COUNTY TRAFFIC OPERATIONS 1-702-455-6000

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1-702-227-2929

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

CLV

EXPIRES 12/31/2019
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEVADA
MICHAEL FANG
No. 24454
CIVIL
DATE: 2/25/19

FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 62021-206
DESIGN: LG
DRAWN: AS
CHECK: LG
PLOT DATE: 02-25-19
PLOT TIME: 15:48:18

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

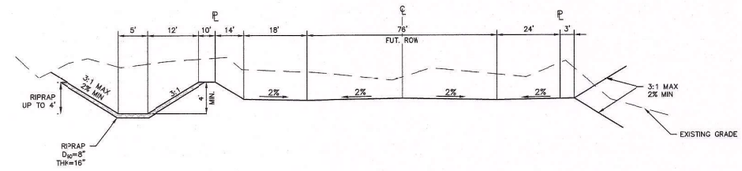
F:\Projects\60\62021-206\DWG\Production\62021-206_GD1.dwg
Andrew Pont-Murray

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 21 REDPOINT DRIVE IMPROVEMENTS
FOX HILL DRIVE TO DESERT FOOTHILLS DRIVE

GRADING PLAN 3

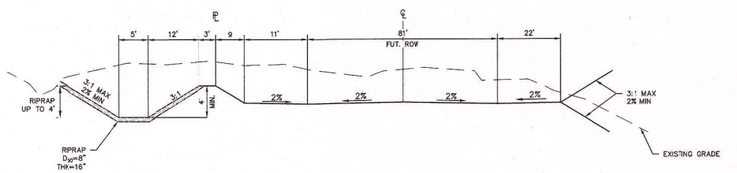
DRAWING
GD3
8 OF 27 SHTS



SKY VISTA DRIVE ROUGH GRADE (FUTURE PUBLIC)

SCALE: NTS
420+24.00 TO 425+51.47

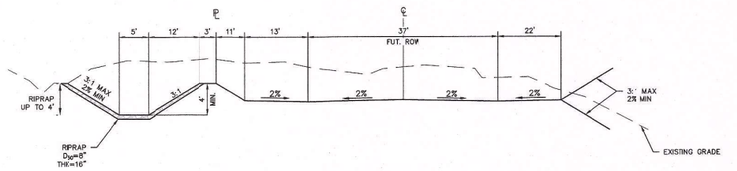
D
-



FOX HILL DRIVE ROUGH GRADE (FUTURE PUBLIC)

SCALE: NTS
220+41.00 TO 221+99.44

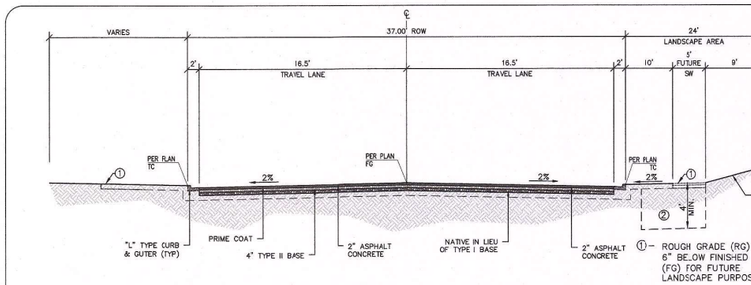
C
-



FOX HILL DRIVE ROUGH GRADE (FUTURE PUBLIC)

SCALE: NTS
221+99.44 TO 230+56.00

B
-



REDPOINT DRIVE (PUBLIC)

SCALE: NTS
26+16.18 TO 41+87.86

A
-

CLV #

FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GOW APP	DATE: 9/25/19

PROJECT NO. 62021-206

DESIGN: LG
DRAWN: AS
CHECK: LG
PLOT DATE: 02-25-19
PLOT TIME: 14:39:54

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

I:\Projects\600\62021-206\DWG\production\62021-206_SECTIONS.dwg
Andrew Park-Murray

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 21 REDPOINT DRIVE IMPROVEMENTS
FOX HILL DRIVE TO DESERT FOOTHILLS DRIVE

ROADWAY TYPICAL SECTIONS

DRAWING
DT2
22 OF 27 SHTS

Worksheet for Ditch #1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.037	
Channel Slope	2.01	%
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	5.00	ft
Discharge	285.00	ft^3/s

Results

Normal Depth	2.74	ft
Flow Area	36.25	ft^2
Wetted Perimeter	22.34	ft
Hydraulic Radius	1.62	ft
Top Width	21.45	ft
Critical Depth	2.83	ft
Critical Slope	0.01753	ft/ft
Velocity	7.86	ft/s
Velocity Head	0.96	ft
Specific Energy	3.70	ft
Froude Number	1.07	
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	2.74	ft
Critical Depth	2.83	ft
Channel Slope	2.01	%

Worksheet for Ditch #1

GVF Output Data

Critical Slope	0.01753	ft/ft

Cross Section for Ditch #1

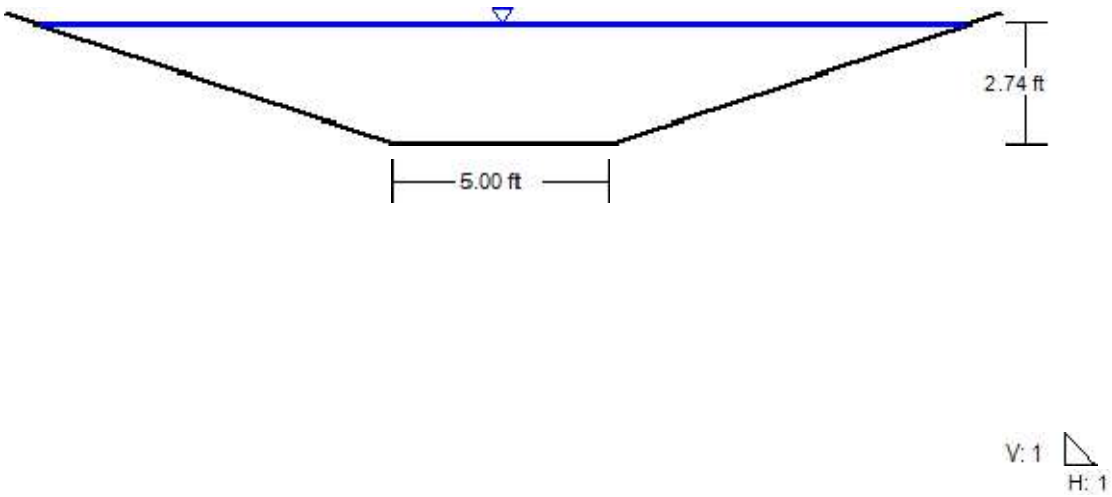
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.037	
Channel Slope	2.01	%
Normal Depth	2.74	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	5.00	ft
Discharge	285.00	ft³/s

Cross Section Image



UPDATE TO THE TECHNICAL DRAINAGE STUDY FOR VILLAGE 23B SKY VISTA DRIVE ALTA DRIVE TO FAR HILLS AVENUE

62023B-240

December 2018

Prepared For:

The Howard Hughes Company, LLC
10801 W. Charleston Blvd., 3Rd Floor
Las Vegas, Nevada 89135
Phone: (702) 791-4300

GCW
ENGINEERS \ SURVEYORS

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: February 13, 2019
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin V23B Sky Vista Drive - Alta to Far Hills - Update**			**COPIES TO:** GCW, Inc.
Cross Streets:	Sky Vista Drive from Alta to Far Hills			The Howard Hughes Company, LLC
File Number:	F:\Depot\DSMemos\DS4980E.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-017			CCRFCD
Zoning Action:	MDR-72841			
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	4/11/2018	4/23/2018 & 5/3/2018	Not Approved	$400.00	495088: $400
2nd Submittal	7/3/2018	7/20/2018 & 7/24/2018	Conditional Approval	$400.00	497102: $400
CCRFCD	8/20/2018	9/4/2018	Concurrence Recv'd	N/C	N/C
3rd Submittal	12/20/2018	1/17/2019	Not Approved	$100.00	501989: $100
4th Submittal	1/30/2019	2/13/2019	See Comments Below	N/C	N/C
			TOTAL FEES (LDDRS):	**$900.00**	**----**

REMARKS:

3rd & 4th Submittals: Update & Supplement to connect the 2nd outfall pipe from DB5 to the Sky Vista Drive Storm Drain System and the Relocation of an existing stub

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.

The following comments are repeated until they are complete:

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

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

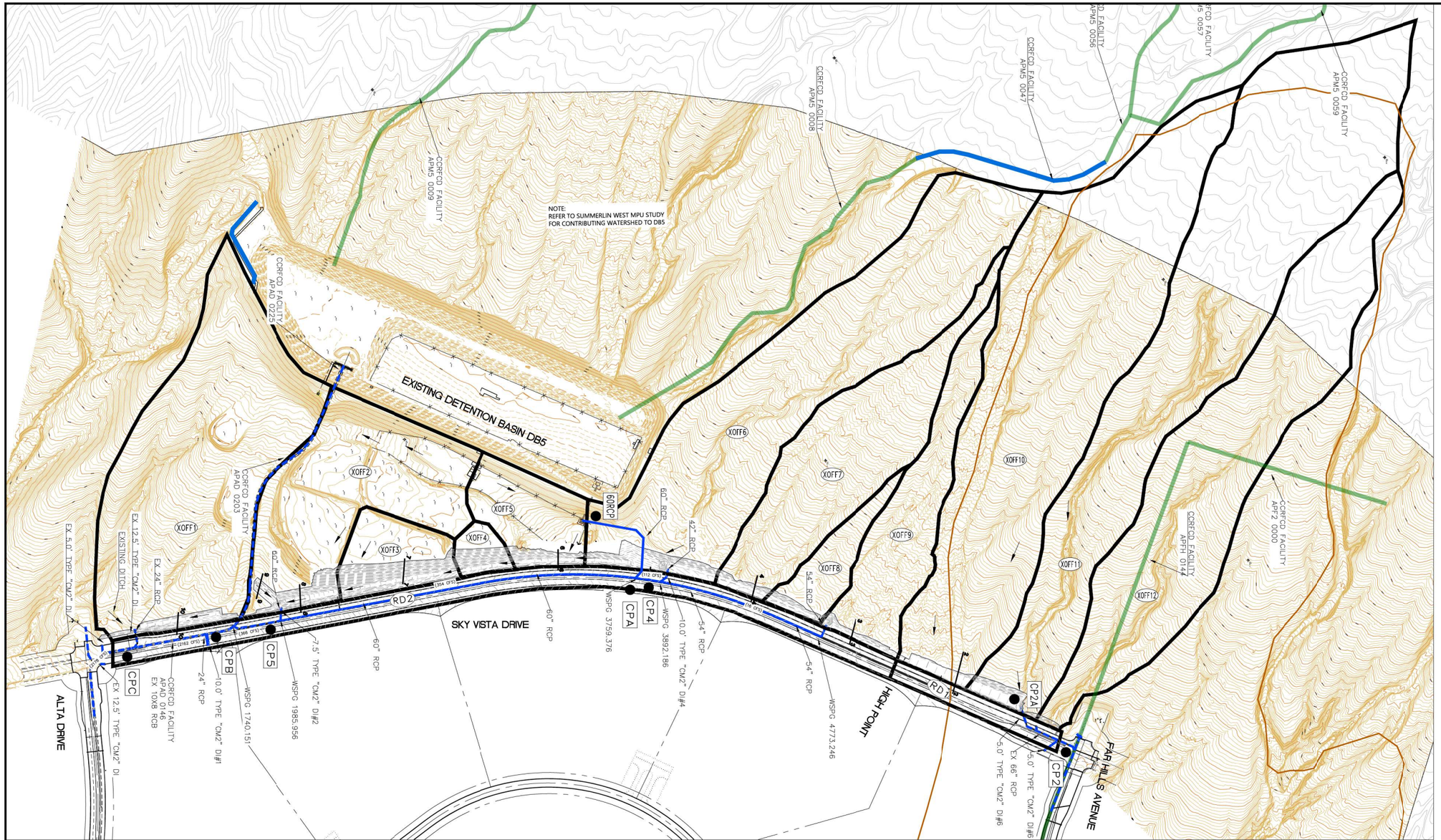
2. Since the street and the associated storm drain facilities will eventually be dedicated to the ***City of Las Vegas***, the engineer/developer must coordinate with *City of Las Vega Streets & Sanitation Department* for their review and approval for maintenance issues prior to the final acceptance of the subject improvement plans.
3. All offsite interim flood control facilities such as but not limited to berms / ditches and temporary sumps are privately owned and to be privately maintained by the *Howard Hughes Company*.

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



INTERIM CONDITIONS 100-YEAR DITCH CHARACTERISTICS

Ditch	Slope (%)	Q_{100} (cfs)	Depth of flow (ft)	Freeboard (ft)	Total Depth (ft)	Velocity (ft/s)	Bottom Width (ft)
2	2.0	100	0.45	0.55	1.0	4.82	45
3	1.7	18	0.59	0.91	1.5	4.54	5
4	1.6	37	0.63	0.87	1.5	4.95	10
6	3.0	12	0.21	1.29	1.5	3.58	15
7	3.7	23	0.3	1.20	1.5	4.89	15
8	4.1	33.4	0.27	1.23	1.5	4.87	25
9	0.9	28	0.88	1.12	2	4.17	5
10	2.6	32.7	0.41	0.59	1	4.98	15

CONCENTRATION POINT SUMMARY

Point ID	Tributary Sources	Area (mi^2)	Q_{100} (cfs)	Q_{10} (cfs)
CP2A	XOFF10, XOFF11, XOFF12	0.18	280	102
CP2	RD1, CP2A	0.18	287	106
CP4	XOFF6, XOFF7, XOFF8, XOFF9	0.09	112	30
60RCP	60" RCP, DB5 outflow	6.72	332	156
CPA	CP4, 60RCP	6.82	354	162
CP5	CPA, XOFF2, XOFF3, XOFF4, XOFF5	6.87	367	165
CPB	CP5, 7X5	6.87	2163	1477
CPC	CPB, XOFF1, RD2	6.92	2178	1481

INTERIM CONDITION SUBBASIN FLOW RATE SUMMARY

Subbasin ID	Area (acres)	Q_{100} (cfs)	Q_{10} (cfs)
XOFF1	23.4	61	23
XOFF2	21.6	53	18
XOFF3	4.3	9	2
XOFF4	1.1	2	1
XOFF5	5.6	12	4
XOFF6	31.2	65	20
XOFF7	15.1	23	5
XOFF8	3.4	5	1
XOFF9	9.9	18	4
XOFF10	41.9	99	34
XOFF11	43.1	107	40
XOFF12	28.3	75	29
RD1	2.1	8	4
RD2	10.1	35	18
7X5	-	1797	-

LEGEND

- (ST2) SUBBASIN NAME
- SUBBASIN BOUNDARY
- CP1 CONCENTRATION POINT
- FLOW DIRECTION
- 12——12 CROSS SECTION
- LOCAL SD FACILITY
- EX MPU FACILITY
- (XX CFS) STORM DRAIN FLOW RATE

NORTH

GRAPHIC SCALE
250 0 125 250
(IN FEET)
1 inch = 250 ft.

% COMPLETE

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP	DATE

PROJECT NO. 62023B-240
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 12-12-18
PLOT TIME: 07:52:16

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

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Mark Tobler

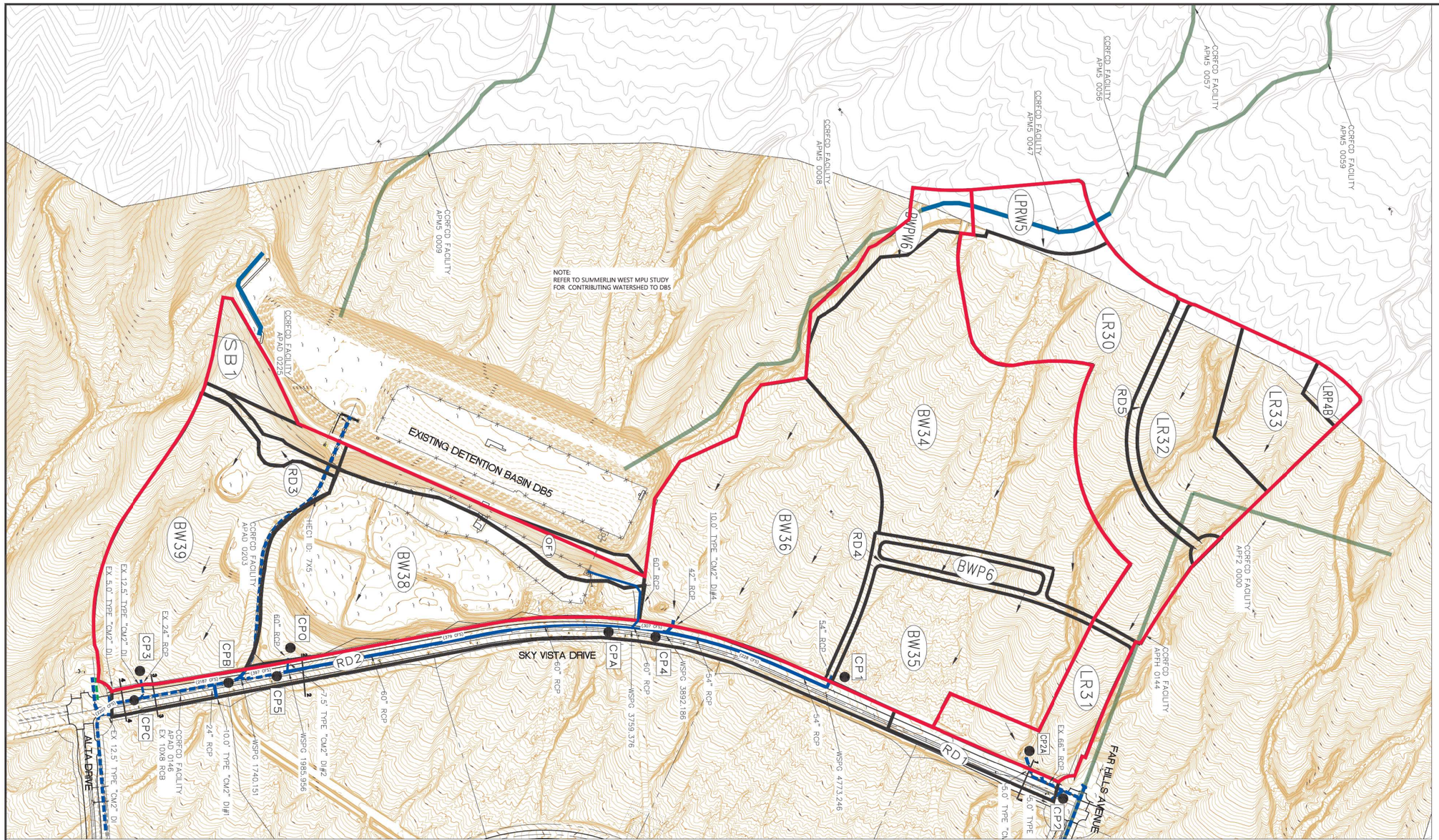
THE HOWARD HUGHES PROPERTIES. LLC

VILLAGE 23B SKY VISTA DRIVE
ALTA DRIVE TO FAR HILLS AVENUE

FIGURE 5
INTERIM CONDITION DRAINAGE MAP

DRAWING
FIG5
1 OF 1 SHTS

HTE: 00-00000



NOTE:
OFFSITE SUBBASIN DELINEATIONS AND LAND USES ARE BASED ON SUMMERLIN WEST MPU.

100-YEAR FLOW CHARACTERISTICS
ULTIMATE CONDITIONS

Location	Slope (%)	Q_{100} (cfs)	Depth (ft)	Velocity (ft/s)	D*V	Tributary
1-1 Half	0.83	4.50	0.39	2.60	1.01	RD1
2-2	4.32	36.00	0.46	6.52	3.00	RD2
3-3 West Half	3.00	10.60	0.42	5.10	2.14	DI#2 Bypass
4-4 East Half	3.00	9.00	0.40	4.95	1.98	DI#1 Bypass
4-4 West Half	3.00	2.00	0.28	3.2	0.9	EX 12.5' CM2 DI Bypass

ULTIMATE CONDITION
CONCENTRATION POINT SUMMARY

Point ID	Tributary Sources	Area (mi^2)	Q_{100} (cfs)	Q_{10} (cfs)
CP1	BWPW6, BW35, BWP6, BW34, & RD4	0.09	228	107
CP2A	LR31, LR30, LR32, LR33, LRP4B, RD5 & LPRW5	0.09	199	90
CP2	CP2A & RD1	0.09	207	95
CP3	SB1, RD3, & BW39	0.04	100	48
CP4	CP1 & BW36	0.14	307	136
CPO	OF1 & BW38	0.04	98	45
CP5	CPA & BW38	6.89	397	186
CPA	CP4 & DB5 60RCP	6.86	379	177
CPB	CP5 & DB 7X5 RCBC	6.89	2187	1491
CPC	CP3, RD2, & CPB	6.95	2207	1502

ULTIMATE CONDITION
SUBBASIN FLOW RATE SUMMARY

Subbasin ID	Area (acres)	Q_{100} (cfs)	Q_{10} (cfs)
BW34	35.8	139	67
BW35	15.8	61	30
BWP6	1.9	5	2
BWPW6	2.9	*0	4
BW36	28.4	78	31
OF1	4.7	*8	8
BW38	22.2	80	37
BW39	22.0	84	41
LR30	25.0	80	37
LR31	6.6	25	12
LR32	10.3	39	19
LR33	6.7	26	13
LRP4B	1.1	4	2
LPRW5	4.2	*6	7
RD1	2.1	9	5
RD2	10.1	36	19
RD3	1.3	5	3
RD4	2.8	*2	6
RD5	2.0	9	5
SB1	2.9	*0	4
60RCP	-	332	-
7X5	-	1797	-

LEGEND

- ST2 — SUBBASIN NAME
- SUMMERLIN WEST MPU LARGE BASIN BOUNDARY
- SUBBASIN BOUNDARY
- CP1 — CONCENTRATION POINT
- FLOW DIRECTION
- 12——12 — CROSS SECTION
- PROP SD FACILITY
- EX SD FACILITY
- (XX CFS) — STORM DRAIN FLOW RATE

NORTH

GRAPHIC SCALE
250 0 25 250
(IN FEET)
1 inch = 250 ft.

% COMPLETE

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP	DATE

PROJECT NO. 62023B-240
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 12-16-18
PLOT TIME: 14:22:21

GCW ENGINEERS \ SURVEYORS
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F:\Projects\600\62023B-240\Division\Civil\Figures\Update\Fig6_ULT.dwg
Mark Eckert

THE HOWARD HUGHES PROPERTIES, LLC

VILLAGE 23B SKY VISTA DRIVE
ALTA DRIVE TO FAR HILLS AVENUE

FIGURE 6

ULTIMATE CONDITION DRAINAGE MAP

DRAWING
FIG6
1 OF 1 SHTS

LOD#
HTE: 00-00000

APPENDIX C

Drainage Figures and Plans

FIGURE 1: VICINITY MAP



03/13/2019 04:52:39 PM

1:15,000

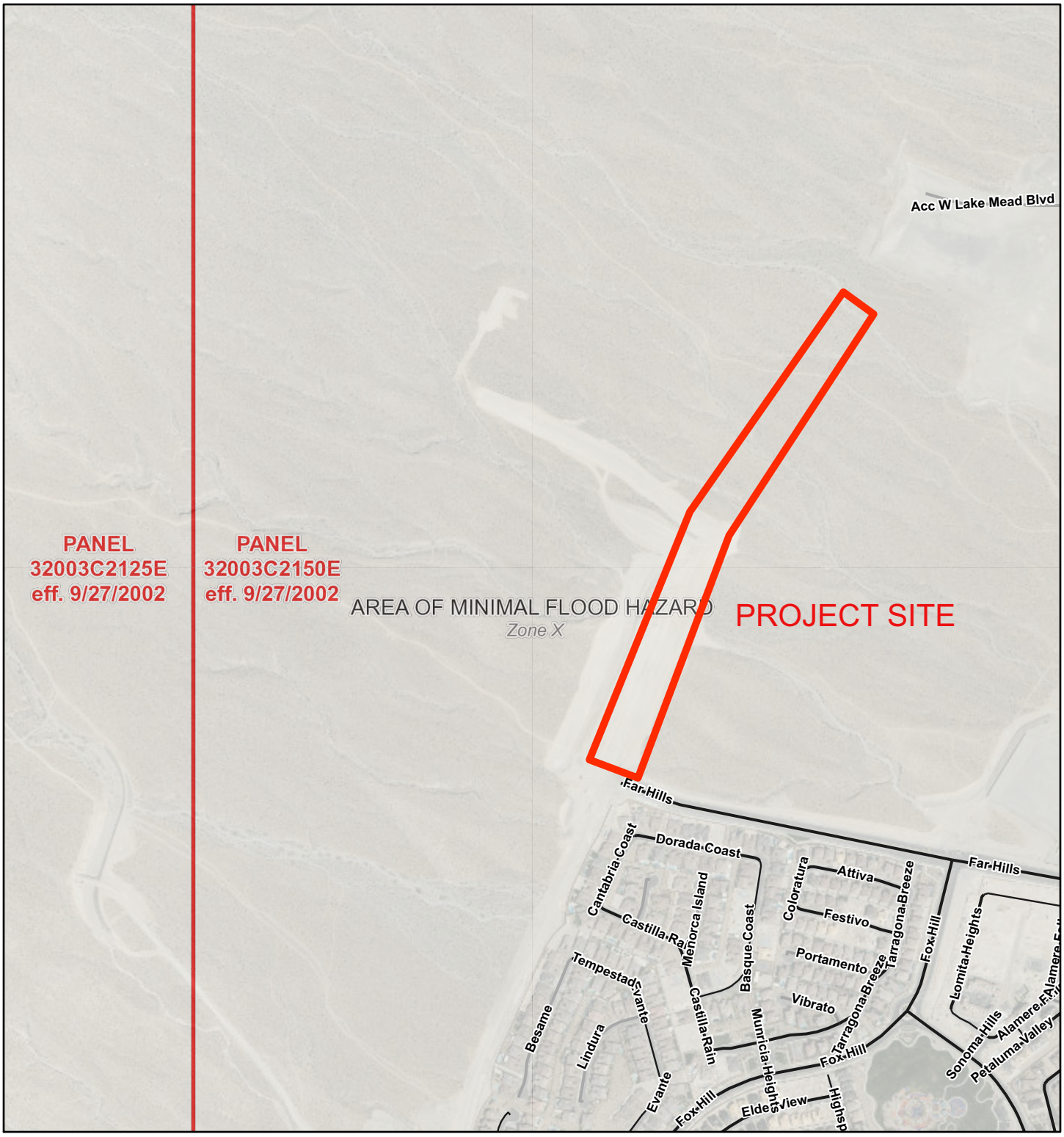
0 0.1 0.2 0.4 mi

0 0.15 0.3 0.6 km

Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors, Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

Masih Edalat
GCW, Inc.

FIGURE 2: FIRM MAP



03/13/2019 04:59:15 PM

1:12,000

0 0.07 0.15 0.3 mi

0 0.13 0.25 0.5 km

Streets
- Avenue
- Street
- Drive
- Other
- Easements

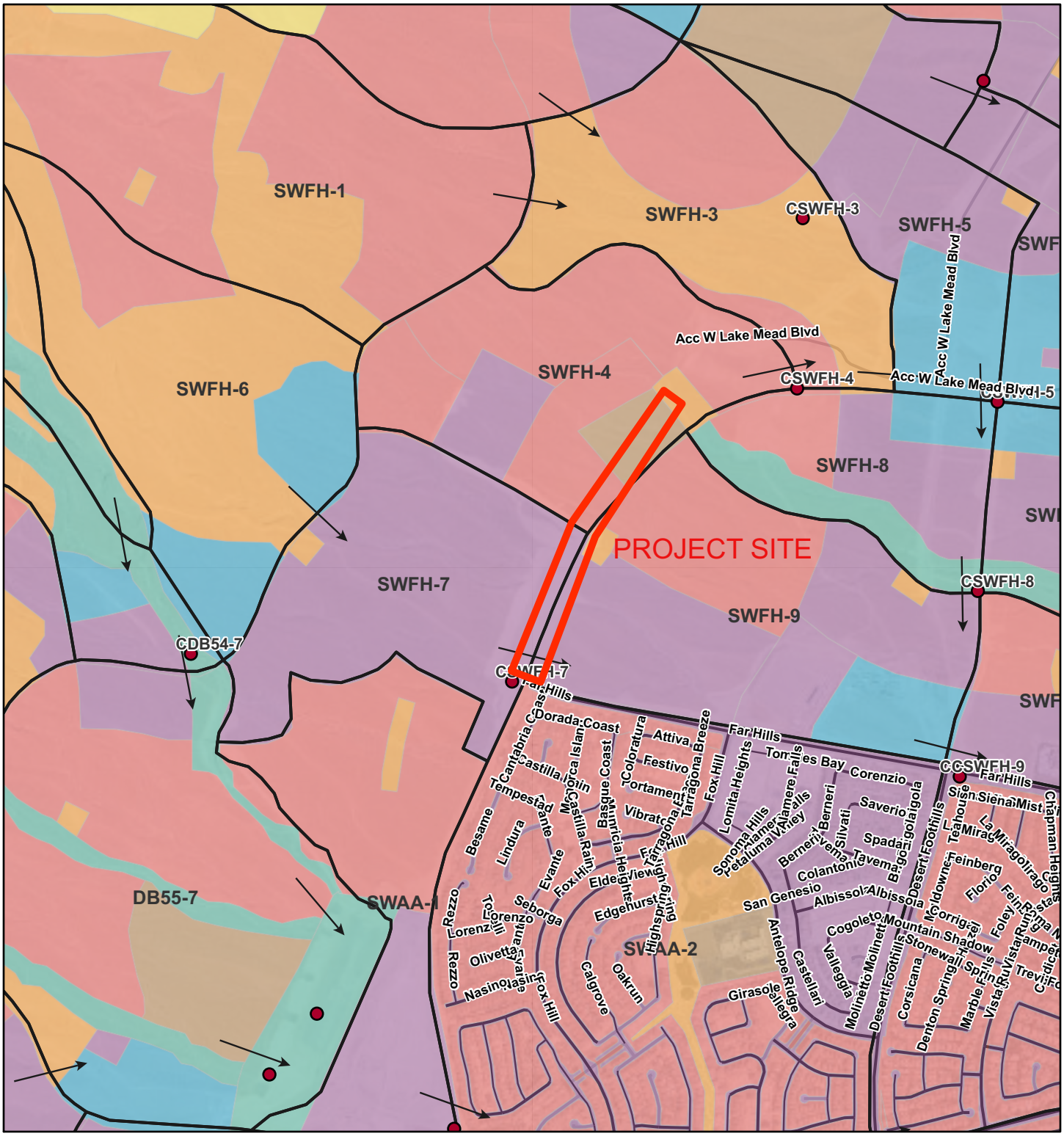
Parcels
- Ground_Parcels
- Condo/Air_Parcels
- Submittal Information

Flood Hazard Zones
- 1% Annual Chance Flood Hazard

Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors, Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

Masih Edalat
GCW, Inc.

FIGURE 3: 2018 MPU SUBBASIN MAP



03/13/2019 05:04:13 PM

1:20,000

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

2018_MPU - LandUse
- 1
- 2
- 5
- 6
- 7
- 9
- 12

2018_MPU - ConcentrationPoints

2018_MPU - FlowDirectionArrows

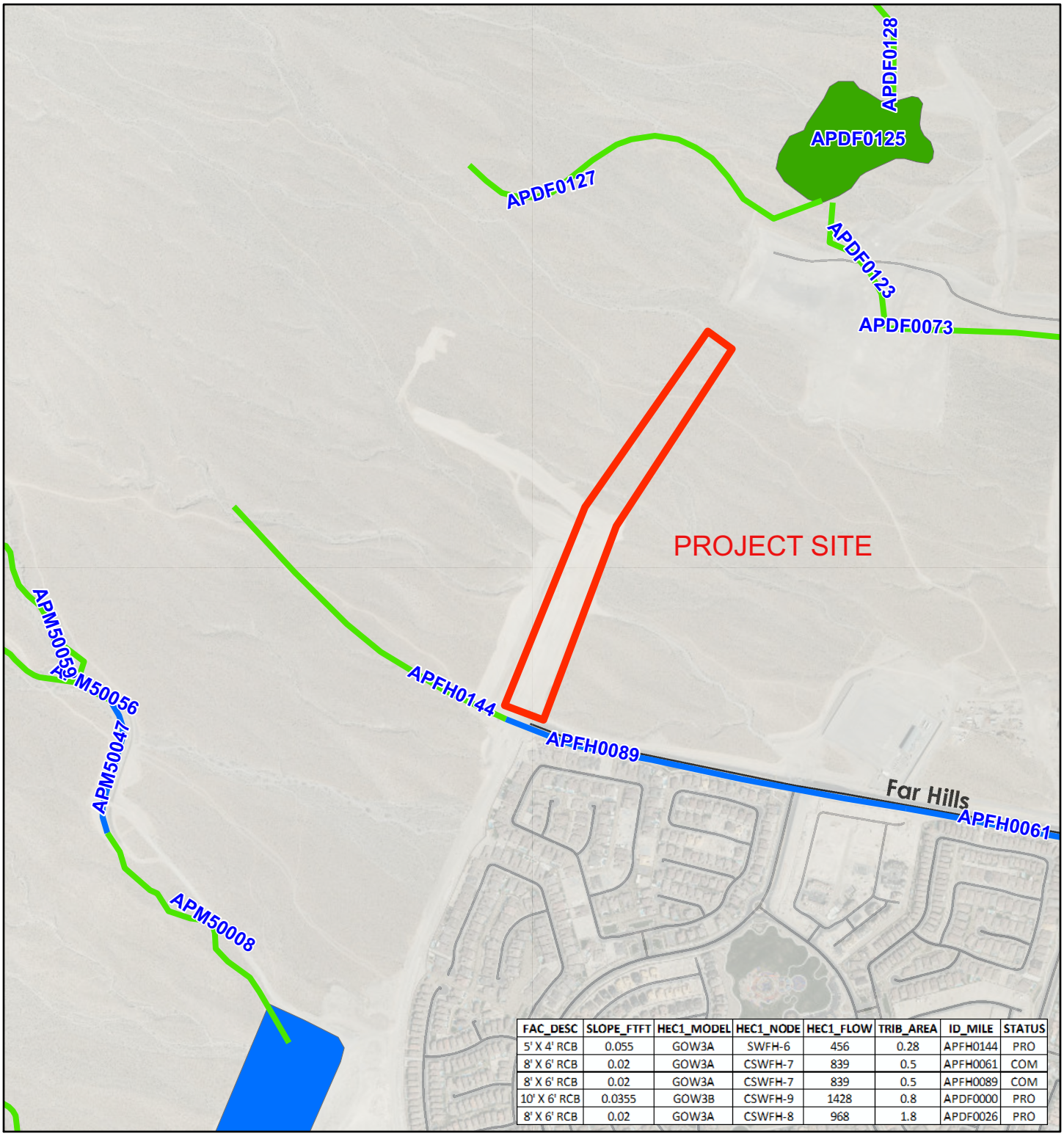
2018_MPU - Subbasins

Streets
- Avenue
- Street
- Drive
- Road
- Other
- Easements

Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors, Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

Masih Edalat
GCW, Inc.

