

DS #: 5221-1

APN: 137-21-801-001, 137-22-301-001

PROJECT: Summitlin West Village 25-Sandstone Rise Dr (Street M)

SUBMITTAL: 3rd

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		February 16, 2021
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 25 - Sandstone Rise Dr. (Street M) (from Park Drift Trail <Street K> to Sky Vista Drive) – Update #1	
Cross Streets:	NWQ of Sky Vista Drive & Far Hills Avenue	
File Number:	F:\Depot\DSMemos\DS5221D.doc	
Parcel Number:	137-21-801-001, 137-22-301-001	
Zoning Action:	N/A	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES X	NO
COPIES TO:		Atkins
		Howard Hughes Company LLC
		Bart Anderson, P.E., DevCo
		CCRFC

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	11/20/2019	12/26/2019	Not Approved	\$400.00	3652617: \$400
2 nd Submittal	1/22/2020	2/20/2020	Conditional Approval	\$400.00	3713777: \$400
CCRFC	5/12/2020	5/26/2020	Concurrence Recv'd	N/C	N/C
3 rd Submittal (Paid on 2/4/2021)	1/27/2021	2/16/2021	See Comments Below	\$100.00	4157963: \$100
TOTAL FEES (LDDRS):				\$900.00	----

REMARKS:

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

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

- Sheet 15/32 & Sheet 22/32:** The revised storm drains connected at SDMH #7 (42"-PVC, 36"-RCP and 48"-RCP) are all very shallow to the street surface. Constant repair and maintenance will be a burden to the City. Address and resolve in the next submittal.
- Sheet 18/32 & Sheet 19/32:** The linework or symbol for SDMH #3A was missing in both plans.
- The project proposes to build temporary drainage facilities including drainage berms/swales for the flood protection of the proposed **Sandstone Rise 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.

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
HDR/AYS

T/R/S: T20S/R59E/21
AREA K-21



Update #1 to the Technical Drainage Study
for

Summerlin West Village 25

Sandstone Rise Drive (Street M): Park Drift Trail
(Street K) to Sky Vista Drive

Prepared for Howard Hughes Company, LLC

January 20, 2021

Engineer's Certification

Atkins certifies that the information contained herein has been prepared in accordance with generally accepted engineering principles and practices, and to the best of our knowledge, is true and correct.

This letter certifies that all items in the **Update #1 to the Technical Drainage Study for Sandstone Rise Drive (Street M): Park Drift Trail (Street K) to Sky Vista Drive** electronic submittal matches the paper version bound into the study.

Janelle L. Klein, PE (NV #17313)
Senior Engineer

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Sandstone Rise Drive (Street M): Park Drift Trail (Street K) to Sky Vista Drive Date: January 25, 2021
Location of Development: a) Descriptive (Cross Streets) North/South: Sky Vista Drive
East/West: Far Hills Avenue
b) Section: 21 and 22 Township: 20S Range: 59E
c) APN : 137-21-801-001, 137-22-301-001

Name of Owner: Howard Hughes Company, LLC
Telephone No.: (702) 791-4000 Fax No.: (702) 791-4450 E-Mail Address: april.chapman@howardhughes.com
Address: 10845 Griffith Peak Drive, Suite 160, Las Vegas, NV 89135

Contact Person-Name: Janelle Klein, PE Telephone No.: (702) 551-0365
* E-Mail Address: janelle.klein@atkinsglobal.com Fax No.: (702) 263-7200
Firm: Atkins
Address: 2270 Corporate Circle, Ste 200, Henderson, NV 89074

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: +/- 446 acres Being Developed/Disturbed: 2.72 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.): Public - Roadway Improvements
5. Approximate upstream land area which drains to the subject site: None
6. Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation: DS5221 and Update #2 to the Master Conceptual Drainage Study for Summerlin West Village 25
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Existing CC-215 Western Beltway Channel
8. Briefly describe your proposed schedule for the subject project: ASAP



01/25/2021

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: Sandstone Rise Drive: Park Drift Trail to Sky Vista Drive	Map ID: 137-21-801-001, 137-22-301-001
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Firm Name: Atkins	Engineer: Janelle Klein, PE
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Address: 2270 Corporate Circle, Ste 200		
City: Henderson	State: NV	Zip: 89074

Phone Number: (702) 551-0330	Fax Number: (702) 263-7200
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Property Owner: Howard Hughes Company, LLC

Address: 10845 Griffith Peak Drive, Suite 160		
City: Las Vegas	State: NV	Zip: 89135

Reviewed By:	Date Received:	Date Accepted for Review:
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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	
<u> x </u>	<u> </u>	Design Manual Standard Form 1 with the engineer's seal and signature.
<u> X </u>	<u> </u>	Design Manual Standard Form 4 .
<u> X </u>	<u> </u>	2 copies of the 24" x 36" Drainage Plan.
<u> </u>	<u> N/A </u>	A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.

II. MAPS AND EXHIBITS

Yes	No	
<u> X </u>	<u> </u>	A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.
<u> X </u>	<u> </u>	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
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HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS (Continued)

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

III. DRAINAGE PLAN

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

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
<u>X</u>	<u> </u>	Streets with off-set crowns.
<u>X</u>	<u> </u>	Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
<u>X</u>	<u> </u>	Property lines.
<u>X</u>	<u> </u>	Right-of-way lines and widths, existing and proposed.
<u>X</u>	<u> </u>	Existing improvements and their elevations.
<u>X</u>	<u> </u>	Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
<u>X</u>	<u> </u>	Concentration points and drainage flow direction with Q_{100} and V_{100} and D_{100} in streets.
<u>X</u>	<u> </u>	Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
<u>X</u>	<u> </u>	Location and cross-section of street capacity calculations.
<u>X</u>	<u> </u>	Cross-sectional detail for channels, including cutoff wall locations.
<u>X</u>	<u> </u>	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.
<u>X</u>	<u> </u>	Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
<u> </u>	<u>N/A</u>	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.
<u> </u>	<u>N/A</u>	Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.
<u> </u>	<u>N/A</u>	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.
<u>X</u>	<u> </u>	Building and/or lot numbers.
<u>X</u>	<u> </u>	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
<u>X</u>	<u> </u>	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

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

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

IV. HYDROLOGIC ANALYSIS

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

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

Yes	No	
☐	☒ N/A	Flow split calculations and supporting documentation or reference for the method of flow split calculations used.
☒ X	☐	Normal depth street flow calculations and cross section diagrams for all interior and perimeter streets. Provide "d x v" products for the Q_{100} and Q_{10} flows representing the worst case for interior and all perimeter streets. $Q_{100} d \times v \leq 8$. $Q_{10} d \times v \leq 6$ and 12 foot dry lane for rights-of-way ≥ 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan.
☒ X	☐	A summary table of interior and exterior street capacity calculations showing the street name, Q_{100} flow, slope, depth of flow, velocity and depth times velocity product and streets needing to meet 12 foot dry lane criteria.
☐	☒ N/A	Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged.)
☐	☒ 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 Q_{100} weir height or flow depth, whichever is greater.
☐	☒ N/A	A complete water surface profile analysis (HEC-2, HEC-RAS, etc.) for channel flows and FEMA Zone A flood zones. • Field survey data. • Input and output information. • Plotted cross-sections based on survey with proper encroachments. • A map showing the location of the cross-sections. • Analysis of both sub and super-critical flow segments. • A summary table and a discussion of the results in the text of the report.
☒ X	☐	Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
☒ X	☐	Hydraulic calculations for culverts and storm drains. D-Load calculations must be provided for storm drain pipes in public rights-of-way, including headwater pool inundation.
☒ X	☐	The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.
☐	☒ 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 (CCRFCDD) 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 CCRFCDD Hydrologic Criteria and Drainage Design Manual (Design Manual).

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

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

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

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

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

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
	N/A	Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.
	N/A	Ten-foot wide public drainage easements to be privately maintained are allowed for flow less than 20 cfs. The depth of flow entering the easement must be checked using the submerged weir calculation.
	N/A	The limits of the flood zones and the base flood elevations (BFE) must be shown on all grading plans for all developments within a Special Flood Hazard Zone A, AO, AE, etc.
	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.

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

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.

Update Letter

Your reference: DS #5221

Albert Sung
City of Las Vegas Public Works
333 N. Rancho Dr, 7th Floor
Las Vegas, NV 89106

January 18, 2021

RE: Update #1 to the TECHNICAL DRAINAGE STUDY FOR SUMMERLIN WEST VILLAGE 25 SANDSTONE RISE DRIVE (STREET M): PARK DRIFT TRAIL (STREET K) TO SKY VISTA DRIVE

Dear Albert,

This letter and the attached documents have been prepared as an Update #1 to the *Technical Drainage Study (TDS) for Summerlin West Village 25 - Sandstone Rise Drive (Street M): Park Drift Trail (Street K) to Sky Vista Drive*.

The storm drain system within Sandstone Rise Drive has been revised to accommodate revisions to the other utilities in the street. Storm Drain manhole #14 was removed as it was no longer needed for vertical adjustment of the Grand Park Boulevard lateral. Storm Drain manhole #3A has been added to provide adequate horizontal clearance from other utility pipes and structures. The revised hydraulic analysis is provided with this submittal.

Below are the comments from the Conditional Approval Letter dated 2/20/2020

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

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

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

Comment response: The approved report, addendum, and supplement were submitted to CCRFCD for concurrence. The Update will be submitted upon conditional approval.

Comment #2: The subject drainage study for *Sandstone Rise Drive (Street M): Park Drift Trail (Street K) to Sky Vista Drive* will not be approved prior to the final approval of the *Update to the Conceptual Master Drainage Study for Summerlin West Village 25*.

Comment response: Acknowledged.

Comment #3: The project proposes to build temporary drainage facilities including drainage berms/swales for the flood protection of the proposed **Sandstone Rise 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.

Comment response: The Maintenance & Liability Agreement with requisite quantity estimates and exhibits will be submitted.

Comment #4: All storm drain inlets that are more than 10'-deep require a special structural detail and calculations. Submit structural design calculations to *City Building & Safety Department* for review and approval prior to the approval of the drainage study

Comment response: The structural design calculations will be submitted to City Building & Safety Department.

Comment #5: *Figure 3 Hydrology Workmap* also did not state what drainage condition it is trying to present. Is it an *Interim Condition* or *Ultimate Condition*? Label clearly in the next submittal

Comment response: The Hydrology Workmap label has been revised to indicate the Interim Condition. The Ultimate Condition is presented in the Village 25 Master Drainage Study

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.

The WSPG models have been revised and the flow values in Table 6 have been revised.

Table 6 – WSPG-W Mainline Summary Table

SDMH#	WSPG-W Station	Q₁₀₀	ΣQ₁₀₀	HGL (Ft)
100-Interim Condition				
#1	0	0	82	3557.53
#2	171.98	6	82	3564.55
#3	240.43	0	76	3567.70
#3A	559.17	0	76	3583.63
#4	608.41	0	76	3585.16
#5	664.58	0	76	3588.88
#6	789.55	0	76	3600.39
#7	1058.68	24	76	3626.38
#8	1226.77	1	52	3631.29
#9	1337.84	1	51	3633.63
#10	1637.48	0	50	3654.17
#11	1773.13	50	50	3662.84
100-Ultimate Condition				
#1	0	0	141	3557.53
#2	171.98	6	141	3564.55
#3	240.43	0	135	3567.70
#3A	559.17	0	135	3583.63
#4	608.41	0	135	3585.16
#5	664.58	0	135	3588.88
#6	789.55	0	135	3600.39
#7	1058.68	63	135	3626.38
#8	1226.77	1	72	3631.29
#9	1337.84	1	71	3633.63
#10	1637.48	0	70	3654.17
#11	1773.13	70	70	3662.84

The maximum velocity modeled is 30.49 ft/s and is observed in the ultimate condition at SDMH#5. A hydraulic jump is modeled in the Sandstone Rise Drive storm drain on the mainline between SDMH#7 and SDMH#8 in the ultimate condition. All HGLs modeled, including the hydraulic jumps, are greater than 1 foot below the existing and or proposed surfaces.

Please contact our office at 702-551-0365 if you have any question regarding this submittal.
Sincerely,
Atkins,

Janelle L. Klein, PE (NV #17313)
Senior Engineer

Appendices



Appendix A. Referenced Reports

A.1. Conditional Approval Letter 5221B

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		February 20, 2020
TO: Land Development Services Department of Building & Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for:	
	Summerlin West Village 25 - Sandstone Rise Dr. (Street M) (from Park Drift Trail <Street K> to Sky Vista Drive)	
Cross Streets:	NWQ of Sky Vista Drive & Far Hills Avenue	COPIES TO: Atkins
File Number:	F:\Depot\DSMemos\DS5221B.doc	Howard Hughes Company LLC
Parcel Number:	137-21-801-001, 137-22-301-001	Bart Anderson, P.E., DevCo
Zoning Action:	N/A	CCRFCFCD
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES X	NO

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	11/20/2019	12/26/2019	Not Approved	\$400.00	3652617: \$400
2 nd Submittal	1/22/2020	2/20/2020	See Comments Below	\$400.00	3713777: \$400
			TOTAL FEES (LDDRS):	\$800.00	----

REMARKS:

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

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

***** The Conditional Approval of this Drainage Study is to allow the engineer/developer to submit the Improvement Plans to City Land Development Only**

***** Do not submit the Drainage Study to Clark County Regional Flood Control District (CCRFCFCD) prior to the Structural Design and Calculations being approved by the City Building & Safety Department**

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

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

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

2. The subject drainage study for *Sandstone Rise Drive (Street M) from Park Drift Trail to Sky Vista Drive* will not be approved prior to the final approval of the *Update Study to the Conceptual Master Drainage Study for Summerlin West Village 25*.

3. The project proposes to build temporary drainage facilities including drainage berms/swales for the flood protection of the proposed **Sandstone Rise 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.

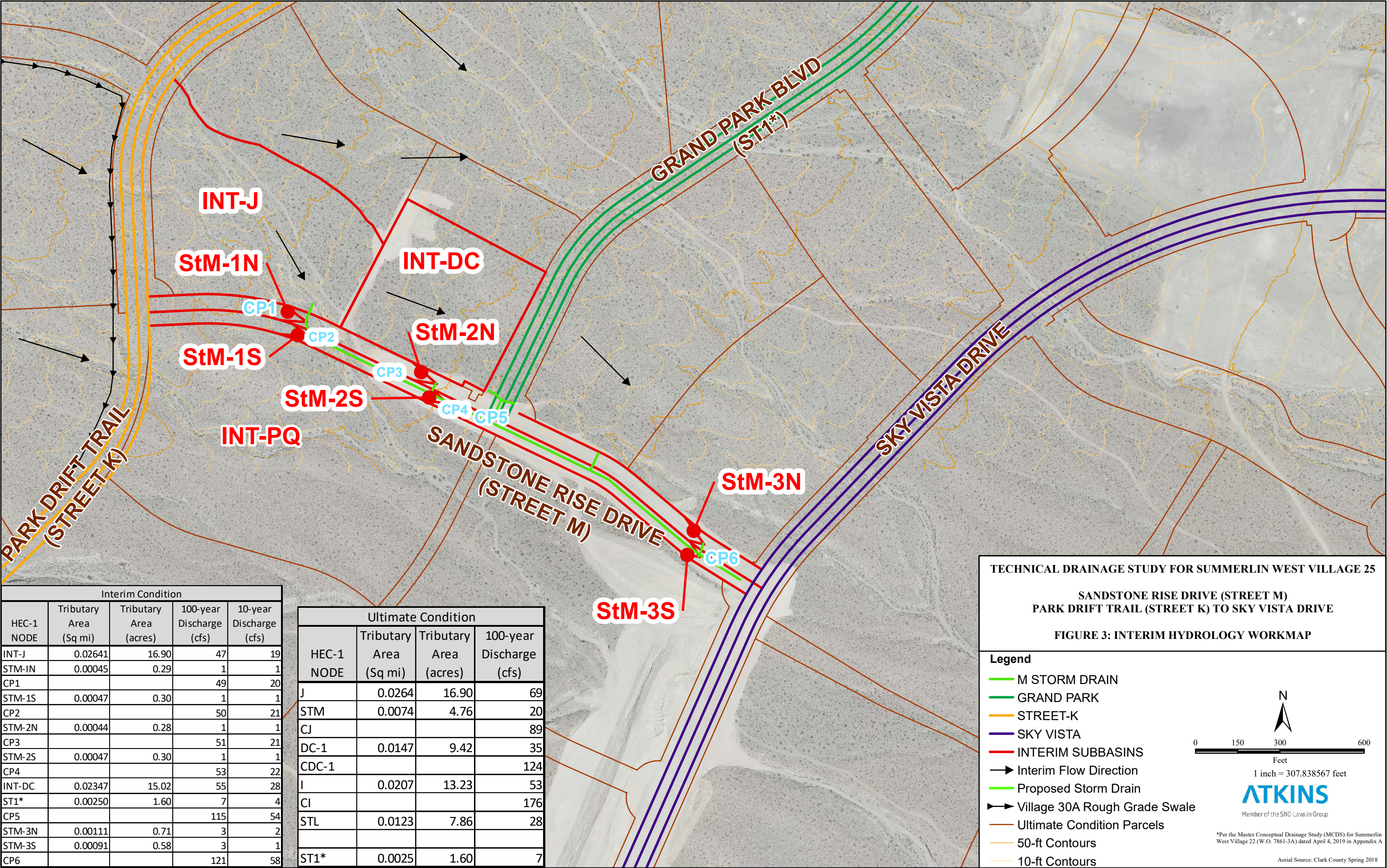
4. All storm drain inlets that are more than 10'-deep require a special structural detail and calculations. Submit structural design and calculations to *City Building & Safety Department* for review and approval prior to the final approval of the drainage study.
5. **Second Request:** *Figure 3 Hydrology Workmap* also did not state what drainage condition it is trying to present. Is it an *Interim Condition* or *Ultimate Condition*? Label clearly in the next submittal.

The revised workmap still did not state whether it is *Interim* or *Ultimate* condition. Provide a corrected workmap as a supplement to *City Flood Control*.

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

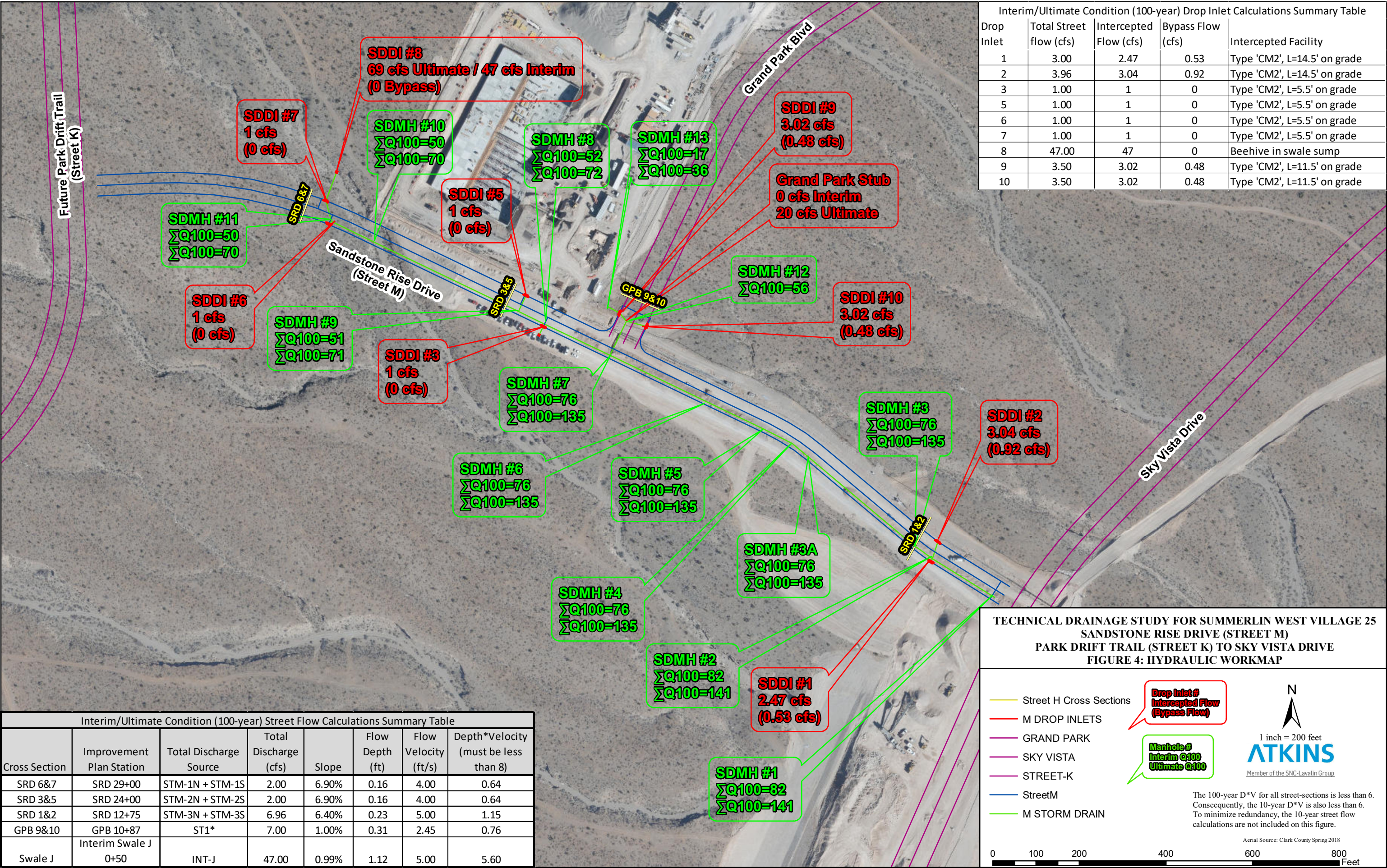
END OF REMARKS
HDR/AYS

T/R/S: T20S/R59E/21
AREA K-21



Appendix B. Revised Hydraulics

B.1 Figure 4 Hydraulic Workmap



B.2 Interim Condition WSPG-W Model

SM-INTERIM-UPDATE.WSW

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T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)
T3 ATKINS / INTERIM CONDITIONS
SO 0.0003557.530 1 3560.390
R 166.9803564.340 1 .013 .000 .000 0
REM SDMH#1
JX 169.4803564.440 1 2 2.013 3.040 2.4703565.94 3566.54 88.7-76.2 .000
REM LATERALS FROM SDDI#1 AND SDDI#2
R 171.9803564.550 1 .013 .000 -4.912 1
REM SDMH#2
R 235.4303567.500 1 .013 .000 .000 0
R 240.4303567.700 1 .013 .000 -3.24 1
REM SDMH#3
R 554.1703583.430 1 .013 .000 .000 0
R 559.1703583.630 1 .013 .000 4.74 1
REM SDMH#3A
R 603.4103585.060 1 .013 .000 .000 0
R 608.4103585.160 1 .013 .000 8.330 1
REM SDMH#4
R 659.5803588.680 1 .013 .000 .000 0
R 664.5803588.880 1 .013 .000 -1.237 1
REM SDMH#5
R 784.5503600.190 1 .013 .000 .000 0
R 789.5503600.390 1 .013 .000 .000 1
REM SDMH#6
R 1053.6803625.880 1 .013 .000 .000 0
JX 1056.1803626.130 4 3 .013 24.000 3626.38 -90.1 .000
REM SDMH#12
R 1058.6803626.380 4 .013 .000 -.187 1
REM SDMH#7
R 1221.7703631.090 4 .013 .000 .000 0
JX 1224.2703631.190 4 2 .013 1.000 3631.29 -89.8 .000
REM LATERAL FROM SDDI#3
R 1226.7703631.290 4 .013 .000 -.188 1
REM SDMH#8
R 1332.8403633.430 4 .013 .000 .000
JX 1335.3403633.530 4 2 .013 1.000 3643.73 90.0 .000
REM LATERAL FROM SDDI#5
R 1337.8403633.630 4 .013 .000 -.008 1
REM SDMH#9
R 1632.4803653.970 4 .013 .000 .000 0
R 1637.4803654.170 4 .013 .000 .241 1
REM SDMH#10
R 1768.1303662.640 4 .013 .000 .000 0
R 1773.1303662.840 4 .013 .000 .000 0
REM SDMH#11
SH 1773.1303662.840 4 3662.84
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 50.000 .0

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / INTERIM CONDITIONS

*****																	*****	
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Width	Top Height/ Dia.-FT	Base Wt/ 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				
*****																	*****	
.000	3557.530	1.455	3558.985	81.51	19.74	6.05	3565.03	.00	2.74	3.85	4.000	.000	.00	1	.0			
166.980	.0408					.0382	6.37	1.45	3.36	1.45	.013	.00	.00	PIPE				
166.980	3564.340	1.499	3565.839	81.51	18.95	5.58	3571.41	.00	2.74	3.87	4.000	.000	.00	1	.0			
JUNCT STR	.0399					.0420	.10	1.50	3.17		.013	.00	.00	PIPE				
169.480	3564.440	1.339	3565.779	76.00	20.60	6.59	3572.37	.00	2.64	3.78	4.000	.000	.00	1	.0			
2.500	.0440					.0479	.12	1.34	3.67	1.37	.013	.00	.00	PIPE				
171.980	3564.550	1.338	3565.888	76.00	20.62	6.60	3572.49	.00	2.64	3.77	4.000	.000	.00	1	.0			
63.450	.0465					.0488	3.10	1.34	3.68	1.35	.013	.00	.00	PIPE				
235.430	3567.500	1.327	3568.827	76.00	20.87	6.76	3575.59	.00	2.64	3.77	4.000	.000	.00	1	.0			
5.000	.0400					.0499	.25	1.33	3.74	1.40	.013	.00	.00	PIPE				
240.430	3567.700	1.323	3569.022	76.00	20.96	6.82	3575.84	.00	2.64	3.76	4.000	.000	.00	1	.0			
139.732	.0501					.0502	7.02	1.32	3.76	1.32	.013	.00	.00	PIPE				
380.162	3574.706	1.323	3576.028	76.00	20.96	6.82	3582.85	.00	2.64	3.76	4.000	.000	.00	1	.0			
174.008	.0501					.0538	9.36	1.32	3.76	1.32	.013	.00	.00	PIPE				
554.170	3583.430	1.277	3584.708	76.00	21.98	7.50	3592.21	.00	2.64	3.73	4.000	.000	.00	1	.0			
5.000	.0400					.0579	.29	1.28	4.02	1.40	.013	.00	.00	PIPE				
559.170	3583.630	1.272	3584.902	76.00	22.12	7.60	3592.50	.00	2.64	3.73	4.000	.000	.00	1	.0			
.228	.0323					.0584	.01	1.27	4.06	1.49	.013	.00	.00	PIPE				

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / INTERIM CONDITIONS

*****															*****	
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/ I.D.	ZL	No Wth		
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch		

559.398	3583.637	1.271	3584.908	76.00	22.13	7.61	3592.51	.00	2.64	3.72	4.000	.000	.00	1	.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.706	.0323					.0626	1.48	1.27	4.06	1.49	.013	.00	.00	PIPE		
583.104	3584.404	1.228	3585.632	76.00	23.21	8.37	3594.00	.00	2.64	3.69	4.000	.000	.00	1	.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20.306	.0323					.0715	1.45	1.23	4.34	1.49	.013	.00	.00	PIPE		
603.410	3585.060	1.187	3586.247	76.00	24.35	9.20	3595.45	.00	2.64	3.65	4.000	.000	.00	1	.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.000	.0200					.0780	.39	1.19	4.64	1.70	.013	.00	.00	PIPE		
608.410	3585.160	1.173	3586.333	76.00	24.75	9.51	3595.85	.00	2.64	3.64	4.000	.000	.00	1	.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51.170	.0688					.0850	4.35	1.17	4.75	1.22	.013	.00	.00	PIPE		
659.580	3588.680	1.136	3589.816	76.00	25.86	10.38	3600.20	.00	2.64	3.61	4.000	.000	.00	1	.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.000	.0400					.0919	.46	1.14	5.05	1.40	.013	.00	.00	PIPE		
664.580	3588.880	1.126	3590.006	76.00	26.20	10.66	3600.66	.00	2.64	3.60	4.000	.000	.00	1	.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
119.970	.0943					.0915	10.98	1.13	5.14	1.12	.013	.00	.00	PIPE		
784.550	3600.190	1.139	3601.329	76.00	25.78	10.32	3611.65	.00	2.64	3.61	4.000	.000	.00	1	.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.000	.0400					.0911	.46	1.14	5.03	1.40	.013	.00	.00	PIPE		
789.550	3600.390	1.128	3601.518	76.00	26.12	10.59	3612.11	.00	2.64	3.60	4.000	.000	.00	1	.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39.156	.0965					.0916	3.59	1.13	5.12	1.12	.013	.00	.00	PIPE		
828.706	3604.168	1.136	3605.304	76.00	25.87	10.39	3615.70	.00	2.64	3.61	4.000	.000	.00	1	.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
76.853	.0965					.0847	6.51	1.14	5.05	1.12	.013	.00	.00	PIPE		

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/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				
*****																	*****	
905.559	3611.585	1.175	3612.760	76.00	24.67	9.45	3622.21	.00	2.64	3.64	4.000	.000	.00	1	.0			
	36.616	.0965				.0742	2.72	1.18	4.73	1.12	.013	.00	.00	PIPE				
942.175	3615.119	1.216	3616.335	76.00	23.52	8.59	3624.93	.00	2.64	3.68	4.000	.000	.00	1	.0			
	23.383	.0965				.0649	1.52	1.22	4.42	1.12	.013	.00	.00	PIPE				
965.558	3617.375	1.259	3618.635	76.00	22.43	7.81	3626.44	.00	2.64	3.72	4.000	.000	.00	1	.0			
	16.793	.0965				.0569	.95	1.26	4.14	1.12	.013	.00	.00	PIPE				
982.351	3618.996	1.303	3620.300	76.00	21.38	7.10	3627.40	.00	2.64	3.75	4.000	.000	.00	1	.0			
	12.835	.0965				.0498	.64	1.30	3.87	1.12	.013	.00	.00	PIPE				
995.187	3620.235	1.350	3621.584	76.00	20.39	6.45	3628.04	.00	2.64	3.78	4.000	.000	.00	1	.0			
	10.194	.0965				.0436	.44	1.35	3.62	1.12	.013	.00	.00	PIPE				
1005.381	3621.219	1.397	3622.616	76.00	19.44	5.87	3628.48	.00	2.64	3.81	4.000	.000	.00	1	.0			
	8.302	.0965				.0383	.32	1.40	3.38	1.12	.013	.00	.00	PIPE				
1013.683	3622.020	1.447	3623.467	76.00	18.53	5.33	3628.80	.00	2.64	3.84	4.000	.000	.00	1	.0			
	6.877	.0965				.0335	.23	1.45	3.16	1.12	.013	.00	.00	PIPE				
1020.560	3622.684	1.499	3624.183	76.00	17.67	4.85	3629.03	.00	2.64	3.87	4.000	.000	.00	1	.0			
	5.766	.0965				.0294	.17	1.50	2.96	1.12	.013	.00	.00	PIPE				
1026.325	3623.240	1.553	3624.793	76.00	16.85	4.41	3629.20	.00	2.64	3.90	4.000	.000	.00	1	.0			
	4.872	.0965				.0258	.13	1.55	2.76	1.12	.013	.00	.00	PIPE				

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ 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				
*****																	*****	
1031.198	3623.710	1.609	3625.320	76.00	16.06	4.01	3629.33	.00	2.64	3.92	4.000	.000	.00	1	.0			
	4.138	.0965				.0227	.09	1.61	2.58	1.12	.013	.00	.00	PIPE				
1035.336	3624.110	1.668	3625.778	76.00	15.32	3.64	3629.42	.00	2.64	3.94	4.000	.000	.00	1	.0			
	3.524	.0965				.0199	.07	1.67	2.41	1.12	.013	.00	.00	PIPE				
1038.860	3624.450	1.729	3626.179	76.00	14.60	3.31	3629.49	.00	2.64	3.96	4.000	.000	.00	1	.0			
	3.000	.0965				.0175	.05	1.73	2.25	1.12	.013	.00	.00	PIPE				
1041.859	3624.739	1.793	3626.532	76.00	13.92	3.01	3629.54	.00	2.64	3.98	4.000	.000	.00	1	.0			
	2.550	.0965				.0154	.04	1.79	2.10	1.12	.013	.00	.00	PIPE				
1044.409	3624.985	1.860	3626.845	76.00	13.28	2.74	3629.58	.00	2.64	3.99	4.000	.000	.00	1	.0			
	2.155	.0965				.0135	.03	1.86	1.95	1.12	.013	.00	.00	PIPE				
1046.564	3625.193	1.930	3627.124	76.00	12.66	2.49	3629.61	.00	2.64	4.00	4.000	.000	.00	1	.0			
	1.807	.0965				.0119	.02	1.93	1.82	1.12	.013	.00	.00	PIPE				
1048.371	3625.368	2.003	3627.371	76.00	12.07	2.26	3629.63	.00	2.64	4.00	4.000	.000	.00	1	.0			
	1.498	.0965				.0105	.02	2.00	1.70	1.12	.013	.00	.00	PIPE				
1049.869	3625.512	2.080	3627.593	76.00	11.51	2.06	3629.65	.00	2.64	4.00	4.000	.000	.00	1	.0			
	1.217	.0965				.0092	.01	2.08	1.58	1.12	.013	.00	.00	PIPE				
1051.086	3625.630	2.161	3627.791	76.00	10.97	1.87	3629.66	.00	2.64	3.99	4.000	.000	.00	1	.0			
	.961	.0965				.0081	.01	2.16	1.47	1.12	.013	.00	.00	PIPE				

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ 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				
*****																	*****	
1052.047	3625.722	2.246	3627.968	76.00	10.46	1.70	3629.67	.00	2.64	3.97	4.000	.000	.00	1	.0			
	.727	.0965				.0072	.01	2.25	1.36	1.12	.013	.00	.00	PIPE				
1052.774	3625.792	2.336	3628.128	76.00	9.97	1.55	3629.67	.00	2.64	3.94	4.000	.000	.00	1	.0			
	.508	.0965				.0064	.00	2.34	1.26	1.12	.013	.00	.00	PIPE				
1053.282	3625.842	2.430	3628.272	76.00	9.51	1.40	3629.68	.00	2.64	3.91	4.000	.000	.00	1	.0			
	.299	.0965				.0056	.00	2.43	1.17	1.12	.013	.00	.00	PIPE				
1053.581	3625.870	2.531	3628.401	76.00	9.07	1.28	3629.68	.00	2.64	3.86	4.000	.000	.00	1	.0			
	.099	.0965				.0050	.00	2.53	1.08	1.12	.013	.00	.00	PIPE				
1053.680	3625.880	2.639	3628.519	76.00	8.64	1.16	3629.68	.00	2.64	3.79	4.000	.000	.00	1	.0			
JUNCT STR	.1000							2.64	1.00		.013	.00	.00	PIPE				
1056.180	3626.130	1.399	3627.529	52.00	16.10	4.02	3631.55	.00	2.34	2.99	3.000	.000	.00	1	.0			
	2.500	.1000				.0299	.07	1.40	2.73	1.01	.013	.00	.00	PIPE				
1058.680	3626.380	1.427	3627.806	52.00	15.69	3.82	3631.63	.00	2.34	3.00	3.000	.000	.00	1	.0			
	163.090	.0289				.0290	4.72	1.43	2.63	1.43	.013	.00	.00	PIPE				
1221.770	3631.090	1.425	3632.515	52.00	15.72	3.84	3636.35	.00	2.34	3.00	3.000	.000	.00	1	.0			
JUNCT STR	.0399					.0301	.08	1.42	2.64		.013	.00	.00	PIPE				
1224.270	3631.190	1.380	3632.570	51.00	16.07	4.01	3636.58	.00	2.32	2.99	3.000	.000	.00	1	.0			
	2.500	.0400				.0311	.08	1.38	2.75	1.29	.013	.00	.00	PIPE				

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ 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				
*****																	*****	
1226.770	3631.290	1.383	3632.672	51.00	16.02	3.99	3636.66	.00	2.32	2.99	3.000	.000	.00	1	.0			
10.488	.0202					.0317	.33	1.38	2.74	1.57	.013	.00	.00	PIPE				
1237.258	3631.501	1.364	3632.866	51.00	16.30	4.13	3636.99	.00	2.32	2.99	3.000	.000	.00	1	.0			
25.070	.0202					.0347	.87	1.36	2.81	1.57	.013	.00	.00	PIPE				
1262.327	3632.007	1.316	3633.323	51.00	17.10	4.54	3637.86	.00	2.32	2.98	3.000	.000	.00	1	.0			
21.097	.0202					.0395	.83	1.32	3.01	1.57	.013	.00	.00	PIPE				
1283.424	3632.433	1.269	3633.702	51.00	17.93	4.99	3638.70	.00	2.32	2.96	3.000	.000	.00	1	.0			
18.347	.0202					.0450	.82	1.27	3.23	1.57	.013	.00	.00	PIPE				
1301.771	3632.803	1.224	3634.027	51.00	18.81	5.49	3639.52	.00	2.32	2.95	3.000	.000	.00	1	.0			
16.320	.0202					.0512	.84	1.22	3.46	1.57	.013	.00	.00	PIPE				
1318.091	3633.132	1.181	3634.313	51.00	19.73	6.04	3640.36	.00	2.32	2.93	3.000	.000	.00	1	.0			
14.749	.0202					.0584	.86	1.18	3.70	1.57	.013	.00	.00	PIPE				
1332.840	3633.430	1.140	3634.570	51.00	20.69	6.65	3641.22	.00	2.32	2.91	3.000	.000	.00	1	.0			
JUNCT STR	.0400					.0651	.16	1.14	3.96		.013	.00	.00	PIPE				
1335.340	3633.530	1.101	3634.631	50.00	21.26	7.02	3641.65	.00	2.30	2.89	3.000	.000	.00	1	.0			
2.500	.0399					.0685	.17	1.10	4.15	1.27	.013	.00	.00	PIPE				
1337.840	3633.630	1.097	3634.726	50.00	21.38	7.10	3641.82	.00	2.30	2.89	3.000	.000	.00	1	.0			
105.300	.0690					.0690	7.27	1.10	4.19	1.10	.013	.00	.00	PIPE				

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ 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				
*****																	*****	
1443.140	3640.899	1.097	3641.996	50.00	21.38	7.10	3649.09	.00	2.30	2.89	3.000	.000	.00	1	.0			
142.556	.0690					.0650	9.27	1.10	4.19	1.10	.013	.00	.00	PIPE				
1585.697	3650.740	1.134	3651.874	50.00	20.44	6.49	3658.36	.00	2.30	2.91	3.000	.000	.00	1	.0			
46.783	.0690					.0573	2.68	1.13	3.93	1.10	.013	.00	.00	PIPE				
1632.480	3653.970	1.174	3655.144	50.00	19.49	5.90	3661.04	.00	2.30	2.93	3.000	.000	.00	1	.0			
5.000	.0400					.0540	.27	1.17	3.67	1.27	.013	.00	.00	PIPE				
1637.480	3654.170	1.169	3655.339	50.00	19.62	5.98	3661.31	.00	2.30	2.93	3.000	.000	.00	1	.0			
17.346	.0648					.0532	.92	1.17	3.70	1.12	.013	.00	.00	PIPE				
1654.826	3655.295	1.185	3656.479	50.00	19.26	5.76	3662.24	.00	2.30	2.93	3.000	.000	.00	1	.0			
29.736	.0648					.0487	1.45	1.18	3.61	1.12	.013	.00	.00	PIPE				
1684.563	3657.222	1.228	3658.450	50.00	18.36	5.24	3663.69	.00	2.30	2.95	3.000	.000	.00	1	.0			
19.507	.0648					.0427	.83	1.23	3.37	1.12	.013	.00	.00	PIPE				
1704.069	3658.487	1.273	3659.760	50.00	17.51	4.76	3664.52	.00	2.30	2.97	3.000	.000	.00	1	.0			
14.133	.0648					.0375	.53	1.27	3.14	1.12	.013	.00	.00	PIPE				
1718.203	3659.403	1.320	3660.723	50.00	16.70	4.33	3665.05	.00	2.30	2.98	3.000	.000	.00	1	.0			
10.813	.0648					.0330	.36	1.32	2.93	1.12	.013	.00	.00	PIPE				
1729.016	3660.104	1.369	3661.473	50.00	15.92	3.93	3665.41	.00	2.30	2.99	3.000	.000	.00	1	.0			
8.552	.0648					.0290	.25	1.37	2.74	1.12	.013	.00	.00	PIPE				

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ 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				
*****																	*****	
1737.568	3660.659	1.420	3662.079	50.00	15.18	3.58	3665.66	.00	2.30	3.00	3.000	.000	.00	1	.0			
6.904	.0648					.0255	.18	1.42	2.55	1.12	.013	.00	.00	PIPE				
1744.472	3661.106	1.474	3662.580	50.00	14.47	3.25	3665.83	.00	2.30	3.00	3.000	.000	.00	1	.0			
5.650	.0648					.0225	.13	1.47	2.38	1.12	.013	.00	.00	PIPE				
1750.122	3661.472	1.530	3663.002	50.00	13.80	2.96	3665.96	.00	2.30	3.00	3.000	.000	.00	1	.0			
4.656	.0648					.0198	.09	1.53	2.21	1.12	.013	.00	.00	PIPE				
1754.778	3661.774	1.589	3663.363	50.00	13.16	2.69	3666.05	.00	2.30	2.99	3.000	.000	.00	1	.0			
3.847	.0648					.0174	.07	1.59	2.06	1.12	.013	.00	.00	PIPE				
1758.625	3662.024	1.651	3663.675	50.00	12.54	2.44	3666.12	.00	2.30	2.98	3.000	.000	.00	1	.0			
3.170	.0648					.0154	.05	1.65	1.91	1.12	.013	.00	.00	PIPE				
1761.795	3662.229	1.716	3663.946	50.00	11.96	2.22	3666.17	.00	2.30	2.97	3.000	.000	.00	1	.0			
2.595	.0648					.0136	.04	1.72	1.78	1.12	.013	.00	.00	PIPE				
1764.389	3662.397	1.785	3664.183	50.00	11.40	2.02	3666.20	.00	2.30	2.95	3.000	.000	.00	1	.0			
2.094	.0648					.0120	.03	1.79	1.65	1.12	.013	.00	.00	PIPE				
1766.483	3662.533	1.858	3664.391	50.00	10.87	1.84	3666.23	.00	2.30	2.91	3.000	.000	.00	1	.0			
1.647	.0648					.0107	.02	1.86	1.52	1.12	.013	.00	.00	PIPE				
1768.130	3662.640	1.936	3664.576	50.00	10.37	1.67	3666.24	.00	2.30	2.87	3.000	.000	.00	1	.0			
2.121	.0400					.0095	.02	1.94	1.41	1.27	.013	.00	.00	PIPE				

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / INTERIM CONDITIONS

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/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			

1770.251	3662.725	2.012	3664.737	50.00	9.92	1.53	3666.27	.00	2.30	2.82	3.000	.000	.00	1	.0		
	1.605	.0400				.0085	.01	2.01	1.31	1.27	.013	.00	.00	PIPE			
1771.856	3662.789	2.100	3664.889	50.00	9.46	1.39	3666.28	.00	2.30	2.75	3.000	.000	.00	1	.0		
	.952	.0400				.0076	.01	2.10	1.20	1.27	.013	.00	.00	PIPE			
1772.808	3662.827	2.196	3665.023	50.00	9.02	1.26	3666.29	.00	2.30	2.66	3.000	.000	.00	1	.0		
	.322	.0400				.0068	.00	2.20	1.10	1.27	.013	.00	.00	PIPE			
1773.130	3662.840	2.301	3665.141	50.00	8.59	1.15	3666.29	.00	2.30	2.54	3.000	.000	.00	1	.0		

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T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 NORTH TO SDDI#2
T3 ATKINS / INTERIM CONDITIONS
SO 171.9803564.550 1 3565.888
R 214.0303567.950 2 .01 .000 0.000 1
REM LATERAL FROM SDDI#2
SH 214.0303567.950 2 3567.95
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 3.040 .0

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 NORTH TO SDDI#2

ATKINS / INTERIM CONDITIONS

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/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
171.980	3564.550	1.338	3565.888	3.04	1.36	.03	3565.92	.00	.61	1.88	2.000	.000	.00	1 .0
	.642	.0809				.0002	.00	1.34	.22	.26	.010	.00	.00	PIPE
172.622	3564.602	1.283	3565.885	3.04	1.43	.03	3565.92	.00	.61	1.92	2.000	.000	.00	1 .0
	.597	.0809				.0002	.00	1.28	.24	.26	.010	.00	.00	PIPE
173.219	3564.650	1.232	3565.882	3.04	1.50	.03	3565.92	.00	.61	1.95	2.000	.000	.00	1 .0
	.556	.0809				.0002	.00	1.23	.26	.26	.010	.00	.00	PIPE
173.775	3564.695	1.184	3565.879	3.04	1.57	.04	3565.92	.00	.61	1.97	2.000	.000	.00	1 .0
173.775	3564.695	1.184	3565.879	3.04	1.57	.04	3565.92	.00	.61	1.97	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
173.775	3564.695	.273	3564.968	3.04	11.83	2.17	3567.14	.00	.61	1.37	2.000	.000	.00	1 .0
	8.811	.0809				.0630	.56	.27	4.82	.26	.010	.00	.00	PIPE
182.586	3565.407	.282	3565.689	3.04	11.28	1.97	3567.66	.00	.61	1.39	2.000	.000	.00	1 .0
	6.585	.0809				.0550	.36	.28	4.51	.26	.010	.00	.00	PIPE
189.171	3565.940	.291	3566.231	3.04	10.75	1.80	3568.03	.00	.61	1.41	2.000	.000	.00	1 .0
	4.677	.0809				.0480	.22	.29	4.23	.26	.010	.00	.00	PIPE
193.848	3566.318	.301	3566.619	3.04	10.25	1.63	3568.25	.00	.61	1.43	2.000	.000	.00	1 .0
	3.555	.0809				.0419	.15	.30	3.97	.26	.010	.00	.00	PIPE
197.404	3566.605	.311	3566.916	3.04	9.77	1.48	3568.40	.00	.61	1.45	2.000	.000	.00	1 .0
	2.814	.0809				.0366	.10	.31	3.72	.26	.010	.00	.00	PIPE

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 NORTH TO SDDI#2

ATKINS / INTERIM CONDITIONS

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/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
200.217	3566.833	.321	3567.154	3.04	9.32	1.35	3568.50	.00	.61	1.47	2.000	.000	.00	1 .0
2.288	.0809					.0320	.07	.32	3.48	.26	.010	.00	.00	PIPE
202.505	3567.018	.332	3567.350	3.04	8.89	1.23	3568.58	.00	.61	1.49	2.000	.000	.00	1 .0
1.896	.0809					.0279	.05	.33	3.27	.26	.010	.00	.00	PIPE
204.401	3567.171	.343	3567.514	3.04	8.47	1.11	3568.63	.00	.61	1.51	2.000	.000	.00	1 .0
1.589	.0809					.0244	.04	.34	3.06	.26	.010	.00	.00	PIPE
205.990	3567.300	.355	3567.654	3.04	8.08	1.01	3568.67	.00	.61	1.53	2.000	.000	.00	1 .0
1.347	.0809					.0213	.03	.35	2.87	.26	.010	.00	.00	PIPE
207.338	3567.409	.367	3567.775	3.04	7.70	.92	3568.70	.00	.61	1.55	2.000	.000	.00	1 .0
1.146	.0809					.0186	.02	.37	2.69	.26	.010	.00	.00	PIPE
208.484	3567.501	.379	3567.880	3.04	7.34	.84	3568.72	.00	.61	1.57	2.000	.000	.00	1 .0
.981	.0809					.0163	.02	.38	2.52	.26	.010	.00	.00	PIPE
209.464	3567.581	.392	3567.972	3.04	7.00	.76	3568.73	.00	.61	1.59	2.000	.000	.00	1 .0
.839	.0809					.0142	.01	.39	2.36	.26	.010	.00	.00	PIPE
210.303	3567.649	.405	3568.054	3.04	6.68	.69	3568.75	.00	.61	1.61	2.000	.000	.00	1 .0
.719	.0809					.0124	.01	.41	2.21	.26	.010	.00	.00	PIPE
211.023	3567.707	.419	3568.125	3.04	6.37	.63	3568.75	.00	.61	1.63	2.000	.000	.00	1 .0
.614	.0809					.0108	.01	.42	2.07	.26	.010	.00	.00	PIPE

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 NORTH TO SDDI#2

ATKINS / INTERIM CONDITIONS

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/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
211.637	3567.756	.433	3568.189	3.04	6.07	.57	3568.76	.00	.61	1.65	2.000	.000	.00	1 .0
	.521	.0809				.0095	.00	.43	1.94	.26	.010	.00	.00	PIPE
212.158	3567.799	.448	3568.246	3.04	5.79	.52	3568.77	.00	.61	1.67	2.000	.000	.00	1 .0
	.441	.0809				.0083	.00	.45	1.82	.26	.010	.00	.00	PIPE
212.599	3567.834	.463	3568.297	3.04	5.52	.47	3568.77	.00	.61	1.69	2.000	.000	.00	1 .0
	.369	.0809				.0072	.00	.46	1.70	.26	.010	.00	.00	PIPE
212.968	3567.864	.479	3568.343	3.04	5.26	.43	3568.77	.00	.61	1.71	2.000	.000	.00	1 .0
	.304	.0809				.0063	.00	.48	1.59	.26	.010	.00	.00	PIPE
213.272	3567.889	.495	3568.384	3.04	5.02	.39	3568.77	.00	.61	1.73	2.000	.000	.00	1 .0
	.245	.0809				.0055	.00	.50	1.49	.26	.010	.00	.00	PIPE
213.517	3567.908	.512	3568.421	3.04	4.78	.36	3568.78	.00	.61	1.75	2.000	.000	.00	1 .0
	.193	.0809				.0048	.00	.51	1.40	.26	.010	.00	.00	PIPE
213.710	3567.924	.530	3568.454	3.04	4.56	.32	3568.78	.00	.61	1.77	2.000	.000	.00	1 .0
	.143	.0809				.0042	.00	.53	1.31	.26	.010	.00	.00	PIPE
213.853	3567.936	.548	3568.484	3.04	4.35	.29	3568.78	.00	.61	1.78	2.000	.000	.00	1 .0
	.100	.0809				.0037	.00	.55	1.22	.26	.010	.00	.00	PIPE
213.953	3567.944	.567	3568.511	3.04	4.15	.27	3568.78	.00	.61	1.80	2.000	.000	.00	1 .0
	.057	.0809				.0032	.00	.57	1.15	.26	.010	.00	.00	PIPE

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 NORTH TO SDDI#2

ATKINS / INTERIM CONDITIONS

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*****
| 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
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
| | | | | | | | | | | | | | |
214.010 3567.948 .587 3568.535 3.04 3.95 .24 3568.78 .00 .61 1.82 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
.020 .0809 | | | | | .0028 .00 .59 1.07 .26 .010 .00 .00 PIPE
| | | | | | | | | | | | | | |
214.030 3567.950 .609 3568.559 3.04 3.76 .22 3568.78 .00 .61 1.84 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-

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SM-Lateral-MH2S-INT.WSW

0

T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1
T3 ATKINS / INTERIM CONDITIONS
SO 171.9803564.550 1 3565.888
R 179.4803569.420 2 .013 .000 0.000 1
REM LATERAL FROM SDDI#1
SH 179.4803569.420 2 3569.42
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 2.470 .0

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1

ATKINS / INTERIM CONDITIONS

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/ 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
171.980	3564.550	1.338	3565.888	2.47	1.11	.02	3565.91	.00	.55	1.88	2.000	.000	.00	1 .0
	.081	.6493				.0002	.00	1.34	.18	.16	.013	.00	.00	PIPE
172.061	3564.603	1.283	3565.886	2.47	1.16	.02	3565.91	.00	.55	1.92	2.000	.000	.00	1 .0
	.019	.6493				.0002	.00	1.28	.19	.16	.013	.00	.00	PIPE
172.081	3564.615	1.283	3565.899	2.47	1.16	.02	3565.92	.00	.55	1.92	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
172.081	3564.615	.190	3564.806	2.47	16.26	4.11	3568.91	.00	.55	1.17	2.000	.000	.00	1 .0
	.904	.6493				.3182	.29	.19	7.97	.16	.013	.00	.00	PIPE
172.985	3565.203	.196	3565.398	2.47	15.58	3.77	3569.17	.00	.55	1.19	2.000	.000	.00	1 .0
	.910	.6493				.2797	.25	.20	7.52	.16	.013	.00	.00	PIPE
173.895	3565.793	.202	3565.996	2.47	14.86	3.43	3569.42	.00	.55	1.21	2.000	.000	.00	1 .0
	.752	.6493				.2440	.18	.20	7.05	.16	.013	.00	.00	PIPE
174.647	3566.282	.209	3566.491	2.47	14.16	3.12	3569.61	.00	.55	1.22	2.000	.000	.00	1 .0
	.633	.6493				.2129	.13	.21	6.61	.16	.013	.00	.00	PIPE
175.280	3566.693	.216	3566.909	2.47	13.50	2.83	3569.74	.00	.55	1.24	2.000	.000	.00	1 .0
	.540	.6493				.1858	.10	.22	6.20	.16	.013	.00	.00	PIPE
175.820	3567.043	.223	3567.266	2.47	12.88	2.57	3569.84	.00	.55	1.26	2.000	.000	.00	1 .0
	.465	.6493				.1621	.08	.22	5.81	.16	.013	.00	.00	PIPE

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1

ATKINS / INTERIM CONDITIONS

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/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
176.285	3567.345	.230	3567.576	2.47	12.28	2.34	3569.92	.00	.55	1.28	2.000	.000	.00	1 .0
.404	.6493					.1415	.06	.23	5.45	.16	.013	.00	.00	PIPE
176.689	3567.608	.238	3567.846	2.47	11.71	2.13	3569.97	.00	.55	1.30	2.000	.000	.00	1 .0
.353	.6493					.1235	.04	.24	5.11	.16	.013	.00	.00	PIPE
177.042	3567.837	.246	3568.083	2.47	11.16	1.93	3570.02	.00	.55	1.31	2.000	.000	.00	1 .0
.310	.6493					.1078	.03	.25	4.79	.16	.013	.00	.00	PIPE
177.352	3568.038	.254	3568.292	2.47	10.64	1.76	3570.05	.00	.55	1.33	2.000	.000	.00	1 .0
.273	.6493					.0940	.03	.25	4.49	.16	.013	.00	.00	PIPE
177.624	3568.215	.263	3568.477	2.47	10.15	1.60	3570.08	.00	.55	1.35	2.000	.000	.00	1 .0
.241	.6493					.0821	.02	.26	4.21	.16	.013	.00	.00	PIPE
177.865	3568.371	.271	3568.643	2.47	9.67	1.45	3570.10	.00	.55	1.37	2.000	.000	.00	1 .0
.213	.6493					.0717	.02	.27	3.95	.16	.013	.00	.00	PIPE
178.078	3568.510	.280	3568.790	2.47	9.22	1.32	3570.11	.00	.55	1.39	2.000	.000	.00	1 .0
.189	.6493					.0626	.01	.28	3.70	.16	.013	.00	.00	PIPE
178.267	3568.632	.290	3568.922	2.47	8.79	1.20	3570.12	.00	.55	1.41	2.000	.000	.00	1 .0
.167	.6493					.0546	.01	.29	3.47	.16	.013	.00	.00	PIPE
178.434	3568.741	.299	3569.040	2.47	8.39	1.09	3570.13	.00	.55	1.43	2.000	.000	.00	1 .0
.148	.6493					.0477	.01	.30	3.25	.16	.013	.00	.00	PIPE

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1

ATKINS / INTERIM CONDITIONS

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/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
178.583	3568.837	.309	3569.146	2.47	8.00	.99	3570.14	.00	.55	1.45	2.000	.000	.00	1 .0
	.131	.6493				.0416	.01	.31	3.05	.16	.013	.00	.00	PIPE
178.714	3568.922	.320	3569.242	2.47	7.62	.90	3570.14	.00	.55	1.47	2.000	.000	.00	1 .0
	.116	.6493				.0364	.00	.32	2.86	.16	.013	.00	.00	PIPE
178.830	3568.998	.330	3569.328	2.47	7.27	.82	3570.15	.00	.55	1.49	2.000	.000	.00	1 .0
	.103	.6493				.0317	.00	.33	2.68	.16	.013	.00	.00	PIPE
178.933	3569.065	.342	3569.406	2.47	6.93	.75	3570.15	.00	.55	1.51	2.000	.000	.00	1 .0
	.091	.6493				.0277	.00	.34	2.51	.16	.013	.00	.00	PIPE
179.024	3569.124	.353	3569.477	2.47	6.61	.68	3570.15	.00	.55	1.52	2.000	.000	.00	1 .0
	.080	.6493				.0242	.00	.35	2.35	.16	.013	.00	.00	PIPE
179.103	3569.175	.365	3569.540	2.47	6.30	.62	3570.16	.00	.55	1.54	2.000	.000	.00	1 .0
	.070	.6493				.0212	.00	.36	2.20	.16	.013	.00	.00	PIPE
179.173	3569.220	.377	3569.598	2.47	6.01	.56	3570.16	.00	.55	1.56	2.000	.000	.00	1 .0
	.060	.6493				.0185	.00	.38	2.06	.16	.013	.00	.00	PIPE
179.233	3569.260	.390	3569.650	2.47	5.73	.51	3570.16	.00	.55	1.58	2.000	.000	.00	1 .0
	.052	.6493				.0161	.00	.39	1.93	.16	.013	.00	.00	PIPE
179.286	3569.294	.403	3569.697	2.47	5.46	.46	3570.16	.00	.55	1.60	2.000	.000	.00	1 .0
	.045	.6493				.0141	.00	.40	1.81	.16	.013	.00	.00	PIPE

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ 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				
*****																	*****	
179.330	3569.323	.417	3569.740	2.47	5.21	.42	3570.16	.00	.55	1.62	2.000	.000	.00	1	.0			
	.038	.6493				.0123	.00	.42	1.70	.16	.013	.00	.00	PIPE				
179.368	3569.347	.431	3569.778	2.47	4.96	.38	3570.16	.00	.55	1.64	2.000	.000	.00	1	.0			
	.031	.6493				.0108	.00	.43	1.59	.16	.013	.00	.00	PIPE				
179.400	3569.368	.446	3569.813	2.47	4.73	.35	3570.16	.00	.55	1.66	2.000	.000	.00	1	.0			
	.026	.6493				.0094	.00	.45	1.49	.16	.013	.00	.00	PIPE				
179.426	3569.385	.461	3569.845	2.47	4.51	.32	3570.16	.00	.55	1.68	2.000	.000	.00	1	.0			
	.020	.6493				.0082	.00	.46	1.40	.16	.013	.00	.00	PIPE				
179.446	3569.398	.477	3569.874	2.47	4.30	.29	3570.16	.00	.55	1.70	2.000	.000	.00	1	.0			
	.015	.6493				.0072	.00	.48	1.31	.16	.013	.00	.00	PIPE				
179.461	3569.408	.493	3569.901	2.47	4.10	.26	3570.16	.00	.55	1.72	2.000	.000	.00	1	.0			
	.011	.6493				.0063	.00	.49	1.22	.16	.013	.00	.00	PIPE				
179.472	3569.415	.510	3569.925	2.47	3.91	.24	3570.16	.00	.55	1.74	2.000	.000	.00	1	.0			
	.006	.6493				.0055	.00	.51	1.15	.16	.013	.00	.00	PIPE				
179.478	3569.419	.527	3569.946	2.47	3.73	.22	3570.16	.00	.55	1.76	2.000	.000	.00	1	.0			
	.002	.6493				.0048	.00	.53	1.07	.16	.013	.00	.00	PIPE				
179.480	3569.420	.547	3569.967	2.47	3.55	.20	3570.16	.00	.55	1.78	2.000	.000	.00	1	.0			

