

DS #:

5171

APN: 137-14-401-006 ? 137-23-101-002

PROJECT: Summerlin West 1/2 - Kestrel Creek Avenue (Street 1)

SUBMITTAL:

2nd

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM

DATE:

November 7, 2019

TO:

Land Development Services
Department of Building & Safety

FROM:

Albert Sung, P.E.
Flood Control Project Engineer
Department of Public Works

SUBJECT:

Drainage Study for:

Summerlin West V22 – Kestrel Creek Avenue (Street I)
(from Desert Foothills Drive to Kettle Ridge Drive <Street J>)

COPIES TO:

Atkins

Cross Streets:

Desert Foothill Drive & Kestrel Creek Ave.

Howard Hughes Company, LLC

File Number:

F:\Depot\DSMemos\DS5171B.doc

Bart Anderson, P.E., DevCo

Parcel Number:

137-14-401-006 & 137-23-101-002

Zoning Action:

N/A

FEMA Flood Zone

YES

NO

X

Proposed Storm Drain

YES

X

NO

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	8/5/2019	9/4/2019	Not Approved	\$400.00	3518203: \$400
2 nd Submittal	10/16/2019	11/6/2019	See Comments Below	\$400.00	3612957: \$400
TOTAL FEES (LDDRS):				\$800.00	----

REMARKS:

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

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

- Second Request:** Drop inlets deeper than 10' require special structural design and structural calculations. Provide a soils report, structural calculations and specifications, two wet stamped structural sets, and a grading plan to the Building Department for processing. The engineer must provide a copy of Building Department approval of the structures to Flood Control prior to final acceptance of the drainage study.

The response that all drop inlets had been modified to less than 10' in depth was found not true. Per **Sheet 21/31 (Storm Drain Lateral Profiles)**, proposed inlets SDDI #1, SDDI #3 and SDDI #5 are schematically shown to be deeper than 10'. This must be resolved prior to the final approval of the study.

The following conditions are repeated until they are complete:

- The subject street improvement of *Kestrel Creek Avenue* is premised on the existence of *Kettle Ridge Drive* on the west for flood cut-off protection. The subject drainage study will not be approved prior to the final approval of the technical drainage study of "*Summerlin West V22 - Kettle Ridge Drive (Street J) and Scurry Bend Drive (Street N) Street Improvements (Lake Mead Blvd. to Fleet Wing Ave.)*".

3. The project proposes to build temporary drainage facilities, ie, berms/swales along the north and south sides of *Kestrel Creek Avenue* for interim flood protection. Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements (berms or channels) 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 facility and an exhibit that adequately shows the location and limits of the drainage facility 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.

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

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



Sample Letter to
certify CD.pdf

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

END OF REMARKS
ays

T/R/S: T20S/R59E/14
AREA K-14

Anderson, Molly

From: Albert Sung <YSung@LasVegasNevada.GOV>
Sent: Tuesday, November 12, 2019 11:12 AM
To: Anderson, Molly
Subject: RE: Drainage study for Summerlin West V22 - Kestrel Creek Avenue (Street I) (from Desert Foothills Drive to Kettle Ridge Drive <Street J>)

Molly,

On Sheet 21/31, since you did not label the depth of the inlets clearly, I went on visually measuring the depths from the profile and found that the inlets are more than 10' deep from the flow line to the bottom. So label the depth of each inlet clearly and revise the profile to visually convincing.

Please send me a supplement showing the table in your previous email with a revised lateral profile sheet. No charge.

Thanks.

Albert Y. Sung

Project Engineer
Public Works Dept. / Flood Control
(702) 229-6541
333 N. Rancho Dr. 7th Floor
Las Vegas, NV 89106



lasvegasnevada.gov



Your opinion is important! Click [here](#) to take a short survey.

From: Anderson, Molly <Molly.Anderson@atkinsglobal.com>
Sent: Monday, November 11, 2019 12:40 PM
To: Jewlia Springer <JSPRINGER@LasVegasNevada.GOV>; Bart Anderson <banderson@LasVegasNevada.GOV>; Chris Anderson (chris.anderson@howardhughes.com) <chris.anderson@howardhughes.com>; Albert Sung <YSung@LasVegasNevada.GOV>
Cc: Anderson, Carl E <Carl.Anderson@atkinsglobal.com>; Barcos, Nicolas <Nicolas.Barcos@atkinsglobal.com>
Subject: RE: Drainage study for Summerlin West V22 - Kestrel Creek Avenue (Street I) (from Desert Foothills Drive to Kettle Ridge Drive <Street J>)

EXTERNAL EMAIL: This email originated from outside the organization, do not click links or open attachments unless you recognize the sender and know the content is safe.

Albert,

The attached comment letter reads as follows for comment #1:

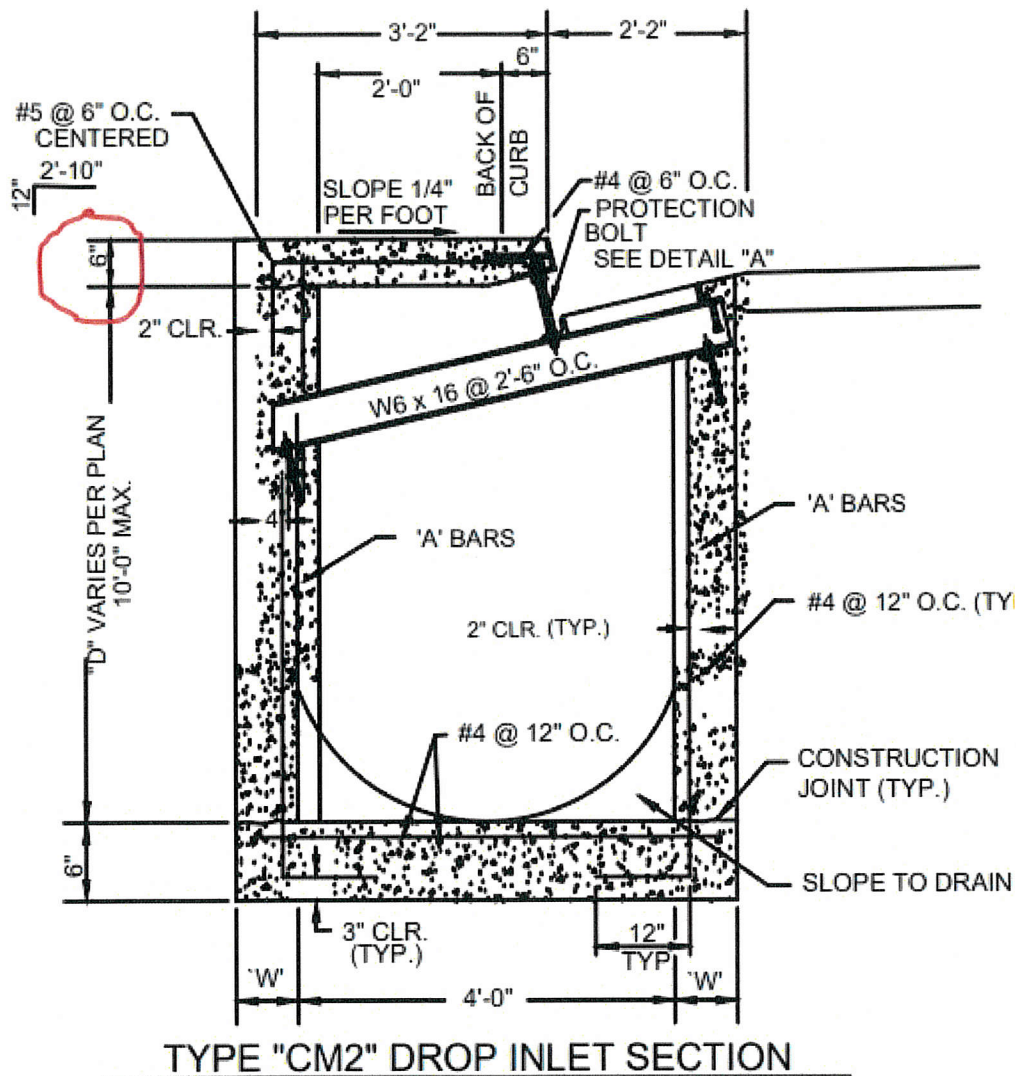
Drop inlets deeper than 10' require special structural design and structural calculations. Provide a soils report, structural calculations and specifications, two wet stamped structural sets, and a grading plan to the Building Department for processing. The engineer must provide a copy of the Building Department approval of the structures to Flood Control prior to final acceptance of the drainage study.

The response that all drop inlets had been modified to less than 10' in depth was found not true. Per Sheet 21/31 (Storm Drain Lateral Profiles), proposed drop inlets SDDI #1, SDDI #2, and SDDI #4 are schematically shown to be deeper than 10'. This must be resolved prior to the final approval of the study.

However, it seems that the calculation of depths of these structures may have been calculated from the top of curb, not the flow line. The depths are as follows:

Drop Inlet	Top of Curb	Flow Line	Invert	Depth
SDDI #1	3440.17	3439.67	3329.75	9.92'
SDDI #3	3383.94	3383.44	3373.94	9.50'
SDDI #5	3383.94	3383.44	3373.94	9.50'

Please see screenshot below of standard drawing 412.1 showing confirmation of depth calculation methodology. Curb height is circled in red showing that it is not included in the calculation of "D".



Please review the above information and methodology and let us know if we can issue a formal supplement if a formal supplement is necessary to clear up this discrepancy and hopefully move closer to conditional approval.

Thank you,

Molly Anderson PE

Senior Engineer
Engineering, Design and Project Management

Tel: +1 702 551 0330

Atkins, member of the SNC-Lavalin Group

2270 Corporate Circle, Suite 200
Henderson, NV 89074
+1 702 263 7275

From: Jewlia Springer <JSPRINGER@LasVegasNevada.GOV>

Sent: Thursday, November 7, 2019 5:27 PM

To: Bart Anderson <banderson@LasVegasNevada.GOV>; Anderson, Molly <Molly.Anderson@atkinsglobal.com>; Chris Anderson <chris.anderson@howardhughes.com> <chris.anderson@howardhughes.com>

Subject: Drainage study for Summerlin West V22 - Kestrel Creek Avenue (Street I) (from Desert Foothills Drive to Kettle Ridge Drive <Street J>)

This email and any attached files are confidential and copyright protected. If you are not the addressee, any dissemination of this communication is strictly prohibited. Unless otherwise expressly agreed in writing, nothing stated in this communication shall be legally binding. The ultimate parent company of the Atkins Group is SNC-Lavalin Group Inc. Registered in Québec, Canada No. 059041-0. Registered Office 455 boul. René-Lévesque Ouest, Montréal, Québec, Canada, H2Z 1Z3. A list of Atkins Group companies registered in the United Kingdom and locations around the world can be found at <http://www.atkinsglobal.com/site-services/group-company-registration-details>

Consider the environment. Please don't print this e-mail unless you really need to.

Summerlin West Village 22

Kestrel Creek Avenue (Street I): Desert Foothills Drive to Kettle Ridge Drive (Street J)

October 16, 2019

Addendum #1

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Addendum #1: Kestrel Creek Avenue: Desert Foothills Drive to Kettle Ridge Drive (Street J) Date: October 16, 2019

Location of Development: a) Descriptive (Cross Streets) North/South: Kettle Ridge Drive

East/West: Desert Foothills Drive

b) Section: 23 and 14 Township: 20S Range: 59E

c) APN: 137-14-401-006

Name of Owner: Howard Hughes Company, LLC

Telephone No.: (702) 791-4000 Fax No.: (702) 791-4450 E-Mail Address: chris.anderson@howardhughes.com

Address: 10801 West Charleston Blvd, Ste 300, Las Vegas, NV 89135

Contact Person-Name: Molly Anderson, PE Telephone No.: (702) 551-0330

* E-Mail Address: molly.anderson@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: 11.7 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: 0 acres

6. Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation: Master Conceptual Drainage Study for Summerlin West Village 22

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

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

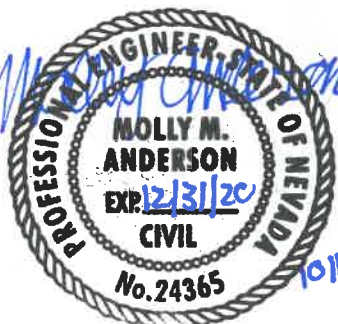
Date

DS #5171

Local Entity File No.