FIGURE 4: 2018 MPU FACILITY MAP



FAC_DESC	SLOPE_FTFT	HEC1_MODEL	HEC1_NODE	HEC1_FLOW	TRIB_AREA	ID_MILE	STATUS
5' X 4' RCB	0.055	GOW3A	SWFH-6	456	0.28	APFH0144	PRO
8' X 6' RCB	0.02	GOW3A	CSWFH-7	839	0.5	APFH0061	COM
8' X 6' RCB	0.02	GOW3A	CSWFH-7	839	0.5	APFH0089	COM
10' X 6' RCB	0.0355	GOW3B	CSWFH-9	1428	0.8	APDF0000	PRO
8' X 6' RCB	0.02	GOW3A	CSWFH-8	968	1.8	APDF0026	PRO

03/13/2019 05:09:25 PM

1:15,000

0 0.1 0.2 0.4 mi

0 0.15 0.3 0.6 km

CCRFCD Facilities
- COM
- PRO

CCRFCD_Basins
- COM
- PRO

Streets
- Highway
- Street
- Dirt Road
- Railroad

Major Streets
- Highway
- Major Street
- Railroad
- County Boundary
- Easements

Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors, Esri, Garmin, GEBCO, NOAA NGDC, and other contributors, GISMO

Masih Edalat
GCW, Inc.



NORTH

240 0 240 Feet

1 in = 150 ft

Legend

- DI
- offsite_g
- Cross Section
- EX SD
- Proposed SD
- Ditch
- Flow Direction
- 1-ft Contours
- 2-ft Contour 2016

CCRFCD Facilities

STATUS

- COM
- CON
- PRO
- TN1
- TN2

100-YEAR STREET FLOW CHARACTERISTICS

Cross Section	Slope (%)	Q_{100} (cfs)	Depth (ft) / HW Elevation	Velocity (ft/s)	D*V	NOTE
(A)	0.5	7.0	0.49	2.13	1.0	Half Street
(B)	1.8	8.0	0.43	3.59	1.5	Half Street

ULTMATE CONDITION FLOW SUMMARY

* Referenced from the Master Drainage Study for Village 25

BASIN ID	Q_{100} (cfs)	Area (acres)
ES1	42	10.2
RES4	7	1.6
H	48	12.1
CR	308	-
V30-U	20	4.7
V30-W	25	6.84
V30-S	49	12.02

NOTE: * REFERENCED FROM THE RESERVOIR STUDY
** REFERENCED FROM THE V23B SKY VISTA STUDY
*** REFERENECED FROM THE V21 REDPOINT STUDY

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE:

PROJECT NO. 62025-203

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 04/03/2019
PLOT TIME: 4:00:20 PM

GCW ENGINEERS \ SURVEYORS
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medalat

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
FAR HILLS AVENUE TO REDPOINT AVENUE

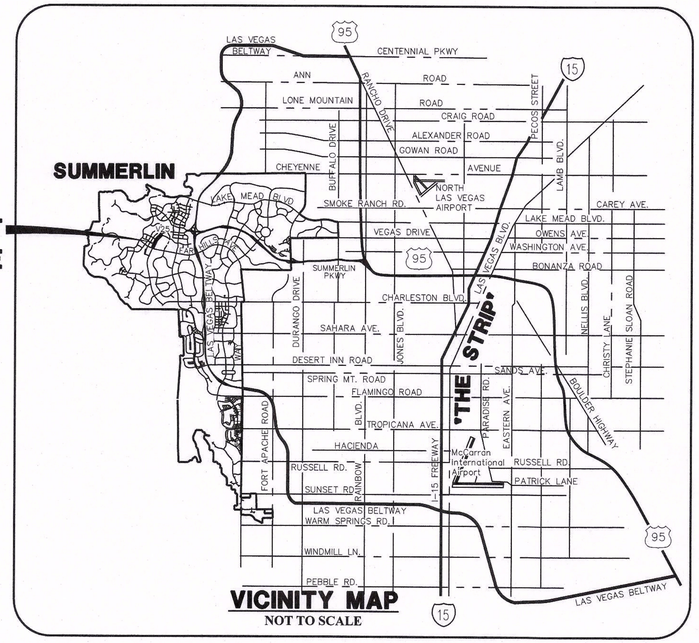
INTERIM CONDITION DRAINAGE MAP

DRAWING
FIG5
1 OF 1 SHTS

SUMMERLIN

SM

VILLAGE 25
SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)
FUTURE SID PROJECT
A.P.N. 137-22-101-001
2019



VICINITY MAP
NOT TO SCALE

SHEET INDEX		
NO.	DWG	DESCRIPTION
1	G1	COVER SHEET
2	G2	PROJECT DATA SHEET
3	G3	GENERAL NOTES
4	HC1	HORIZONTAL CONTROL 1
5	HC2	HORIZONTAL CONTROL 2
6	MU1	MASTER UTILITY PLAN – WATER
7	MU2	MASTER UTILITY PLAN – STORM DRAIN
8	MU3	MASTER UTILITY PLAN – SEWER
9	MG	MASTER GRADING PLAN
10	GD1	GRADING PLAN 1
11	GD2	GRADING PLAN 2
12	PP1	PLAN AND PROFILE 1
13	PP2	PLAN AND PROFILE 2
14	PP3	PLAN AND PROFILE 3
15	PP4	PLAN AND PROFILE 4
16	PP4A	PLAN AND PROFILE 4A
17	PP5	PLAN AND PROFILE 5
18	PP5A	PLAN AND PROFILE 5A
19	PP6	PLAN AND PROFILE 6
20	PP6A	PLAN AND PROFILE 6A
21	PP7	PLAN AND PROFILE 7
22	PP7A	PLAN AND PROFILE 7A
23	LP1	LATERAL PROFILES 1
24	LP2	LATERAL PROFILES 2
25	LP3	LATERAL PROFILES 3
26	LP4	LATERAL PROFILES 4
27	LP5	LATERAL PROFILES 5
28	LP6	LATERAL PROFILES 6
29	DT1	TYPICAL DETAILS & SECTIONS
30	DT2	UTILITY DETAILS
31	TR1	SIGNAGE AND STRIPING PLAN 1
32	TR2	SIGNAGE AND STRIPING PLAN 2
33	TR3	SIGNAGE AND STRIPING PLAN 3
34	TR4	SIGNAGE AND STRIPING PLAN 4
35	SL1	STREETLIGHT AND ELECTRICAL PLAN 1
36	SL2	STREETLIGHT AND ELECTRICAL PLAN 2
37	SL3	STREETLIGHT AND ELECTRICAL PLAN 3
38	SL4	STREETLIGHT AND ELECTRICAL PLAN 4
39	SL5	STREETLIGHT AND ELECTRICAL PLAN 5
40	SL6	STREETLIGHT AND ELECTRICAL PLAN 6
41	S1	GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS
42	S2	JUNCTION STRUCTURE 6'X6' RCB TO EX. 8'X6' RCB
43	S3	JUNCTION STRUCTURE 48" RCP TO 6'X6' RCB

OWNER/DEVELOPER

THE HOWARD HUGHES COMPANY, LLC
10801 W. CHARLESTON BLVD., 3RD FLOOR
LAS VEGAS, NEVADA 89135
OFFICE PHONE NO. (702) 791-4300

ENGINEER

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

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

CAUTION TO CONTRACTOR

THE CONTRACTOR SHALL BE RESPONSIBLE TO INVESTIGATE AND VERIFY THE ACTUAL LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND FACILITIES AT LEAST 48 HOURS IN ADVANCE OF THE PERFORMANCE OF ANY WORK.

THE HOWARD HUGHES COMPANY, LLC

KEVIN ORROCK DATE
VICE PRESIDENT

DRAINAGE CERTIFICATION

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

MICHAEL FANG, P.E. 24464 DATE

CLV PLANNING DEPARTMENT

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

CITY OF LAS VEGAS PLANNING DEPARTMENT DATE

ALLEN PAVELKA, P.E. 9029 DATE
CITY ENGINEER
CITY OF LAS VEGAS, NEVADA

APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHTS-OF-WAY AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS, EXCEPT THOSE SPECIFICALLY LISTED UNDER "DEVIATIONS FROM STANDARDS". THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN "DEVIATIONS FROM STANDARDS" IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:
LVVWD APPROVED FIRE FLOW: TOTAL 1,500 GPM / ON-SITE N/A GPM
SHEETS: G1-G3, MU1-MU3, PP1-PP7A, LP1-LP6, DT1-DT2

FIRE DEPARTMENT APPROVAL

CITY OF LAS VEGAS FIRE DEPARTMENT DATE

UTILITY APPROVALS

COX COMMUNICATIONS LAS VEGAS, INC. DATE

CENTRAL TELEPHONE CO., DBA CENTURYLINK DATE

THE AFFIXED CENTURYLINK APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED 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 CORPORATION DATE

CLV#:

STATE OF NEVADA — PROFESSIONAL ENGINEER — MICHAEL FANG — Exp. 06/30/2019 — CIVIL — No. 24464
DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

NO.	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP
REV					

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-09-19
PLOT TIME: 09:48:42

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

F:\PROJECTS\2000\62025-203\DWG\PRODUCTION\62025-203DWG_G1.DWG ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

COVER SHEET

DRAWING
G1
1 OF 43 SHTS

LEGEND

- TYPICAL PROPOSED LINEWORK
- TYPICAL EXISTING LINEWORK
- TYPICAL FUTURE LINEWORK
- SECTION LINE
- EASEMENT LINE
- 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. UTILITIES PROFILE VIEW
- PE GAS — EX. GAS LINE
- ELEC — EX. ELECTRICAL
- CATV — EX. CABLE TV
- TEL — EX. TELEPHONE
- OHP — EX. OVERHEAD POWER LINES
- EX. ELEC & PWR POLES
- TYPICAL CURB & GUTTER, SIDEWALK AND RAMP
- POST AND CABLE FENCE
- CHAIN LINK FENCE
- SAWCUT
- PAVEMENT RESORATION AREA
- PROPOSED ABANDONMENT
- EXISTING ABANDONMENT
- CUT LINE LIMITS
- FILL LINE LIMITS

- 1/C — DETAIL BUBBLE W/ REF.
- BENCHMARK
- GATE VALVE
- PRV — PRESSURE REDUCING VALVE
- BWV — BACK WATER VALVE
- 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
- 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

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
DCS\	DESIGN AND CONSTRUCTION
DCSWCS	STANDARDS FOR WASTEWATER COLLECTION SYSTEM (LATEST EDITION)
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
ELE,ELEC	ELECTRICAL
ELEV	ELEVATION
EP, EOP	EDGE OF PAVEMENT
ESMT	EASEMENT
EVC	END VERTICAL CURVE
EVP	END VERTICAL POINT
EXIST,EX	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
L, LT	LEFT
LF	LINEAR FEET
LIP	LIP OF GUTTER
LN	LANE
LP	LOW POINT, LIGHT POLE
LSCP	LANDSCAPE
LVVWD	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
PB	PULL BOX
PBS	PLANTMIX BITUMINOUS SURFACE
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
ℙ	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
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PZ	PRESSURE ZONE
R, RAD	RADIAL, RADIUS
R, 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
ROW,R/W	RIGHT OF WAY
RP	RADIUS POINT
RPM	RAISED PAVEMENT MARKERS
RSGV	RESILIENT SEAT GATE VALVE
S	SEWER, SOUTH
SCH	SCHEDULE
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
USD, USDCCA, CCAUSD	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

SEWER QUANTITIES (PUBLIC)

12" C-900	2,802	LF
48" MANHOLE	7	EA
60" MANHOLE	4	EA
PIPE END CAP	7	EA

QUANTITIES ARE ESTIMATES ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

WATER QUANTITIES (PUBLIC)

6" DIP	203	LF
12" PVC	4,511	LF
12" CAP & BLOW-OFF	6	EA
FIRE HYDRANT	5	EA

QUANTITIES ARE ESTIMATES ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

STORM DRAIN QUANTITIES (PUBLIC)

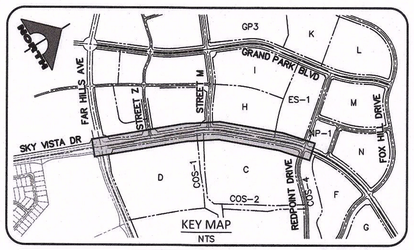
18" RCP	127	LF
24" RCP	406	LF
30" RCP	67	LF
36" RCP	850	LF
48" RCP	148	LF
6'X6' RCB	1,516	LF
48" TYPE I MANHOLE	7	EA
48" TYPE II-SD MANHOLE	2	EA
60" TYPE II-SD MANHOLE	7	EA
DROP INLET - 5' MODIFIED "C"	5	EA
DROP INLET - 7.5' MODIFIED "C"	2	EA
DROP INLET - 10' MODIFIED "C"	2	EA
DROP INLET - 15' MODIFIED "C"	1	EA

QUANTITIES ARE ESTIMATES ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

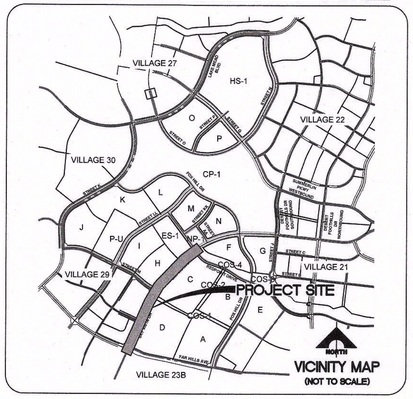
ROAD IMPROVEMENT QUANTITIES (PUBLIC)

EXCAVATION	2,391	CY
EMBANKMENT	20,329	CY
NET (FILL)	17,938	CY
24" "L" TYPE CURB & GUTTER	6,038	LF
6" "A" TYPE MEDIAN CURB	4,679	LF
4" A.C. PAVEMENT	20,086	SY
4" TYPE II AGGREGATE BASE	2,232	CY
HANDICAP RAMP	6	EA
SITE SIGNAGE	18	EA
2' WIDE STOP BAR & PAVEMENT MARKINGS	5,189	SF

QUANTITIES ARE ESTIMATES ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.



KEY MAP
NTS



VICINITY MAP
(NOT TO SCALE)

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

SOUTHWEST GAS APPROVAL

SOUTHWEST GAS CORPORATION DATE

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 VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

CLV#:

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

F:\PROJECTS\VDO\62025-203\VDO\PRODUCTION\62025-203D1_DN.DWG

ALEXANDER SANTIAGO

PROFESSIONAL ENGINEER - STATE OF NEVADA
MICHAEL FANG
No. 23902
Exp. 06/30/2019
CIVIL
04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
	DATE	AGEN APP
	DATE	GCW APP
	DATE	DATE

PROJECT NO. 62025-203

DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 09:46:45

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PROJECT DATA SHEET

DRAWING
G2
2 OF 43 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 XXXXXXXXXXXX, REPORT # XXXXX-X, DATE XXXXXXXXX XXTH, 20XX 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 FINAL 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 MAIN 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

DEVIATION FROM STANDARDS

NONE

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.
4. CONTRACTOR TO INSTALL TEMPORARY SERVICE TO ENSURE PROPER SHUTDOWN IN THE EVENT NO OTHER APPURTENANCES ARE AVAILABLE.
5. THIS PROJECT PROVIDES FOR THE INSTALLATION OF OFF-SITE MAINS ONLY, AND DOES NOT PROVIDE OR IMPLY ANY WATER COMMITMENT.

FOR TRENCHES 4-FEET WIDE AND GREATER

CONTRACTOR MUST SUBMIT SHOP DRAWINGS TO LVVWD ENGINEERING SERVICES BEFORE CONSTRUCTION TO SHOW HOW WATERLINES SPANNING A TRENCH WILL BE SUPPORTED DURING EXCAVATION AND BACKFILL.

SUPPORTED PIPELINES MAY BE EXPOSED FOR NO LONGER THAN 90 DAYS MAXIMUM. IF THE PIPE WILL BE EXPOSED FOR MORE THAN 90 DAYS, PIPE MUST BE RELOCATED PER APPROVED PLANS.

IF THE PIPE MATERIAL IS ACP, REPLACE FROM COUPLING TO COUPLING WITH DUCTILE IRON PIPE.

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 THE DISTRICT'S 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.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

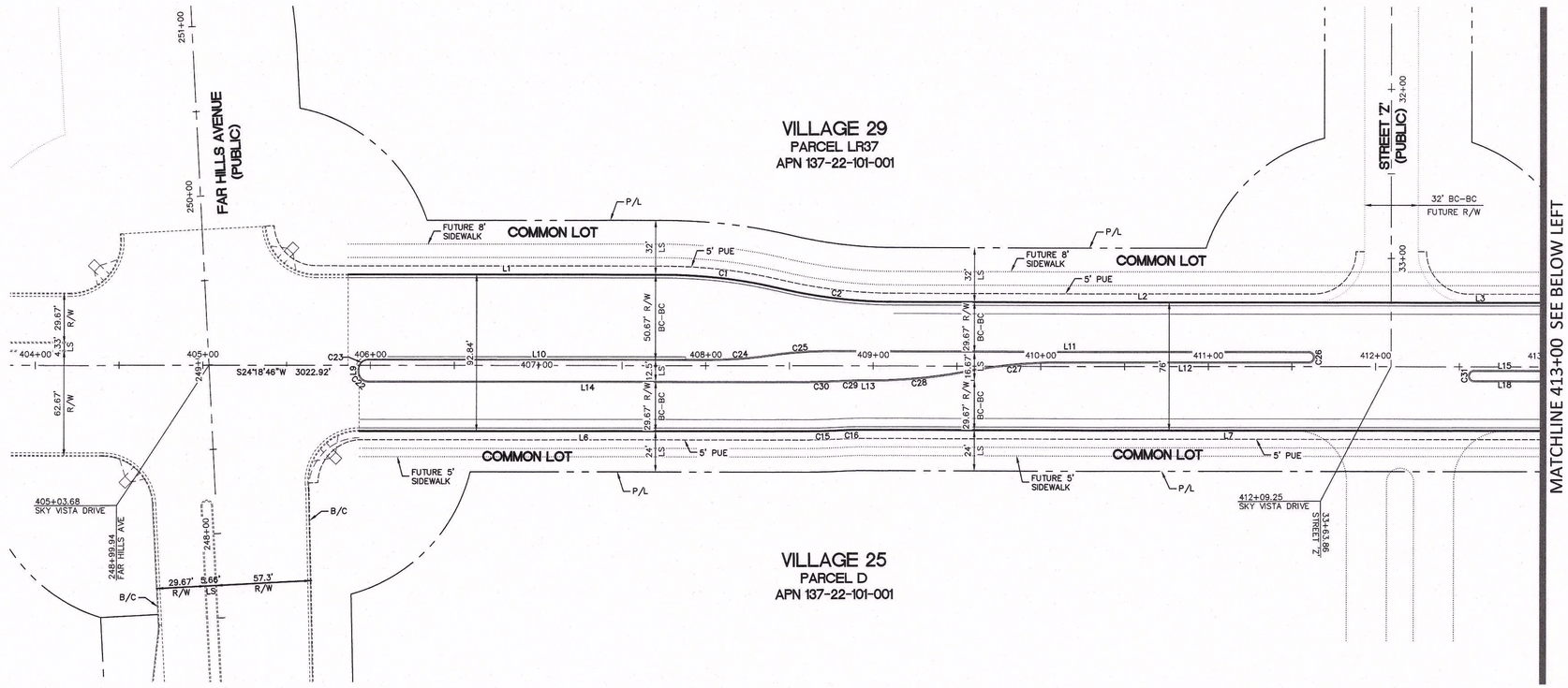
CITY OF LAS VEGAS SEWER NOTES

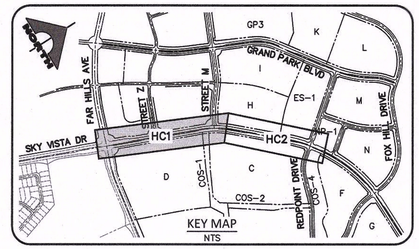
1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY ENGINEER.
3. CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.
4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.
5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETROFIT IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.
6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y" 'S SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.
7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.
8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

REVISED 04/15/10

LAS VEGAS VALLEY CONSTRUCTION STORMWATER RUNOFF MANAGEMENT - STANDARD NOTES

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATE IN, THE PUBLIC RIGHTS OF WAYS OF THE **CITY OF LAS VEGAS** AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE **CLARK COUNTY UDACS** AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PR





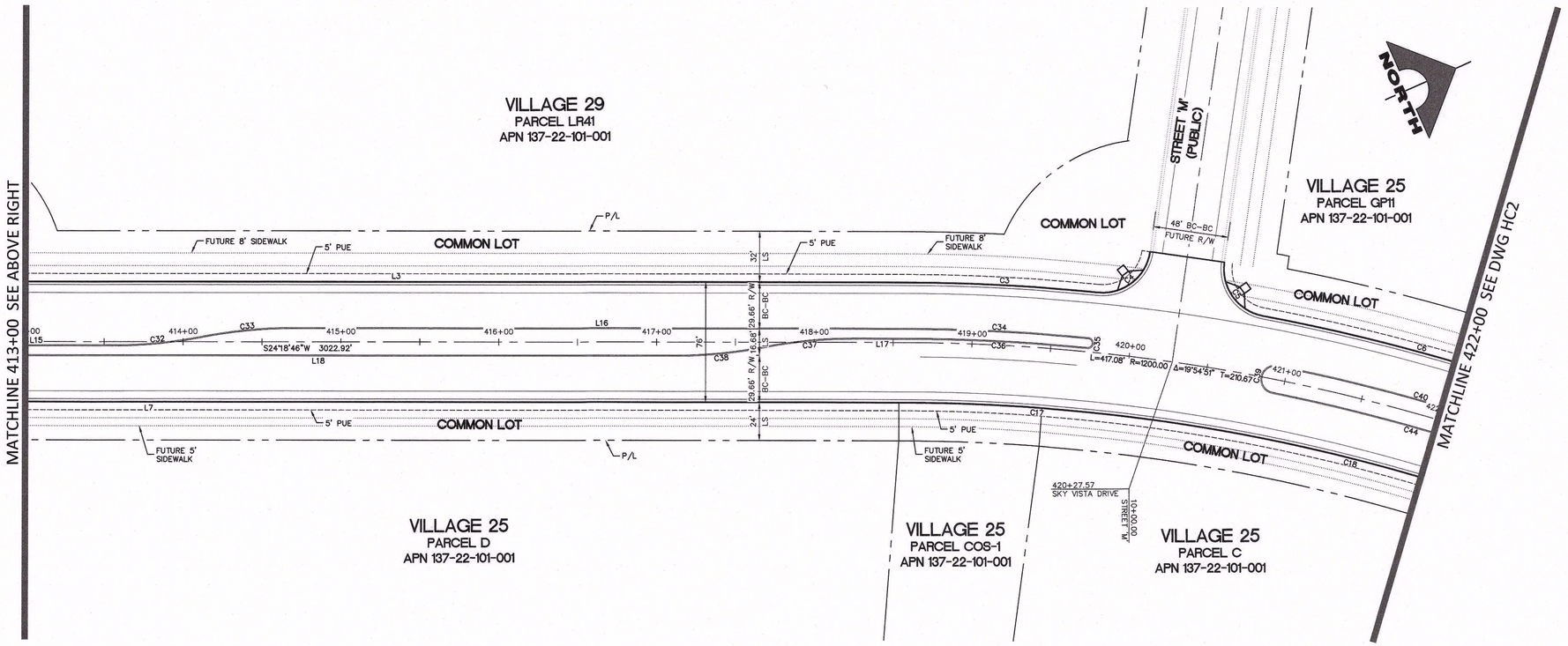
SKY VISTA DRIVE

(PUBLIC)

SCALE: HORIZ 1" = 40'

40' 0' 20' 40' 80'

SCALE: 1" = 40'



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. TS0S,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

CLV#:

PROFESSIONAL ENGINEER - STATE OF NEVADA
MICHAEL FANG
Exp. 06/30/2019
CIVIL
No. 24464

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 09:49:04

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

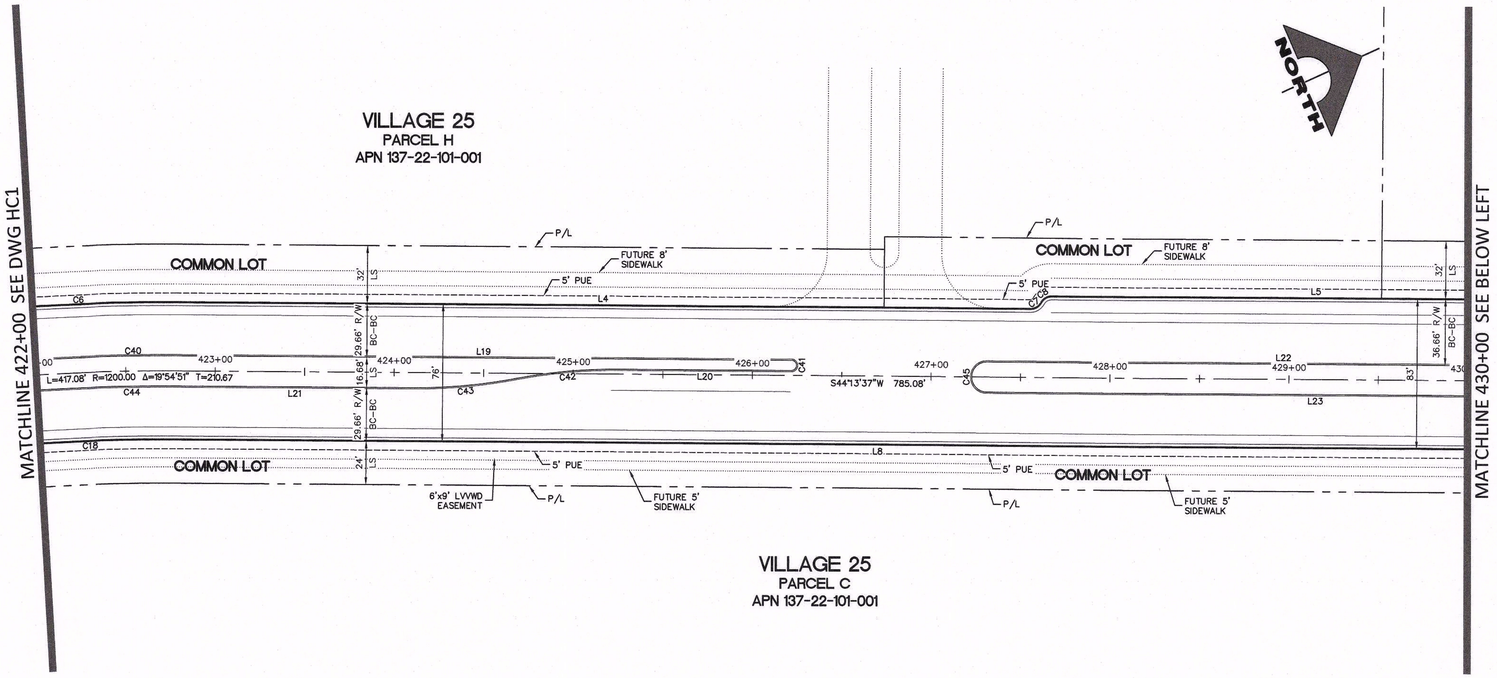
F:\PROJECTS\600\62025-203\DWG\PRODUCTION\62025-203C02_HC.DWG
ALEXANDER SANTIAGO

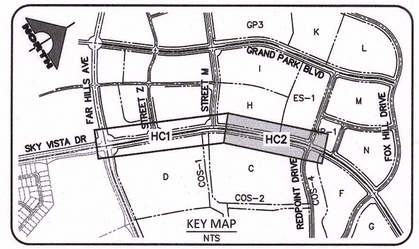
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

HORIZONTAL CONTROL 1

DRAWING
HC1
4 OF 43 SHTS





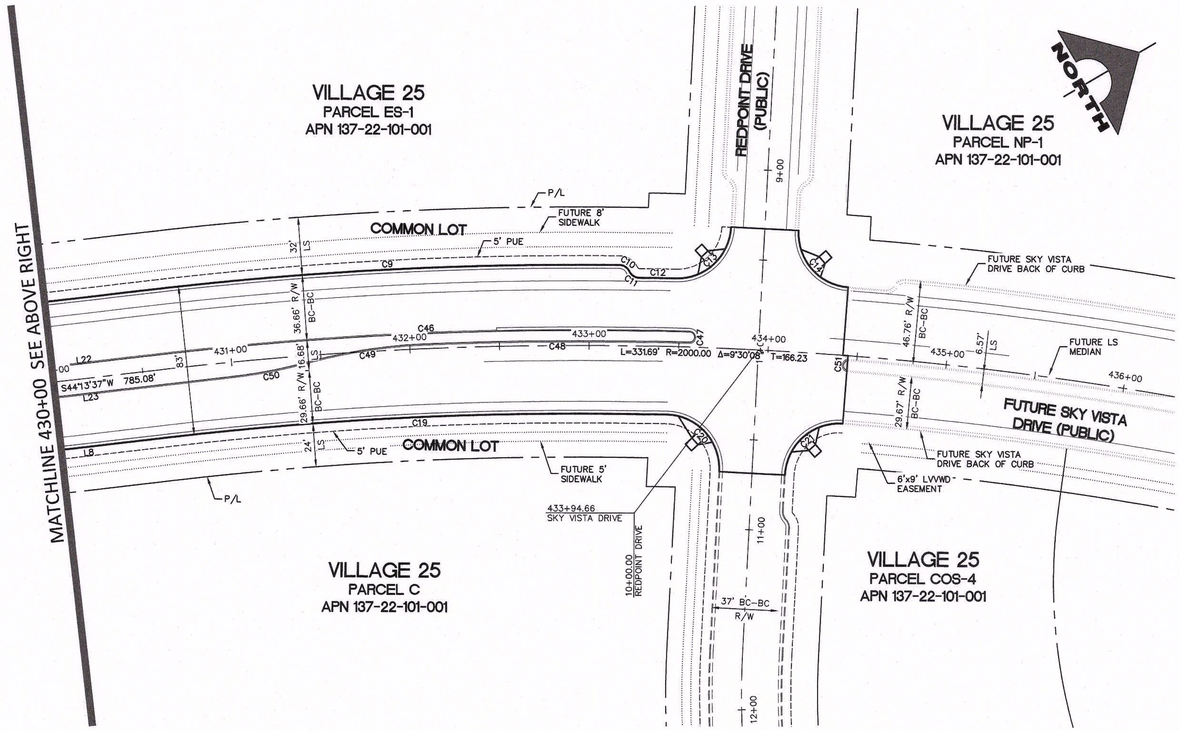
LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	188.62'	N24°18'46"E
L2	297.07'	N24°18'46"E
L3	651.55'	N24°18'46"E
L4	477.47'	N44°13'37"E
L5	296.08'	N44°13'37"E
L6	267.40'	S24°18'46"W
L7	965.08'	S24°18'46"W
L8	785.08'	S44°13'37"W
L9	1.84'	S65°43'54"E
L10	204.24'	S24°18'46"W
L11	285.49'	S24°18'46"W
L12	147.17'	N24°18'46"E

LINE TABLE		
LINE #	LENGTH	DIRECTION
L13	2.68'	N24°18'46"E
L14	262.57'	N24°18'46"E
L15	96.50'	N24°18'46"E
L16	391.19'	N24°18'46"E
L17	35.16'	S24°18'46"W
L18	454.06'	S24°18'46"W
L19	344.02'	S44°13'37"W
L20	96.50'	N44°13'37"E
L21	133.11'	N44°13'37"E
L22	331.99'	S44°13'37"W
L23	367.93'	N44°13'37"E

SKY VISTA DRIVE

(PUBLIC)
SCALE: HORIZ 1" = 40'

40' 0' 20' 40' 80'
SCALE: 1" = 40'



CURVE TABLE				
CURVE #	LENGTH	RADIUS	TANGENT	DELTA
C1	69.09'	300.00'	34.70'	13°11'41"
C2	69.09'	300.00'	34.70'	13°11'41"
C3	119.38'	1238.00'	59.73'	5°31'29"
C4	45.82'	30.00'	28.72'	87°30'11"
C5	45.88'	30.00'	28.78'	87°36'56"
C6	205.44'	1238.00'	102.96'	9°30'28"
C7	7.09'	6.50'	3.95'	62°30'49"
C8	7.09'	6.50'	3.95'	62°30'49"
C9	259.07'	2045.00'	129.71'	7°15'31"
C10	7.11'	6.50'	3.96'	62°40'32"
C11	7.07'	6.50'	3.93'	62°21'07"
C12	20.00'	2038.00'	10.00'	0°33'44"
C13	46.41'	30.00'	29.30'	88°38'33"
C14	46.41'	30.00'	29.30'	88°38'32"
C15	17.32'	300.00'	8.66'	3°18'27"
C16	17.32'	300.00'	8.66'	3°18'27"
C17	161.85'	1162.00'	81.06'	7°58'50"
C18	242.02'	1162.00'	121.45'	11°56'01"
C19	276.13'	1962.00'	138.29'	8°03'50"

CURVE TABLE				
CURVE #	LENGTH	RADIUS	TANGENT	DELTA
C20	47.88'	30.00'	30.76'	91°26'19"
C21	47.88'	30.00'	30.76'	91°26'19"
C22	8.37'	5.33'	5.33'	89°57'20"
C23	8.38'	5.33'	5.34'	90°02'41"
C24	36.02'	250.67'	18.04'	8°13'59"
C25	35.92'	249.99'	17.99'	8°13'59"
C26	8.90'	2.83'	INFINITY'	180°00'00"
C27	57.54'	300.00'	28.86'	10°59'23"
C28	57.54'	300.00'	28.86'	10°59'23"
C29	19.03'	329.67'	9.52'	3°18'27"
C30	15.61'	270.33'	7.80'	3°18'27"
C31	8.89'	2.83'	669899.37'	180°00'02"
C32	57.53'	300.00'	28.86'	10°59'17"
C33	57.53'	300.00'	28.86'	10°59'17"
C34	113.01'	1208.33'	56.54'	5°21'30"
C35	8.89'	2.83'	INFINITY'	180°00'00"
C36	112.48'	1202.67'	56.28'	5°21'30"
C37	57.54'	300.00'	28.86'	10°59'25"
C38	56.00'	300.00'	28.08'	10°41'39"

CURVE TABLE				
CURVE #	LENGTH	RADIUS	TANGENT	DELTA
C39	26.17'	8.33'	INFINITY'	180°00'00"
C40	185.62'	1208.33'	92.99'	8°48'06"
C41	8.89'	2.83'	622556.72'	180°00'02"
C42	57.56'	300.00'	28.87'	10°59'35"
C43	57.56'	300.00'	28.87'	10°59'35"
C44	183.06'	1191.66'	91.71'	8°48'06"
C45	26.17'	8.33'	1483637.14'	180°00'02"
C46	294.09'	2008.33'	147.31'	8°23'24"
C47	8.89'	2.83'	INFINITY'	180°00'00"
C48	147.38'	2002.67'	73.73'	4°13'00"
C49	66.00'	300.00'	33.13'	12°36'18"
C50	44.15'	300.00'	22.11'	8°25'54"
C51	7.50'	2.83'	11.28'	151°49'56"

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. T50S,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

CLV#:

REGISTERED ENGINEER - STATE OF NEVADA
MICHAEL FANG
No. 9878
Exp. 09/30/2019
CIVIL
PROFESSIONAL
DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 09:49:15