SM-Lateral-MH7N-INT-UPDATE.WSW

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T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#7 NORTH TO SDMH#12
T3 ATKINS / INTERIM CONDITIONS
SO 1058.6803626.380 1 3627.806
R 1140.7403626.990 3 .01 .000 0.000 1
JX 1143.2403626.990 4 4 2.013 20.020 3.0203627.19 3627.19 65.5-78.0 .000
R 1145.7403626.990 4 .013
R 1185.3103627.380 4 .013 .000 0.000 1
SH 1185.3103627.380 4 3627.380
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q .010 .0

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#7 NORTH TO SDMH#12

ATKINS / INTERIM CONDITIONS

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/ 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
1058.680	3626.380	1.141	3627.521	23.05	8.47	1.11	3628.63	.00	1.47	3.28	3.500	.000	.00	1 .0
10.631	.0074					.0058	.06	1.14	1.64	1.07	.010	.00	.00	PIPE
1069.311	3626.459	1.151	3627.610	23.05	8.37	1.09	3628.70	.00	1.47	3.29	3.500	.000	.00	1 .0
27.723	.0074					.0053	.15	1.15	1.61	1.07	.010	.00	.00	PIPE
1097.034	3626.665	1.192	3627.856	23.05	7.98	.99	3628.84	.00	1.47	3.32	3.500	.000	.00	1 .0
17.202	.0074					.0047	.08	1.19	1.51	1.07	.010	.00	.00	PIPE
1114.236	3626.793	1.234	3628.027	23.05	7.61	.90	3628.93	.00	1.47	3.34	3.500	.000	.00	1 .0
11.293	.0074					.0041	.05	1.23	1.41	1.07	.010	.00	.00	PIPE
1125.529	3626.877	1.278	3628.155	23.05	7.25	.82	3628.97	.00	1.47	3.37	3.500	.000	.00	1 .0
7.378	.0074					.0036	.03	1.28	1.32	1.07	.010	.00	.00	PIPE
1132.907	3626.932	1.324	3628.256	23.05	6.91	.74	3629.00	.00	1.47	3.39	3.500	.000	.00	1 .0
4.596	.0074					.0032	.01	1.32	1.23	1.07	.010	.00	.00	PIPE
1137.503	3626.966	1.372	3628.338	23.05	6.59	.67	3629.01	.00	1.47	3.42	3.500	.000	.00	1 .0
2.473	.0074					.0028	.01	1.37	1.15	1.07	.010	.00	.00	PIPE
1139.976	3626.984	1.421	3628.406	23.05	6.29	.61	3629.02	.00	1.47	3.44	3.500	.000	.00	1 .0
.764	.0074					.0024	.00	1.42	1.07	1.07	.010	.00	.00	PIPE
1140.740	3626.990	1.474	3628.464	23.05	5.99	.56	3629.02	.00	1.47	3.46	3.500	.000	.00	1 .0
JUNCT STR	.0000					.0019	.00	1.47	1.00		.013	.00	.00	PIPE

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#7 NORTH TO SDMH#12

ATKINS / INTERIM CONDITIONS

*****															*****	
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/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		
*****															*****	
1143.240	3626.990	2.114	3629.104	.01	.00	.00	3629.10	.00	.03	2.74	3.000	.000	.00	1 .0		
	2.500	.0000				.0000	.00	2.11	.00	.00	.013	.00	.00	PIPE		
1145.740	3626.990	2.115	3629.105	.01	.00	.00	3629.10	.00	.03	2.74	3.000	.000	.00	1 .0		
	9.074	.0099				.0000	.00	2.11	.00	.03	.013	.00	.00	PIPE		
1154.814	3627.079	2.025	3629.105	.01	.00	.00	3629.10	.00	.03	2.81	3.000	.000	.00	1 .0		
	8.444	.0099				.0000	.00	2.03	.00	.03	.013	.00	.00	PIPE		
1163.258	3627.163	1.942	3629.105	.01	.00	.00	3629.10	.00	.03	2.87	3.000	.000	.00	1 .0		
	7.916	.0099				.0000	.00	1.94	.00	.03	.013	.00	.00	PIPE		
1171.174	3627.240	1.864	3629.105	.01	.00	.00	3629.10	.00	.03	2.91	3.000	.000	.00	1 .0		
	7.449	.0099				.0000	.00	1.86	.00	.03	.013	.00	.00	PIPE		
1178.623	3627.314	1.791	3629.105	.01	.00	.00	3629.10	.00	.03	2.94	3.000	.000	.00	1 .0		
	6.687	.0099				.0000	.00	1.79	.00	.03	.013	.00	.00	PIPE		
1185.310	3627.380	1.725	3629.105	.01	.00	.00	3629.10	.00	.03	2.97	3.000	.000	.00	1 .0		

SM-Lateral-MH8S-INT.WSW

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T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#8 SOUTH TO SDDI#3
T3 ATKINS / INTERIM CONDITIONS
SO 1226.7703631.290 4 3632.672
R 1233.6203631.360 2 .013 .000 0.000 1
SH 1233.6203631.360 2 3631.360
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 1.000 .0

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#8 SOUTH TO SDDI#3

ATKINS / INTERIM CONDITIONS

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/ 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			

1226.770	3631.290	1.382	3632.672	1.00	.43	.00	3632.68	.00	.34	1.85	2.000	.000	.00	1	.0		
	5.626	.0102				.0000	.00	1.38	.07	.28	.013	.00	.00	PIPE			
1232.396	3631.348	1.324	3632.672	1.00	.45	.00	3632.68	.00	.34	1.89	2.000	.000	.00	1	.0		
	1.224	.0102				.0000	.00	1.32	.07	.28	.013	.00	.00	PIPE			
1233.620	3631.360	1.313	3632.673	1.00	.46	.00	3632.68	.00	.34	1.90	2.000	.000	.00	1	.0		

SM-Lateral-MH9N-INT.WSW

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T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5
T3 ATKINS / INTERIM CONDITIONS
SO 1337.8403633.630 4 3634.726
R 1379.0203643.730 2 .01 .000 0.000 1
SH 1379.0203643.730 2 3643.730
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 1.000 .0

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

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/ 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
1337.840	3633.630	1.096	3634.726	1.00	.57	.00	3634.73	.00	.34	1.99	2.000	.000	.00	1 .0
	.166	.2453				.0000	.00	1.10	.11	.12	.010	.00	.00	PIPE
1338.006	3633.671	1.055	3634.726	1.00	.59	.01	3634.73	.00	.34	2.00	2.000	.000	.00	1 .0
	.157	.2453				.0000	.00	1.06	.11	.12	.010	.00	.00	PIPE
1338.163	3633.709	1.016	3634.725	1.00	.62	.01	3634.73	.00	.34	2.00	2.000	.000	.00	1 .0
	.150	.2453				.0000	.00	1.02	.12	.12	.010	.00	.00	PIPE
1338.313	3633.746	.979	3634.724	1.00	.65	.01	3634.73	.00	.34	2.00	2.000	.000	.00	1 .0
	.142	.2453				.0001	.00	.98	.13	.12	.010	.00	.00	PIPE
1338.455	3633.781	.943	3634.724	1.00	.69	.01	3634.73	.00	.34	2.00	2.000	.000	.00	1 .0
	.136	.2453				.0001	.00	.94	.14	.12	.010	.00	.00	PIPE
1338.591	3633.814	.909	3634.723	1.00	.72	.01	3634.73	.00	.34	1.99	2.000	.000	.00	1 .0
	.129	.2453				.0001	.00	.91	.15	.12	.010	.00	.00	PIPE
1338.720	3633.846	.877	3634.722	1.00	.76	.01	3634.73	.00	.34	1.98	2.000	.000	.00	1 .0
	.123	.2453				.0001	.00	.88	.16	.12	.010	.00	.00	PIPE
1338.843	3633.876	.845	3634.721	1.00	.79	.01	3634.73	.00	.34	1.98	2.000	.000	.00	1 .0
	.118	.2453				.0001	.00	.85	.17	.12	.010	.00	.00	PIPE
1338.961	3633.905	.816	3634.720	1.00	.83	.01	3634.73	.00	.34	1.97	2.000	.000	.00	1 .0
	.072	.2453				.0001	.00	.82	.19	.12	.010	.00	.00	PIPE

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

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/ 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
1339.033	3633.923	.787	3634.709	1.00	.87	.01	3634.72	.00	.34	1.95	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1339.033	3633.923	.118	3634.041	1.00	13.28	2.74	3636.78	.00	.34	.94	2.000	.000	.00	1 .0
3.822	.2453					.2453	.94	.12	8.28	.12	.010	.00	.00	PIPE
1342.855	3634.860	.118	3634.978	1.00	13.28	2.74	3637.72	.00	.34	.94	2.000	.000	.00	1 .0
15.555	.2453					.2328	3.62	.12	8.28	.12	.010	.00	.00	PIPE
1358.410	3638.675	.121	3638.796	1.00	12.79	2.54	3641.34	.00	.34	.95	2.000	.000	.00	1 .0
5.827	.2453					.2063	1.20	.12	7.88	.12	.010	.00	.00	PIPE
1364.236	3640.104	.125	3640.229	1.00	12.20	2.31	3642.54	.00	.34	.97	2.000	.000	.00	1 .0
3.152	.2453					.1799	.57	.13	7.39	.12	.010	.00	.00	PIPE
1367.388	3640.877	.129	3641.007	1.00	11.63	2.10	3643.11	.00	.34	.98	2.000	.000	.00	1 .0
2.113	.2453					.1569	.33	.13	6.93	.12	.010	.00	.00	PIPE
1369.502	3641.396	.134	3641.529	1.00	11.09	1.91	3643.44	.00	.34	1.00	2.000	.000	.00	1 .0
1.560	.2453					.1368	.21	.13	6.50	.12	.010	.00	.00	PIPE
1371.062	3641.778	.138	3641.916	1.00	10.57	1.74	3643.65	.00	.34	1.01	2.000	.000	.00	1 .0
1.218	.2453					.1193	.15	.14	6.10	.12	.010	.00	.00	PIPE
1372.280	3642.077	.142	3642.219	1.00	10.08	1.58	3643.80	.00	.34	1.03	2.000	.000	.00	1 .0
.983	.2453					.1041	.10	.14	5.72	.12	.010	.00	.00	PIPE

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ I.D.	ZL	No Wth				
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch				
*****																	*****	
1373.263	3642.318	.147	3642.465	1.00	9.61	1.43	3643.90	.00	.34	1.04	2.000	.000	.00	1	.0			
	.813	.2453				.0908	.07	.15	5.37	.12	.010	.00	.00	PIPE				
1374.076	3642.517	.152	3642.669	1.00	9.17	1.30	3643.97	.00	.34	1.06	2.000	.000	.00	1	.0			
	.684	.2453				.0792	.05	.15	5.03	.12	.010	.00	.00	PIPE				
1374.760	3642.685	.157	3642.842	1.00	8.74	1.19	3644.03	.00	.34	1.08	2.000	.000	.00	1	.0			
	.583	.2453				.0690	.04	.16	4.72	.12	.010	.00	.00	PIPE				
1375.342	3642.828	.162	3642.990	1.00	8.33	1.08	3644.07	.00	.34	1.09	2.000	.000	.00	1	.0			
	.500	.2453				.0602	.03	.16	4.43	.12	.010	.00	.00	PIPE				
1375.843	3642.951	.167	3643.118	1.00	7.94	.98	3644.10	.00	.34	1.11	2.000	.000	.00	1	.0			
	.434	.2453				.0525	.02	.17	4.15	.12	.010	.00	.00	PIPE				
1376.277	3643.057	.173	3643.230	1.00	7.57	.89	3644.12	.00	.34	1.12	2.000	.000	.00	1	.0			
	.378	.2453				.0458	.02	.17	3.90	.12	.010	.00	.00	PIPE				
1376.654	3643.150	.179	3643.329	1.00	7.22	.81	3644.14	.00	.34	1.14	2.000	.000	.00	1	.0			
	.330	.2453				.0400	.01	.18	3.65	.12	.010	.00	.00	PIPE				
1376.985	3643.231	.184	3643.415	1.00	6.89	.74	3644.15	.00	.34	1.16	2.000	.000	.00	1	.0			
	.289	.2453				.0349	.01	.18	3.43	.12	.010	.00	.00	PIPE				
1377.274	3643.302	.191	3643.492	1.00	6.57	.67	3644.16	.00	.34	1.17	2.000	.000	.00	1	.0			
	.254	.2453				.0304	.01	.19	3.21	.12	.010	.00	.00	PIPE				

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

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/ 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
1377.528	3643.364	.197	3643.561	1.00	6.26	.61	3644.17	.00	.34	1.19	2.000	.000	.00	1 .0
.223	.2453					.0265	.01	.20	3.01	.12	.010	.00	.00	PIPE
1377.751	3643.419	.203	3643.622	1.00	5.97	.55	3644.18	.00	.34	1.21	2.000	.000	.00	1 .0
.196	.2453					.0232	.00	.20	2.83	.12	.010	.00	.00	PIPE
1377.947	3643.467	.210	3643.677	1.00	5.69	.50	3644.18	.00	.34	1.23	2.000	.000	.00	1 .0
.172	.2453					.0202	.00	.21	2.65	.12	.010	.00	.00	PIPE
1378.119	3643.509	.217	3643.726	1.00	5.43	.46	3644.18	.00	.34	1.24	2.000	.000	.00	1 .0
.151	.2453					.0176	.00	.22	2.48	.12	.010	.00	.00	PIPE
1378.271	3643.546	.224	3643.771	1.00	5.17	.42	3644.19	.00	.34	1.26	2.000	.000	.00	1 .0
.132	.2453					.0154	.00	.22	2.33	.12	.010	.00	.00	PIPE
1378.402	3643.579	.232	3643.810	1.00	4.93	.38	3644.19	.00	.34	1.28	2.000	.000	.00	1 .0
.115	.2453					.0134	.00	.23	2.18	.12	.010	.00	.00	PIPE
1378.518	3643.607	.239	3643.846	1.00	4.70	.34	3644.19	.00	.34	1.30	2.000	.000	.00	1 .0
.099	.2453					.0117	.00	.24	2.05	.12	.010	.00	.00	PIPE
1378.617	3643.631	.247	3643.879	1.00	4.48	.31	3644.19	.00	.34	1.32	2.000	.000	.00	1 .0
.086	.2453					.0102	.00	.25	1.92	.12	.010	.00	.00	PIPE
1378.703	3643.652	.255	3643.908	1.00	4.28	.28	3644.19	.00	.34	1.34	2.000	.000	.00	1 .0
.073	.2453					.0089	.00	.26	1.80	.12	.010	.00	.00	PIPE

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

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/ 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
1378.776	3643.670	.264	3643.934	1.00	4.08	.26	3644.19	.00	.34	1.35	2.000	.000	.00	1 .0
	.062	.2453				.0078	.00	.26	1.69	.12	.010	.00	.00	PIPE
1378.838	3643.686	.273	3643.958	1.00	3.89	.23	3644.19	.00	.34	1.37	2.000	.000	.00	1 .0
	.052	.2453				.0068	.00	.27	1.58	.12	.010	.00	.00	PIPE
1378.890	3643.698	.282	3643.980	1.00	3.71	.21	3644.19	.00	.34	1.39	2.000	.000	.00	1 .0
	.042	.2453				.0059	.00	.28	1.48	.12	.010	.00	.00	PIPE
1378.932	3643.708	.291	3644.000	1.00	3.53	.19	3644.19	.00	.34	1.41	2.000	.000	.00	1 .0
	.033	.2453				.0052	.00	.29	1.39	.12	.010	.00	.00	PIPE
1378.964	3643.717	.301	3644.018	1.00	3.37	.18	3644.19	.00	.34	1.43	2.000	.000	.00	1 .0
	.025	.2453				.0045	.00	.30	1.30	.12	.010	.00	.00	PIPE
1378.989	3643.723	.311	3644.033	1.00	3.21	.16	3644.19	.00	.34	1.45	2.000	.000	.00	1 .0
	.017	.2453				.0040	.00	.31	1.22	.12	.010	.00	.00	PIPE
1379.006	3643.727	.321	3644.048	1.00	3.06	.15	3644.19	.00	.34	1.47	2.000	.000	.00	1 .0
	.010	.2453				.0035	.00	.32	1.14	.12	.010	.00	.00	PIPE
1379.017	3643.729	.332	3644.061	1.00	2.92	.13	3644.19	.00	.34	1.49	2.000	.000	.00	1 .0
	.003	.2453				.0030	.00	.33	1.07	.12	.010	.00	.00	PIPE
1379.020	3643.730	.344	3644.074	1.00	2.77	.12	3644.19	.00	.34	1.51	2.000	.000	.00	1 .0

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T1 SUMMERLIN WEST VILLAGE 25
 T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#11 NORTH TO SDDI#7
 T3 ATKINS / INTERIM CONDITIONS
 SO 1773.1303662.840 4 .013 3665.141
 R 1817.6003663.370 4 .013 .000 0.000 1
 JX 1820.1003663.870 2 2 .013 1 3663.87 90.0 .000
 R 1822.6003663.870 2 .013
 R 1893.1003664.670 2 .013 .000 0.000 1
 SH 1893.1003664.670 2 3664.670
 CD 1 4 1 .000 4.000 .000 .000 .000 .00
 CD 2 4 1 .000 2.500 .000 .000 .000 .00
 CD 3 4 1 .000 3.500 .000 .000 .000 .00
 CD 4 4 1 .000 3.000 .000 .000 .000 .00
 Q 47.000 .0

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#11 NORTH TO SDDI#7

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ 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				
*****																	*****	
1773.130	3662.840	1.570	3664.411	47.00	12.55	2.45	3666.86	.00	2.23	3.00	3.000	.000	.00	1	.0			
	18.009	.0119				.0177	.32	1.57	1.98	1.75	.013	.00	.00	PIPE				
1791.139	3663.055	1.537	3664.592	47.00	12.90	2.58	3667.17	.00	2.23	3.00	3.000	.000	.00	1	.0			
	26.461	.0119				.0195	.52	1.54	2.06	1.75	.013	.00	.00	PIPE				
1817.600	3663.370	1.480	3664.850	47.00	13.53	2.84	3667.69	.00	2.23	3.00	3.000	.000	.00	1	.0			
JUNCT STR	.2000					.0162	.04	1.48	2.21		.013	.00	.00	PIPE				
1820.100	3663.870	2.257	3666.127	47.00	10.08	1.58	3667.70	.00	2.26	1.48	2.500	.000	.00	1	.0			
	1.547	.0000				.0114	.02	2.26	1.00	.00	.013	.00	.00	PIPE				
1821.646	3663.870	2.370	3666.240	47.00	9.77	1.48	3667.72	.00	2.26	1.11	2.500	.000	.00	1	.0			
	.953	.0000				.0114	.01	2.37	.83	.00	.013	.00	.00	PIPE				
1822.600	3663.870	2.400	3666.271	47.00	9.70	1.46	3667.73	.00	2.26	.98	2.500	.000	.00	1	.0			
	70.500	.0113				.0114	.81	2.40	.77	2.50	.013	.00	.00	PIPE				
1893.100	3664.670	2.400	3667.070	47.00	9.70	1.46	3668.53	.00	2.26	.98	2.500	.000	.00	1	.0			

SM-Lateral-MH11S-INT-UPDATED.WSW

0

T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#11 SOUTH TO SDDI#6
T3 ATKINS / INTERIM CONDITIONS
SO 1773.1303662.840 4 3665.141
R 1782.0303663.140 2 .013 .000 0.000 1
SH 1782.0303663.140 2 3663.140
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 1.000 .0

SM-LATERAL-MH11S-INT.OUT

FILE: SM-LATERAL-MH11S-INT.WSW

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#11 SOUTH TO SDDI#6

ATKINS / INTERIM CONDITIONS

```

*****
| 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
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
| | | | | | | | | | | | | | | |
1773.130 | 3662.840 | 2.553 | 3665.393 | 1.00 | .32 | .00 | 3665.39 | .00 | .34 | .00 | 2.000 | .000 | .00 | 1 | .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
8.900 | .0337 | | | | | .0000 | .00 | 2.55 | .00 | .21 | .013 | .00 | .00 | PIPE
| | | | | | | | | | | | | | | |
1782.030 | 3663.140 | 2.253 | 3665.393 | 1.00 | .32 | .00 | 3665.39 | .00 | .34 | .00 | 2.000 | .000 | .00 | 1 | .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-

```

SM-Lateral-MH12E-INT-UPDATE.WSW

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T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#12 WEST TO SDDI#10
T3 ATKINS / INTERIM CONDITIONS
SO 1145.7403627.190 4 3629.105
R 1193.8303627.430 2 .013 .000 0.000 1
SH 1193.8303627.430 2 3627.430
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 3.020 .0

```

SM-LATERAL-MH12E-INT-UPDATE.OUT

FILE: SM-LATERAL-MH12E-INT-UPDATE.WSW W S P G W - CIVILDESIGN Version 14.08
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WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:11:34:53

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#12 WEST TO SDDI#10

ATKINS / INTERIM CONDITIONS

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/ I.D.	ZL	No Wth	Prs/Pip		
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch			

1145.740	3627.190	1.915	3629.105	3.02	.98	.01	3629.12	.00	.61	.81	2.000	.000	.00	1	.0		
	28.002	.0050				.0002	.00	1.92	.09	.59	.013	.00	.00	PIPE			
1173.742	3627.330	1.778	3629.108	3.02	1.02	.02	3629.12	.00	.61	1.26	2.000	.000	.00	1	.0		
	20.088	.0050				.0002	.00	1.78	.12	.59	.013	.00	.00	PIPE			
1193.830	3627.430	1.680	3629.110	3.02	1.07	.02	3629.13	.00	.61	1.47	2.000	.000	.00	1	.0		

SM-Lateral-MH12W-INT-UPDATE.WSW

```

T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#12 EAST TO SDDI#9
T3 ATKINS / INTERIM CONDITIONS
SO 1145.7403627.190 4 3629.105
R 1165.9803627.690 4 .013 .000 0.000 1
JX 1170.9803627.890 2 2 .013 3.020 3627.89 90.0 .000
R 1198.5003631.090 2 .013 .000 0.000 1
SH 1198.5003631.090 2 3631.090
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 17.000 .0

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SM-LATERAL-MH12W-INT-UPDATE.OUT

FILE: SM-LATERAL-MH12W-INT-UPDATE.WSW W S P G W - CIVILDESIGN Version 14.08
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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#12 EAST TO SDDI#9

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ I.D.	ZL	No Wth Prs/Pip				
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch				
*****																	*****	
1145.740	3627.190	.839	3628.029	20.02	12.38	2.38	3630.41	.00	1.44	2.69	3.000	.000	.00	1	.0			
20.240	.0247					.0326	.66	.84	2.81	.89	.013	.00	.00	PIPE				
1165.980	3627.690	.817	3628.507	20.02	12.85	2.56	3631.07	.00	1.44	2.67	3.000	.000	.00	1	.0			
JUNCT STR	.0400					.0462	.23	.82	2.96		.013	.00	.00	PIPE				
1170.980	3627.890	.767	3628.656	17.00	15.34	3.65	3632.31	.00	1.49	1.94	2.000	.000	.00	1	.0			
.441	.1163					.0578	.03	.77	3.58	.64	.013	.00	.00	PIPE				
1171.421	3627.941	.769	3628.710	17.00	15.28	3.63	3632.33	.00	1.49	1.95	2.000	.000	.00	1	.0			
4.847	.1163					.0540	.26	.77	3.56	.64	.013	.00	.00	PIPE				
1176.268	3628.505	.797	3629.301	17.00	14.57	3.30	3632.60	.00	1.49	1.96	2.000	.000	.00	1	.0			
3.929	.1163					.0474	.19	.80	3.33	.64	.013	.00	.00	PIPE				
1180.197	3628.962	.826	3629.787	17.00	13.89	3.00	3632.78	.00	1.49	1.97	2.000	.000	.00	1	.0			
3.244	.1163					.0416	.14	.83	3.11	.64	.013	.00	.00	PIPE				
1183.441	3629.339	.856	3630.195	17.00	13.24	2.72	3632.92	.00	1.49	1.98	2.000	.000	.00	1	.0			
2.710	.1163					.0366	.10	.86	2.90	.64	.013	.00	.00	PIPE				
1186.151	3629.654	.887	3630.542	17.00	12.63	2.48	3633.02	.00	1.49	1.99	2.000	.000	.00	1	.0			
2.283	.1163					.0321	.07	.89	2.70	.64	.013	.00	.00	PIPE				
1188.433	3629.919	.920	3630.840	17.00	12.04	2.25	3633.09	.00	1.49	1.99	2.000	.000	.00	1	.0			
1.932	.1163					.0283	.05	.92	2.52	.64	.013	.00	.00	PIPE				

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#12 EAST TO SDDI#9

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ 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				
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****		
1190.365	3630.144	.955	3631.099	17.00	11.48	2.05	3633.15	.00	1.49	2.00	2.000	.000	.00	1	.0			
	1.640	.1163				.0249	.04	.96	2.35	.64	.013	.00	.00	PIPE				
1192.005	3630.335	.991	3631.326	17.00	10.95	1.86	3633.19	.00	1.49	2.00	2.000	.000	.00	1	.0			
	1.390	.1163				.0219	.03	.99	2.19	.64	.013	.00	.00	PIPE				
1193.395	3630.496	1.029	3631.525	17.00	10.44	1.69	3633.22	.00	1.49	2.00	2.000	.000	.00	1	.0			
	1.175	.1163				.0193	.02	1.03	2.04	.64	.013	.00	.00	PIPE				
1194.570	3630.633	1.069	3631.702	17.00	9.95	1.54	3633.24	.00	1.49	2.00	2.000	.000	.00	1	.0			
	.986	.1163				.0170	.02	1.07	1.90	.64	.013	.00	.00	PIPE				
1195.556	3630.748	1.111	3631.858	17.00	9.49	1.40	3633.26	.00	1.49	1.99	2.000	.000	.00	1	.0			
	.819	.1163				.0150	.01	1.11	1.76	.64	.013	.00	.00	PIPE				
1196.375	3630.843	1.155	3631.998	17.00	9.05	1.27	3633.27	.00	1.49	1.98	2.000	.000	.00	1	.0			
	.669	.1163				.0133	.01	1.15	1.63	.64	.013	.00	.00	PIPE				
1197.044	3630.921	1.201	3632.122	17.00	8.63	1.16	3633.28	.00	1.49	1.96	2.000	.000	.00	1	.0			
	.532	.1163				.0118	.01	1.20	1.52	.64	.013	.00	.00	PIPE				
1197.576	3630.983	1.251	3632.233	17.00	8.22	1.05	3633.28	.00	1.49	1.94	2.000	.000	.00	1	.0			
	.406	.1163				.0104	.00	1.25	1.40	.64	.013	.00	.00	PIPE				
1197.982	3631.030	1.303	3632.333	17.00	7.84	.95	3633.29	.00	1.49	1.91	2.000	.000	.00	1	.0			
	.287	.1163				.0093	.00	1.30	1.30	.64	.013	.00	.00	PIPE				

SM-LATERAL-MH12W-INT-UPDATE.OUT

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WATER SURFACE PROFILE LISTING

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#12 EAST TO SDDI#9

ATKINS / INTERIM CONDITIONS

```

*****
| 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
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
| | | | | | | | | | | | | | | |
1198.269 3631.063 1.359 3632.423 17.00 7.48 .87 3633.29 .00 1.49 1.87 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
.172 .1163 .0082 .00 1.36 1.19 .64 .013 .00 .00 PIPE
| | | | | | | | | | | | | | | |
1198.441 3631.083 1.420 3632.503 17.00 7.13 .79 3633.29 .00 1.49 1.82 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
.059 .1163 .0074 .00 1.42 1.10 .64 .013 .00 .00 PIPE
| | | | | | | | | | | | | | | |
1198.500 3631.090 1.486 3632.576 17.00 6.79 .72 3633.29 .00 1.49 1.75 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-

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B.3 Ultimate Condition WSPG-W Model

SM-ULTIMATE-UPDATE.WSW

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T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)
T3 ATKINS / ULTIMATE CONDITIONS - UPDATE
SO      0.0003557.530  1      3560.390
R      166.9803564.340  1      .013      .000      .000  0
JX      169.4803564.440  1  2  2.013      3.040      2.4703565.94  3566.54  88.7-76.2      .000
REM  LATERALS FROM SDDI#1 AND SDDI#2
R      171.9803564.550  1      .013      .000  -4.912  1
REM      SDMH#2
R      235.4303567.500  1      .013      .000      .000  0
R      240.4303567.700  1      .013      .000  -3.24  1
REM      SDMH#3
R      554.1703583.430  1      .013      .000      .000  0
R      559.1703583.630  1      .013      .000      4.74  1
REM      SDMH#3A
R      603.4103585.060  1      .013      .000      .000  0
R      608.4103585.160  1      .013      .000      8.330  1
REM      SDMH#4
R      659.5803588.680  1      .013      .000      .000  0
R      664.5803588.880  1      .013      .000  -1.237  1
REM      SDMH#5
R      784.5503600.190  1      .013      .000      .000  0
R      789.5503600.390  1      .013      .000      .000  1
REM      SDMH#6
R      1053.6803625.880  1      .013      .000      .000  0
JX      1056.1803626.130  4  3  .013      63.000      3626.38      -90.1      .000
REM  LATERAL TO GRAND PARK
R      1058.6803626.380  4      .013      .000  -.187  1
REM      SDMH#7
R      1221.7703631.090  4      .013      .000      .000  0
JX      1224.2703631.190  4  2  .013      1.000      3631.29      -89.8      .000
REM  LATERAL FROM SDDI#3
R      1226.7703631.290  4      .013      .000  -.188  1
REM      SDMH#8
R      1332.8403633.430  4      .013      .000      .000
JX      1335.3403633.530  4  2  .013      1.000      3643.73      90.0      .000
REM  LATERAL FROM SDDI#5
R      1337.8403633.630  4      .013      .000  -.008  1
REM      SDMH#9
R      1632.4803653.970  4      .013      .000      .000  0
R      1637.4803654.170  4      .013      .000      .241  1
REM      SDMH#10
R      1768.1303662.640  4      .013      .000      .000  0
R      1773.1303662.840  4      .013      .000      .000  0
REM      SDMH#11
SH      1773.1303662.840  4      3662.63
CD      1  4  1      .000      4.000      .000      .000      .000      .00
CD      2  4  1      .000      2.000      .000      .000      .000      .00
CD      3  4  1      .000      3.500      .000      .000      .000      .00
CD      4  4  1      .000      3.000      .000      .000      .000      .00
Q      70.000      .0

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SM-ULTIMATE-UPDATE.OUT

FILE: SM-ULTIMATE-UPDATE.WSW

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WATER SURFACE PROFILE LISTING

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / ULTIMATE CONDITIONS - UPDATE

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/ 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
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
.000	3557.530	1.961	3559.491	140.51	22.94	8.17	3567.66	.00	3.52	4.00	4.000	.000	.00	1 .0
166.980	.0408					.0413	6.89	1.96	3.27	1.96	.013	.00	.00	PIPE
166.980	3564.340	1.952	3566.292	140.51	23.06	8.26	3574.55	.00	3.52	4.00	4.000	.000	.00	1 .0
JUNCT STR	.0399					.0451	.11	1.95	3.29		.013	.00	.00	PIPE
169.480	3564.440	1.824	3566.264	135.00	24.19	9.09	3575.35	.00	3.46	3.98	4.000	.000	.00	1 .0
2.500	.0440					.0486	.12	1.82	3.60	1.88	.013	.00	.00	PIPE
171.980	3564.550	1.823	3566.373	135.00	24.21	9.10	3575.48	.00	3.46	3.98	4.000	.000	.00	1 .0
63.450	.0465					.0494	3.14	1.82	3.61	1.85	.013	.00	.00	PIPE
235.430	3567.500	1.807	3569.307	135.00	24.48	9.31	3578.61	.00	3.46	3.98	4.000	.000	.00	1 .0
5.000	.0400					.0504	.25	1.81	3.67	1.93	.013	.00	.00	PIPE
240.430	3567.700	1.803	3569.503	135.00	24.56	9.36	3578.87	.00	3.46	3.98	4.000	.000	.00	1 .0
211.500	.0501					.0530	11.22	1.80	3.68	1.81	.013	.00	.00	PIPE
451.930	3578.304	1.757	3580.061	135.00	25.41	10.03	3590.09	.00	3.46	3.97	4.000	.000	.00	1 .0
102.240	.0501					.0593	6.07	1.76	3.87	1.81	.013	.00	.00	PIPE
554.170	3583.430	1.694	3585.124	135.00	26.65	11.03	3596.15	.00	3.46	3.95	4.000	.000	.00	1 .0
5.000	.0400					.0637	.32	1.69	4.15	1.93	.013	.00	.00	PIPE
559.170	3583.630	1.687	3585.317	135.00	26.80	11.16	3596.47	.00	3.46	3.95	4.000	.000	.00	1 .0
17.341	.0323					.0667	1.16	1.69	4.18	2.05	.013	.00	.00	PIPE

SM-ULTIMATE-UPDATE.OUT

FILE: SM-ULTIMATE-UPDATE.WSW

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SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / ULTIMATE CONDITIONS - UPDATE

```

*****
| 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 |
*****
576.510 | 3584.190 | 1.652 | 3585.843 | 135.00 | 27.56 | 11.79 | 3597.63 | .00 | 3.46 | 3.94 | 4.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
26.899 | .0323 | | | | | .0740 | 1.99 | 1.65 | 4.35 | 2.05 | .013 | .00 | .00 | PIPE
603.410 | 3585.060 | 1.594 | 3586.654 | 135.00 | 28.90 | 12.97 | 3599.62 | .00 | 3.46 | 3.92 | 4.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
5.000 | .0200 | | | | | .0802 | .40 | 1.59 | 4.66 | 2.38 | .013 | .00 | .00 | PIPE
608.410 | 3585.160 | 1.580 | 3586.740 | 135.00 | 29.26 | 13.29 | 3600.03 | .00 | 3.46 | 3.91 | 4.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
51.170 | .0688 | | | | | .0853 | 4.36 | 1.58 | 4.75 | 1.65 | .013 | .00 | .00 | PIPE
659.580 | 3588.680 | 1.542 | 3590.222 | 135.00 | 30.21 | 14.17 | 3604.39 | .00 | 3.46 | 3.89 | 4.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
5.000 | .0400 | | | | | .0902 | .45 | 1.54 | 4.97 | 1.93 | .013 | .00 | .00 | PIPE
664.580 | 3588.880 | 1.532 | 3590.412 | 135.00 | 30.49 | 14.44 | 3604.85 | .00 | 3.46 | 3.89 | 4.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
119.970 | .0943 | | | | | .0880 | 10.55 | 1.53 | 5.04 | 1.52 | .013 | .00 | .00 | PIPE
784.550 | 3600.190 | 1.564 | 3601.754 | 135.00 | 29.66 | 13.66 | 3615.41 | .00 | 3.46 | 3.90 | 4.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
5.000 | .0400 | | | | | .0856 | .43 | 1.56 | 4.84 | 1.93 | .013 | .00 | .00 | PIPE
789.550 | 3600.390 | 1.554 | 3601.943 | 135.00 | 29.92 | 13.90 | 3615.84 | .00 | 3.46 | 3.90 | 4.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
65.399 | .0965 | | | | | .0827 | 5.41 | 1.55 | 4.90 | 1.51 | .013 | .00 | .00 | PIPE
854.949 | 3606.701 | 1.595 | 3608.296 | 135.00 | 28.89 | 12.96 | 3621.25 | .00 | 3.46 | 3.92 | 4.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
49.581 | .0965 | | | | | .0739 | 3.66 | 1.59 | 4.66 | 1.51 | .013 | .00 | .00 | PIPE
904.530 | 3611.486 | 1.653 | 3613.139 | 135.00 | 27.54 | 11.78 | 3624.92 | .00 | 3.46 | 3.94 | 4.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
31.964 | .0965 | | | | | .0649 | 2.07 | 1.65 | 4.35 | 1.51 | .013 | .00 | .00 | PIPE

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SM-ULTIMATE-UPDATE.OUT

FILE: SM-ULTIMATE-UPDATE.WSW

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:10:25:19

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / ULTIMATE CONDITIONS - UPDATE

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/ 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
936.494	3614.571	1.713	3616.284	135.00	26.26	10.71	3626.99	.00	3.46	3.96	4.000	.000	.00	1 .0
23.046	.0965					.0570	1.31	1.71	4.06	1.51	.013	.00	.00	PIPE
959.539	3616.795	1.777	3618.571	135.00	25.04	9.74	3628.31	.00	3.46	3.97	4.000	.000	.00	1 .0
17.650	.0965					.0501	.88	1.78	3.79	1.51	.013	.00	.00	PIPE
977.190	3618.498	1.843	3620.341	135.00	23.87	8.85	3629.19	.00	3.46	3.99	4.000	.000	.00	1 .0
14.021	.0965					.0441	.62	1.84	3.53	1.51	.013	.00	.00	PIPE
991.211	3619.851	1.912	3621.763	135.00	22.76	8.05	3629.81	.00	3.46	4.00	4.000	.000	.00	1 .0
11.414	.0965					.0388	.44	1.91	3.29	1.51	.013	.00	.00	PIPE
1002.625	3620.953	1.984	3622.937	135.00	21.70	7.31	3630.25	.00	3.46	4.00	4.000	.000	.00	1 .0
9.444	.0965					.0341	.32	1.98	3.07	1.51	.013	.00	.00	PIPE
1012.070	3621.864	2.060	3623.924	135.00	20.69	6.65	3630.57	.00	3.46	4.00	4.000	.000	.00	1 .0
7.901	.0965					.0301	.24	2.06	2.85	1.51	.013	.00	.00	PIPE
1019.970	3622.626	2.140	3624.766	135.00	19.73	6.05	3630.81	.00	3.46	3.99	4.000	.000	.00	1 .0
6.656	.0965					.0265	.18	2.14	2.66	1.51	.013	.00	.00	PIPE
1026.626	3623.269	2.224	3625.492	135.00	18.81	5.50	3630.99	.00	3.46	3.97	4.000	.000	.00	1 .0
5.626	.0965					.0234	.13	2.22	2.47	1.51	.013	.00	.00	PIPE
1032.253	3623.812	2.312	3626.124	135.00	17.94	5.00	3631.12	.00	3.46	3.95	4.000	.000	.00	1 .0
4.760	.0965					.0207	.10	2.31	2.29	1.51	.013	.00	.00	PIPE

SM-ULTIMATE-UPDATE.OUT

FILE: SM-ULTIMATE-UPDATE.WSW

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:10:25:19

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / ULTIMATE CONDITIONS - UPDATE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Width	Top Height/ Dia.-FT	Base Wt/ 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
1037.012	3624.271	2.405	3626.677	135.00	17.10	4.54	3631.22	.00	3.46	3.92	4.000	.000	.00	1 .0
	4.016	.0965				.0183	.07	2.41	2.12	1.51	.013	.00	.00	PIPE
1041.028	3624.659	2.504	3627.163	135.00	16.31	4.13	3631.29	.00	3.46	3.87	4.000	.000	.00	1 .0
	3.366	.0965				.0162	.05	2.50	1.96	1.51	.013	.00	.00	PIPE
1044.394	3624.984	2.610	3627.593	135.00	15.55	3.75	3631.35	.00	3.46	3.81	4.000	.000	.00	1 .0
	2.788	.0965				.0144	.04	2.61	1.81	1.51	.013	.00	.00	PIPE
1047.183	3625.253	2.722	3627.975	135.00	14.82	3.41	3631.39	.00	3.46	3.73	4.000	.000	.00	1 .0
	2.265	.0965				.0129	.03	2.72	1.67	1.51	.013	.00	.00	PIPE
1049.448	3625.471	2.843	3628.314	135.00	14.13	3.10	3631.42	.00	3.46	3.63	4.000	.000	.00	1 .0
	1.777	.0965				.0115	.02	2.84	1.54	1.51	.013	.00	.00	PIPE
1051.225	3625.643	2.974	3628.616	135.00	13.48	2.82	3631.44	.00	3.46	3.49	4.000	.000	.00	1 .0
	1.311	.0965				.0103	.01	2.97	1.40	1.51	.013	.00	.00	PIPE
1052.536	3625.769	3.117	3628.886	135.00	12.85	2.56	3631.45	.00	3.46	3.32	4.000	.000	.00	1 .0
	.837	.0965				.0093	.01	3.12	1.27	1.51	.013	.00	.00	PIPE
1053.372	3625.850	3.277	3629.127	135.00	12.25	2.33	3631.46	.00	3.46	3.08	4.000	.000	.00	1 .0
	.308	.0965				.0085	.00	3.28	1.14	1.51	.013	.00	.00	PIPE
1053.680	3625.880	3.463	3629.343	135.00	11.68	2.12	3631.46	.00	3.46	2.73	4.000	.000	.00	1 .0
JUNCT STR	.1000					.0099	.02	3.46	1.00		.013	.00	.00	PIPE

SM-ULTIMATE-UPDATE.OUT

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WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:10:25:19

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / ULTIMATE CONDITIONS - UPDATE

*****															*****	
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/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		
*****															*****	
1056.180	3626.130	6.049	3632.179	72.00	10.19	1.61	3633.79	.00	2.68	.00	3.000	.000	.00	1 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2.500	.1000					.0117	.03	6.05	.00	1.21	.013	.00	.00	PIPE		
1058.680	3626.380	5.910	3632.289	72.00	10.19	1.61	3633.90	.00	2.68	.00	3.000	.000	.00	1 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
97.178	.0289					.0117	1.13	5.91	.00	1.74	.013	.00	.00	PIPE		
1155.858	3629.187	4.235	3633.422	72.00	10.19	1.61	3635.03	.00	2.68	.00	3.000	.000	.00	1 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
HYDRAULIC JUMP																
1155.858	3629.187	1.690	3630.876	72.00	17.55	4.78	3635.66	.00	2.68	2.98	3.000	.000	.00	1 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
65.912	.0289					.0320	2.11	1.69	2.63	1.74	.013	.00	.00	PIPE		
1221.770	3631.090	1.672	3632.762	72.00	17.78	4.91	3637.67	.00	2.68	2.98	3.000	.000	.00	1 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
JUNCT STR	.0399					.0334	.08	1.67	2.69		.013	.00	.00	PIPE		
1224.270	3631.190	1.632	3632.822	71.00	18.07	5.07	3637.89	.00	2.67	2.99	3.000	.000	.00	1 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2.500	.0400					.0342	.09	1.63	2.78	1.56	.013	.00	.00	PIPE		
1226.770	3631.290	1.633	3632.923	71.00	18.05	5.06	3637.98	.00	2.67	2.99	3.000	.000	.00	1 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
25.077	.0202					.0362	.91	1.63	2.77	1.94	.013	.00	.00	PIPE		
1251.847	3631.796	1.577	3633.373	71.00	18.85	5.52	3638.89	.00	2.67	3.00	3.000	.000	.00	1 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
23.855	.0202					.0409	.97	1.58	2.96	1.94	.013	.00	.00	PIPE		
1275.702	3632.277	1.519	3633.796	71.00	19.77	6.07	3639.87	.00	2.67	3.00	3.000	.000	.00	1 .0		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
21.031	.0202					.0464	.98	1.52	3.18	1.94	.013	.00	.00	PIPE		

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WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:10:25:19

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / ULTIMATE CONDITIONS - UPDATE

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth
         | Elev   | (FT)  | Elev  | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
L/Elem | Ch Slope | | | | | | | | | | | | | | |
***** |*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|
1296.733 | 3632.701 | 1.463 | 3634.165 | 71.00 | 20.73 | 6.68 | 3640.84 | .00 | 2.67 | 3.00 | 3.000 | .000 | .00 | 1 | .0
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
18.899 | .0202 | | | | | | | | | | | | | | |
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1315.632 | 3633.083 | 1.410 | 3634.493 | 71.00 | 21.75 | 7.34 | 3641.84 | .00 | 2.67 | 2.99 | 3.000 | .000 | .00 | 1 | .0
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
17.208 | .0202 | | | | | | | | | | | | | | |
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1332.840 | 3633.430 | 1.359 | 3634.789 | 71.00 | 22.81 | 8.08 | 3642.87 | .00 | 2.67 | 2.99 | 3.000 | .000 | .00 | 1 | .0
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR | .0400 | | | | | | | | | | | | | | |
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1335.340 | 3633.530 | 1.324 | 3634.854 | 70.00 | 23.27 | 8.41 | 3643.26 | .00 | 2.66 | 2.98 | 3.000 | .000 | .00 | 1 | .0
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
2.500 | .0399 | | | | | | | | | | | | | | |
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1337.840 | 3633.630 | 1.320 | 3634.949 | 70.00 | 23.38 | 8.49 | 3643.44 | .00 | 2.66 | 2.98 | 3.000 | .000 | .00 | 1 | .0
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
152.948 | .0690 | | | | | | | | | | | | | | |
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1490.788 | 3644.188 | 1.336 | 3645.524 | 70.00 | 23.01 | 8.22 | 3653.75 | .00 | 2.66 | 2.98 | 3.000 | .000 | .00 | 1 | .0
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
98.571 | .0690 | | | | | | | | | | | | | | |
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1589.359 | 3650.993 | 1.385 | 3652.378 | 70.00 | 21.94 | 7.47 | 3659.85 | .00 | 2.66 | 2.99 | 3.000 | .000 | .00 | 1 | .0
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
43.121 | .0690 | | | | | | | | | | | | | | |
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1632.480 | 3653.970 | 1.437 | 3655.407 | 70.00 | 20.92 | 6.79 | 3662.20 | .00 | 2.66 | 3.00 | 3.000 | .000 | .00 | 1 | .0
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
5.000 | .0400 | | | | | | | | | | | | | | |
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1637.480 | 3654.170 | 1.432 | 3655.602 | 70.00 | 21.02 | 6.86 | 3662.46 | .00 | 2.66 | 3.00 | 3.000 | .000 | .00 | 1 | .0
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
30.089 | .0648 | | | | | | | | | | | | | | |
         |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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SM-ULTIMATE-UPDATE.OUT

FILE: SM-ULTIMATE-UPDATE.WSW

W S P G W - CIVILDESIGN Version 14.08

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:10:25:19

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / ULTIMATE CONDITIONS - UPDATE

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*****
| 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 |
*****
1667.569 | 3656.121 | 1.477 | 3657.598 | 70.00 | 20.20 | 6.34 | 3663.94 | .00 | 2.66 | 3.00 | 3.000 | .000 | .00 | 1 | .0 |
| 24.572 | .0648 | | | | | .0437 | 1.07 | 1.48 | 3.31 | 1.34 | .013 | .00 | .00 | PIPE |
1692.142 | 3657.714 | 1.533 | 3659.247 | 70.00 | 19.26 | 5.76 | 3665.01 | .00 | 2.66 | 3.00 | 3.000 | .000 | .00 | 1 | .0 |
| 17.633 | .0648 | | | | | .0385 | .68 | 1.53 | 3.08 | 1.34 | .013 | .00 | .00 | PIPE |
1709.774 | 3658.857 | 1.592 | 3660.449 | 70.00 | 18.37 | 5.24 | 3665.69 | .00 | 2.66 | 2.99 | 3.000 | .000 | .00 | 1 | .0 |
| 13.399 | .0648 | | | | | .0339 | .45 | 1.59 | 2.87 | 1.34 | .013 | .00 | .00 | PIPE |
1723.173 | 3659.726 | 1.655 | 3661.380 | 70.00 | 17.51 | 4.76 | 3666.14 | .00 | 2.66 | 2.98 | 3.000 | .000 | .00 | 1 | .0 |
| 10.531 | .0648 | | | | | .0300 | .32 | 1.65 | 2.67 | 1.34 | .013 | .00 | .00 | PIPE |
1733.704 | 3660.408 | 1.720 | 3662.128 | 70.00 | 16.70 | 4.33 | 3666.46 | .00 | 2.66 | 2.97 | 3.000 | .000 | .00 | 1 | .0 |
| 8.454 | .0648 | | | | | .0265 | .22 | 1.72 | 2.48 | 1.34 | .013 | .00 | .00 | PIPE |
1742.158 | 3660.956 | 1.789 | 3662.746 | 70.00 | 15.92 | 3.94 | 3666.68 | .00 | 2.66 | 2.94 | 3.000 | .000 | .00 | 1 | .0 |
| 6.869 | .0648 | | | | | .0234 | .16 | 1.79 | 2.30 | 1.34 | .013 | .00 | .00 | PIPE |
1749.027 | 3661.402 | 1.863 | 3663.264 | 70.00 | 15.18 | 3.58 | 3666.84 | .00 | 2.66 | 2.91 | 3.000 | .000 | .00 | 1 | .0 |
| 5.612 | .0648 | | | | | .0208 | .12 | 1.86 | 2.13 | 1.34 | .013 | .00 | .00 | PIPE |
1754.639 | 3661.765 | 1.941 | 3663.706 | 70.00 | 14.47 | 3.25 | 3666.96 | .00 | 2.66 | 2.87 | 3.000 | .000 | .00 | 1 | .0 |
| 4.581 | .0648 | | | | | .0184 | .08 | 1.94 | 1.96 | 1.34 | .013 | .00 | .00 | PIPE |
1759.220 | 3662.062 | 2.024 | 3664.086 | 70.00 | 13.80 | 2.96 | 3667.04 | .00 | 2.66 | 2.81 | 3.000 | .000 | .00 | 1 | .0 |
| 3.708 | .0648 | | | | | .0164 | .06 | 2.02 | 1.81 | 1.34 | .013 | .00 | .00 | PIPE |

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SM-ULTIMATE-UPDATE.OUT

FILE: SM-ULTIMATE-UPDATE.WSW

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WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:10:25:19

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (K)

ATKINS / ULTIMATE CONDITIONS - UPDATE

*****																	*****	
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/ 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				
*****																	*****	
1762.928	3662.303	2.113	3664.416	70.00	13.16	2.69	3667.10	.00	2.66	2.74	3.000	.000	.00	1	.0			
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
2.946	.0648					.0146	.04	2.11	1.66	1.34	.013	.00	.00	PIPE				
1765.874	3662.494	2.209	3664.703	70.00	12.54	2.44	3667.15	.00	2.66	2.64	3.000	.000	.00	1	.0			
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
2.256	.0648					.0131	.03	2.21	1.52	1.34	.013	.00	.00	PIPE				
1768.130	3662.640	2.315	3664.955	70.00	11.96	2.22	3667.18	.00	2.66	2.52	3.000	.000	.00	1	.0			
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
1.922	.0400					.0121	.02	2.31	1.38	1.54	.013	.00	.00	PIPE				
1770.052	3662.717	2.382	3665.099	70.00	11.63	2.10	3667.20	.00	2.66	2.43	3.000	.000	.00	1	.0			
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
2.243	.0400					.0112	.03	2.38	1.30	1.54	.013	.00	.00	PIPE				
1772.295	3662.807	2.508	3665.315	70.00	11.09	1.91	3667.22	.00	2.66	2.22	3.000	.000	.00	1	.0			
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
.835	.0400					.0102	.01	2.51	1.16	1.54	.013	.00	.00	PIPE				
1773.130	3662.840	2.658	3665.498	70.00	10.57	1.73	3667.23	.00	2.66	1.91	3.000	.000	.00	1	.0			
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			

SM-Lateral-MH2N-ULT.WSW

0

T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 NORTH TO SDDI#2
T3 ATKINS / INTERIM CONDITIONS
SO 171.9803564.550 1 3566.373
R 214.0303567.950 2 .01 .000 0.000 1
REM LATERAL FROM SDDI#2
SH 214.0303567.950 2 3567.95
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 3.040 .0

SM-LATERAL-MH2N-ULT.OUT

FILE: SM-LATERAL-MH2N-ULT.WSW

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:12: 1:13

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 NORTH TO SDDI#2

ATKINS / INTERIM CONDITIONS

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/ 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
171.980	3564.550	1.823	3566.373	3.04	1.01	.02	3566.39	.00	.61	1.14	2.000	.000	.00	1 .0
1.337	.0809					.0001	.00	1.82	.11	.26	.010	.00	.00	PIPE
173.317	3564.658	1.713	3566.372	3.04	1.06	.02	3566.39	.00	.61	1.40	2.000	.000	.00	1 .0
1.090	.0809					.0001	.00	1.71	.13	.26	.010	.00	.00	PIPE
174.408	3564.746	1.624	3566.370	3.04	1.11	.02	3566.39	.00	.61	1.56	2.000	.000	.00	1 .0
.946	.0809					.0001	.00	1.62	.15	.26	.010	.00	.00	PIPE
175.354	3564.823	1.545	3566.368	3.04	1.17	.02	3566.39	.00	.61	1.68	2.000	.000	.00	1 .0
.847	.0809					.0001	.00	1.55	.17	.26	.010	.00	.00	PIPE
176.201	3564.891	1.475	3566.366	3.04	1.22	.02	3566.39	.00	.61	1.76	2.000	.000	.00	1 .0
.770	.0809					.0001	.00	1.47	.18	.26	.010	.00	.00	PIPE
176.971	3564.954	1.410	3566.364	3.04	1.28	.03	3566.39	.00	.61	1.82	2.000	.000	.00	1 .0
.707	.0809					.0002	.00	1.41	.20	.26	.010	.00	.00	PIPE
177.678	3565.011	1.351	3566.362	3.04	1.35	.03	3566.39	.00	.61	1.87	2.000	.000	.00	1 .0
.653	.0809					.0002	.00	1.35	.22	.26	.010	.00	.00	PIPE
178.331	3565.063	1.295	3566.359	3.04	1.41	.03	3566.39	.00	.61	1.91	2.000	.000	.00	1 .0
.606	.0809					.0002	.00	1.30	.23	.26	.010	.00	.00	PIPE
178.937	3565.113	1.243	3566.356	3.04	1.48	.03	3566.39	.00	.61	1.94	2.000	.000	.00	1 .0
.565	.0809					.0002	.00	1.24	.25	.26	.010	.00	.00	PIPE

SM-LATERAL-MH2N-ULT.OUT

FILE: SM-LATERAL-MH2N-ULT.WSW

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:12: 1:13

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 NORTH TO SDDI#2

ATKINS / INTERIM CONDITIONS

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/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		
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****		
179.503	3565.158	1.194	3566.352	3.04	1.55	.04	3566.39	.00	.61	1.96	2.000	.000	.00	1	.0	
	.308	.0809				.0003	.00	1.19	.27	.26	.010	.00	.00	PIPE		
179.811	3565.183	1.148	3566.331	3.04	1.63	.04	3566.37	.00	.61	1.98	2.000	.000	.00	1	.0	
HYDRAULIC JUMP																
179.811	3565.183	.273	3565.456	3.04	11.83	2.17	3567.63	.00	.61	1.37	2.000	.000	.00	1	.0	
	2.775	.0809				.0630	.17	.27	4.82	.26	.010	.00	.00	PIPE		
182.586	3565.407	.282	3565.689	3.04	11.28	1.97	3567.66	.00	.61	1.39	2.000	.000	.00	1	.0	
	6.585	.0809				.0550	.36	.28	4.51	.26	.010	.00	.00	PIPE		
189.171	3565.940	.291	3566.231	3.04	10.75	1.80	3568.03	.00	.61	1.41	2.000	.000	.00	1	.0	
	4.677	.0809				.0480	.22	.29	4.23	.26	.010	.00	.00	PIPE		
193.848	3566.318	.301	3566.619	3.04	10.25	1.63	3568.25	.00	.61	1.43	2.000	.000	.00	1	.0	
	3.555	.0809				.0419	.15	.30	3.97	.26	.010	.00	.00	PIPE		
197.404	3566.605	.311	3566.916	3.04	9.77	1.48	3568.40	.00	.61	1.45	2.000	.000	.00	1	.0	
	2.814	.0809				.0366	.10	.31	3.72	.26	.010	.00	.00	PIPE		
200.217	3566.833	.321	3567.154	3.04	9.32	1.35	3568.50	.00	.61	1.47	2.000	.000	.00	1	.0	
	2.288	.0809				.0320	.07	.32	3.48	.26	.010	.00	.00	PIPE		
202.505	3567.018	.332	3567.350	3.04	8.89	1.23	3568.58	.00	.61	1.49	2.000	.000	.00	1	.0	
	1.896	.0809				.0279	.05	.33	3.27	.26	.010	.00	.00	PIPE		

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WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:12: 1:13

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 NORTH TO SDDI#2

ATKINS / INTERIM CONDITIONS

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*****
| 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 |
*****
204.401 | 3567.171 | .343 | 3567.514 | 3.04 | 8.47 | 1.11 | 3568.63 | .00 | .61 | 1.51 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | |
1.589 | .0809 | | | | | .0244 | .04 | .34 | 3.06 | .26 | .010 | .00 | .00 | PIPE |
205.990 | 3567.300 | .355 | 3567.654 | 3.04 | 8.08 | 1.01 | 3568.67 | .00 | .61 | 1.53 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | |
1.347 | .0809 | | | | | .0213 | .03 | .35 | 2.87 | .26 | .010 | .00 | .00 | PIPE |
207.338 | 3567.409 | .367 | 3567.775 | 3.04 | 7.70 | .92 | 3568.70 | .00 | .61 | 1.55 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | |
1.146 | .0809 | | | | | .0186 | .02 | .37 | 2.69 | .26 | .010 | .00 | .00 | PIPE |
208.484 | 3567.501 | .379 | 3567.880 | 3.04 | 7.34 | .84 | 3568.72 | .00 | .61 | 1.57 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | |
.981 | .0809 | | | | | .0163 | .02 | .38 | 2.52 | .26 | .010 | .00 | .00 | PIPE |
209.464 | 3567.581 | .392 | 3567.972 | 3.04 | 7.00 | .76 | 3568.73 | .00 | .61 | 1.59 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | |
.839 | .0809 | | | | | .0142 | .01 | .39 | 2.36 | .26 | .010 | .00 | .00 | PIPE |
210.303 | 3567.649 | .405 | 3568.054 | 3.04 | 6.68 | .69 | 3568.75 | .00 | .61 | 1.61 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | |
.719 | .0809 | | | | | .0124 | .01 | .41 | 2.21 | .26 | .010 | .00 | .00 | PIPE |
211.023 | 3567.707 | .419 | 3568.125 | 3.04 | 6.37 | .63 | 3568.75 | .00 | .61 | 1.63 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | |
.614 | .0809 | | | | | .0108 | .01 | .42 | 2.07 | .26 | .010 | .00 | .00 | PIPE |
211.637 | 3567.756 | .433 | 3568.189 | 3.04 | 6.07 | .57 | 3568.76 | .00 | .61 | 1.65 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | |
.521 | .0809 | | | | | .0095 | .00 | .43 | 1.94 | .26 | .010 | .00 | .00 | PIPE |
212.158 | 3567.799 | .448 | 3568.246 | 3.04 | 5.79 | .52 | 3568.77 | .00 | .61 | 1.67 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | |
.441 | .0809 | | | | | .0083 | .00 | .45 | 1.82 | .26 | .010 | .00 | .00 | PIPE |

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SM-LATERAL-MH2N-ULT.OUT

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W S P G W - CIVILDESIGN Version 14.08

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:12: 1:13

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 NORTH TO SDDI#2

ATKINS / INTERIM CONDITIONS

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/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		

212.599	3567.834	.463	3568.297	3.04	5.52	.47	3568.77	.00	.61	1.69	2.000	.000	.00	1	.0	
	.369	.0809				.0072	.00	.46	1.70	.26	.010	.00	.00	PIPE		
212.968	3567.864	.479	3568.343	3.04	5.26	.43	3568.77	.00	.61	1.71	2.000	.000	.00	1	.0	
	.304	.0809				.0063	.00	.48	1.59	.26	.010	.00	.00	PIPE		
213.272	3567.889	.495	3568.384	3.04	5.02	.39	3568.77	.00	.61	1.73	2.000	.000	.00	1	.0	
	.245	.0809				.0055	.00	.50	1.49	.26	.010	.00	.00	PIPE		
213.517	3567.908	.512	3568.421	3.04	4.78	.36	3568.78	.00	.61	1.75	2.000	.000	.00	1	.0	
	.193	.0809				.0048	.00	.51	1.40	.26	.010	.00	.00	PIPE		
213.710	3567.924	.530	3568.454	3.04	4.56	.32	3568.78	.00	.61	1.77	2.000	.000	.00	1	.0	
	.143	.0809				.0042	.00	.53	1.31	.26	.010	.00	.00	PIPE		
213.853	3567.936	.548	3568.484	3.04	4.35	.29	3568.78	.00	.61	1.78	2.000	.000	.00	1	.0	
	.100	.0809				.0037	.00	.55	1.22	.26	.010	.00	.00	PIPE		
213.953	3567.944	.567	3568.511	3.04	4.15	.27	3568.78	.00	.61	1.80	2.000	.000	.00	1	.0	
	.057	.0809				.0032	.00	.57	1.15	.26	.010	.00	.00	PIPE		
214.010	3567.948	.587	3568.535	3.04	3.95	.24	3568.78	.00	.61	1.82	2.000	.000	.00	1	.0	
	.020	.0809				.0028	.00	.59	1.07	.26	.010	.00	.00	PIPE		
214.030	3567.950	.609	3568.559	3.04	3.76	.22	3568.78	.00	.61	1.84	2.000	.000	.00	1	.0	