STANDARD FORM 1

REFERENCE:



Engineer's Seal

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Kestrel Creek Avenue: Desert Foothills Drive to Kettle Ridge Drive

Map ID:

Firm Name: **Atkins**

Engineer: **Molly Anderson, PE**

Address: 2270 Corporate Circle, Ste 200

City: **Henderson**

State:

NV

Zip: **89074**

Phone Number: **(702) 551-0330**

Fax Number: **(702) 263-7200**

Property Owner: **Howard Hughes Company, LLC**

Address: 10801 West Charleston Blvd, Ste 300

City: **Las Vegas**

State: **NV**

Zip: **89135**

Reviewed By:

Date Received:

Date Accepted for Review:

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

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

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

I. GENERAL REQUIREMENT

Yes

No

x

Design Manual **Standard Form 1** with the engineer's seal and signature.

X

Design Manual **Standard Form 4**.

X

2 copies of the 24" x 36" Drainage Plan.

N/A

A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.

II. MAPS AND EXHIBITS

Yes

No

X

A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.

X

A copy of the current CCRFCD Master Plan Update Figure, (F-x), for Flood Control Facilities and Environmental areas with the site delineated.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS (Continued)

Yes No

X

_____ Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.

X

_____ On-site drainage basin maps for existing and proposed conditions showing the existing topography, basin boundaries, concentration points, and on-site and off-site flows in cfs.

X

_____ Vicinity Map with local and major cross streets identified and a north arrow.

III. DRAINAGE PLAN

Yes No

X

_____ Sheet size: 24" x 36" sealed by a registered engineer in the State of Nevada.

X

_____ Minimum scale: 1" = 60'.

X

_____ Project name.

X

_____ Vicinity Map with local and major cross streets.

X

_____ Revision box.

X

_____ North arrow and bar scale.

X

_____ Engineer's/consultant's address and phone number.

X

_____ Elevation datum and benchmark.

X

_____ Legend for symbols and abbreviations.

X

_____ Cut/fill scarps, where applicable.

X

_____ Street names, grades, widths.

X

_____ Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street.

X

_____ Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where appropriate.

X

_____ Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.

X

_____ Proposed typical street sections.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
<u>X</u>	_____	Streets with off-set crowns.
<u>X</u>	_____	Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
<u>X</u>	_____	Property lines.
<u>X</u>	_____	Right-of-way lines and widths, existing and proposed.
<u>X</u>	_____	Existing improvements and their elevations.
<u>X</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>	_____	Concentration points and drainage flow direction with Q_{100} and V_{100} and D_{100} in streets.
<u>X</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>	_____	Location and cross-section of street capacity calculations.
<u>X</u>	_____	Cross-sectional detail for channels, including cutoff wall locations.
<u>X</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>	_____	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>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>N/A</u>	Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.
_____	<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>	_____	Building and/or lot numbers.
<u>X</u>	_____	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
<u>X</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

- X _____ For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table. Finish floor elevations must be a minimum of 18 inches above BFE.
- X _____ Appropriately elevated "humps" 6 inches above the 100 year water surface elevation at site accesses where the intent is to protect the site from the Q_{100} flows.
- X _____ Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.
- X _____ 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	
☐	<u>N/A</u>	Flow split calculations and supporting documentation or reference for the method of flow split calculations used.
<u>X</u>	☐	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.
<u>X</u>	☐	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.
☐	<u>N/A</u>	Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged.)
☐	<u>N/A</u>	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.
☐	<u>N/A</u>	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.
☐	<u>N/A</u>	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.
<u>X</u>	☐	Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
<u>X</u>	☐	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.
<u>X</u>	☐	The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.
☐	<u>N/A</u>	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>MMA</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.
X		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.
X		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.

Contents

Chapter	Page
Engineer's Certification	3
Comment Response Letter	4
Appendix A. Comment Letter	
Appendix B. Revised Figures	
B.1. Revised Hydrology Workmap	
B.2. Revised Hydraulics Workmap	
Appendix C. Revised Ultimate Condition WSPG-W Model	
Appendix D. CD-ROM	

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 **Addendum #1 to the Technical Drainage Study for Desert Foothills Drive: Fleet Wing Avenue (Street G) to Lake Mead Boulevard** electronic submittal matches the paper version bound into the study.



Molly M. Anderson, PE (NV #24365)
Senior Engineer

Comment Response Letter

Your reference: DS #5171

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

October 16, 2019

**RE: ADDENDUM #1 TECHNICAL DRAINAGE STUDY FOR SUMMERLIN WEST VILLAGE 22
KESTREL CREEK AVENUE: DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE
(STREET J)**

Dear Albert,

This letter and the attached documents have been prepared as an Addendum #1 to the *Technical Drainage Study (TDS) for Summerlin West Village 22 Kestrel Creek Avenue: Desert Foothills Drive to Kettle Ridge Drive (Street J)*.

Comment #1: The subject street improvement of *Kestrel Creek Avenue* is premised on the existence of *Kettle Ridge Drive* on the west for flood cut-off protection. The subject drainage study will not be approved prior to the final approval of the technical drainage study of “*Summerlin West V22 – Kettle Ridge Drive (Street J) and Scurry Bend Drive (Street N) Street Improvements (Lake Mead Blvd. to Fleet Wing Ave.)*”.

Comment response: Understood. This report uses the “Summerlin West V22 – Lake Mead Boulevard (Desert Foothills Drive to Kettle Ridge Drive)” and “Summerlin West V22 – Kettle Ridge Drive (Lake Mead Boulevard to Fleet Wing Avenue)” report hydrology and hydraulics as the existing condition to cut off flow upstream of the proposed project.

Comment #2: The project proposes to build temporary drainage facilities, i.e., berms/swales along the north and south side of *Kestrel Creek Avenue* for interim flood protection. Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements (berms or channels) 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 facility and an exhibit that adequately shows the location and limits of the drainage facility 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: A drainage update will be submitted prior to offsite berms and channel removal.