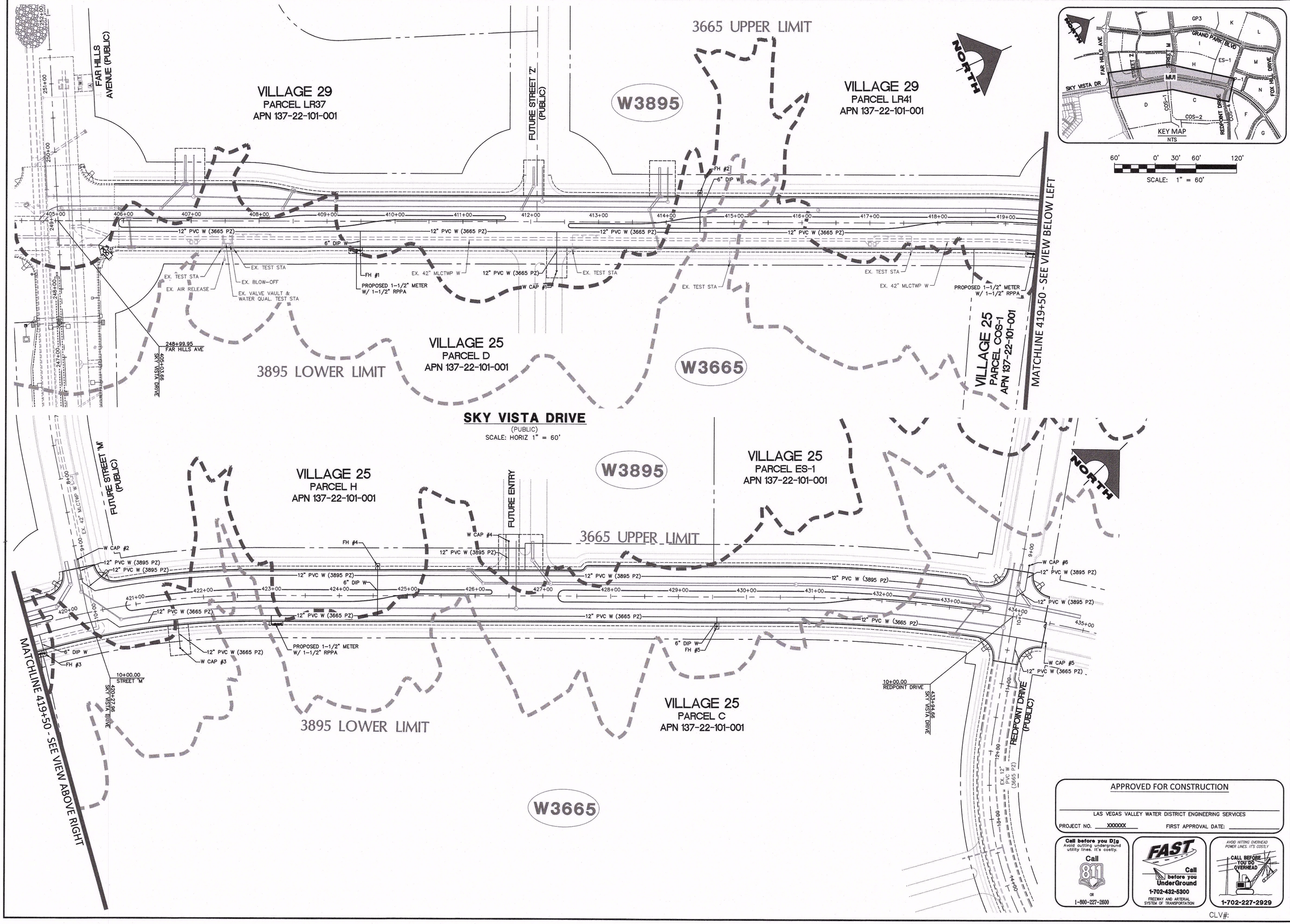
GCW
ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\6XX\62025-203\DWG\PRODUCTION\62025-203CD_HC.DWG
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

HORIZONTAL CONTROL 2

DRAWING
HC2
5 OF 43 SHTS



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

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

CLV#:

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 09:50:30

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

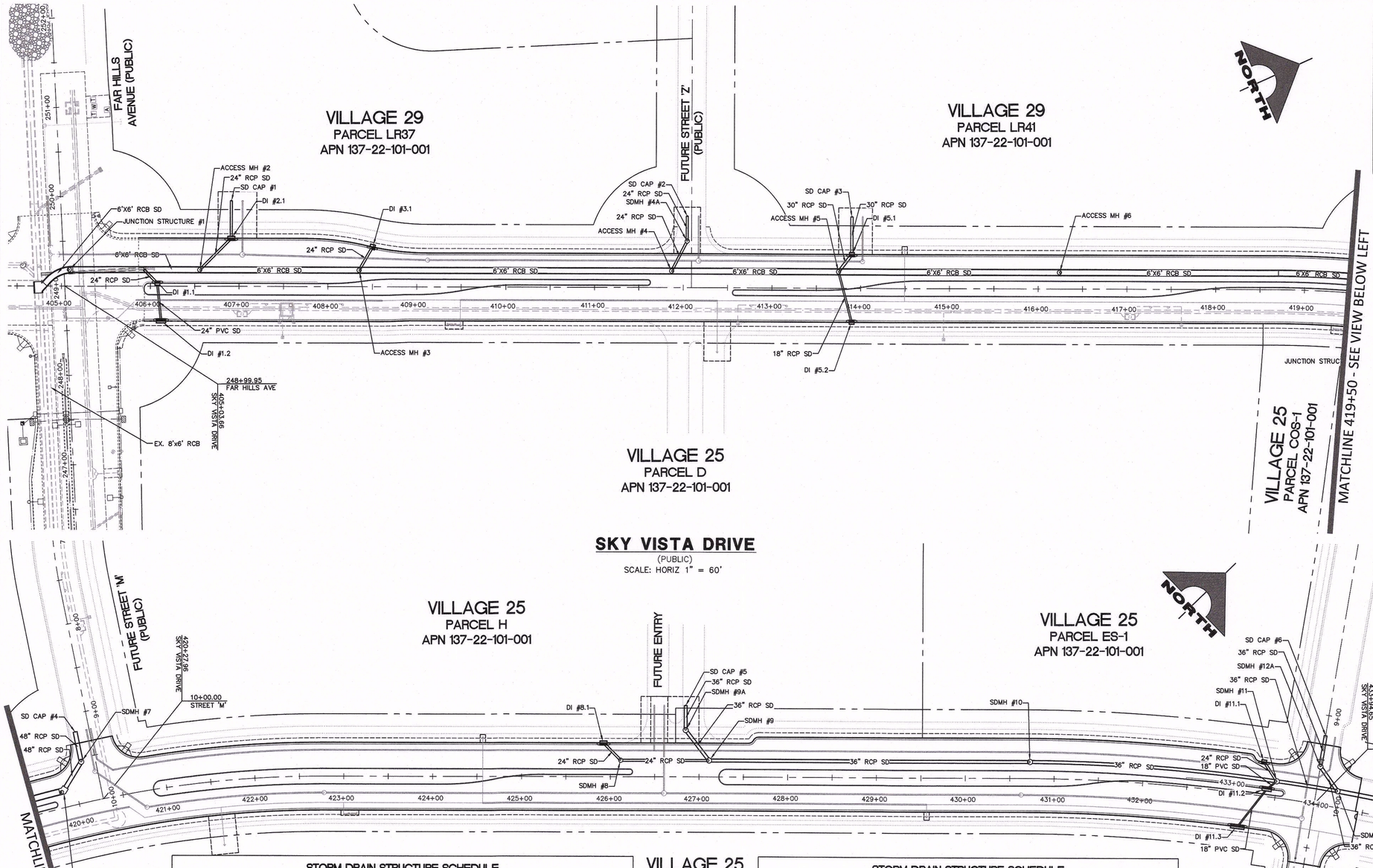
F:\PROJECTS\600\62025-203\DWG\PRODUCTION\62025-203C04_MU1.DWG
ALEXANDER SANTIAGO

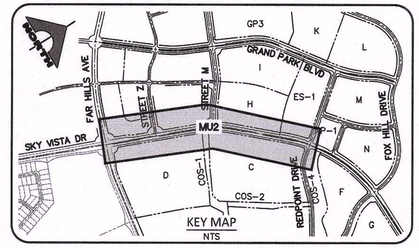
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

MASTER UTILITY PLAN - WATER

DRAWING
MU1
6 OF 43 SHTS



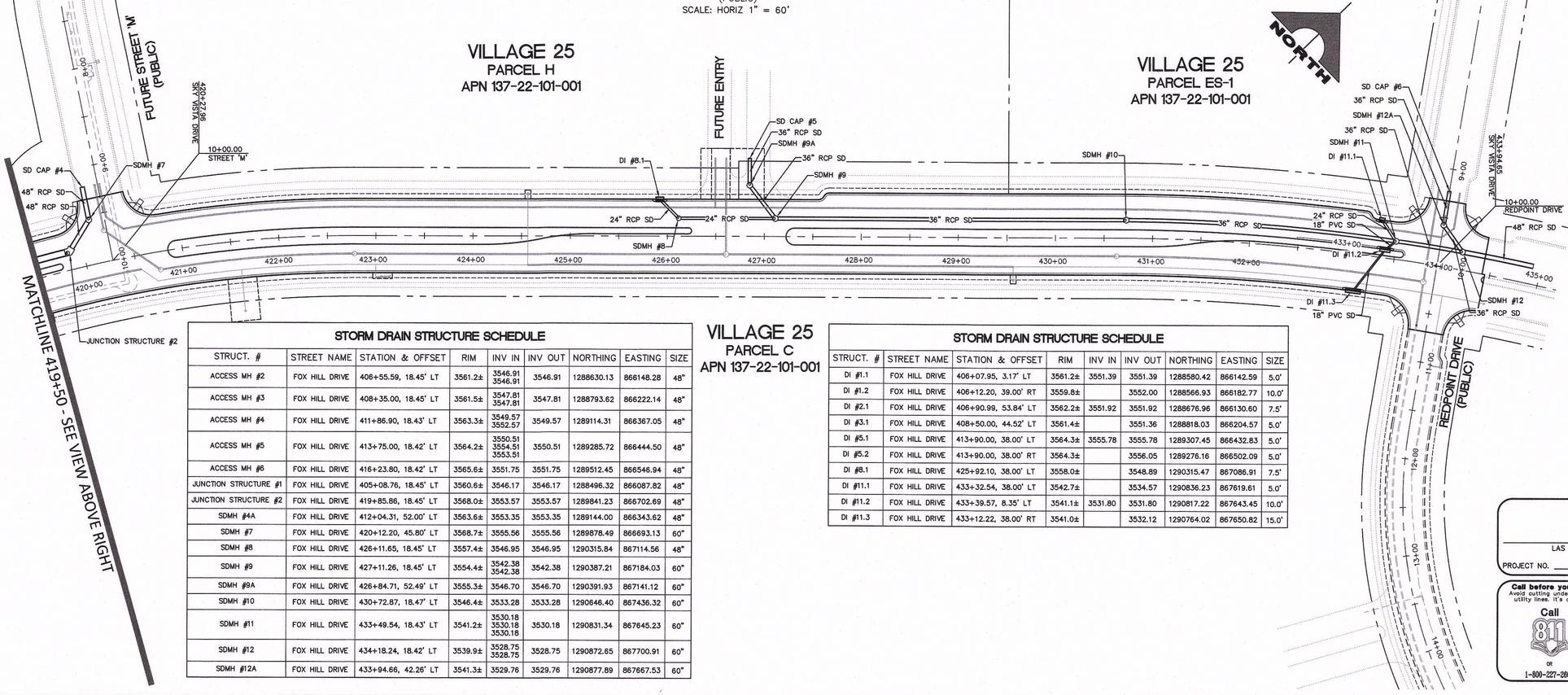


60' 0' 30' 60' 120'

SCALE: 1" = 60'

SKY VISTA DRIVE

(PUBLIC)
SCALE: HORIZ 1" = 60'



STORM DRAIN STRUCTURE SCHEDULE

STRUCT. #	STREET NAME	STATION & OFFSET	RIM	INV IN	INV OUT	NORTHING	EASTING	SIZE
ACCESS MH #2	FOX HILL DRIVE	406+55.59, 18.45' LT	3561.2±	3546.91 3546.91	3546.91	1288630.13	866148.28	48"
ACCESS MH #3	FOX HILL DRIVE	408+35.00, 18.45' LT	3561.5±	3547.81 3547.81	3547.81	1288793.62	866222.14	48"
ACCESS MH #4	FOX HILL DRIVE	411+86.90, 18.43' LT	3563.3±	3549.57 3552.57	3549.57	1289114.31	866367.05	48"
ACCESS MH #5	FOX HILL DRIVE	413+75.00, 18.42' LT	3564.2±	3550.51 3554.51 3553.51	3550.51	1289285.72	866444.50	48"
ACCESS MH #6	FOX HILL DRIVE	416+23.80, 18.42' LT	3565.6±	3551.75	3551.75	1289512.45	866546.94	48"
JUNCTION STRUCTURE #1	FOX HILL DRIVE	405+08.76, 18.45' LT	3560.6±	3546.17	3546.17	1288496.32	866087.82	48"
JUNCTION STRUCTURE #2	FOX HILL DRIVE	419+85.86, 18.45' LT	3568.0±	3553.57	3553.57	1289841.23	866702.69	48"
SDMH #4A	FOX HILL DRIVE	412+04.31, 52.00' LT	3563.6±	3553.35	3553.35	1289144.00	866343.62	48"
SDMH #7	FOX HILL DRIVE	420+12.20, 45.80' LT	3568.7±	3555.56	3555.56	1289878.49	866693.13	60"
SDMH #8	FOX HILL DRIVE	426+11.65, 18.45' LT	3557.4±	3546.95	3546.95	1290315.84	867114.56	48"
SDMH #9	FOX HILL DRIVE	427+11.26, 18.45' LT	3554.4±	3542.38 3542.38	3542.38	1290387.21	867184.03	60"
SDMH #9A	FOX HILL DRIVE	426+84.71, 52.49' LT	3555.3±	3546.70	3546.70	1290391.93	867141.12	60"
SDMH #10	FOX HILL DRIVE	430+72.87, 18.47' LT	3546.4±	3533.28	3533.28	1290646.40	867436.32	60"
SDMH #11	FOX HILL DRIVE	433+49.54, 18.43' LT	3541.2±	3530.18 3530.18 3530.18	3530.18	1290831.34	867645.23	60"
SDMH #12	FOX HILL DRIVE	434+18.24, 18.42' LT	3539.9±	3528.75 3528.75	3528.75	1290872.65	867700.91	60"
SDMH #12A	FOX HILL DRIVE	433+94.66, 42.26' LT	3541.3±	3529.76	3529.76	1290877.89	867667.53	60"

STORM DRAIN STRUCTURE SCHEDULE

STRUCT. #	STREET NAME	STATION & OFFSET	RIM	INV IN	INV OUT	NORTHING	EASTING	SIZE
DI #1.1	FOX HILL DRIVE	406+07.95, 3.17' LT	3561.2±	3551.39	3551.39	1288580.42	866142.59	5.0'
DI #1.2	FOX HILL DRIVE	406+12.20, 39.00' RT	3559.8±		3552.00	1288566.93	866182.77	10.0'
DI #2.1	FOX HILL DRIVE	406+90.99, 53.84' LT	3562.2±	3551.92	3551.92	1288676.96	866130.60	7.5'
DI #3.1	FOX HILL DRIVE	408+50.00, 44.52' LT	3561.4±		3551.36	1288818.03	866204.57	5.0'
DI #5.1	FOX HILL DRIVE	413+90.00, 38.00' LT	3564.3±	3555.78	3555.78	1289307.45	866432.83	5.0'
DI #5.2	FOX HILL DRIVE	413+90.00, 38.00' RT	3564.3±		3556.05	1289276.16	866502.09	5.0'
DI #8.1	FOX HILL DRIVE	425+92.10, 38.00' LT	3558.0±		3548.89	1290315.47	867086.91	7.5'
DI #11.1	FOX HILL DRIVE	433+32.54, 38.00' LT	3542.7±		3534.57	1290836.23	867619.61	5.0'
DI #11.2	FOX HILL DRIVE	433+39.57, 8.35' LT	3541.1±	3531.80	3531.80	1290817.22	867643.45	10.0'
DI #11.3	FOX HILL DRIVE	433+12.22, 38.00' RT	3541.0±		3532.12	1290764.02	867650.82	15.0'

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

Call before you Dig
Avoid cutting underground utility lines. It's costly.
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FAST
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1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

CLV#:

ENGINEER: STATE OF NEVADA — MICHAEL FANG — Exp. 06/30/2019 — CIVIL — No. 21345 — PROFESSIONAL

DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203

DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 09:51:46

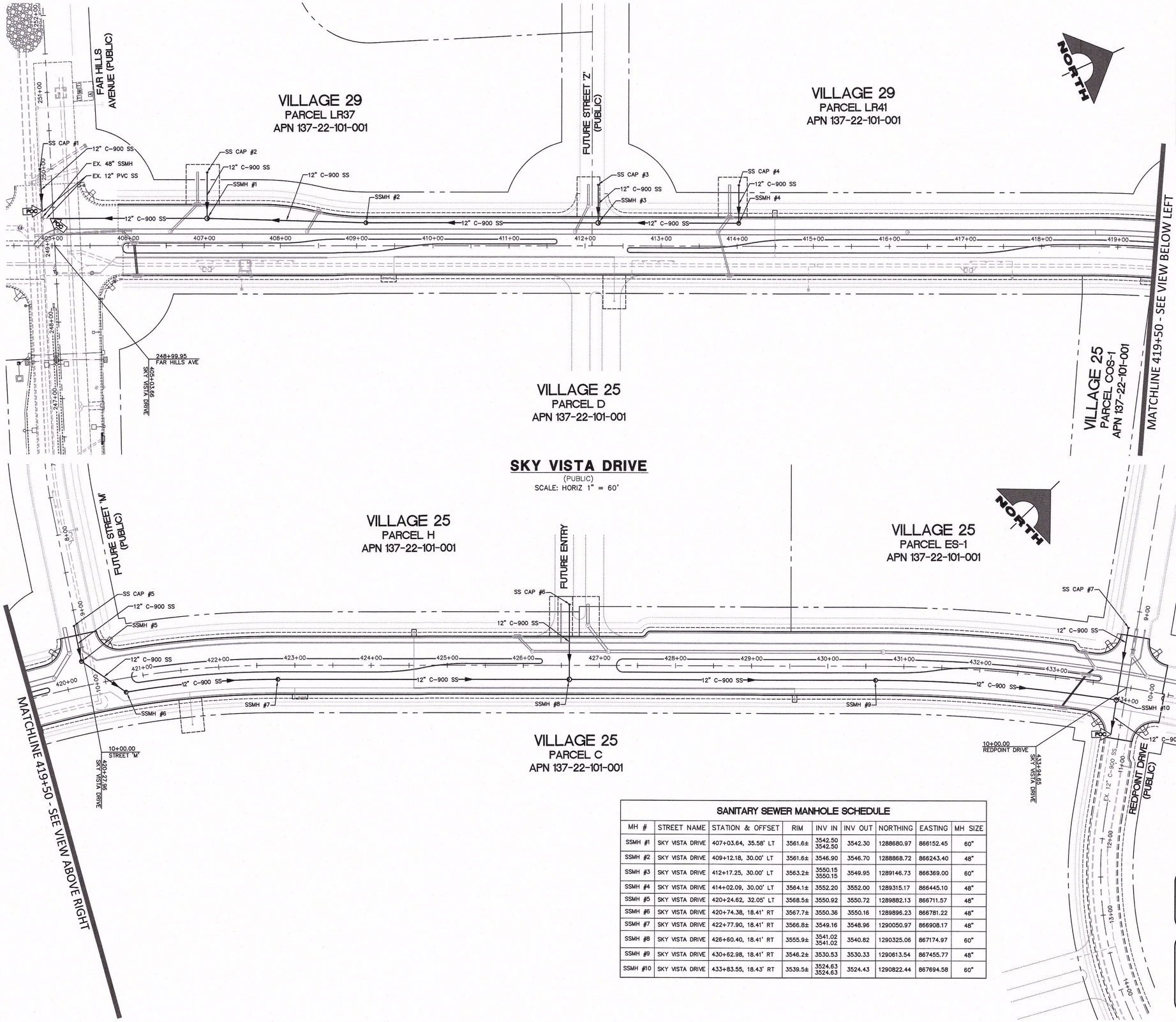
GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\6000\62025-203\DWG\PRODUCTION\62025-203SH_MU2.DWG
ALEXANDER SANTIAGO

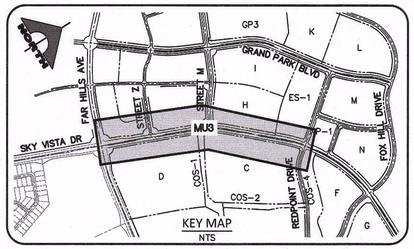
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

MASTER UTILITY PLAN - STORM DRAIN

DRAWING
MU2
7 OF 43 SHTS





60' 0' 30' 60' 120'

SCALE: 1" = 60'

SANITARY SEWER MANHOLE SCHEDULE

MH #	STREET NAME	STATION & OFFSET	RIM	INV IN	INV OUT	NORTHING	EASTING	MH SIZE
SSMH #1	SKY VISTA DRIVE	407+03.64, 35.58' LT	3561.6±	3542.50 3542.50	3542.30	1288680.97	866152.45	60"
SSMH #2	SKY VISTA DRIVE	409+12.18, 30.00' LT	3561.6±	3546.90	3546.70	1288868.72	866243.40	48"
SSMH #3	SKY VISTA DRIVE	412+17.25, 30.00' LT	3563.2±	3550.15 3550.15	3549.95	1289146.73	866369.00	60"
SSMH #4	SKY VISTA DRIVE	414+02.09, 30.00' LT	3564.1±	3552.20	3552.00	1289315.17	866445.10	48"
SSMH #5	SKY VISTA DRIVE	420+24.62, 32.05' LT	3568.5±	3550.92	3550.72	1289882.13	866711.57	48"
SSMH #6	SKY VISTA DRIVE	420+74.38, 18.41' RT	3567.7±	3550.36	3550.16	1289896.23	866781.22	48"
SSMH #7	SKY VISTA DRIVE	422+77.90, 18.41' RT	3566.8±	3549.16	3548.96	1290050.97	866908.17	48"
SSMH #8	SKY VISTA DRIVE	426+60.40, 18.41' RT	3555.9±	3541.02 3541.02	3540.82	1290325.06	867174.97	60"
SSMH #9	SKY VISTA DRIVE	430+62.98, 18.41' RT	3546.2±	3530.53	3530.33	1290613.54	867455.77	48"
SSMH #10	SKY VISTA DRIVE	433+83.55, 18.43' RT	3539.5±	3524.63 3524.63	3524.43	1290822.44	867694.58	60"

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

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OR
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1-702-227-2929

CLV#:

90% REVIEW - NOT FOR CONSTRUCTION

DATE: 04/08/2019

PROJECT NO. 62025-203

DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 09:52:57

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

F:\PROJECTS\600\62025-203\DWG\PRODUCTION\62025-203C04_MU3.DWG

ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

MASTER UTILITY PLAN - SEWER

DRAWING
MU3
8 OF 43 SHTS



NORTH

200' 0' 100' 200' 400'

SCALE: 1" = 200'

OFF-SITE FLOOD CONTROL NOTE

ALL OFF-SITE INTERIM FLOOD CONTROL FACILITIES SUCH AS, BUT NOT LIMITED TO, BERMS/DITCHES AND TEMPORARY SUMPS ARE PRIVATELY OWNED AND ARE TO BE PRIVATELY MAINTAINED BY THE HOWARD HUGHES COMPANY.

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. T30S,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

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FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

CLV#:

STATE OF NEVADA — ENGINEER — MICHAEL F. FANG — No. 16782 — CIVIL — PROFESSIONAL ENGINEER — DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 09:57:39

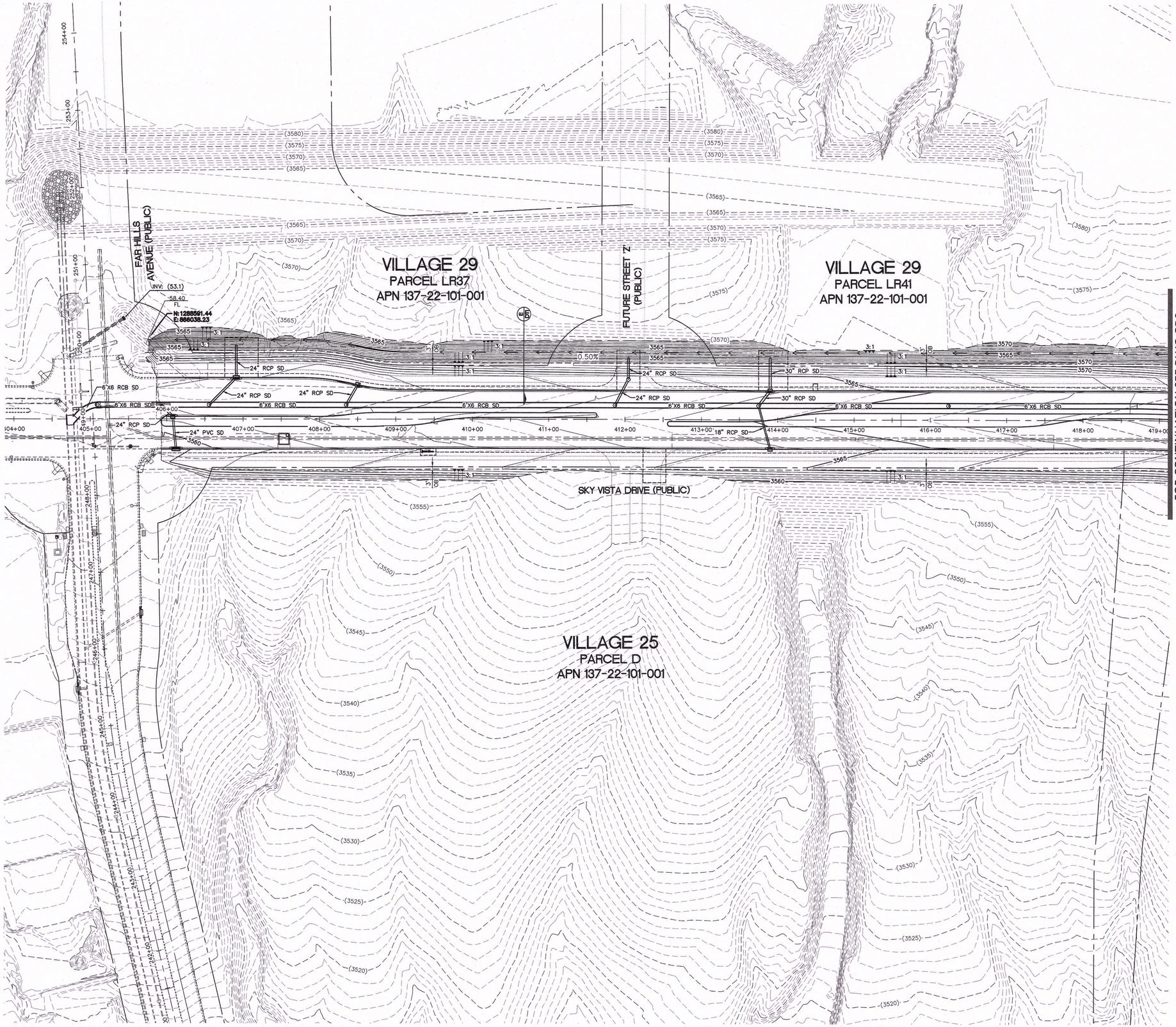
GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\6XX\62025-203\DWG\PRODUCTION\62025-203D3_GD1.DWG
ALEXANDER SANTIAGO

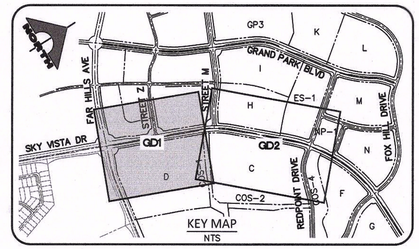
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

MASTER GRADING PLAN

DRAWING MG
9 OF 43 SHTS





KEY MAP
NTS

40' 0' 20' 40' 80'

SCALE: 1" = 40'

OFF-SITE FLOOD CONTROL NOTE

ALL OFF-SITE INTERIM FLOOD CONTROL FACILITIES SUCH AS, BUT NOT LIMITED TO, BERMS/DITCHES AND TEMPORARY SUMPS ARE PRIVATELY OWNED AND ARE TO BE PRIVATELY MAINTAINED BY THE HOWARD HUGHES COMPANY.

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)

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

CLV#:

ENGINEER - STATE OF NEVADA
MICHAEL FANG
exp. 06/30/2019
DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:27:52

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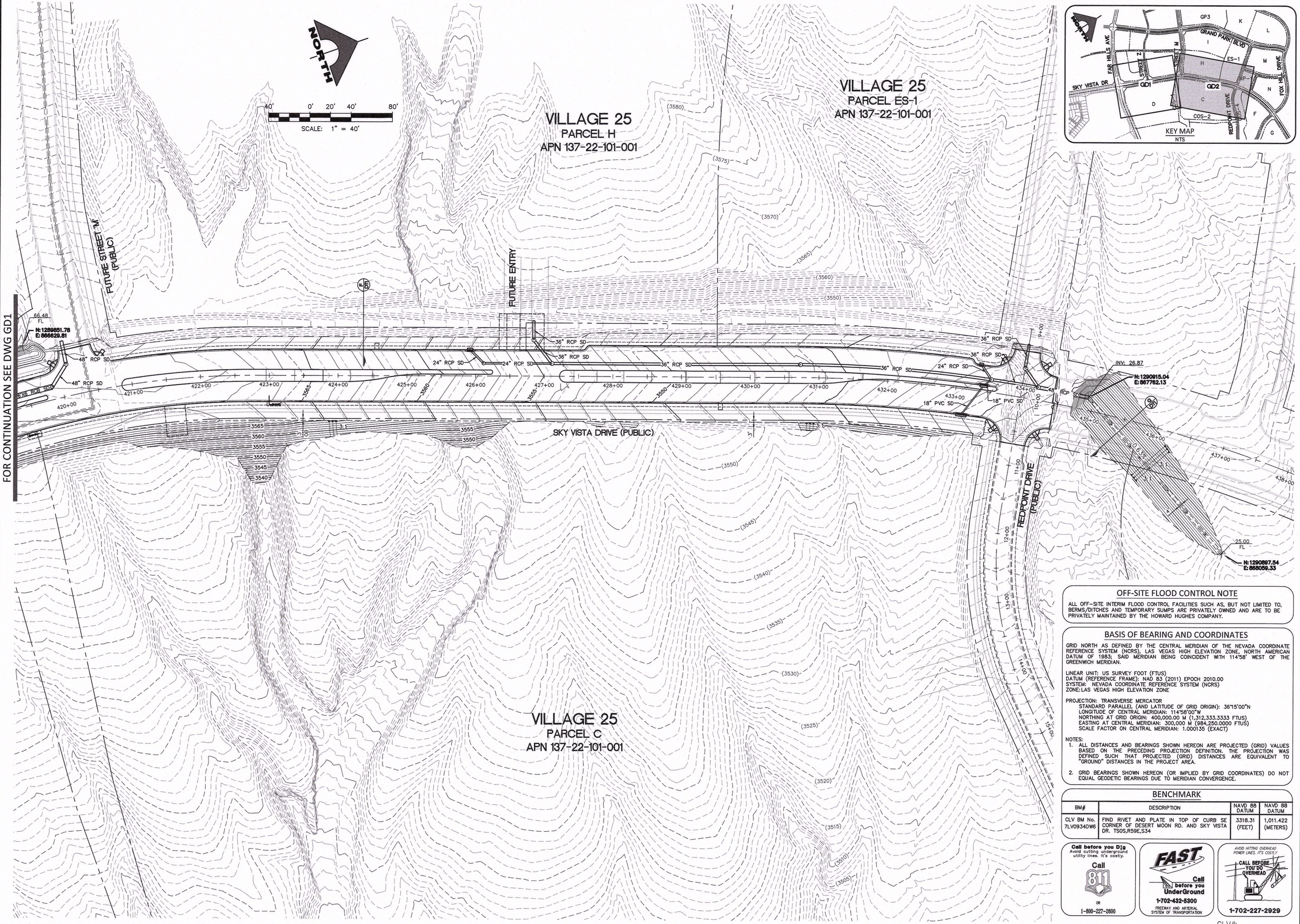
F:\PROJECTS\62025-203\GCW\PRODUCTION\62025-203D3_GD2.DWG
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

GRADING PLAN 1

DRAWING
GD1
10 OF 43 SHTS



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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
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)
ZONE: LAS VEGAS HIGH ELEVATION ZONE

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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)

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CLV#:

ENGINEER STATE OF NEVADA
MICHAEL FANG
Exp. 06/30/2019
CIVIL
No. 21487
PROFESSIONAL

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:28:12

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
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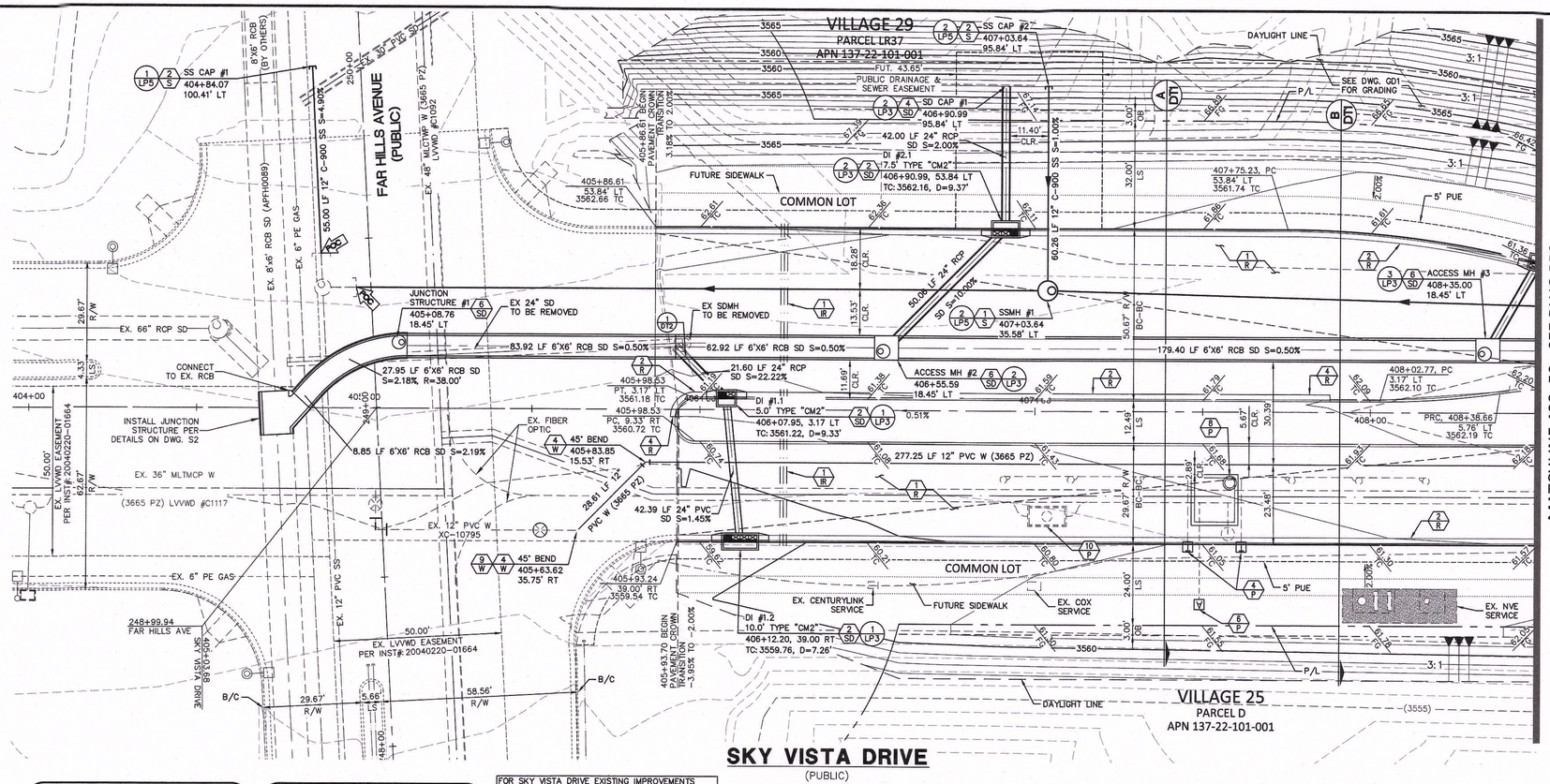
F:\PROJECTS\6GD\62025-203\DWG\PRODUCTION\62025-203D3_GD2.DWG
ALEXANDER SANTIAGO