SM-Lateral-MH2S-ULT.WSW

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T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1
T3 ATKINS / INTERIM CONDITIONS
SO 171.9803564.550 1 3566.373
R 179.4803569.420 2 .013 .000 0.000 1
REM LATERAL FROM SDDI#1
SH 179.4803569.420 2 3569.42
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 2.470 .0

SM-LATERAL-MH2S-ULT.OUT

FILE: SM-LATERAL-MH2S-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:12: 0:57

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1

ATKINS / INTERIM CONDITIONS

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/ 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
171.980	3564.550	1.823	3566.373	2.47	.82	.01	3566.38	.00	.55	1.14	2.000	.000	.00	1 .0
	.167	.6493				.0001	.00	1.82	.09	.16	.013	.00	.00	PIPE
172.147	3564.659	1.713	3566.372	2.47	.86	.01	3566.38	.00	.55	1.40	2.000	.000	.00	1 .0
	.137	.6493				.0001	.00	1.71	.11	.16	.013	.00	.00	PIPE
172.284	3564.747	1.624	3566.371	2.47	.90	.01	3566.38	.00	.55	1.56	2.000	.000	.00	1 .0
	.119	.6493				.0001	.00	1.62	.12	.16	.013	.00	.00	PIPE
172.402	3564.824	1.545	3566.370	2.47	.95	.01	3566.38	.00	.55	1.68	2.000	.000	.00	1 .0
	.106	.6493				.0001	.00	1.55	.13	.16	.013	.00	.00	PIPE
172.509	3564.894	1.475	3566.368	2.47	.99	.02	3566.38	.00	.55	1.76	2.000	.000	.00	1 .0
	.097	.6493				.0002	.00	1.47	.15	.16	.013	.00	.00	PIPE
172.606	3564.957	1.410	3566.367	2.47	1.04	.02	3566.38	.00	.55	1.82	2.000	.000	.00	1 .0
	.089	.6493				.0002	.00	1.41	.16	.16	.013	.00	.00	PIPE
172.695	3565.014	1.351	3566.365	2.47	1.09	.02	3566.38	.00	.55	1.87	2.000	.000	.00	1 .0
	.083	.6493				.0002	.00	1.35	.18	.16	.013	.00	.00	PIPE
172.778	3565.068	1.295	3566.363	2.47	1.15	.02	3566.38	.00	.55	1.91	2.000	.000	.00	1 .0
	.066	.6493				.0002	.00	1.30	.19	.16	.013	.00	.00	PIPE
172.843	3565.111	1.243	3566.354	2.47	1.20	.02	3566.38	.00	.55	1.94	2.000	.000	.00	1 .0

HYDRAULIC JUMP

SM-LATERAL-MH2S-ULT.OUT

FILE: SM-LATERAL-MH2S-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 2

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:12: 0:57

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1

ATKINS / INTERIM CONDITIONS

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*****
| 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 |
*****
| 172.843 | 3565.111 | .190 | 3565.301 | 2.47 | 16.26 | 4.11 | 3569.41 | .00 | .55 | 1.17 | 2.000 | .000 | .00 | 1 | .0 |
| .142 | .6493 | | | | | .3182 | .05 | .19 | 7.97 | .16 | .013 | .00 | .00 | PIPE |
| 172.985 | 3565.203 | .196 | 3565.398 | 2.47 | 15.58 | 3.77 | 3569.17 | .00 | .55 | 1.19 | 2.000 | .000 | .00 | 1 | .0 |
| .910 | .6493 | | | | | .2797 | .25 | .20 | 7.52 | .16 | .013 | .00 | .00 | PIPE |
| 173.895 | 3565.793 | .202 | 3565.996 | 2.47 | 14.86 | 3.43 | 3569.42 | .00 | .55 | 1.21 | 2.000 | .000 | .00 | 1 | .0 |
| .752 | .6493 | | | | | .2440 | .18 | .20 | 7.05 | .16 | .013 | .00 | .00 | PIPE |
| 174.647 | 3566.282 | .209 | 3566.491 | 2.47 | 14.16 | 3.12 | 3569.61 | .00 | .55 | 1.22 | 2.000 | .000 | .00 | 1 | .0 |
| .633 | .6493 | | | | | .2129 | .13 | .21 | 6.61 | .16 | .013 | .00 | .00 | PIPE |
| 175.280 | 3566.693 | .216 | 3566.909 | 2.47 | 13.50 | 2.83 | 3569.74 | .00 | .55 | 1.24 | 2.000 | .000 | .00 | 1 | .0 |
| .540 | .6493 | | | | | .1858 | .10 | .22 | 6.20 | .16 | .013 | .00 | .00 | PIPE |
| 175.820 | 3567.043 | .223 | 3567.266 | 2.47 | 12.88 | 2.57 | 3569.84 | .00 | .55 | 1.26 | 2.000 | .000 | .00 | 1 | .0 |
| .465 | .6493 | | | | | .1621 | .08 | .22 | 5.81 | .16 | .013 | .00 | .00 | PIPE |
| 176.285 | 3567.345 | .230 | 3567.576 | 2.47 | 12.28 | 2.34 | 3569.92 | .00 | .55 | 1.28 | 2.000 | .000 | .00 | 1 | .0 |
| .404 | .6493 | | | | | .1415 | .06 | .23 | 5.45 | .16 | .013 | .00 | .00 | PIPE |
| 176.689 | 3567.608 | .238 | 3567.846 | 2.47 | 11.71 | 2.13 | 3569.97 | .00 | .55 | 1.30 | 2.000 | .000 | .00 | 1 | .0 |
| .353 | .6493 | | | | | .1235 | .04 | .24 | 5.11 | .16 | .013 | .00 | .00 | PIPE |
| 177.042 | 3567.837 | .246 | 3568.083 | 2.47 | 11.16 | 1.93 | 3570.02 | .00 | .55 | 1.31 | 2.000 | .000 | .00 | 1 | .0 |
| .310 | .6493 | | | | | .1078 | .03 | .25 | 4.79 | .16 | .013 | .00 | .00 | PIPE |

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SM-LATERAL-MH2S-ULT.OUT

FILE: SM-LATERAL-MH2S-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 3

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:12: 0:57

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1

ATKINS / INTERIM CONDITIONS

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth
      | Elev | (FT) | Elev | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
L/Elem | Ch Slope | | | | | | | | | | | | | | |
***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | *****
      | | | | | | | | | | | | | | |
177.352 | 3568.038 | .254 | 3568.292 | 2.47 | 10.64 | 1.76 | 3570.05 | .00 | .55 | 1.33 | 2.000 | .000 | .00 | 1 | .0
      | | | | | | | | | | | | | | | | |
      | .273 | .6493 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
177.624 | 3568.215 | .263 | 3568.477 | 2.47 | 10.15 | 1.60 | 3570.08 | .00 | .55 | 1.35 | 2.000 | .000 | .00 | 1 | .0
      | | | | | | | | | | | | | | | | |
      | .241 | .6493 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
177.865 | 3568.371 | .271 | 3568.643 | 2.47 | 9.67 | 1.45 | 3570.10 | .00 | .55 | 1.37 | 2.000 | .000 | .00 | 1 | .0
      | | | | | | | | | | | | | | | | |
      | .213 | .6493 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
178.078 | 3568.510 | .280 | 3568.790 | 2.47 | 9.22 | 1.32 | 3570.11 | .00 | .55 | 1.39 | 2.000 | .000 | .00 | 1 | .0
      | | | | | | | | | | | | | | | | |
      | .189 | .6493 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
178.267 | 3568.632 | .290 | 3568.922 | 2.47 | 8.79 | 1.20 | 3570.12 | .00 | .55 | 1.41 | 2.000 | .000 | .00 | 1 | .0
      | | | | | | | | | | | | | | | | |
      | .167 | .6493 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
178.434 | 3568.741 | .299 | 3569.040 | 2.47 | 8.39 | 1.09 | 3570.13 | .00 | .55 | 1.43 | 2.000 | .000 | .00 | 1 | .0
      | | | | | | | | | | | | | | | | |
      | .148 | .6493 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
178.583 | 3568.837 | .309 | 3569.146 | 2.47 | 8.00 | .99 | 3570.14 | .00 | .55 | 1.45 | 2.000 | .000 | .00 | 1 | .0
      | | | | | | | | | | | | | | | | |
      | .131 | .6493 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
178.714 | 3568.922 | .320 | 3569.242 | 2.47 | 7.62 | .90 | 3570.14 | .00 | .55 | 1.47 | 2.000 | .000 | .00 | 1 | .0
      | | | | | | | | | | | | | | | | |
      | .116 | .6493 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
178.830 | 3568.998 | .330 | 3569.328 | 2.47 | 7.27 | .82 | 3570.15 | .00 | .55 | 1.49 | 2.000 | .000 | .00 | 1 | .0
      | | | | | | | | | | | | | | | | |
      | .103 | .6493 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
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SM-LATERAL-MH2S-ULT.OUT

FILE: SM-LATERAL-MH2S-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:12: 0:57

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1

ATKINS / INTERIM CONDITIONS

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/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
178.933	3569.065	.342	3569.406	2.47	6.93	.75	3570.15	.00	.55	1.51	2.000	.000	.00	1 .0
	.091	.6493				.0277	.00	.34	2.51	.16	.013	.00	.00	PIPE
179.024	3569.124	.353	3569.477	2.47	6.61	.68	3570.15	.00	.55	1.52	2.000	.000	.00	1 .0
	.080	.6493				.0242	.00	.35	2.35	.16	.013	.00	.00	PIPE
179.103	3569.175	.365	3569.540	2.47	6.30	.62	3570.16	.00	.55	1.54	2.000	.000	.00	1 .0
	.070	.6493				.0212	.00	.36	2.20	.16	.013	.00	.00	PIPE
179.173	3569.220	.377	3569.598	2.47	6.01	.56	3570.16	.00	.55	1.56	2.000	.000	.00	1 .0
	.060	.6493				.0185	.00	.38	2.06	.16	.013	.00	.00	PIPE
179.233	3569.260	.390	3569.650	2.47	5.73	.51	3570.16	.00	.55	1.58	2.000	.000	.00	1 .0
	.052	.6493				.0161	.00	.39	1.93	.16	.013	.00	.00	PIPE
179.286	3569.294	.403	3569.697	2.47	5.46	.46	3570.16	.00	.55	1.60	2.000	.000	.00	1 .0
	.045	.6493				.0141	.00	.40	1.81	.16	.013	.00	.00	PIPE
179.330	3569.323	.417	3569.740	2.47	5.21	.42	3570.16	.00	.55	1.62	2.000	.000	.00	1 .0
	.038	.6493				.0123	.00	.42	1.70	.16	.013	.00	.00	PIPE
179.368	3569.347	.431	3569.778	2.47	4.96	.38	3570.16	.00	.55	1.64	2.000	.000	.00	1 .0
	.031	.6493				.0108	.00	.43	1.59	.16	.013	.00	.00	PIPE
179.400	3569.368	.446	3569.813	2.47	4.73	.35	3570.16	.00	.55	1.66	2.000	.000	.00	1 .0
	.026	.6493				.0094	.00	.45	1.49	.16	.013	.00	.00	PIPE

SM-LATERAL-MH2S-ULT.OUT

FILE: SM-LATERAL-MH2S-ULT.WSW

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:12: 0:57

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH2 SOUTH TO SDDI#1

ATKINS / INTERIM CONDITIONS

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/ 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	*****	
179.426	3569.385	.461	3569.845	2.47	4.51	.32	3570.16	.00	.55	1.68	2.000	.000	.00	1	.0	
	.020	.6493				.0082	.00	.46	1.40	.16	.013	.00	.00	PIPE		
179.446	3569.398	.477	3569.874	2.47	4.30	.29	3570.16	.00	.55	1.70	2.000	.000	.00	1	.0	
	.015	.6493				.0072	.00	.48	1.31	.16	.013	.00	.00	PIPE		
179.461	3569.408	.493	3569.901	2.47	4.10	.26	3570.16	.00	.55	1.72	2.000	.000	.00	1	.0	
	.011	.6493				.0063	.00	.49	1.22	.16	.013	.00	.00	PIPE		
179.472	3569.415	.510	3569.925	2.47	3.91	.24	3570.16	.00	.55	1.74	2.000	.000	.00	1	.0	
	.006	.6493				.0055	.00	.51	1.15	.16	.013	.00	.00	PIPE		
179.478	3569.419	.527	3569.946	2.47	3.73	.22	3570.16	.00	.55	1.76	2.000	.000	.00	1	.0	
	.002	.6493				.0048	.00	.53	1.07	.16	.013	.00	.00	PIPE		
179.480	3569.420	.547	3569.967	2.47	3.55	.20	3570.16	.00	.55	1.78	2.000	.000	.00	1	.0	

SM-Lateral-MH7N-ULT-UPDATE.WSW

T1 SUMMERLIN WEST VILLAGE 25
 T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#7 NORTH TO SDMH#12
 T3 ATKINS / INTERIM CONDITIONS
 SO 1058.6803626.380 1 3632.289
 R 1140.7403626.990 3 .01 .000 0.000 1
 JX 1143.2403626.990 4 4 2.013 39.020 3.0203627.19 3627.19 65.5-78.0 .000
 R 1145.7403626.990 4 .013
 R 1185.3103627.380 4 .013 .000 0.000 1
 SH 1185.3103627.380 4 3627.380
 CD 1 4 1 .000 4.000 .000 .000 .000 .00
 CD 2 4 1 .000 2.000 .000 .000 .000 .00
 CD 3 4 1 .000 3.500 .000 .000 .000 .00
 CD 4 4 1 .000 3.000 .000 .000 .000 .00
 Q 20.000 .0

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FILE: SM-LATERAL-MH7N-ULT-UPDATE.WSW

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WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:11: 8:55

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#7 NORTH TO SDMH#12

ATKINS / INTERIM CONDITIONS

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/ 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			

1058.680	3626.380	5.909	3632.289	62.04	6.45	.65	3632.93	.00	2.47	.00	3.500	.000	.00	1	.0		
	82.060	.0074				.0022	.18	5.91	.00	1.85	.010	.00	.00	PIPE			
1140.740	3626.990	5.516	3632.506	62.04	6.45	.65	3633.15	.00	2.47	.00	3.500	.000	.00	1	.0		
JUNCT STR	.0000					.0024	.01	5.52	.00		.013	.00	.00	PIPE			
1143.240	3626.990	6.465	3633.455	20.00	2.83	.12	3633.58	.00	1.44	.00	3.000	.000	.00	1	.0		
	2.500	.0000				.0009	.00	6.47	.00	.00	.013	.00	.00	PIPE			
1145.740	3626.990	6.468	3633.458	20.00	2.83	.12	3633.58	.00	1.44	.00	3.000	.000	.00	1	.0		
	39.570	.0099				.0009	.04	6.47	.00	1.13	.013	.00	.00	PIPE			
1185.310	3627.380	6.119	3633.499	20.00	2.83	.12	3633.62	.00	1.44	.00	3.000	.000	.00	1	.0		

SM-Lateral-MH8S-ULT.WSW

0

T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#8 SOUTH TO SDDI#3
T3 ATKINS / INTERIM CONDITIONS
SO 1226.7703631.290 4 3632.923
R 1233.6203631.360 2 .013 .000 0.000 1
SH 1233.6203631.360 2 3631.360
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 1.000 .0

SM-LATERAL-MH8S-ULT.OUT

FILE: SM-LATERAL-MH8S-ULT.WSW

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WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:12: 2: 5

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#8 SOUTH TO SDDI#3

ATKINS / INTERIM CONDITIONS

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*****
| 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
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
| | | | | | | | | | | | | | | |
1226.770 3631.290 1.633 3632.923 1.00 .36 .00 3632.93 .00 .34 1.55 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
6.850 .0102 .0000 .00 1.63 .05 .28 .013 .00 .00 PIPE
| | | | | | | | | | | | | | | |
1233.620 3631.360 1.563 3632.923 1.00 .38 .00 3632.93 .00 .34 1.65 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-

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SM-Lateral-MH9N-ULT.WSW

0

T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5
T3 ATKINS / INTERIM CONDITIONS
SO 1337.8403633.630 4 3634.949
R 1379.0203643.730 2 .01 .000 0.000 1
SH 1379.0203643.730 2 3643.730
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 1.000 .0

SM-LATERAL-MH9N-ULT.OUT

FILE: SM-LATERAL-MH9N-ULT.WSW

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time: 1: 2:49

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

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/ 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
1337.840	3633.630	1.319	3634.949	1.00	.45	.00	3634.95	.00	.34	1.90	2.000	.000	.00	1 .0
	.217	.2453				.0000	.00	1.32	.07	.12	.010	.00	.00	PIPE
1338.057	3633.683	1.266	3634.949	1.00	.48	.00	3634.95	.00	.34	1.93	2.000	.000	.00	1 .0
	.204	.2453				.0000	.00	1.27	.08	.12	.010	.00	.00	PIPE
1338.260	3633.733	1.215	3634.948	1.00	.50	.00	3634.95	.00	.34	1.95	2.000	.000	.00	1 .0
	.192	.2453				.0000	.00	1.22	.09	.12	.010	.00	.00	PIPE
1338.452	3633.780	1.168	3634.948	1.00	.52	.00	3634.95	.00	.34	1.97	2.000	.000	.00	1 .0
	.181	.2453				.0000	.00	1.17	.09	.12	.010	.00	.00	PIPE
1338.633	3633.825	1.123	3634.948	1.00	.55	.00	3634.95	.00	.34	1.98	2.000	.000	.00	1 .0
	.171	.2453				.0000	.00	1.12	.10	.12	.010	.00	.00	PIPE
1338.804	3633.867	1.081	3634.947	1.00	.58	.01	3634.95	.00	.34	1.99	2.000	.000	.00	1 .0
	.163	.2453				.0000	.00	1.08	.11	.12	.010	.00	.00	PIPE
1338.967	3633.906	1.040	3634.947	1.00	.61	.01	3634.95	.00	.34	2.00	2.000	.000	.00	1 .0
	.154	.2453				.0000	.00	1.04	.12	.12	.010	.00	.00	PIPE
1339.121	3633.944	1.002	3634.946	1.00	.64	.01	3634.95	.00	.34	2.00	2.000	.000	.00	1 .0
	.147	.2453				.0000	.00	1.00	.13	.12	.010	.00	.00	PIPE
1339.268	3633.980	.965	3634.946	1.00	.67	.01	3634.95	.00	.34	2.00	2.000	.000	.00	1 .0
	.140	.2453				.0001	.00	.97	.14	.12	.010	.00	.00	PIPE

SM-LATERAL-MH9N-ULT.OUT

FILE: SM-LATERAL-MH9N-ULT.WSW

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time: 1: 2:49

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

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/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
1339.408	3634.015	.930	3634.945	1.00	.70	.01	3634.95	.00	.34	2.00	2.000	.000	.00	1 .0
.133	.2453					.0001	.00	.93	.15	.12	.010	.00	.00	PIPE
1339.541	3634.047	.897	3634.944	1.00	.73	.01	3634.95	.00	.34	1.99	2.000	.000	.00	1 .0
.127	.2453					.0001	.00	.90	.16	.12	.010	.00	.00	PIPE
1339.668	3634.079	.865	3634.943	1.00	.77	.01	3634.95	.00	.34	1.98	2.000	.000	.00	1 .0
.121	.2453					.0001	.00	.86	.17	.12	.010	.00	.00	PIPE
1339.790	3634.108	.834	3634.943	1.00	.81	.01	3634.95	.00	.34	1.97	2.000	.000	.00	1 .0
.115	.2453					.0001	.00	.83	.18	.12	.010	.00	.00	PIPE
1339.905	3634.137	.805	3634.942	1.00	.85	.01	3634.95	.00	.34	1.96	2.000	.000	.00	1 .0
.029	.2453					.0001	.00	.80	.19	.12	.010	.00	.00	PIPE
1339.934	3634.144	.777	3634.920	1.00	.89	.01	3634.93	.00	.34	1.95	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1339.934	3634.144	.118	3634.262	1.00	13.28	2.74	3637.00	.00	.34	.94	2.000	.000	.00	1 .0
2.921	.2453					.2453	.72	.12	8.28	.12	.010	.00	.00	PIPE
1342.855	3634.860	.118	3634.978	1.00	13.28	2.74	3637.72	.00	.34	.94	2.000	.000	.00	1 .0
15.555	.2453					.2328	3.62	.12	8.28	.12	.010	.00	.00	PIPE
1358.410	3638.675	.121	3638.796	1.00	12.79	2.54	3641.34	.00	.34	.95	2.000	.000	.00	1 .0
5.827	.2453					.2063	1.20	.12	7.88	.12	.010	.00	.00	PIPE

SM-LATERAL-MH9N-ULT.OUT

FILE: SM-LATERAL-MH9N-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 3

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time: 1: 2:49

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

```

*****
| 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 |
*****
| 1364.236 | 3640.104 | .125 | 3640.229 | 1.00 | 12.20 | 2.31 | 3642.54 | .00 | .34 | .97 | 2.000 | .000 | .00 | 1 | .0 | |
| | | | | | | | | | | | | | | | | |
| 3.152 | .2453 | | | | | .1799 | .57 | .13 | 7.39 | .12 | .010 | .00 | .00 | PIPE |
| 1367.388 | 3640.877 | .129 | 3641.007 | 1.00 | 11.63 | 2.10 | 3643.11 | .00 | .34 | .98 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | | |
| 2.113 | .2453 | | | | | .1569 | .33 | .13 | 6.93 | .12 | .010 | .00 | .00 | PIPE |
| 1369.502 | 3641.396 | .134 | 3641.529 | 1.00 | 11.09 | 1.91 | 3643.44 | .00 | .34 | 1.00 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | | |
| 1.560 | .2453 | | | | | .1368 | .21 | .13 | 6.50 | .12 | .010 | .00 | .00 | PIPE |
| 1371.062 | 3641.778 | .138 | 3641.916 | 1.00 | 10.57 | 1.74 | 3643.65 | .00 | .34 | 1.01 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | | |
| 1.218 | .2453 | | | | | .1193 | .15 | .14 | 6.10 | .12 | .010 | .00 | .00 | PIPE |
| 1372.280 | 3642.077 | .142 | 3642.219 | 1.00 | 10.08 | 1.58 | 3643.80 | .00 | .34 | 1.03 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | | |
| .983 | .2453 | | | | | .1041 | .10 | .14 | 5.72 | .12 | .010 | .00 | .00 | PIPE |
| 1373.263 | 3642.318 | .147 | 3642.465 | 1.00 | 9.61 | 1.43 | 3643.90 | .00 | .34 | 1.04 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | | |
| .813 | .2453 | | | | | .0908 | .07 | .15 | 5.37 | .12 | .010 | .00 | .00 | PIPE |
| 1374.076 | 3642.517 | .152 | 3642.669 | 1.00 | 9.17 | 1.30 | 3643.97 | .00 | .34 | 1.06 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | | |
| .684 | .2453 | | | | | .0792 | .05 | .15 | 5.03 | .12 | .010 | .00 | .00 | PIPE |
| 1374.760 | 3642.685 | .157 | 3642.842 | 1.00 | 8.74 | 1.19 | 3644.03 | .00 | .34 | 1.08 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | | |
| .583 | .2453 | | | | | .0690 | .04 | .16 | 4.72 | .12 | .010 | .00 | .00 | PIPE |
| 1375.342 | 3642.828 | .162 | 3642.990 | 1.00 | 8.33 | 1.08 | 3644.07 | .00 | .34 | 1.09 | 2.000 | .000 | .00 | 1 | .0 |
| | | | | | | | | | | | | | | | | |
| .500 | .2453 | | | | | .0602 | .03 | .16 | 4.43 | .12 | .010 | .00 | .00 | PIPE |

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SM-LATERAL-MH9N-ULT.OUT

FILE: SM-LATERAL-MH9N-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 4

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time: 1: 2:49

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

```

*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth
      | Elev | (FT) | Elev | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
L/Elem | Ch Slope | | | | | | | | | | | | | | |
***** |*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|
1375.843 | 3642.951 | .167 | 3643.118 | 1.00 | 7.94 | .98 | 3644.10 | .00 | .34 | 1.11 | 2.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
      | .434 | .2453 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
1376.277 | 3643.057 | .173 | 3643.230 | 1.00 | 7.57 | .89 | 3644.12 | .00 | .34 | 1.12 | 2.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
      | .378 | .2453 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
1376.654 | 3643.150 | .179 | 3643.329 | 1.00 | 7.22 | .81 | 3644.14 | .00 | .34 | 1.14 | 2.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
      | .330 | .2453 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
1376.985 | 3643.231 | .184 | 3643.415 | 1.00 | 6.89 | .74 | 3644.15 | .00 | .34 | 1.16 | 2.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
      | .289 | .2453 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
1377.274 | 3643.302 | .191 | 3643.492 | 1.00 | 6.57 | .67 | 3644.16 | .00 | .34 | 1.17 | 2.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
      | .254 | .2453 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
1377.528 | 3643.364 | .197 | 3643.561 | 1.00 | 6.26 | .61 | 3644.17 | .00 | .34 | 1.19 | 2.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
      | .223 | .2453 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
1377.751 | 3643.419 | .203 | 3643.622 | 1.00 | 5.97 | .55 | 3644.18 | .00 | .34 | 1.21 | 2.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
      | .196 | .2453 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
1377.947 | 3643.467 | .210 | 3643.677 | 1.00 | 5.69 | .50 | 3644.18 | .00 | .34 | 1.23 | 2.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
      | .172 | .2453 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |
1378.119 | 3643.509 | .217 | 3643.726 | 1.00 | 5.43 | .46 | 3644.18 | .00 | .34 | 1.24 | 2.000 | .000 | .00 | 1 | .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
      | .151 | .2453 | | | | | | | | | | | | | | |
      | | | | | | | | | | | | | | |

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SM-LATERAL-MH9N-ULT.OUT

FILE: SM-LATERAL-MH9N-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time: 1: 2:49

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

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/ 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
1378.271	3643.546	.224	3643.771	1.00	5.17	.42	3644.19	.00	.34	1.26	2.000	.000	.00	1 .0
	.132	.2453				.0154	.00	.22	2.33	.12	.010	.00	.00	PIPE
1378.402	3643.579	.232	3643.810	1.00	4.93	.38	3644.19	.00	.34	1.28	2.000	.000	.00	1 .0
	.115	.2453				.0134	.00	.23	2.18	.12	.010	.00	.00	PIPE
1378.518	3643.607	.239	3643.846	1.00	4.70	.34	3644.19	.00	.34	1.30	2.000	.000	.00	1 .0
	.099	.2453				.0117	.00	.24	2.05	.12	.010	.00	.00	PIPE
1378.617	3643.631	.247	3643.879	1.00	4.48	.31	3644.19	.00	.34	1.32	2.000	.000	.00	1 .0
	.086	.2453				.0102	.00	.25	1.92	.12	.010	.00	.00	PIPE
1378.703	3643.652	.255	3643.908	1.00	4.28	.28	3644.19	.00	.34	1.34	2.000	.000	.00	1 .0
	.073	.2453				.0089	.00	.26	1.80	.12	.010	.00	.00	PIPE
1378.776	3643.670	.264	3643.934	1.00	4.08	.26	3644.19	.00	.34	1.35	2.000	.000	.00	1 .0
	.062	.2453				.0078	.00	.26	1.69	.12	.010	.00	.00	PIPE
1378.838	3643.686	.273	3643.958	1.00	3.89	.23	3644.19	.00	.34	1.37	2.000	.000	.00	1 .0
	.052	.2453				.0068	.00	.27	1.58	.12	.010	.00	.00	PIPE
1378.890	3643.698	.282	3643.980	1.00	3.71	.21	3644.19	.00	.34	1.39	2.000	.000	.00	1 .0
	.042	.2453				.0059	.00	.28	1.48	.12	.010	.00	.00	PIPE
1378.932	3643.708	.291	3644.000	1.00	3.53	.19	3644.19	.00	.34	1.41	2.000	.000	.00	1 .0
	.033	.2453				.0052	.00	.29	1.39	.12	.010	.00	.00	PIPE

SM-LATERAL-MH9N-ULT.OUT

FILE: SM-LATERAL-MH9N-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

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Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time: 1: 2:49

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#9 NORTH TO SDDI#5

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ 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				
*****																	*****	
1378.964	3643.717	.301	3644.018	1.00	3.37	.18	3644.19	.00	.34	1.43	2.000	.000	.00	1	.0			
	.025	.2453				.0045	.00	.30	1.30	.12	.010	.00	.00	PIPE				
1378.989	3643.723	.311	3644.033	1.00	3.21	.16	3644.19	.00	.34	1.45	2.000	.000	.00	1	.0			
	.017	.2453				.0040	.00	.31	1.22	.12	.010	.00	.00	PIPE				
1379.006	3643.727	.321	3644.048	1.00	3.06	.15	3644.19	.00	.34	1.47	2.000	.000	.00	1	.0			
	.010	.2453				.0035	.00	.32	1.14	.12	.010	.00	.00	PIPE				
1379.017	3643.729	.332	3644.061	1.00	2.92	.13	3644.19	.00	.34	1.49	2.000	.000	.00	1	.0			
	.003	.2453				.0030	.00	.33	1.07	.12	.010	.00	.00	PIPE				
1379.020	3643.730	.344	3644.074	1.00	2.77	.12	3644.19	.00	.34	1.51	2.000	.000	.00	1	.0			

SM-Lateral-MH11N-ULT-UPDATED.WSW

T1 SUMMERLIN WEST VILLAGE 25
 T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#11 NORTH TO SDDI#7
 T3 ATKINS / INTERIM CONDITIONS
 SO 1773.1303662.840 4 .013 3665.498
 R 1817.6003663.370 4 .013 .000 0.000 1
 JX 1820.1003663.870 2 2 .013 1 3663.87 90.0 .000
 R 1822.6003663.870 2 .013
 R 1893.1003664.670 2 .013 .000 0.000 1
 SH 1893.1003664.670 2 3664.670
 CD 1 4 1 .000 4.000 .000 .000 .000 .00
 CD 2 4 1 .000 2.500 .000 .000 .000 .00
 CD 3 4 1 .000 3.500 .000 .000 .000 .00
 CD 4 4 1 .000 3.000 .000 .000 .000 .00
 Q 69.000 .0

SM-LATERAL-MH11N-ULT-UPDATED.OUT

FILE: SM-LATERAL-MH11N-ULT-UPDATED.WSW W S P G W - CIVILDESIGN Version 14.08
Program Package Serial Number: 7271

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WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time: 1: 4: 1

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#11 NORTH TO SDDI#7

ATKINS / INTERIM CONDITIONS

*****																	*****	
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/ 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				
*****																	*****	
1773.130	3662.840	1.842	3664.682	69.00	15.16	3.57	3668.25	.00	2.64	2.92	3.000	.000	.00	1	.0			
22.189	.0119					.0234	.52	1.84	2.14	2.33	.013	.00	.00	PIPE				
1795.319	3663.104	1.776	3664.881	69.00	15.83	3.89	3668.77	.00	2.64	2.95	3.000	.000	.00	1	.0			
22.281	.0119					.0263	.59	1.78	2.29	2.33	.013	.00	.00	PIPE				
1817.600	3663.370	1.708	3665.078	69.00	16.60	4.28	3669.36	.00	2.64	2.97	3.000	.000	.00	1	.0			
JUNCT STR	.2000					.0265	.07	1.71	2.47		.013	.00	.00	PIPE				
1820.100	3663.870	2.437	3666.307	69.00	14.15	3.11	3669.42	.00	2.44	.78	2.500	.000	.00	1	.0			
.802	.0000					.0265	.02	2.44	1.00	.00	.013	.00	.00	PIPE				
1820.902	3663.870	2.500	3666.370	69.00	14.06	3.07	3669.44	.00	2.44	.00	2.500	.000	.00	1	.0			
1.698	.0000					.0281	.05	2.50	.00	.00	.013	.00	.00	PIPE				
1822.600	3663.870	2.548	3666.418	69.00	14.06	3.07	3669.49	.00	2.44	.00	2.500	.000	.00	1	.0			
70.500	.0113					.0283	2.00	2.55	.00	2.50	.013	.00	.00	PIPE				
1893.100	3664.670	3.897	3668.567	69.00	14.06	3.07	3671.63	.00	2.44	.00	2.500	.000	.00	1	.0			

SM-Lateral-MH11S-ULT-UPDATED.WSW

0

T1 SUMMERLIN WEST VILLAGE 25
T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#11 SOUTH TO SDDI#6
T3 ATKINS / INTERIM CONDITIONS
SO 1773.1303662.840 4 3665.498
R 1782.0303663.140 2 .013 .000 0.000 1
SH 1782.0303663.140 2 3663.140
CD 1 4 1 .000 4.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 3.500 .000 .000 .000 .00
CD 4 4 1 .000 3.000 .000 .000 .000 .00
Q 1.000 .0

SM-LATERAL-MH11S-ULT-UPDATED.OUT

FILE: SM-LATERAL-MH11S-ULT-UPDATED.WSW W S P G W - CIVILDESIGN Version 14.08
Program Package Serial Number: 7271

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WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time: 1: 3:27

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#11 SOUTH TO SDDI#6

ATKINS / INTERIM CONDITIONS

```

*****
| 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
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
| | | | | | | | | | | | | | | |
1773.130 | 3662.840 | 2.658 | 3665.498 | 1.00 | .32 | .00 | 3665.50 | .00 | .34 | .00 | 2.000 | .000 | .00 | 1 | .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
8.900 | .0337 | | | | | .0000 | .00 | 2.66 | .00 | .21 | .013 | .00 | .00 | PIPE
| | | | | | | | | | | | | | | |
1782.030 | 3663.140 | 2.358 | 3665.498 | 1.00 | .32 | .00 | 3665.50 | .00 | .34 | .00 | 2.000 | .000 | .00 | 1 | .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-

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SM-Lateral-MH12E-ULT-UPDATE.WSW

T1 SUMMERLIN WEST VILLAGE 25
 T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#12 WEST TO SDDI#10
 T3 ATKINS / ULTIMATE CONDITIONS
 SO 1145.7403627.190 4 3633.458
 R 1193.8303627.430 2 .013 .000 0.000 1
 SH 1193.8303627.430 2 3627.430
 CD 1 4 1 .000 4.000 .000 .000 .000 .00
 CD 2 4 1 .000 2.000 .000 .000 .000 .00
 CD 3 4 1 .000 3.500 .000 .000 .000 .00
 CD 4 4 1 .000 3.000 .000 .000 .000 .00
 Q 3.020 .0

SM-LATERAL-MH12E-ULT-UPDATE.OUT

FILE: SM-LATERAL-MH12E-ULT-UPDATE.WSW W S P G W - CIVILDESIGN Version 14.08
Program Package Serial Number: 7271

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WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:11:35:10

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#12 WEST TO SDDI#10

ATKINS / ULTIMATE CONDITIONS

```

*****
| 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
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
| | | | | | | | | | | | | | | |
1145.740 3627.190 6.268 3633.458 3.02 .96 .01 3633.47 .00 .61 .00 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
48.090 .0050 | | | | | .0002 .01 6.27 .00 .59 .013 .00 .00 PIPE
| | | | | | | | | | | | | | | |
1193.830 3627.430 6.037 3633.467 3.02 .96 .01 3633.48 .00 .61 .00 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-

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SM-Lateral-MH12W-ULT-UPDATE.WSW

T1 SUMMERLIN WEST VILLAGE 25
 T2 SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#12 EAST TO SDDI#9
 T3 ATKINS / INTERIM CONDITIONS
 SO 1145.7403627.190 4 3633.458
 R 1165.9803627.690 4 .013 .000 0.000 1
 JX 1170.9803627.890 2 2 .013 3.020 3627.89 90.0 .000
 R 1198.5003631.090 2 .013 .000 0.000 1
 SH 1198.5003631.090 2 3631.090
 CD 1 4 1 .000 4.000 .000 .000 .000 .00
 CD 2 4 1 .000 2.000 .000 .000 .000 .00
 CD 3 4 1 .000 3.500 .000 .000 .000 .00
 CD 4 4 1 .000 3.000 .000 .000 .000 .00
 Q 36.000 .0

SM-LATERAL-MH12W-ULT-UPDATE.OUT

FILE: SM-LATERAL-MH12W-ULT-UPDATE.WSW W S P G W - CIVILDESIGN Version 14.08
Program Package Serial Number: 7271

PAGE 1

WATER SURFACE PROFILE LISTING

Date: 1-15-2021 Time:11:34:14

SUMMERLIN WEST VILLAGE 25

SANDSTONE RISE DRIVE (STREET M) LATERAL FROM SDMH#12 EAST TO SDDI#9

ATKINS / INTERIM CONDITIONS

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/ I.D.	ZL	No Wth	Prs/Pip		
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch			

1145.740	3627.190	6.268	3633.458	39.02	5.52	.47	3633.93	.00	2.03	.00	3.000	.000	.00	1	.0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
20.240	.0247					.0034	.07	6.27	.00	1.27	.013	.00	.00	PIPE			
1165.980	3627.690	5.861	3633.551	39.02	5.52	.47	3634.02	.00	2.03	.00	3.000	.000	.00	1	.0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
JUNCT STR	.0400					.0144	.07	5.86	.00		.013	.00	.00	PIPE			
1170.980	3627.890	4.534	3632.424	36.00	11.46	2.04	3634.46	.00	1.93	.00	2.000	.000	.00	1	.0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
27.520	.1163					.0253	.70	4.53	.00	.96	.013	.00	.00	PIPE			
1198.500	3631.090	2.132	3633.222	36.00	11.46	2.04	3635.26	.00	1.93	.00	2.000	.000	.00	1	.0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Appendix C. CD-ROM

Atkins

2270 Corporate Circle
Suite 200
Henderson, NV 89074-7755

Tel: +1 702 263 7275/+1 800 483 6244

Fax: +1 702 263 7200

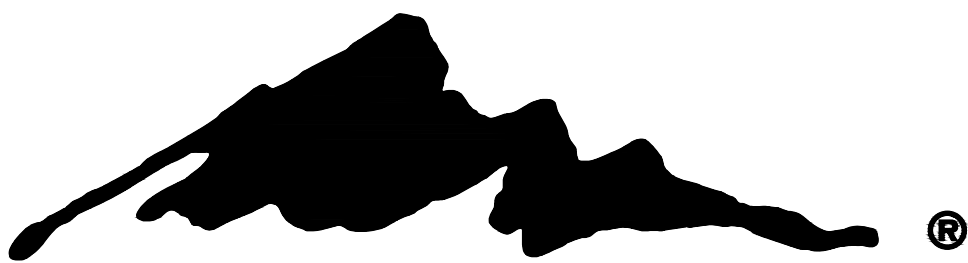
Direct: +1 702 551 0365

Janelle.klein@atkinsglobal.com

SHEET INDEX

1	COVER SHEET	
2	LEGEND AND ABBREVIATIONS	
3	GENERAL NOTES	
4	HORIZONTAL CONTROL PLAN	
5	MASTER DRAINAGE PLAN	
6	MASTER WATER PLAN	
7	MASTER SEWER PLAN	
8	SANDSTONE RISE DRIVE GRADING PLAN	STA 31+00 TO END
9	SANDSTONE RISE DRIVE PLAN AND PROFILE	STA 31+00 TO END
10	SANDSTONE RISE DRIVE GRADING PLAN	STA 27+00 TO STA 31+00
11	SANDSTONE RISE DRIVE PLAN AND PROFILE	STA 27+00 TO STA 31+00
12	SANDSTONE RISE DRIVE GRADING PLAN	STA 24+00 TO STA 27+00
13	SANDSTONE RISE DRIVE PLAN AND PROFILE	STA 24+00 TO STA 27+00
14	SANDSTONE RISE DRIVE GRADING PLAN	STA 20+00 TO STA 24+00
15	SANDSTONE RISE DRIVE PLAN AND PROFILE	STA 20+00 TO STA 24+00
16	SANDSTONE RISE DRIVE GRADING PLAN	STA 16+50 TO STA 20+00
17	SANDSTONE RISE DRIVE PLAN AND PROFILE	STA 16+50 TO STA 20+00
18	SANDSTONE RISE DRIVE GRADING PLAN	STA 12+00 TO STA 16+50
19	SANDSTONE RISE DRIVE PLAN AND PROFILE	STA 12+00 TO STA 16+50
20	SANDSTONE RISE DRIVE GRADING PLAN	BEGIN TO STA 12+00
21	SANDSTONE RISE DRIVE PLAN AND PROFILE	BEGIN TO STA 12+00
22	GRAND PARK BOULEVARD PLAN AND PROFILE	STA 10+00 TO STA 12+00
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24	STORM DRAIN LATERAL DETAILS	
25	WATER AND SEWER LATERAL DETAILS	
26	WATER LATERAL DETAILS	
27	STREET SECTIONS	
28	MISCELLANEOUS DETAILS	
29	RESERVOIR ENTRY DETAILS	
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SUMMERLIN VILLAGE 25
IMPROVEMENT PLANS FOR:
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)
FUTURE SID PROJECT



SUMMERLIN®

OWNER /DEVELOPER

CONTACT: KEVIN ORROCK
HOWARD HUGHES COMPANY LLC, A DELAWARE LIMITED LIABILITY COMPANY
10801 W. CHARLESTON BLVD., 3rd FLOOR
LAS VEGAS, NEVADA 89135

KEVIN T. ORROCK, VICE PRESIDENT

DATE

NPDES PERMIT NOTE

THE ENGINEER SHOULD CONTACT THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP) TO OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PRIOR TO CONSTRUCTION. ALL CONSTRUCTION PROJECTS ONE ACRE OR LARGER MUST APPLY FOR THE PERMIT THROUGH NDEP. ALL QUESTIONS REGARDING THE NPDES PERMIT REQUIREMENTS SHOULD BE DIRECTED TO THE NDEP AT (775) 687-9429.

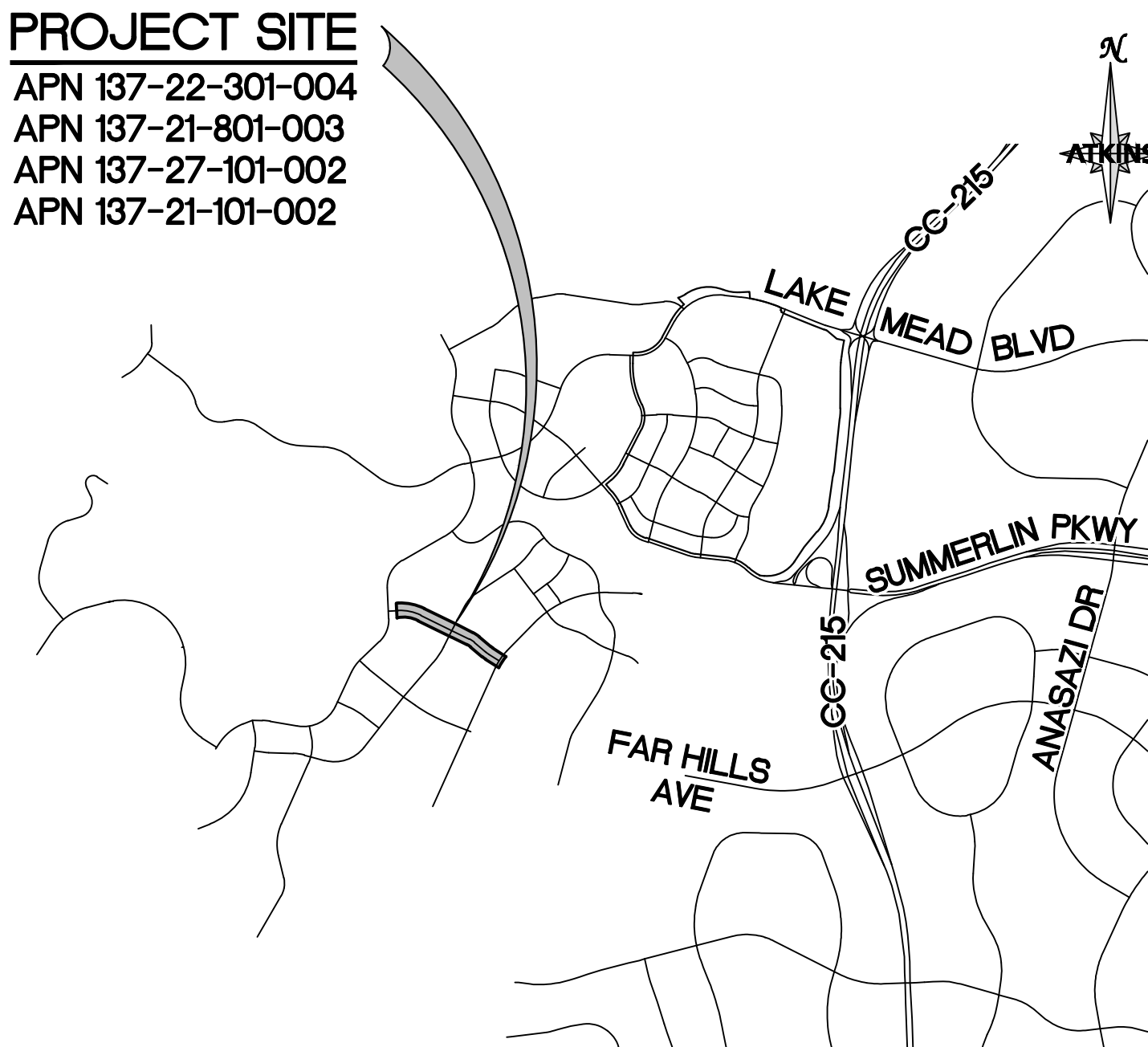
ENGINEER / CONSULTANT

CONTACT: DAVID WILSON P.E.
ATKINS
2270 CORPORATE CIRCLE SUITE 200
HENDERSON, NEVADA 89074
(702) 263-7275

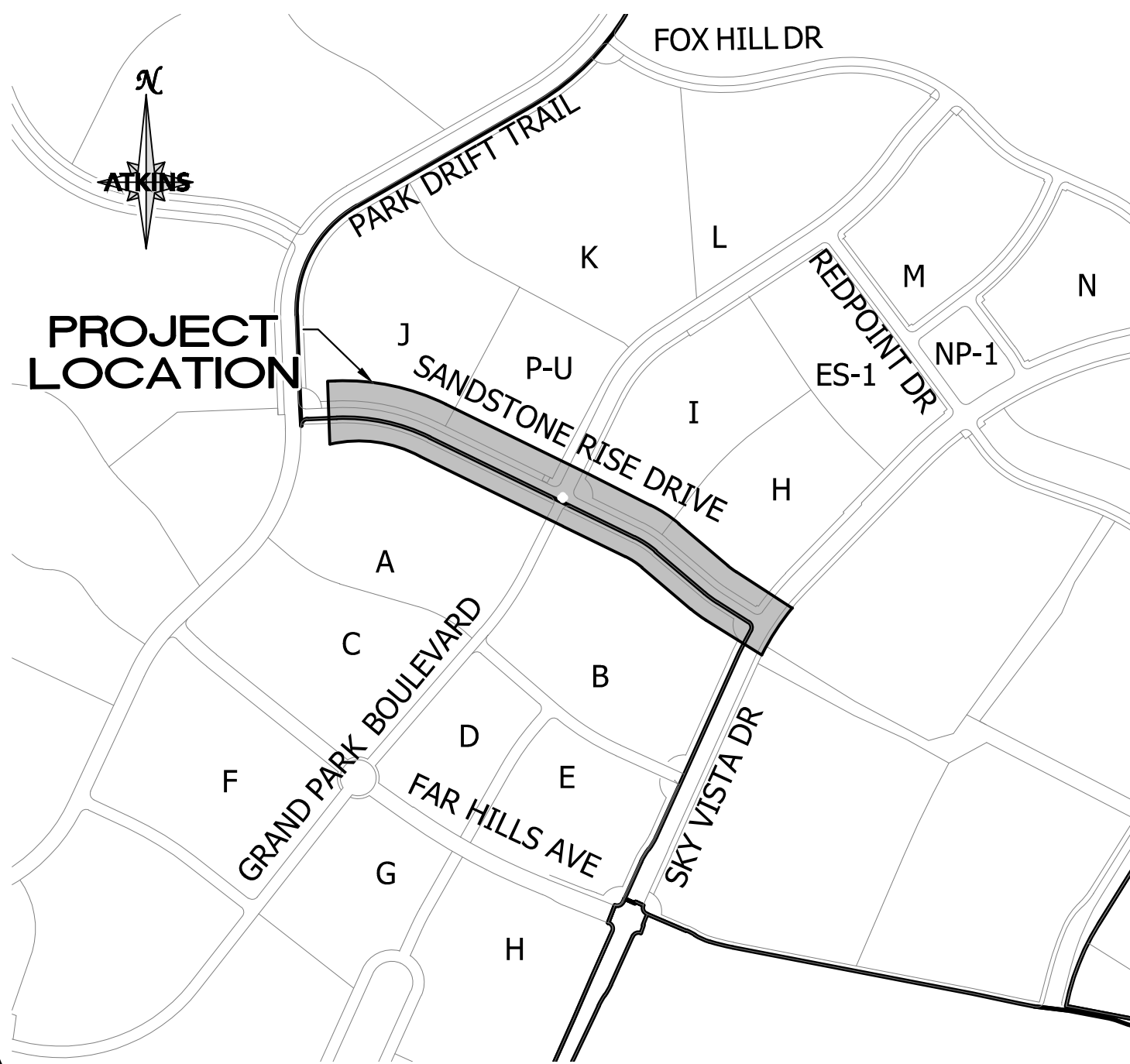
FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C2150E, DATED 9/27/2002. A ZONE X (UNSHADED) IS DESCRIBED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

LOCATION MAP



VICINITY MAP



APPROVALS

STEPHEN FORD, P.E. #012175 DATE
CITY ENGINEER

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

CITY OF LAS VEGAS PLANNING DEPARTMENT DATE

NOTE:
THIS PLAN CONFORMS TO THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

LAS VEGAS FIRE AND RESCUE DATE

CENTRAL TELEPHONE COMPANY d/b/a CENTURYLINK DATE

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

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE: _____

LVVWD APPROVED FIRE FLOW _____ GPM AT 20 PSI RESIDUAL

SHEETS: 1,2,3,6,9,11,13,15,17,19,21,22,25,26,27,28,30

NV ENERGY DATE

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

SW GAS
PLANNER:
DATE:
SOUTHWEST GAS CORPORATION DATE

COX COMMUNICATIONS OF LAS VEGAS, INC DATE

BASIS OF BEARING

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

LINEAR UNIT: US SURVEY FOOT (FTUS)
DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)
ZONE: LAS VEGAS HIGH ELEVATION ZONE
PROJECTION: TRANSVERSE MERCATOR STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W
NORTHING AT GRID OF ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

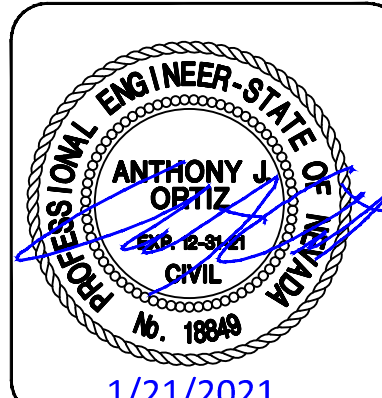
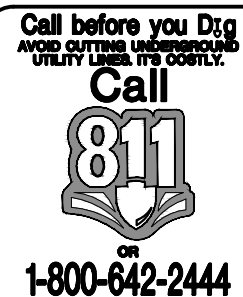
- NOTES:
- ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECTED AREA.
 - GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES)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

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
CITY OF LAS VEGAS BENCHMARK: 0368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

LEGAL DESCRIPTION

BEING A PORTION OF LOT 2 AS SHOWN ON THE MAP THEREOF IN BOOK 124 OF PLATS, PAGE 51, OFFICIAL RECORDS, CITY OF LAS VEGAS CLARK COUNTY, NEVADA.



GEOTECHNICAL ENGINEER
PREPARED BY: NOVA GEOTECHNICAL & INSPECTION SERVICES
4480 W. HACIENDA AVENUE, SUITE 104, LAS VEGAS, NV 89118
PHONE: 702-873-3478
PROJECT NO.: G-19-026
DATED: MAY 9, 2019

PROPOSED RIGHT-OF-WAY ACREAGE
2.72 A.C.

PROPOSED DISTURBED AREA ACREAGE
7.33 A.C.

REVISIONS

DESCRIPTION

REV.

ATKINS

SUMMERLIN®

SUMMERLIN VILLAGE 25

SANDSTONE RISE DRIVE (STREET M)

SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)

COVER SHEET

DESIGNED BY:
G. BLAKE

DRAWN BY:
G. BLAKE

CHECKED BY:
G. BLAKE

HORIZ.: NONE

VERT.: NONE

1/07/15132
L20-00453
DATE: JANUARY, 2021
DRAWING NO.
1/32

JOB NO. 100063656

X:\Projects\Summerlin\ Village 25\100063656 - V25 Street M (Lake Mead to Sky Vista)\ Sheets\63656-01-TITLE-CI.dwg LAYOUT: 1 Jan 21, 2021 - 5:11PM

[illegible]

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE 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".

16. ALL NOTES.
17. 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.
18. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
19. 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.
20. 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.
21. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKER BARS, LOCATING RIBBON, ETC. THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION OF OFFSITE INSPECTION AND TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN INSTALLED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.
22. SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION. THE MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN MANHOLE LATERALS TO 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 VERIFIED BY THE CONTRACTOR'S SURVEYOR 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 CERTAINITIES OF ± 0.09 METERS (± 0.3 FEET) HORIZONTALLY AND VERTICALLY. A SEPARATE ELECTRONIC COMMA DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).
23. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.
24. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.

- REVISÉ 04/15/10

THE FOLLOWING SEPARATE VILLAGE 25 ROADWAY IMPROVEMENT PLANS ARE TO BE CONSTRUCTED CONCURRENTLY AND ARE SHOWN AS FUTURE (BY OTHERS):

- ### DEVIATION FROM STANDARDS

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 SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. IFC § 105.6.1.9
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. IFC § 3310, IFC § 3312
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. IFC § 507.5.3
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES SHALL BE COMPLETED BEFORE COVERED. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. IFC § 106.3
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. IFC § 507.2.1, NPFA 24
8. PAINTING OF CURBS, FIRE HYDRANT MARKS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. IFC § 507
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. IFC § 507.5.7.1
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. IFC § 507
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: IFC § 509.1
 - RESIDENTIAL - 300 FT UNSPRINKLERED; 600 FT SPRINKLERED.
 - COMMERCIAL - 500 FT UNSPRINKLERED; 400 FT SPRINKLERED.

12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE DEPARTMENT VEHICLES ARE REQUIRED TO TURN, FIRE DEPARTMENT VEHICLES SHALL BE INSTALLED AT A MAXIMUM OF 100 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 ODDING BASIS. IFC § C102.6
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. IFC § C102.10
15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § 102.4
16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.7
17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. IFC § C102.6
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS THAT ARE INSTALLED ON A SINGLE SYSTEM. FOR SYSTEMS REQUIRED TO HAVE TWO (2) SOURCES OF WATER SUPPLY, SECONDAL CONNECTION VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. FOR SYSTEMS PERMITTED TO HAVE ONE SOURCE OF WATER SUPPLY, SECONDAL CONNECTION VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 3 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-IN CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. IFC § C104
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. IFC § 503.2.3
20. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12% GRADES OF APPROACH AND 8% GRADES OF DEPARTURE. IFC § 503.2.6 FOR 25 FT PRIOR TO AND AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%. IFC § 503.2.7; 503.2.8
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 13FT 6 INS. IFC § 503.2.1
23. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 33 FT WITH PARKING ON BOTH SIDES MEASURED TO FACE OF CURB, NOT LESS THAN 28 FT 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 BE NOT LESS THAN 24 FT. IFC § 503.2.5
24. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. IFC § 503.1.1
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS OR A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. CLV REGULATION AND MOU
26. DEAD-ENDS AND FIRE DEPARTMENT ACCESS ROADS AND/OR CUL-DE-SACS SHALL BE PRIVATE, IN EXCESS OF 80 FT, CLV REGULATION 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 DEAD END OF THE FIRE DEPARTMENT ACCESS ROAD AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF THE 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 WHITE WITH RED DIAGONAL STRIPES. IFC § 503.2.9
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. IFC § 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 BEINGS UTILIZED TO DELIVER FIRE WATER ARE TO BE PROTECTED BY A FIRE HYDRANT BEING LOCATED ON THE SAME SIDE OF THE STREET AS THE PROPOSED DEVELOPMENT. CLV REGULATION

REVISÉ FEBRUARY 4, 2019

1. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.

3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
4. WHEN A DESIGNATED "SUGGESTED ROUTE TO SCHOOL" IS ENCROACHED UPON BY A CONSTRUCTION WORK ZONE, ALL ADVANCE WARNING STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL UTILIZE TYPE III RETROREFLECTIVE SHEETING IN ACCORDANCE WITH CCAUSS 627 AND 718 AND SHALL HAVE AN ANTI-GRAFFITI PROTECTIVE OVERLAY FILM THAT IS A MATCHING COMPOUND TO, AND OF THE SAME MAKE AND COLOR AS THE SIGN TO WHICH IT IS APPLIED. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.
7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.
8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HEREUNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
9. STREET SIGNS AND STOP SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF TRAFFIC SIGN NAME SIGNS.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC IN OR AROUND THE WORK THE CONTRACTOR SHALL HAVE A CERTIFIED ATSSA TRAFFIC CONTROL TECHNICIAN OR IMSA WORK ZONE SAFETY SPECIALIST SET UP, MAINTAIN AND/OR REMOVE ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.
11. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA (RTC) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.
13. GUARDS SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 826-3442) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR THE USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.

14. ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.

15. THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAVEMENT TRANSITIONS, MARKINGS AND SIGNAGE THAT ARE REQUIRED TO BE MADE TO THE DRAWINGS TO ACCOMMODATE THE PROPOSED PAVING. THE DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPICTING ANY ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND SIGNAGE, SHALL BE SUBMITTED TO THE TRAFFIC ENGINEERING DIVISION FOR REVIEW AND APPROVAL. ALL ROADWAY SEGMENTS ARE CONSTRUCTED.

REVISÉ JUNE 4, 2018

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 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 LWWD 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 LIMIT SHALL BE REJECTED, 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.

REVISÉ 04/15/10

1. ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION (USS), AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA" (USD), LATEST REVISION.

2. DESIGN PROFESSIONAL AND CONTRACTOR SHALL VERIFY CITY'S LATEST LED FIXTURE SPECIFICATIONS AND APPROVED FIXTURES PER CLV WEBSITE, UNDER BUILDING AND SAFETY FORMS, PRIOR TO ORDERING MATERIALS.
3. NO DEVIATION OF STREET LIGHT, PULL BOX, CONDUITS, ETC., LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF THE TRAFFIC AND CITY ENGINEER. ANY DEVIATION FROM THE PLAN LOCATION WILL REQUIRE COMPLIANCE WITH SECTION 623 OF THE U.S.S.
4. ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION IN ACCORDANCE WITH SECTION 623 G.03.01 OF THE U.S.S.
5. ALL EMPTY CONDUIT SHALL HAVE AT LEAST ONE GREEN NO. #8 AWG WIRE INSTALLED AS TRACER WIRE IN ACCORDANCE WITH SECTION 623 G.02.01 OF THE U.S.S PRIOR TO BACKFILLING AND FINAL INSPECTION.
6. ANY STRUCTURE SUCH AS BLOCK WALLS, CHAIN LINK FENCES, RETAINING WALLS, SHALL LEAVE A MINIMUM CLEARANCE IN COMPLIANCE WITH U.S.S. NO. 3204 WHEN POLE IS INSTALLED BEHIND SIDEWALK, AND SHALL AT NO TIME COMPLETELY ENCLOSE THE STREET OR SIDEWALK.
7. AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TRAFFIC ENGINEERING DIVISION PRIOR TO ANY PRE-FINAL INSPECTION. THE AS-BUILT DRAWING NEEDS TO BE STAMPED AS-BUILT AND SIGNED BY THE PREPARER.
8. SERVICE POINTS SHALL BE COORDINATED WITH NV ENERGY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICEPOINTS SHALL BE SHOWN ON THE PLANS.
9. WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREETLIGHTING CIRCUITS AND/OR POLES, THESE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED BEFORE STREETLIGHT BASES ARE INSTALLED, AT NO EXPENSE TO THE CITY OF LAS VEGAS.
10. THE CONTRACTOR SHALL FURNISH COMPLETE CONDUIT, WIRE, ETC. FROM SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON THE PLANS.