Comment #3: Sheet 9/27: A comment was issued for the *Kettle Ridge Drive Improvements Drainage Study* to relocate the regional storm drain towards the street center as much as possible. However, the subject improvement plan still shows that the regional facility under the curb & gutter of *Kettle Ridge*. Review and revise accordingly.

Comment response: The storm drain within the Kettle Ridge Drive Improvements Drainage Study has relocated the regional storm drain towards the center of the street as much as possible and has been revised accordingly in this study.

Comment #4: On all pertinent *Roadway Grading Plans* and *Plan & Profile* sheets, specify the minimum clearance distance between the lip of the curb and gutter of the street and the edge of the proposed storm drain.

Comment response: The minimum clearances have been noted on the plan and profile sheets.

Comment #5: Sheet 17/27 and Sheet 18/27: It is assumed that the sequence of construction is that the storm drain system at the intersection of *Desert Foothills Drive* and *Kestrel Creek Avenue* to be installed prior to the subject improvements. Therefore, the storm drains downstream of SDMH #1 should be existing in regard to the subject project. Revise the line type of the storm drains "BY OTHERS" to broken line to reflect "Existing" status in the next submittal.

Comment response: The line type has been revised to reflect existing status.

Comment #6: Drop inlets deeper than 10' require special structural design and structural calculations. Provide a soils report, structural calculations and specifications, two wet stamped structural sets, and grading plan to the *Building Department* for processing. The engineer must provide a copy of *Building Department* approval of the structures to *Flood Control* prior to final acceptance of the drainage study.

Comment response: The drop inlets proposed by this report have been modified and are all under 10' deep from flow line to invert out per CCAUSD Dwg. No. 412.1.



Molly M. Anderson, PE (NV #24365)
Senior Engineer

Appendices



Appendix A. Comment Letter

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		September 4, 2019
TO: Land Development Services Department of Building & Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for:	
	Summerlin West V22 – Kestrel Creek Avenue (Street I) (from Desert Foothills Drive to Kettle Ridge Drive <Street J>)	
Cross Streets:	Desert Foothill Drive & Kestrel Creek Ave.	COPIES TO: Atkins
File Number:	F:\Depot\DSMemos\DS5171A.doc	Howard Hughes Company, LLC
Parcel Number:	137-14-401-006 & 137-23-101-002	Bart Anderson, P.E., DevCo
Zoning Action:	N/A	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES X	NO

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	8/5/2019	9/4/2019	See Comments Below	\$400.00	3518203: \$400
TOTAL FEES (LDDRS):				\$400.00	----

REMARKS:

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

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

1. The subject street improvement of *Kestrel Creek Avenue* is premised on the existence of *Kettle Ridge Drive* on the west for flood cut-off protection. The subject drainage study will not be approved prior to the final approval of the technical drainage study of "*Summerlin West V22 - Kettle Ridge Drive (Street J) and Scurry Bend Drive (Street N) Street Improvements (Lake Mead Blvd. to Fleet Wing Ave.)*".
2. The project proposes to build temporary drainage facilities, ie, berms/swales along the north and south sides of *Kestrel Creek Avenue* for interim flood protection. Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements (berms or channels) 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 facility and an exhibit that adequately shows the location and limits of the drainage facility to *City of Las Vegas Flood Control* for approval. Once the drainage study is conditionally approved, the engineer should contact the *City's Land Development Section* (229-6371) to begin the agreement process.

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

3. **Sheet 9/27:** A comment was issued for the *Kettle Ridge Drive Improvements Drainage Study* to relocate the regional storm drain towards the street center as much as possible. However, the subject improvement plan still shows that the regional facility under the curb & gutter of *Kettle Ridge*. Review and revise accordingly.
4. On all pertinent *Roadway Grading Plans* and *Plan & Profile* sheets, specify the minimum clearance distance between the lip of the curb and gutter of the street and the edge of the proposed storm drain.
5. **Sheet 17/27 and Sheet 18/27:** It is assumed that the sequence of construction is that the storm drain system at the intersection of *Desert Foothills Drive* and *Kestrel Creek Avenue* to be installed prior to the subject improvements. Therefore the storm drains downstream of SDMH #1 should be existing in regard to the subject project. Revise the line type of the storm drains "BY OTHERS" to broken line to reflect "Existing" status in the next submittal.
6. Drop inlets deeper than 10' require special structural design and structural calculations. Provide a soils report, structural calculations and specifications, two wet stamped structural sets, and a grading plan to the *Building Department* for processing. The engineer must provide a copy of *Building Department* approval of the structures to *Flood Control* prior to final acceptance of the drainage study.