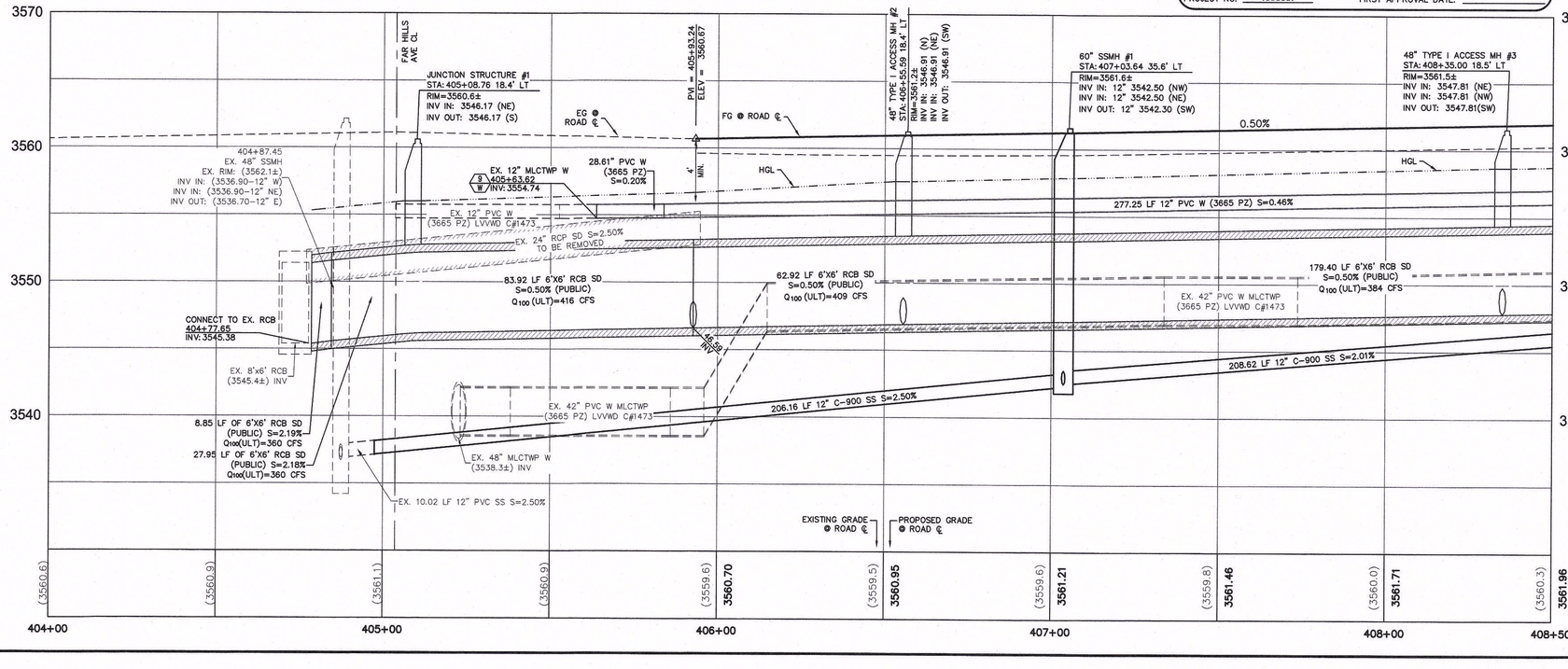
THE HOWARD HUGHES COMPANY, LLC

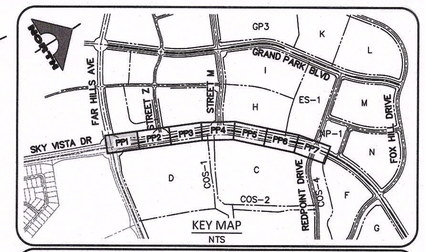
VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

GRADING PLAN 2

DRAWING
GD2
11 OF 43 SHTS







PROTECTION CONSTRUCTION NOTES

1 P EXISTING PAVEMENT, PROTECT IN PLACE
2 P EXISTING CURB/GUTTER, PROTECT IN PLACE
3 P EXISTING PULLBOX, ADJUST TO FINISH GRADE
4 P EXISTING TEST STATION, ADJUST TO FINISH GRADE & RELOCATE TO BEHIND CURB IF NECESSARY.
5 P EXISTING BLOW-OFF, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 37
6 P EXISTING AVAR, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 38
7 P EXISTING GATE VALVE, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 39
8 P EXISTING WATER VAULT MH, ADJUST TO FINISH GRADE PER UDACS PLT. NO. C-475
9 P EXISTING SSMH, ADJUST TO FINISH GRADE
10 P EXISTING WATER FIBER OPTIC SPLICE PIT PROTECT IN PLACE. RAISE TO FINAL GRADE PER DETAIL 5, 7 & 8 DWG. DT2
11 P EXISTING WATER ACCESS MANHOLE PROTECT IN PLACE. RAISE TO FINAL PAVEMENT GRADE PER DETAIL 7 & 8 DWG. DT2

ROADWAY CONSTRUCTION NOTES

1 R INSTALL A.C. PAVEMENT PER STREET SECTIONS, SEE DWG. DT1
2 R INSTALL "L" TYPE CURB & GUTTER, SEE SUMMERLIN STD DWG. S-47
3 R INSTALL "A" TYPE ISLAND CURB, SEE SUMMERLIN STD DWG. S-50
4 R INSTALL CURB TRANSITION PER DETAIL 2 DWG. DT2
5 R CONSTRUCT SIDEWALK RAMP PER USD DWG. NO. 235 (CASE II)

WATER CONSTRUCTION NOTES

1 W INSTALL FIRE HYDRANT & ASSEMBLY PER UDACS PLT. NO. 40. FOR "DEEP" FIRE HYDRANTS SEE UDACS PL. NO. 41.
2 W INSTALL GATE VALVE AND BOX PER UDACS PLT. NO. 30 AND 39
3 W INSTALL TEE PER UDACS PLT. NO. 31
4 W INSTALL HORIZONTAL BEND PER UDACS PLT. NO. 31 (SEE PLAN FOR ANGLE)
5 W INSTALL REDUCER PER UDACS PLT. NO. 31
6 W INSTALL CAP W/ 2" BLOW-OFF ASSEMBLY PER UDACS PLT. NO. 36
7 W INSTALL 1-½" WATER METER AND 1-½" RPPA PER DETAIL 1 DWG. DT1
8 W INSTALL VERTICAL BEND PER UDACS PLT. NO. 31 (SEE PROFILE FOR ANGLE)
9 W REMOVE CAP AND BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE.

SEWER CONSTRUCTION NOTES

1 S INSTALL SEWER MANHOLE PER DCS STD. DWG. 1A AND 1B
2 S STUB AND CAP SEWER PIPE PER DETAIL 3, DWG. DT2
3 S REMOVE PLUG & CONNECT TO SEWER LINE (CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EX. SEWER PRIOR TO CONSTRUCTION)

STORM DRAIN CONSTRUCTION NOTES

1 SD INSTALL TYPE II MANHOLE PER USD DWG. NO. 405.1
2 SD INSTALL TYPE "CM2" DROP INLET PER USD DWG. NO. 412.1 AND 421
3 SD INSTALL TYPE "C" DROP INLET PER USD DWG. NO. 413 AND 421
4 SD INSTALL TEMPORARY PLUG AND CAP
5 SD REMOVE PLUG & CONNECT TO STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EX. STORM DRAIN PRIOR TO CONSTRUCTION)
6 SD INSTALL TYPICAL TYPE I ACCESS MANHOLE IN RCB PER DETAILS ON DWG. S1 AND USD DWG. NO. 403.1

IRRIGATION CONSTRUCTION NOTES

1 IR BANK "A": 1-6" & 2-4" SCH 40 PVC. PER DETAIL 4 DWG. DT2

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
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NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
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BENCHMARK

BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 7LV09340W6	FIND RIVET AND PLATE IN TOP OF CURB SE CORNER OF DESERT MOON RD. AND SKY VISTA DR. TSOS,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

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FAST
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1-702-227-2929

CLV#:

STATE OF NEVADA
ENGINEER
MICHAEL FANG
Exp. 06/30/2019
CIVIL
No. 24464
PROFESSIONAL

	DATE	BY	DESCRIPTION
REV	DATE		DESCRIPTION

90% REVIEW - NOT FOR CONSTRUCTION

DATE: 04/08/2019
GCW APP
AGEN APP
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:30:11
ALEXANDER SANTIAGO

PROJECT NO. 62025-203

GCW
ENGINEERS \ SURVEYORS
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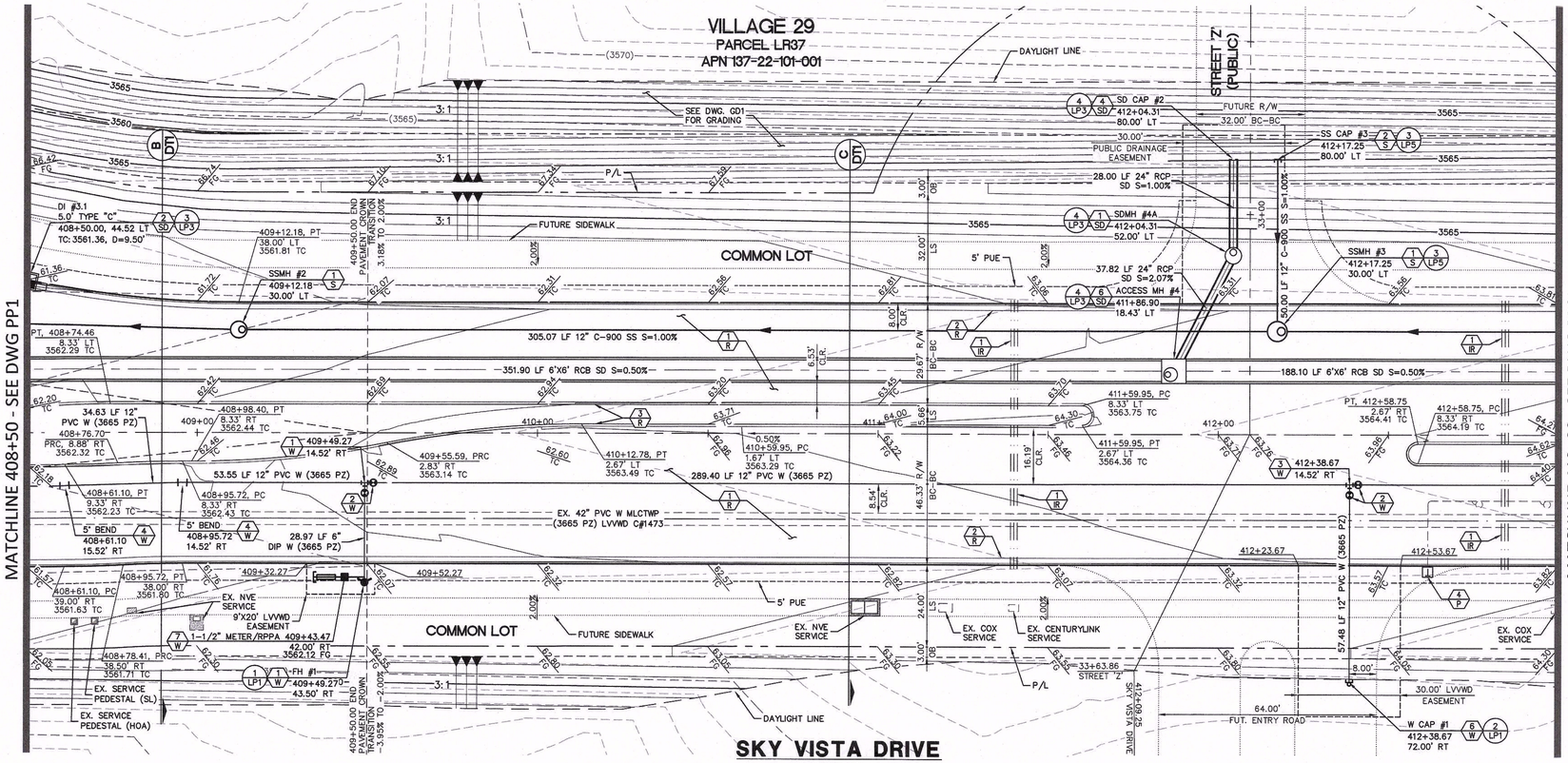
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\2000\62025-203\DWG\PRODUCTION\62025-203DS_PP1.DWG

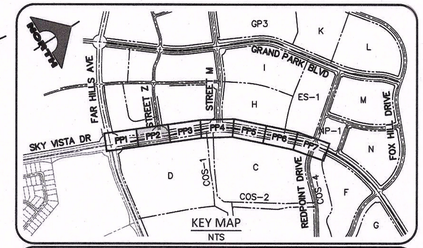
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 1

DRAWING
PP1
12 OF 43 SHTS





PROTECTION CONSTRUCTION NOTES

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9 P EXISTING SSMH, ADJUST TO FINISH GRADE
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11 P EXISTING WATER ACCESS MANHOLE PROTECT IN PLACE. RAISE TO FINAL PAVEMENT GRADE PER DETAIL 7 & 8 DWG. DT2

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3 R INSTALL "A" TYPE ISLAND CURB, SEE SUMMERLIN STD DWG. S-50
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DROP INLET NOTE:

ALL STORM DRAIN DROP INLETS ARE TO BE CONSTRUCTED PER THE REQUIREMENTS OF USDCCA DWG. NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).

OFF-SITE FLOOD CONTROL NOTE:

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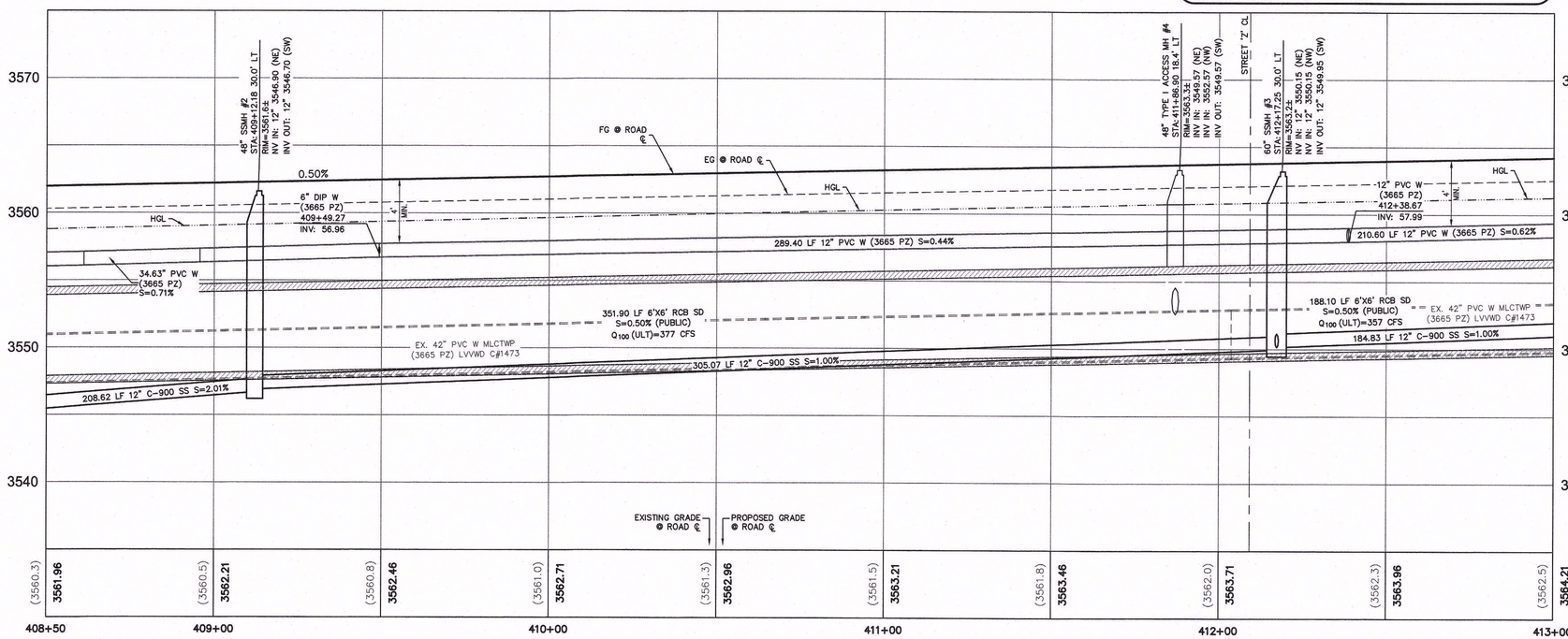
APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:



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CLV#:

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T: 702.804.2000
F: 702.804.2299
gcwengineering.com

F:\PROJECTS\6500\62025-203\DWG\PRODUCTION\62025-203DS_PP.DWG ALEXANDER SANTIAGO

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE:04-08-19
PLOT TIME:10:30:50

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE
							04/08/2019

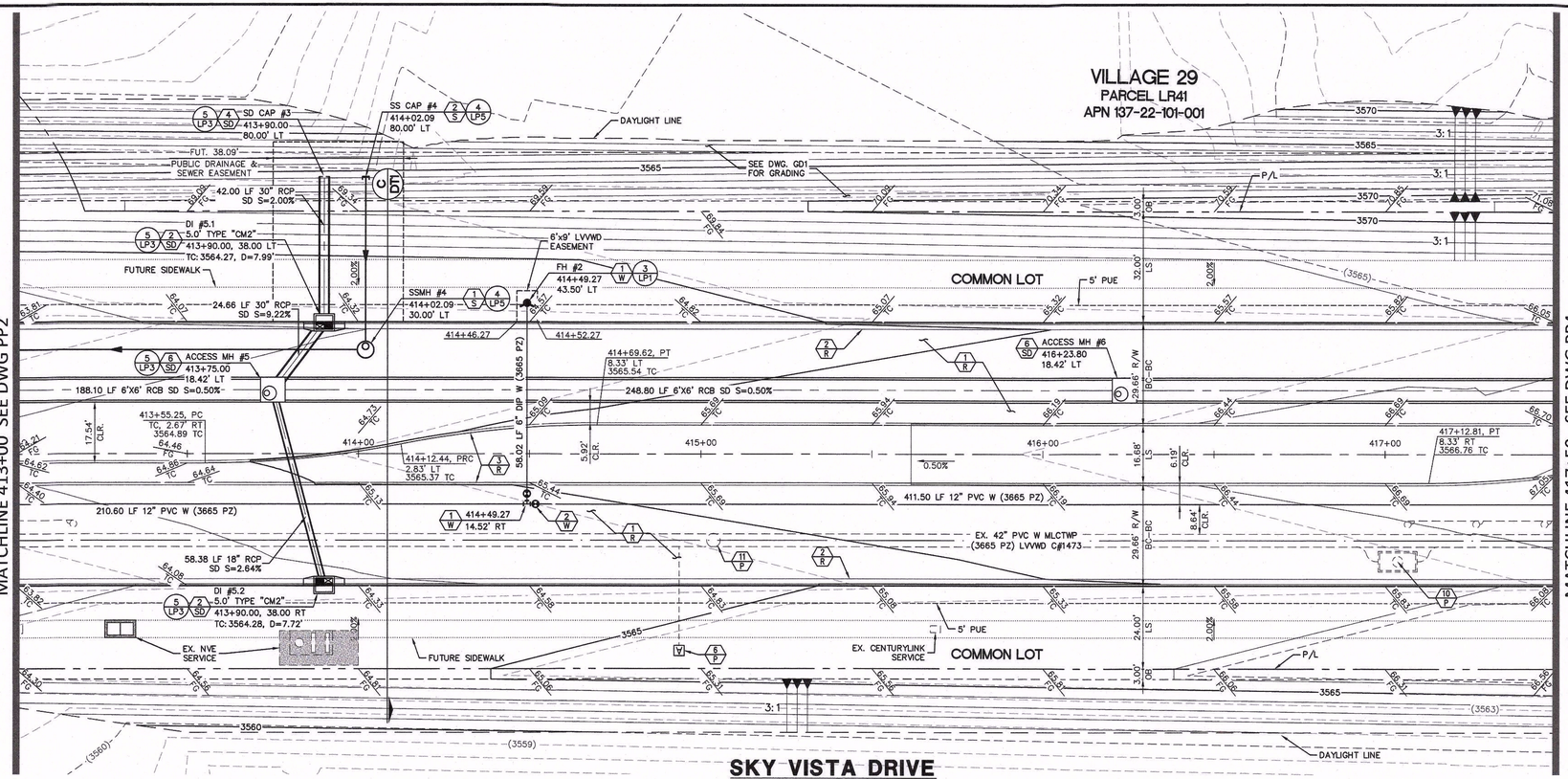
90% REVIEW - NOT FOR CONSTRUCTION

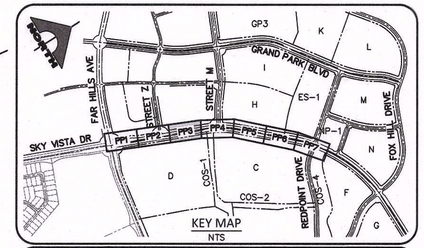
THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 2

DRAWING
PP2
13 OF 43 SHTS





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2 P EXISTING CURB/GUTTER, PROTECT IN PLACE
3 P EXISTING PULLBOX, ADJUST TO FINISH GRADE
4 P EXISTING TEST STATION, ADJUST TO FINISH GRADE & RELOCATE TO BEHIND CURB IF NECESSARY.
5 P EXISTING BLOW-OFF, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 37
6 P EXISTING AVAR, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 38
7 P EXISTING GATE VALVE, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 39
8 P EXISTING WATER VAULT MH, ADJUST TO FINISH GRADE PER UDACS PLT. NO. C-475
9 P EXISTING SSMH, ADJUST TO FINISH GRADE
10 P EXISTING WATER FIBER OPTIC SPLICE PIT PROTECT IN PLACE. RAISE TO FINAL GRADE PER DETAIL 5, 7 & 8 DWG. DT2
11 P EXISTING WATER ACCESS MANHOLE PROTECT IN PLACE. RAISE TO FINAL PAVEMENT GRADE PER DETAIL 7 & 8 DWG. DT2

ROADWAY CONSTRUCTION NOTES

1 R INSTALL A.C. PAVEMENT PER STREET SECTIONS, SEE DWG. DT1
2 R INSTALL "L" TYPE CURB & GUTTER, SEE SUMMERLIN STD DWG. S-47
3 R INSTALL "A" TYPE ISLAND CURB, SEE SUMMERLIN STD DWG. S-50
4 R INSTALL CURB TRANSITION PER DETAIL 2 DWG. DT2
5 R CONSTRUCT SIDEWALK RAMP PER USD DWG. NO. 235 (CASE II)

WATER CONSTRUCTION NOTES

1 W INSTALL FIRE HYDRANT & ASSEMBLY PER UDACS PLT. NO. 40. FOR "DEEP" FIRE HYDRANTS SEE UDACS PL. NO. 41.
2 W INSTALL GATE VALVE AND BOX PER UDACS PLT. NO. 30 AND 39
3 W INSTALL TEE PER UDACS PLT. NO. 31
4 W INSTALL HORIZONTAL BEND PER UDACS PLT. NO. 31 (SEE PLAN FOR ANGLE)
5 W INSTALL REDUCER PER UDACS PLT. NO. 31
6 W INSTALL CAP W/ 2" BLOW-OFF ASSEMBLY PER UDACS PLT. NO. 36
7 W INSTALL 1-½" WATER METER AND 1-½" RPPA PER DETAIL 1 DWG. DT1
8 W INSTALL VERTICAL BEND PER UDACS PLT. NO. 31 (SEE PROFILE FOR ANGLE)
9 W REMOVE CAP AND BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE.

SEWER CONSTRUCTION NOTES

1 S INSTALL SEWER MANHOLE PER DCS STD. DWG. 1A AND 1B
2 S STUB AND CAP SEWER PIPE PER DETAIL 3, DWG. DT2
3 S REMOVE PLUG & CONNECT TO SEWER LINE (CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EX. SEWER PRIOR TO CONSTRUCTION)

STORM DRAIN CONSTRUCTION NOTES

1 SD INSTALL TYPE II MANHOLE PER USD STD. DWG. NO. 405.1
2 SD INSTALL TYPE "CM2" DROP INLET PER USD DWG. NO. 412.1 AND 421
3 SD INSTALL TYPE "C" DROP INLET PER USD DWG. NO. 413 AND 421
4 SD INSTALL TEMPORARY PLUG AND CAP
5 SD REMOVE PLUG & CONNECT TO STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EX. STORM DRAIN PRIOR TO CONSTRUCTION)
6 SD INSTALL TYPICAL TYPE I ACCESS MANHOLE IN RCB PER DETAILS ON DWG. S1 AND USD DWG. NO. 403.1

IRRIGATION CONSTRUCTION NOTES

1 IR BANK "A": 1-6" & 2-4" SCH 40 PVC. PER DETAIL 4 DWG. DT2

DROP INLET NOTE:

ALL STORM DRAIN DROP INLETS ARE TO BE CONSTRUCTED PER THE REQUIREMENTS OF USDCCA DWG. NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).

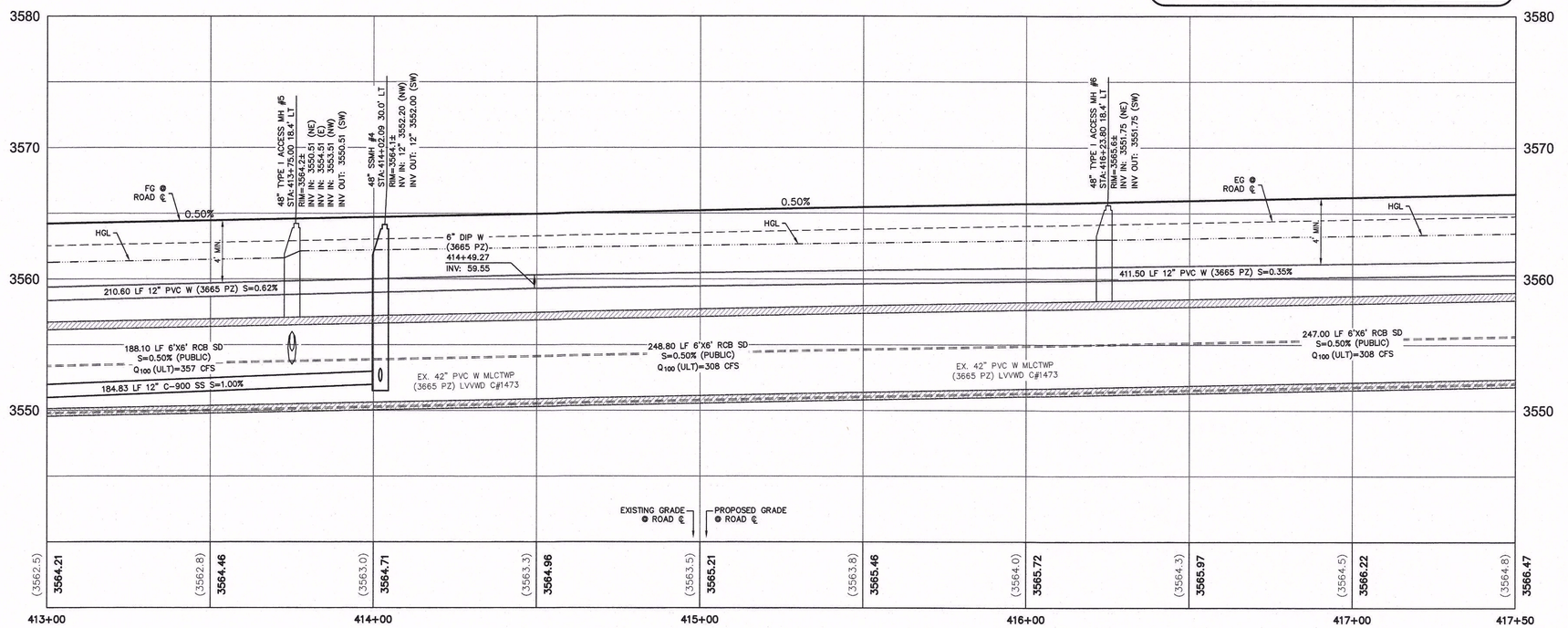
OFF-SITE FLOOD CONTROL NOTE:

ALL OFF-SITE INTERIM FLOOD CONTROL FACILITIES SUCH AS, BUT NOT LIMITED TO, BERMS/DITCHES AND TEMPORARY SUMPS ARE PRIVATELY OWNED AND ARE TO BE PRIVATELY MAINTAINED BY THE HOWARD HUGHES COMPANY.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:



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)

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 DIG OVERHEAD
1-702-227-2929

CLV#:

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE: 04/08/2019

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:31:30

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

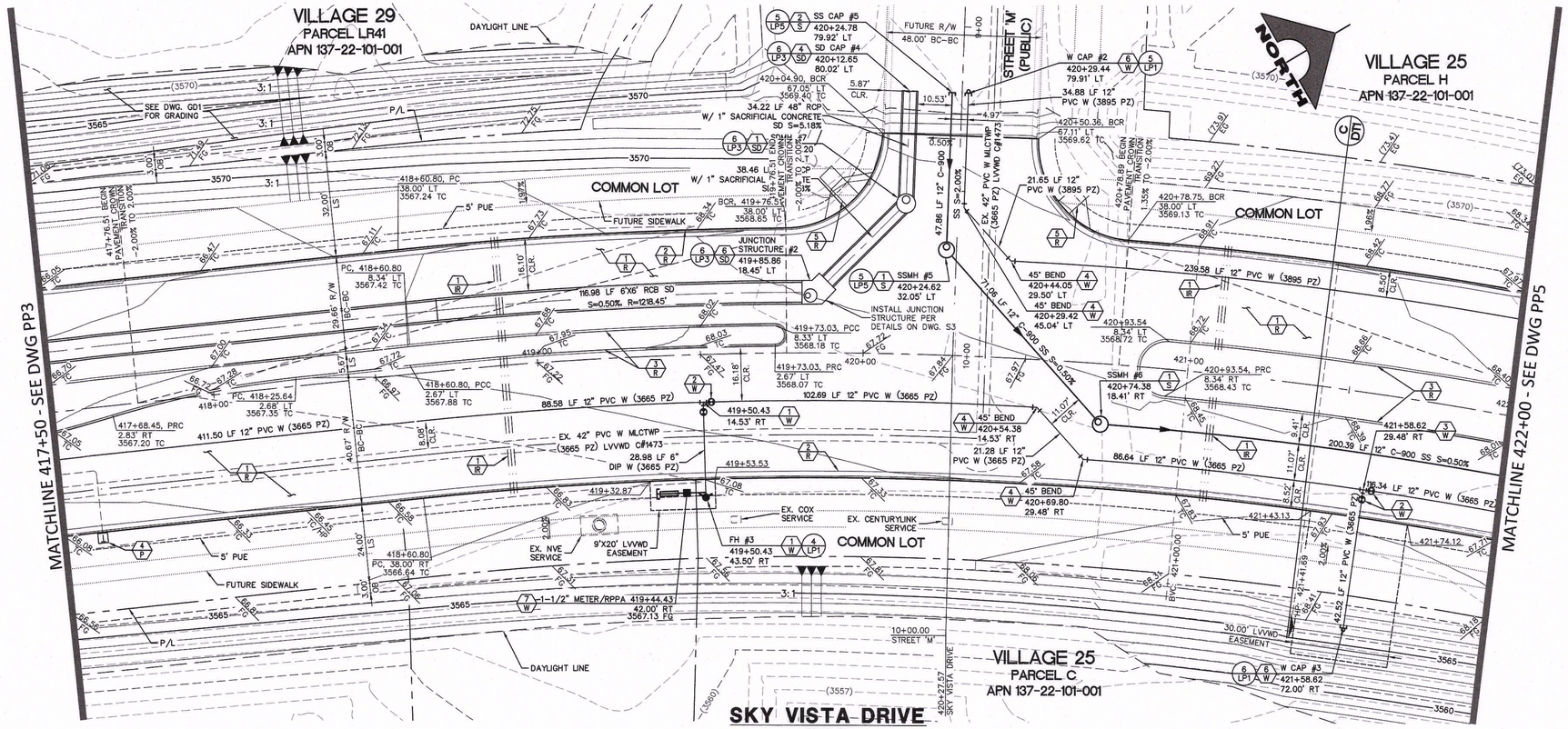
F:\PROJECTS\6200\62025-203\CIVIL\PRODUCTION\62025-203DS_PP.DWG ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 3

DRAWING
PP3
14 OF 43 SHTS



DROP INLET NOTE:

ALL STORM DRAIN DROP INLETS ARE TO BE CONSTRUCTED PER THE REQUIREMENTS OF USDCCA DWG. NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).