REVISED 6/4/2018 (LD VERSION)

1. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATED IN, THE PUBLIC RIGHTS OF WAY OF CLARK COUNTY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.

2. ADDITIONAL CONSTRUCTION BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN CLARK COUNTY TITLE 24.40 AND IN THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TERMINATED, OR IF REMOVAL OF CEASURES FOR SOME EXCEPTIONS MAY APPLY, REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPs WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITY REFERRED TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.12.
5. ACCUMULATED SEDIMENT IN BMPs SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6020

2. MINIMUM HORIZONTAL AND VERTICAL CLEARANCES BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND UTILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRIC SHALL BE AT LEAST 12-INCHES OR GREATER AS DICTATED BY LOCAL CODES AND STANDARDS
 - A. ANY DEVIATION FROM SPECIFIED MINIMUM CLEARANCES MUST BE APPROVED BY ALL AFFECTED UTILITIES AND/OR MUNICIPALITIES.
 - B. FOR VALVE ADJUSTMENT CONTACT 702-668-6107 48 HOURS PRIOR TO CONSTRUCTION
 - C. IN THE EVENT OF A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND STRUCTURES CONTACT 702-365-2099

CAUTION: HIGH PRESSURE GAS!

CALL SOUTHWEST GAS AT 702-278-8251 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES 48 HOURS PRIOR TO CONSTRUCTION

SOUTHWEST GAS CORPORATION

DATE _____

1. INDICATED GRADES OTHER THAN TC, FG & GUTTER FL ARE ROUGH GRADES

2. THE ROUGH GRADING PLANS SHALL BE ON THE JOB SITE AT ALL TIMES. THE ROUGH GRADING SHALL BE FINISHED IN CONFORMANCE WITH THE LINES AND GRADES SHOWN ON THE PLANS. THE GRADING QUANTITIES ARE BASED ON THE ELEVATION AND DETAILS SHOWN ON THE PLANS. ANY DEVIATIONS FROM THE PLAN WILL RESULT IN QUANTITY CHANGES.
3. SOILS REPORT PREPARED BY: NOVA GEOTECHNICAL & INSPECTION SERVICES 4480 W. HACIENDA AVENUE, SUITE 104, LAS VEGAS, NV 89118, PHONE: 702-873-3478, PROJECT NO. : G-19-026, DATED: JUNE 18, 2020.
4. EARTHWORK QUANTITIES (RAW):

- CUT = 3,500 CUBIC YARDS
-FILL = 23,600 CUBIC YARDS
- A. THE ABOVE QUANTITIES DO NOT REFLECT LOSSES DUE TO SUBSIDENCE OR SHRINKAGE.
- B. THE ABOVE QUANTITIES DO REFLECT USING NATIVE MATERIAL IN LIEU OF TYPE 1 GRAVEL BASE MATERIAL FOR CONSTRUCT ADDITIONAL DITCHES.
- C. THE ABOVE QUANTITIES DO NOT REFLECT ANY EARTHWORK WHICH MAY BE REQUIRED BY THE ENGINEER TO CONSTRUCT ADDITIONAL PROTECTIVE DITCHES OR BERMS NOT SHOWN ON THESE DRAWINGS.

1. THE CONTRACTOR SHALL NOTIFY ALL AFFECTED PUBLIC ENTITIES, THE PROJECT ENGINEER AND THE CITY OF LAS VEGAS AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF WORK.

1. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE CONTRACT DRAWINGS, ANY REVISIONS SHALL HAVE THE CONTRACTOR'S WRITTEN APPROVAL OF THE PROJECT ENGINEER.
2. 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 ISSUE; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE.
3. LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM INFORMATION RECEIVED FROM APPLICABLE CITY DEPARTMENTS. THE OWNER, PROJECT ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES OR STRUCTURES NOT SHOWN, OR NOT IN THE LOCATION SHOWN ON THE DRAWINGS. CONTRACTOR TO VERIFY EXACT LOCATION OF UTILITIES PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR'S RESPONSIBILITY REGARDING UTILITIES SHALL BE AS REQUIRED UNDER SECTION 107.17 OF THE "UNIFORM STANDARD SPECIFICATIONS FOR CLARK COUNTY AREA, NEVADA" AND AS PROVIDED IN THE SPECIFICATIONS.
4. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES TO PROTECT EXISTING UTILITY LINES, STRUCTURES, AND STREET IMPROVEMENTS REMAINING IN PLACE. FROM ENGINEER ASSUMES ANY RESPONSIBILITY FOR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE COUNTY ENGINEER OR OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
5. THE CONTRACTOR SHALL NOT REMOVE TREES, SHRUBS, LAWNS, WALLS, FENCES, SIGNS, STRUCTURES, LIGHTS, OR ANY OTHER EXISTING IMPROVEMENTS OUTSIDE OF STREET RIGHT-OF-WAY, EXCEPT WHERE REQUIRED TO DO SO BY THE CONTRACT DRAWINGS OR THE PROJECT ENGINEER. REPLACEMENT, RELOCATION OR REMOVAL OF EXISTING TREES, SHRUBS, LAWNS, WALLS, FENCES, SIGNS, STRUCTURES, LIGHTS, SIDEWALKS, DRIVEWAYS, LAWN LIGHTS, AND ALL OTHER ITEMS APPLICABLE TO THIS CONTRACT SHALL BE REQUIRED BY THE PROJECT ENGINEER.
6. THE CONTRACTOR SHALL BACKFILL AND FINE GRADE ALL CUT OR FILL SLOPES TO MATCH EXISTING CONDITIONS TO THE SATISFACTION OF THE PROJECT ENGINEER. WHERE EXISTING LAWNS ARE DAMAGED BY THE CONTRACTOR'S OPERATIONS THE CONTRACTOR SHALL SOO THE AFFECTED AREA TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO CONSTRUCTION.
7. THE 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 TRANSITIONS TO BE AS SHOWN PER CONTRACT DRAWINGS.
8. 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. 625.550.
9. THE ACTUAL LOCATIONS OF SAW CUT LINES, LIMITS OF COLD MILLING, LIMITS OF DRIVEWAY TRANSITIONS, AND LANDSCAPE REPAIR SHALL BE DETERMINED IN THE FIELD BY THE RESIDENT PROJECT REPRESENTATIVE.
10. THE ACTUAL LIMITS OF EXISTING OPEN GRADE REMOVAL AND UDACS APPLICATION SHALL BE DETERMINED IN THE FIELD BY THE RESIDENT PROJECT REPRESENTATIVE.
11. ALL STANDARD DRAWINGS REFERENCED IN THIS SET ARE BASED ON THE CURRENT "UNIFORM STANDARD DRAWINGS REVISION SET II--1997 RELEASE".
12. UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OR RELOCATION OF ALL WATER SERVICES AND METERS WHICH INTERFERE WITH IMPROVEMENTS SHOWN ON THE CONTRACT DRAWINGS.
13. THE CONTRACTOR SHALL MAINTAIN AN ONGOING REMOVAL PROCESS OF ALL SPILLAGE OF EXCAVATION MATERIAL ON ALL PAVED STREETS.
14. CURB AND GUTTER OF A GRADE OF LESS THAN 4/10 OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EARTH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
15. THE CONTRACTOR SHALL VERIFY IN THE FIELD ALL DIMENSIONS, EXISTING CONDITIONS AND POINTS OF CONNECTION WITH ADJOINING PROPERTY (PUBLIC AND PRIVATE). ANY DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE PROJECT ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
16. REMOVAL OR RELOCATION OF POWER POLES, TELEPHONE POLES, JOINTLY-OWNED POLES, AND APPURTENANCES WHICH INTERFERE WITH IMPROVEMENTS REQUIRED TO BE CONSTRUCTED UNDER THIS CONTRACT, SHALL BE THE RESPONSIBILITY OF THE RESPECTIVE UTILITY COMPANY. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH THE UTILITY COMPANIES FAR ENOUGH IN ADVANCE SO AS TO NOT IMPACT THE SCHEDULE.
17. COX COMMUNICATIONS SHALL BE RESPONSIBLE FOR THE VERTICAL OR HORIZONTAL ADJUSTMENT OF ALL CATV FACILITIES WHICH INTERFERE WITH IMPROVEMENTS SHOWN ON THE CONTRACT DRAWINGS, UNLESS NOTED OTHERWISE.
18. NV ENERGY SHALL BE RESPONSIBLE FOR THE RELOCATION OF UNDERGROUND OR OVERHEAD POWER LINES THAT INTERFERE WITH THE REQUIRED IMPROVEMENTS AS SHOWN ON THE CONTRACT DRAWINGS.
19. EMBARGO SHALL BE RESPONSIBLE FOR THE VERTICAL OR HORIZONTAL ADJUSTMENT OF ALL TELEPHONE FACILITIES WHICH INTERFERE WITH IMPROVEMENTS SHOWN ON CONTRACT DRAWINGS, UNLESS NOTED OTHERWISE.

LVVWD PROJECT #137065
(REVISED 01/01/2017)

1. NO WORK SHALL BEGIN UNTIL THE WATER PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE LVVMD. FOLLOWING WATER PLAN APPROVAL, NOTICE SHALL BE GIVEN TO THE LVVMD 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 LVVMD INSPECTION. **WHEN REQUESTING INSPECTIONS, PLEASE REFER TO THE PROJECT # IDENTIFIED ABOVE.**
2. ALL WORK SHALL CONFORM TO LVVMD 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 SUPERCEDE 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 LVVMD.
5. ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING WITH LVVMD APPROVED SERVICE SADDLES.
6. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS.
7. ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB GUTTERS.
8. ALL WATER AND STORM DRAIN OR SANITARY SEWER CROSSINGS SHALL CONFORM TO SECTION 2.22 OF THE 2010 EDITION OF THE UDACS.
9. ALL WATER FACILITIES SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED, AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO CONNECTION TO THE LVVMD DISTRIBUTION SYSTEM.
10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVMD 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 LVVMD INSPECTION DIVISION PRIOR TO SHUTDOWN. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.
12. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE AS LISTED ON THE LVVMD PRE-APPROVED MATERIALS AND MANUFACTURER'S LISTING FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS.
13. TELEPHONE "CALL BEFORE YOU DIG" AT 1--800--227--2600 OR 811.
14. THE INSTALLATION OF LAS VEGAS VALLEY WATER DISTRICT (LVVWD) MUNICIPAL WATER FACILITIES WITHIN ALL STREETS IS ASSUMED TO BE IN COMPLIANCE WITH THE UNIFORM STANDARD, INCLUDING THE PLACEMENT OF ASPHALT PAVING STREET SURFACES. ANY REPAIR WORK DONE BY THE LVVMD TO THE MUNICIPAL WATER FACILITIES WILL INCLUDE THE PLACEMENT OF AN APPROPRIATELY SIZED ASPHALT REPAIR PATCH ON THE STREET SURFACE.

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

LAS VEGAS VALLEY WATER DISTRICT
PLANNING AND ENGINEERING SERVICES

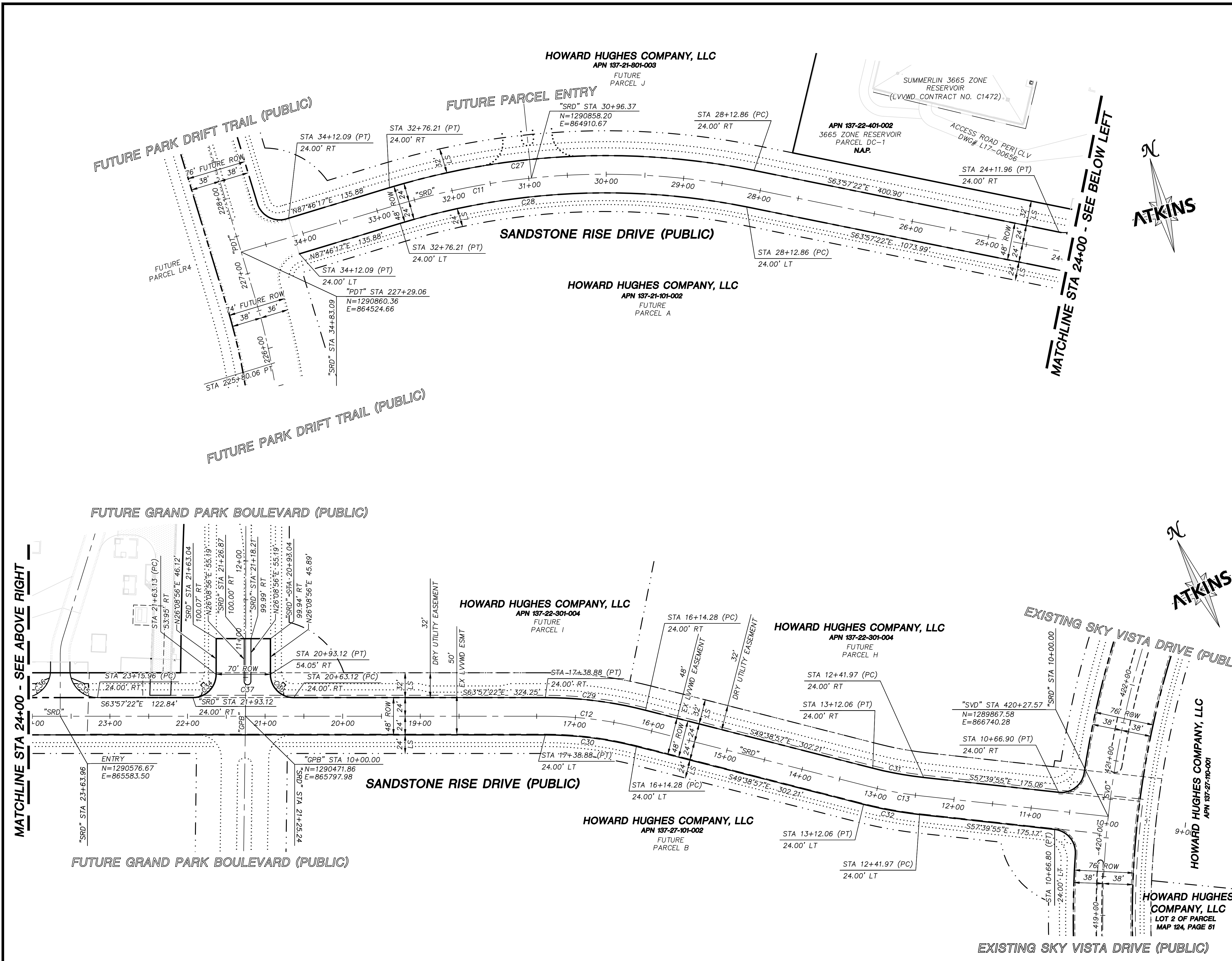
PROJECT NO. 137065 FIRST APPROVED DATE:

LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL



JOB NO.	100063656	DESIGNED BY:	107Y5132 L20-00453
		DRAWN BY:	DATE: JANUARY, 2021
		CHECKED BY:	DRAWING NO.
		HORIZ.: NONE	3/32
		VERT.: NONE	

JOB NO. 100063656



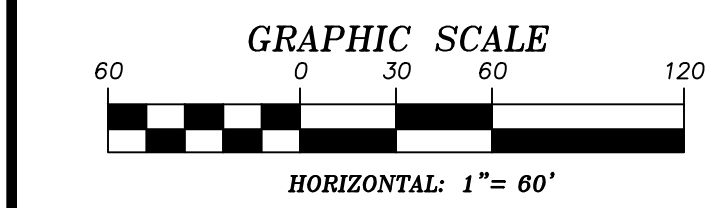
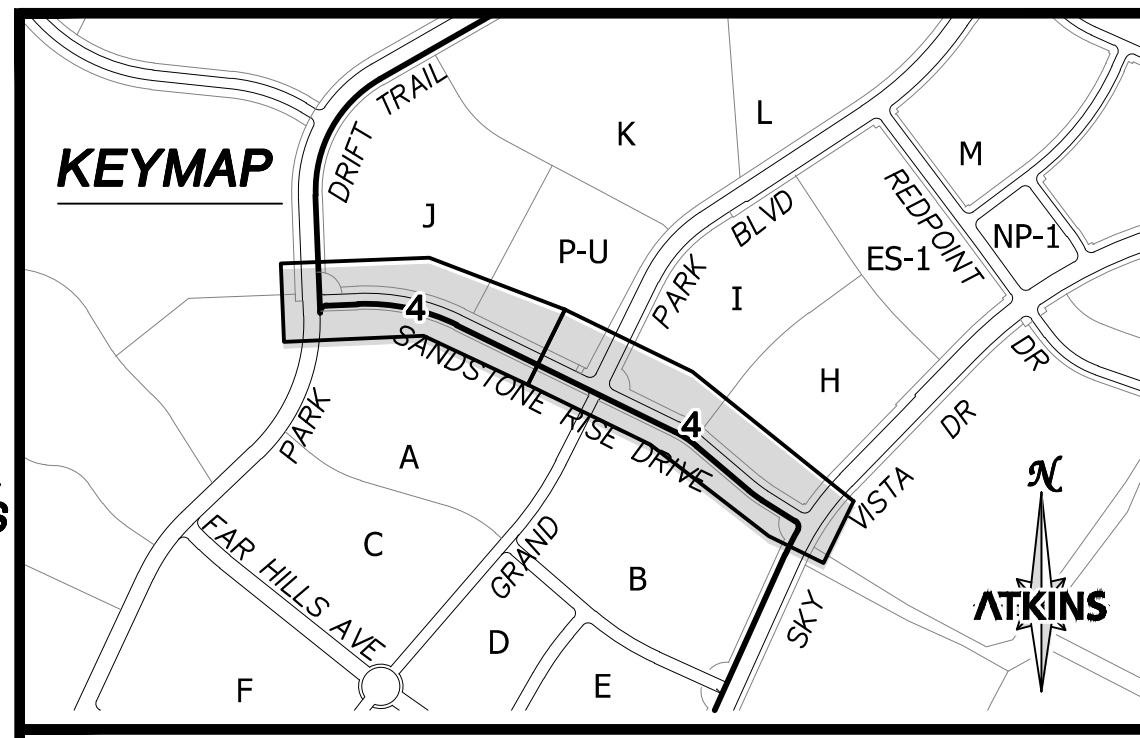
SUMMARY OF QUANTITIES		
DESCRIPTION	QUANTITY	UNIT
ROADWAY		
CURB & GUTTER (TYPE "L")	4762	LF
CURB & GUTTER (TYPE "A")	124	LF
TYPE II GRAVEL BASE	1335	CY
3" ASPHALTIC CONCRETE PAVING	12019	SY
CURB RAMP	4	EA

- ROADWAY NOTES**
- SEE SHEET 27 FOR TYPICAL SECTIONS, DETAILS
 - SEE SHEET 2 FOR ROADWAY ALIGNMENT ABBREVIATIONS

CENTERLINE CURVE TABLE				
NO.	RADIUS	DELTA	LENGTH	TANGENT
C11	939.00'	28°16'21"	463.35'	236.49'
C12	499.00'	14°18'25"	124.60'	62.63'
C13	501.00'	8°00'59"	70.10'	35.11'

BACK OF CURB CURVE TABLE				
NO.	RADIUS	DELTA	LENGTH	TANGENT
C27	963.00'	28°16'21"	475.19'	242.54'
C28	915.00'	28°16'21"	451.51'	230.45'
C29	523.00'	14°18'25"	130.60'	65.64'
C30	475.00'	14°18'25"	118.61'	59.61'
C31	477.00'	8°00'59"	66.74'	33.42'
C32	525.00'	8°00'59"	73.45'	36.79'
C33	30.00'	90°06'17"	47.18'	30.05'
C34	30.00'	89°53'43"	47.07'	29.95'
C35	35.50'	90°00'01"	55.76'	35.50'
C36	35.50'	90°00'01"	55.76'	35.50'
C37	4.33'	180°00'00"	13.60'	INFINITY'

EXISTING SKY VISTA DRIVE:
PER VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
CLV# 107V7884



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

BENCHMARK
CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVDS8 ELEVATION: 989.574 METERS (3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

FAST
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UnderGround
1-702-432-5300
EMERGENCY AND AIRTEL
SERVICE OF TRANSPORTATION

Call before you Dig
811
1-800-642-2444

AVOID HITTING OVERHEAD POWER LINES. IT'S YOUR RESPONSIBILITY.
CALL BEFORE YOU DIG OVERHEAD
1-702-227-2929

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

PROFESSIONAL ENGINEER-STATE OF NEVADA
ANTHONY J. ORTIZ
No. 18849
1/21/2021

DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO. 4/32
HORIZ. 1"=60'
VERT.: NONE

ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7755
Fax: +1702.263.7200

SUMMERLIN

SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)

HORIZONTAL CONTROL PLAN

DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO. 4/32
HORIZ. 1"=60'
VERT.: NONE

107V15132
L20-00453
JANUARY, 2021
DRAWING NO. 4/32
JOB NO. 100063656

EXISTING ROUGH GRADING:
PER
VILLAGE 30A ROUGH GRADE
CLV NO. L20-00015

FUTURE PARK DRIFT TRAIL
(PUBLIC)

FUTURE PARCEL ENTRY

HOWARD HUGHES COMPANY, LLC
APN 137-21-801-003
FUTURE
PARCEL J

SANDSTONE RISE DRIVE (PUBLIC)
HOWARD HUGHES COMPANY, LLC
APN 137-21-101-002
FUTURE
PARCEL A

APN 137-22-401-002
3665 ZONE RESERVOIR
PARCEL DC-1
NAP.

SUMMERLIN 3665 ZONE
RESERVOIR
(LVVWD CONTRACT NO. C1472)

ACCESS ROAD PER CLV
DWG# L17-00656

MATCHLINE STA 24+00 - SEE BELOW LEFT



SUMMARY OF QUANTITIES

DESCRIPTION	QUANTITY	UNIT
STORM DRAIN		
24" RCP	49	LF
24" PVC	90	LF
30" RCP	71	LF
36" RCP	997	LF
48" RCP	1059	LF
SD MANHOLE	14	EA
2' BEEHIVE INLET	1	EA
5.5' TYPE CM DROP INLET	4	EA
11.5' TYPE CM DROP INLET	2	EA
14.5' TYPE CM DROP INLET	2	EA

MASTER PLAN NOTE

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FOR REVIEW AND COORDINATION WITH OTHER
PROJECT DETAILS WITHIN THIS PLAN SET.

STORM DRAIN NOTES

- SEE ROADWAY GRADING PLAN AND ROADWAY
PLAN AND PROFILE SHEETS FOR
CONSTRUCTION NOTES AND INFORMATION
RELATED TO PIPE SIZE (INNER DIAMETER),
MANHOLE BASE SIZE (INSIDE DIMENSIONS),
AND DROP INLET LENGTHS (CURB OPENING).
- ALL STORM DRAIN MATERIAL TO BE CLASS III
REINFORCED CONCRETE PIPE, UNLESS
OTHERWISE NOTED IN PROFILES.
- CONTRACTOR TO PROVIDE 6" MINIMUM OF
CLEARANCE BETWEEN OUTSIDE OF PIPE TO
OUTSIDE WALL OF STORM DRAIN STRUCTURES.

FUTURE GRAND PARK BOULEVARD (PUBLIC)

MATCHLINE STA 24+00 - SEE ABOVE RIGHT

HOWARD HUGHES COMPANY, LLC
APN 137-22-301-004
FUTURE
PARCEL I

HOWARD HUGHES COMPANY, LLC
APN 137-22-301-004
FUTURE
PARCEL H

EXISTING SKY VISTA DRIVE (PUBLIC)



EXISTING SKY VISTA DRIVE:

PER
VILLAGE 25 SKY VISTA DRIVE
IMPROVEMENTS
CLV# 107V7884

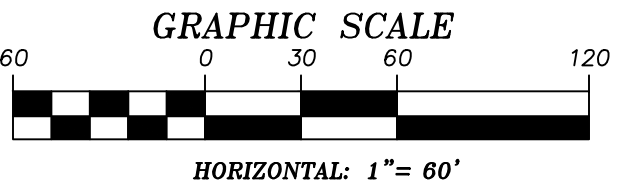
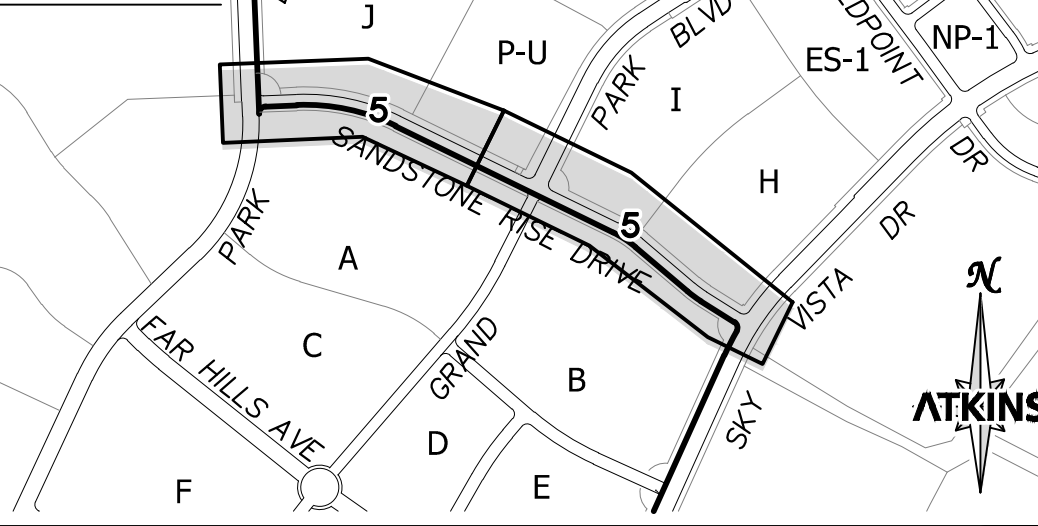
SANDSTONE RISE DRIVE (PUBLIC)

HOWARD HUGHES COMPANY, LLC
APN 137-27-101-002
FUTURE
PARCEL B

HOWARD HUGHES
COMPANY, LLC
LOT 2 OF PARCEL
MAP 124, PAGE 51

EXISTING SKY VISTA DRIVE (PUBLIC)

KEYMAP



SOILS REPORT

BY NOVA GEOTECHNICAL
PROJECT NO. G-19-026
DATED MAY 9, 2019
EARTHWORK QUANTITIES (RAW):
CUT= 3,500 CU YDS
FILL= 23,600 CU YDS

GRADING PLAN CERTIFICATION

ANTHONY ORTIZ PE#18849 DATE
CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR
THIS PROJECT.
DS#5221

BASIS OF BEARING

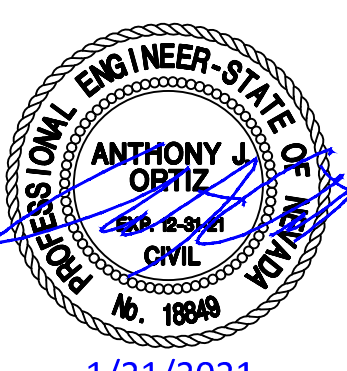
GRID NORTH AS DEFINED BY THE
CENTRAL MERIDIAN OF THE NEVADA
COORDINATE REFERENCE SYSTEM
(NCRS), LAS VEGAS HIGH
ELEVATION ZONE, NORTH AMERICAN
DATUM OF 1983; SAID MERIDIAN
BEING COINCIDENT WITH 114°58'
WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK:
D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK
RIDGE 150' SOUTH OF CHARLESTON
BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03



UTILITY LOCATIONS SHOWN HEREON ARE
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HORIZONTAL LOCATION OF ALL EXISTING
UNDERGROUND UTILITIES PRIOR TO
COMMENCING CONSTRUCTION. NO
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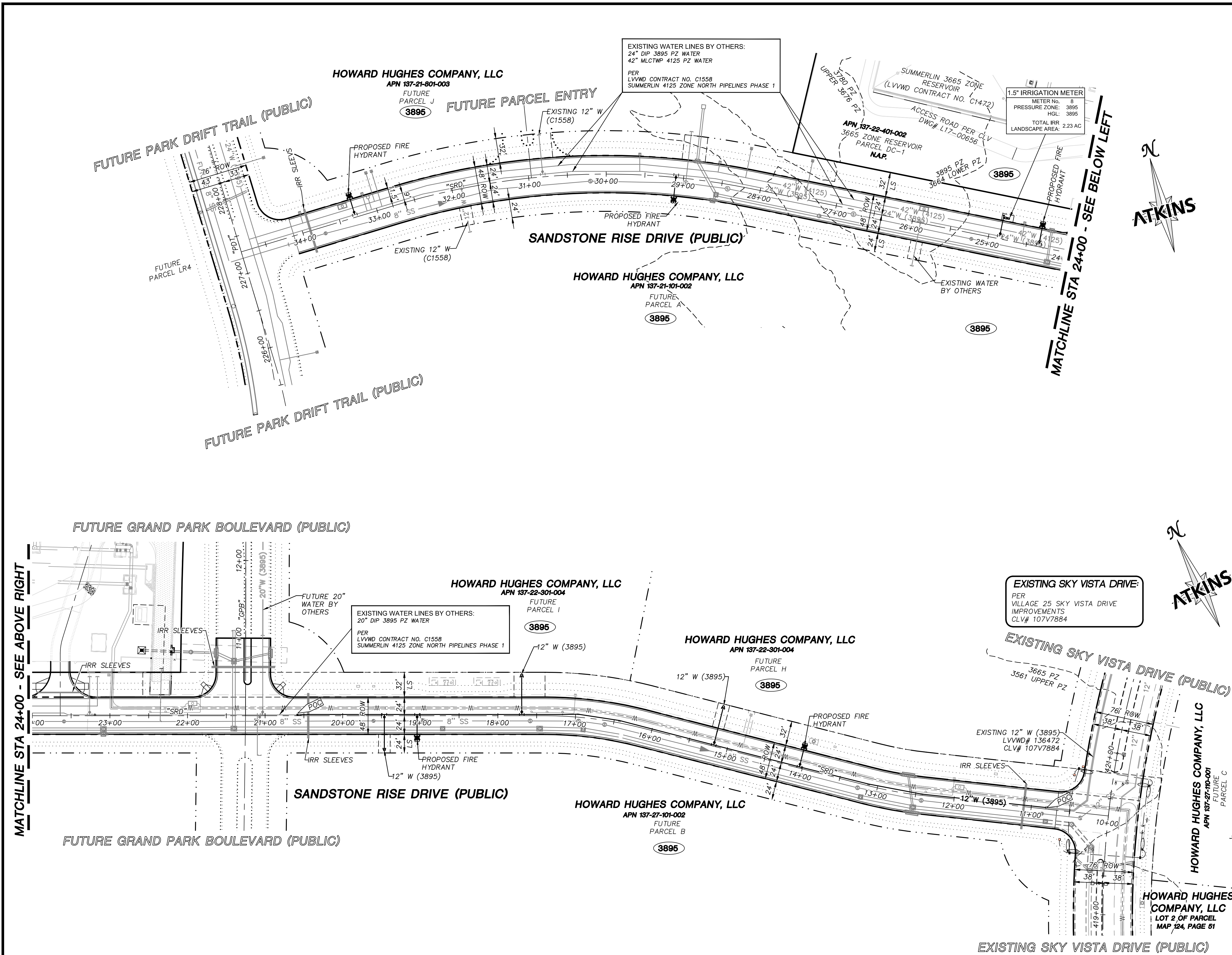


ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7755
Fax: +1702.263.7200

SUMMERLIN

SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)

DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO. 5/32
JOB NO. 100063656



SUMMARY OF QUANTITIES

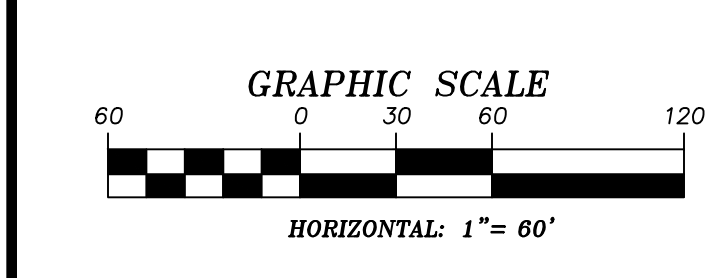
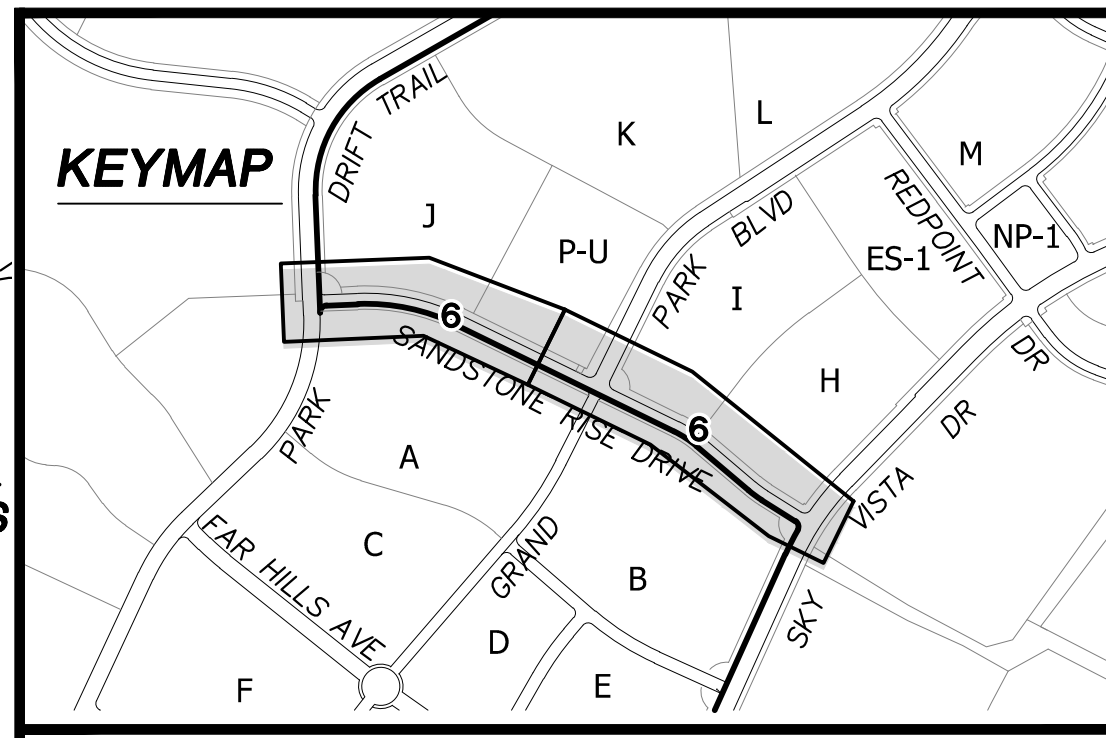
DESCRIPTION	QUANTITY	UNIT
WATER		
12" DIP WATER MAIN	1,123	LF
6" DIP WATER MAIN	106	LF
12" GATE VALVE	3	EA
IRRIGATION SLEEVES	373	LF
WATER SERVICE TO LOTS	1	EA
FIRE HYDRANT	5	EA
1.5" METER AND RPPA	1	EA

MASTER PLAN NOTE

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WATER NOTES

- SEE ROADWAY PLAN AND PROFILE SHEETS FOR CONSTRUCTION NOTES AND INFORMATION RELATED TO PIPE SIZE, LENGTH, AND SIZE OF FITTINGS.
- ALL WATER PIPE MATERIAL TO BE WATER QUALITY RATED AWWA C-900, UNLESS OTHERWISE NOTED IN PROFILES.
- INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING PER UDACS PLATE #15.
- PROTECT IN PLACE AND ADJUST LVVWD EXISTING FACILITIES TO FINISHED GRADE. ALL LVVWD FACILITIES SHALL BE ACCESSIBLE AT ALL TIMES.
- THRUST BLOCKS WILL BE PROVIDED AT EVERY CHANGE IN DIRECTION PER UDACS PLATES #30 & #31.
- IRRIGATION METER NUMBERING PER SUMMERLIN VILLAGE 25 IRRIGATION MASTER PLAN BY SMP ENVIRONMENTAL DESIGN DATED 5/1/19.
- ALL SEWER/STORM DRAIN CROSSING WATER LINES MUST COMPLY WITH UDACS SECTION 2.22.
- 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 TO LVVWD STANDARDS AND AT THE DEVELOPER'S EXPENSE. APPROVAL OF THE VALVED OUTLET DOES NOT PROVIDE OR IMPLY A WATER COMMITMENT.
- ALL ABOVE GROUND OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO LANDSCAPE BOULDERS, FENCES / WALLS (TO INCLUDE NO FOOTINGS), AND SIGNS ARE STRICTLY PROHIBITED WITHIN EASEMENT.
- MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.
- PROTECT IN PLACE AND ADJUST LVVWD EXISTING FACILITIES TO FINISHED GRADE PER UDACS. ALL LVVWD FACILITIES SHALL BE ACCESSIBLE AT ALL TIMES.



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. 137065 FIRST APPROVED DATE: _____

LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

BASIS OF BEARING

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

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

FAST

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PROFESSIONAL ENGINEER-STATE OF NEVADA

ANTHONY J. ORTIZ

1/21/2021

ATKINS

2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7755
Fax: +1702.263.7200

SUMMERLIN

SUMMERLIN VILLAGE 25

SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)

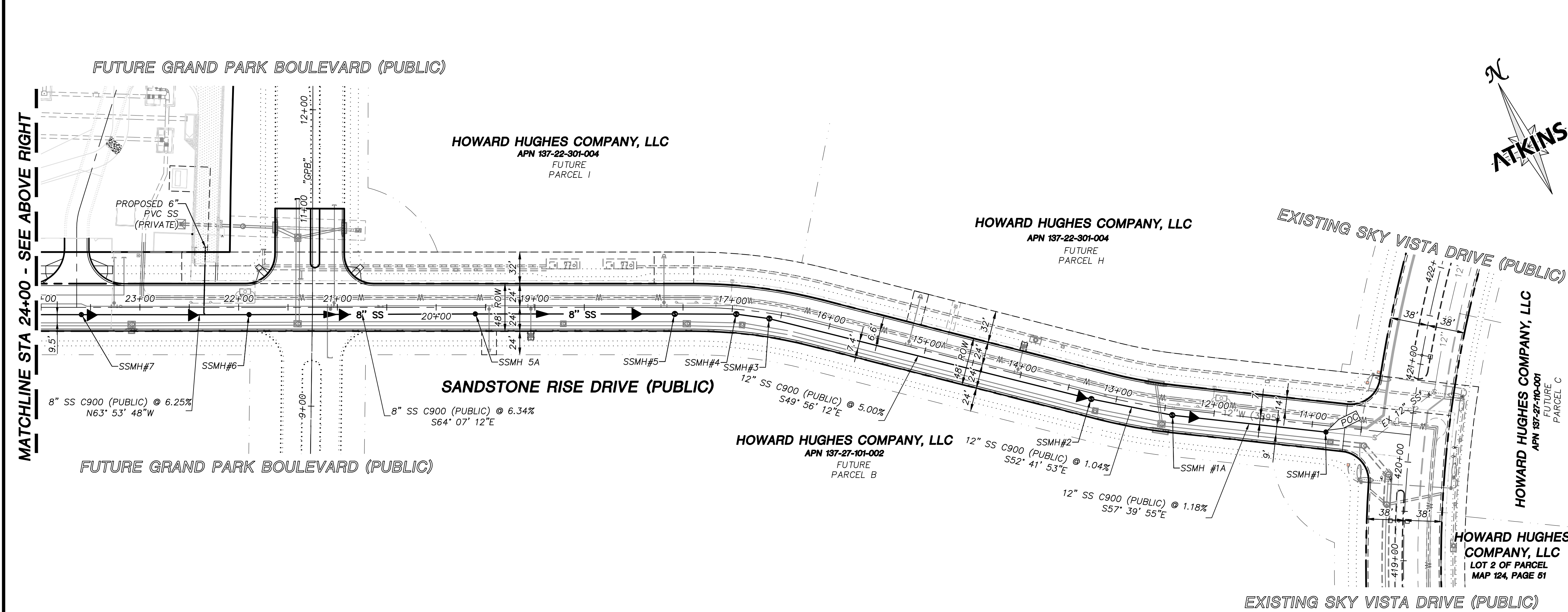
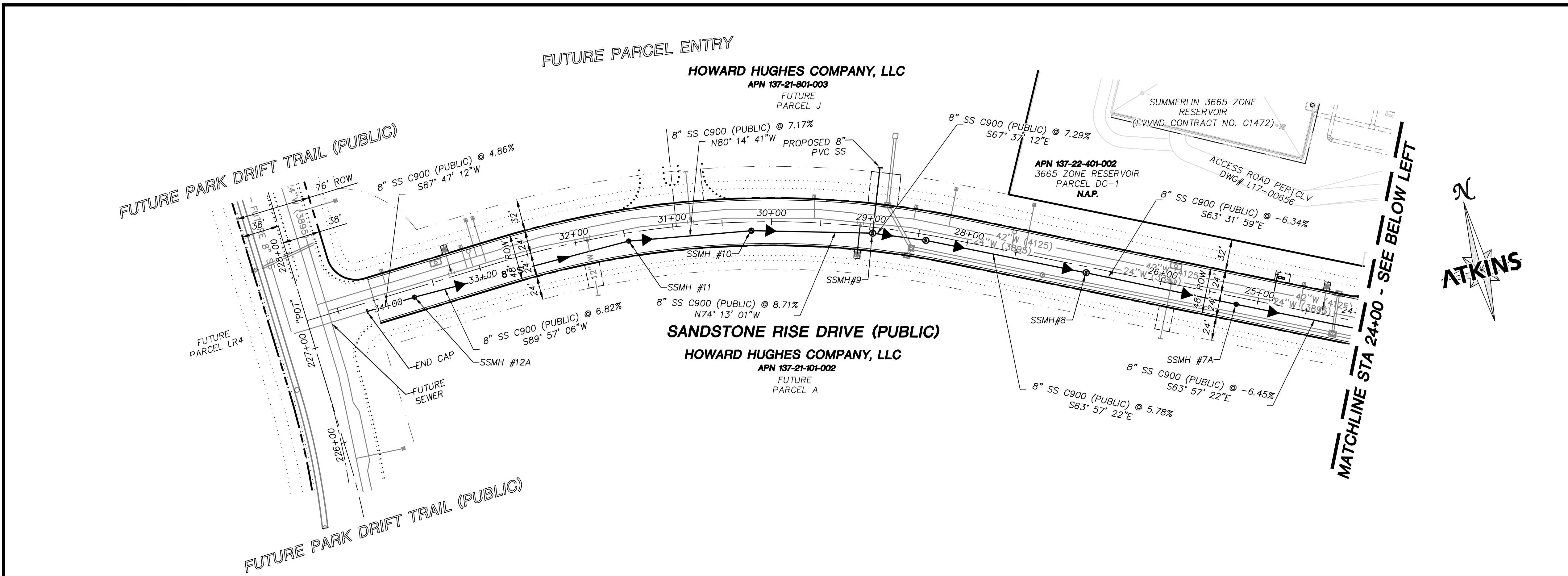
MASTER WATER PLAN

DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO. 6/32
JOB NO. 100063656

REVISIONS

REV.	DESCRIPTION	DATE	APPROVAL

107/5132
L20-00453
DATE: JANUARY, 2021
DRAWING NO. 6/32
JOB NO. 100063656



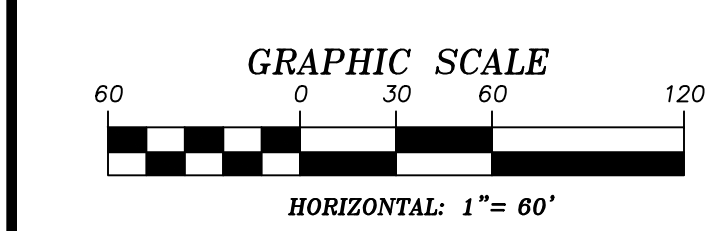
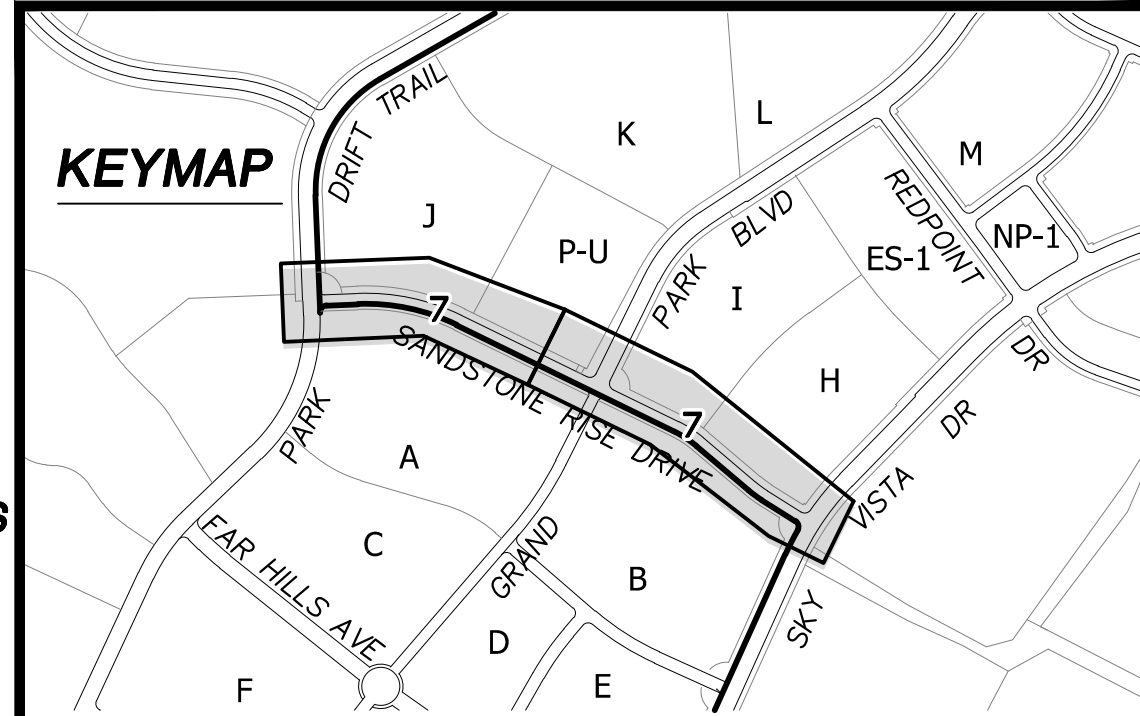
SUMMARY OF QUANTITIES		
DESCRIPTION	QUANTITY	UNIT
SEWER		
12" C900 SEWER	2,332	LF
8" C900 SEWER	125	LF
6" SEWER	69	LF
SEWER MANHOLE (12'-18')	16	EA

MASTER PLAN NOTE
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- SEWER NOTES**
- SEE ROADWAY PLAN AND PROFILE SHEETS FOR CONSTRUCTION NOTES AND INFORMATION RELATED TO PIPE SIZE, SLOPE, INVERT, RIM INFORMATION, AND MANHOLE BASE SIZE.
 - ALL SEWER PIPE MATERIAL TO BE WATER QUALITY RATED AWWA C-900, UNLESS OTHERWISE NOTED IN PROFILES.
 - ALL SEWER MANHOLES TO BE POLYMER LINED AND ALL JOINTS TO HAVE SIKATFLEX 2C NS SEALANT BETWEEN COMPONENTS.
 - ALL SEWER MANHOLES GREATER THAN 20' DEEP TO BE LINED WITH CORROSION PROTECTION PER DCSCWS STANDARD PLATE SD-1.



EXISTING SKY VISTA DRIVE:
PER VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
CLV# 107V7884



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

BENCHMARK
CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

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1-800-642-2444

1/21/2021

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Henderson, Nevada 89074
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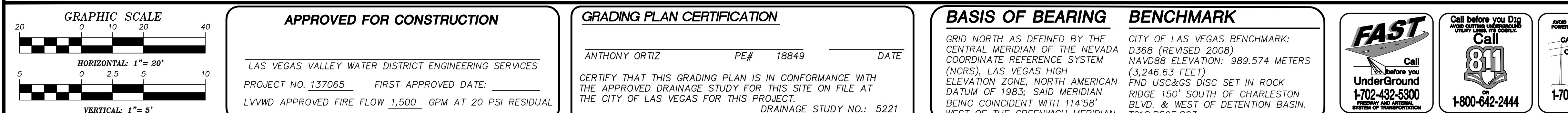
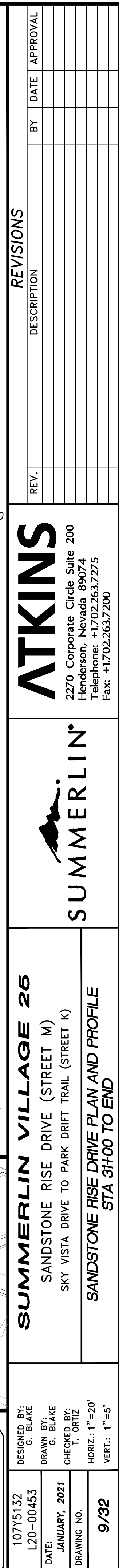
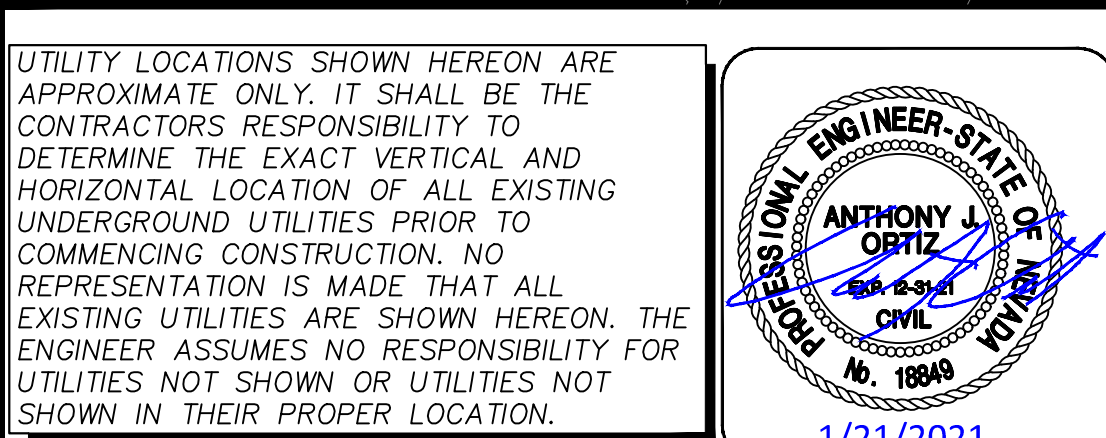
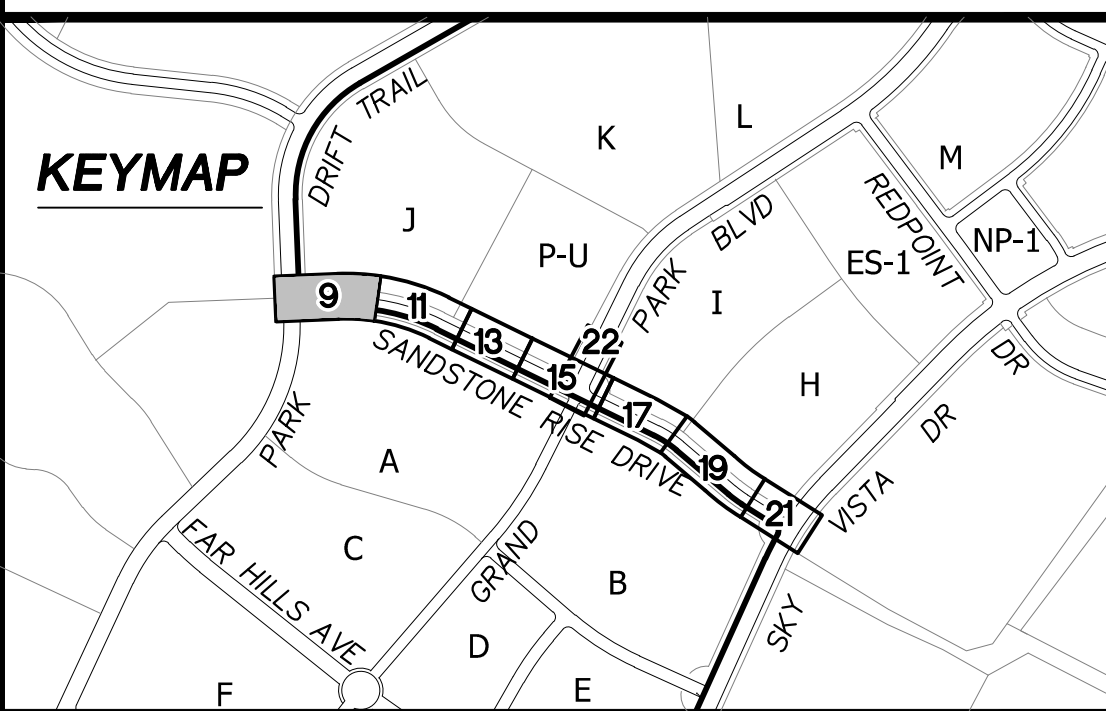
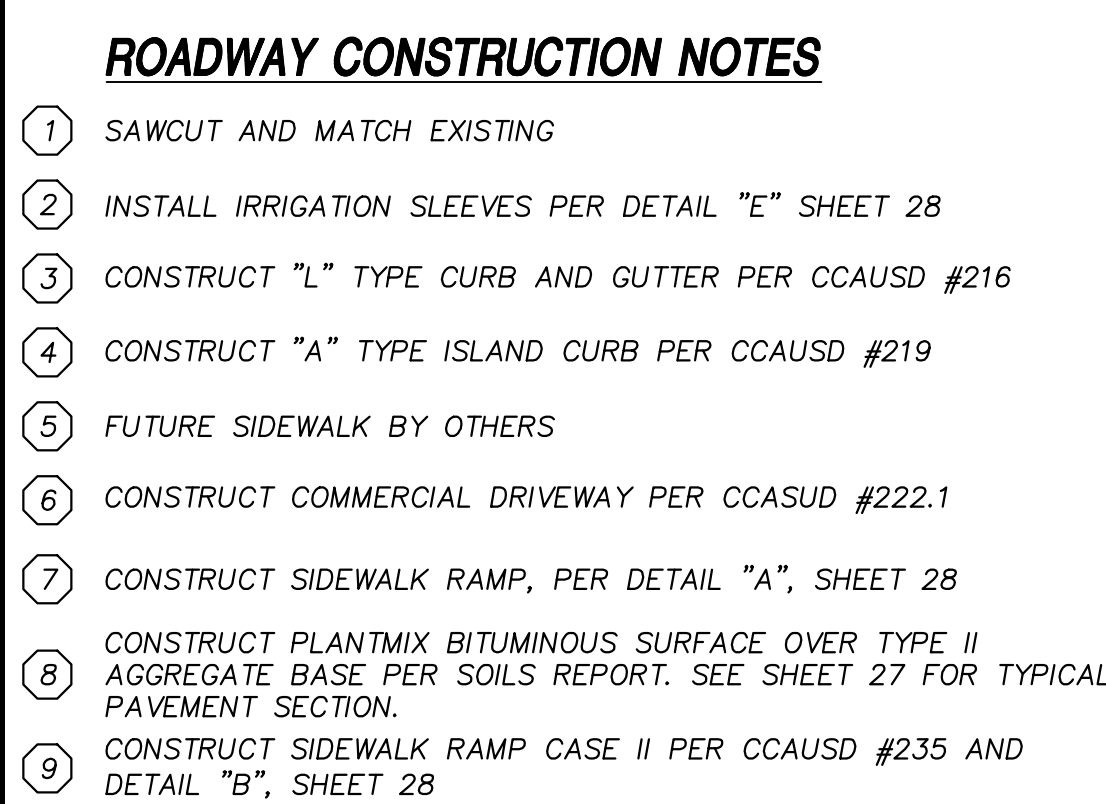
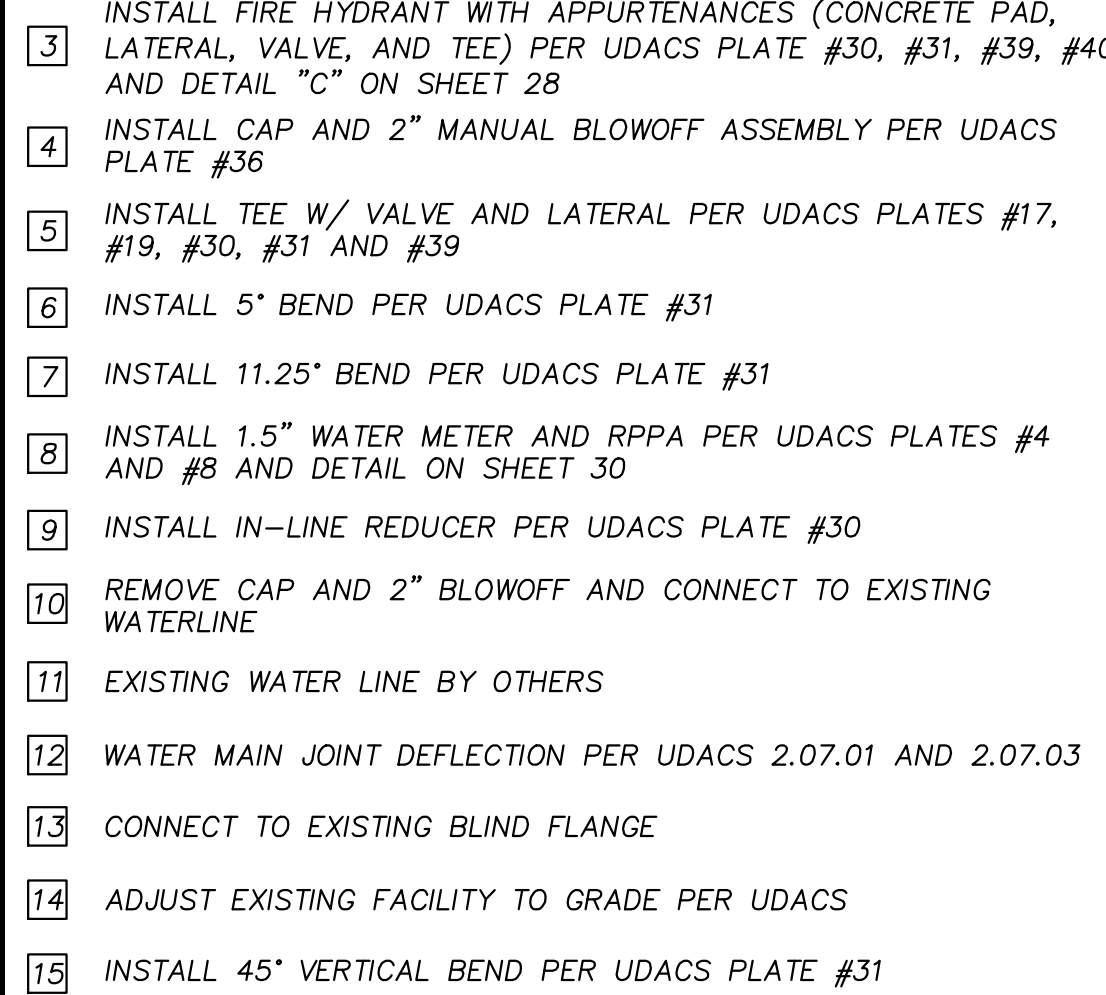
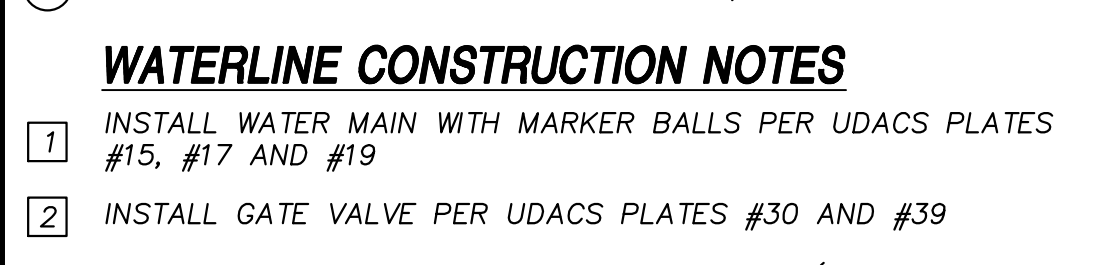
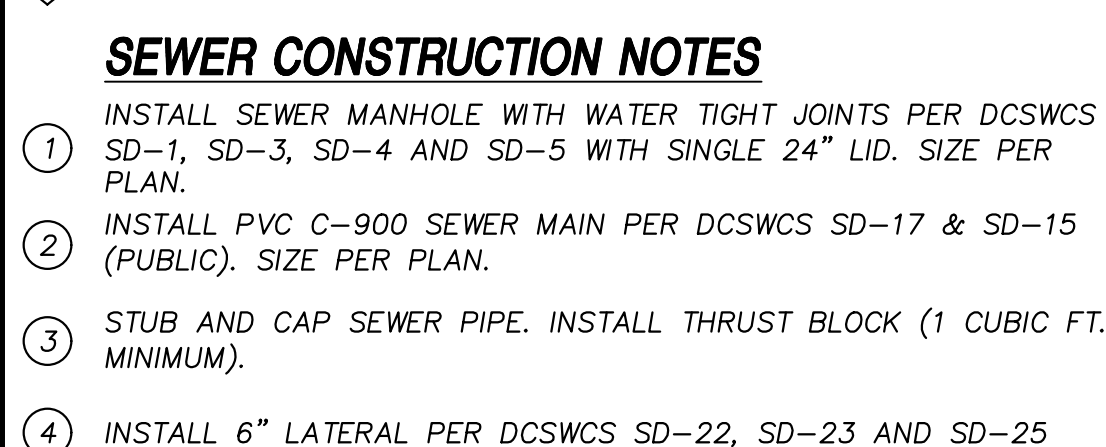
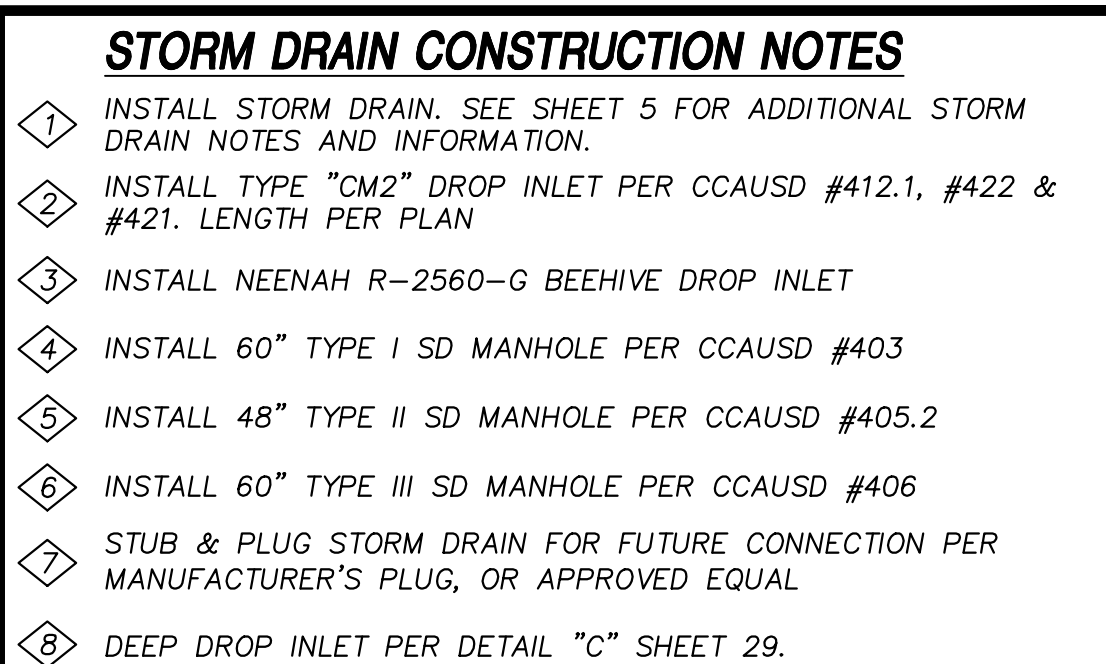
SUMMERLIN