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

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



Sample Letter to
certify CD.pdf

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

END OF REMARKS
ays

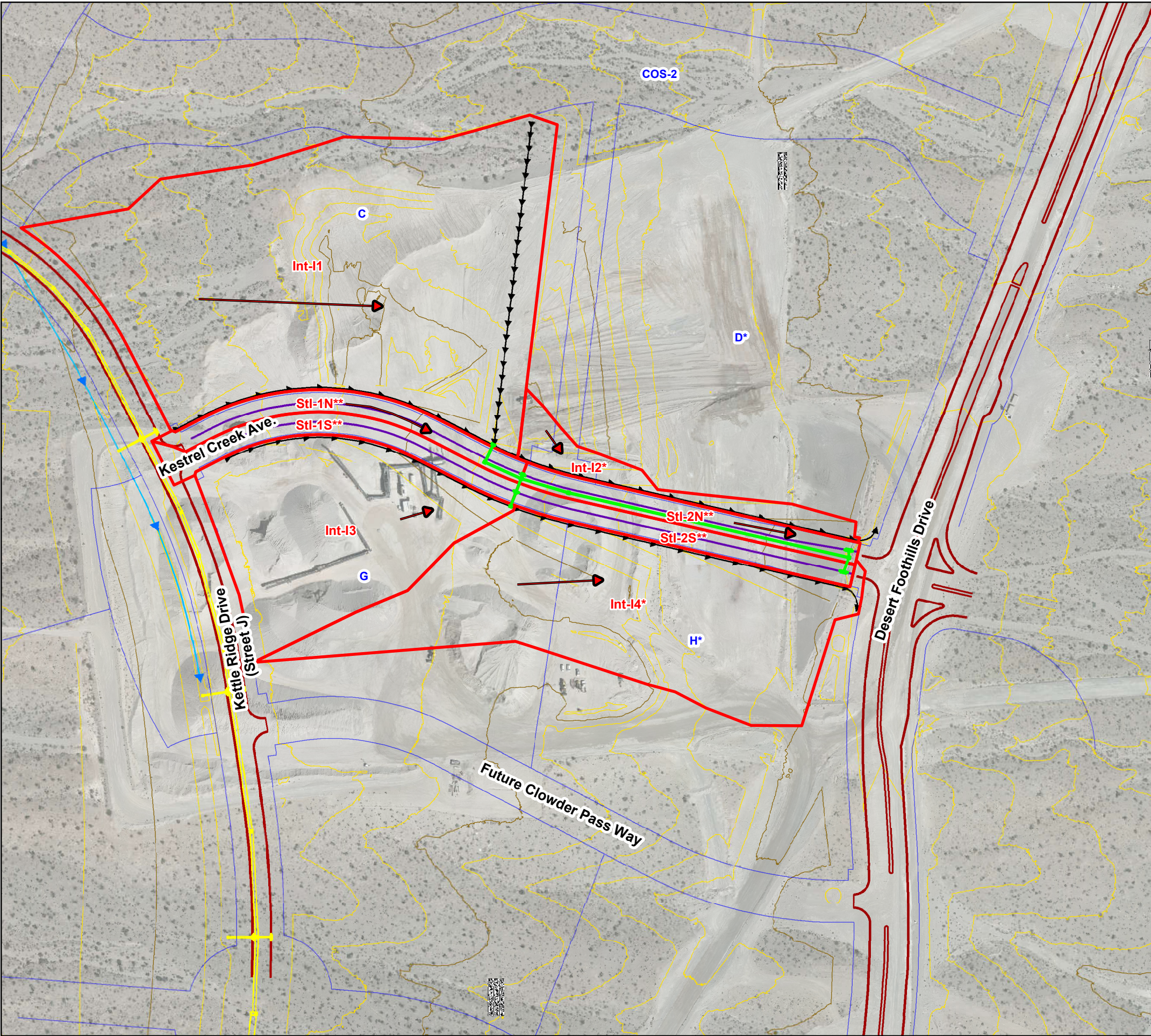
T/R/S: T20S/R59E/14
AREA K-14

Appendix B. Revised Figures

B.1. Revised Hydrology Workmap

B.2. Revised Hydraulics Workmap

B.1. Revised Hydrology Workmap



Interim Conditions				
Basin Id	Tributary Area (sq mi)	Tributary Area (acres)	100-Year Discharge (cfs)	10-Year Discharge (cfs)
Int-I1	0.01517	9.71	29	13
Int-I2*	0.00112	0.72	2	1
Int-I3	0.00553	3.54	11	5
Int-I4*	0.00831	5.32	16	7
St-1	0.00232	1.48	6	3
St-2	0.00209	1.34	5	3
St-1N**	0.00114	0.73	3	1.5
St-1S**	0.00117	0.75	3	1.5
St-2N**	0.00104	0.66	2.5	1.5
St-2S**	0.00105	0.67	2.5	1.5
* Drains only to roadside interim swale. Flow does not enter Street I.				
** North/South Street 1/2 sections split from above HEC-1 Nodes				

Ultimate Conditions				
Basin Id	Tributary Area (sq mi)	Tributary Area (acres)	100-Year Discharge (cfs)	10-Year Discharge (cfs)
C	0.01825	11.68	50	-
D*	0.01761	11.27	47	-
G	0.01106	7.08	30	-
H*	0.01195	7.65	33	-
STI	0.00384	2.46	11	-
* D & H Drain to Desert Foothills Drive in Ultimate Conditions				

TECHNICAL DRAINAGE STUDY FOR SUMMERLIN WEST VILLAGE 22
KESTREL CREEK AVENUE
STREET I (DESERT FOOTHILLS DRIVE TO STREET J)
FIGURE 3: HYDROLOGY WORKMAP