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NOTE:

FOR 3895 PZ WATER LINE PROFILE VIEW, SEE DWG. PP4A

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'

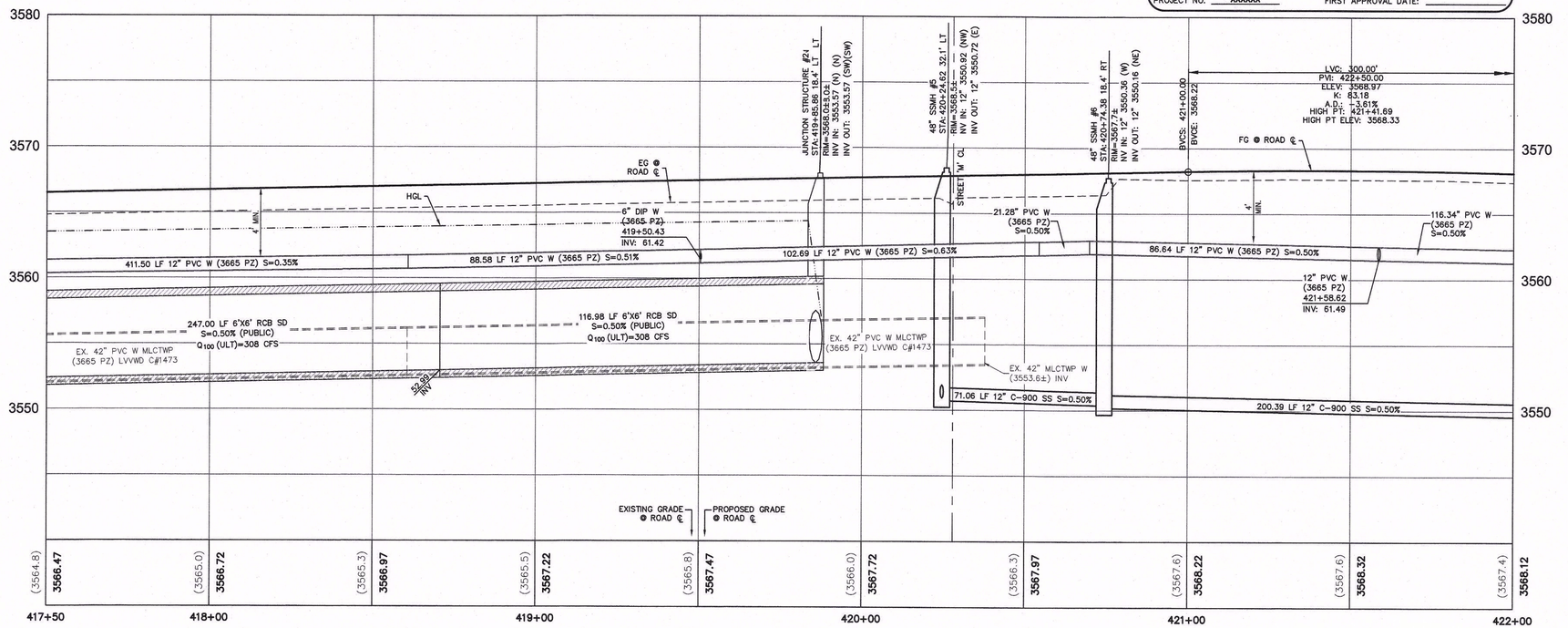
20' 0' 10' 20' 40'

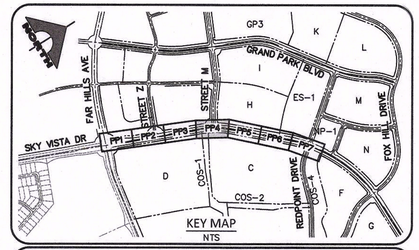
SCALE: 1" = 20'

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:





PROTECTION CONSTRUCTION NOTES

1. EXISTING PAVEMENT, PROTECT IN PLACE
2. EXISTING CURB/GUTTER, PROTECT IN PLACE
3. EXISTING PULLBOX, ADJUST TO FINISH GRADE
4. EXISTING TEST STATION, ADJUST TO FINISH GRADE & RELOCATE TO BEHIND CURB IF NECESSARY.
5. EXISTING BLOW-OFF, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 37
6. EXISTING AVAR, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 38
7. EXISTING GATE VALVE, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 39
8. EXISTING WATER VAULT MH, ADJUST TO FINISH GRADE PER UDACS PLT. NO. C-475
9. EXISTING SSMH, ADJUST TO FINISH GRADE
10. EXISTING WATER FIBER OPTIC SPLICE PIT PROTECT IN PLACE. RAISE TO FINAL GRADE PER DETAIL 5, 7 & 8 DWG. DT2
11. EXISTING WATER ACCESS MANHOLE PROTECT IN PLACE. RAISE TO FINAL PAVEMENT GRADE PER DETAIL 7 & 8 DWG. DT2

ROADWAY CONSTRUCTION NOTES

1. INSTALL A.C. PAVEMENT PER STREET SECTIONS, SEE DWG. DT1
2. INSTALL "L" TYPE CURB & GUTTER, SEE SUMMERLIN STD DWG. S-47
3. INSTALL "A" TYPE ISLAND CURB, SEE SUMMERLIN STD DWG. S-50
4. INSTALL CURB TRANSITION PER DETAIL 2 DWG. DT2
5. CONSTRUCT SIDEWALK RAMP PER USD DWG. NO. 235 (CASE II)

WATER CONSTRUCTION NOTES

1. INSTALL FIRE HYDRANT & ASSEMBLY PER UDACS PLT. NO. 40. FOR "DEEP" FIRE HYDRANTS SEE UDACS PL. NO. 41.
2. INSTALL GATE VALVE AND BOX PER UDACS PLT. NO. 30 AND 39
3. INSTALL TEE PER UDACS PLT. NO. 31
4. INSTALL HORIZONTAL BEND PER UDACS PLT. NO. 31 (SEE PLAN FOR ANGLE)
5. INSTALL REDUCER PER UDACS PLT. NO. 31
6. INSTALL CAP W/ 2" BLOW-OFF ASSEMBLY PER UDACS PLT. NO. 36
7. INSTALL 1-½" WATER METER AND 1-½" RPPA PER DETAIL 1 DWG. DT1
8. INSTALL VERTICAL BEND PER UDACS PLT. NO. 31 (SEE PROFILE FOR ANGLE)
9. REMOVE CAP AND BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE.

SEWER CONSTRUCTION NOTES

1. INSTALL SEWER MANHOLE PER DCS STD. DWG. 1A AND 1B
2. STUB AND CAP SEWER PIPE PER DETAIL 3, DWG. DT2
3. REMOVE PLUG & CONNECT TO SEWER LINE (CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EX. SEWER PRIOR TO CONSTRUCTION)

STORM DRAIN CONSTRUCTION NOTES

1. INSTALL TYPE II MANHOLE PER USD STD. DWG. NO. 405.1
2. INSTALL TYPE "CM2" DROP INLET PER USD DWG. NO. 412.1 AND 421
3. INSTALL TYPE "C" DROP INLET PER USD DWG. NO. 413 AND 421
4. INSTALL TEMPORARY PLUG AND CAP
5. REMOVE PLUG & CONNECT TO STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EX. STORM DRAIN PRIOR TO CONSTRUCTION)
6. INSTALL TYPICAL TYPE I ACCESS MANHOLE IN RCB PER DETAILS ON DWG. S1 AND USD DWG. NO. 403.1

IRRIGATION CONSTRUCTION NOTES

1. BANK "A": 1-6" & 2-4" SCH 40 PVC. PER DETAIL 4 DWG. DT2

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 (984,250.00000 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)

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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CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

CLV#:

STATE OF NEVADA — PROFESSIONAL ENGINEER — MICHAEL FANG — No. 24487 — CIVIL — Exp. 12/31/2019 — DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:32:13

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\000\62025-203\DWG\PRODUCTION\62025-203DS_PP.DWG
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 4

DRAWING
PP4
15 OF 43 SHTS

SKY VISTA DRIVE (12-IN 3895 WTR ZONE PROFILE)

(PUBLIC)
SCALE: HORIZ 1" = 20'
VERT. 1" = 5'

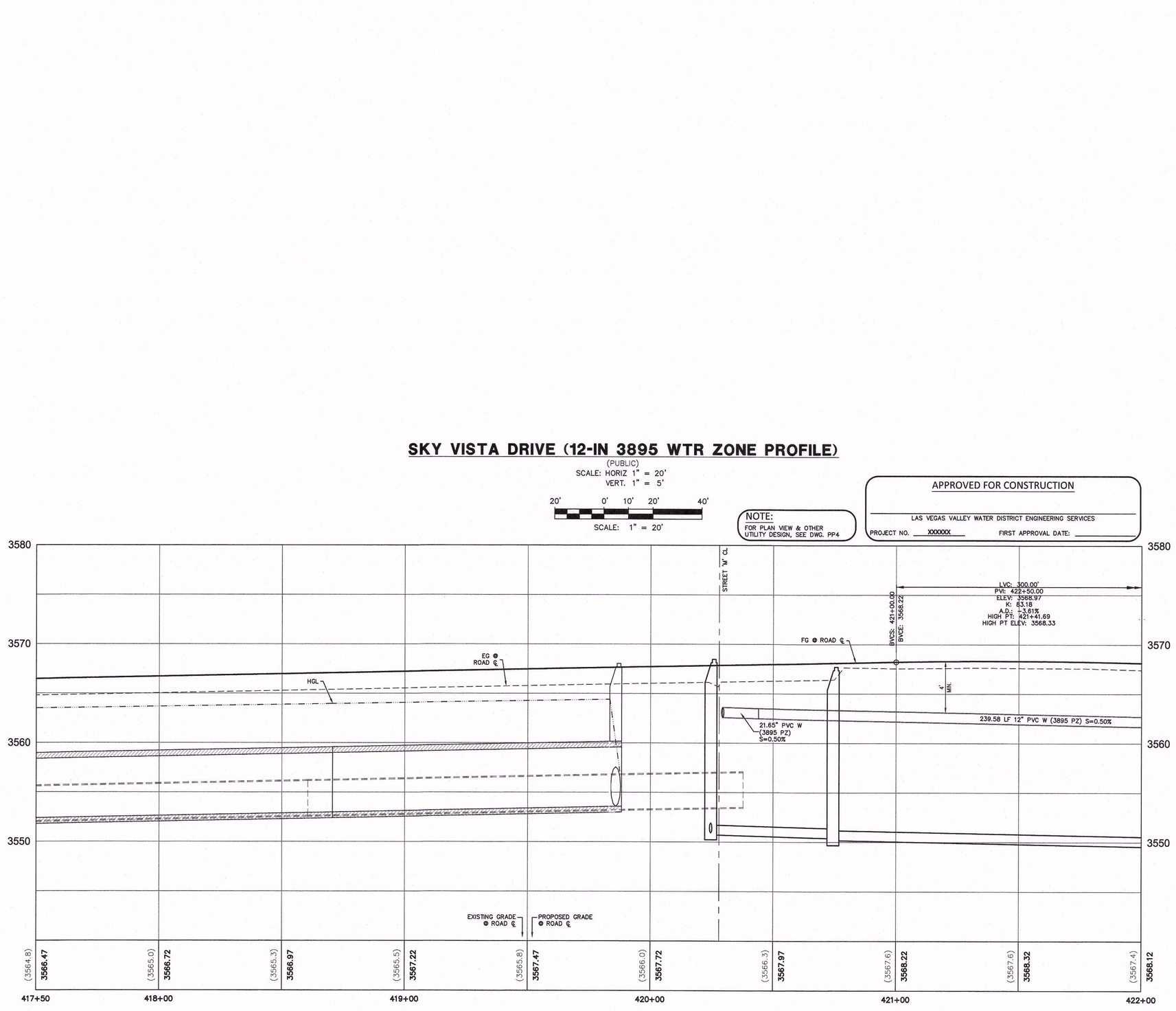
20' 0' 10' 20' 40'
SCALE: 1" = 20'

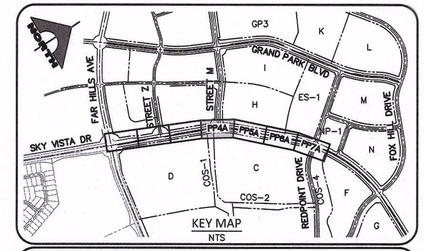
NOTE:
FOR PLAN VIEW & OTHER UTILITY DESIGN, SEE DWG. PP4

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:





KEY MAP
NTS

PROTECTION CONSTRUCTION NOTES

1 P EXISTING PAVEMENT, PROTECT IN PLACE
2 P EXISTING CURB/GUTTER, PROTECT IN PLACE
3 P EXISTING PULLBOX, ADJUST TO FINISH GRADE
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1 IR BANK "A": 1-6" & 2-4" SCH 40 PVC. PER DETAIL 4 DWG. DT2

BASIS OF BEARING AND COORDINATES

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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
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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. T30S,R59E,S34	3318.31 (FEET)	1,011.422 (METERS)

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1-702-432-5300
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1-702-227-2929

CLV#:

STATE OF NEVADA — REGISTERED PROFESSIONAL ENGINEER — MICHAEL FANG — No. 24484 — CIVIL — Exp. 04/30/2019

DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:32:28

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

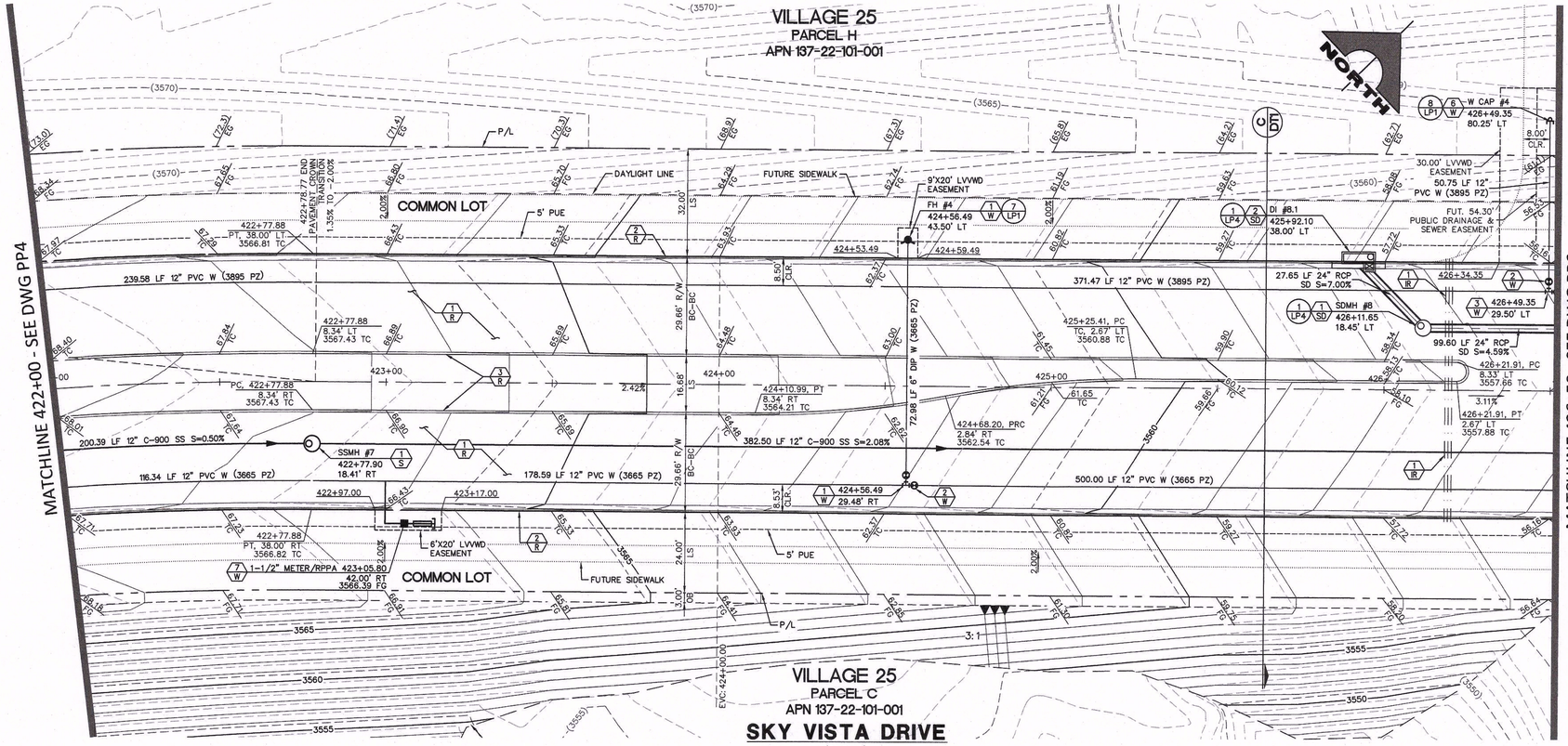
F:\PROJECTS\CIVIL\62025-203\DWG\PRODUCTION\62025-203DS_PP.DWG
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 4A

DRAWING
PP4A
16 OF 43 SHTS



VILLAGE 25
PARCEL C
APN 137-22-101-001

SKY VISTA DRIVE
(PUBLIC)
SCALE: HORIZ 1" = 20'
VERT. 1" = 5'

20' 0' 10' 20' 40'
SCALE: 1" = 20'

DROP INLET NOTE:
ALL STORM DRAIN DROP INLETS ARE TO BE CONSTRUCTED PER THE REQUIREMENTS OF USDCCA DWG. NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).

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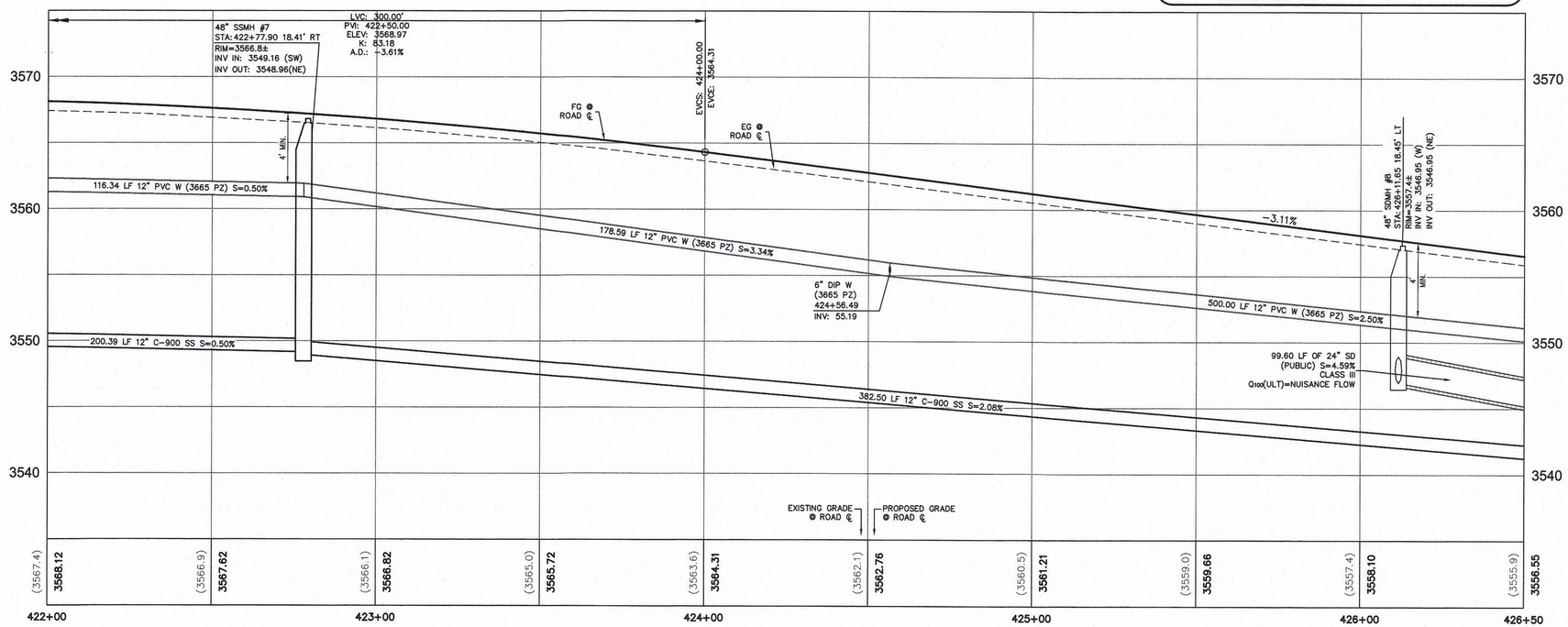
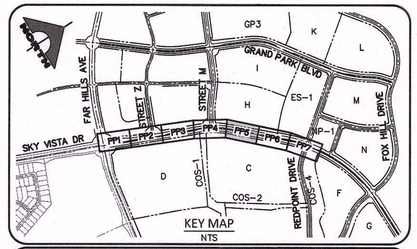
NOTE:
FOR 3895 PZ WATER LINE PROFILE VIEW, SEE DWG. PP5A

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:





PROTECTION CONSTRUCTION NOTES
1 P EXISTING PAVEMENT, PROTECT IN PLACE
2 P EXISTING CURB/GUTTER, PROTECT IN PLACE
3 P EXISTING PULLBOX, ADJUST TO FINISH GRADE
4 P EXISTING TEST STATION, ADJUST TO FINISH GRADE & RELOCATE TO BEHIND CURB IF NECESSARY.
5 P EXISTING BLOW-OFF, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 37
6 P EXISTING AVAR, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 38
7 P EXISTING GATE VALVE, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 39
8 P EXISTING WATER VAULT MH, ADJUST TO FINISH GRADE PER UDACS PLT. NO. C-475
9 P EXISTING SSMH, ADJUST TO FINISH GRADE
10 P EXISTING WATER FIBER OPTIC SPLICE PIT PROTECT IN PLACE. RAISE TO FINAL GRADE PER DETAIL 5, 7 & 8 DWG. DT2
11 P EXISTING WATER ACCESS MANHOLE PROTECT IN PLACE. RAISE TO FINAL PAVEMENT GRADE PER DETAIL 7 & 8 DWG. DT2

ROADWAY CONSTRUCTION NOTES
1 R INSTALL A.C. PAVEMENT PER STREET SECTIONS, SEE DWG. DT1
2 R INSTALL "L" TYPE CURB & GUTTER, SEE SUMMERLIN STD DWG. S-47
3 R INSTALL "A" TYPE ISLAND CURB, SEE SUMMERLIN STD DWG. S-50
4 R INSTALL CURB TRANSITION PER DETAIL 2 DWG. DT2
5 R CONSTRUCT SIDEWALK RAMP PER USD DWG. NO. 235 (CASE II)

WATER CONSTRUCTION NOTES
1 W INSTALL FIRE HYDRANT & ASSEMBLY PER UDACS PLT. NO. 40. FOR "DEEP" FIRE HYDRANTS SEE UDACS PL. NO. 41.
2 W INSTALL GATE VALVE AND BOX PER UDACS PLT. NO. 30 AND 39
3 W INSTALL TEE PER UDACS PLT. NO. 31
4 W INSTALL HORIZONTAL BEND PER UDACS PLT. NO. 31 (SEE PLAN FOR ANGLE)
5 W INSTALL REDUCER PER UDACS PLT. NO. 31
6 W INSTALL CAP W/ 2" BLOW-OFF ASSEMBLY PER UDACS PLT. NO. 36
7 W INSTALL 1-½" WATER METER AND 1-½" RPPA PER DETAIL 1 DWG. DT1
8 W INSTALL VERTICAL BEND PER UDACS PLT. NO. 31 (SEE PROFILE FOR ANGLE)
9 W REMOVE CAP AND BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE.

SEWER CONSTRUCTION NOTES
1 S INSTALL SEWER MANHOLE PER DCS STD. DWG. 1A AND 1B
2 S STUB AND CAP SEWER PIPE PER DETAIL 3, DWG. DT2
3 S REMOVE PLUG & CONNECT TO SEWER LINE (CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EX. SEWER PRIOR TO CONSTRUCTION)

STORM DRAIN CONSTRUCTION NOTES
1 SD INSTALL TYPE II MANHOLE PER USD DWG. NO. 405.1
2 SD INSTALL TYPE "CM2" DROP INLET PER USD DWG. NO. 412.1 AND 421
3 SD INSTALL TYPE "C" DROP INLET PER USD DWG. NO. 413 AND 421
4 SD INSTALL TEMPORARY PLUG AND CAP
5 SD REMOVE PLUG & CONNECT TO STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EX. STORM DRAIN PRIOR TO CONSTRUCTION)
6 SD INSTALL TYPICAL TYPE I ACCESS MANHOLE IN RCB PER DETAILS ON DWG. S1 AND USD DWG. NO. 403.1

IRRIGATION CONSTRUCTION NOTES
1 IR BANK "A": 1-6" & 2-4" SCH 40 PVC. PER DETAIL 4 DWG. DT2

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. 7LV0934DWB	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)

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

CLV#:

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

F:\PROJECTS\6000\62025-203\DWG\PRODUCTION\62025-203DS_PP.DWG

ALEXANDER SANTIAGO

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:32:56

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 5

DRAWING
PP5
17 OF 43 SHTS

SKY VISTA DRIVE (12-IN 3895 WTR ZONE PROFILE)

(PUBLIC)
SCALE: HORIZ 1" = 20'
VERT. 1" = 5'

20' 0' 10' 20' 40'

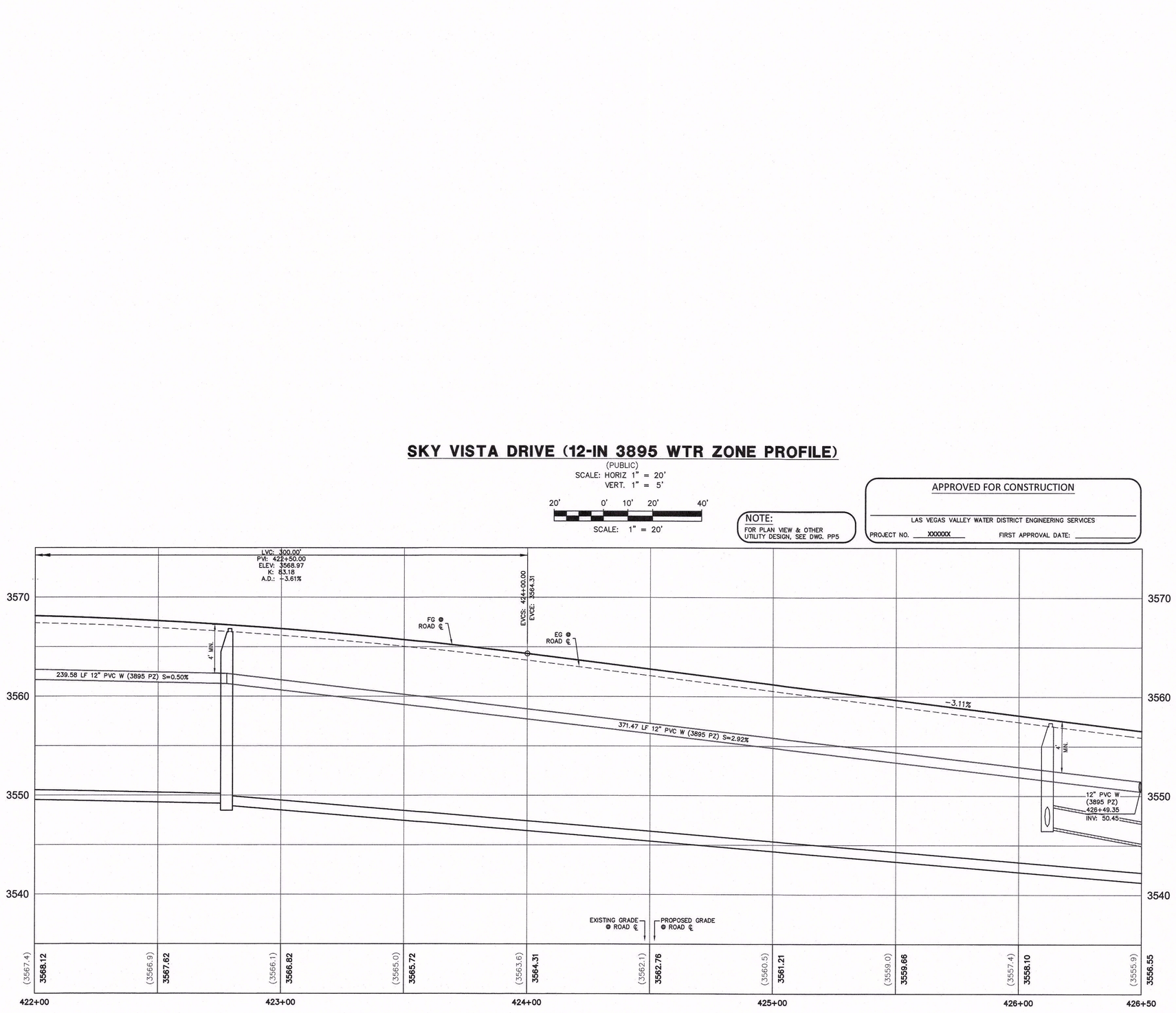
SCALE: 1" = 20'

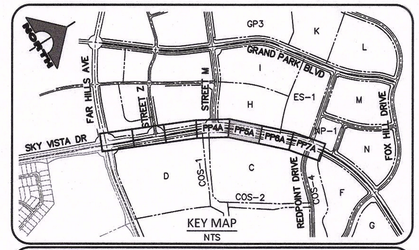
NOTE:
FOR PLAN VIEW & OTHER UTILITY DESIGN, SEE DWG. PP5

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:





KEY MAP
NTS

PROTECTION CONSTRUCTION NOTES

1 P EXISTING PAVEMENT, PROTECT IN PLACE
2 P EXISTING CURB/GUTTER, PROTECT IN PLACE
3 P EXISTING PULLBOX, ADJUST TO FINISH GRADE
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9 P EXISTING SSMH, ADJUST TO FINISH GRADE
10 P EXISTING WATER FIBER OPTIC SPLICE PIT PROTECT IN PLACE. RAISE TO FINAL GRADE PER DETAIL 5, 7 & 8 DWG. DT2
11 P EXISTING WATER ACCESS MANHOLE PROTECT IN PLACE. RAISE TO FINAL PAVEMENT GRADE PER DETAIL 7 & 8 DWG. DT2

ROADWAY CONSTRUCTION NOTES

1 R INSTALL A.C. PAVEMENT PER STREET SECTIONS, SEE DWG. DT1
2 R INSTALL "L" TYPE CURB & GUTTER, SEE SUMMERLIN STD DWG. S-47
3 R INSTALL "A" TYPE ISLAND CURB, SEE SUMMERLIN STD DWG. S-50
4 R INSTALL CURB TRANSITION PER DETAIL 2 DWG. DT2
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WATER CONSTRUCTION NOTES

1 W INSTALL FIRE HYDRANT & ASSEMBLY PER UDACS PLT. NO. 40. FOR "DEEP" FIRE HYDRANTS SEE UDACS PL. NO. 41.
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9 W REMOVE CAP AND BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE.

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6 SD INSTALL TYPICAL TYPE I ACCESS MANHOLE IN RCB PER DETAILS ON DWG. S1 AND USD DWG. NO. 403.1

IRRIGATION CONSTRUCTION NOTES

1 IR BANK "A": 1-6" & 2-4" SCH 40 PVC. PER DETAIL 4 DWG. DT2

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)

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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

CLV#:

ENGINEER - STATE OF NEVADA
MICHAEL FANG
Exp. 06/30/2019
No. 17847
PROFESSIONAL
CIVIL

DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:33:15

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

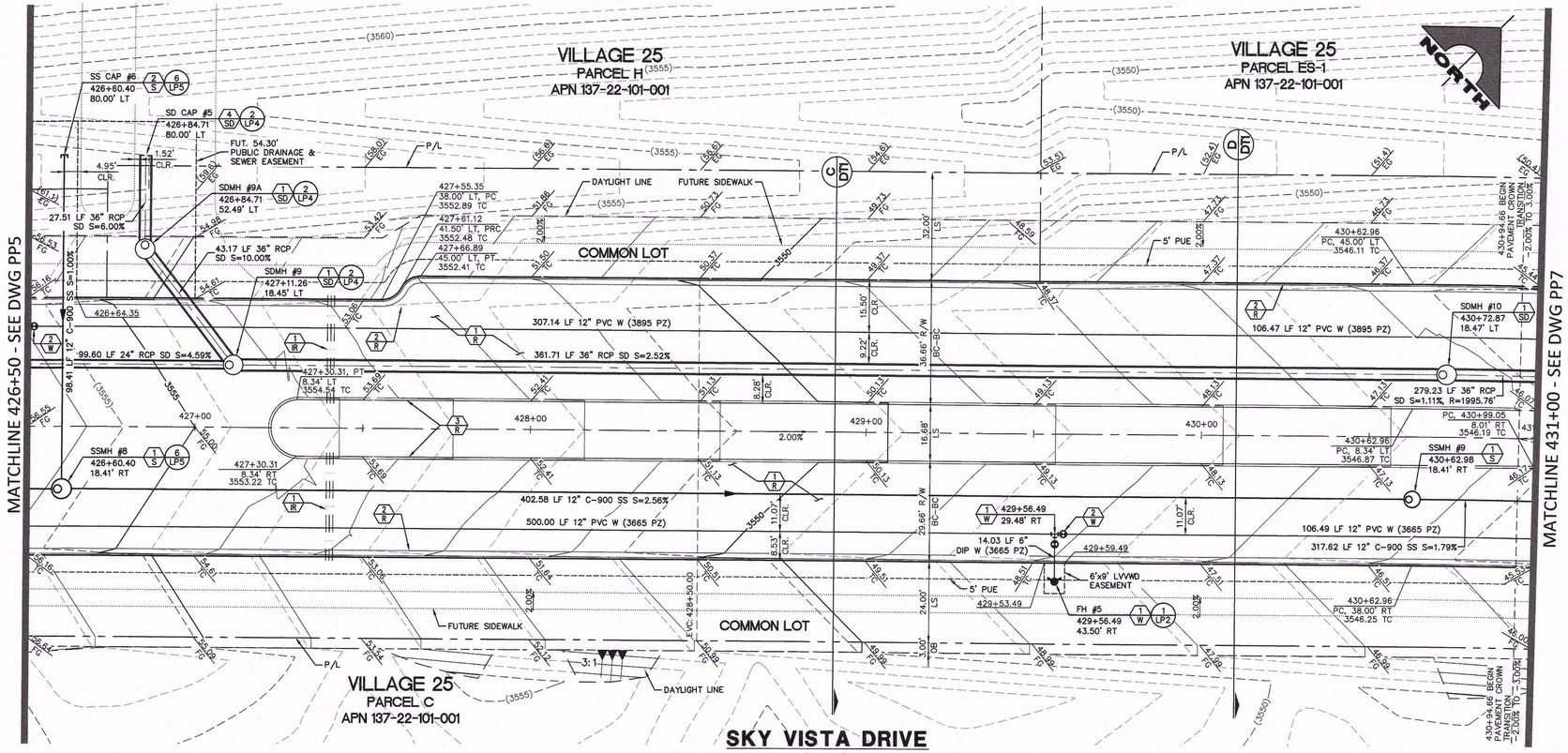
F:\PROJECTS\6200\6202S-203\DWG\PRODUCTION\6202S-203DS_PP.DWG
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 5A

DRAWING
PP5A
18 OF 43 SHTS



SKY VISTA DRIVE

(PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'

20' 0' 10' 20' 40'

SCALE: 1" = 20'

DROP INLET NOTE:

ALL STORM DRAIN DROP INLETS ARE TO BE CONSTRUCTED PER THE REQUIREMENTS OF USDCOA DWG. NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).

OFF-SITE FLOOD CONTROL NOTE:

ALL OFF-SITE INTERIM FLOOD CONTROL FACILITIES SUCH AS, BUT NOT LIMITED TO, BERMS/DITCHES AND TEMPORARY SUMPS ARE PRIVATELY OWNED AND ARE TO BE PRIVATELY MAINTAINED BY THE HOWARD HUGHES COMPANY.