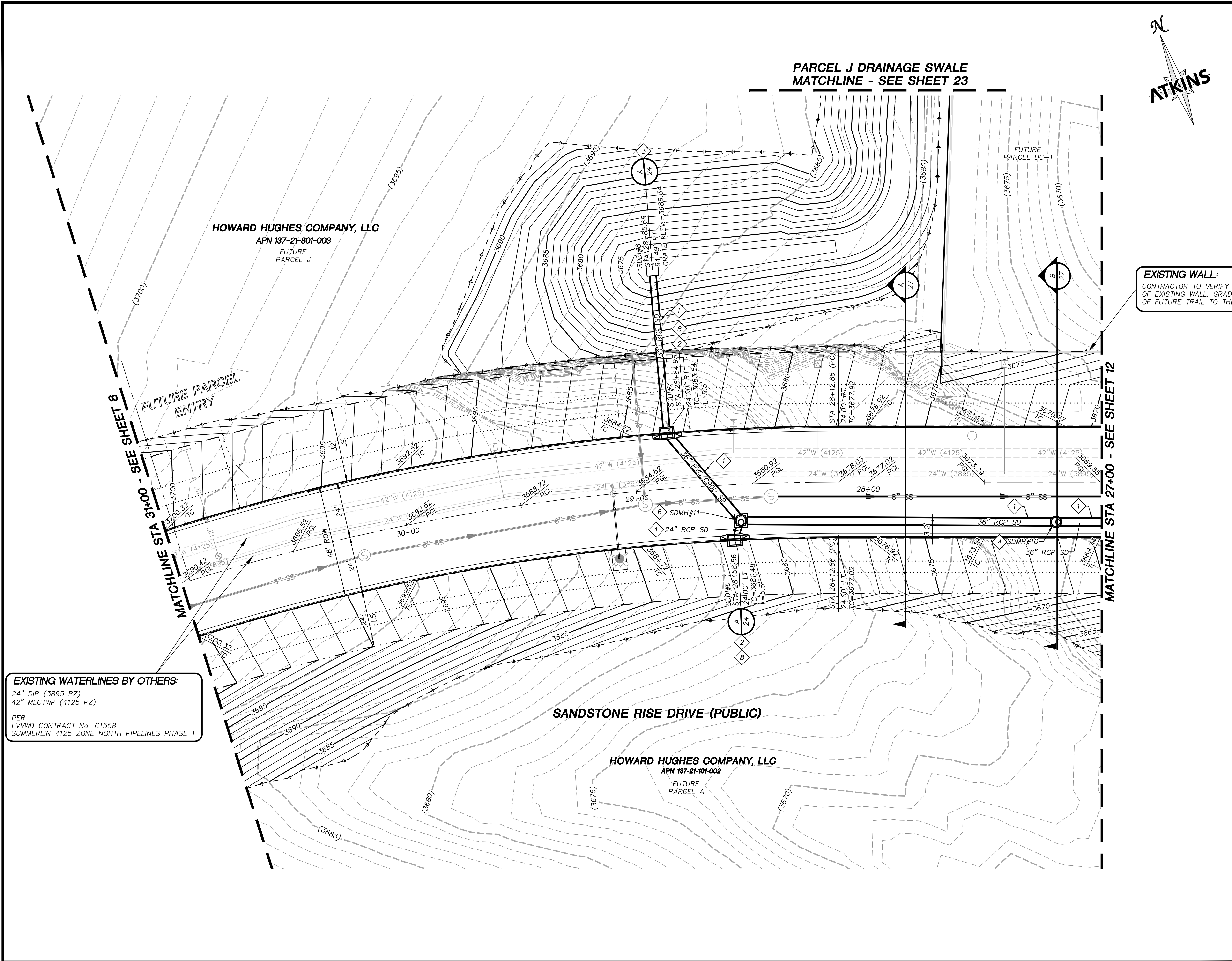
SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)

MASTER SEWER PLAN

DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO. 7/92
JOB NO. 100063656

107V1532
L20-00453
DATE: JANUARY, 2021
DRAWING NO. 7/92
JOB NO. 100063656





STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN. SEE SHEET 5 FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1, #422 & #421. LENGTH PER PLAN
3. INSTALL NEENAH R-2560-G BEEHIVE DROP INLET
4. INSTALL 60" TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL 48" TYPE II SD MANHOLE PER CCAUSD #405.2
6. INSTALL 60" TYPE III SD MANHOLE PER CCAUSD #406
7. STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
8. DEEP DROP INLET PER DETAIL "C" SHEET 29.

DEPTH OF COVER DURING CONSTRUCTION

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

EXISTING LVVWD FACILITIES

PROTECT IN PLACE AND ADJUST LVVWD EXISTING FACILITIES TO FINISHED GRADE PER UDACS. ALL LVVWD FACILITIES SHALL BE ACCESSIBLE AT ALL TIMES.

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

ATKINS

2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7755
Fax: +1702.263.7200

SUMMERLIN

SUMMERLIN VILLAGE 25

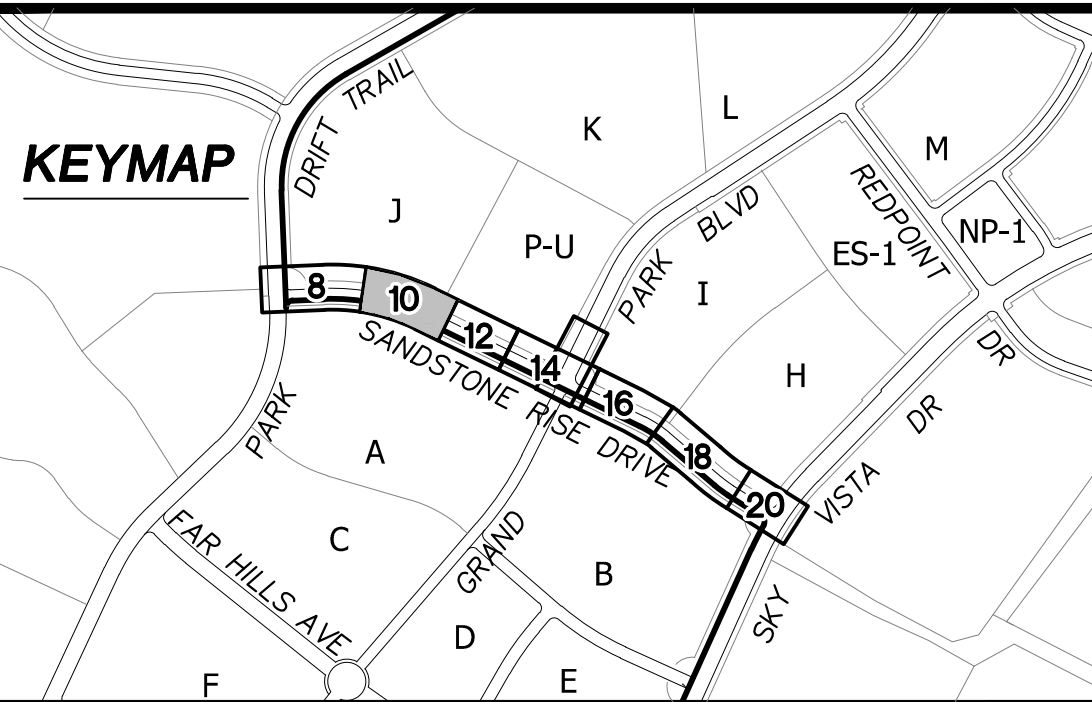
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SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)

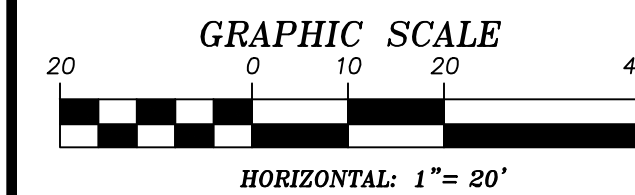
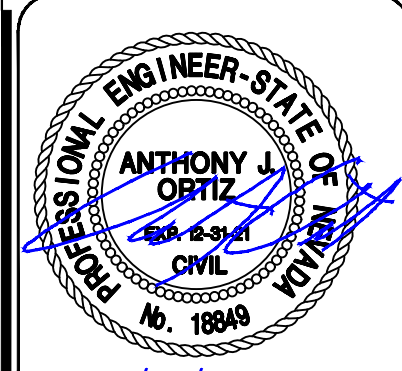
SANDSTONE RISE DRIVE GRADING PLAN
STA 27+00 TO STA 31+00

DESIGNED BY: G. BLAKE	107/5132
DRAWN BY: G. BLAKE	L20-00453
CHECKED BY: G. BLAKE	JANUARY, 2021
HORIZ.: 1"=20'	DRAWING NO.
VERT.: NONE	10/32

JOB NO. 100063656



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BY NOVA GEOTECHNICAL
PROJECT NO. G-19-026
DATED MAY 9, 2019
EARTHWORK QUANTITIES (RAW):
CUT= 3,500 CU YDS
FILL= 23,600 CU YDS

GRADING PLAN CERTIFICATION

ANTHONY ORTIZ PE# 18849 DATE
CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.
DRAINAGE STUDY NO.: 5221

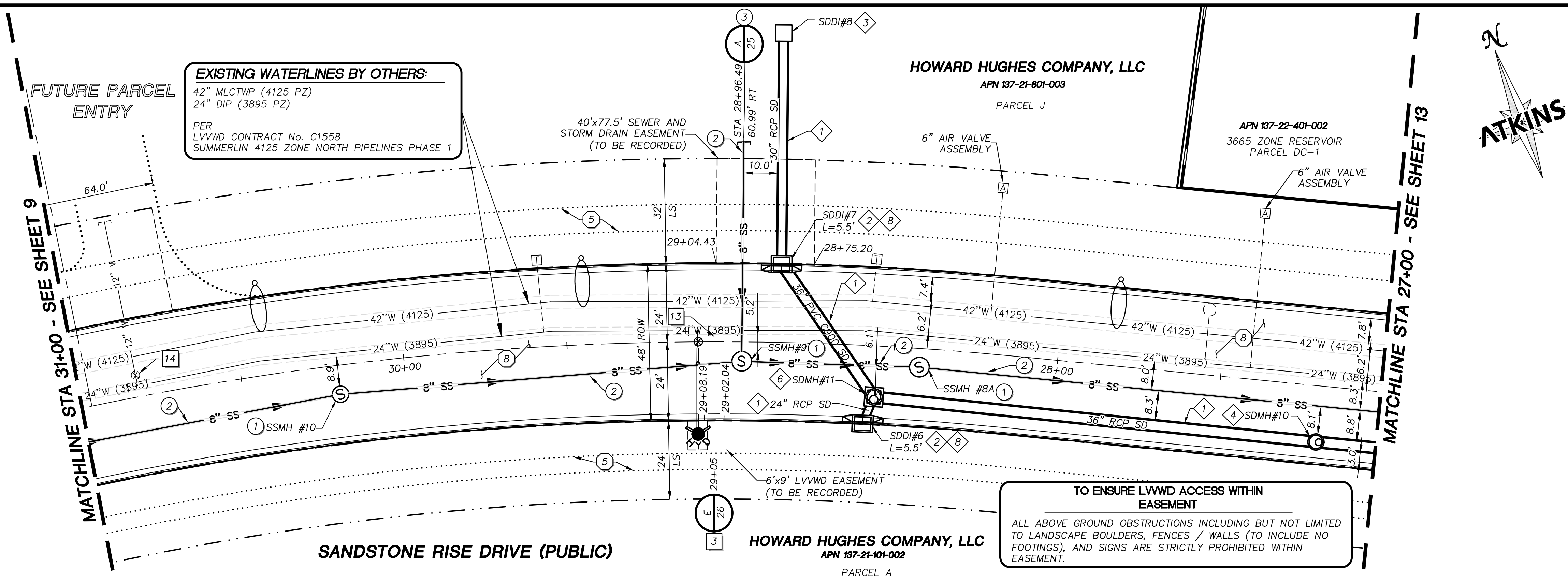
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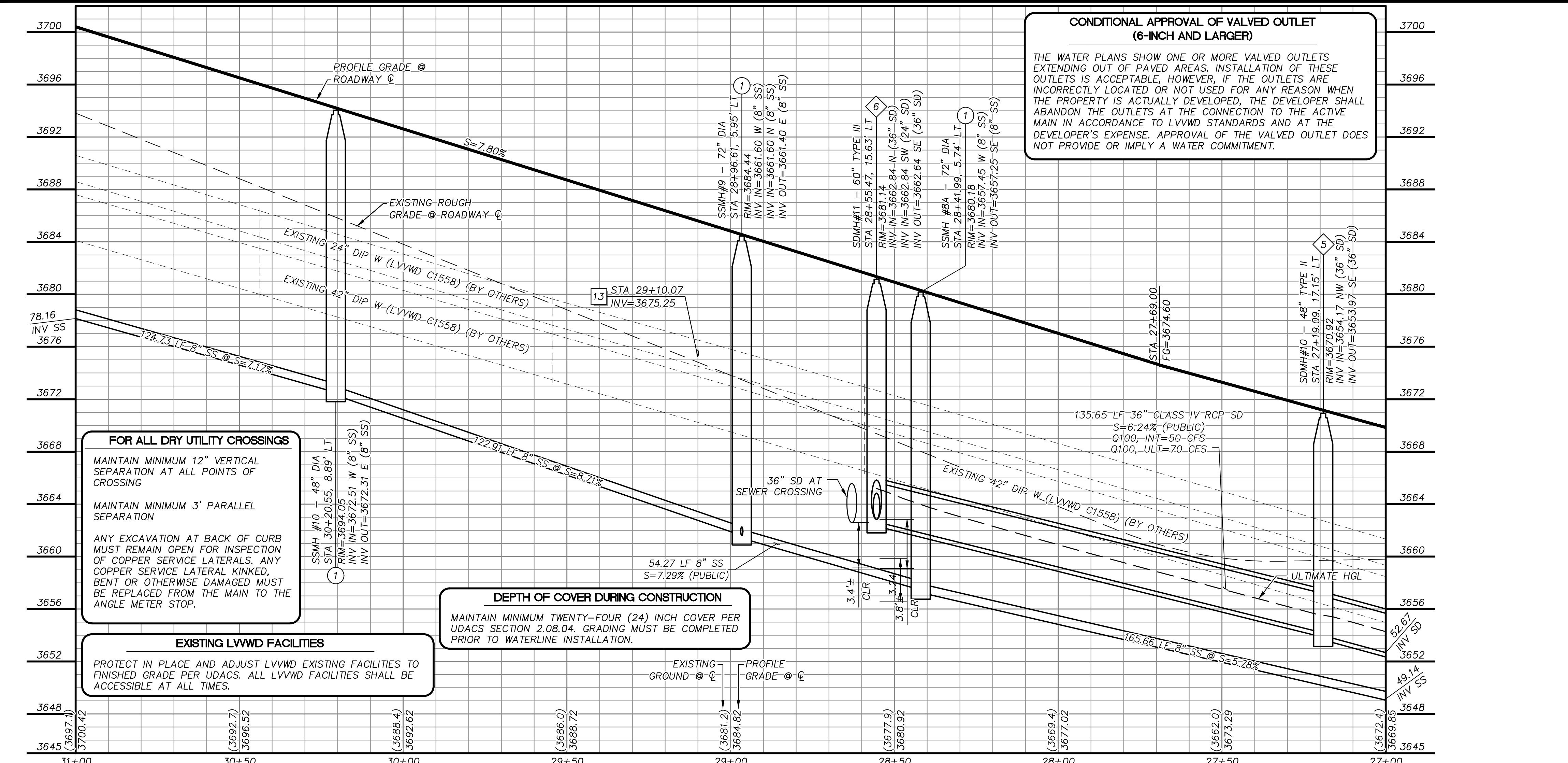
BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

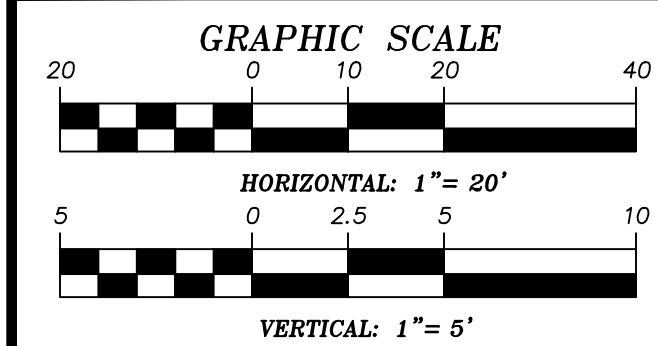




- STORM DRAIN CONSTRUCTION NOTES**
1. INSTALL STORM DRAIN. SEE SHEET 5 FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
 2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1, #422 & #421. LENGTH PER PLAN
 3. INSTALL NEENAH R-2560-G BEEHIVE DROP INLET
 4. INSTALL 60" TYPE I SD MANHOLE PER CCAUSD #403
 5. INSTALL 48" TYPE II SD MANHOLE PER CCAUSD #405.2
 6. INSTALL 60" TYPE III SD MANHOLE PER CCAUSD #406
 7. STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
 8. DEEP DROP INLET PER DETAIL "C" SHEET 29.
- SEWER CONSTRUCTION NOTES**
1. INSTALL SEWER MANHOLE WITH WATER TIGHT JOINTS PER DCSWCS SD-1, SD-3, SD-4 AND SD-5 WITH SINGLE 24" LID. SIZE PER PLAN.
 2. INSTALL PVC C-900 SEWER MAIN PER DCSWCS SD-17 & SD-15 (PUBLIC). SIZE PER PLAN.
 3. STUB AND CAP SEWER PIPE. INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
 4. INSTALL 6" LATERAL PER DCSWCS SD-22, SD-23 AND SD-25
- WATERLINE CONSTRUCTION NOTES**
1. INSTALL WATER MAIN WITH MARKER BALLS PER UDACS PLATES #15, #17 AND #19
 2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
 3. INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATE #30, #31, #39, #40 AND DETAIL "C" ON SHEET 28
 4. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
 5. INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
 6. INSTALL 5" BEND PER UDACS PLATE #31
 7. INSTALL 11.25" BEND PER UDACS PLATE #31
 8. INSTALL 1.5" WATER METER AND RPPA PER UDACS PLATES #4 AND #8 AND DETAIL ON SHEET 30
 9. INSTALL IN-LINE REDUCER PER UDACS PLATE #30
 10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE
 11. EXISTING WATER LINE BY OTHERS
 12. WATER MAIN JOINT DEFLECTION PER UDACS 2.07.01 AND 2.07.03
 13. CONNECT TO EXISTING BLIND FLANGE
 14. ADJUST EXISTING FACILITY TO GRADE PER UDACS
 15. INSTALL 45° VERTICAL BEND PER UDACS PLATE #31



- CONDITIONAL APPROVAL OF VALVED OUTLET (6-INCH 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 TO LVVWD STANDARDS AND AT THE DEVELOPER'S EXPENSE. APPROVAL OF THE VALVED OUTLET DOES NOT PROVIDE OR IMPLY A WATER COMMITMENT.
- ROADWAY CONSTRUCTION NOTES**
1. SAWCUT AND MATCH EXISTING
 2. INSTALL IRRIGATION SLEEVES PER DETAIL "E" SHEET 28
 3. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
 4. CONSTRUCT "A" TYPE ISLAND CURB PER CCAUSD #219
 5. FUTURE SIDEWALK BY OTHERS
 6. CONSTRUCT COMMERCIAL DRIVEWAY PER CCASUD #222.1
 7. CONSTRUCT SIDEWALK RAMP, PER DETAIL "A", SHEET 28
 8. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 27 FOR TYPICAL PAVEMENT SECTION.
 9. CONSTRUCT SIDEWALK RAMP CASE II PER CCAUSD #235 AND DETAIL "B", SHEET 28



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. 137065 FIRST APPROVED DATE: _____

LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

GRADING PLAN CERTIFICATION

ANTHONY ORTIZ PE# 18849 DATE _____

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DRAINAGE STUDY NO.: 5221

BASIS OF BEARING

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

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

Call before you Dig
UnderGround
1-702-432-5300

Call before you Dig
1-800-642-2444

Call before you Dig
1-702-227-2929

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

1/21/2021

ATKINS

2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7275
Fax: +1702.263.7200

SUMMERLIN

SUMMERLIN VILLAGE 25

SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)
SANDSTONE RISE DRIVE PLAN AND PROFILE
STA 27+00 TO STA 31+00

DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO.: 11/32
JOB NO.: 100063656

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPROVAL



STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN. SEE SHEET 5 FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1, #422 & #421. LENGTH PER PLAN
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8. DEEP DROP INLET PER DETAIL "C" SHEET 29.

DEPTH OF COVER DURING CONSTRUCTION

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

EXISTING LVWD FACILITIES

PROTECT IN PLACE AND ADJUST LVVWD EXISTING FACILITIES TO FINISHED GRADE PER UDACS. ALL LVVWD FACILITIES SHALL BE ACCESSIBLE AT ALL TIMES.

EXISTING WATERLINES BY OTHERS:

24" DIP (3895 PZ)
42" MLCTWP (4125 PZ)

PER
LVVWD CONTRACT No. C1558
SUMMERLIN 4125 ZONE NORTH PIPELINES PHASE 1

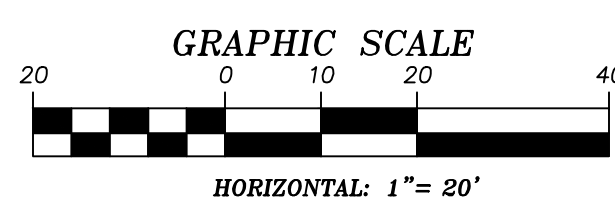
EXISTING 3665 ZONE RESERVOIR

PER
LVVWD CONTRACT No. C1472
SUMMERLIN 3665 ZONE RESERVIOR

APN 137-22-401-002
3665 ZONE RESERVOIR
PARCEL DC-1
N.A.P.

EXISTING WALL:

CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING WALL. GRADE LANDSCAPE AT 3:1 MAX FROM BACK OF FUTURE TRAIL TO THE EXISTING WALL.



SOILS REPORT

BY NOVA GEOTECHNICAL
PROJECT NO. G-19-026
DATED MAY 9, 2019
EARTHWORK QUANTITIES (RAW):
CUT= 3,500 CU YDS
FILL= 23,600 CU YDS

GRADING PLAN CERTIFICATION

ANTHONY ORTIZ PE# 18849 DATE

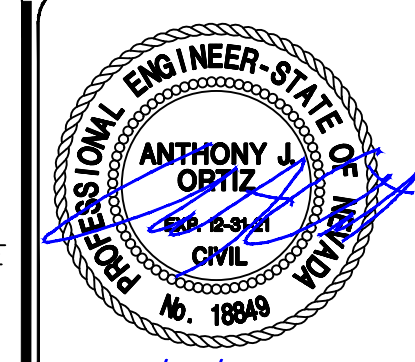
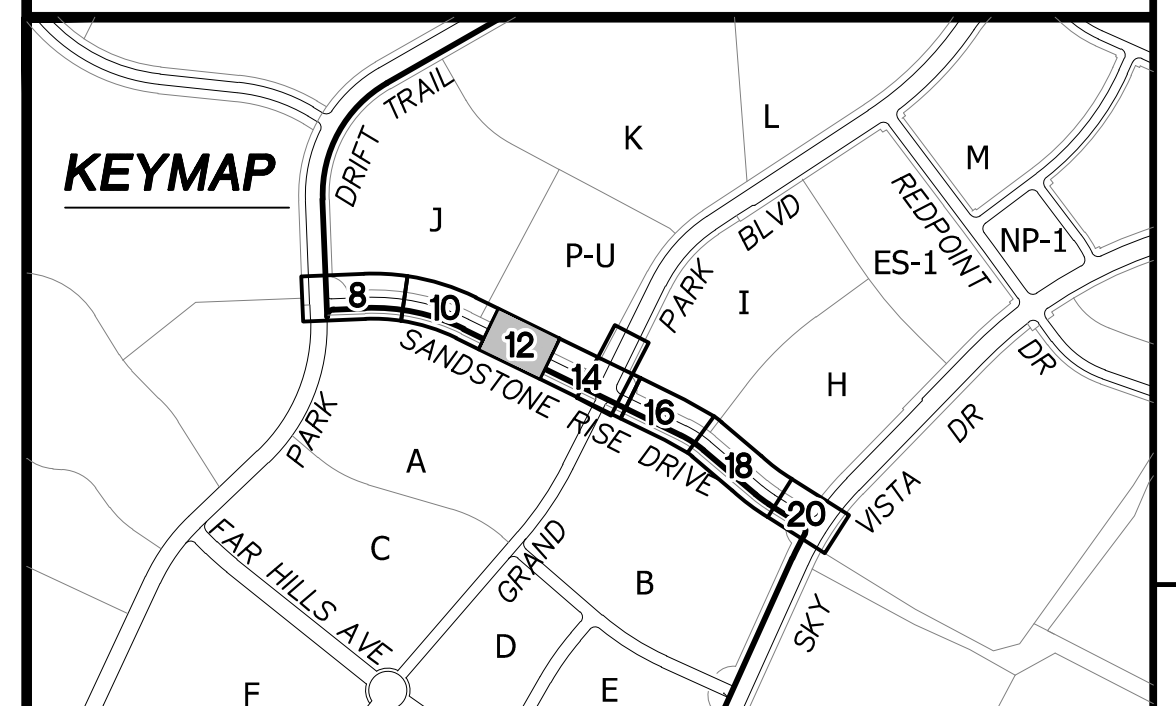
CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH
THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT
THE CITY OF LAS VEGAS FOR THIS PROJECT.
DRAINAGE STUDY NO.: 5221

BASIS OF BEARING

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--	---

BENCHMARK

CITY OF LAS VEGAS BENCHMARK:
D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
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FND USC&GS DISC SET IN ROCK
RIDGE 150' SOUTH OF CHARLESTON
BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03



1/21/2021

DESIGNED BY: G. BLAKE	107Y5132 L20-00453
DRAWN BY: G. BLAKE	DATE: JANUARY, 2021
CHECKED BY: T. ORTIZ	DRAWING NO.
HORIZ.: 1"=20'	12/32
VERT.: NONE	

SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)
SANDSTONE RISE DRIVE GRADING PLAN
STA 24+00 TO STA 27+00

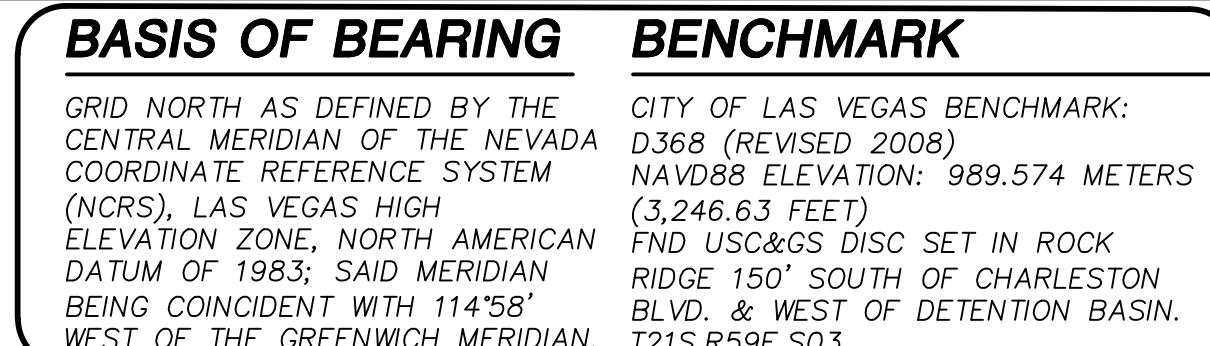
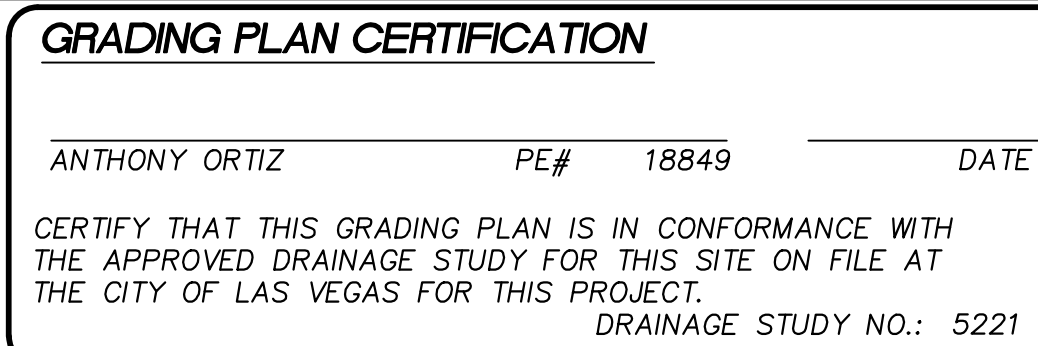
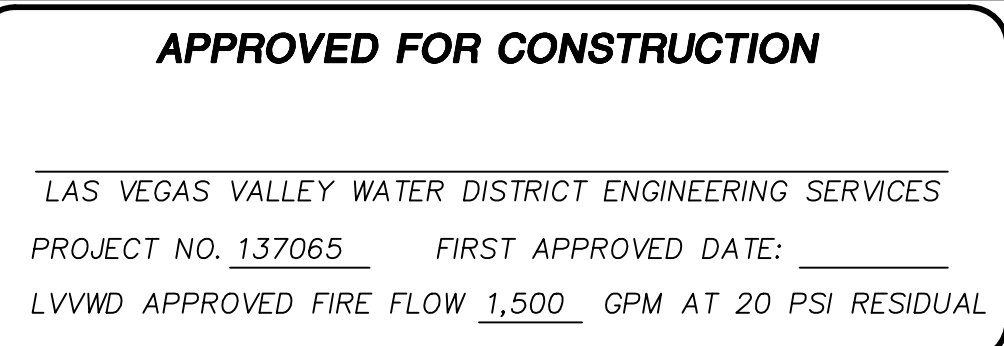
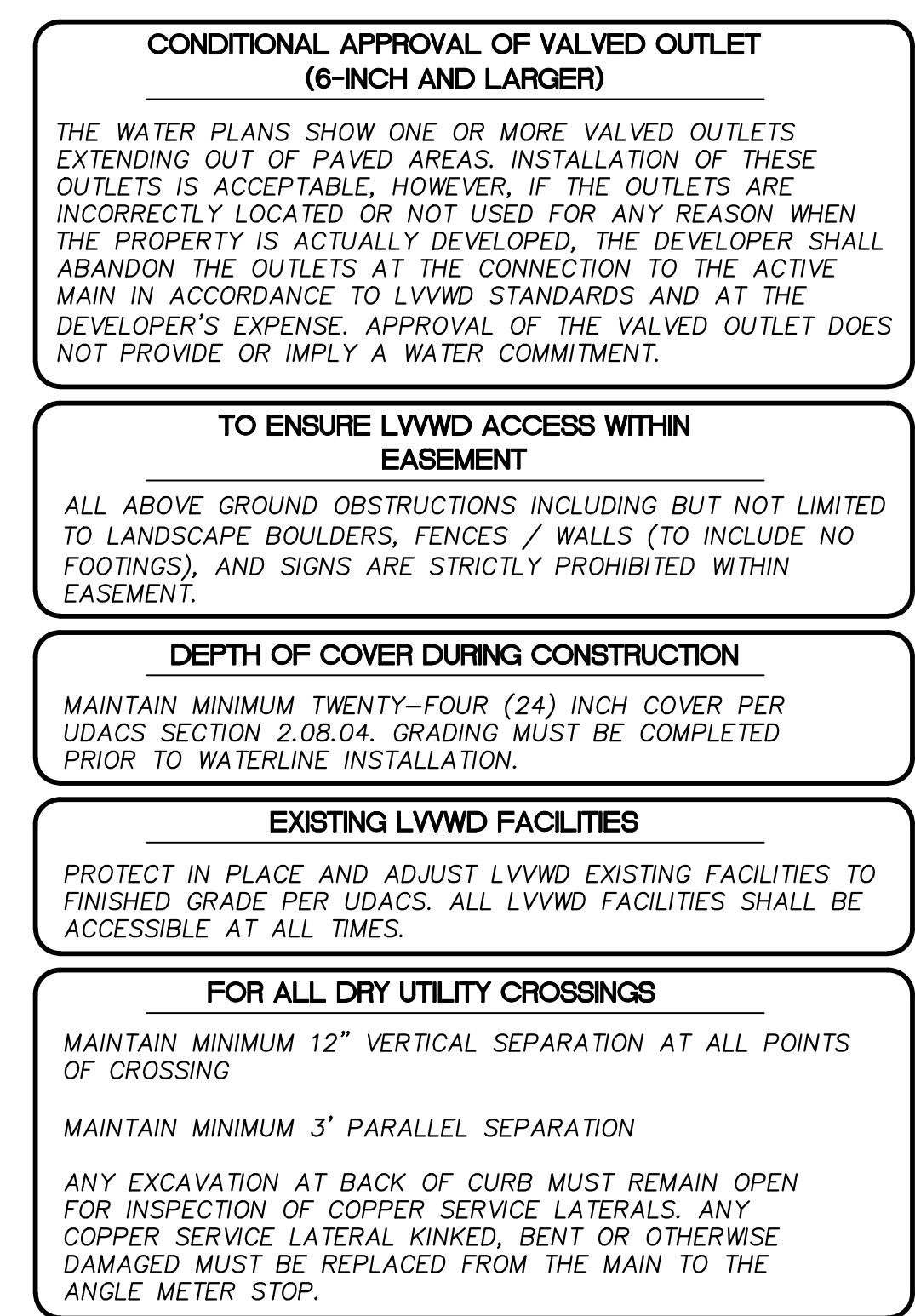
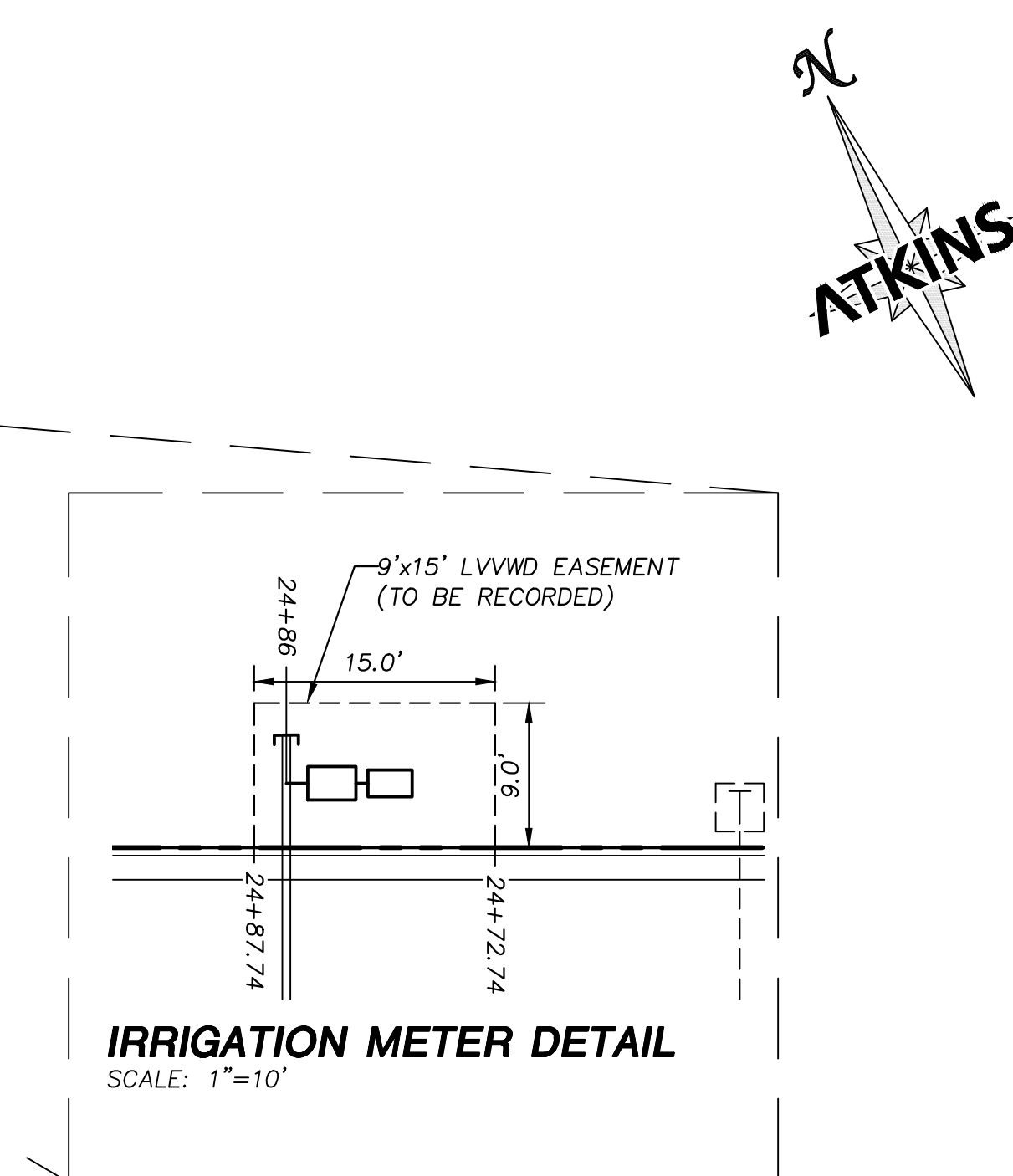


ATKINS
22270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200

REVISIONS	
REV.	DESCRIPTION

[illegible]

JOB NO. 100063656



STORM DRAIN CONSTRUCTION NOTES

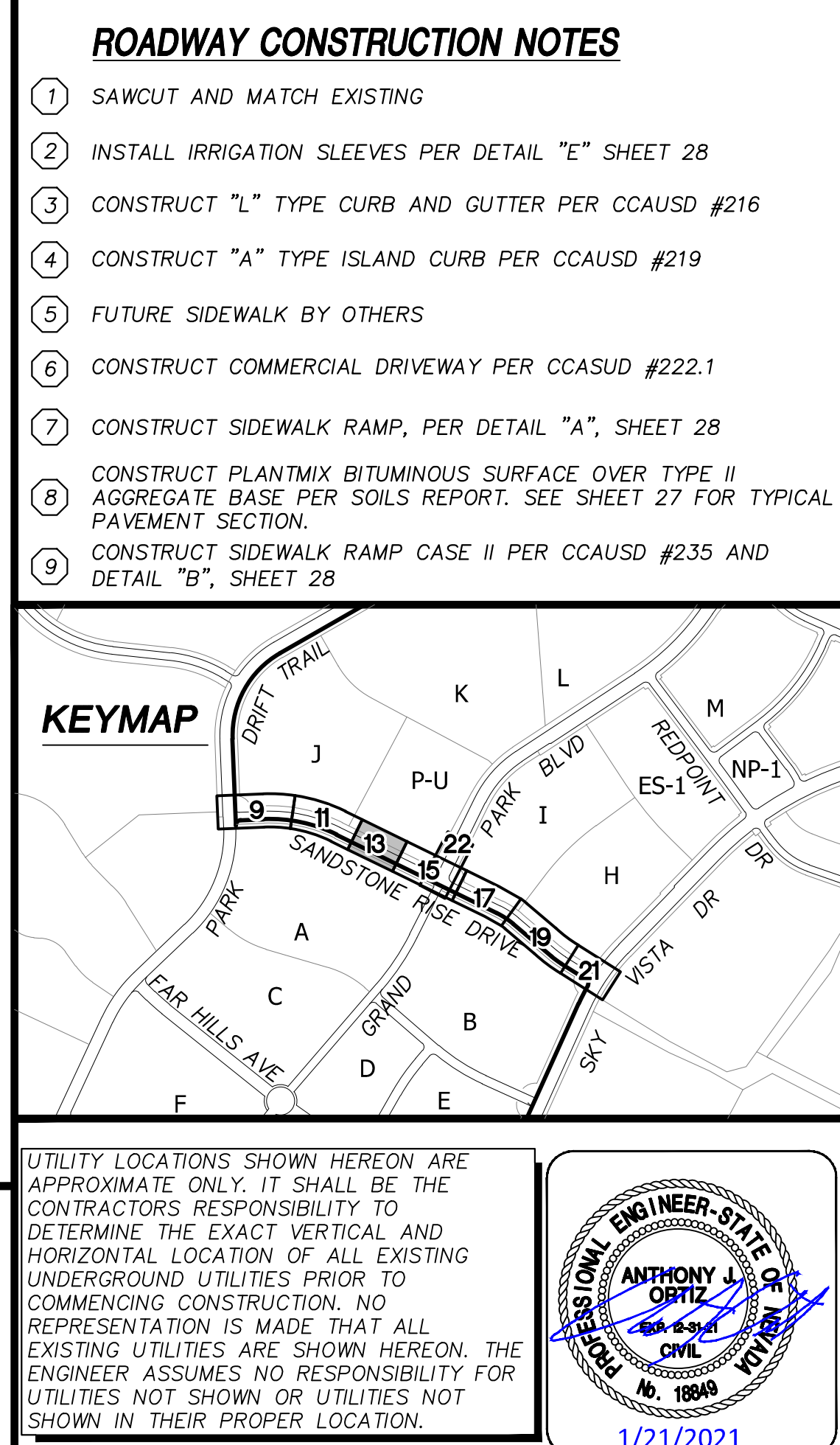
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- ⑤ INSTALL 48" TYPE II SD MANHOLE PER CCAUSD #405.2
- ⑥ INSTALL 60" TYPE III SD MANHOLE PER CCAUSD #406
- ⑦ STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
- ⑧ DEEP DROP INLET PER DETAIL "C" SHEET 29.

SEWER CONSTRUCTION NOTES

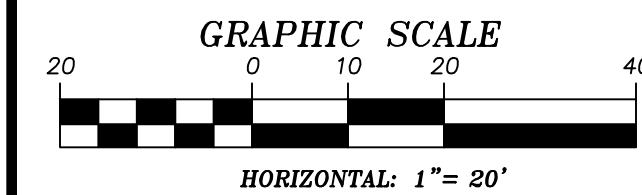
- ① INSTALL SEWER MANHOLE WITH WATER TIGHT JOINTS PER DCSWCS SD-1, SD-3, SD-4 AND SD-5 WITH SINGLE 24" LID. SIZE PER PLAN.
- ② INSTALL PVC C-900 SEWER MAIN PER DCSWCS SD-17 & SD-15 (PUBLIC). SIZE PER PLAN.
- ③ STUB AND CAP SEWER PIPE. INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
- ④ INSTALL 6" LATERAL PER DCSWCS SD-22, SD-23 AND SD-25

WATERLINE CONSTRUCTION NOTES

- ① INSTALL WATER MAIN WITH MARKER BALLS PER UDACS PLATES #15, #17 AND #19
- ② INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
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- ⑤ INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
- ⑥ INSTALL 5' BEND PER UDACS PLATE #31
- ⑦ INSTALL 11.25' BEND PER UDACS PLATE #31
- ⑧ INSTALL 1.5" WATER METER AND RPPA PER UDACS PLATES #4 AND #8 AND DETAIL ON SHEET 30
- ⑨ INSTALL IN-LINE REDUCER PER UDACS PLATE #30
- ⑩ REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE
- ⑪ EXISTING WATER LINE BY OTHERS
- ⑫ WATER MAIN JOINT DEFLECTION PER UDACS 2.07.01 AND 2.07.03
- ⑬ CONNECT TO EXISTING BLIND FLANGE
- ⑭ ADJUST EXISTING FACILITY TO GRADE PER UDACS
- ⑮ INSTALL 45" VERTICAL BEND PER UDACS PLATE #31



DESIGNED BY: 10775132 L20-00453 G. BLAKE		SUMMERLIN VILLAGE 25 SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K) SUMMERLIN  2270 Corporate Circle Suite 200 Henderson, Nevada 89074 Telephone: +1702.263.7275 Fax: +1702.263.7200	ATKINS 2270 Corporate Circle Suite 200 Henderson, Nevada 89074 Telephone: +1702.263.7275 Fax: +1702.263.7200	REVISIONS				
DRAWN BY: G. BLAKE	DESCRIPTION			BY	DATE	APPROVAL		
CHECKED BY: G. BLAKE	DATE: JANUARY, 2021							
DRAWING NO.		SANDSTONE RISE DRIVE PLAN AND PROFILE STA 24+00 TO STA 27+00						
13/32		HORIZ.: 1"=20' VERT.: 1"=5'						



SOILS REPORT

BY: NOVA GEOTECHNICAL
PROJECT NO.: G-19-026
DATED: MAY 9, 2019
EARTHWORK QUANTITIES (RAW):
CUT= 3,500 CU YDS
FILL= 23,600 CU YDS

GRADING PLAN CERTIFICATION

ANTHONY ORTIZ PE# 18849 DATE _____
CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH
THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT
THE CITY OF LAS VEGAS FOR THIS PROJECT.
DRAINAGE STUDY NO.: 5221

BASIS OF BEARING

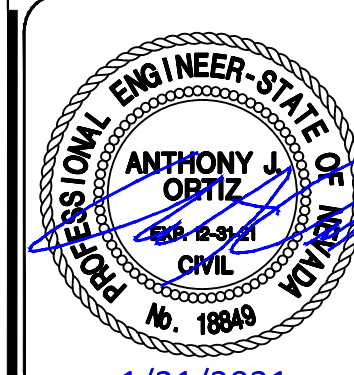
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CENTRAL MERIDIAN OF THE NEVADA
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(NCRS), LAS VEGAS HIGH
ELEVATION ZONE, NORTH AMERICAN
DATUM OF 1983; SAID MERIDIAN
BEING COINCIDENT WITH 114°58'
WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK:
D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK
RIDGE 150' SOUTH OF CHARLESTON
BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

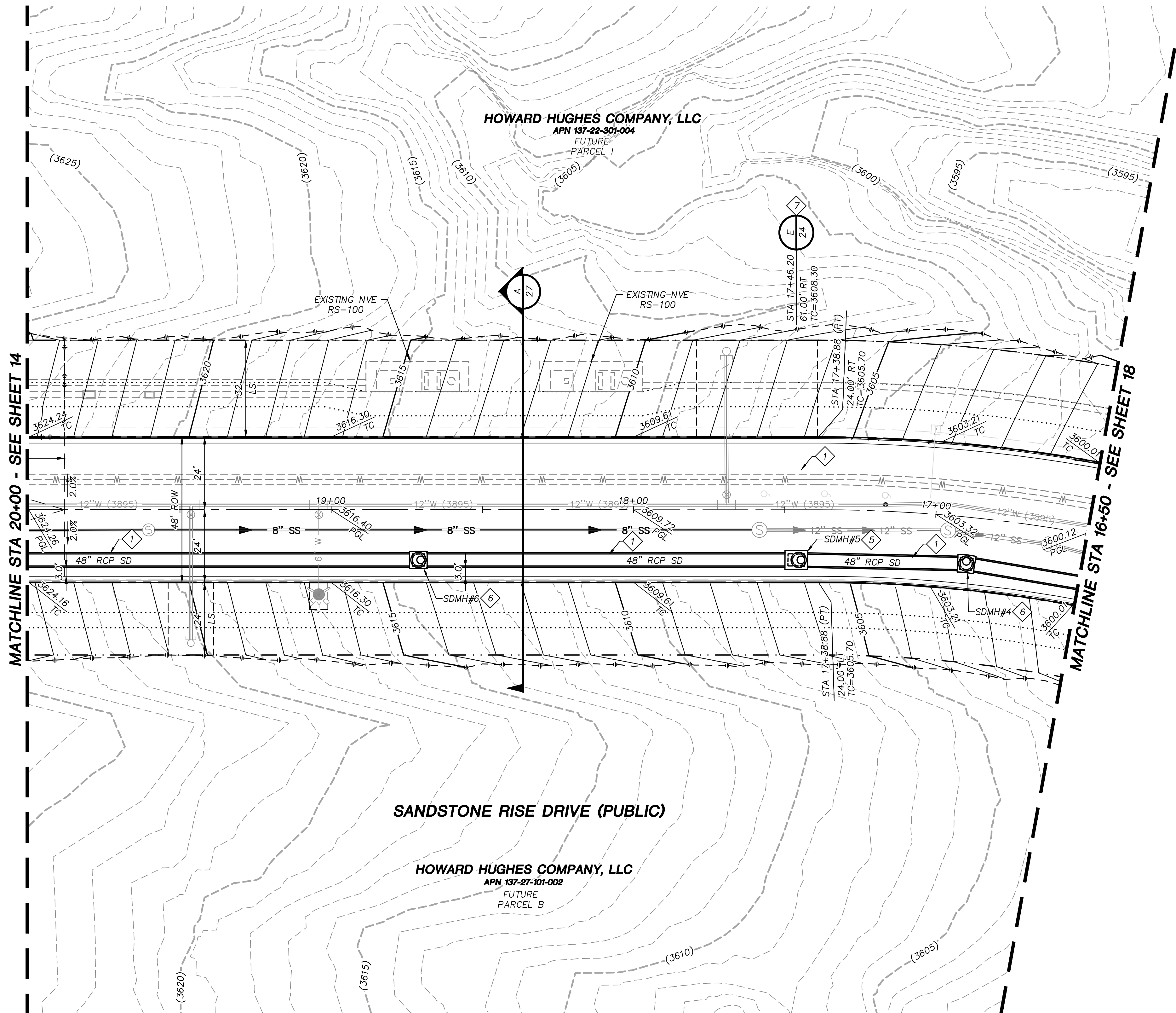


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UNDERGROUND UTILITIES PRIOR TO
COMMENCING CONSTRUCTION. NO
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ENGINEER ASSUMES NO RESPONSIBILITY FOR
UTILITIES NOT SHOWN OR UTILITIES NOT
SHOWN IN THEIR PROPER LOCATION.



DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO.: 16/32
VERT.: NONE

JOB NO. 100063656



STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN. SEE SHEET 5 FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1, #422 & #421. LENGTH PER PLAN
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7. STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
8. DEEP DROP INLET PER DETAIL "C" SHEET 29.

DEPTH OF COVER DURING CONSTRUCTION

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

EXISTING LVWD FACILITIES

PROTECT IN PLACE AND ADJUST LVWD EXISTING FACILITIES TO FINISHED GRADE PER UDACS. ALL LVWD FACILITIES SHALL BE ACCESSIBLE AT ALL TIMES.

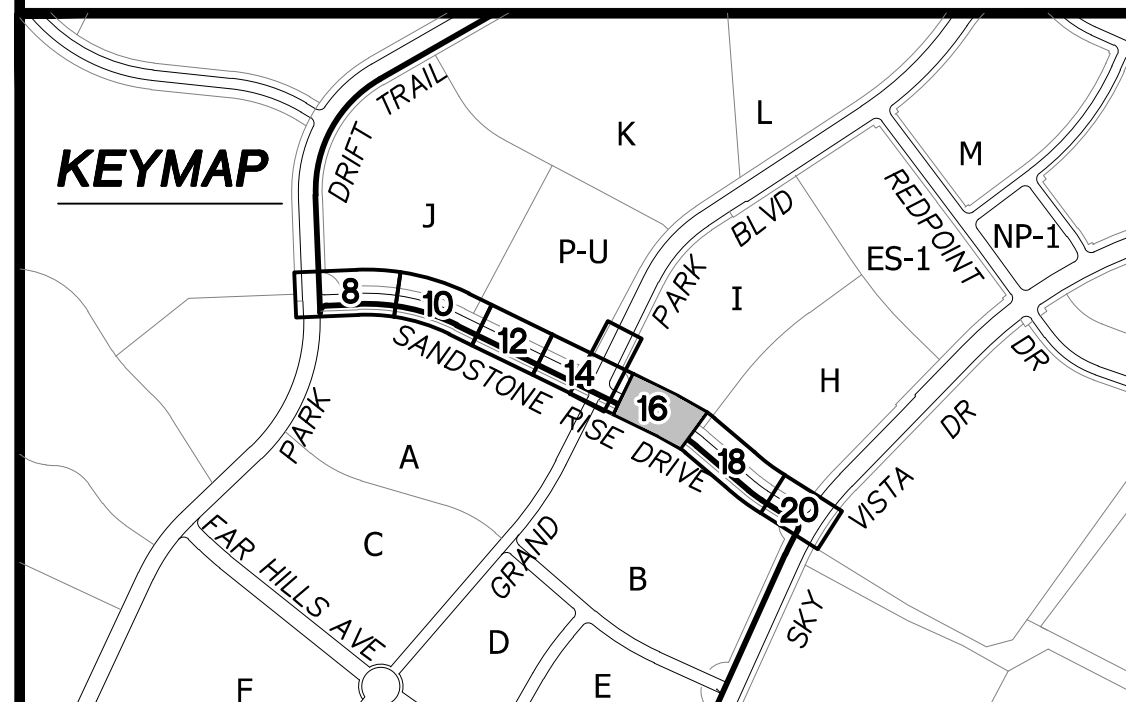
REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7755
Fax: +1702.263.7200



SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)
SANDSTONE RISE DRIVE GRADING PLAN
STA 16+50 TO STA 20+00



X:\Projects\Summerlin\ Village 25\100063656 - V25 Street M (Lake Mead to Sky Vista)\ Sheets\63656-08-GRAD-G1.dwg LAYOUT: 16 Jan 21, 2021 - 8:36PM

CONDITIONAL APPROVAL OF VALVED OUTLET
(6-INCH 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 TO LVVWD STANDARDS AND AT THE DEVELOPER'S EXPENSE. APPROVAL OF THE VALVED OUTLET DOES NOT PROVIDE OR IMPLY A WATER COMMITMENT.

TO ENSURE LVVWD ACCESS WITHIN
EASEMENT

ALL ABOVE GROUND OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO LANDSCAPE BOULDERS, FENCES / WALLS (TO INCLUDE NO FOOTINGS), AND SIGNS ARE STRICTLY PROHIBITED WITHIN EASEMENT.

DEPTH OF COVER DURING CONSTRUCTION

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

EXISTING LVVWD FACILITIES

PROTECT IN PLACE AND ADJUST LVVWD EXISTING FACILITIES TO FINISHED GRADE PER UDACS. ALL LVVWD FACILITIES SHALL BE ACCESSIBLE AT ALL TIMES.