Proposed Storm Drain

Interim Flow Paths

Street I Interim Subbasins

Ultimate Condition Parcels

Street I Interim Swales

Existing Storm Drain

Street I Proposed Roadway

Existing Roadway Improvements

Street J Flowline

10-ft Contours

50-ft Contours

N

1 inch = 200 feet

ATKINS

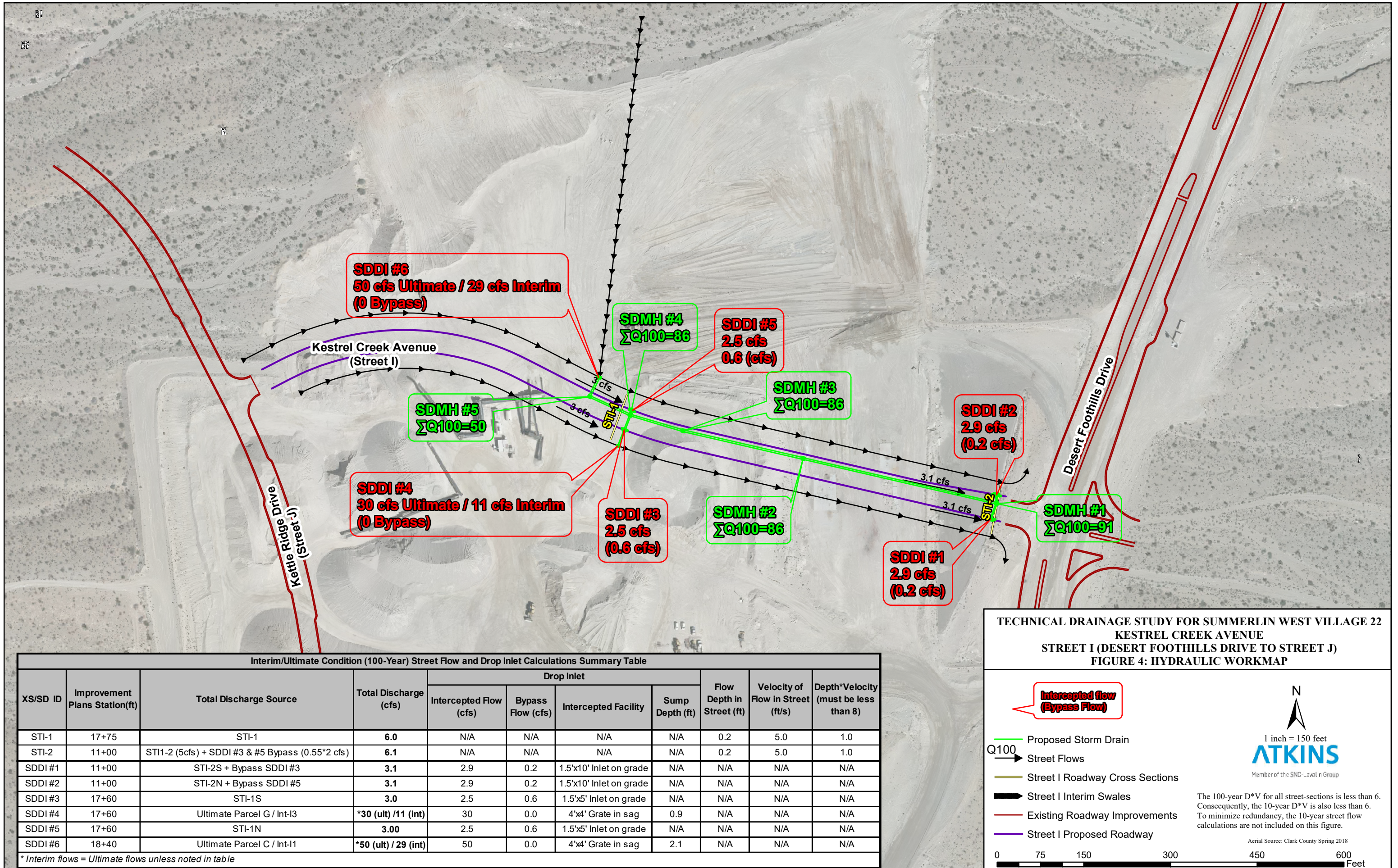
Member of the SNC-Lavalin Group

Aerial Source: Clark County Spring 2018

0100200400600800

Feet

B.2. Revised Hydraulics Workmap



Appendix C. Revised Ultimate Condition WSPG-W Model

Storm Drain System Modeling

The proposed storm drain systems were modeled using Water Surface Pressure Gradient for Windows (WSPG-W). A print-out of the WSPG-W models are provided in Appendix C. Because the ultimate condition flows are higher than or equal to the interim condition flows in all areas, only the ultimate conditions were analyzed in the WSPG-W models. The Q_{100} and HGLs are shown on the improvement plans in Appendix D. Table 6 summarizes the WSPG-W model at the mainline manholes.

Table 6 – WSPG-W Mainline Summary Table

SDMH#	WSPG-W Station	100-yr Ultimate Condition		
		Q_{100}	ΣQ_{100}	HGL (Ft)
Upstream	785.97	50.0	50.0	3381.33
SDMH #5	746.59	0.0	50.0	3378.00
SDMH #4	669.17	36.0	86.0	3378.68
SDMH #3	573.64	0.0	86.0	3367.73
SDMH #2	360.38	0.0	86.0	3352.90
SDMH #1	16.68	5.0	91.0	3330.9
Downstream	13.68	-	-	3329.45

The downstream end of the proposed storm drain is 36" RCP. The maximum velocity modeled is 24.67 ft/s and is observed just upstream of SDMH#1, the system outlet of the Kestrel Creek Avenue WSPG-W model. Hydraulic jumps are modeled in the Kestrel Creek Avenue storm drain on the mainline approximately 45 feet upstream of SDMH#4, and on the lateral structure between SDMH#1 and SDDI #2, immediately upstream of SDMH#1 on the North side. All HGLs modeled including the hydraulic jumps, are greater than 1-foot below existing and proposed surfaces.

STREET-I-ULT.OUT

FILE: STREET-I-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 1

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 2: 5:47

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) DFD TO KETTLE RIDGE DR (STREET J)