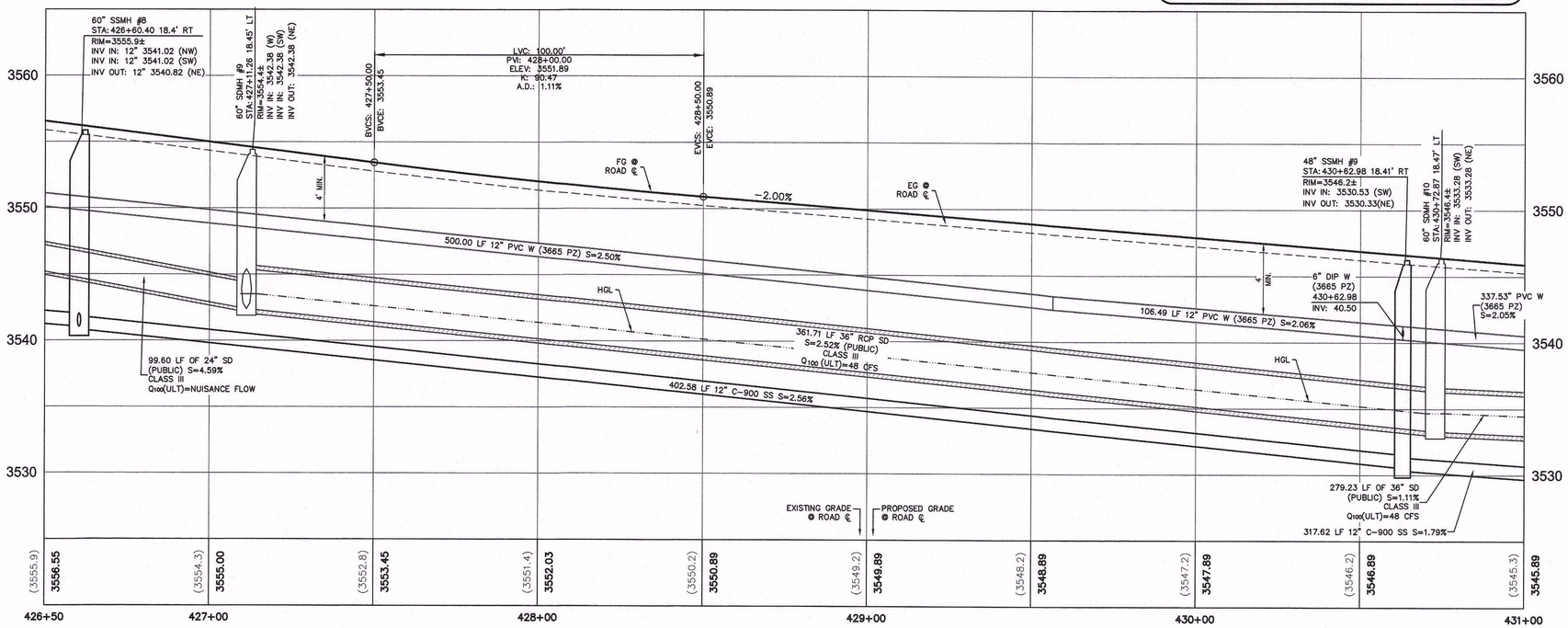
NOTE:

FOR 3895 PZ WATER LINE PROFILE VIEW, SEE DWG. PP6A

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:



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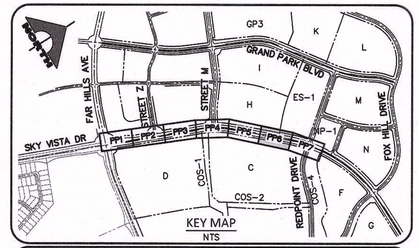

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1 (P) EXISTING PAVEMENT, PROTECT IN PLACE
2 (P) EXISTING CURB/GUTTER, PROTECT IN PLACE
3 (P) EXISTING PULLBOX, ADJUST TO FINISH GRADE
4 (P) EXISTING TEST STATION, ADJUST TO FINISH GRADE & RELOCATE TO BEHIND CURB IF NECESSARY.
5 (P) EXISTING BLOW-OFF, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 37
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7 (P) EXISTING GATE VALVE, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 39
8 (P) EXISTING WATER VAULT MH, ADJUST TO FINISH GRADE PER UDACS PLT. NO. C-475
9 (P) EXISTING SSMH, ADJUST TO FINISH GRADE
10 (P) EXISTING WATER FIBER OPTIC SPLICE PIT PROTECT IN PLACE. RAISE TO FINAL GRADE PER DETAIL 5, 7 & 8 DWG. DT2
11 (P) EXISTING WATER ACCESS MANHOLE PROTECT IN PLACE. RAISE TO FINAL PAVEMENT GRADE PER DETAIL 7 & 8 DWG. DT2

ROADWAY CONSTRUCTION NOTES

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3 (R) INSTALL "A" TYPE ISLAND CURB, SEE SUMMERLIN STD DWG. S-50
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4 (SD) INSTALL TEMPORARY PLUG AND CAP
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IRRIGATION CONSTRUCTION NOTES

1 (IR) BANK "A": 1-6" & 2-4" SCH 40 PVC. PER DETAIL 4 DWG. DT2

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ZONE:LAS VEGAS HIGH ELEVATION ZONE

PROJECTION: TRANSVERSE MERCATOR
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REGISTERED ENGINEER - STATE OF NEVADA
MICHAEL FANG
Exp. 06/30/2019
CIVIL
No. 23465
PROFESSIONAL

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP	DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:33:55

F:\PROJECTS\6000\62025-203\DWG\PRODUCTION\62025-203CDL_PP.DWG
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 6

DRAWING
PP6
19 OF 43 SHTS

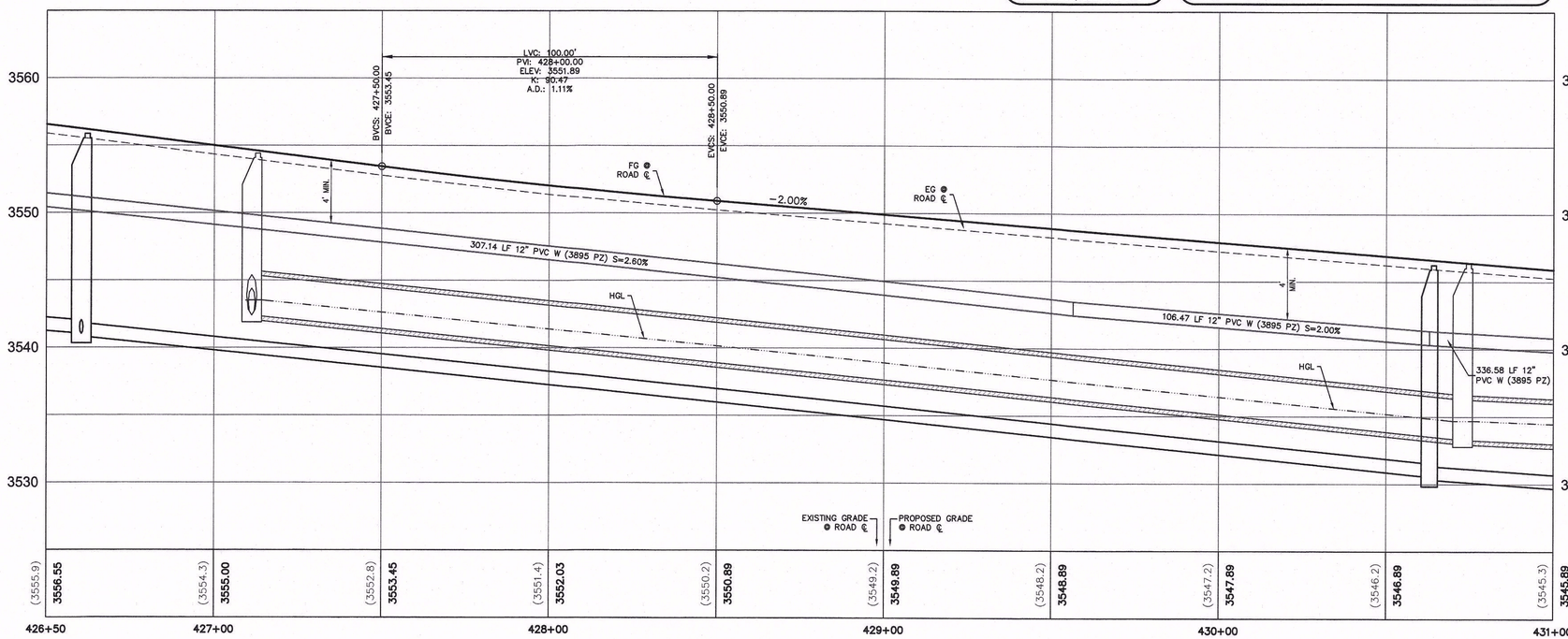
SKY VISTA DRIVE (12-IN 3895 WTR ZONE PROFILE)

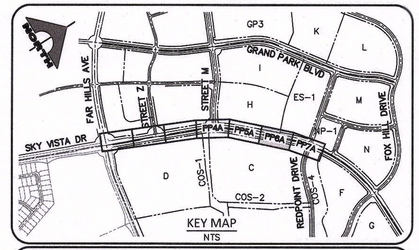
(PUBLIC)
SCALE: HORIZ 1" = 20'
VERT. 1" = 5'

20' 0' 10' 20' 40'
SCALE: 1" = 20'

NOTE:
FOR PLAN VIEW & OTHER UTILITY DESIGN, SEE DWG. PP6

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. XXXXXX FIRST APPROVAL DATE:





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11 P EXISTING WATER ACCESS MANHOLE PROTECT IN PLACE. RAISE TO FINAL PAVEMENT GRADE PER DETAIL 7 & 8 DWG. DT2

ROADWAY CONSTRUCTION NOTES

1 R INSTALL A.C. PAVEMENT PER STREET SECTIONS, SEE DWG. DT1
2 R INSTALL "L" TYPE CURB & GUTTER, SEE SUMMERLIN STD DWG. S-47
3 R INSTALL "A" TYPE ISLAND CURB, SEE SUMMERLIN STD DWG. S-50
4 R INSTALL CURB TRANSITION PER DETAIL 2 DWG. DT2
5 R CONSTRUCT SIDEWALK RAMP PER USD DWG. NO. 235 (CASE II)

WATER CONSTRUCTION NOTES

1 W INSTALL FIRE HYDRANT & ASSEMBLY PER UDACS PLT. NO. 40. FOR "DEEP" FIRE HYDRANTS SEE UDACS PL. NO. 41.
2 W INSTALL GATE VALVE AND BOX PER UDACS PLT. NO. 30 AND 39
3 W INSTALL TEE PER UDACS PLT. NO. 31
4 W INSTALL HORIZONTAL BEND PER UDACS PLT. NO. 31 (SEE PLAN FOR ANGLE)
5 W INSTALL REDUCER PER UDACS PLT. NO. 31
6 W INSTALL CAP W/ 2" BLOW-OFF ASSEMBLY PER UDACS PLT. NO. 36
7 W INSTALL 1-½" WATER METER AND 1-½" RPPA PER DETAIL 1 DWG. DT1
8 W INSTALL VERTICAL BEND PER UDACS PLT. NO. 31 (SEE PROFILE FOR ANGLE)
9 W REMOVE CAP AND BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE.

SEWER CONSTRUCTION NOTES

1 S INSTALL SEWER MANHOLE PER DCS STD. DWG. 1A AND 1B
2 S STUB AND CAP SEWER PIPE PER DETAIL 3, DWG. DT2
3 S REMOVE PLUG & CONNECT TO SEWER LINE (CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EX. SEWER PRIOR TO CONSTRUCTION)

STORM DRAIN CONSTRUCTION NOTES

1 SD INSTALL TYPE II MANHOLE PER USD DWG. NO. 405.1
2 SD INSTALL TYPE "CM2" DROP INLET PER USD DWG. NO. 412.1 AND 421
3 SD INSTALL TYPE "C" DROP INLET PER USD DWG. NO. 413 AND 421
4 SD INSTALL TEMPORARY PLUG AND CAP
5 SD REMOVE PLUG & CONNECT TO STORM DRAIN (CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EX. STORM DRAIN PRIOR TO CONSTRUCTION)
A SD INSTALL TYPICAL TYPE I ACCESS MANHOLE IN RCB PER DETAILS ON DWG. S1 AND USD DWG. NO. 403.1

IRRIGATION CONSTRUCTION NOTES

1 IR BANK "A": 1-6" & 2-4" SCH 40 PVC. PER DETAIL 4 DWG. DT2

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. 7LV09340W6	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)

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 OR 1-800-227-2800

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

CLV#:

ENGINEER - STATE OF NEVADA
MICHAEL FANG
No. 24467
PROFESSIONAL
CIVIL
04/30/2019

DATE: 04/08/2019

REV	DATE	DESCRIPTION	DATE	AGEN. APP	DATE	GCW APP

90% REVIEW - NOT FOR CONSTRUCTION

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:34:15

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

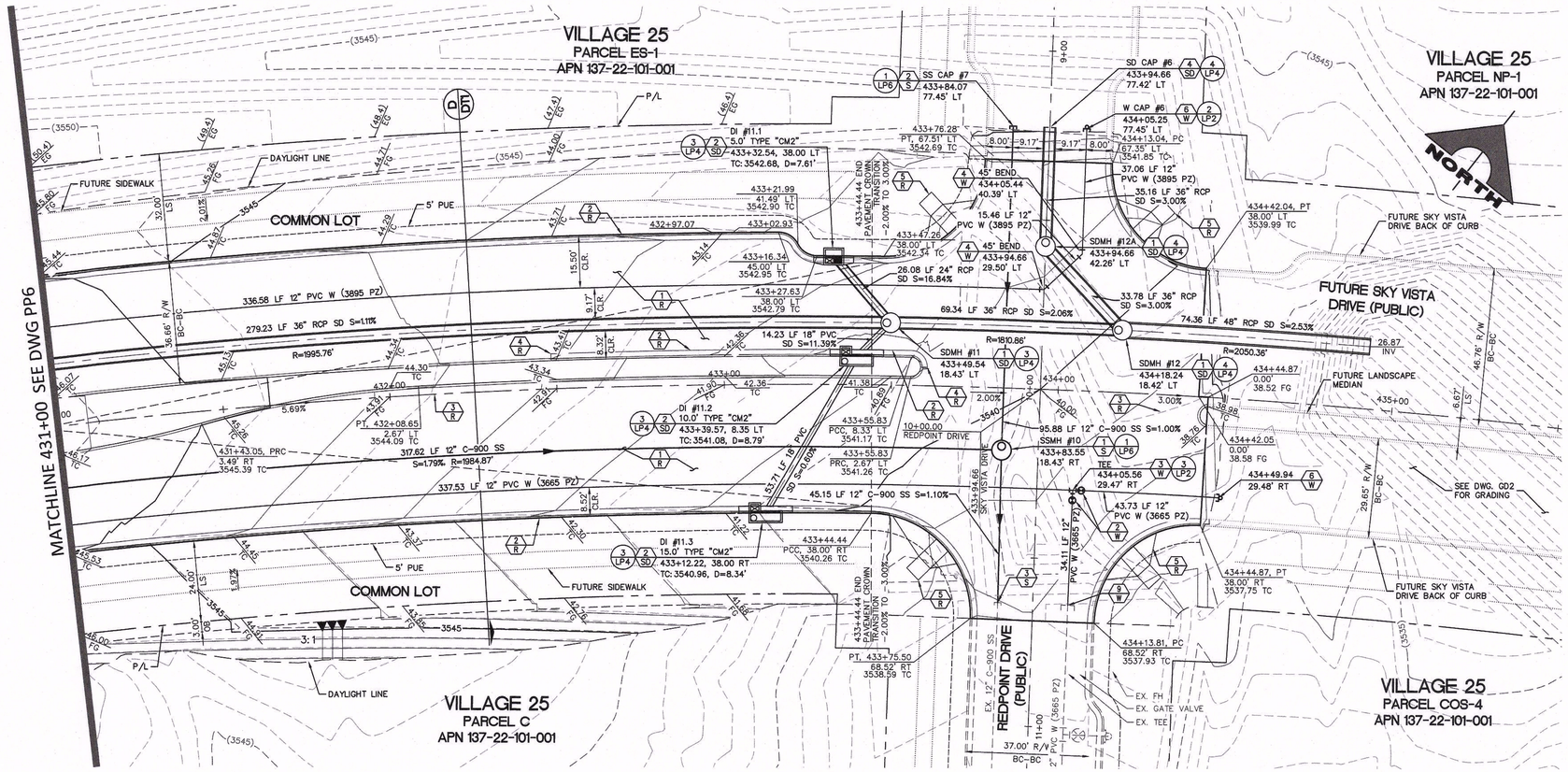
F:\PROJECTS\6200\62025-203\GWC\PRODUCTION\62025-203DSN_PP.DWG
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 6A

DRAWING
PP6A
20 OF 43 SHTS



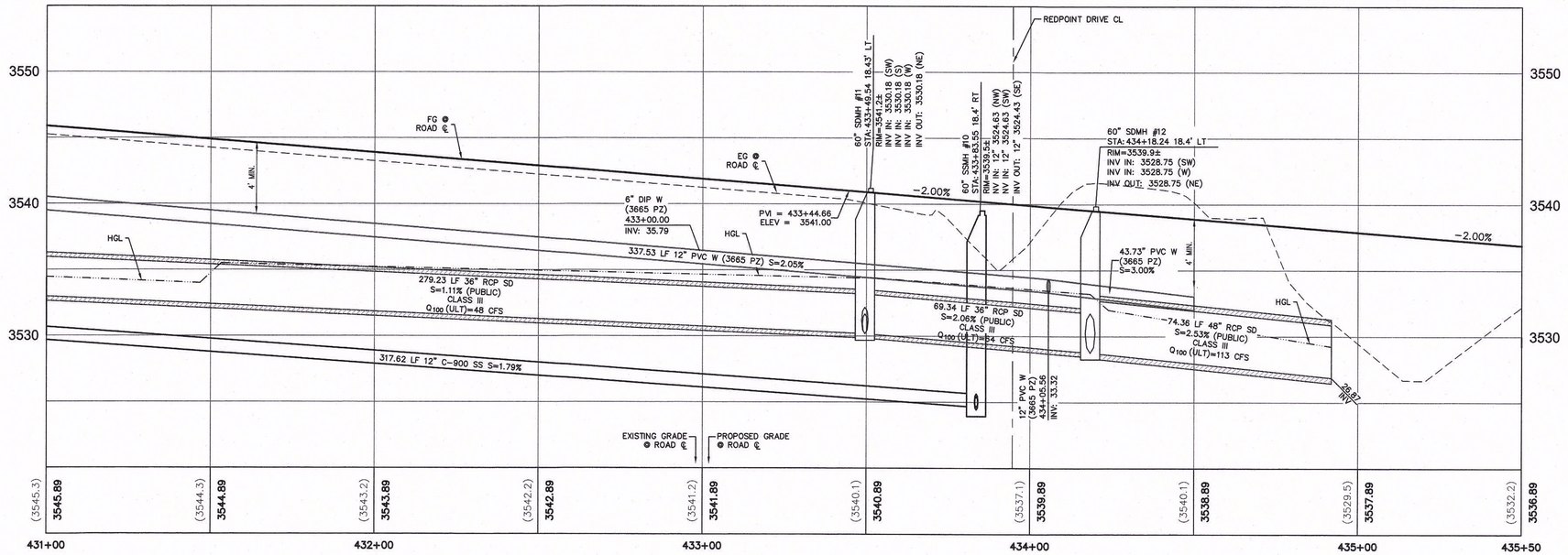
SKY VISTA DRIVE

(PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'

20' 0' 10' 20' 40'

SCALE: 1" = 20'



DROP INLET NOTE:

ALL STORM DRAIN DROP INLETS ARE TO BE CONSTRUCTED PER THE REQUIREMENTS OF USDCCA DWG. NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).

OFF-SITE FLOOD CONTROL NOTE:

ALL OFF-SITE INTERIM FLOOD CONTROL FACILITIES SUCH AS, BUT NOT LIMITED TO, BERMS/DITCHES AND TEMPORARY SUMPS ARE PRIVATELY OWNED AND ARE TO BE PRIVATELY MAINTAINED BY THE HOWARD HUGHES COMPANY.

FOR REDPOINT DRIVE EXISTING IMPROVEMENTS FROM SKY VISTA DRIVE TO FOX HILL DRIVE, REFER TO THE FOLLOWING SET: "SUMMERLIN VILLAGE 25 REDPOINT DRIVE IMPROVEMENTS (SKY VISTA DRIVE TO FOX HILL DRIVE)" BY GCW, INC. CLV #107V7418

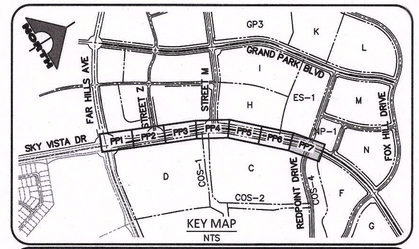
NOTE:

FOR 3895 PZ WATER LINE PROFILE VIEW, SEE DWG. PP7A

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE: _____



KEY MAP
NTS

PROTECTION CONSTRUCTION NOTES

1 P EXISTING PAVEMENT, PROTECT IN PLACE
2 P EXISTING CURB/GUTTER, PROTECT IN PLACE
3 P EXISTING PULLBOX, ADJUST TO FINISH GRADE
4 P EXISTING TEST STATION, ADJUST TO FINISH GRADE & RELOCATE TO BEHIND CURB IF NECESSARY.
5 P EXISTING BLOW-OFF, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 37
6 P EXISTING AVAR, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 38
7 P EXISTING GATE VALVE, ADJUST TO FINISH GRADE PER UDACS PLT. NO. 39
8 P EXISTING WATER VAULT MH, ADJUST TO FINISH GRADE PER UDACS PLT. NO. C-475
9 P EXISTING SSMH, ADJUST TO FINISH GRADE
10 P EXISTING WATER FIBER OPTIC SPLICE PIT PROTECT IN PLACE. RAISE TO FINAL GRADE PER DETAIL 5, 7 & 8 DWG. DT2
11 P EXISTING WATER ACCESS MANHOLE PROTECT IN PLACE. RAISE TO FINAL PAVEMENT GRADE PER DETAIL 7 & 8 DWG. DT2

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1 IR BANK "A": 1-6" & 2-4" SCH 40 PVC. PER DETAIL 4 DWG. DT2

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CLV#:

STATE OF NEVADA
ENGINEER
MICHAEL FANG
No. 24464
PROFESSIONAL
Exp. 06/30/2019
CIVIL

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:34:57

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

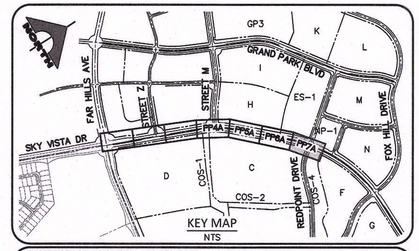
F:\PROJECTS\600\V2025-203\DWG\PRODUCTION\V2025-203DS_PP.DWG
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 7

DRAWING
PP7
21 OF 43 SHTS



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1-702-227-2929

CLV#:

SKY VISTA DRIVE (12-IN 3895 WTR ZONE PROFILE)

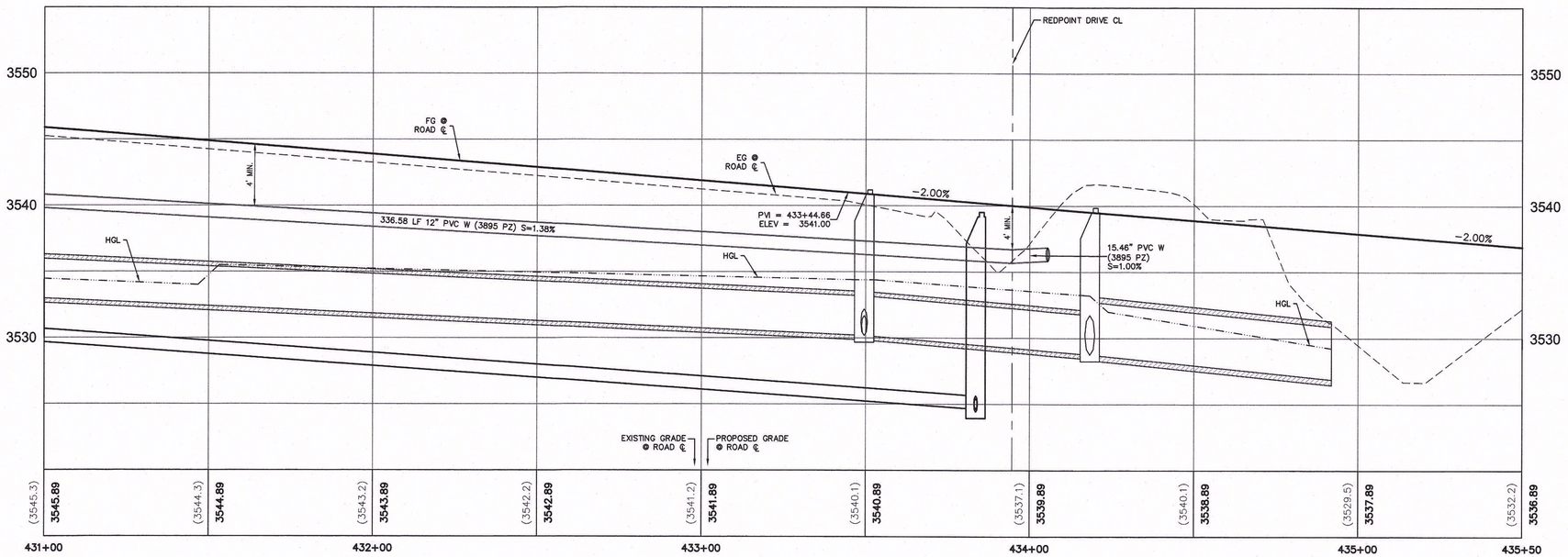
(PUBLIC)
SCALE: HORIZ 1" = 20'
VERT. 1" = 5'

20' 0' 10' 20' 40'
SCALE: 1" = 20'

NOTE:
FOR PLAN VIEW & OTHER UTILITY DESIGN, SEE DWG. PP7

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. XXXXXX FIRST APPROVAL DATE:



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

F:\PROJECTS\62025-203\DWG\PRODUCTION\62025-203DS_PP.DWG
ALEXANDER SANTIAGO

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:35:15

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

DATE: 04/08/2019

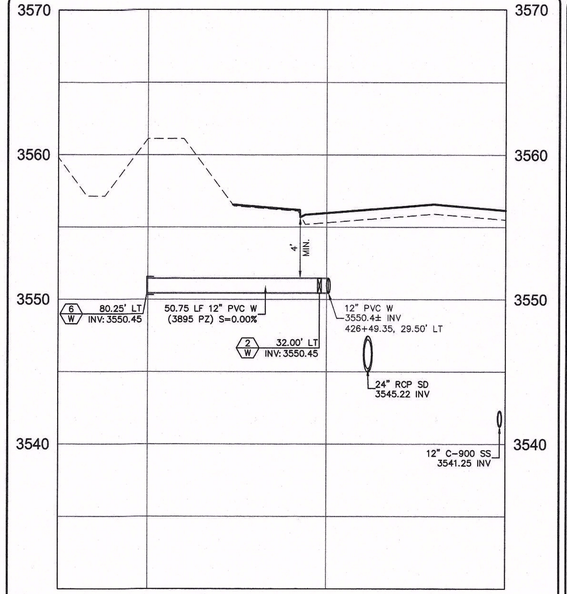
90% REVIEW - NOT FOR CONSTRUCTION

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

PLAN AND PROFILE 7A

DRAWING
PP7A
22 OF 43 SHTS

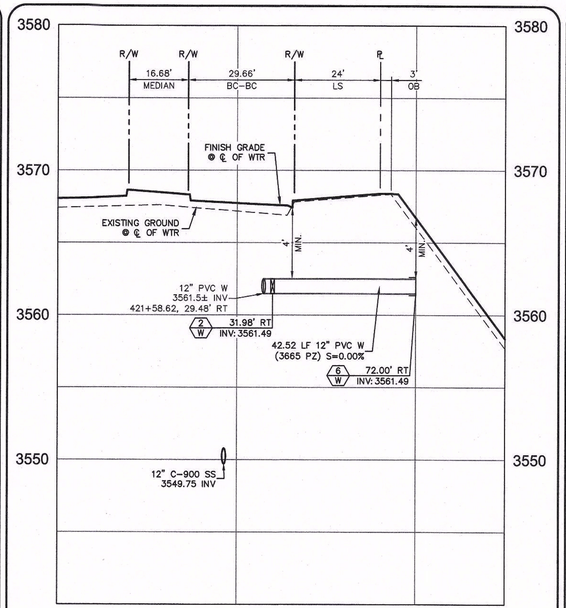


SKY VISTA DRIVE
WTR LATERAL @ 426+49.35

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP5

8 / –

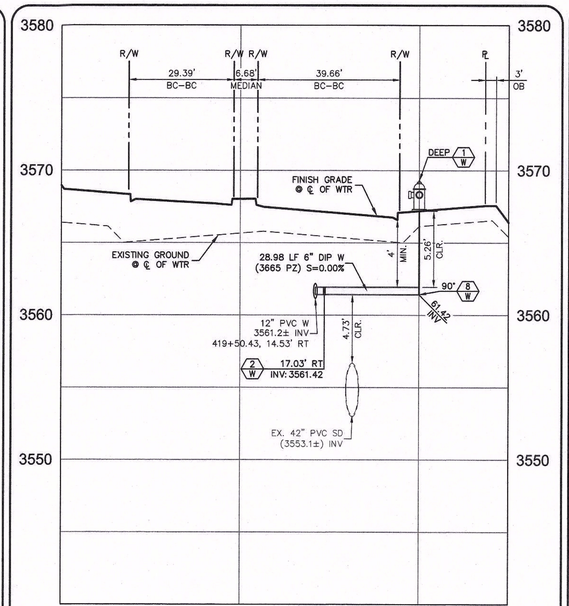


SKY VISTA DRIVE
WTR LATERAL @ 421+58.62

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP4

6 / –

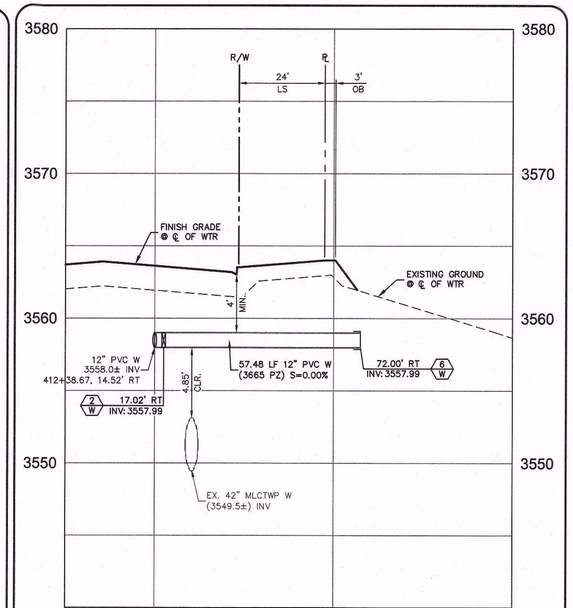


SKY VISTA DRIVE
WTR LATERAL @ 419+50.43

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP4

4 / –

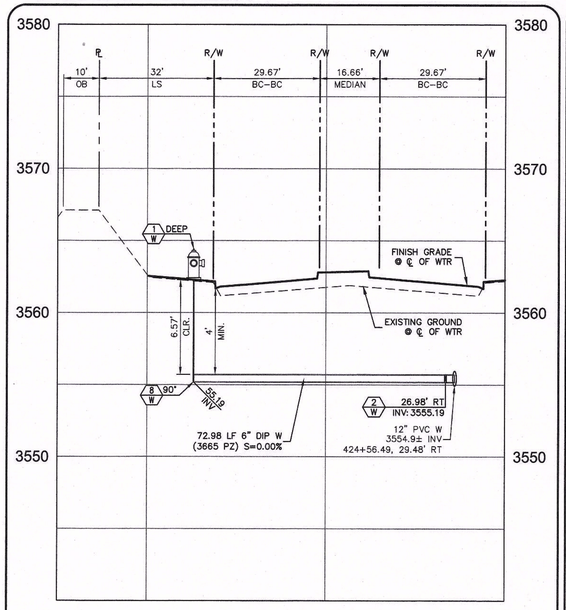


SKY VISTA DRIVE
WTR LATERAL @ 412+38.67

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP2

2 / –

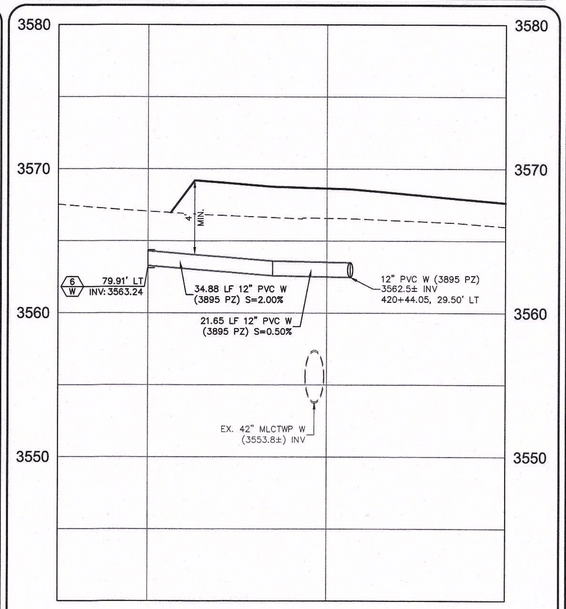


SKY VISTA DRIVE
WTR LATERAL @ 424+56.49

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP5

7 / –

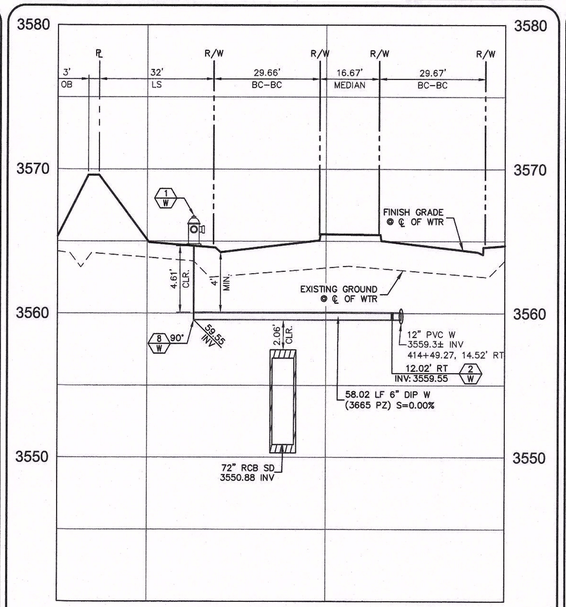


SKY VISTA DRIVE
WTR LATERAL @ 420+44.05

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP4

5 / –

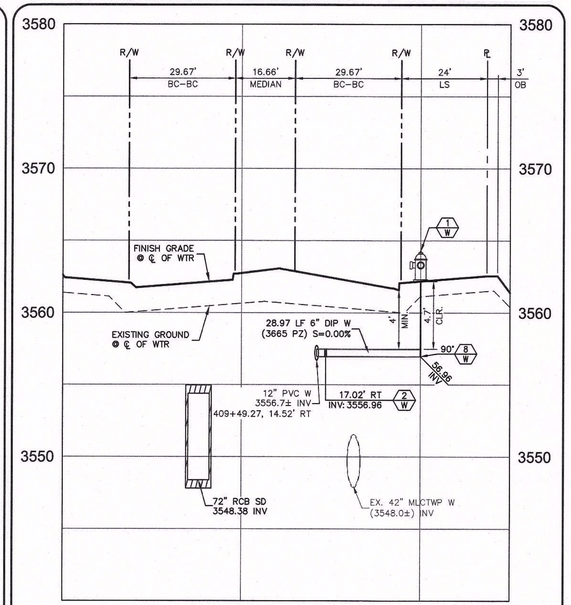


SKY VISTA DRIVE
WTR LATERAL @ 414+49.27

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP3

3 / –



SKY VISTA DRIVE
WTR LATERAL @ 409+49.27

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP2

1 / –

WATER CONSTRUCTION NOTES:

1 W — INSTALL FIRE HYDRANT PER UDACS PL. NO. 30, 39 AND 40. FOR "DEEP" FIRE HYDRANTS SEE UDACS PL. NO. 41.

2 W — INSTALL GATE VALVE AND BOX PER UDACS PL. NO. 30 AND 39

6 W — INSTALL CAP W/ 2" BLOW-OFF ASSEMBLY PER UDACS PL. NO. 36

8 W — INSTALL VERTICAL BEND PER UDACS PL. NO. 31 UNLESS OTHERWISE IDENTIFIED. (SEE PLAN FOR ANGLE)

9 W — REMOVE CAP AND BLOWOFF PER UDACS PL. NO. 36 AND CONNECT TO EX WATER LINE (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EX WATER PRIOR TO CONSTRUCTION)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

CLV#:

PROFESSIONAL ENGINEER – STATE OF NEVADA – MICHAEL FANG – Exp. 06/30/2019 – CIVIL – No. 21486

DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203

DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:36:05

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

F:\PROJECTS\6200\62025-203\DWG\PRODUCTION\62025-203LP.DWG

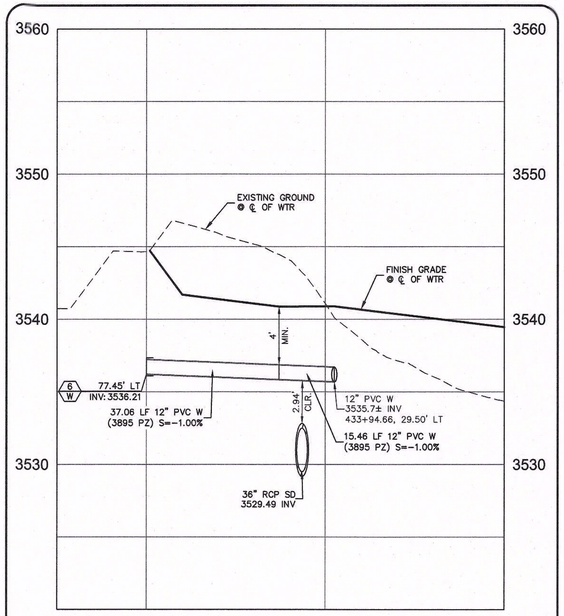
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS (FAR HILLS AVENUE TO REDPOINT DRIVE)