FOR ALL DRY UTILITY CROSSINGS

MAINTAIN MINIMUM 12" VERTICAL SEPARATION AT ALL POINTS OF CROSSING

MAINTAIN MINIMUM 3' PARALLEL SEPARATION

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

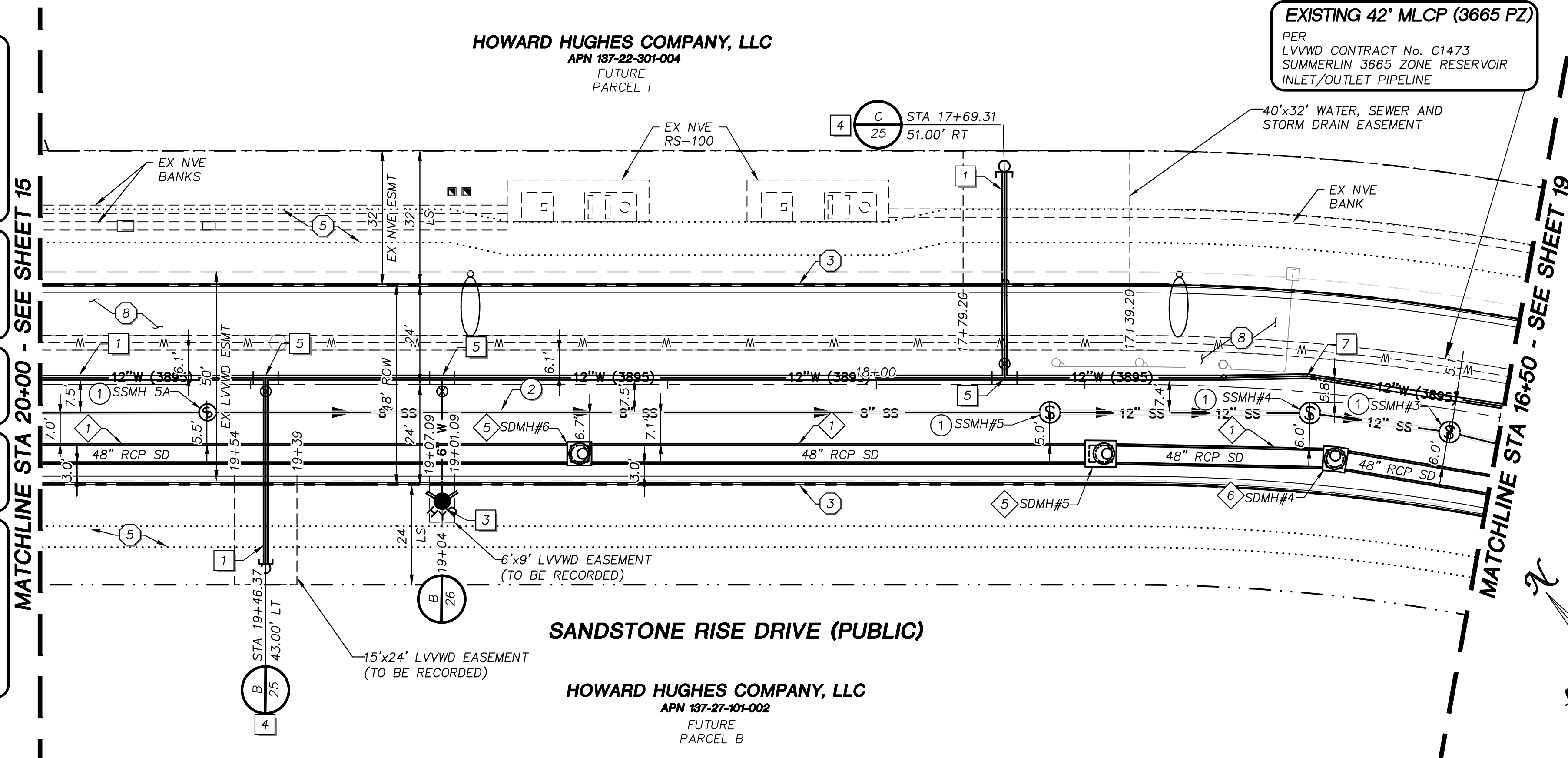
HOWARD HUGHES COMPANY, LLC

APN 137-22-301-004

FUTURE
PARCEL I

EXISTING 42" MLCP (3665 PZ)

PER
LVVWD CONTRACT No. C1473
SUMMERLIN 3665 ZONE RESERVOIR
INLET/OUTLET PIPELINE

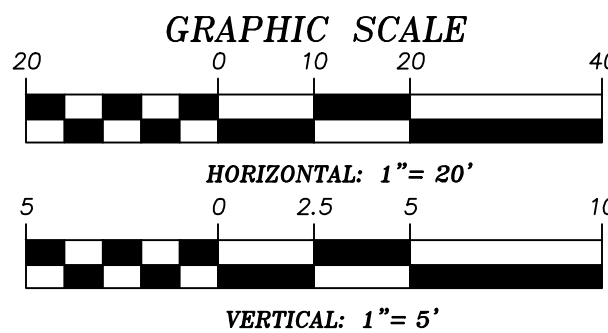
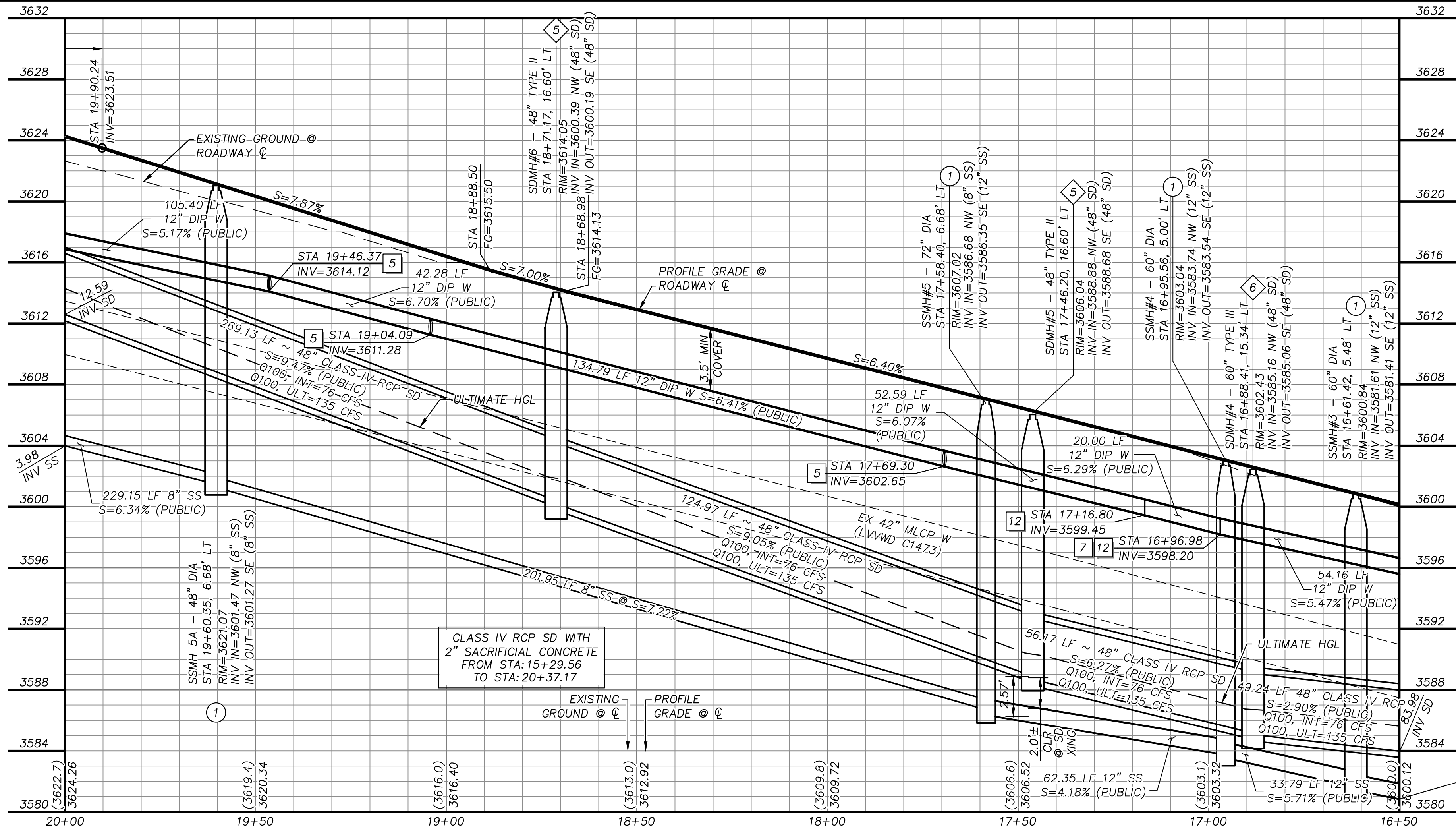


SANDSTONE RISE DRIVE (PUBLIC)

HOWARD HUGHES COMPANY, LLC

APN 137-27-101-002

FUTURE
PARCEL B



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. 137065 FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

GRADING PLAN CERTIFICATION

ANTHONY ORTIZ PE# 18849 DATE _____
CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT
DRAINAGE STUDY NO.: 5221

BASIS OF BEARING

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

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03



STORM DRAIN CONSTRUCTION NOTES

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3. INSTALL NEENAH R-2560-G BEEHIVE DROP INLET
4. INSTALL 60" TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL 48" TYPE II SD MANHOLE PER CCAUSD #405.2
6. INSTALL 60" TYPE III SD MANHOLE PER CCAUSD #406
7. STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
8. DEEP DROP INLET PER DETAIL "C" SHEET 29.

SEWER CONSTRUCTION NOTES

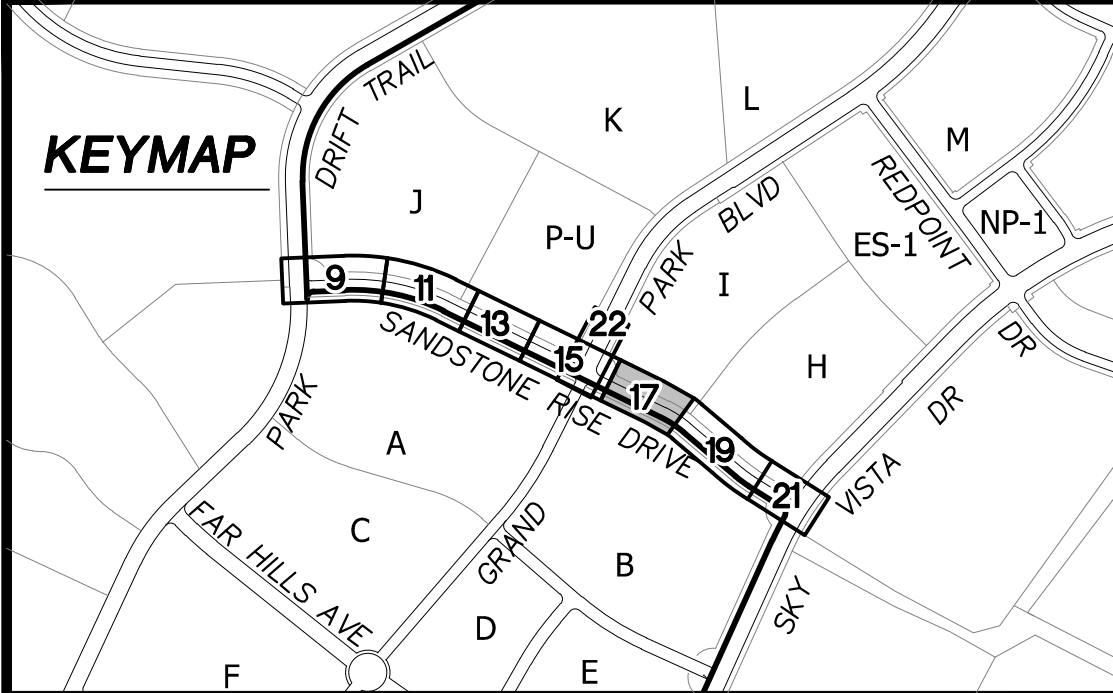
1. INSTALL SEWER MANHOLE WITH WATER TIGHT JOINTS PER DCSWCS SD-1, SD-3, SD-4 AND SD-5 WITH SINGLE 24" LID. SIZE PER PLAN.
2. INSTALL PVC C-900 SEWER MAIN PER DCSWCS SD-17 & SD-15 (PUBLIC). SIZE PER PLAN.
3. STUB AND CAP SEWER PIPE. INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. INSTALL 6" LATERAL PER DCSWCS SD-22, SD-23 AND SD-25

WATERLINE CONSTRUCTION NOTES

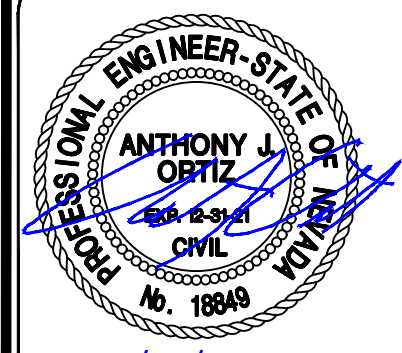
1. INSTALL WATER MAIN WITH MARKER BALLS PER UDACS PLATES #15, #17 AND #19
2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
3. INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATE #30, #31, #39, #40 AND DETAIL "C" ON SHEET 28
4. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
5. INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
6. INSTALL 5" BEND PER UDACS PLATE #31
7. INSTALL 11.25" BEND PER UDACS PLATE #31
8. INSTALL 1.5" WATER METER AND RPPA PER UDACS PLATES #4 AND #8 AND DETAIL ON SHEET 30
9. INSTALL IN-LINE REDUCER PER UDACS PLATE #30
10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE
11. EXISTING WATER LINE BY OTHERS
12. WATER MAIN JOINT DEFLECTION PER UDACS 2.07.01 AND 2.07.03
13. CONNECT TO EXISTING BLIND FLANGE
14. ADJUST EXISTING FACILITY TO GRADE PER UDACS
15. INSTALL 45" VERTICAL BEND PER UDACS PLATE #31

ROADWAY CONSTRUCTION NOTES

1. SAWCUT AND MATCH EXISTING
2. INSTALL IRRIGATION SLEEVES PER DETAIL "E" SHEET 28
3. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
4. CONSTRUCT "A" TYPE ISLAND CURB PER CCAUSD #219
5. FUTURE SIDEWALK BY OTHERS
6. CONSTRUCT COMMERCIAL DRIVEWAY PER CCASUD #222.1
7. CONSTRUCT SIDEWALK RAMP, PER DETAIL "A", SHEET 28
8. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 27 FOR TYPICAL PAVEMENT SECTION.
9. CONSTRUCT SIDEWALK RAMP CASE II PER CCAUSD #235 AND DETAIL "B", SHEET 28



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



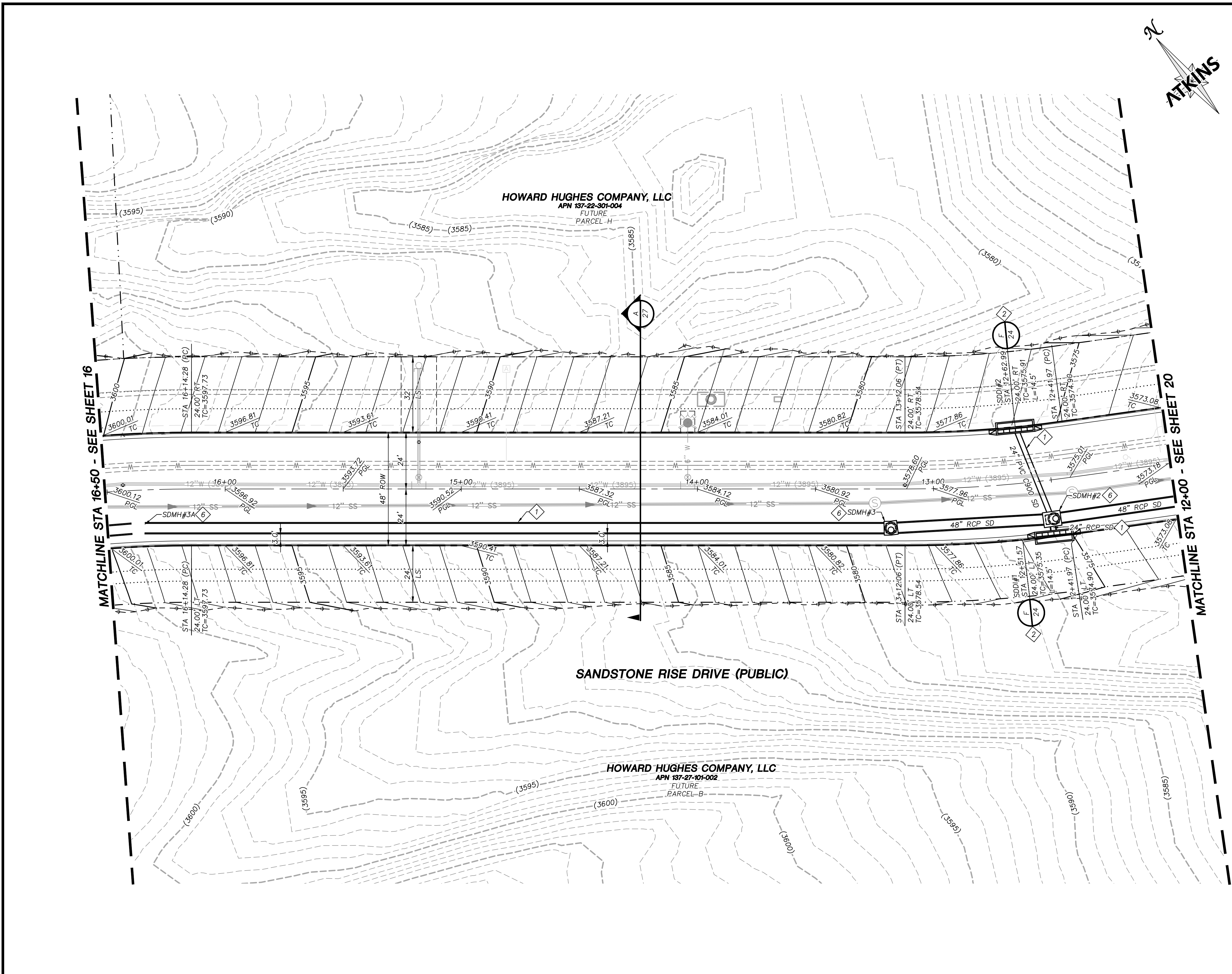
REVISIONS	
DESCRIPTION	DATE

ATKINS	
2270 Corporate Circle Suite 200 Henderson, Nevada 89074 Telephone: +1702.263.7275 Fax: +1702.263.7200	
SUMMERLIN	

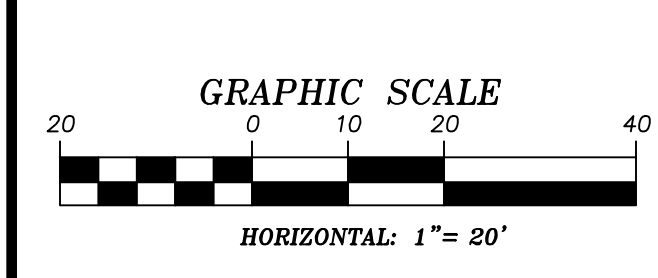
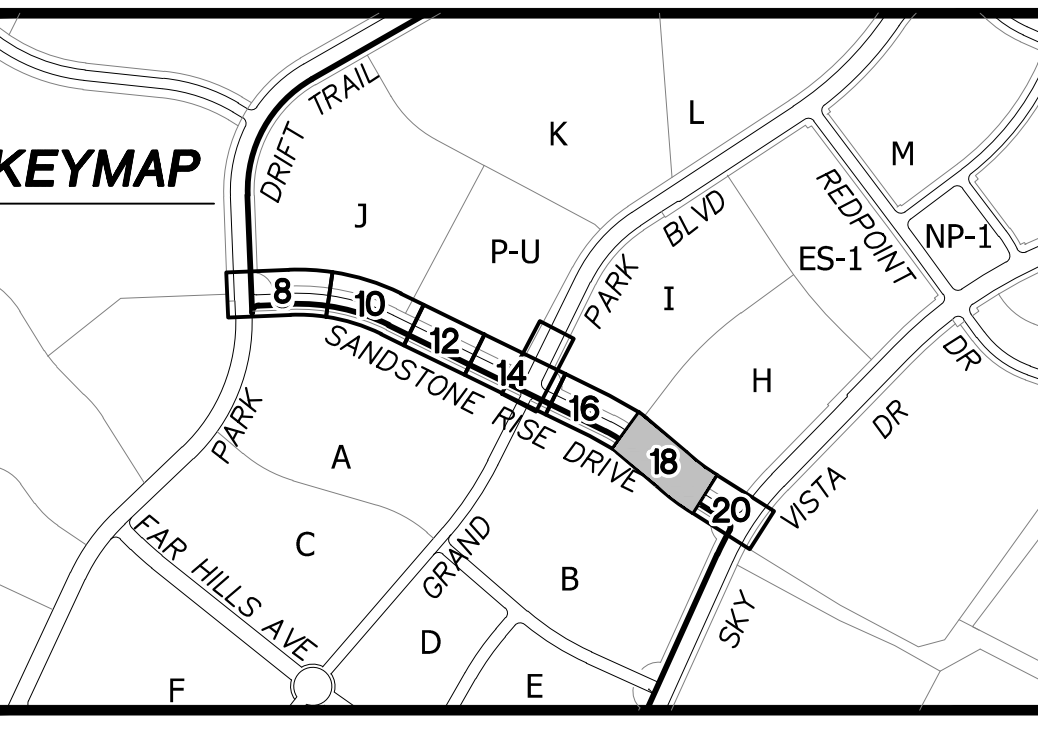
SUMMERLIN VILLAGE 25	
SANDSTONE RISE DRIVE (STREET M) SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)	
SANDSTONE RISE DRIVE PLAN AND PROFILE STA 16+50 TO STA 20+00	

DESIGNED BY:	
G. BLAKE	
DATE:	JANUARY, 2021
CHECKED BY:	
DRAWING NO.	17/32
HORIZ. 1"=20'	
VERT. 1"=5'	

JOB NO. 100063656



- ### STORM DRAIN CONSTRUCTION NOTES
1. INSTALL STORM DRAIN. SEE SHEET 5 FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
 2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1, #422 & #421. LENGTH PER PLAN
 3. INSTALL NEENAH R-2560-G BEEHIVE DROP INLET
 4. INSTALL 60" TYPE I SD MANHOLE PER CCAUSD #403
 5. INSTALL 48" TYPE II SD MANHOLE PER CCAUSD #405.2
 6. INSTALL 60" TYPE III SD MANHOLE PER CCAUSD #406
 7. STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
 8. DEEP DROP INLET PER DETAIL "C" SHEET 29.
- ### DEPTH OF COVER DURING CONSTRUCTION
- MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.
- ### EXISTING LWWD FACILITIES
- PROTECT IN PLACE AND ADJUST LWWD EXISTING FACILITIES TO FINISHED GRADE PER UDACS. ALL LWWD FACILITIES SHALL BE ACCESSIBLE AT ALL TIMES.



SOILS REPORT
BY: NOVA GEOTECHNICAL
PROJECT NO.: G-19-026
DATED: MAY 9, 2019
EARTHWORK QUANTITIES (RAW):
CUT= 3,500 CU YDS
FILL= 23,600 CU YDS

GRADING PLAN CERTIFICATION
ANTHONY ORTIZ PE# 18849 DATE _____
CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.
DRAINAGE STUDY NO.: 5221

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

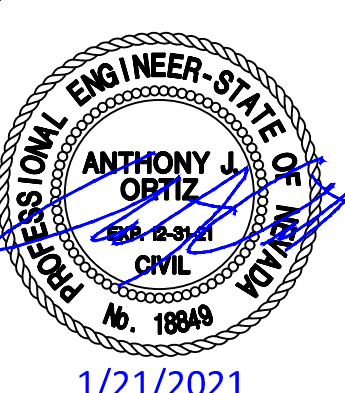
BENCHMARK
CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

Call before you Dig
underground
1-702-432-5300

Call before you Dig
underground
1-800-642-2444

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

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



ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7755
Fax: +1702.263.7200

SUMMERLIN

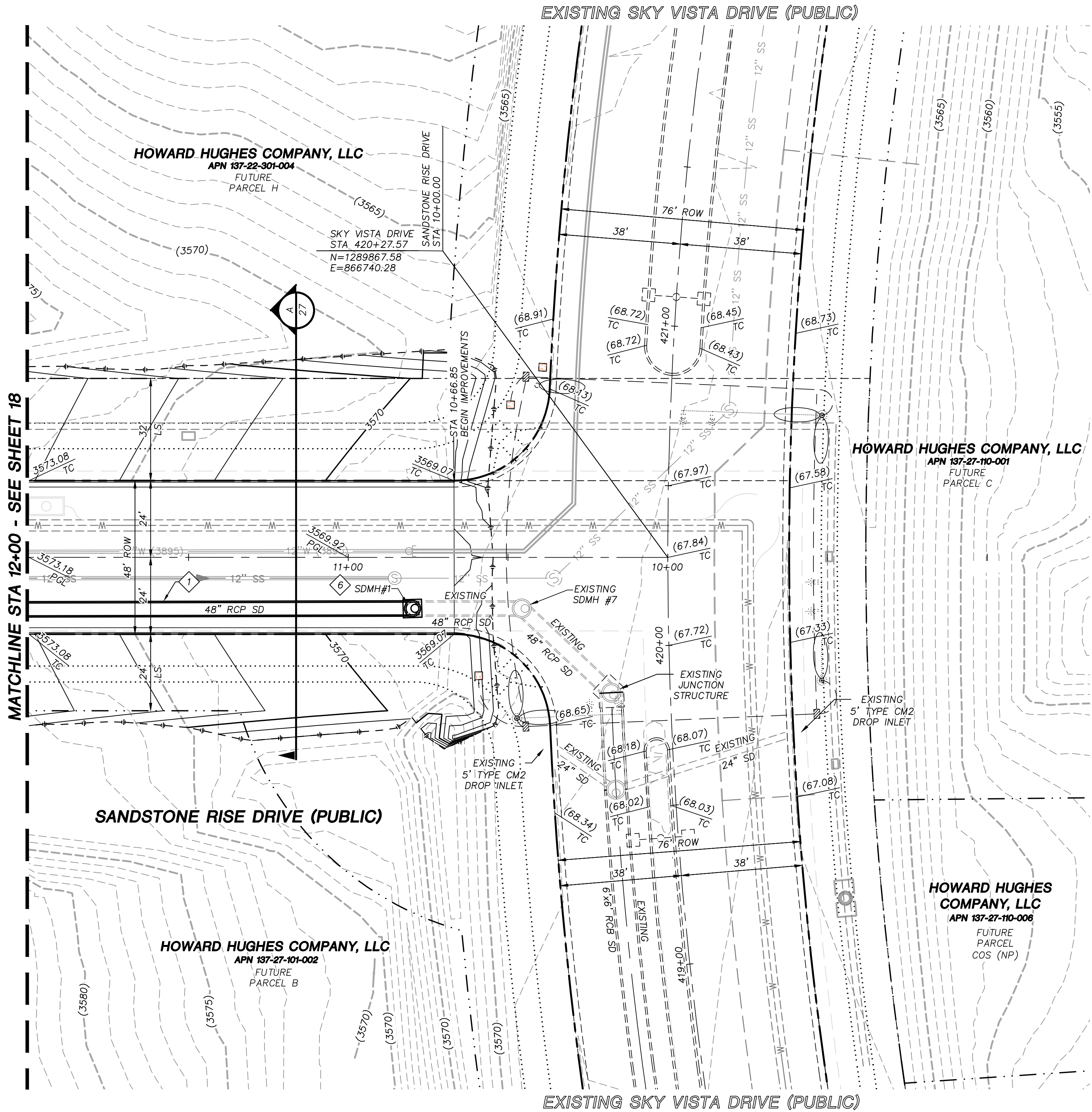
SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)
SANDSTONE RISE DRIVE GRADING PLAN
STA 12+00 TO STA 16+50

DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO.: 18/32
VERT.: NONE

10715132
L20-00453
DATE: JANUARY, 2021
DRAWING NO.: 18/32
VERT.: NONE

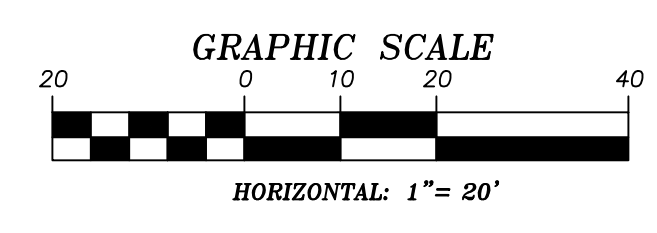
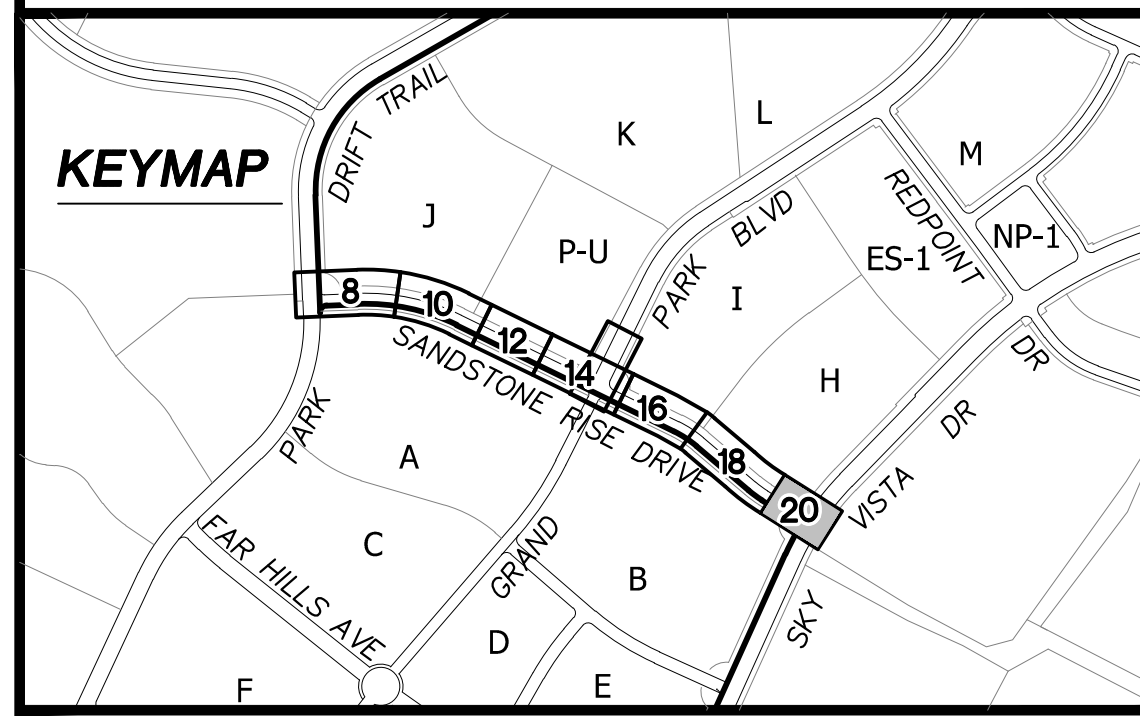
1/21/2021

100063656



- STORM DRAIN CONSTRUCTION NOTES**
- 1. INSTALL STORM DRAIN. SEE SHEET 5 FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
 - 2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1, #422 & #421. LENGTH PER PLAN
 - 3. INSTALL NEENAH R-2560-G BEEHIVE DROP INLET
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 - 6. INSTALL 60" TYPE III SD MANHOLE PER CCAUSD #406
 - 7. STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
 - 8. DEEP DROP INLET PER DETAIL "C" SHEET 29.
- DEPTH OF COVER DURING CONSTRUCTION**
- MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.
- EXISTING LVWD FACILITIES**
- PROTECT IN PLACE AND ADJUST LVWD EXISTING FACILITIES TO FINISHED GRADE PER UDACS. ALL LVWD FACILITIES SHALL BE ACCESSIBLE AT ALL TIMES.

EXISTING SKY VISTA DRIVE:
PER
VILLAGE 25 SKY VISTA DRIVE
IMPROVEMENTS
CLV# 107V7884



SOILS REPORT
BY: NOVA GEOTECHNICAL
PROJECT NO. G-19-026
DATED: MAY 9, 2019
EARTHWORK QUANTITIES (RAW):
CUT= 3,500 CU YDS
FILL= 23,600 CU YDS

GRADING PLAN CERTIFICATION
ANTHONY ORTIZ PE# 18849 DATE _____
CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.
DRAINAGE STUDY NO.: 5221

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

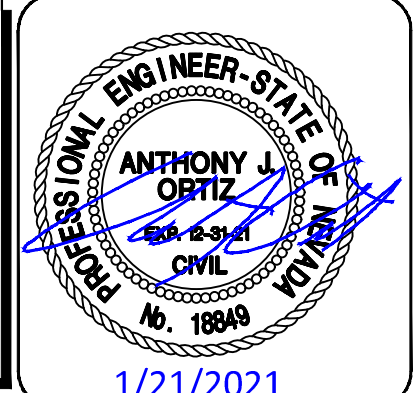
BENCHMARK
CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

Call before you Dig
UnderGround
1-702-432-5300

Call before you Dig
UnderGround
1-800-642-2444

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

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Henderson, Nevada 89074
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SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)
SANDSTONE RISE DRIVE GRADING PLAN
BEGIN TO STA 12+00

DESIGNED BY:	G. BLAKE
DRAWN BY:	G. BLAKE
CHECKED BY:	G. BLAKE
DATE:	JANUARY, 2021
DRAWING NO.	20/32
VERT.:	NONE

107V5132
L20-00453
1-21-2021
100063656

TO ENSURE LVWD ACCESS WITHIN EASEMENT

ALL ABOVE GROUND OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO LANDSCAPE BOULDERS, FENCES / WALLS (TO INCLUDE NO FOOTINGS), AND SIGNS ARE STRICTLY PROHIBITED WITHIN EASEMENT.

DEPTH OF COVER DURING CONSTRUCTION

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

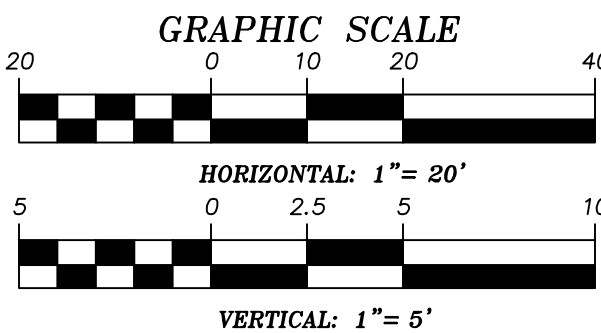
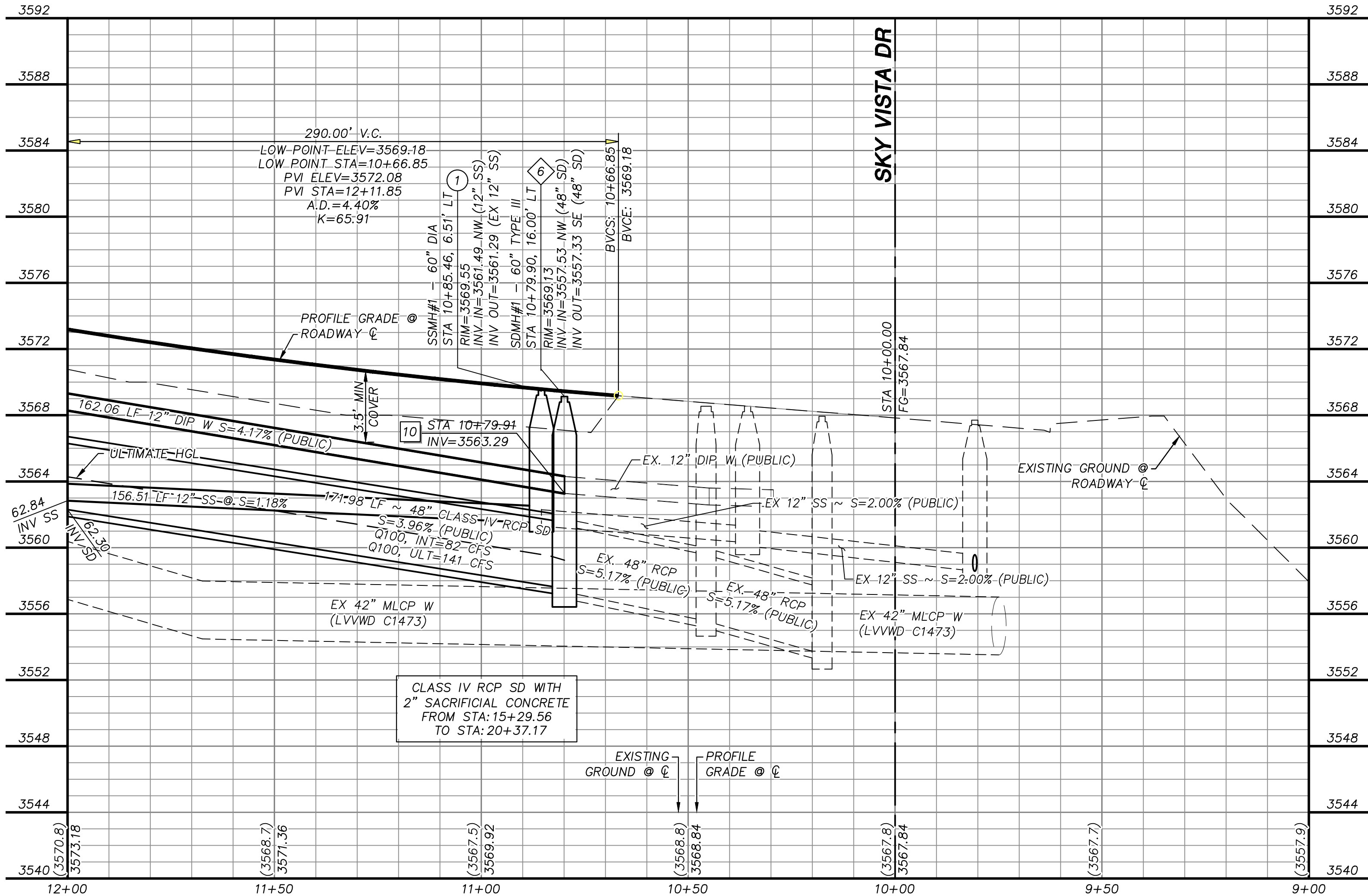
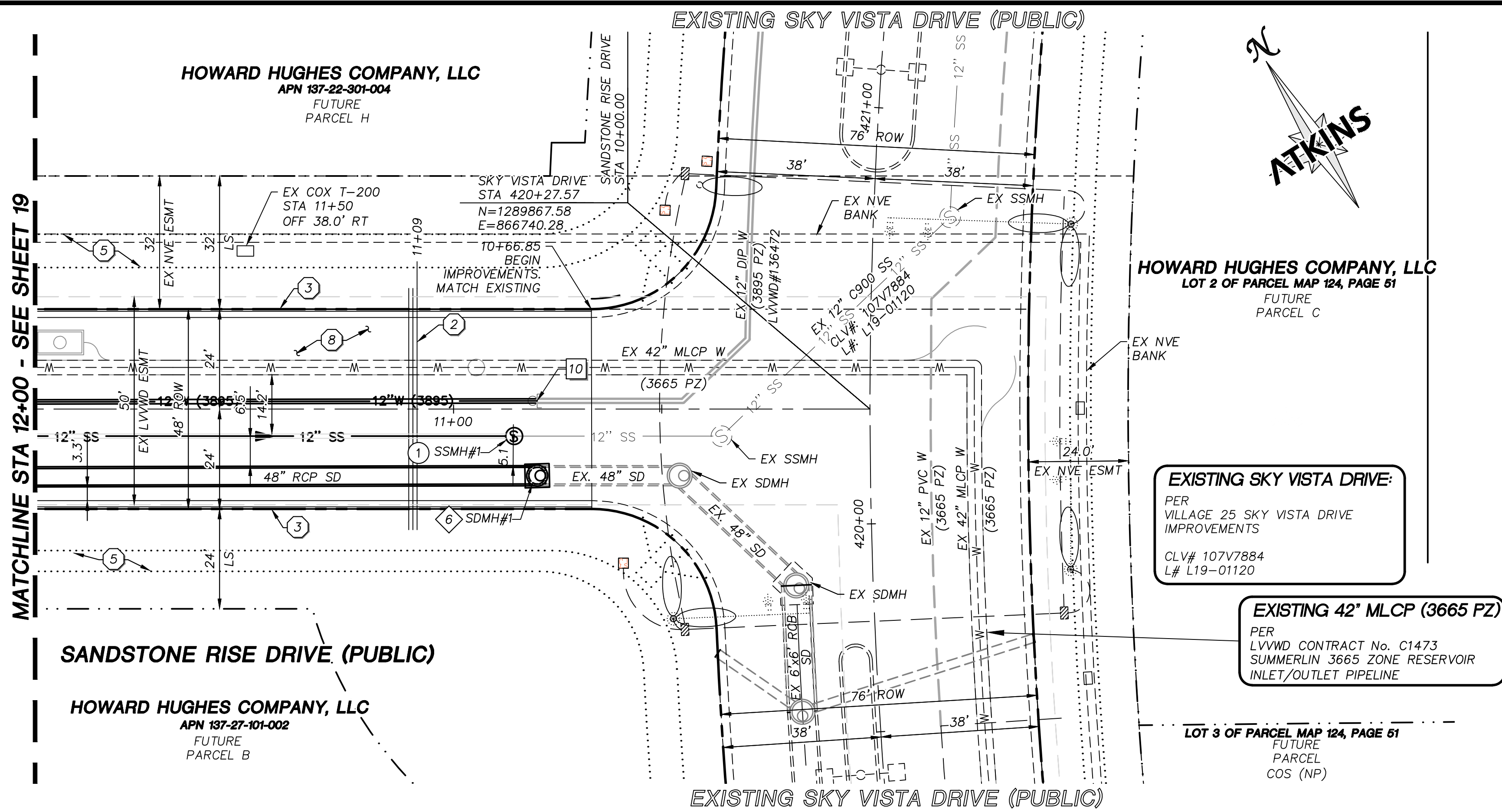
EXISTING LVWD FACILITIES

PROTECT IN PLACE AND ADJUST LVWD EXISTING FACILITIES TO MAINTAIN MINIMUM 12" VERTICAL SEPARATION AT ALL POINTS OF CROSSING.

FOR ALL DRY UTILITY CROSSINGS

MAINTAIN MINIMUM 3' PARALLEL SEPARATION

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



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. 137065 FIRST APPROVED DATE: _____

LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

GRADING PLAN CERTIFICATION

ANTHONY ORTIZ PE# 18849 DATE _____

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT

DRAINAGE STUDY NO.: 5221

BASIS OF BEARING

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

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03

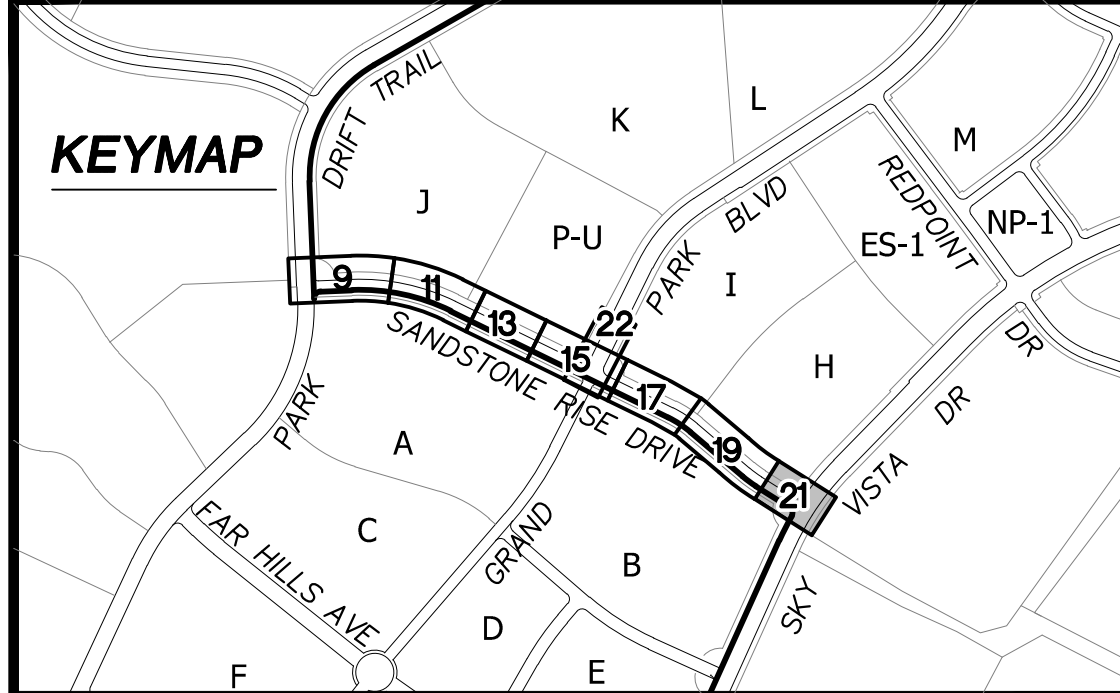


- STORM DRAIN CONSTRUCTION NOTES**
1. INSTALL STORM DRAIN. SEE SHEET 5 FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
 2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1, #422 & #421. LENGTH PER PLAN
 3. INSTALL NEENAH R-2560-G BEEHIVE DROP INLET
 4. INSTALL 60" TYPE I SD MANHOLE PER CCAUSD #403
 5. INSTALL 48" TYPE II SD MANHOLE PER CCAUSD #405.2
 6. INSTALL 60" TYPE III SD MANHOLE PER CCAUSD #406
 7. STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
 8. DEEP DROP INLET PER DETAIL "C" SHEET 29.

- SEWER CONSTRUCTION NOTES**
1. INSTALL SEWER MANHOLE WITH WATER TIGHT JOINTS PER DCSWCS SD-1, SD-3, SD-4 AND SD-5 WITH SINGLE 24" LID. SIZE PER PLAN.
 2. INSTALL PVC C-900 SEWER MAIN PER DCSWCS SD-17 & SD-15 (PUBLIC). SIZE PER PLAN.
 3. STUB AND CAP SEWER PIPE. INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
 4. INSTALL 6" LATERAL PER DCSWCS SD-22, SD-23 AND SD-25

- WATERLINE CONSTRUCTION NOTES**
1. INSTALL WATER MAIN WITH MARKER BALLS PER UDACS PLATES #15, #17 AND #19
 2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
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 4. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
 5. INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
 6. INSTALL 5" BEND PER UDACS PLATE #31
 7. INSTALL 11.25" BEND PER UDACS PLATE #31
 8. INSTALL 1.5" WATER METER AND RPPA PER UDACS PLATES #4 AND #8 AND DETAIL ON SHEET 30
 9. INSTALL IN-LINE REDUCER PER UDACS PLATE #30
 10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE
 11. EXISTING WATER LINE BY OTHERS
 12. WATER MAIN JOINT DEFLECTION PER UDACS 2.07.01 AND 2.07.03
 13. CONNECT TO EXISTING BLIND FLANGE
 14. ADJUST EXISTING FACILITY TO GRADE PER UDACS
 15. INSTALL 45" VERTICAL BEND PER UDACS PLATE #31

- ROADWAY CONSTRUCTION NOTES**
1. SAWCUT AND MATCH EXISTING
 2. INSTALL IRRIGATION SLEEVES PER DETAIL "E" SHEET 28
 3. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
 4. CONSTRUCT "A" TYPE ISLAND CURB PER CCAUSD #219
 5. FUTURE SIDEWALK BY OTHERS
 6. CONSTRUCT COMMERCIAL DRIVEWAY PER CCASUD #222.1
 7. CONSTRUCT SIDEWALK RAMP, PER DETAIL "A", SHEET 28
 8. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 27 FOR TYPICAL PAVEMENT SECTION.
 9. CONSTRUCT SIDEWALK RAMP CASE II PER CCAUSD #235 AND DETAIL "B", SHEET 28



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DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO.: 21/32
VERT.: 1"=5'

1/21/2021

ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7755
Fax: +1702.263.7200

SUMMERLIN

SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)
SANDSTONE RISE DRIVE PLAN AND PROFILE
BEGIN TO STA 12+00

DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO.: 21/32
VERT.: 1"=5'

1/21/2021

JOB NO. 100063656

PROPOSED WATERLINES BY OTHERS:
24" DIP (3895 PZ)
42" MLCTWP (4125 PZ)
PER
LVVWD CONTRACT No. C1558
SUMMERLIN 4125 ZONE NORTH PIPELINES PHASE 1

EXISTING LVVWD FACILITIES

PROTECT IN PLACE AND ADJUST LVVWD EXISTING FACILITIES TO FINISHED GRADE PER UDACS. ALL LVVWD FACILITIES SHALL BE ACCESSIBLE AT ALL TIMES.

EXISTING 42' MLCP (3665 PZ)
PER
LVVWD CONTRACT No. C1473
SUMMERLIN 3665 ZONE RESERVOIR
INLET/OUTLET PIPELINE

EXISTING 3665 ZONE RESERVOIR
PER
LVVWD CONTRACT No. C1472
SUMMERLIN 3665 ZONE RESERVOIR

APN
137-22-401-002
EX 3665 ZONE RESERVOIR
PARCEL DC-1



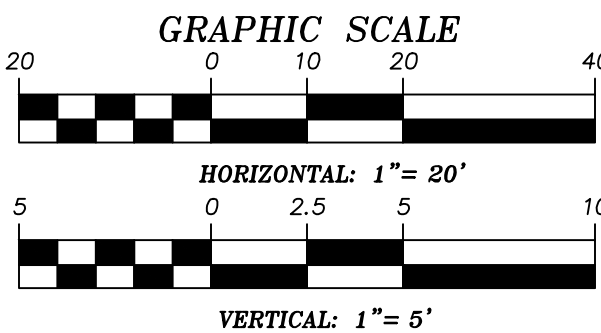
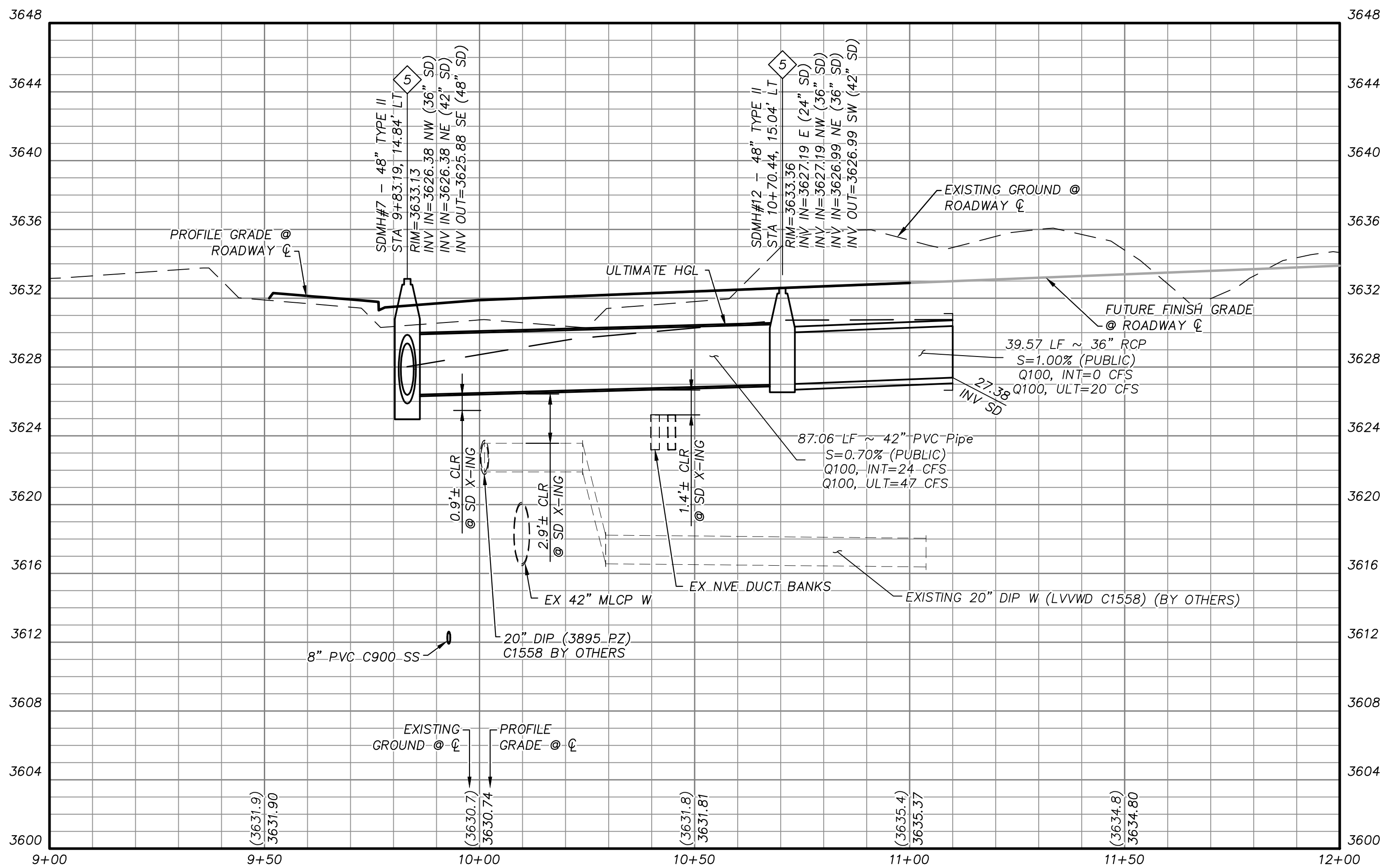
FUTURE GRAND PARK BOULEVARD (PUBLIC)

FUTURE GRAND PARK BOULEVARD (PUBLIC)

SANDSTONE RISE DRIVE - SEE SHEET 15

SANDSTONE RISE DRIVE - SEE SHEET 15

GRAND PARK BLVD (PUBLIC)



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. 137065 FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

GRADING PLAN CERTIFICATION

ANTHONY ORTIZ PE# 18849 DATE _____
CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.
DRAINAGE STUDY NO.: 5221

BASIS OF BEARING

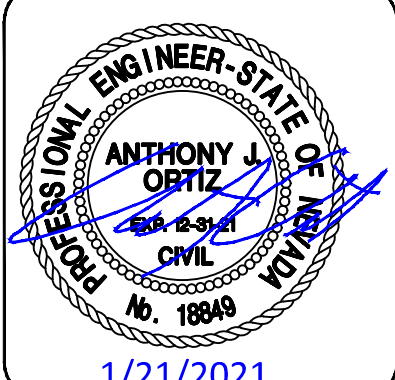
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STORM DRAIN CONSTRUCTION NOTES

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8. DEEP DROP INLET PER DETAIL "C" SHEET 29.

SEWER CONSTRUCTION NOTES

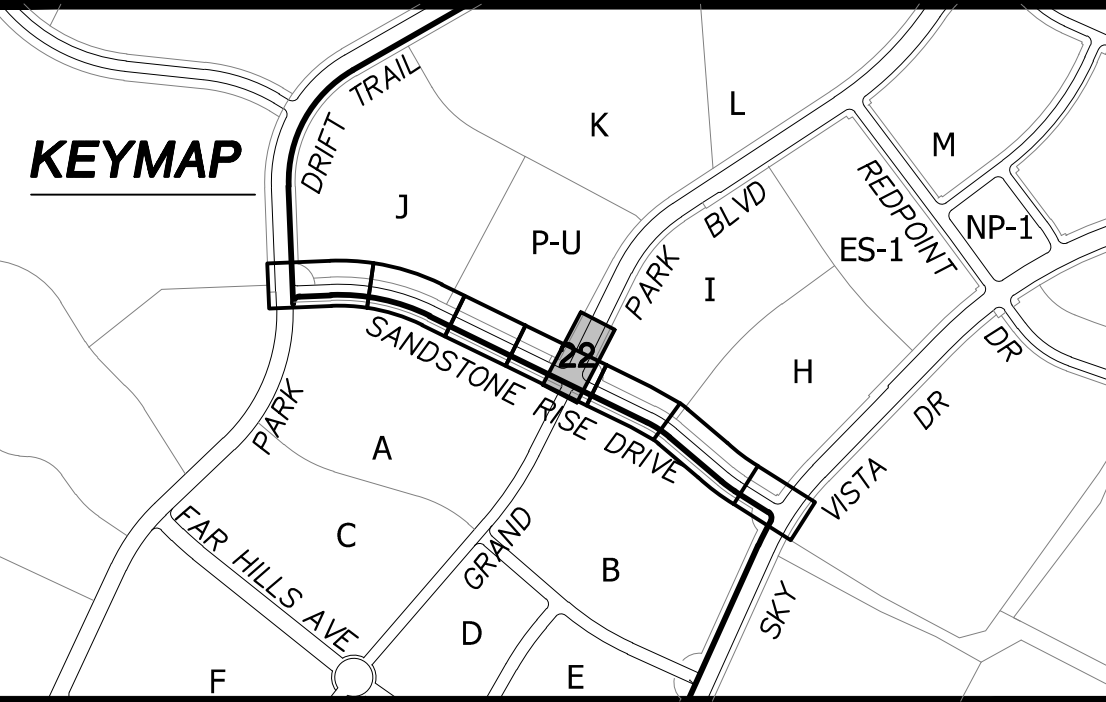
1. INSTALL SEWER MANHOLE WITH WATER TIGHT JOINTS PER DCSWCS SD-1, SD-3, SD-4 AND SD-5 WITH SINGLE 24" LID. SIZE PER PLAN.
2. INSTALL PVC C-900 SEWER MAIN PER DCSWCS SD-17 & SD-15 (PUBLIC). SIZE PER PLAN.
3. STUB AND CAP SEWER PIPE. INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. INSTALL 6" LATERAL PER DCSWCS SD-22, SD-23 AND SD-25

WATERLINE CONSTRUCTION NOTES

1. INSTALL WATER MAIN WITH MARKER BALLS PER UDACS PLATES #15, #17 AND #19
2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
3. INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATE #30, #31, #39, #40 AND DETAIL "C" ON SHEET 28
4. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
5. INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
6. INSTALL 5" BEND PER UDACS PLATE #31
7. INSTALL 11.25" BEND PER UDACS PLATE #31
8. INSTALL 1.5" WATER METER AND RPPA PER UDACS PLATES #4 AND #8 AND DETAIL ON SHEET 30
9. INSTALL IN-LINE REDUCER PER UDACS PLATE #30
10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE
11. EXISTING WATER LINE BY OTHERS
12. WATER MAIN JOINT DEFLECTION PER UDACS 2.07.01 AND 2.07.03
13. CONNECT TO EXISTING BLIND FLANGE
14. ADJUST EXISTING FACILITY TO GRADE PER UDACS
15. INSTALL 45" VERTICAL BEND PER UDACS PLATE #31

ROADWAY CONSTRUCTION NOTES

1. SAWCUT AND MATCH EXISTING
2. INSTALL IRRIGATION SLEEVES PER DETAIL "E" SHEET 28
3. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
4. CONSTRUCT "A" TYPE ISLAND CURB PER CCAUSD #219
5. FUTURE SIDEWALK BY OTHERS
6. CONSTRUCT COMMERCIAL DRIVEWAY PER CCASUD #222.1
7. CONSTRUCT SIDEWALK RAMP, PER DETAIL "A", SHEET 28
8. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 27 FOR TYPICAL PAVEMENT SECTION.
9. CONSTRUCT SIDEWALK RAMP CASE II PER CCAUSD #235 AND DETAIL "B", SHEET 28



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

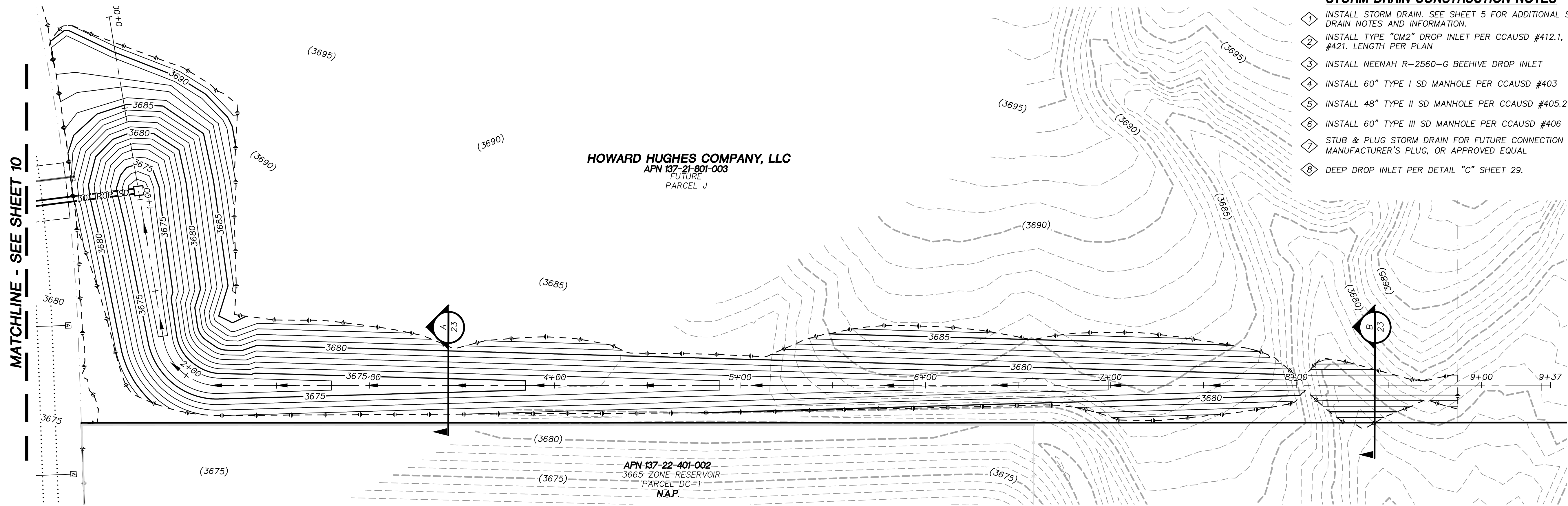
ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7755
Fax: +1702.263.7200

SUMMERLIN

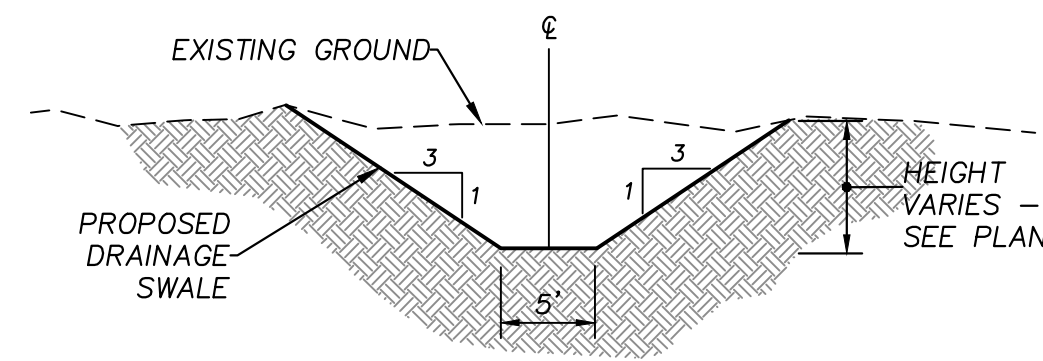
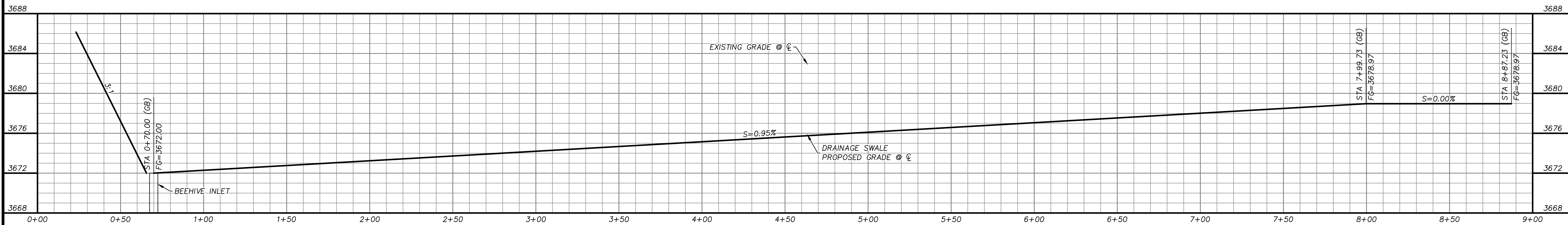
SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)
GRAND PARK BOULEVARD PLAN AND PROFILE
STA 10+00 TO STA 12+00

DESIGNED BY: 1075132
G. BLAKE
DRAWN BY: L20-00453
G. BLAKE
CHECKED BY: JANUARY, 2021
DATE: JANUARY, 2021
DRAWING NO.: 22/32
VERT.: 1"=20'
HORIZ.: 1"=50'

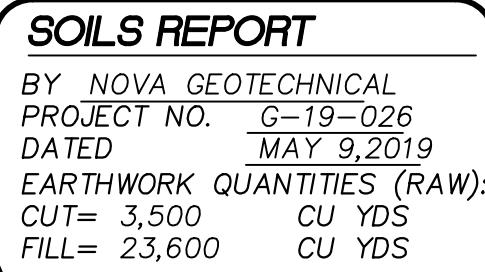
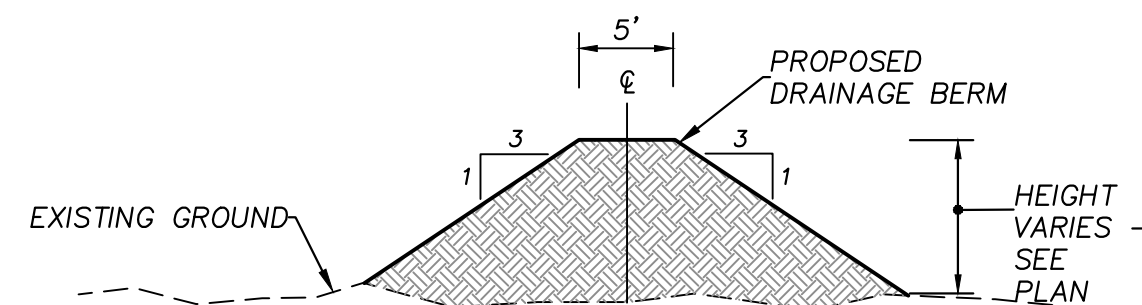
JOB NO. 100063656



- NOTE**
- INTERIM DRAINAGE IMPROVEMENTS ARE PRIVATELY OWNED AND PRIVATELY MAINTAINED BY THE HOWARD HUGHES COMPANY.