ATKINS / ULTIMATE 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 | | | | | | | | | | | | | | |
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|
13.680 | 3327.800 | 1.648 | 3329.448 | 91.00 | 22.88 | 8.13 | 3337.57 | .00 | 2.85 | 2.99 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1.350 | .0371 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
15.030 | 3327.850 | 1.646 | 3329.496 | 91.00 | 22.91 | 8.15 | 3337.65 | .00 | 2.85 | 2.99 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
JUNCT STR | .0302 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
16.680 | 3327.900 | 1.491 | 3329.391 | 86.00 | 24.52 | 9.34 | 3338.73 | .00 | 2.82 | 3.00 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
3.000 | .0334 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
19.680 | 3328.000 | 1.484 | 3329.484 | 86.00 | 24.67 | 9.45 | 3338.94 | .00 | 2.82 | 3.00 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
143.908 | .0690 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
163.588 | 3337.929 | 1.484 | 3339.413 | 86.00 | 24.67 | 9.45 | 3348.86 | .00 | 2.82 | 3.00 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
193.792 | .0690 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
357.380 | 3351.300 | 1.508 | 3352.808 | 86.00 | 24.18 | 9.08 | 3361.88 | .00 | 2.82 | 3.00 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
3.000 | .0333 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
360.380 | 3351.400 | 1.501 | 3352.901 | 86.00 | 24.32 | 9.18 | 3362.08 | .00 | 2.82 | 3.00 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
3.000 | .0334 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
363.380 | 3351.500 | 1.494 | 3352.994 | 86.00 | 24.46 | 9.29 | 3362.28 | .00 | 2.82 | 3.00 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
124.139 | .0698 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
487.519 | 3360.161 | 1.550 | 3361.710 | 86.00 | 23.35 | 8.47 | 3370.18 | .00 | 2.82 | 3.00 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
51.789 | .0698 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

```

STREET-I-ULT.OUT

FILE: STREET-I-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 2

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 2: 5:47

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) DFD TO KETTLE RIDGE DR (STREET J)

ATKINS / ULTIMATE 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 | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|
539.308 | 3363.774 | 1.610 | 3365.384 | 86.00 | 22.26 | 7.70 | 3373.08 | .00 | 2.82 | 2.99 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
31.332 | .0698 | | | | | .0495 | 1.55 | 1.61 | 3.45 | 1.48 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
570.640 | 3365.960 | 1.673 | 3367.633 | 86.00 | 21.23 | 7.00 | 3374.63 | .00 | 2.82 | 2.98 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
3.000 | .0334 | | | | | .0466 | .14 | 1.67 | 3.21 | 1.86 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
573.640 | 3366.060 | 1.668 | 3367.729 | 86.00 | 21.30 | 7.04 | 3374.77 | .00 | 2.82 | 2.98 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
3.000 | .0333 | | | | | .0470 | .14 | 1.67 | 3.22 | 1.86 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
576.640 | 3366.161 | 1.664 | 3367.825 | 86.00 | 21.36 | 7.09 | 3374.91 | .00 | 2.82 | 2.98 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
6.665 | .0723 | | | | | .0463 | .31 | 1.66 | 3.24 | 1.46 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
583.305 | 3366.642 | 1.683 | 3368.325 | 86.00 | 21.07 | 6.90 | 3375.22 | .00 | 2.82 | 2.98 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
19.035 | .0723 | | | | | .0429 | .82 | 1.68 | 3.17 | 1.46 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
602.340 | 3368.018 | 1.750 | 3369.768 | 86.00 | 20.09 | 6.27 | 3376.04 | .00 | 2.82 | 2.96 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
14.518 | .0723 | | | | | .0379 | .55 | 1.75 | 2.94 | 1.46 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
616.858 | 3369.067 | 1.821 | 3370.887 | 86.00 | 19.16 | 5.70 | 3376.59 | .00 | 2.82 | 2.93 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
11.441 | .0723 | | | | | .0335 | .38 | 1.82 | 2.73 | 1.46 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
628.299 | 3369.894 | 1.896 | 3371.789 | 86.00 | 18.27 | 5.18 | 3376.97 | .00 | 2.82 | 2.89 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
9.197 | .0723 | | | | | .0298 | .27 | 1.90 | 2.52 | 1.46 | .013 | .00 | .00 | PIPE
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
637.496 | 3370.558 | 1.976 | 3372.534 | 86.00 | 17.42 | 4.71 | 3377.24 | .00 | 2.82 | 2.85 | 3.000 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
7.478 | .0723 | | | | | .0264 | .20 | 1.98 | 2.33 | 1.46 | .013 | .00 | .00 | PIPE

```


STREET-I-ULT.OUT

FILE: STREET-I-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 3

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 2: 5:47

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) DFD TO KETTLE RIDGE DR (STREET J)

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 |
*****
644.973 | 3371.098 | 2.062 | 3373.160 | 86.00 | 16.61 | 4.28 | 3377.44 | .00 | 2.82 | 2.78 | 3.000 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | | |
6.101 | .0723 | | | | | .0236 | .14 | 2.06 | 2.14 | 1.46 | .013 | .00 | .00 | PIPE
651.074 | 3371.539 | 2.154 | 3373.693 | 86.00 | 15.83 | 3.89 | 3377.59 | .00 | 2.82 | 2.70 | 3.000 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | | |
4.958 | .0723 | | | | | .0211 | .10 | 2.15 | 1.97 | 1.46 | .013 | .00 | .00 | PIPE
656.032 | 3371.897 | 2.254 | 3374.151 | 86.00 | 15.10 | 3.54 | 3377.69 | .00 | 2.82 | 2.59 | 3.000 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | | |
3.968 | .0723 | | | | | .0189 | .08 | 2.25 | 1.80 | 1.46 | .013 | .00 | .00 | PIPE
659.999 | 3372.184 | 2.364 | 3374.548 | 86.00 | 14.39 | 3.22 | 3377.77 | .00 | 2.82 | 2.45 | 3.000 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | | |
3.062 | .0723 | | | | | .0171 | .05 | 2.36 | 1.63 | 1.46 | .013 | .00 | .00 | PIPE
663.061 | 3372.405 | 2.488 | 3374.893 | 86.00 | 13.72 | 2.92 | 3377.82 | .00 | 2.82 | 2.26 | 3.000 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | | |
2.148 | .0723 | | | | | .0157 | .03 | 2.49 | 1.45 | 1.46 | .013 | .00 | .00 | PIPE
665.209 | 3372.561 | 2.632 | 3375.192 | 86.00 | 13.09 | 2.66 | 3377.85 | .00 | 2.82 | 1.97 | 3.000 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | | |
.961 | .0723 | | | | | .0147 | .01 | 2.63 | 1.26 | 1.46 | .013 | .00 | .00 | PIPE
666.170 | 3372.630 | 2.819 | 3375.449 | 86.00 | 12.47 | 2.42 | 3377.87 | .00 | 2.82 | 1.43 | 3.000 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | | |
JUNCT STR | .0334 | | | | | .0100 | .03 | 2.82 | 1.00 | | | .013 | .00 | .00 | PIPE
669.170 | 3372.730 | 5.948 | 3378.678 | 50.00 | 10.19 | 1.61 | 3380.29 | .00 | 2.30 | .00 | 2.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | | |
3.000 | .0334 | | | | | .0149 | .04 | 5.95 | .00 | 1.49 | .013 | .00 | .00 | PIPE
672.170 | 3372.830 | 6.015 | 3378.845 | 50.00 | 10.19 | 1.61 | 3380.46 | .00 | 2.30 | .00 | 2.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | | |
38.765 | .0735 | | | | | .0149 | .58 | 6.02 | .00 | 1.18 | .013 | .00 | .00 | PIPE

```

STREET-I-ULT.OUT

FILE: STREET-I-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 4

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 2: 5:47

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) DFD TO KETTLE RIDGE DR (STREET J)

ATKINS / ULTIMATE 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 |
*****
710.935 | 3375.680 | 3.790 | 3379.470 | 50.00 | 10.19 | 1.61 | 3381.08 | .00 | 2.30 | .00 | 2.500 | .000 | .00 | 1 | .0
HYDRAULIC JUMP
710.935 | 3375.680 | 1.440 | 3377.120 | 50.00 | 17.08 | 4.53 | 3381.65 | .00 | 2.30 | 2.47 | 2.500 | .000 | .00 | 1 | .0
3.622 | .0735 | .0365 | .13 | 1.44 | 2.77 | 1.18 | .013 | .00 | .00 | PIPE
714.557 | 3375.946 | 1.462 | 3377.407 | 50.00 | 16.77 | 4.37 | 3381.78 | .00 | 2.30 | 2.46 | 2.500 | .000 | .00 | 1 | .0
8.461 | .0735 | .0336 | .28 | 1.46 | 2.69 | 1.18 | .013 | .00 | .00 | PIPE
723.018 | 3376.568 | 1.521 | 3378.089 | 50.00 | 15.99 | 3.97 | 3382.06 | .00 | 2.30 | 2.44 | 2.500 | .000 | .00 | 1 | .0
6.813 | .0735 | .0298 | .20 | 1.52 | 2.49 | 1.18 | .013 | .00 | .00 | PIPE
729.830 | 3377.069 | 1.584 | 3378.653 | 50.00 | 15.25 | 3.61 | 3382.26 | .00 | 2.30 | 2.41 | 2.500 | .000 | .00 | 1 | .0
5.543 | .0735 | .0264 | .15 | 1.58 | 2.30 | 1.18 | .013 | .00 | .00 | PIPE
735.373 | 3377.476 | 1.651 | 3379.127 | 50.00 | 14.54 | 3.28 | 3382.41 | .00 | 2.30 | 2.37 | 2.500 | .000 | .00 | 1 | .0
4.528 | .0735 | .0235 | .11 | 1.65 | 2.13 | 1.18 | .013 | .00 | .00 | PIPE
739.901 | 3377.809 | 1.723 | 3379.531 | 50.00 | 13.86 | 2.98 | 3382.51 | .00 | 2.30 | 2.31 | 2.500 | .000 | .00 | 1 | .0
3.689 | .0735 | .0209 | .08 | 1.72 | 1.96 | 1.18 | .013 | .00 | .00 | PIPE
743.590 | 3378.080 | 1.800 | 3379.880 | 50.00 | 13.22 | 2.71 | 3382.59 | .00 | 2.30 | 2.25 | 2.500 | .000 | .00 | 1 | .0
1.000 | .0400 | .0196 | .02 | 1.80 | 1.79 | 1.41 | .013 | .00 | .00 | PIPE
744.590 | 3378.120 | 1.809 | 3379.929 | 50.00 | 13.14 | 2.68 | 3382.61 | .00 | 2.30 | 2.24 | 2.500 | .000 | .00 | 1 | .0
1.000 | .0298 | .0194 | .02 | 1.81 | 1.78 | 1.55 | .013 | .00 | .00 | PIPE