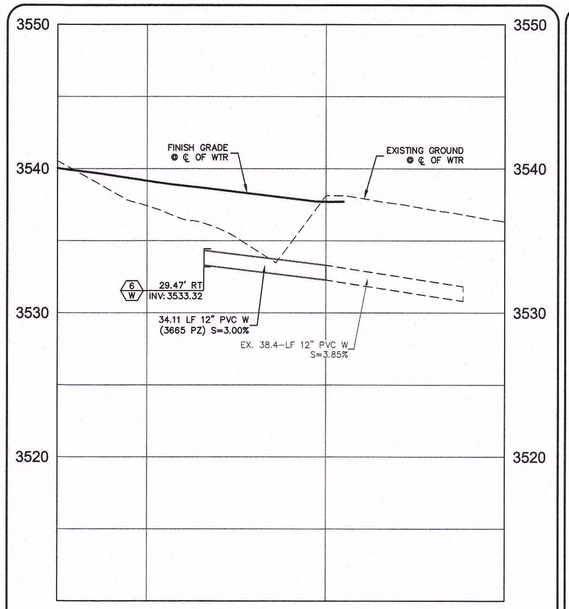
LATERAL PROFILES 1

DRAWING
LP1
23 OF 43 SHTS



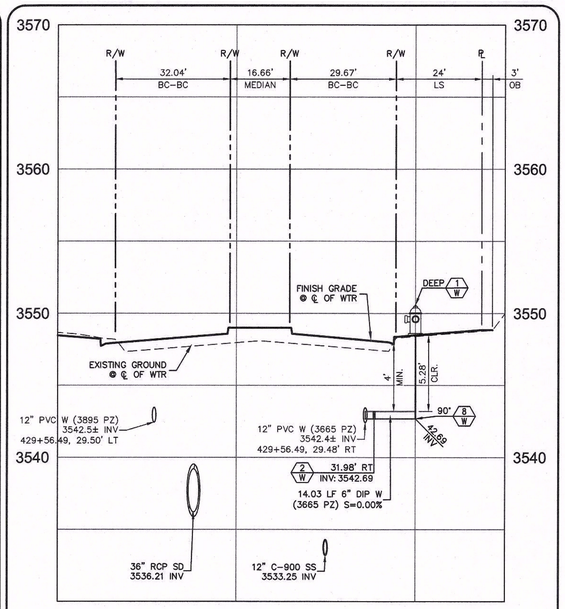
SKY VISTA DRIVE
WTR LATERAL @ 433+94.66
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP7

2
—



SKY VISTA DRIVE
WTR LATERAL @ 434+05.56
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP7

3
—



SKY VISTA DRIVE
WTR LATERAL @ 429+56.49
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP6

1
—

WATER CONSTRUCTION NOTES:

1. INSTALL FIRE HYDRANT PER UDACS PL. NO. 30, 39 AND 40. FOR "DEEP" FIRE HYDRANTS SEE UDACS PL. NO. 41.
2. INSTALL GATE VALVE AND BOX PER UDACS PL. NO. 30 AND 39
3. INSTALL VERTICAL BEND PER UDACS PL. NO. 31 UNLESS OTHERWISE IDENTIFIED. (SEE PLAN FOR ANGLE)
6. INSTALL CAP W/ 2" BLOW-OFF ASSEMBLY PER UDACS PL. NO. 36
9. REMOVE CAP AND BLOWOFF PER UDACS PL. NO. 36 AND CONNECT TO EX WATER LINE (CONTRACTOR TO VERIFY SIZE, INVERT AND LOCATION OF EX WATER PRIOR TO CONSTRUCTION)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

CLV#:

STATE OF NEVADA — PROFESSIONAL ENGINEER — MICHAEL FANG — No. 24487 — CIVIL — Exp. 06/30/2019

DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:36:14

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
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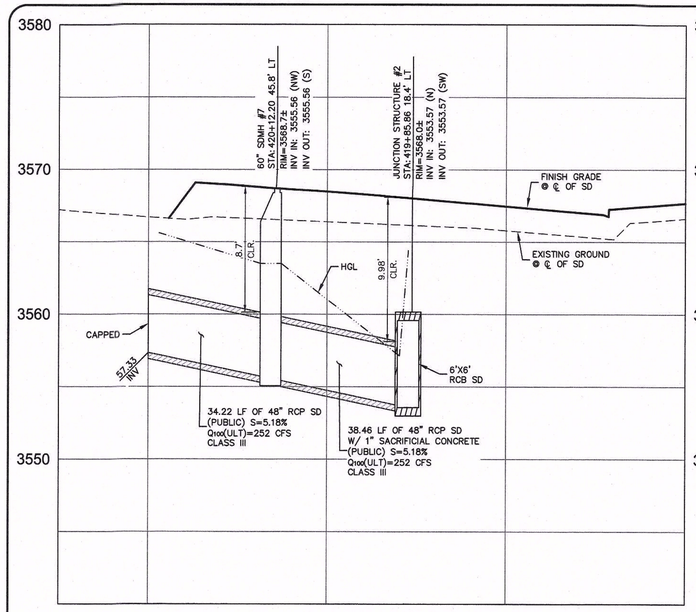
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

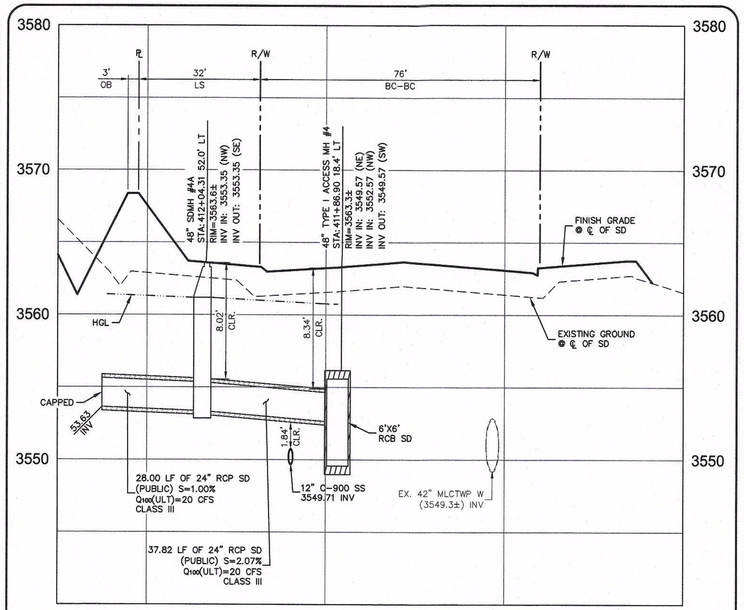
LATERAL PROFILES 2

DRAWING
LP2
24 OF 43 SHTS



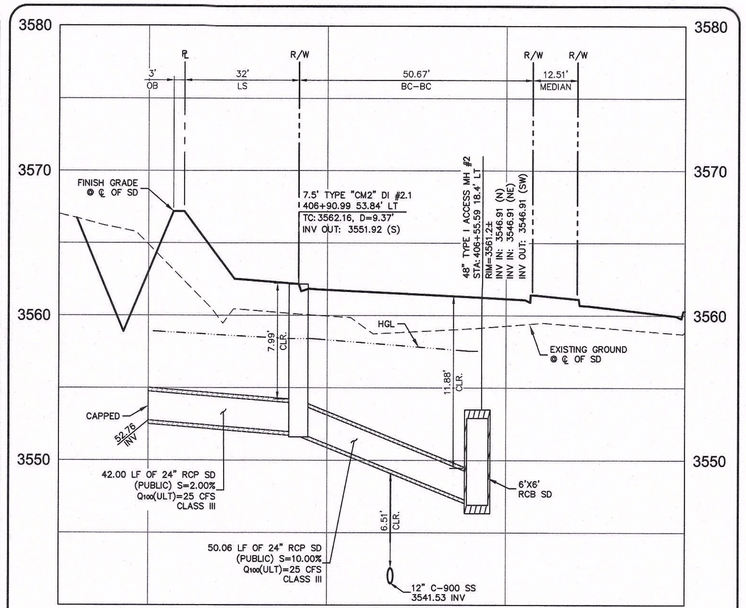
SKY VISTA DRIVE
SD LATERAL @ 419+85.86
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP4

6



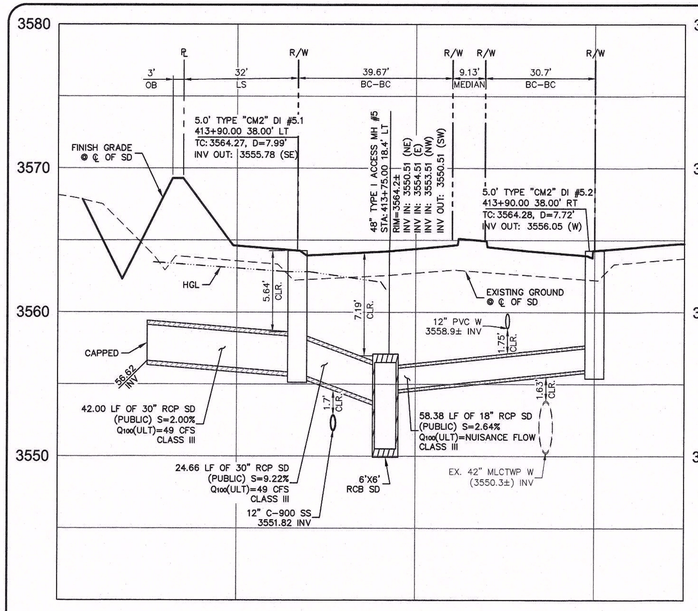
SKY VISTA DRIVE
SD LATERAL @ 411+86.90
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP2

4



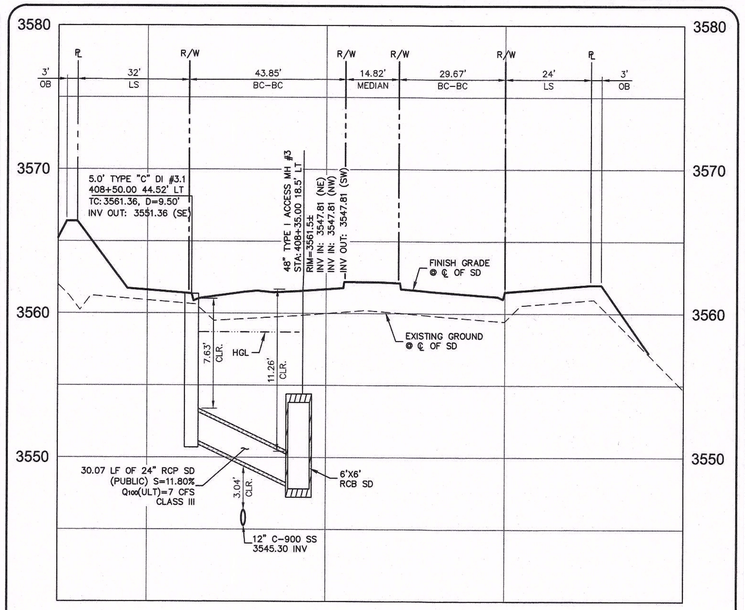
SKY VISTA DRIVE
SD LATERAL @ 406+55.59
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP1

2



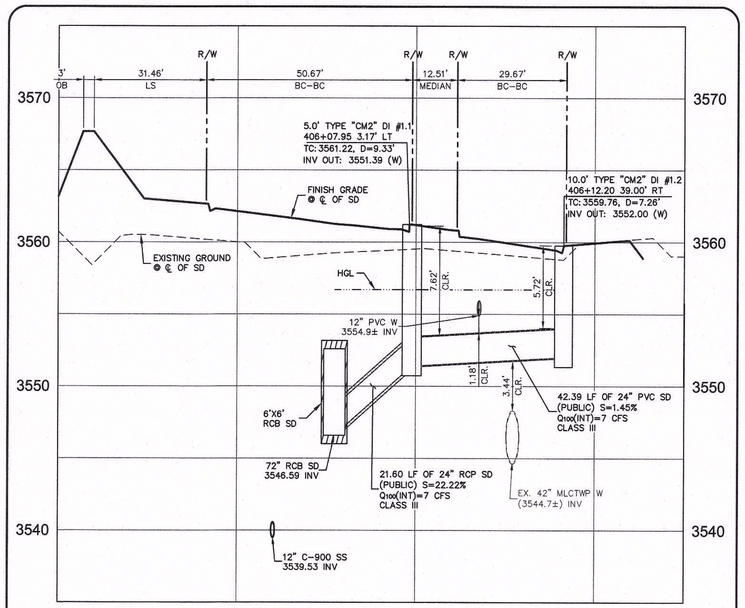
SKY VISTA DRIVE
SD LATERAL @ 413+75.00
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP3

5



SKY VISTA DRIVE
SD LATERAL @ 408+48.43
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP1

3



SKY VISTA DRIVE
SD LATERAL @ 405+92.68
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP1

1

OFF-SITE FLOOD CONTROL NOTE

ALL OFF-SITE INTERIM FLOOD CONTROL FACILITIES SUCH AS, BUT NOT LIMITED TO, BERMS/DITCHES AND TEMPORARY SUMPS ARE PRIVATELY OWNED AND ARE TO BE PRIVATELY MAINTAINED BY THE HOWARD HUGHES COMPANY.

DROP INLET NOTE

ALL STORM DRAIN DROP INLETS ARE TO BE CONSTRUCTED PER THE REQUIREMENTS OF USDCCA DWG. NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).

HORIZONTAL SEPARATION 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).

CONSTRUCTION NOTE

IN AREAS WHERE THE EXCAVATION OR GROUND ELEVATION IS LESS THAN THREE (3) FEET, FROM THE TOP OF THE LVVWD TRANSMISSION MAIN, NO EXCAVATION EQUIPMENT, OTHER THAN HAND HELD EQUIPMENT WILL BE ALLOWED WITHIN TEN (10) FEET OF THE PIPELINE IN THESE AREAS. THE CONTRACTOR IS TO PLACE A CONCRETE BARRIER; I.E. JERSEY RAIL, TO IDENTIFY AND PROTECT THE "NO EQUIPMENT ZONE".

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

CLV#:

STATE OF NEVADA — PROFESSIONAL ENGINEER — MICHAEL FANG — No. 9493 — CIVIL — Exp. 06/30/2019 — DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:36:19

GCW ENGINEERS\SURVEYORS
1555 S. RAINBOW BLVD.
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gcwengineering.com

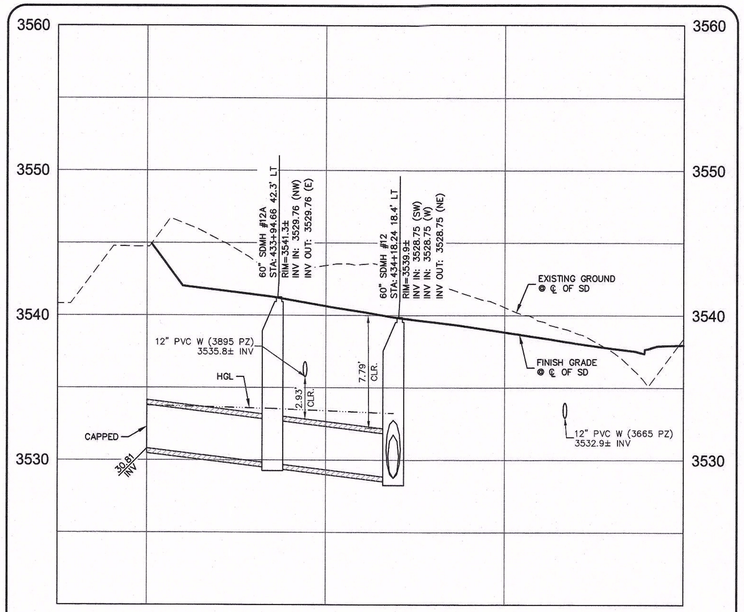
F:\PROJECTS\6000\62025-203\DWG\PRODUCTION\62025-203CWE_LP.DWG
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

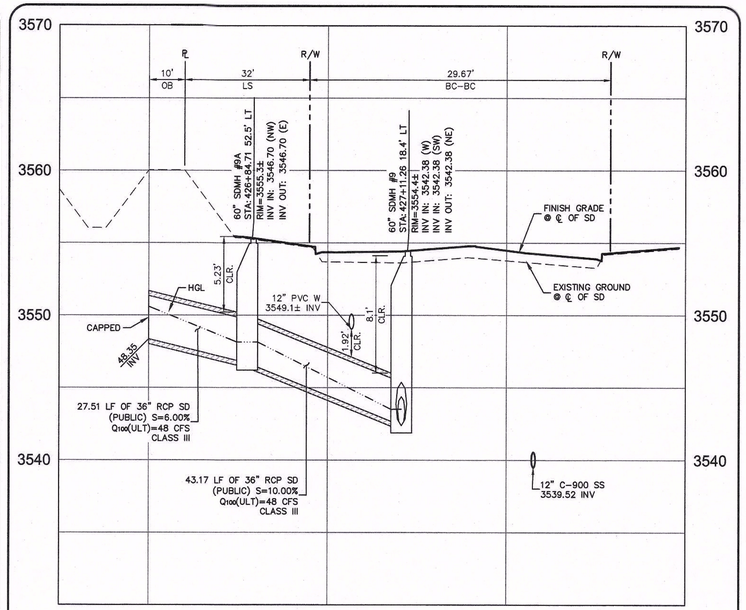
LATERAL PROFILES 3

DRAWING
LP3
25 OF 43 SHTS



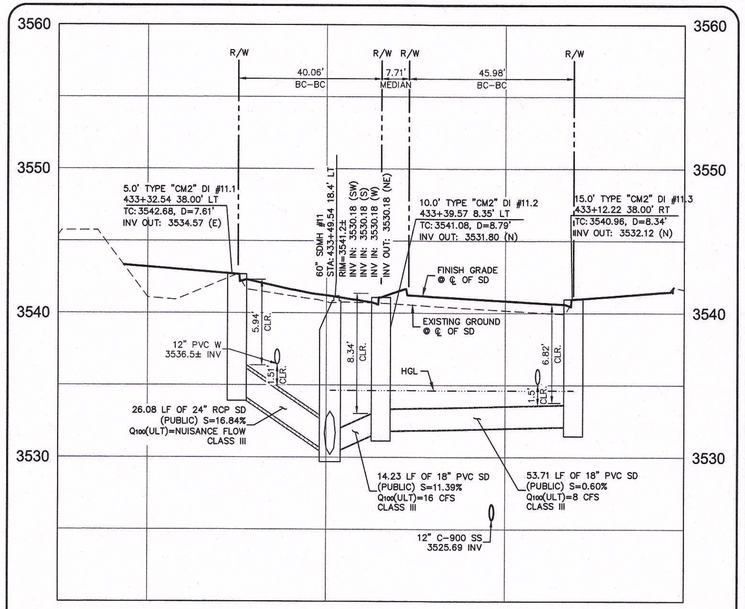
SKY VISTA DRIVE
SD LATERAL @ 434+18.24
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP7

4



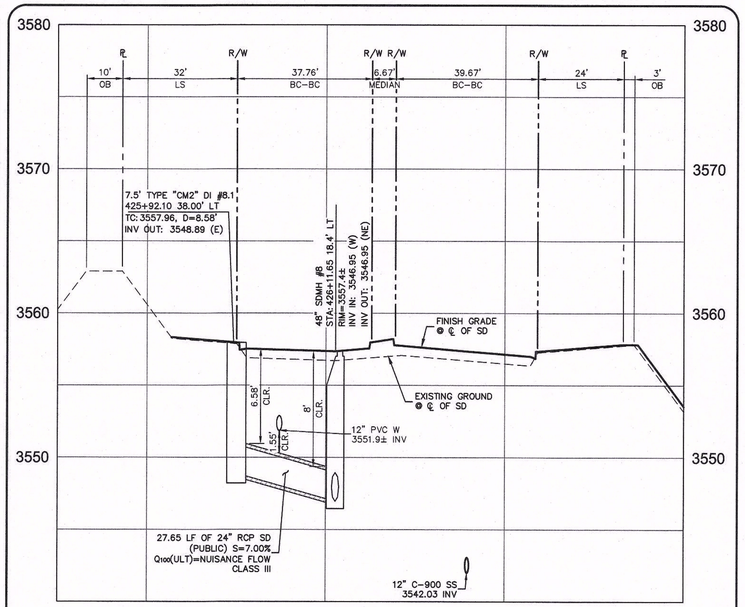
SKY VISTA DRIVE
SD LATERAL @ 427+11.26
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP6

2



SKY VISTA DRIVE
SD LATERAL @ 433+52.22
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP7

3



SKY VISTA DRIVE
SD LATERAL @ 426+11.65
SCALE: HORIZ. 1"=20', VERT. 1"=5'
SEE DRAWING PP5

1

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

CLV#:

STATE OF NEVADA — PROFESSIONAL ENGINEER — MICHAEL FANG — Exp. 06/30/2019 — CIVIL — 13457 — DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE: 04/08/2019

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:36:24

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

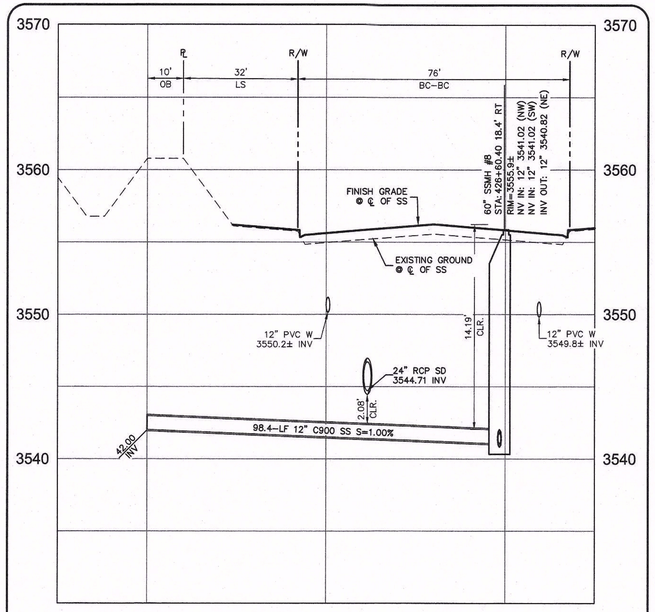
ALEXANDER SANTIAGO
F:\PROJECTS\6XX\62025-203\DWG\PRODUCTION\62025-203CIVIL_LP.DWG

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

LATERAL PROFILES 4

DRAWING
LP4
26 OF 43 SHTS

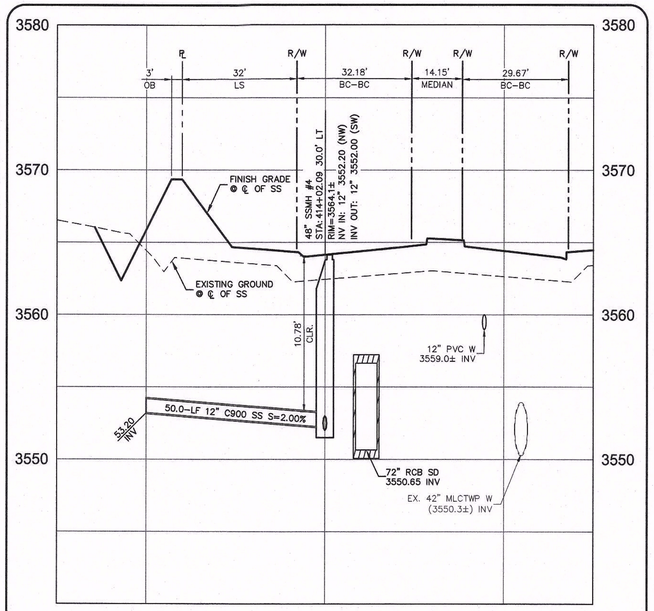


SKY VISTA DRIVE
SSWR LATERAL @ 426+60.40

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP6

6 / –

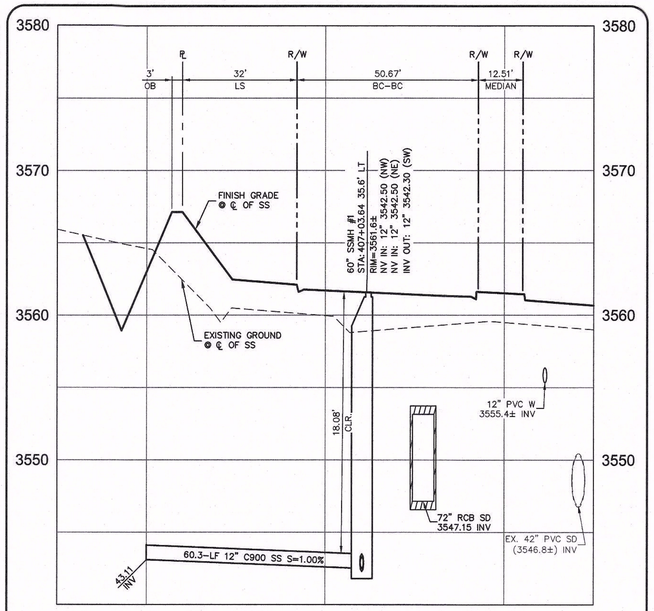


SKY VISTA DRIVE
SSWR LATERAL @ 414+02.09

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP3

4 / –

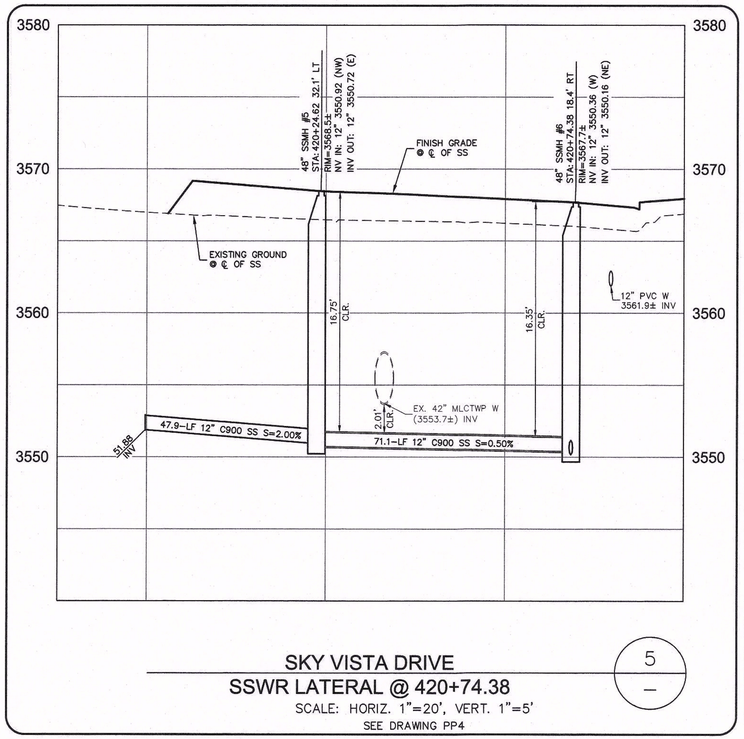


SKY VISTA DRIVE
SSWR LATERAL @ 407+03.64

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP1

2 / –

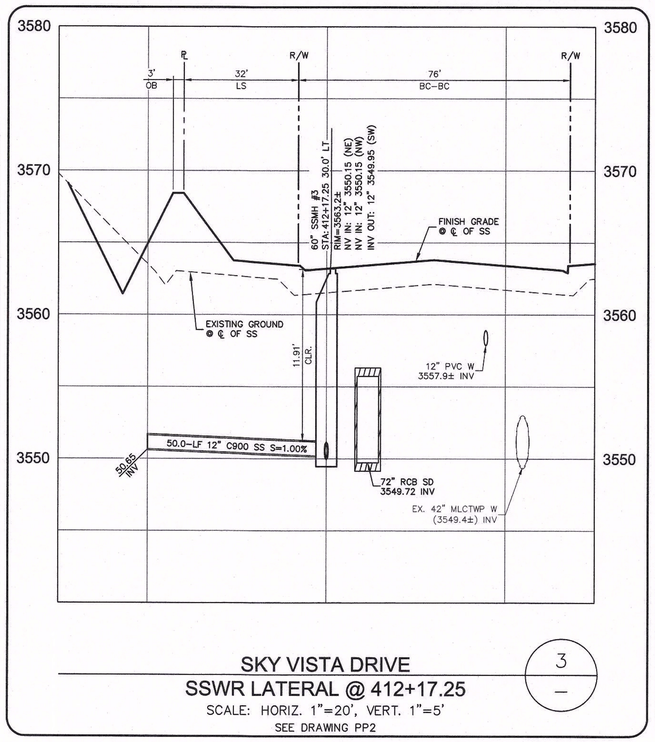


SKY VISTA DRIVE
SSWR LATERAL @ 420+74.38

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP4

5 / –

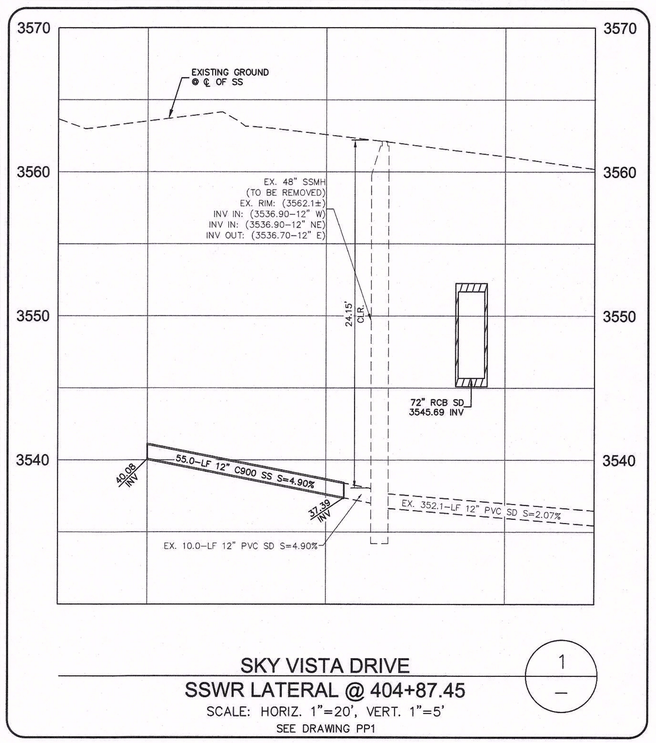


SKY VISTA DRIVE
SSWR LATERAL @ 412+17.25

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP2

3 / –



SKY VISTA DRIVE
SSWR LATERAL @ 404+87.45

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP1

1 / –

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

CLV#:

ENGINEER – STATE OF NEVADA – PROFESSIONAL
MICHAEL FANG
Exp. 06/30/2019
CIVIL
No. 14015
DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN. APP	DATE	GCW APP

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:36:29

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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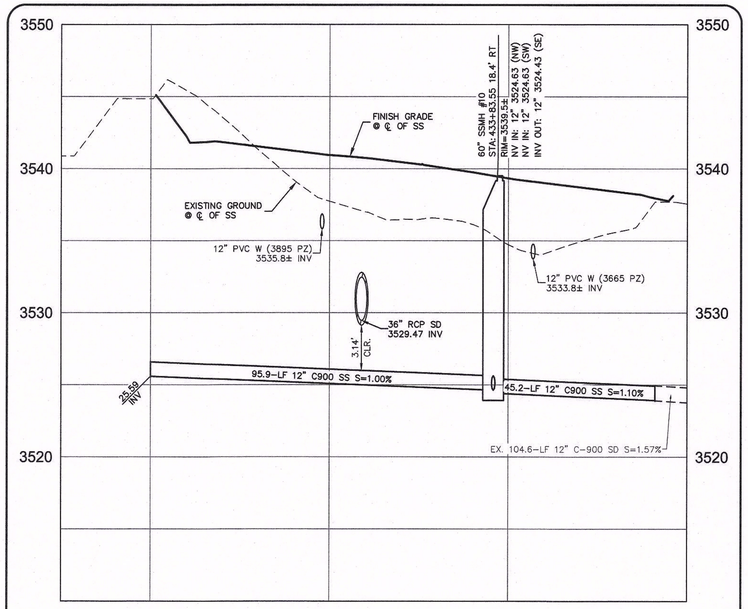
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

LATERAL PROFILES 5

DRAWING
LP5
27 OF 43 SHTS



SKY VISTA DRIVE

SSWR LATERAL @ 433+83.55

SCALE: HORIZ. 1"=20', VERT. 1"=5'

SEE DRAWING PP7

1

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

CLV#:

PROFESSIONAL ENGINEER - STATE OF NEVADA
MICHAEL FANG
Exp. 06/30/2019
CIVIL
No. 24464

DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203

DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:36:33

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
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gcwengineering.com

F:\PROJECTS\600\62025-203\DWG\PRODUCTION\62025-203C06_LP.DWG

ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

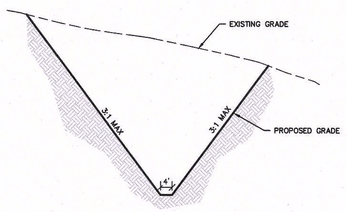
LATERAL PROFILES 6

DRAWING
LP6

APPROVED FOR CONSTRUCTION

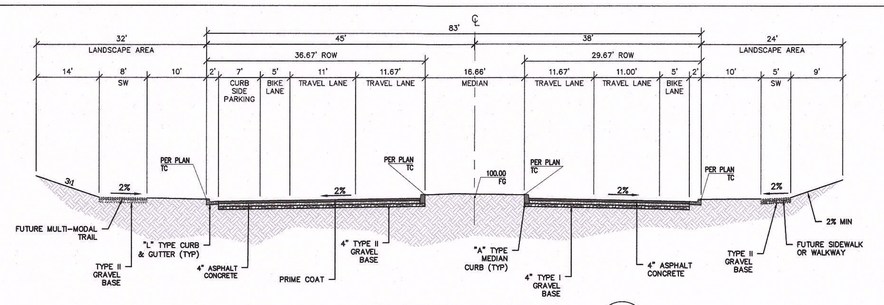
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:



DRAINAGE CHANNEL G

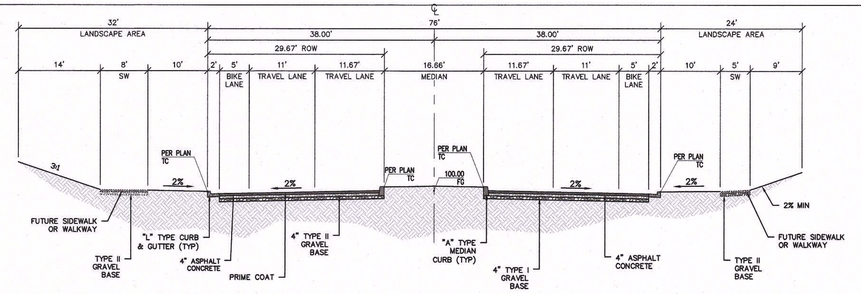
SCALE: NTS DWG GD2 -



SKY VISTA DRIVE (PUBLIC) D

SCALE: NTS DWG PP6-PP7 -

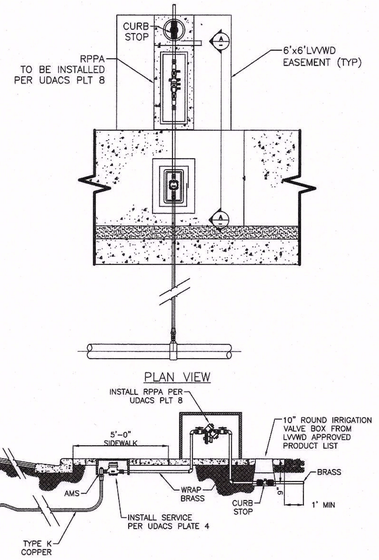
429+63.01 TO 433+16.34



SKY VISTA DRIVE (PUBLIC) C

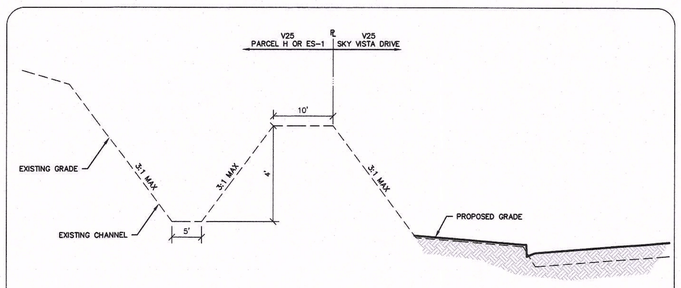
SCALE: NTS DWG PP2-PP7 -

409+12.18 TO 429+51.47
433+27.63 TO 433+47.26



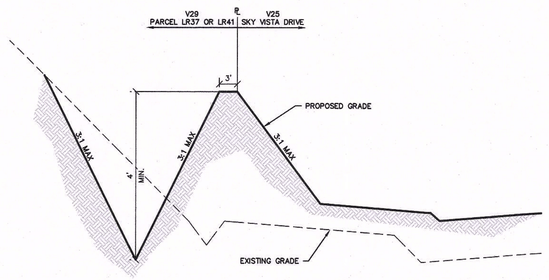
METER & RPPA PER UDACS PL. NO. 4 & 8 W/ CURB STOP 1

SCALE: NTS -



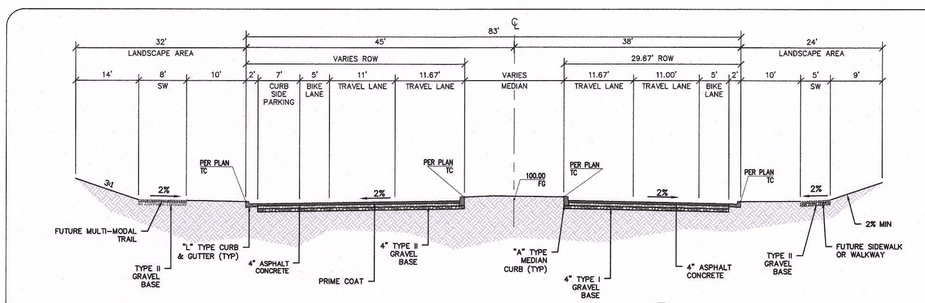
DRAINAGE CHANNEL F

SCALE: NTS DWG GD2 -



DRAINAGE CHANNEL E

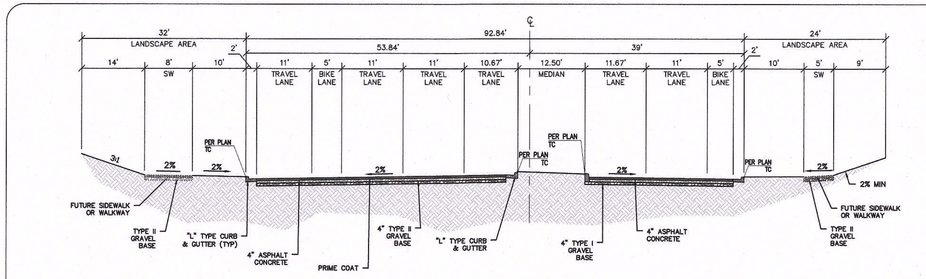
SCALE: NTS DWG GD1 -



SKY VISTA DRIVE (PUBLIC) B

SCALE: NTS DWG PP2 -

431+55.67 TO 433+56.00



SKY VISTA DRIVE (PUBLIC) A

SCALE: NTS DWG PP1 -

405+93.70 TO 407+75.22

CLV#:

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

F:\PROJECTS\620\62025-203\VMK\PRODUCTION\62025-203DT.DWG ALEXANDER SANTIAGO

PROJECT NO. 62025-203

DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:36:45

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE: 04/08/2019

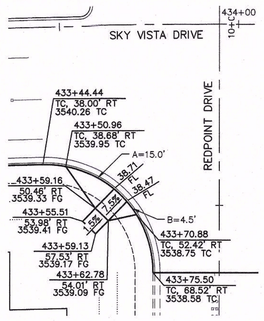
90% REVIEW - NOT FOR CONSTRUCTION

THE HOWARD HUGHES COMPANY, LLC

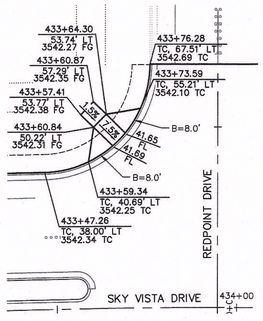
VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

TYPICAL DETAILS & SECTIONS

DRAWING
DT1
29 OF 43 SHTS

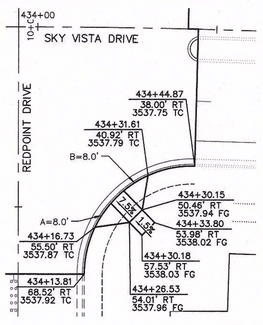


SIDEWALK RAMP GRADING 12
SCALE: N.T.S.

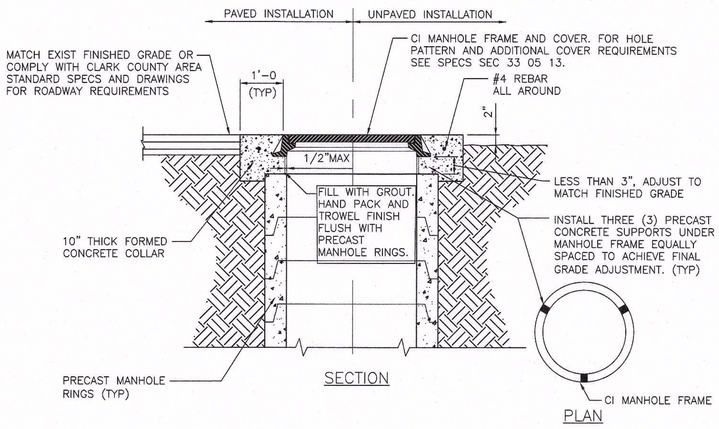


SIDEWALK RAMP GRADING 11
SCALE: N.T.S.

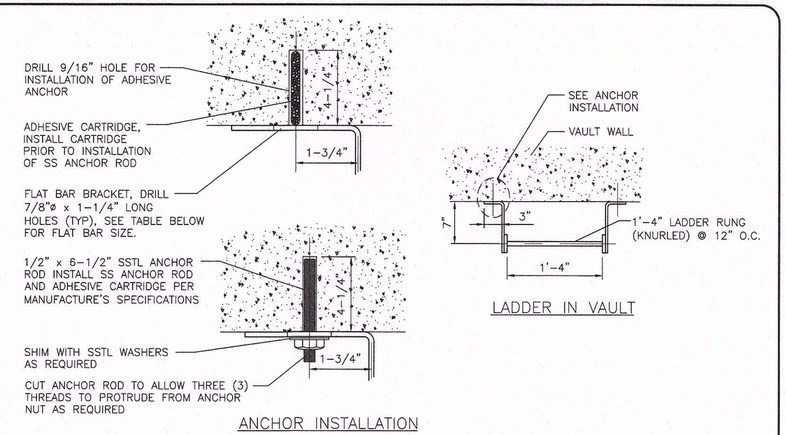
SIDEWALK RAMP GRADING 10
SCALE: N.T.S.



SIDEWALK RAMP GRADING 9
SCALE: N.T.S.

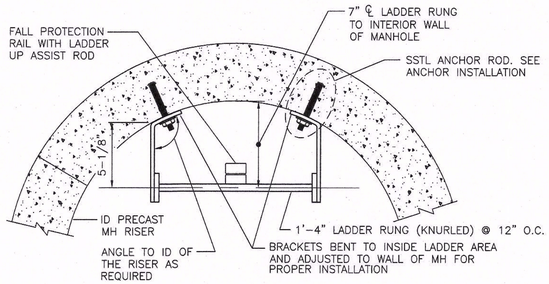


MANHOLE COVER AND COLLAR 8
SCALE: N.T.S.



ANCHOR INSTALLATION

LADDER IN VAULT

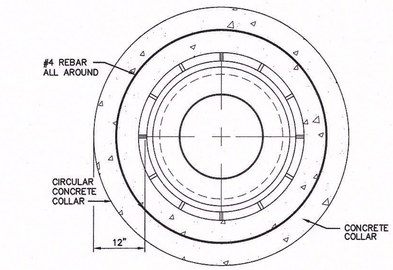


LADDER IN MANHOLE

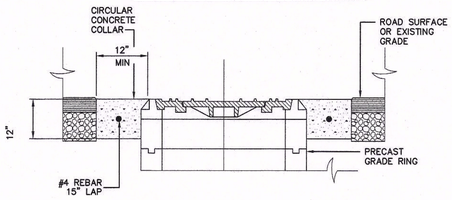
FLAT BAR SIZE	
LADDER LENGTH	FLAT BAR SIZE
5'-0" TO 20'-0"	3" x 3/8"
OVER 20'-0"	4" x 1/2"

NOTES:
1. APPROVAL OF THE ENGINEER REQUIRED FOR ANY BRACKET SPACING OVER 5'-0" OC
2. LADDER SHALL BE MADE OF MILD CARBON STEEL WITH 3/4" DIA BAR RUNGS (KNURLED) PLUG WELDED TO RUNNERS.
3. GALVANIZE LADDER ASSEMBLY AFTER WELDING.

LADDER INSTALLATION 7
SCALE: N.T.S.



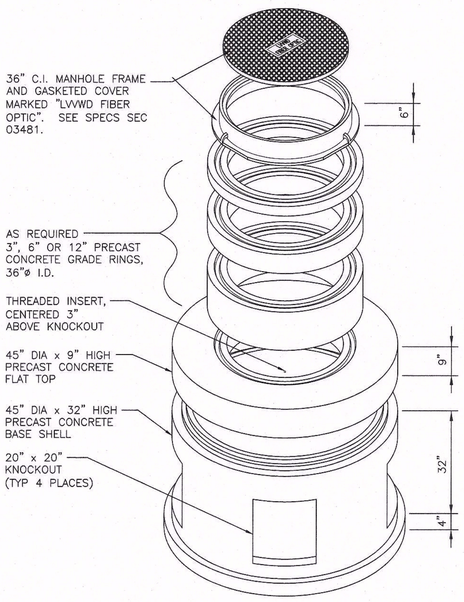
PLAN VIEW



SECTIONAL VIEW

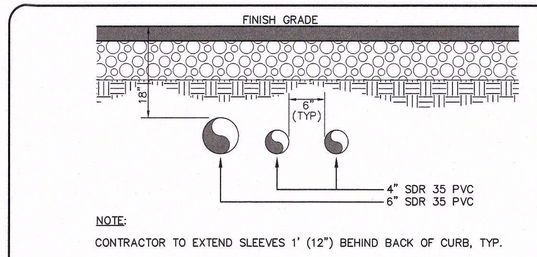
NOTES:
CONCRETE COLLAR TO BE CONSTRUCTED TO MATCH TOP OF MANHOLE FRAME.
CONCRETE IN ACCORDANCE WITH SECTION 501, UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS.

STORM DRAIN MANHOLE COVER AND FRAME 6
SCALE: N.T.S.



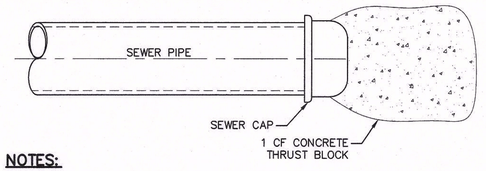
NOTES:
1. ENTIRE PIT ASSEMBLY AND CONDUIT INSTALLATION SHALL BE CLEAN AND DRY AT TIME OF ACCEPTANCE.
2. BACKFILL AROUND PIT ASSEMBLY IN ACCORDANCE WITH SPEC SEC 02300
3. INSTALL LADDER ASSEMBLY IN SPLICE PIT ASSEMBLIES DEEPER THAN 4'-0", SEE 7
4. FINAL MANHOLE FRAME ADJUSTMENT AND CONCRETE COLLAR INSTALLATION REQUIREMENTS, SEE 8
5. INSTALL 3' DIA x 3' DEEP DRAIN GRAVEL PACK UNDER 12" DRAIN HOLE AND COVER (CENTERED).

FIBER OPTIC SPLICE PIT ASSEMBLY 5
SCALE: N.T.S.



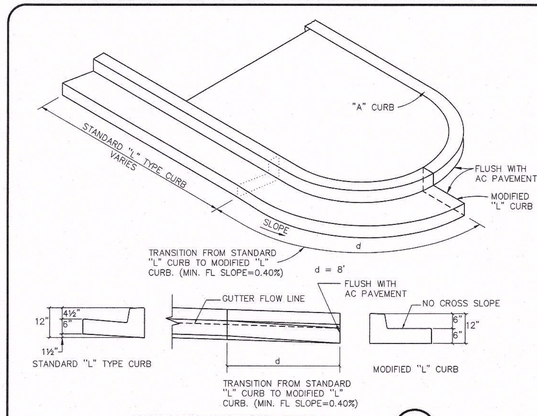
NOTE:
CONTRACTOR TO EXTEND SLEEVES 1' (12") BEHIND BACK OF CURB, TYP.

IRRIGATION SLEEVE BANK 'A' 4
SCALE: N.T.S.

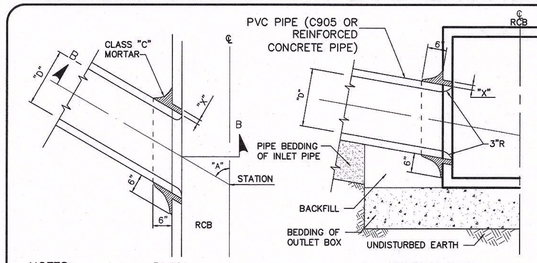


NOTES:
1. CONCRETE TO CONFORM WITH SECTION 4.11.2 OF THE LATEST VERSION OF THE DCS.

SEWER STUB AND CAP WITH THRUST BLOCK 3
SCALE: N.T.S.



CURB TRANSITION DETAIL 2
SCALE: N.T.S.



NOTES:
1. ANGLE "A" SHALL BE BETWEEN 60°.
2. DIMENSION "D" SHALL BE EQUAL TO OR LESS THAN 1/2 THE INSIDE DIMENSION OF THE MAINLINE BOX.
3. DIMENSION "X" SHALL BE 1" MINIMUM AND 3" MAXIMUM.
4. BURN OR CHIP END OF INLET PIPE FLUSH WITH INNER SURFACE OF MAINLINE. ROUND EDGES OF MAINLINE AND INLET PIPE.

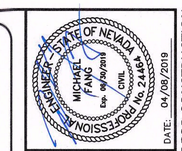
BOX PENETRATION DETAIL 1
SCALE: N.T.S.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. XXXXXX FIRST APPROVAL DATE:

CLV#:



DATE: 04/08/2019
90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203
DESIGN: LG/MF
DRAWN: AS
CHECK: LG/MF
PLOT DATE: 04-08-19
PLOT TIME: 10:36:56

GCW
ENGINEERS & SURVEYORS
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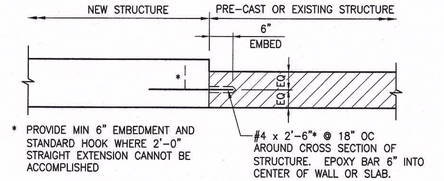
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

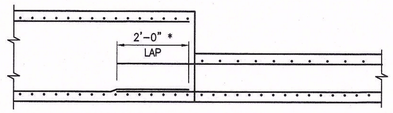
VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS (FAR HILLS AVENUE TO REDPOINT DRIVE)

UTILITY DETAILS

DRAWING
DT2
30 OF 43 SHTS

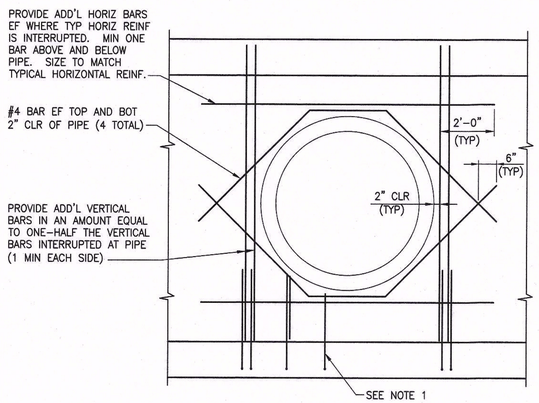


CAST-IN-PLACE CONNECTION TO PRE-CAST OR EXISTING STRUCTURE



CAST-IN-PLACE CONNECTION TO CAST-IN-PLACE STRUCTURE

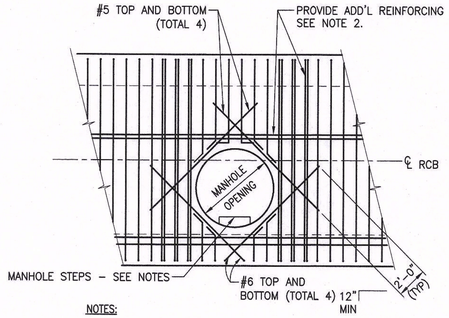
5 CONSTRUCTION JOINT DETAIL
SCALE: NTS



NOTES:

1. FIELD CUT TYPICAL WALL REINFORCING 2" CLR OF PIPE.
2. WHEN WALL IS LESS THAN 9" THICK REINFORCING DOES NOT NEED TO BE PLACED IN EACH FACE AS STATED ABOVE.
3. IF BARS CANNOT EXTEND BEYOND PIPE AS SHOWN, EXTEND AS FAR AS POSSIBLE AND PROVIDE STANDARD HOOK.

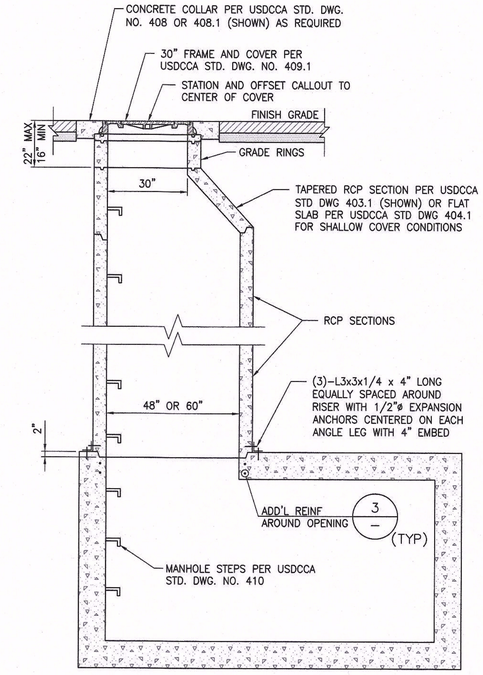
4 PIPE PENETRATION DETAIL
SCALE: NTS



NOTES:

1. FIELD BEND OR CUT ALL REINFORCING 2" CLR OF OPENINGS.
2. EVERY REBAR DISCONTINUED AT OPENING SHALL BE REPLACED BY AN EXTRA REBAR PLACED AT THE SIDE OF THE OPENING AS SHOWN. THE LENGTH OF THE EXTRA REBARS SHALL EQUAL THE LENGTH OF THE SCHEDULE REBARS THAT ARE NOT DISCONTINUED AT THE OPENING.
3. PROVIDE MINIMUM 2" CLR BETWEEN ALL REINFORCING BARS.
4. MANHOLE STEPS SHALL BE PER CLARK COUNTY STANDARD DRAWING NO. 410 WITH A MAXIMUM SPACING BETWEEN STEPS OF 12" AND A MAXIMUM OF 16" BETWEEN THE LAST STEP AND BOTTOM OF STRUCTURE.

3 MANHOLE OPENING REINFORCING
SCALE: NTS



NOTES:

1. SEE USDCCA STD. DWG. NO. 403.1 AND 404.1 FOR ADDITIONAL MANHOLE CONSTRUCTION NOTES AND DETAILS.

2 RCB ACCESS MANHOLE
SCALE: NTS

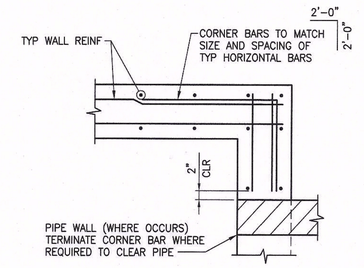
GENERAL STRUCTURAL NOTES

1. DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, EIGHTH EDITION, 2017.
2. EXISTING UTILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES WITHIN THE WORK AREA, AND PROVIDING PROTECTION FOR THE VARIOUS UTILITIES AFFECTED PRIOR TO PROCEEDING WITH THE WORK.
3. CONCRETE: ALL CONCRETE SHALL BE CLASS D WITH A MINIMUM ULTIMATE COMPRESSIVE STRENGTH f'c = 4500psi AT 28 DAYS AND A MAXIMUM WATER/CEMENT RATIO BY WEIGHT OF 0.45. USE TYPE V CEMENT PER ASTM C-150.
4. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60. DIMENSIONS ARE FROM OUT TO OUT OF BARS. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 3" WHERE CONCRETE IS CAST AGAINST SOIL AND 2" ELSEWHERE, UNLESS NOTED OTHERWISE. HOOKS MAY BE ROTATED OR TILTED AS NECESSARY TO PROVIDE THE PROPER CLEARANCES.
5. BEDDING MATERIAL: BEDDING MATERIAL SHALL BE 6-INCHES OF TYPE II AGGREGATE BASE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY. EXPOSED NATIVE SOILS IN BOTTOMS OF EXCAVATIONS SHALL BE SCARIFIED TO A DEPTH OF 6-INCHES, MOISTURE-CONDITIONED TO WITHIN 2% OF OPTIMUM MOISTURE CONTENT AND COMPACTED TO 95%.
6. EPOXY: EPOXY SHALL BE SIMPSON STRONG-TIE "SET-XP EPOXY-TIE ADHESIVE" PER ICC REPORT ESR-2508 OR APPROVED EQUAL. INSTALL IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
7. INVERTS, SLOPES, BEARINGS, ALIGNMENTS, AND ELEVATIONS SHOWN ARE FOR "REFERENCE ONLY". INFORMATION ON CIVIL DRAWINGS SHALL GOVERN.
8. CONTRACTOR SHALL PROVIDE SLOPE STABILIZATION, SHEETING, BRACING, AND/OR SHORING AS REQUIRED TO PROTECT EXISTING EMBANKMENTS, STRUCTURES, AND UNDERGROUND ITEMS.

SPECIAL INSPECTION:

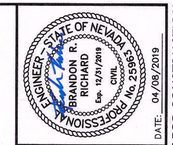
	CONTINUOUS MONITORING	PERIODIC MONITORING
FOUNDATION SOILS, EXCAVATIONS, FILL MATERIALS, SUBGRADE		X
PLACEMENT AND COMPACTION OF FILL	X	
REBAR PLACEMENT IN CONCRETE		X
VERIFICATION OF CONCRETE MIX DESIGN		X
SAMPLING OF FRESH CONCRETE AND PLACEMENT	X	
CONCRETE CURING AND FORMWORK		X
POST-INSTALLED ANCHORS	X	

1. SPECIAL INSPECTIONS ARE TO BE PERFORMED BY QUALIFIED FIRMS OR PERSONNEL. THE SPECIAL INSPECTOR MUST BE ICC CERTIFIED AND APPROVED BY CLARK COUNTY IN THE CATEGORY OF WORK REQUIRED TO HAVE SPECIAL INSPECTION.
2. THE CONSTRUCTION MATERIALS TESTING LABORATORY MUST BE APPROVED BY CLARK COUNTY, FOR TESTING OF MATERIALS, SYSTEMS, COMPONENTS, AND EQUIPMENTS.
3. AS IDENTIFIED WITHIN THE CONTRACT DOCUMENTS, AND THE IBC 2018 BUILDING CODE CHAPTER 17. THE SPECIAL INSPECTORS SHALL MAINTAIN RECORDS OF ALL INSPECTIONS PERTAINING TO THE PORTIONS OF WORK THEY ARE TO INSPECT. PROVIDE COPIES OF REPORTS TO THE OWNER AND ARCHITECT/ ENGINEER PERIODICALLY AND AS REQUIRED FOR ADEQUATE COMMUNICATION AS WORK PROGRESSES.



1 CORNER REINFORCING DETAIL
SCALE: NTS

CLV#:



DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203
DESIGN: BRR/CZ
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GCW
ENGINEERS \ SURVEYORS
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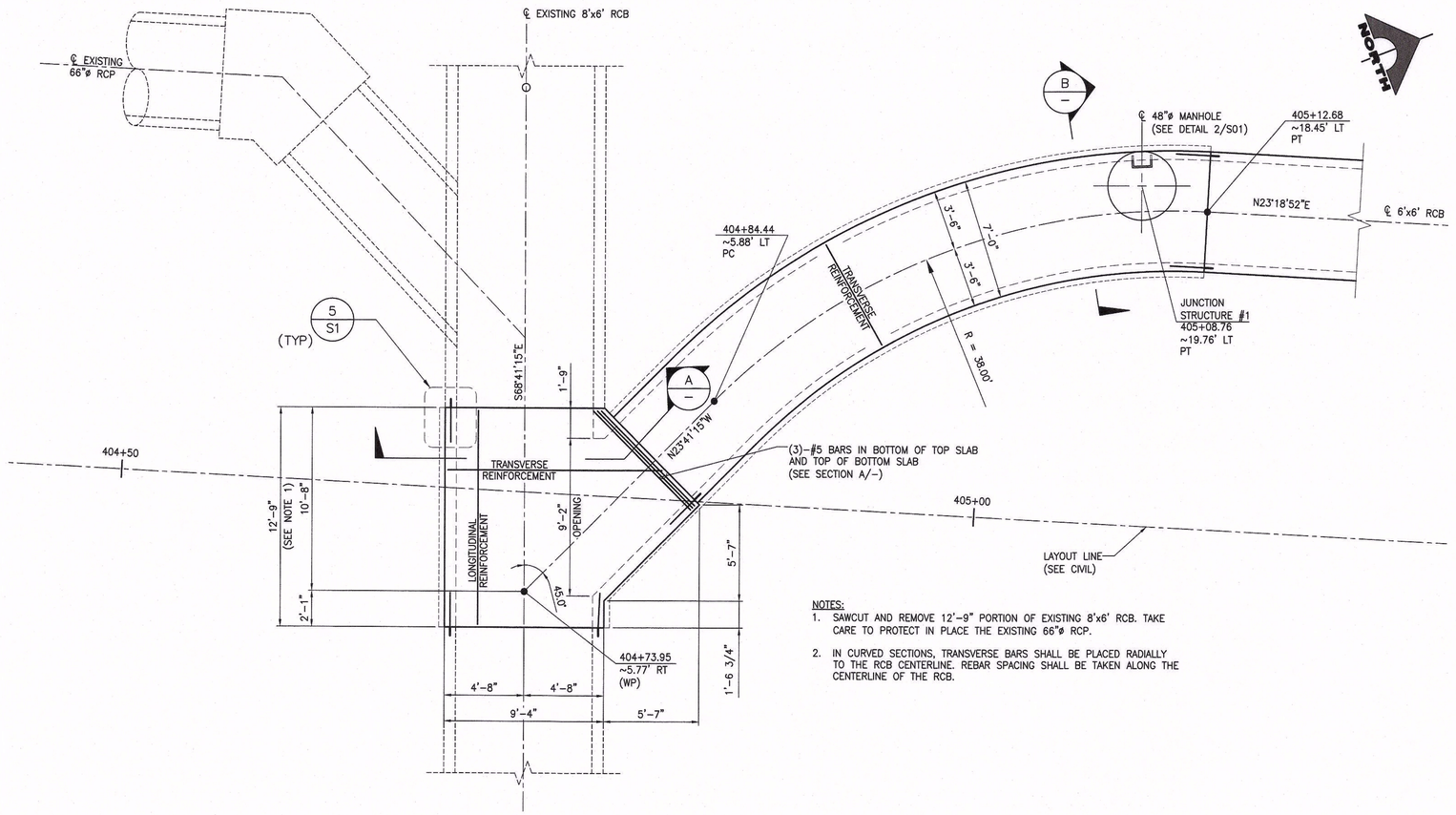
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

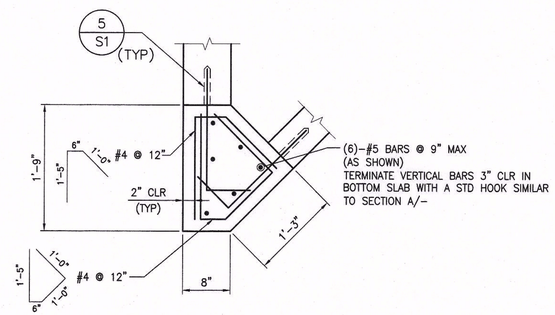
GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

DRAWING
S1
41 OF 43 SHTS

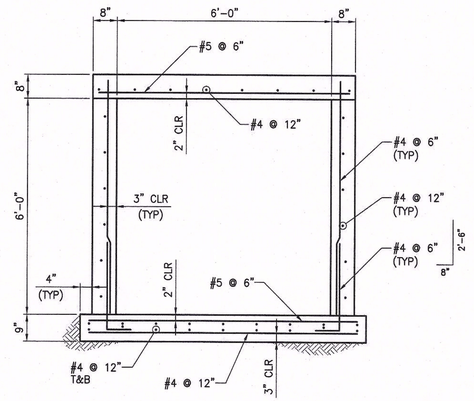


NOTES:
1. SAWCUT AND REMOVE 12'–9" PORTION OF EXISTING 8'x6' RCB. TAKE CARE TO PROTECT IN PLACE THE EXISTING 66"ø RCP.
2. IN CURVED SECTIONS, TRANSVERSE BARS SHALL BE PLACED RADIALLY TO THE RCB CENTERLINE. REBAR SPACING SHALL BE TAKEN ALONG THE CENTERLINE OF THE RCB.

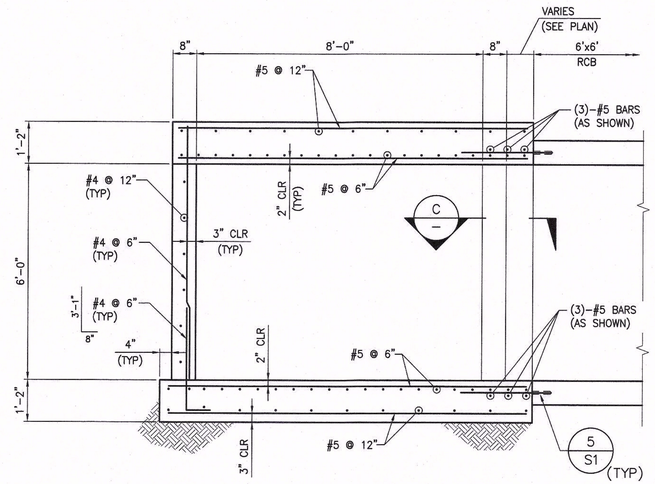
1/– PLAN – JUNCTION 6'x6' RCB TO 8'x6' RCB
SCALE: 3/16" = 1'–0"



C/– SECTION
SCALE: 3/16" = 1'–0"



B/– SECTION
SCALE: 1/2" = 1'–0"



A/– SECTION
SCALE: 1/2" = 1'–0"

CLV#:

ENGINEER – STATE OF NEVADA – PROFESSIONAL
BRANDON R. RICHARD
Exp. 12/31/2019
CIVIL
No. 25985
DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

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PROJECT NO. 62025-203
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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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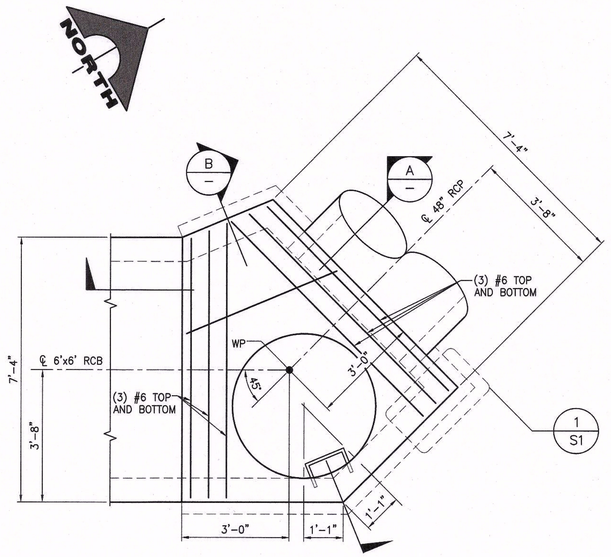
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

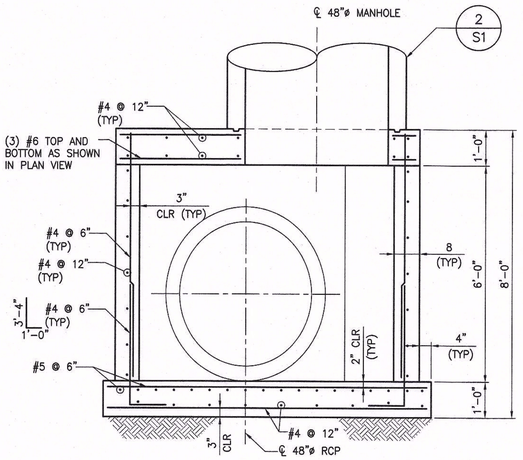
JUNCTION STRUCTURE
6'x6' RCB TO Ex. 8'x6' RCB

DRAWING
S2
42 OF 43 SHTS



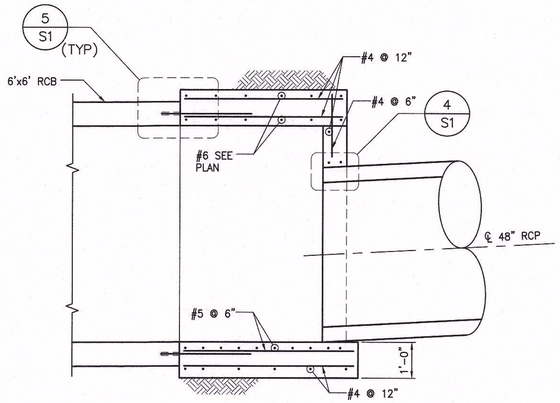
1 PLAN - JUNCTION OF 48" RCP AND 6'x6' RCB

SCALE: 1/2" = 1'-0"



B SECTION

SCALE: 1/2" = 1'-0"



A SECTION

SCALE: 1/2" = 1'-0"

CLV#:

PROFESSIONAL ENGINEER - STATE OF NEVADA
BRANDON R. RICHARD
Exp. 12/31/2019
CIVIL
No. 25963

DATE: 04/08/2019

90% REVIEW - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62025-203

DESIGN: BRR/CZ
DRAWN: BRR/CZ
CHECK: EGG
PLOT DATE: 04-08-19
PLOT TIME: 10:39:15

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
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gcwengineering.com

F:\PROJECTS\600\62025-203\DWG\PRODUCTION\STRUCTURAL\62025-203_S01.DWG
ALEXANDER SANTIAGO

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
(FAR HILLS AVENUE TO REDPOINT DRIVE)

JUNCTION STRUCTURE
48" RCP TO 6'x6' RCB

DRAWING
S3
43 OF 43 SHTS