A
23

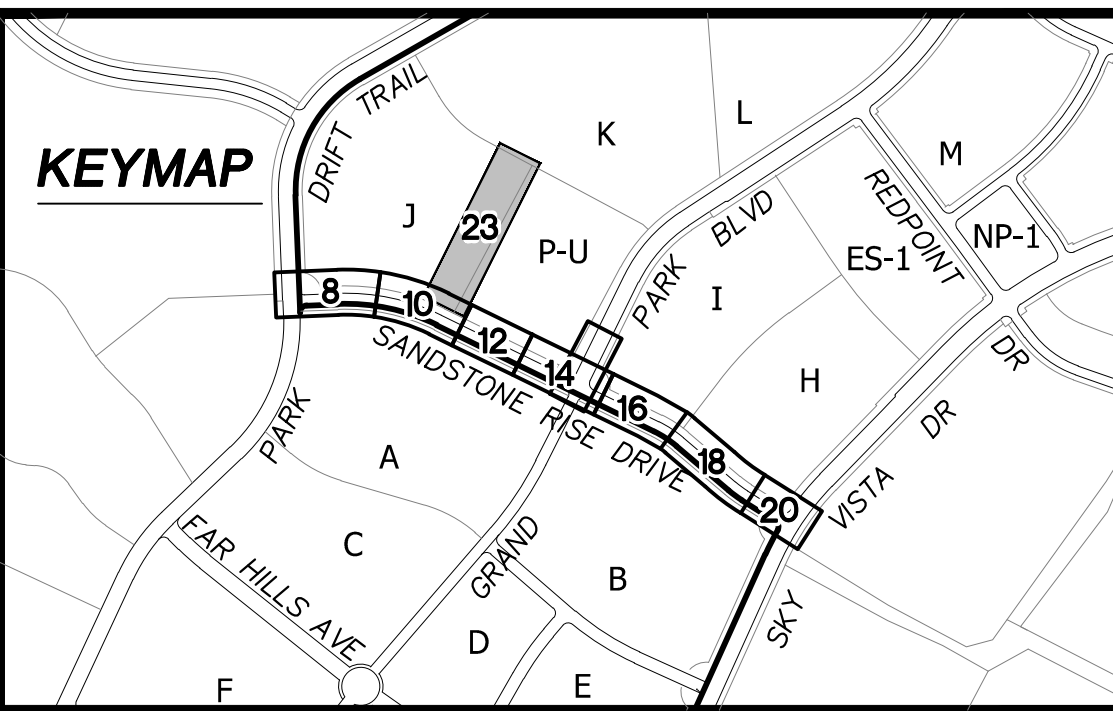


ANTHONY ORTIZ	PE#	18849	DATE
CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.			DRAINAGE STUDY NO.: 5221

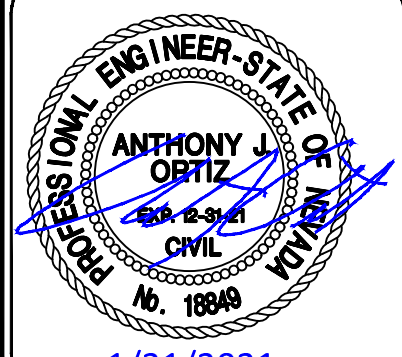
GRID NORTH AS DEFINED BY THE
CENTRAL MERIDIAN OF THE NEVADA
COORDINATE REFERENCE SYSTEM
(NCRS), LAS VEGAS HIGH
ELEVATION ZONE, NORTH AMERICAN
DATUM OF 1983; SAID MERIDIAN
BEING COINCIDENT WITH 114°58'
WEST OF THE GREENWICH MERIDIAN.

CITY OF LAS VEGAS BENCHMARK:
D368 (REVISED 2008)
NAV808 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FIND USGS DISC SET IN ROCK
RIDGE 150' SOUTH OF CHARLESTON
BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03

CITY OF LAS VEGAS BENCHMARK:
D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS
(3,246.63 FEET)
FND USC&GS DISC SET IN ROCK
RIDGE 150' SOUTH OF CHARLESTON
BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03



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

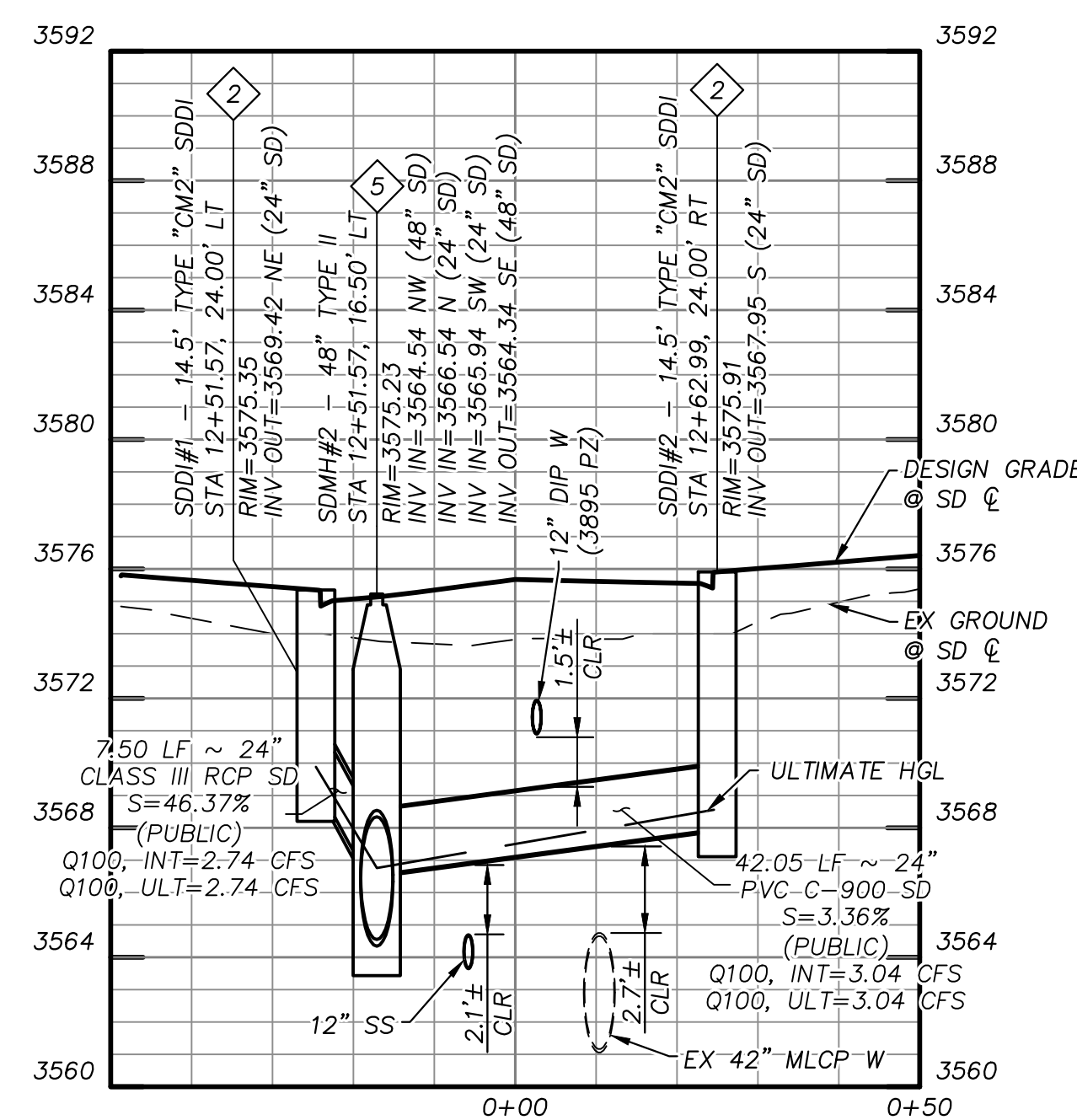
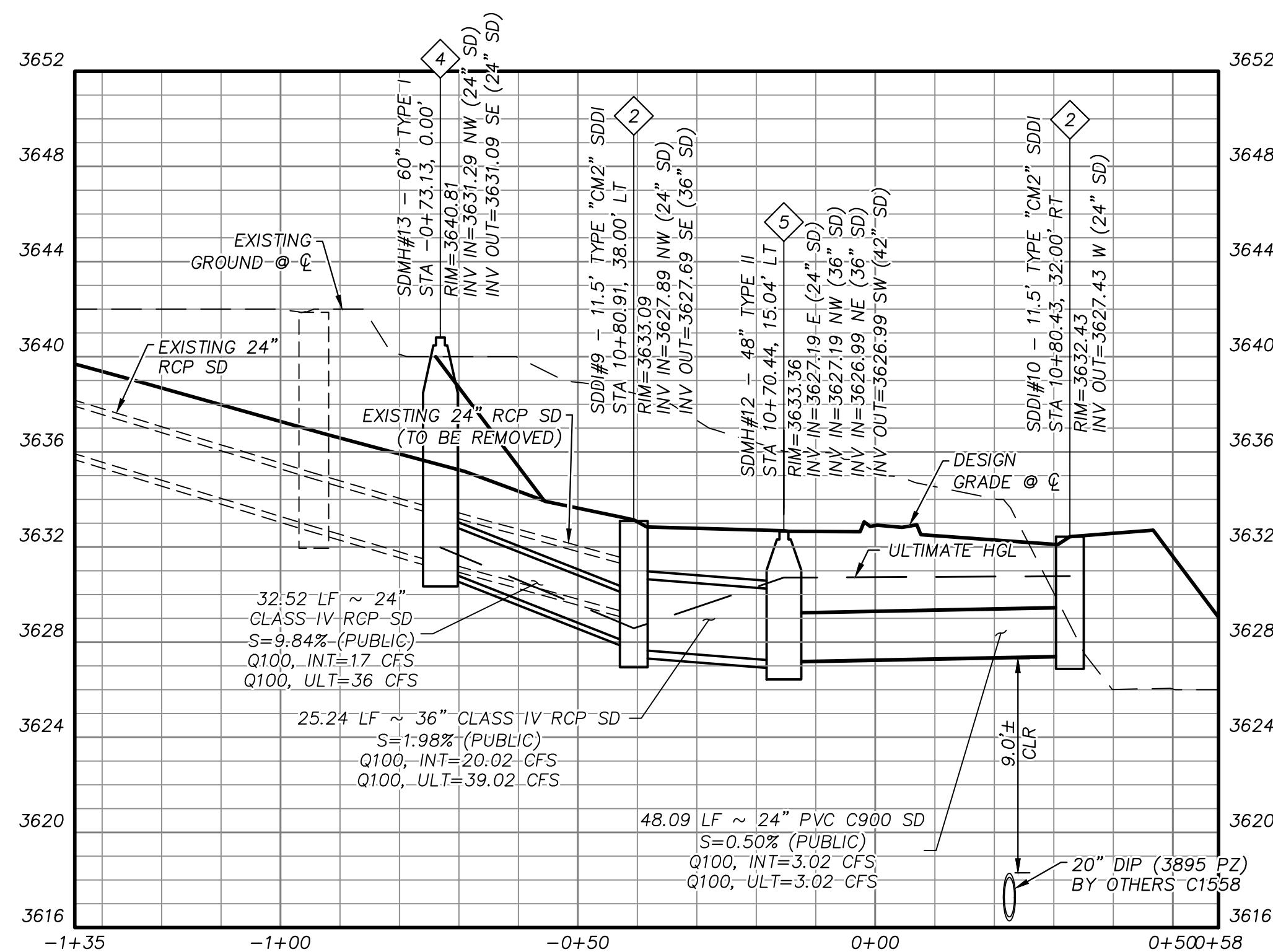
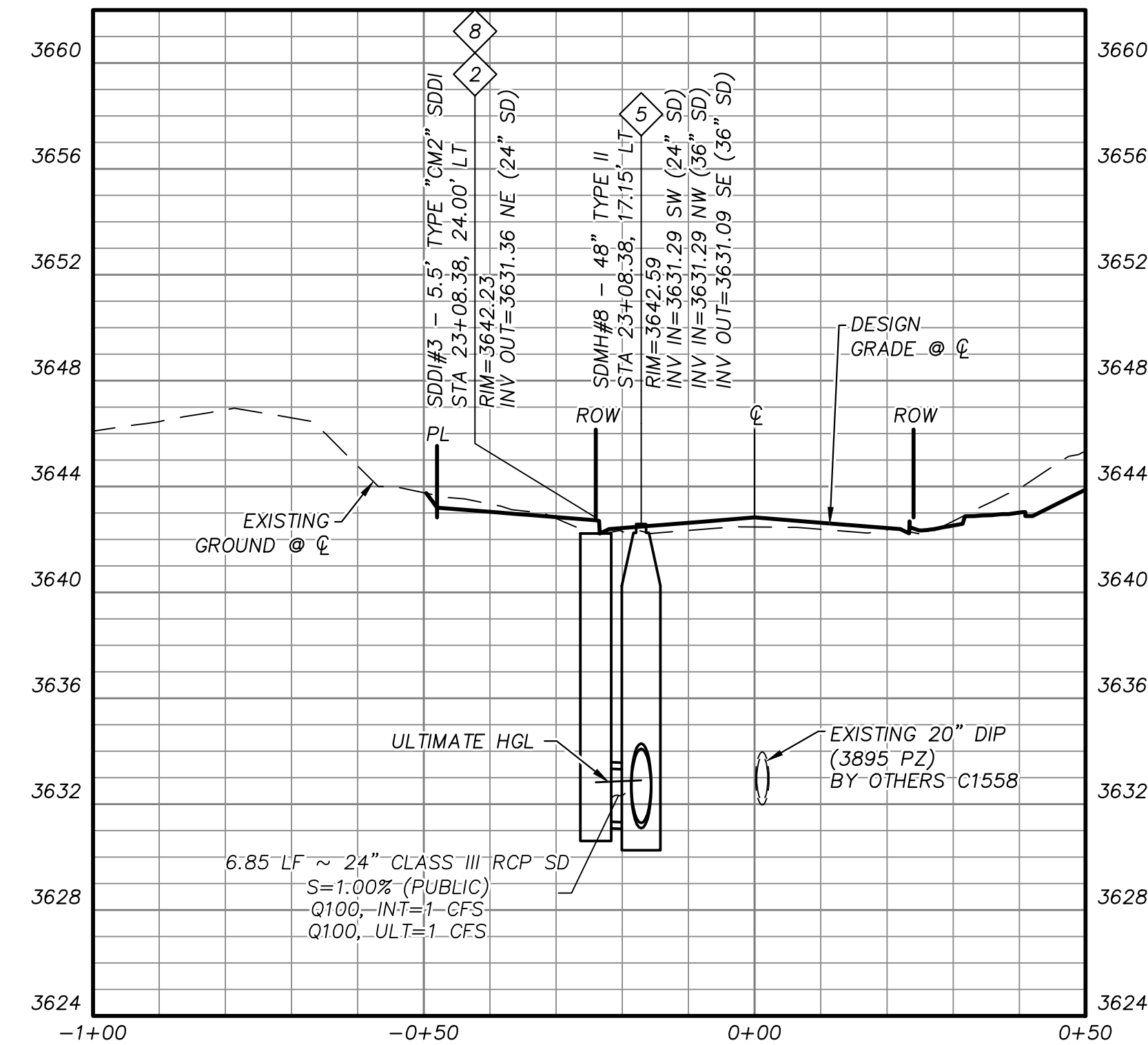
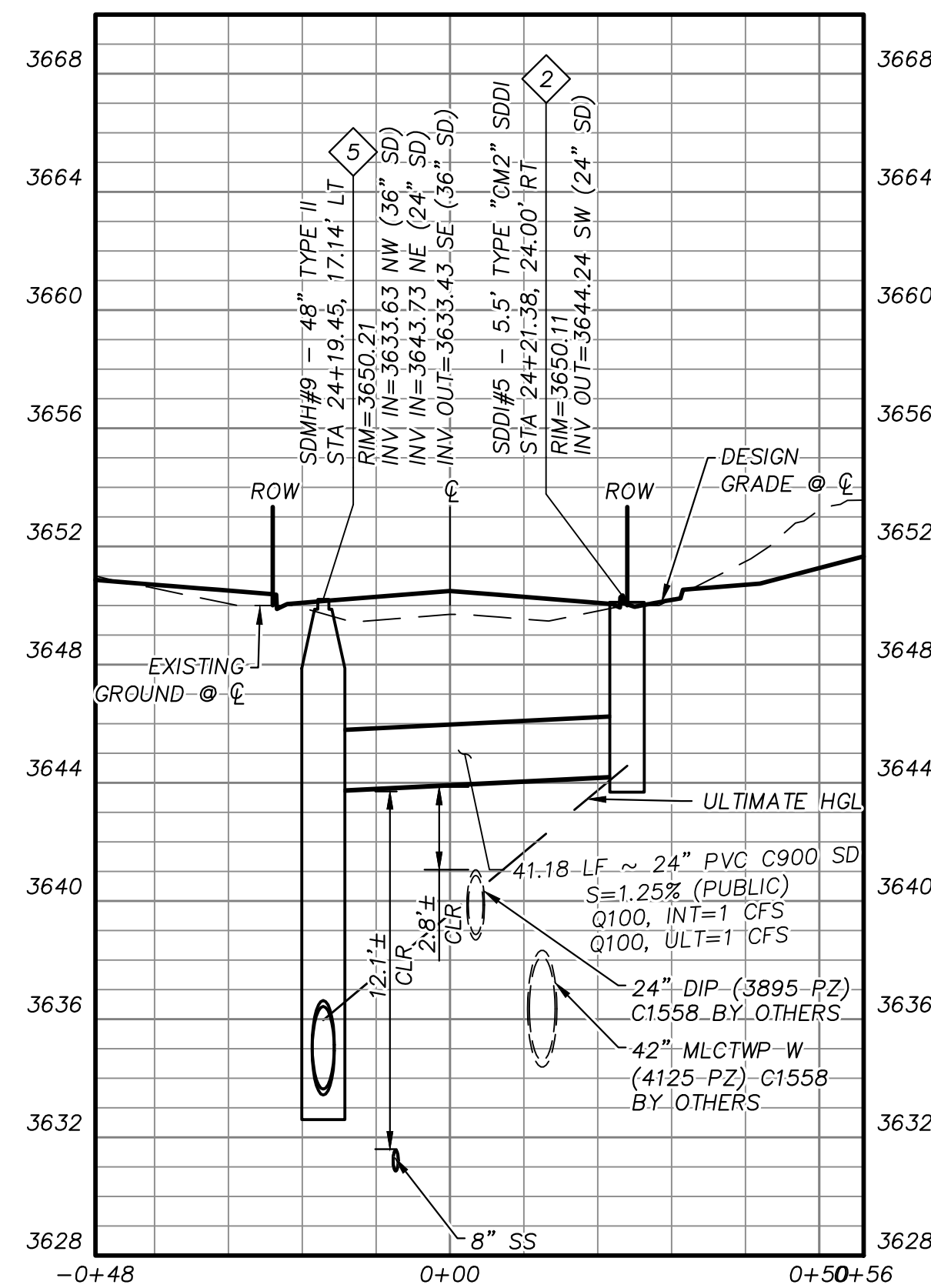
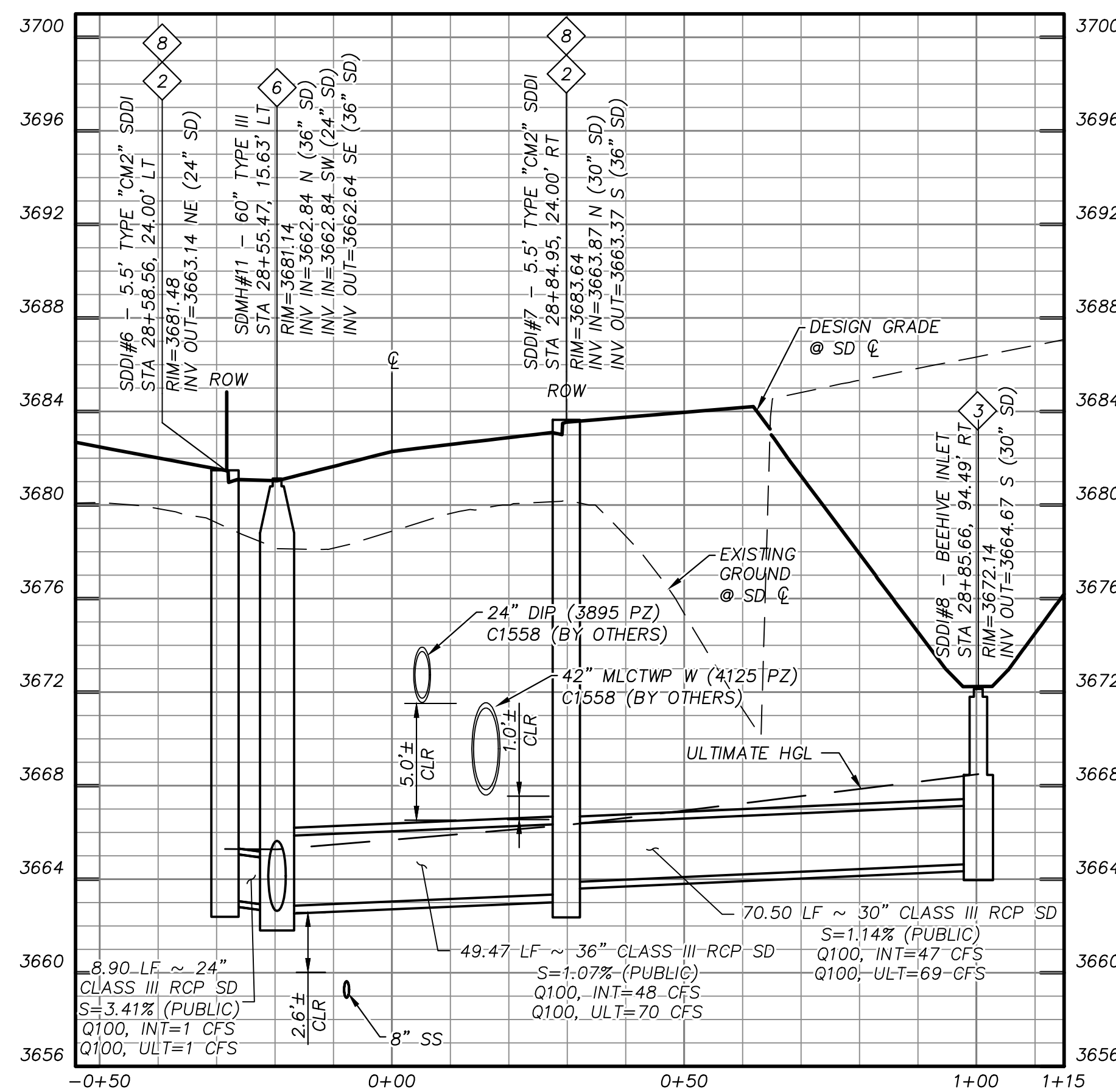


SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)

PARCEL J DRAINAGE SWALE PLAN AND PROFILE

107Y5132	DESIGNED BY: G. BLAKE
L20-00453	DRAWN BY: G. BLAKE
DATE: JANUARY, 2021	CHECKED BY: T. ORTIZ
DRAWING NO.	HORIZ.: 1"=30" VERT.: NONE
23/32	

JOB NO. 100063656



STORM DRAIN CONSTRUCTION NOTES

- 1 INSTALL STORM DRAIN. SEE SHEET 5 FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
- 2 INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1, #422 & #421. LENGTH PER PLAN
- 3 INSTALL NEENAH R-2560-G BEEHIVE DROP INLET
- 4 INSTALL 60" TYPE I SD MANHOLE PER CCAUSD #403
- 5 INSTALL 48" TYPE II SD MANHOLE PER CCAUSD #405.2
- 6 INSTALL 60" TYPE III SD MANHOLE PER CCAUSD #406
- 7 STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
- 8 DEEP DROP INLET PER DETAIL "C" SHEET 29.

SEWER CONSTRUCTION NOTES

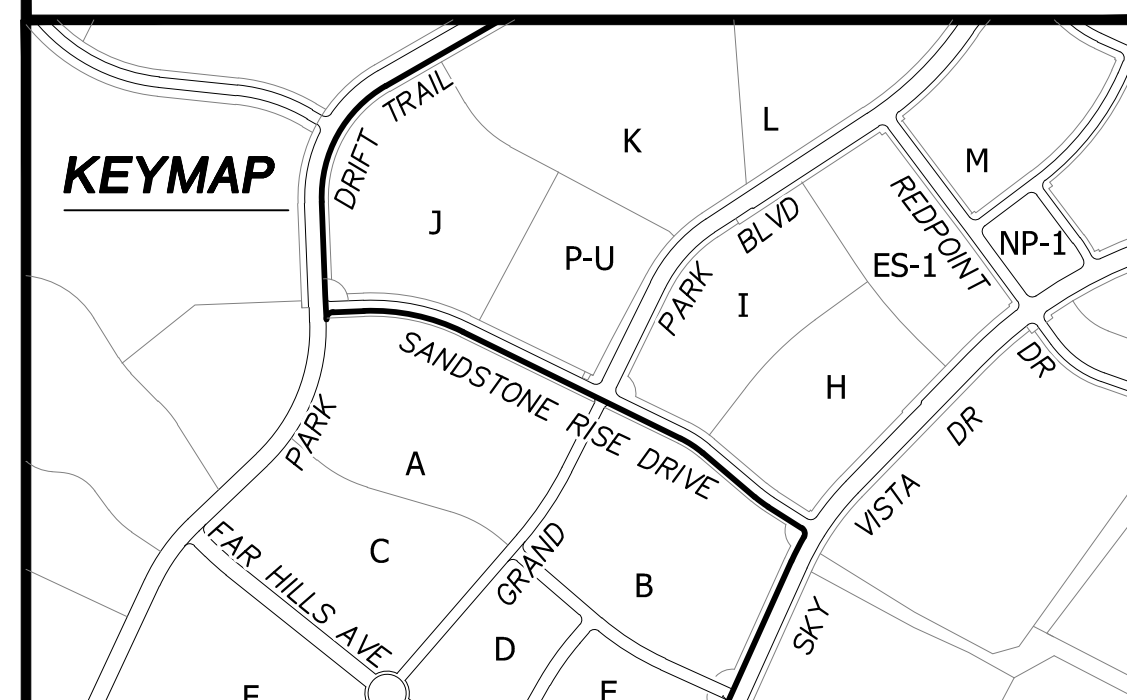
- ① INSTALL SEWER MANHOLE WITH WATER TIGHT JOINTS PER DCSWCS SD-1, SD-3, SD-4 AND SD-5 WITH SINGLE 24" LID. SIZE PER PLAN.
- ② INSTALL PVC C-900 SEWER MAIN PER DCSWCS SD-17 & SD-15 (PUBLIC). SIZE PER PLAN.
- ③ STUB AND CAP SEWER PIPE. INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
- ④ INSTALL 6" LATERAL PER DCSWCS SD-22, SD-23 AND SD-25

WATERLINE CONSTRUCTION NOTES

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- 2 INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
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- 7 INSTALL 11.25" BEND PER UDACS PLATE #31
- 8 INSTALL 1.5" WATER METER AND RPPA PER UDACS PLATES #4 AND #8 AND DETAIL ON SHEET 30
- 9 INSTALL IN-LINE REDUCER PER UDACS PLATE #30
- 10 REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE
- 11 EXISTING WATER LINE BY OTHERS
- 12 WATER MAIN JOINT DEFLECTION PER UDACS 2.07.01 AND 2.07.03
- 13 CONNECT TO EXISTING BLIND FLANGE
- 14 ADJUST EXISTING FACILITY TO GRADE PER UDACS
- 15 INSTALL 45° VERTICAL BEND PER UDACS PLATE #31

ROADWAY CONSTRUCTION NOTES

- ① SAWCUT AND MATCH EXISTING
- ② INSTALL IRRIGATION SLEEVES PER DETAIL "E" SHEET 28
- ③ CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
- ④ CONSTRUCT "A" TYPE ISLAND CURB PER CCAUSD #219
- ⑤ FUTURE SIDEWALK BY OTHERS
- ⑥ CONSTRUCT COMMERCIAL DRIVEWAY PER CCASUD #222.1
- ⑦ CONSTRUCT SIDEWALK RAMP, PER DETAIL "A", SHEET 28
- ⑧ CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 27 FOR TYPICAL PAVEMENT SECTION.
- ⑨ CONSTRUCT SIDEWALK RAMP CASE II PER CCAUSD #235 AND DETAIL "B", SHEET 28



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. 137065 FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

BASIS OF BEARING

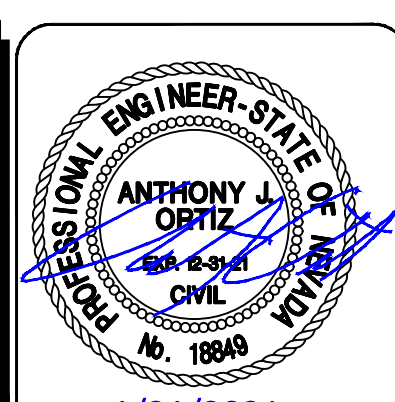
GRID NORTH AS DEFINED BY THE
CENTRAL MERIDIAN OF THE NEVADA
COORDINATE REFERENCE SYSTEM
(NCRS), LAS VEGAS HIGH
ELEVATION ZONE, NORTH AMERICAN
DATUM OF 1983; SAID MERIDIAN
BEING COINCIDENT WITH 114°58'
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BENCHMARK

CITY OF LAS VEGAS BENCHMARK:
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FND USC&GS DISC SET IN ROCK
RIDGE 150' SOUTH OF CHARLESTON
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T21S.R59E.S03



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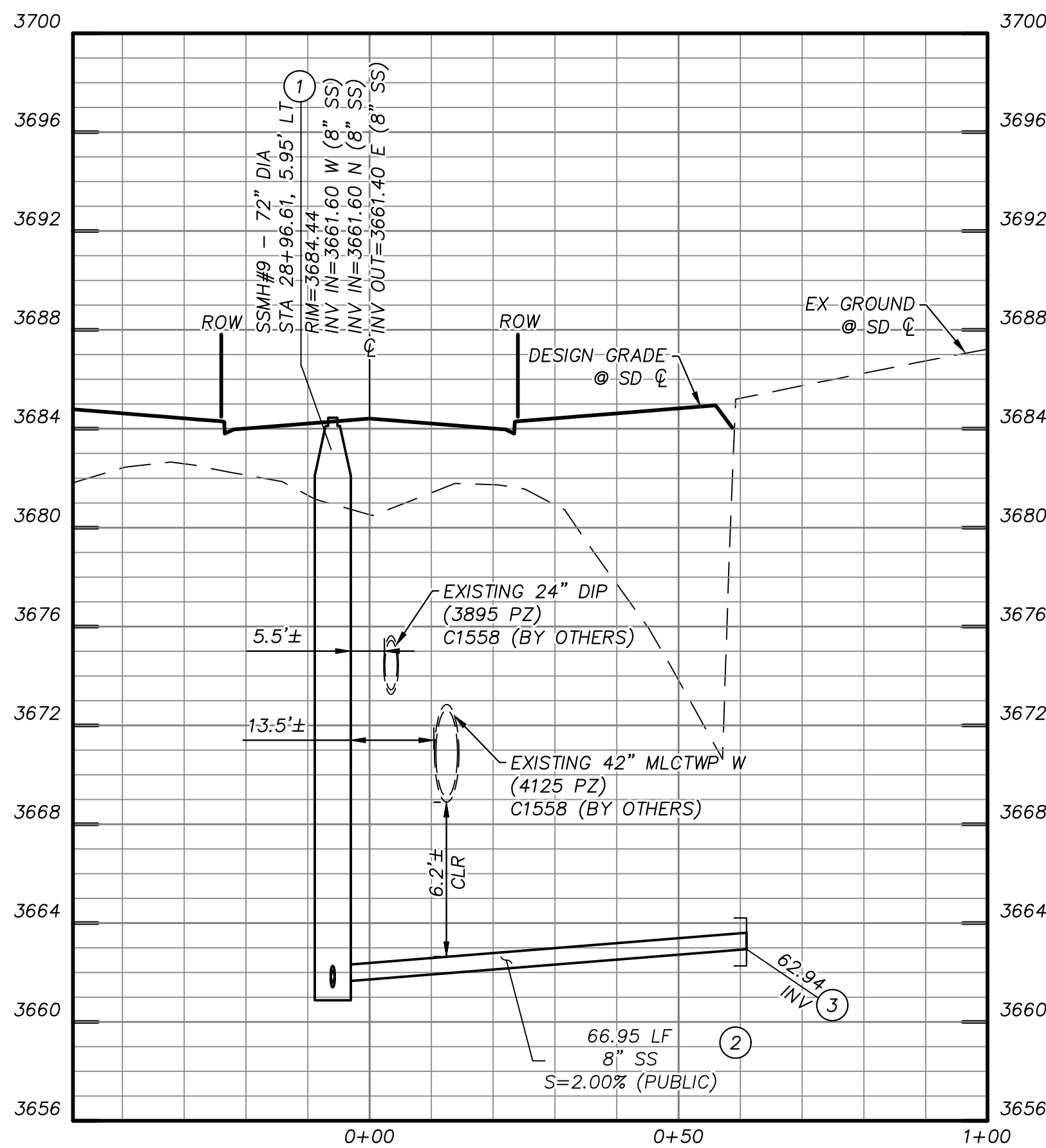


L20-00453	G. BLAKE
DATE:	DRAWN BY:
<u>JANUARY, 2021</u>	G. BLAKE
DRAWING NO.	CHECKED BY:
	T. ORTIZ
	HORIZ.: N.T.S.
24/32	VERT.: N.T.S.

ATKINS
22270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1.702.263.7275
Fax: +1.702.263.7200



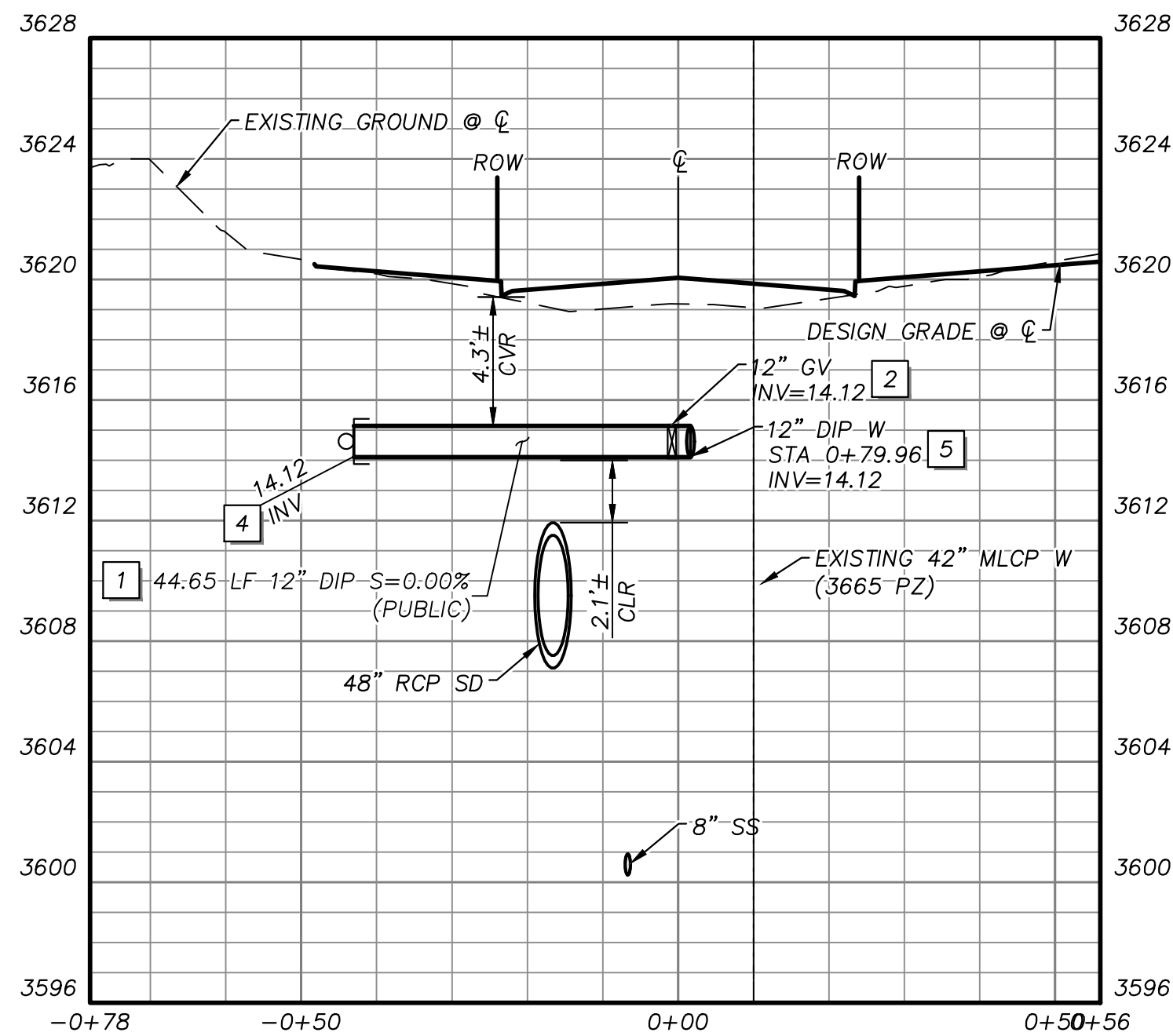
SUMMERLIN®



SEWER LATERAL DETAIL

"SRD" STA: 28+94 SEE SHEET 11

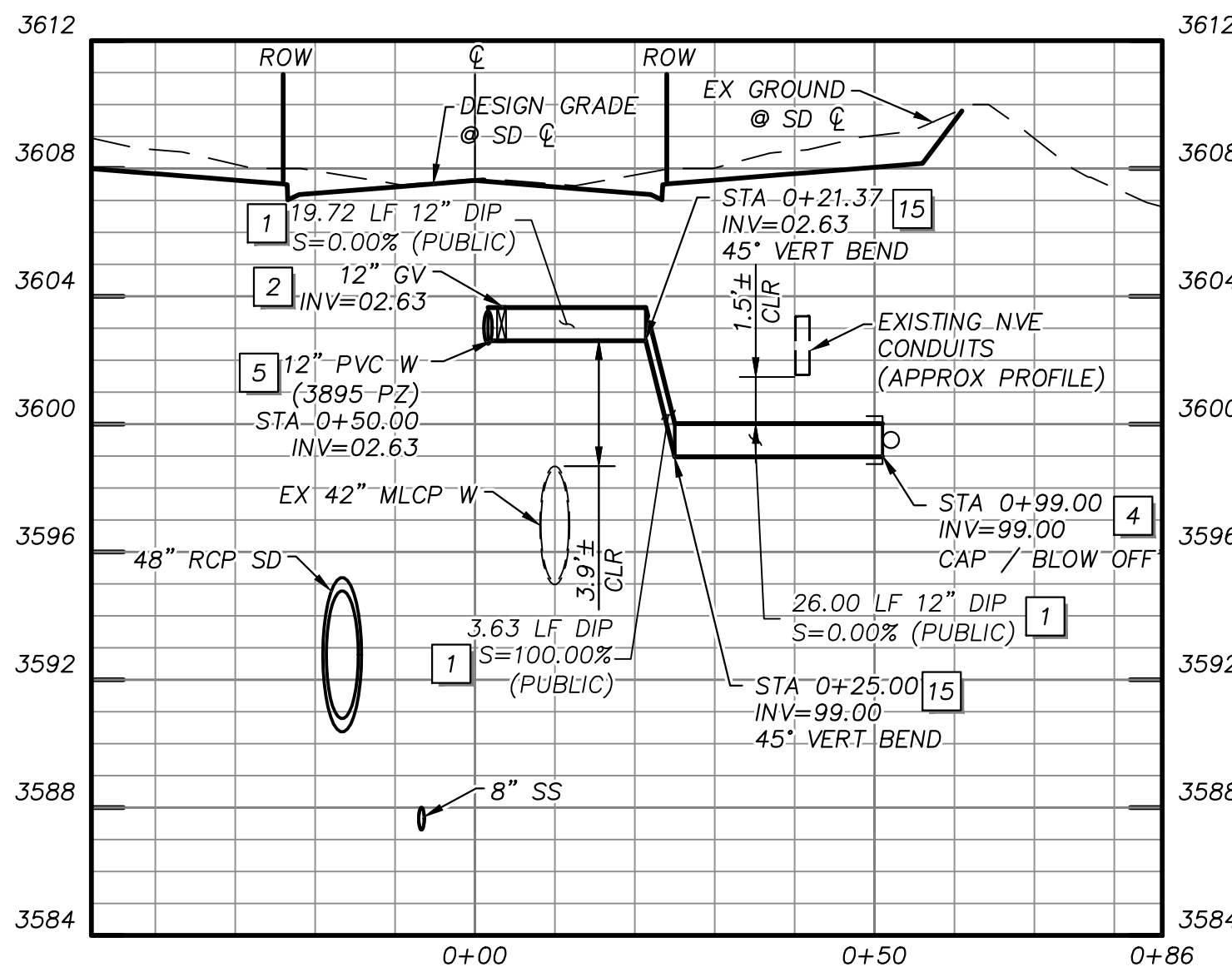
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WATER LATERAL DETAIL

"SRD" STA: 19+46 SEE SHEET 17

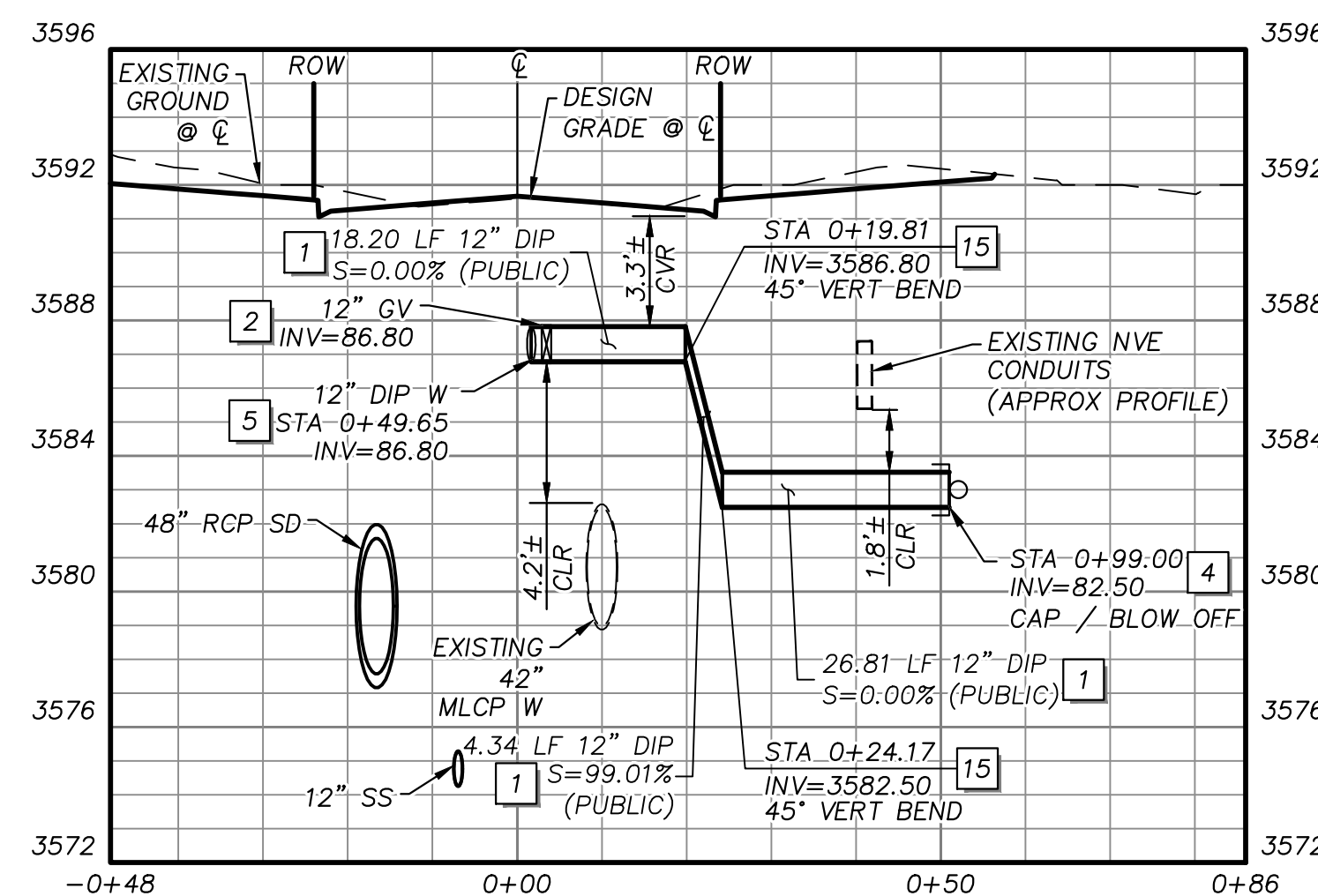
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25



WATER LATERAL DETAIL

"SRD" STA: 17+67 SEE SHEET 17

C
25



WATER LATERAL DETAIL

"SRD" STA: 15+17 SEE SHEET 19

E
25

STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN. SEE SHEET 5 FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1, #422 & #421. LENGTH PER PLAN
3. INSTALL NEENAH R-2560-G BEEHIVE DROP INLET
4. INSTALL 60" TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL 48" TYPE II SD MANHOLE PER CCAUSD #405.2
6. INSTALL 60" TYPE III SD MANHOLE PER CCAUSD #406
7. STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
8. DEEP DROP INLET PER DETAIL "C" SHEET 29.

SEWER CONSTRUCTION NOTES

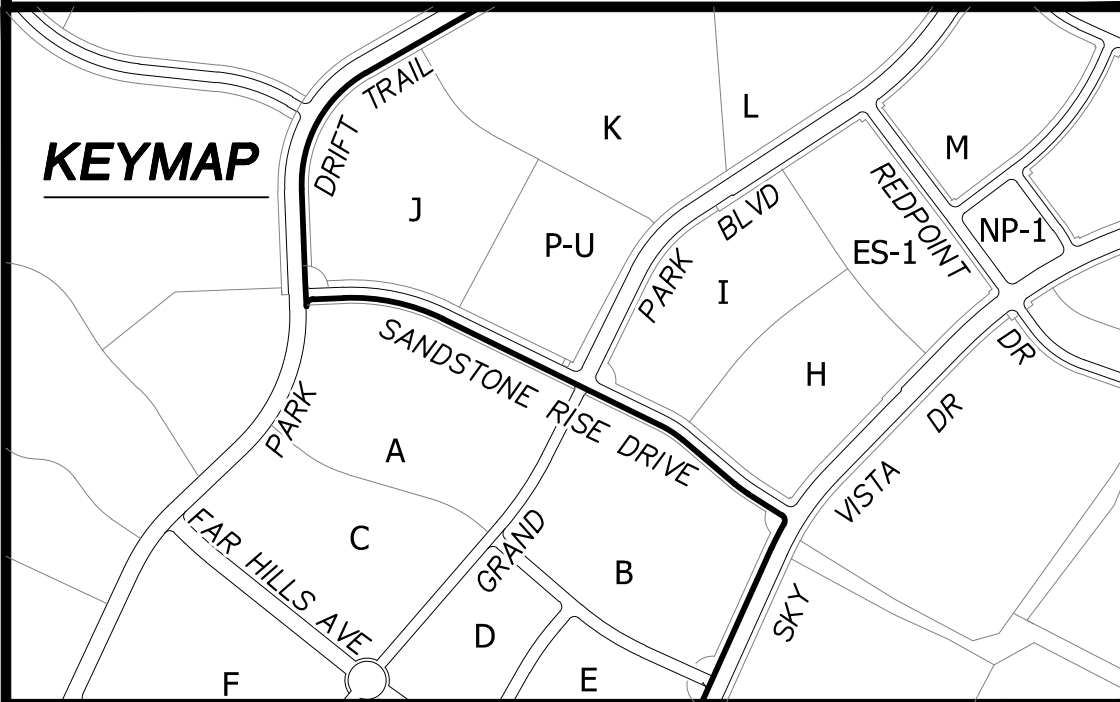
1. INSTALL SEWER MANHOLE WITH WATER TIGHT JOINTS PER DCSWCS SD-1, SD-3, SD-4 AND SD-5 WITH SINGLE 24" LID. SIZE PER PLAN.
2. INSTALL PVC C-900 SEWER MAIN PER DCSWCS SD-17 & SD-15 (PUBLIC). SIZE PER PLAN.
3. STUB AND CAP SEWER PIPE. INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. INSTALL 6" LATERAL PER DCSWCS SD-22, SD-23 AND SD-25

WATERLINE CONSTRUCTION NOTES

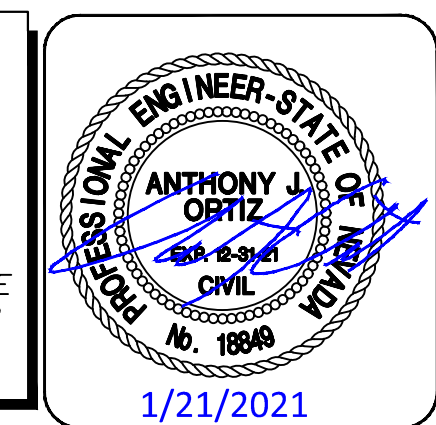
1. INSTALL WATER MAIN WITH MARKER BALLS PER UDACS PLATES #15, #17 AND #19
2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
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4. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
5. INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
6. INSTALL 5' BEND PER UDACS PLATE #31
7. INSTALL 11.25' BEND PER UDACS PLATE #31
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11. EXISTING WATER LINE BY OTHERS
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13. CONNECT TO EXISTING BLIND FLANGE
14. ADJUST EXISTING FACILITY TO GRADE PER UDACS
15. INSTALL 45° VERTICAL BEND PER UDACS PLATE #31

ROADWAY CONSTRUCTION NOTES

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3. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
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7. CONSTRUCT SIDEWALK RAMP, PER DETAIL "A", SHEET 28
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9. CONSTRUCT SIDEWALK RAMP CASE II PER CCAUSD #235 AND DETAIL "B", SHEET 28



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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. 137065 FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

BASIS OF BEARING

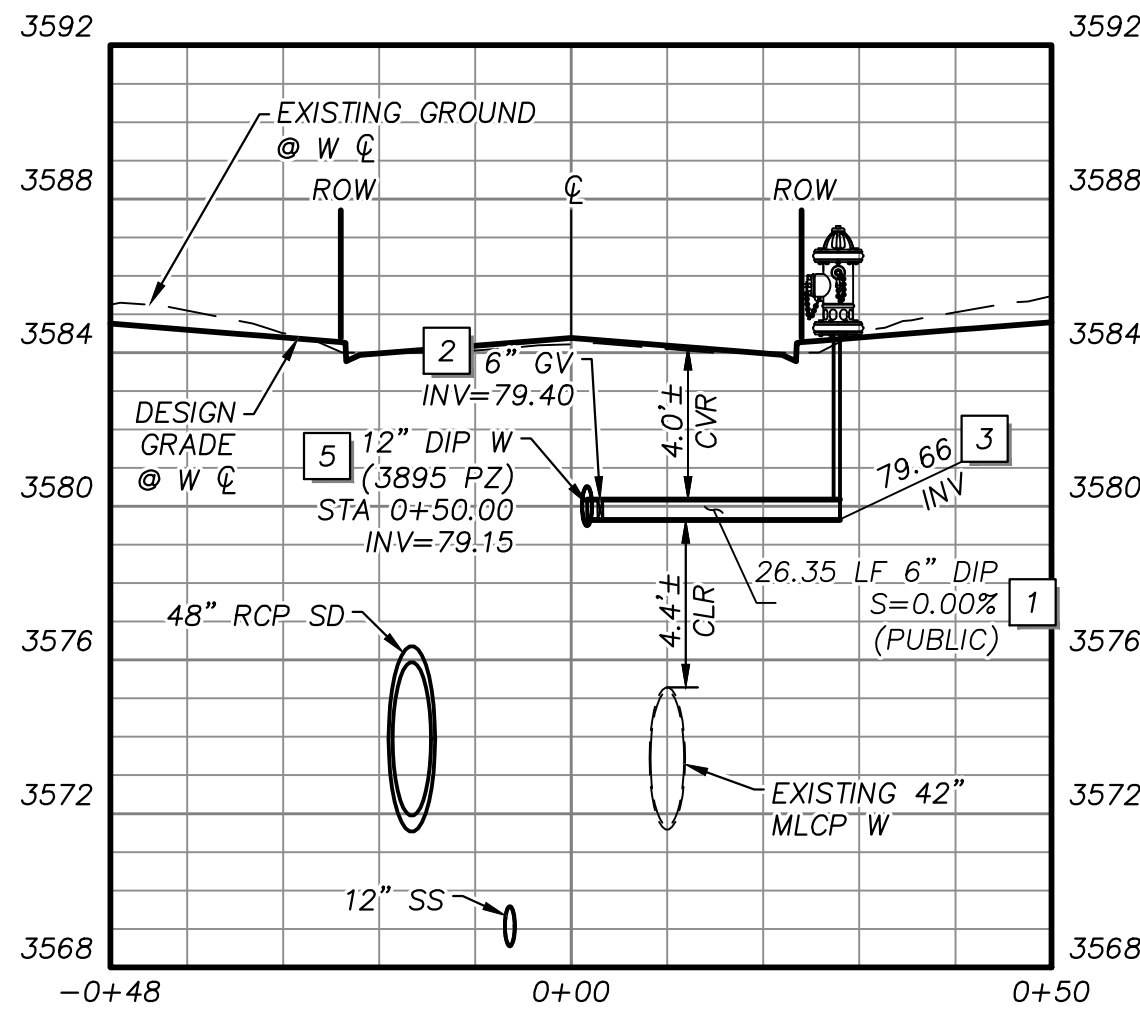
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS). LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T213, R59E, S03



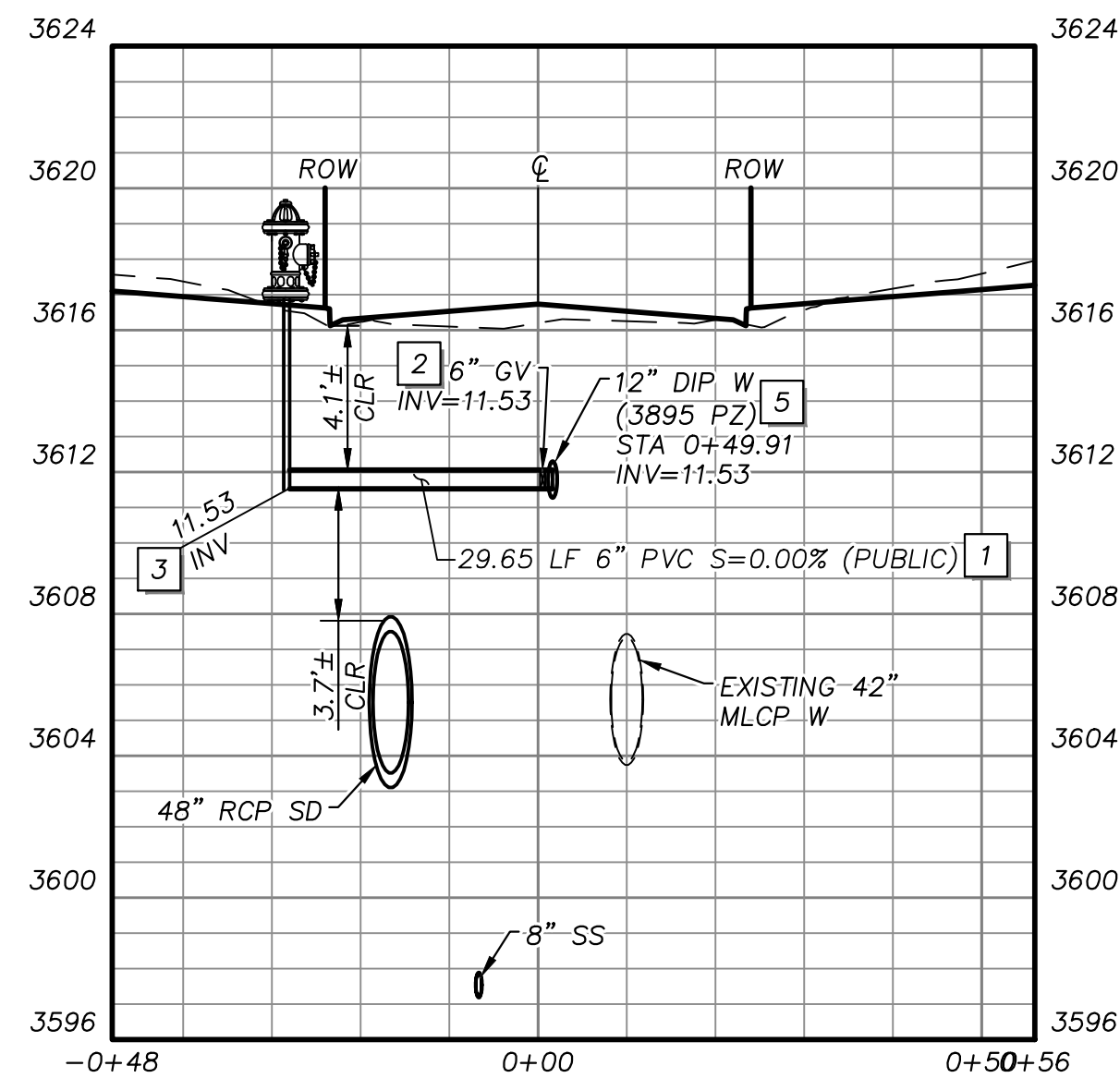
DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
DATE: JANUARY, 2021
CHECKED BY: T. ORTIZ
DRAWING NO. 25/32
VERT. N.T.S.
JOB NO. 100063656



FIRE HYDRANT LATERAL DETAIL

"SRD" STA: 14+04 SEE SHEET 19

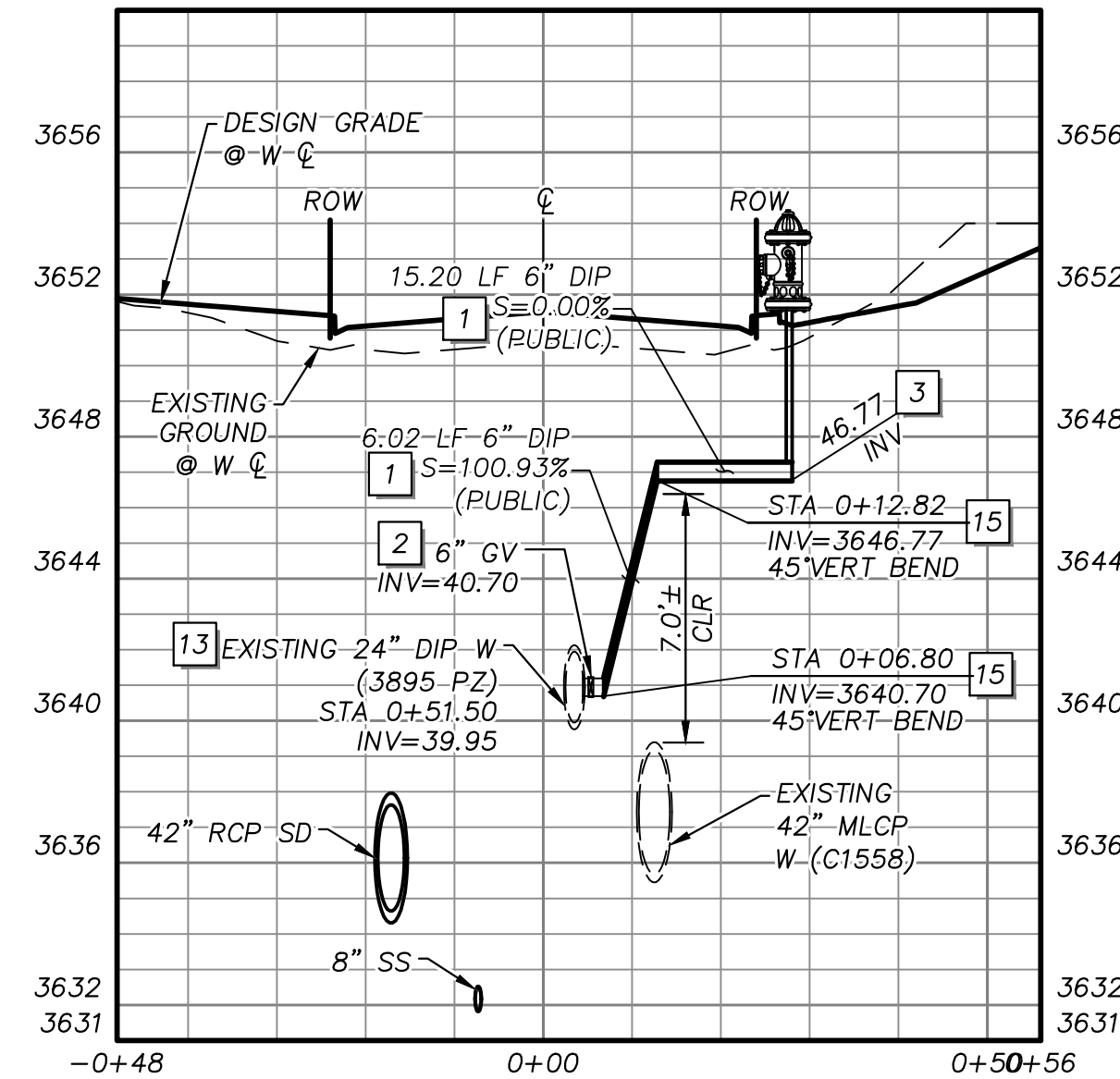
A
26



FIRE HYDRANT LATERAL DETAIL

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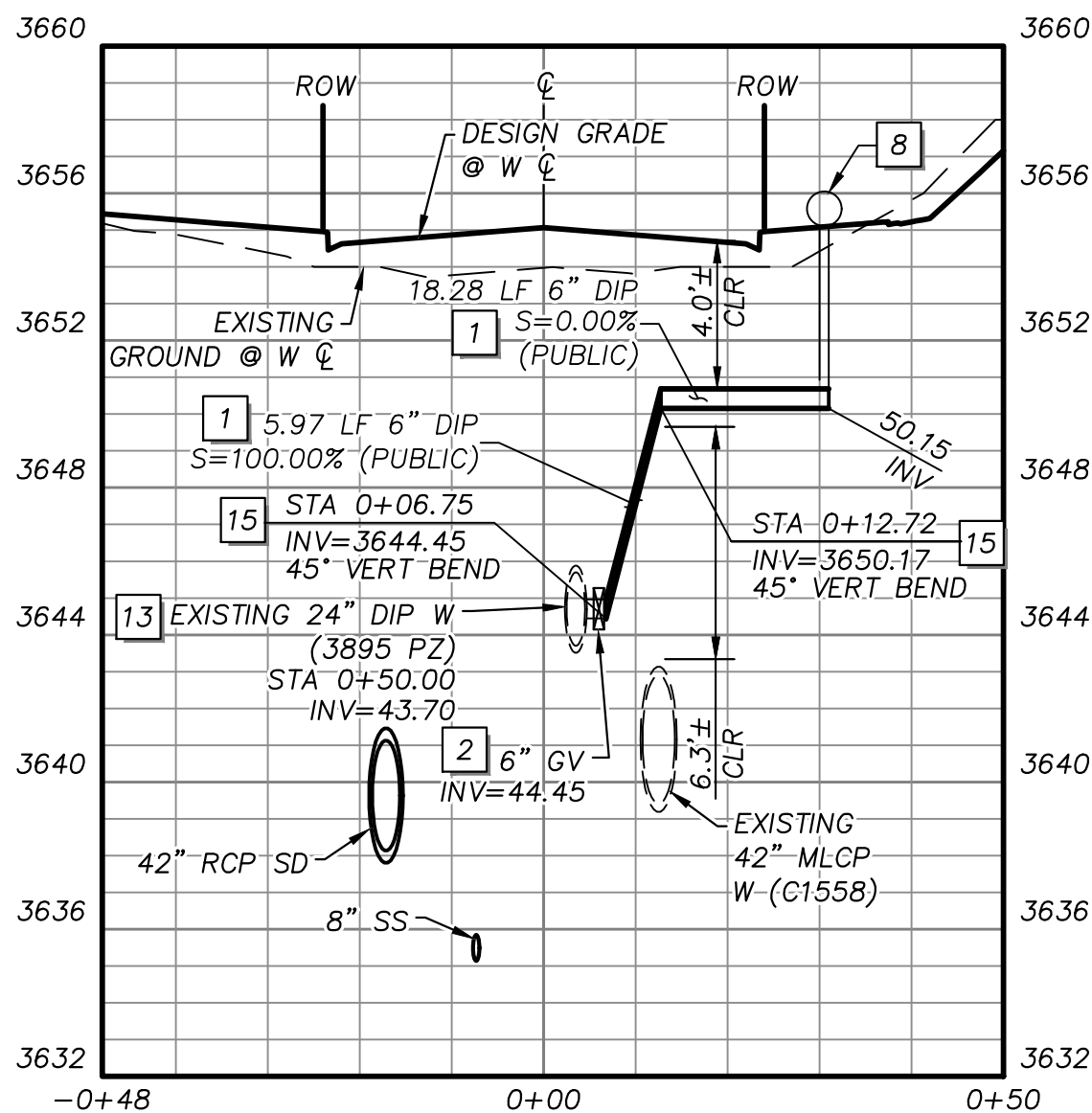
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FIRE HYDRANT LATERAL DETAIL

"SRD" STA: 24+25 SEE SHEET 13

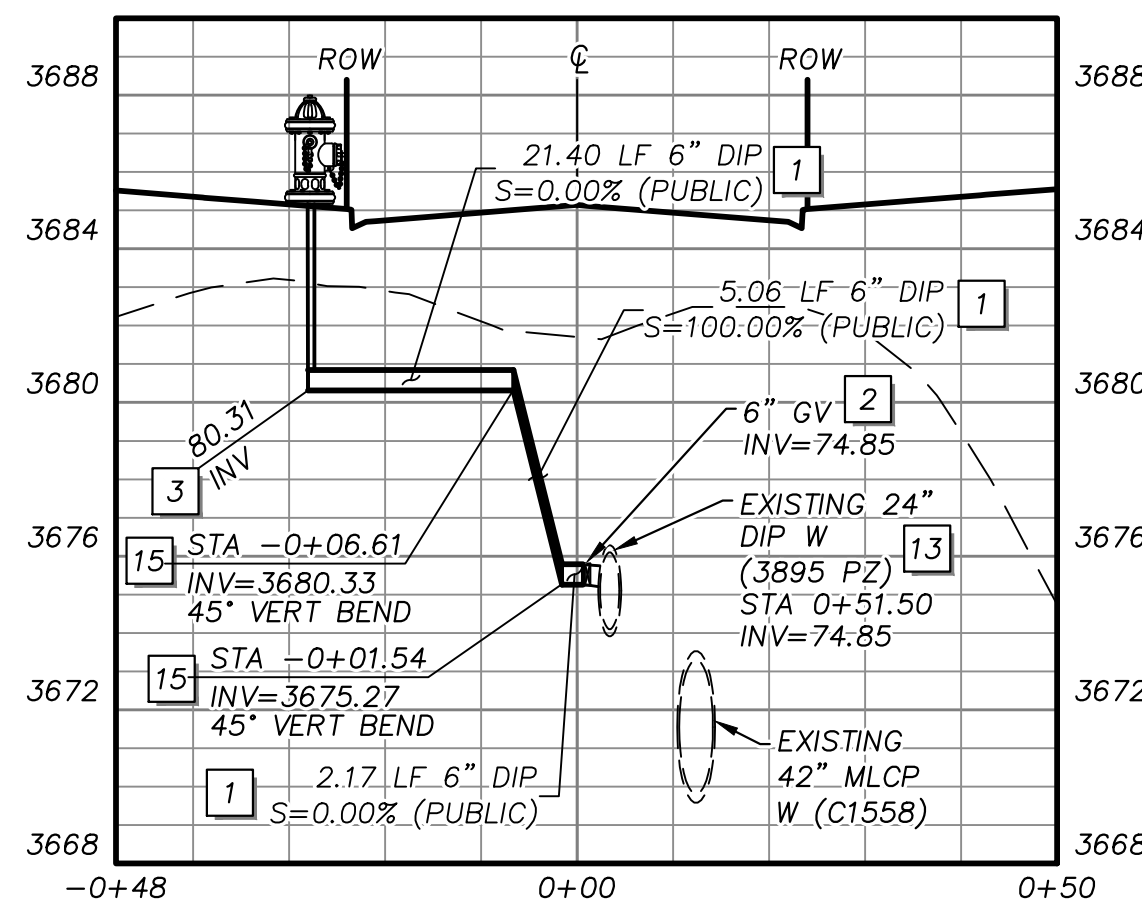
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IRRIGATION METER LATERAL DETAIL

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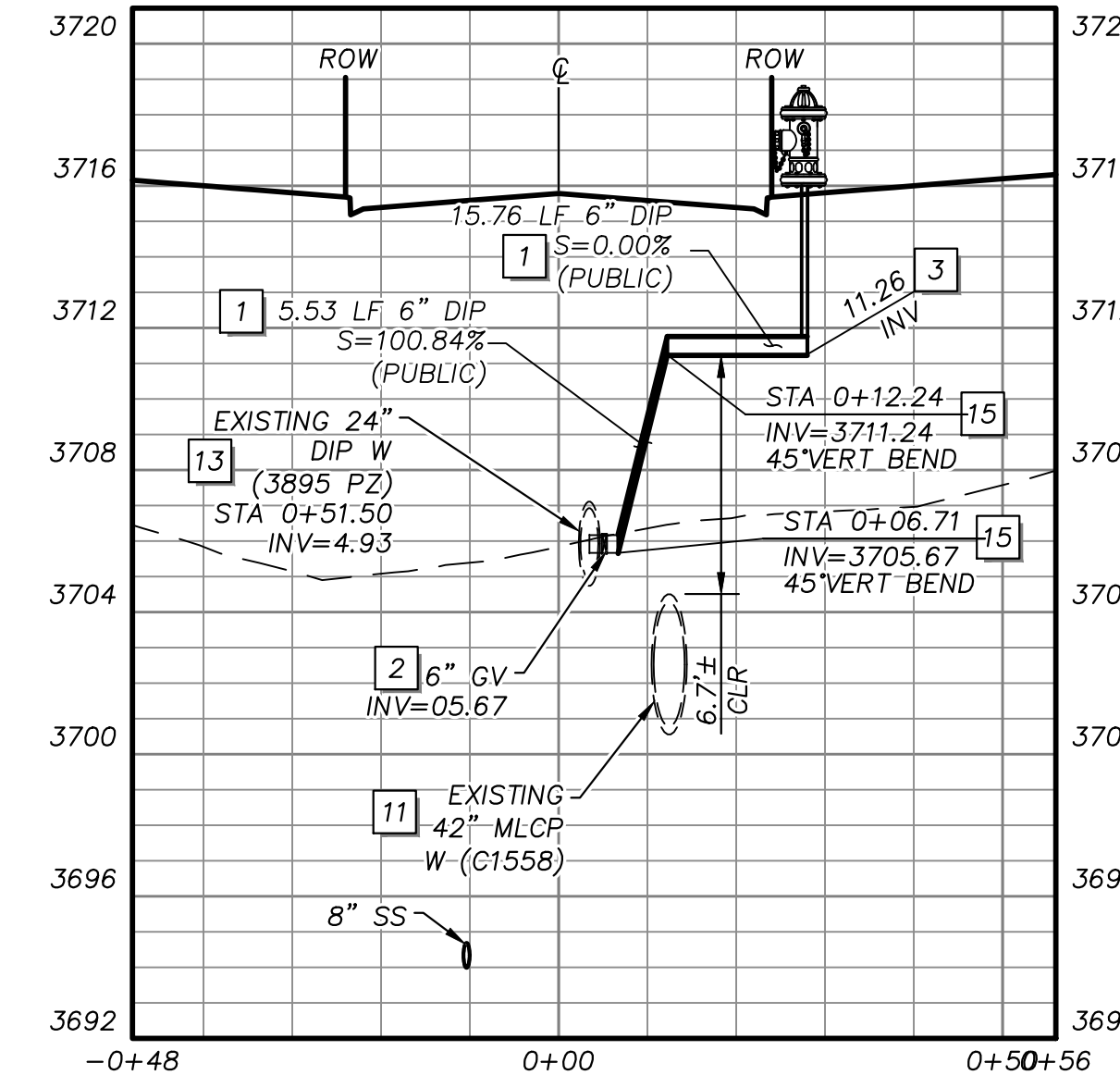
D
26



FIRE HYDRANT LATERAL DETAIL

"SRD" STA: 29+04 SEE SHEET 11

E
26



FIRE HYDRANT LATERAL DETAIL

"SRD" STA: 33+29 SEE SHEET 9

F
26

STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN. SEE SHEET 5 FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1, #422 & #421. LENGTH PER PLAN
3. INSTALL NEENAH R-2560-G BEEHIVE DROP INLET
4. INSTALL 60" TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL 48" TYPE II SD MANHOLE PER CCAUSD #405.2
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7. STUB & PLUG STORM DRAIN FOR FUTURE CONNECTION PER MANUFACTURER'S PLUG, OR APPROVED EQUAL
8. DEEP DROP INLET PER DETAIL "C" SHEET 29.

SEWER CONSTRUCTION NOTES

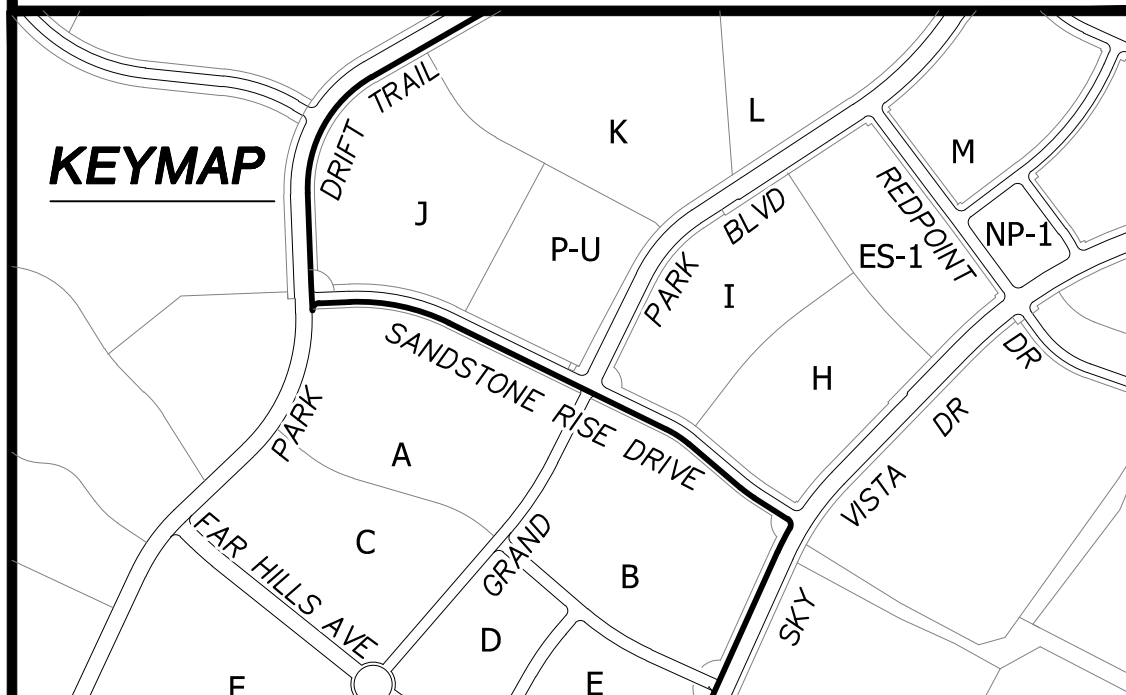
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WATERLINE CONSTRUCTION NOTES

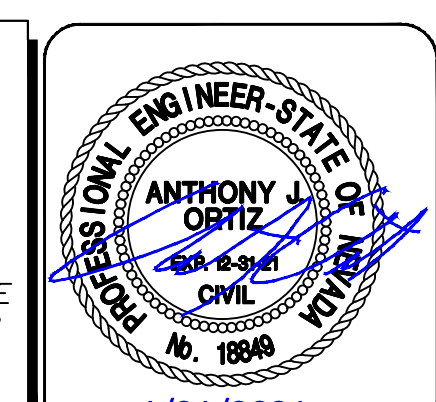
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4. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
5. INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
6. INSTALL 5" BEND PER UDACS PLATE #31
7. INSTALL 11.25" BEND PER UDACS PLATE #31
8. INSTALL 1.5" WATER METER AND RPPA PER UDACS PLATES #4 AND #8 AND DETAIL ON SHEET 30
9. INSTALL IN-LINE REDUCER PER UDACS PLATE #30
10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE
11. EXISTING WATER LINE BY OTHERS
12. WATER MAIN JOINT DEFLECTION PER UDACS 2.07.01 AND 2.07.03
13. CONNECT TO EXISTING BLIND FLANGE
14. ADJUST EXISTING FACILITY TO GRADE PER UDACS
15. INSTALL 45° VERTICAL BEND PER UDACS PLATE #31

ROADWAY CONSTRUCTION NOTES

1. SAWCUT AND MATCH EXISTING
2. INSTALL IRRIGATION SLEEVES PER DETAIL "E" SHEET 28
3. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
4. CONSTRUCT "A" TYPE ISLAND CURB PER CCAUSD #219
5. FUTURE SIDEWALK BY OTHERS
6. CONSTRUCT COMMERCIAL DRIVEWAY PER CCASUD #222.1
7. CONSTRUCT SIDEWALK RAMP, PER DETAIL "A", SHEET 28
8. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 27 FOR TYPICAL PAVEMENT SECTION.
9. CONSTRUCT SIDEWALK RAMP CASE II PER CCAUSD #235 AND DETAIL "B", SHEET 28



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DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: T. ORTIZ
DATE: JANUARY, 2021
DRAWING NO.: 26/32
JOB NO.: 100063656

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. 137065 FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

BASIS OF BEARING

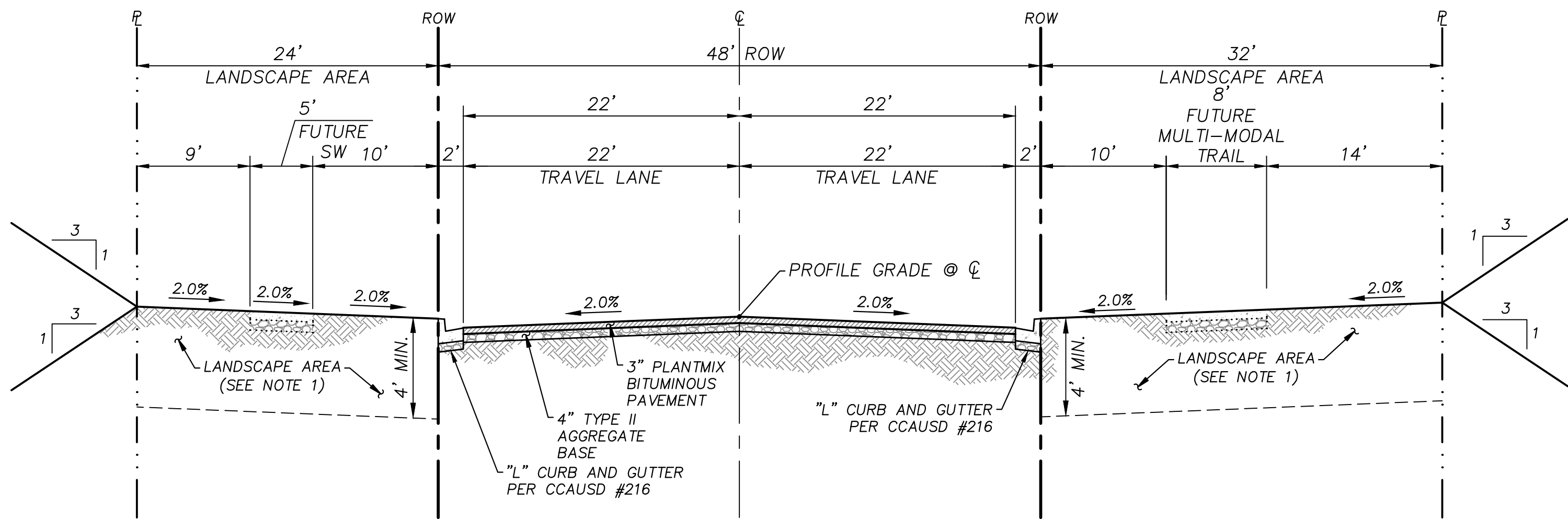
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS). LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T213, R59E, S03



X:\Projects\Summit\ Village 25\100063656 - V25 Street M (Lake Mead to Sky Vista)\Sheets\63656-13-DETL-02.dwg LAYOUT: 26 Jan 21, 2021 - 5:20PM



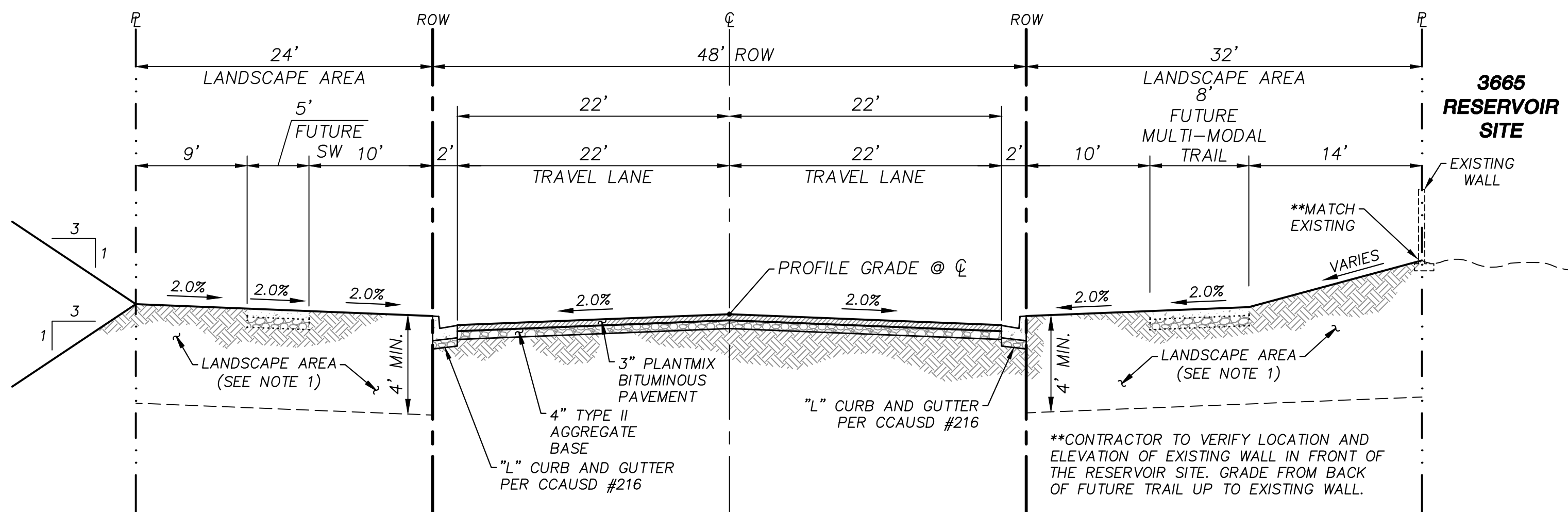
NOTES:

1. EXCAVATE BOTH SIDES TO DEPTH INDICATED PRIOR TO STREET IMPROVEMENTS. SIFT/SCREEN OUT ROCK AND DEBRIS GREATER THAN 6" FROM EXCAVATED MATERIAL, THEN BACKFILL TO 85% COMPACTION. FILL AS NECESSARY TO 2" BELOW THE FINISHED GRADE.

SANDSTONE RISE DRIVE - TYPICAL SECTION

N.T.S.

A
27



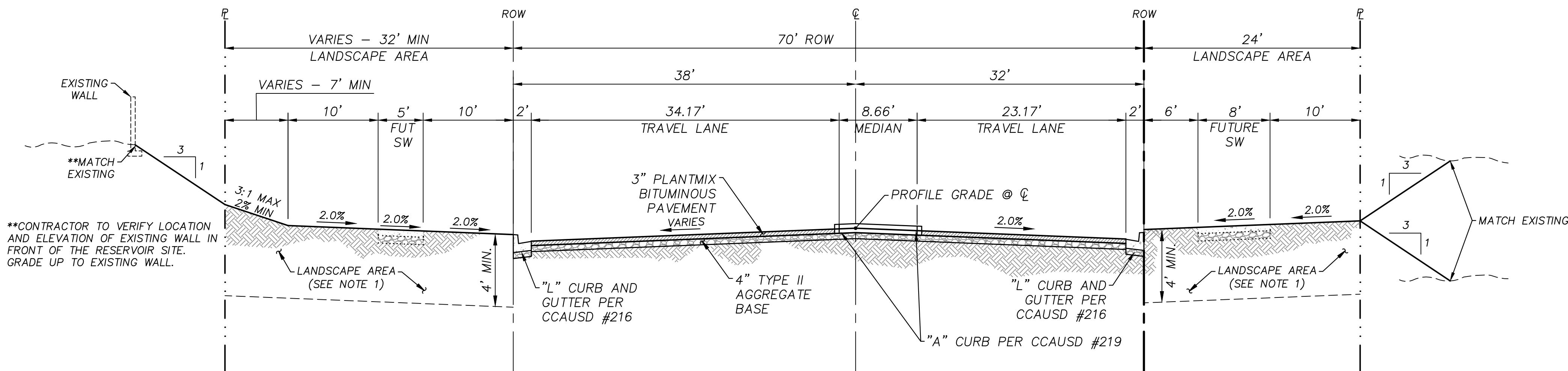
NOTES:

1. EXCAVATE BOTH SIDES TO DEPTH INDICATED PRIOR TO STREET IMPROVEMENTS. SIFT/SCREEN OUT ROCK AND DEBRIS GREATER THAN 6" FROM EXCAVATED MATERIAL, THEN BACKFILL TO 85% COMPACTION. FILL AS NECESSARY TO 2" BELOW THE FINISHED GRADE.

SANDSTONE RISE DRIVE - RESERVOIR SITE SECTION

N.T.S.

B
27



NOTES:

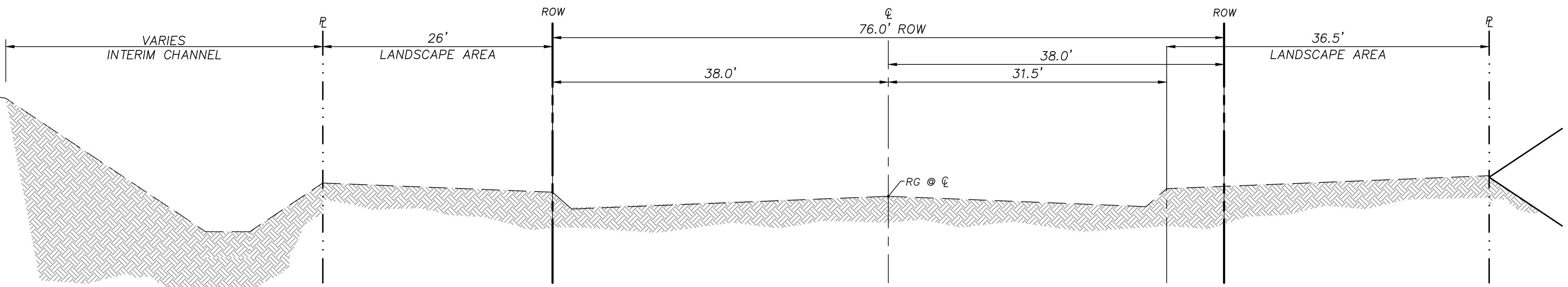
1. EXCAVATE BOTH SIDES TO DEPTH INDICATED PRIOR TO STREET IMPROVEMENTS. SIFT/SCREEN OUT ROCK AND DEBRIS GREATER THAN 6" FROM EXCAVATED MATERIAL, THEN BACKFILL TO 85% COMPACTION. FILL AS NECESSARY TO 2" BELOW THE FINISHED GRADE.

GRAND PARK BOULEVARD - TYPICAL SECTION

N.T.S.

C
27

EXISTING ROUGH GRADING:
PER
VILLAGE 30A ROUGH GRADE
CLV NO. L20-00015



PARK DRIFT TRAIL - EXISTING ROUGH GRADE SECTION

N.T.S.

D
27

BASIS OF BEARING

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

BENCHMARK

CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03



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DESIGNED BY:	107/5132
DRAWN BY:	L20-00453
CHECKED BY:	JANUARY, 2021
DATE:	DRAWING NO.
HORIZ. N.T.S.	27/92
VERT. N.T.S.	

JOB NO. 100063656

REV.	DESCRIPTION	BY	DATE	APPROVAL

ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7275
Fax: +1702.263.7200

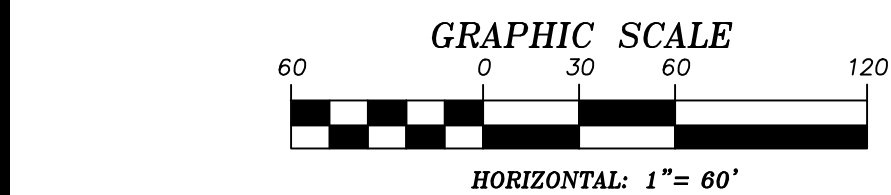
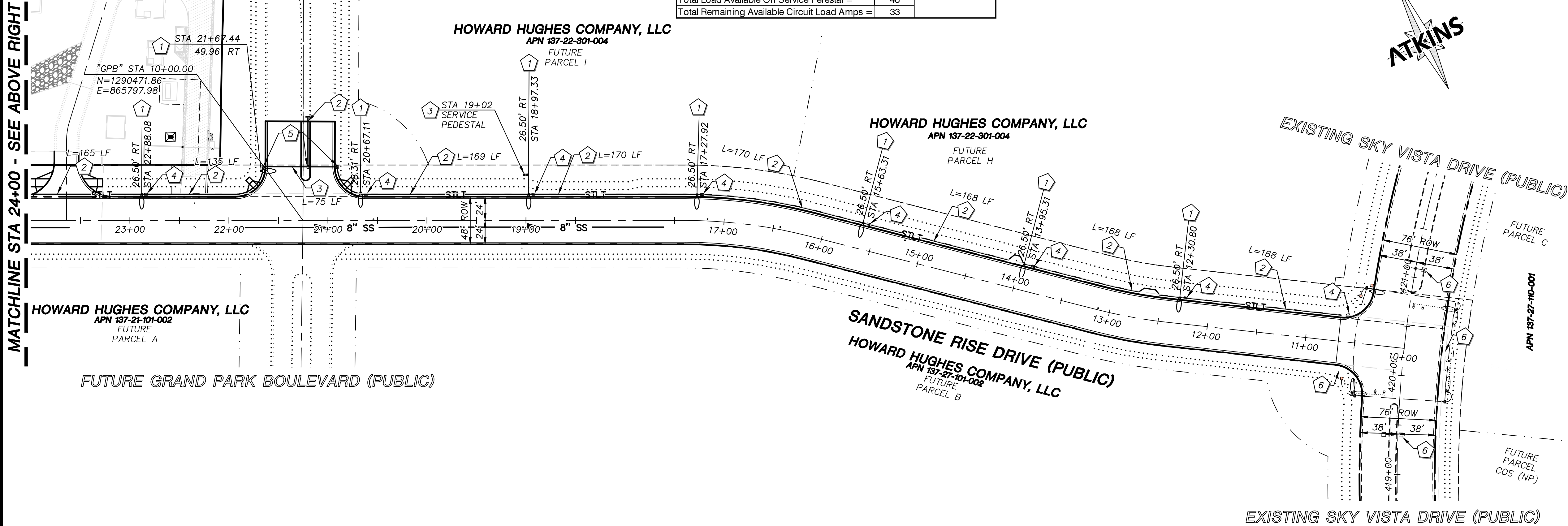
SUMMERLIN

SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)

STREET SECTIONS

X:\Projects\Summerlin\ Village 25\100063656 - V25 Street M (Lake Mead to Sky Vista)\ Sheets\63656-12-DETL-D1.dwg LAYOUT: 24 Jan 21, 2021 - 5:20PM

MATCHLINE STA 24+00 - SEE ABOVE RIGHT



STREET LIGHTING NOTES

- SEE SHEET 28 FOR DETAILS & CCAUSD'S FOR STREETLIGHTING

BASIS OF BEARING

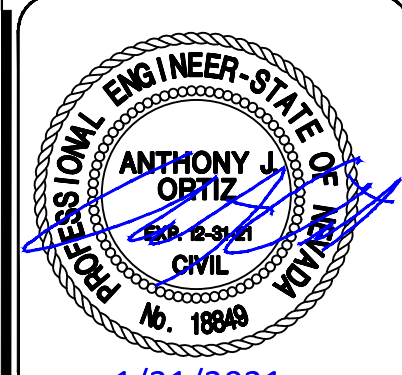
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

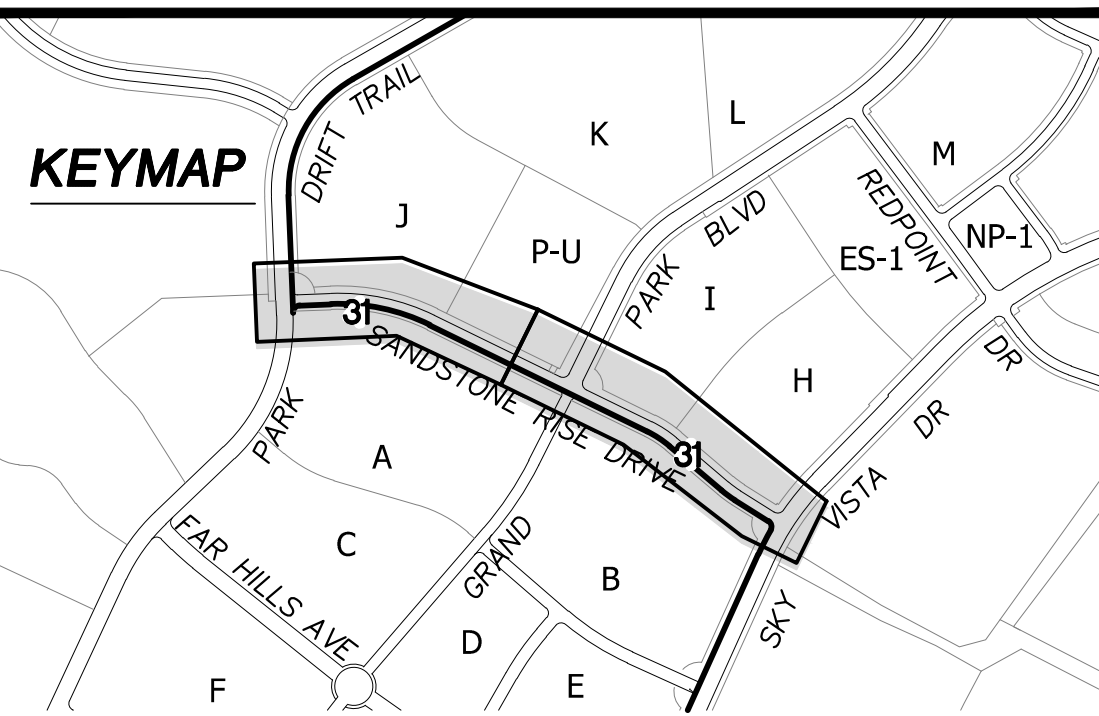
CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008) NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET) FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03



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EXISTING SKY VISTA DRIVE:
PER VILLAGE 25 SKY VISTA DRIVE IMPROVEMENTS
CLV# 107V7884



STREET LIGHTING CONSTRUCTION NOTES

- INSTALL TYPE 4 LED SINGLE STREETLIGHT WITH 8' MAST ARMS AND LSI LUMINAIRE FIXTURE
SUM-XGBM-LED-26L-SIL-2-UE-DIM-27-70CRI-BRZ-NR-4397-SM BRKT WITH A 2700K COLOR TEMPERATURE PER APPROVED LED LIGHTING ANALYSIS. REFER TO SUMMERLIN STD DWG E-2, SEE SHEET 29 FOR TYPICAL LOCATION, AND CCAUSD #311.1, #316, AND #320.
- INSTALL 1-1/4" STREETLIGHT CONDUIT W/ 2-#4 AND 1-#8 PER CCAUSD #501
- INSTALL NEW 200 AMP SERVICE PEDESTAL PER CCAUSD #332.S2, 331, 335.S2, 336, AND 730.
- INSTALL NO. 3-1/2" PULL BOX PER CCAUSD #705
- INSTALL NO. 7 PULL BOX PER CCAUSD #707
- EXISTING STREET LIGHT BY OTHERS

SUMMARY OF QUANTITIES

DESCRIPTION	QUANTITY	UNIT
STREET LIGHTING		
TYPE 4 SINGLE ARM STREET LIGHT POLE ASSEMBLY	15	EA
NO 3-1/2 PULL BOX	15	EA
SERVICE PEDESTAL	1	EA
1 1/4" STREET LIGHT CONDUIT WITH ALL WIRING	2,772	LF

REV.	DESCRIPTION	BY	DATE	APPROVAL

ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7755
Fax: +1702.263.7200

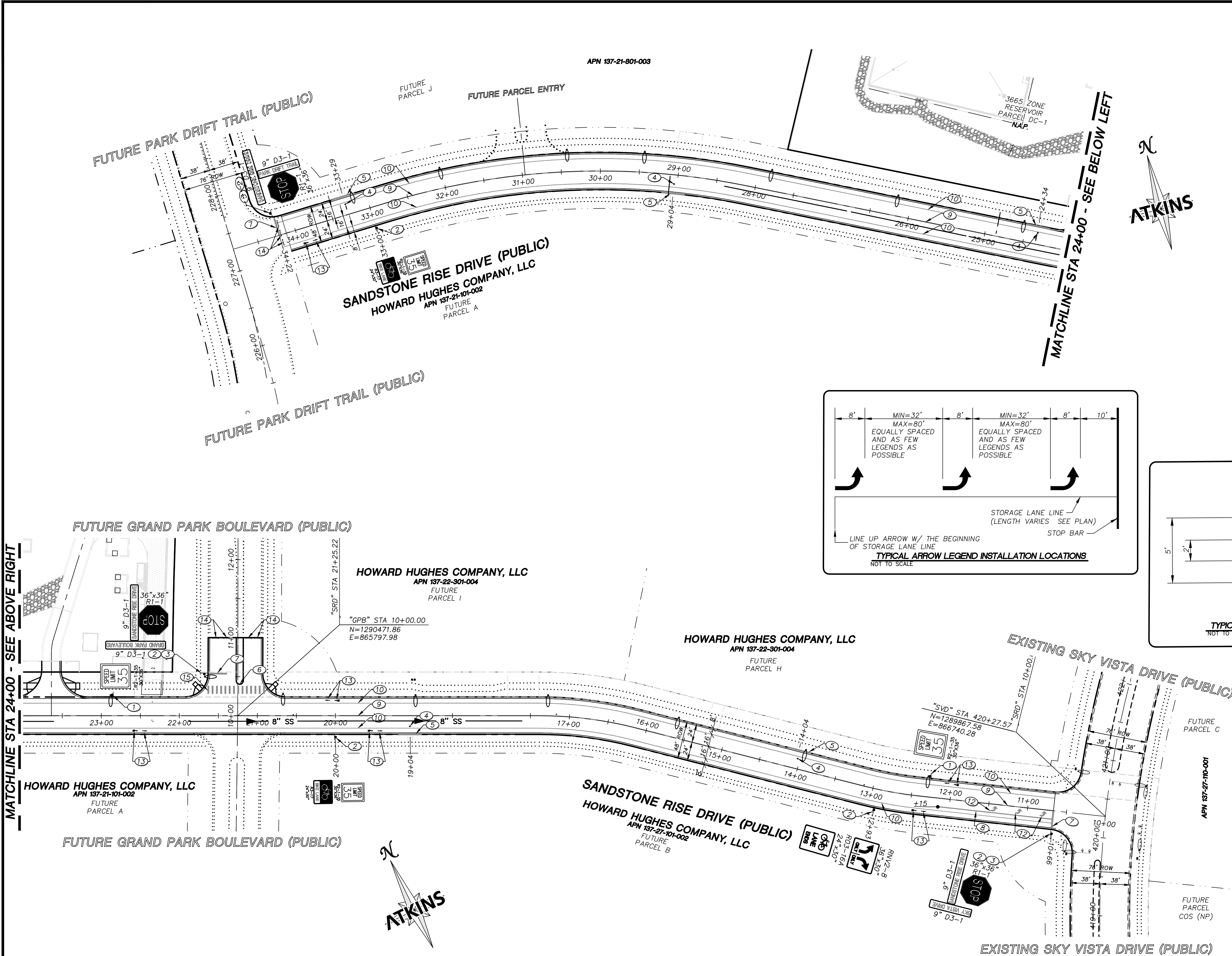
SUMMERLIN

SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)

DESIGNED BY: G. BLAKE
DRAWN BY: G. BLAKE
CHECKED BY: G. BLAKE
DATE: JANUARY, 2021
DRAWING NO. 31/32
JOB NO. 100063656

STREETLIGHT PLAN

MATCHLINE STA 24+00 - SEE ABOVE RIGHT

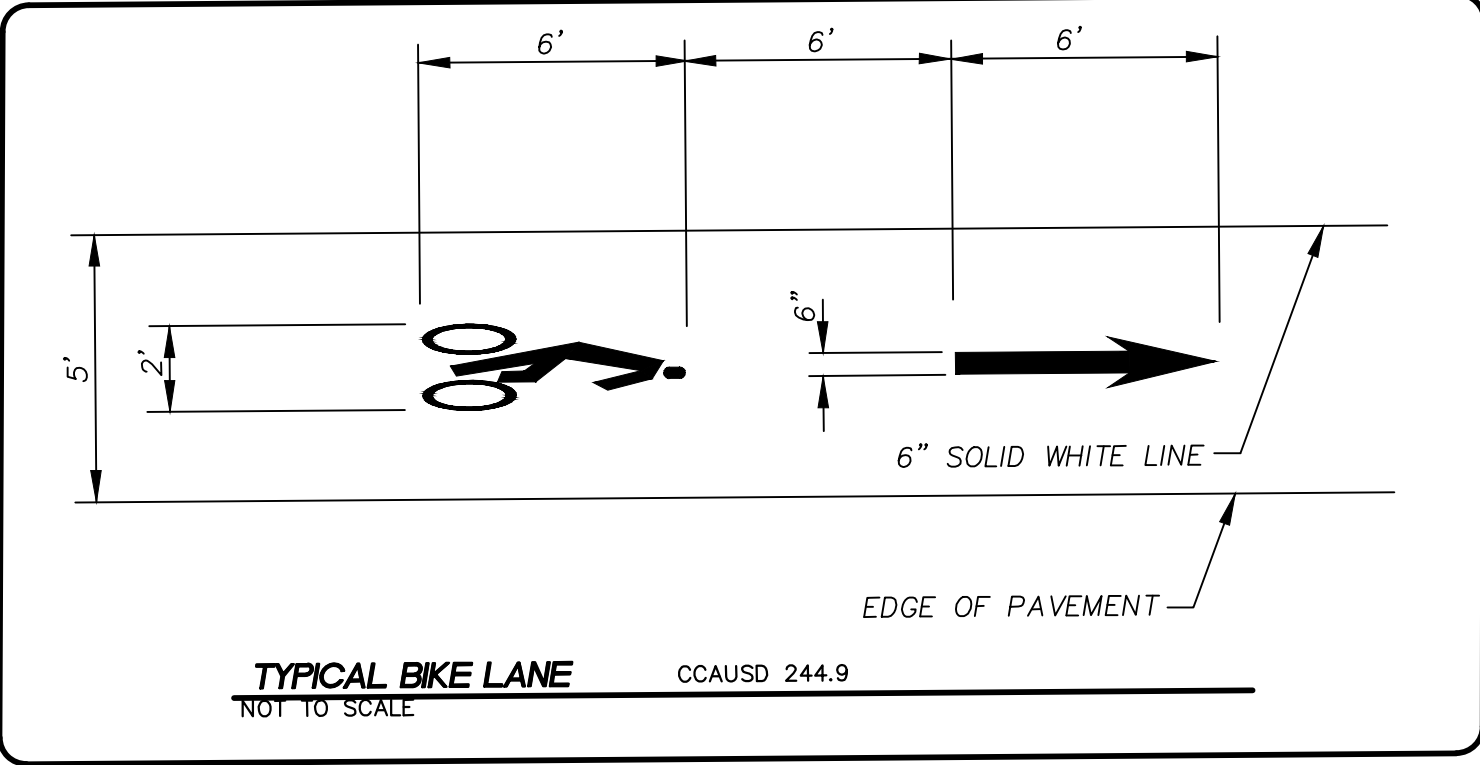
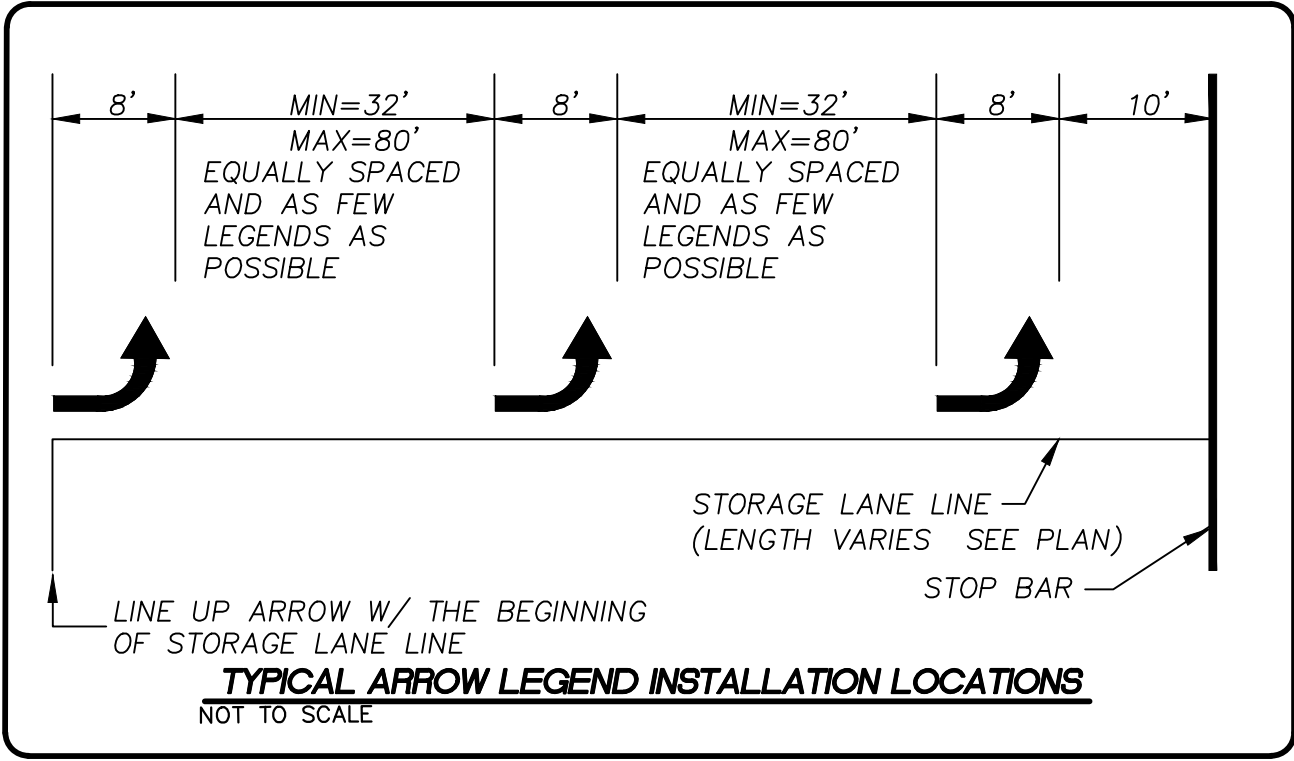


STRIPING AND SIGNAGE CONSTRUCTION NOTES

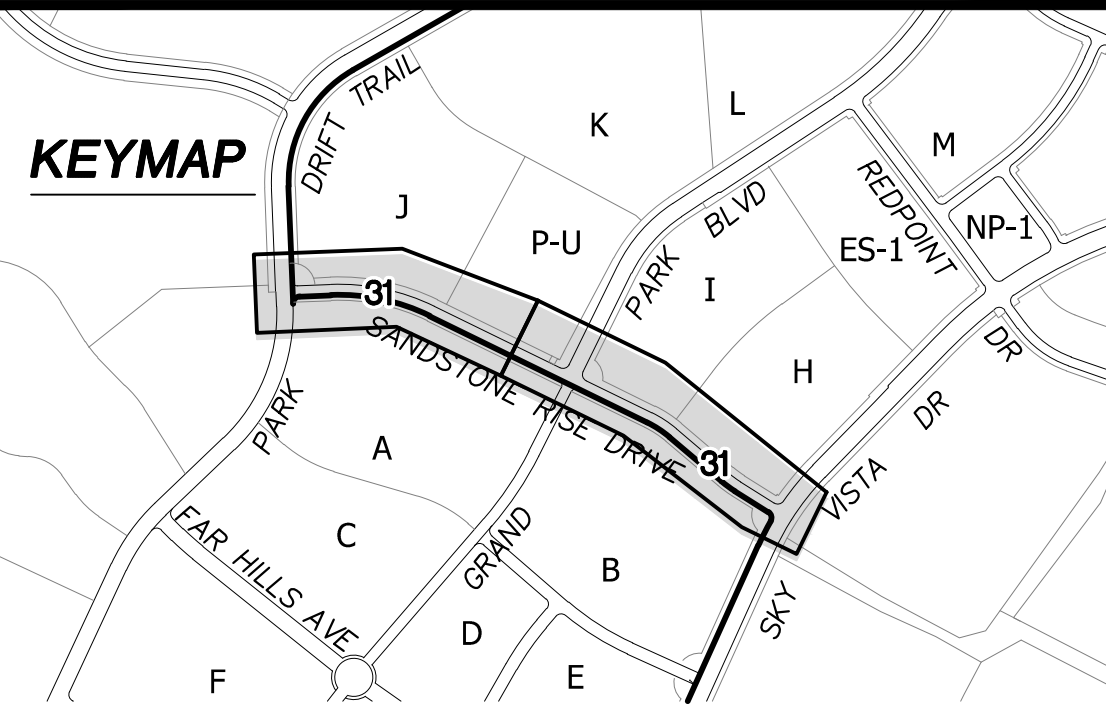
1. INSTALL SIGN(S) ON STREETLIGHT POLE
2. INSTALL SIGN(S) ON POST PER CCAUSD #249.1
3. INSTALL STREET NAME SIGN (D3-1) PER CCAUSD #250 ON TOP OF STOP SIGN
4. INSTALL BLUE REFLECTIVE MARKER 8' FROM BACK OF CURB
5. PAINT CURB 15' EITHER DIRECTION OF FIRE HYDRANT (30' MINIMUM)
6. INSTALL MEDIAN NOSE MARKER PER CCAUSD #248 WITH R-71 AND TYPE C MARKING ALONG THE MEDIAN ISLAND PER DETAIL (XX).
7. INSTALL 24" SOLID WHITE LINE PER CCAUSD #254 (TYPE 2 PMF)
8. INSTALL STORAGE LANE LINE (RPM) PER CCAUSD #246
9. INSTALL TYPE I CENTERLINE (RPM) PER CCAUSD #244
10. INSTALL 6" SOLID WHITE LINE PER CCAUSD #244.9 (POLUREA LPM)
11. INSTALL 6"x2' SKIP LINE 8' ON CENTER PER CCAUSD #244.9 (POLUREA LPM)
12. INSTALL WHITE TURN ARROW (TYPE 2 PMF) PER MUTCD FIGURE 3B-24
13. INSTALL BIKE LANE LEGEND PER DETAIL THIS SHEET
14. INSTALL TYPE IIIA BARRICADE PER CCAUSD #601 WITH OM4-1 END ON ROAD MARKER
15. INSTALL 24" WIDE SOLID WHITE CROSSWALK LINES USING TYPE 1 PAVEMENT MARKINGS PER CCAUSD #254

SUMMARY OF QUANTITIES

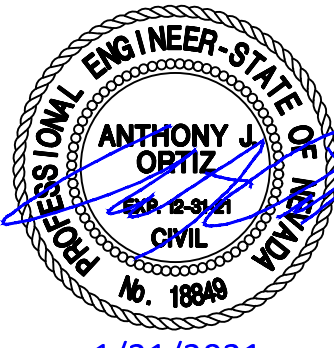
DESCRIPTION	QUANTITY	UNIT
STREET SIGNS	14	EA
TYPE I CENTERLINE	2,354	LF
24" SOLID WHITE LINE (STOP BAR)	66	LF
6" SOLID WHITE LINE	4,709	LF
RED PAINTED CURB (FIRE HYDRANT)	150	LF
TYPE IIIA BARRICADE	7	EA



EXISTING SKY VISTA DRIVE:
PER
VILLAGE 25 SKY VISTA DRIVE
IMPROVEMENTS
CLV# 107V7884



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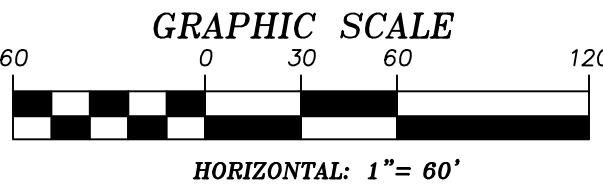


BASIS OF BEARING

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

BENCHMARK

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ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7275
Fax: +1702.263.7200



SUMMERLIN VILLAGE 25
SANDSTONE RISE DRIVE (STREET M)
SKY VISTA DRIVE TO PARK DRIFT TRAIL (STREET K)

TRAFFIC PLAN

DESIGNED BY: G. BLAKE	107V15132
DRAWN BY: G. BLAKE	L20-00453
CHECKED BY: G. BLAKE	JANUARY, 2021
DATE:	DRAWING NO.
HORIZ.: 1"=60'	32/32
VERT.: NONE	