```

STREET-I-ULT.OUT

FILE: STREET-I-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 5

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 2: 5:47

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) DFD TO KETTLE RIDGE DR (STREET J)

ATKINS / ULTIMATE 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 | | | | | | | | | | | | | | |
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|
745.590 | 3378.150 | 1.814 | 3379.964 | 50.00 | 13.11 | 2.67 | 3382.63 | .00 | 2.30 | 2.23 | 2.500 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1.000 | .0300 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
746.590 | 3378.180 | 1.819 | 3379.999 | 50.00 | 13.07 | 2.65 | 3382.65 | .00 | 2.30 | 2.23 | 2.500 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1.000 | .0300 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
747.590 | 3378.210 | 1.824 | 3380.034 | 50.00 | 13.03 | 2.64 | 3382.67 | .00 | 2.30 | 2.22 | 2.500 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1.000 | .0400 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
748.590 | 3378.250 | 1.834 | 3380.084 | 50.00 | 12.96 | 2.61 | 3382.69 | .00 | 2.30 | 2.21 | 2.500 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
1.000 | .0300 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
749.590 | 3378.280 | 1.840 | 3380.120 | 50.00 | 12.91 | 2.59 | 3382.71 | .00 | 2.30 | 2.20 | 2.500 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
3.076 | .0276 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
752.666 | 3378.365 | 1.854 | 3380.219 | 50.00 | 12.81 | 2.55 | 3382.77 | .00 | 2.30 | 2.19 | 2.500 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
13.949 | .0276 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
766.615 | 3378.750 | 1.943 | 3380.694 | 50.00 | 12.21 | 2.32 | 3383.01 | .00 | 2.30 | 2.08 | 2.500 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
9.323 | .0276 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
775.939 | 3379.008 | 2.043 | 3381.051 | 50.00 | 11.64 | 2.11 | 3383.16 | .00 | 2.30 | 1.93 | 2.500 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
5.778 | .0276 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
781.717 | 3379.168 | 2.157 | 3381.325 | 50.00 | 11.10 | 1.91 | 3383.24 | .00 | 2.30 | 1.72 | 2.500 | .000 | .00 | 1 .0
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
2.253 | .0276 | | | | | | | | | | | | | | |
      |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0.0133 | .03 | 2.16 | 1.21 | 1.59 | .013 | .00 | .00 | PIPE

```

STREET-I-ULT.OUT

FILE: STREET-I-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 6

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 2: 5:47

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) DFD TO KETTLE RIDGE DR (STREET J)

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 |
```

```

T1 SUMMERLIN WEST VILLAGE 22 0
T2 KESTREL CREEK AVENUE (STREET I) DFD TO KETTLE RIDGE DR (STREET J)
T3 ATKINS / ULTIMATE CONDITIONS
SO 13.68 3327.800 1 3330.60
REM ##### SDMH#1 Tailwater from DFD 10-9-2019 Ultimate Condition
R 15.03 3327.850 1 .013 .000 .000 0
JX 16.68 3327.900 1 2 2.013 2.5 2.5 3328.0 3328.0 80.0-75.0 .000
R 19.68 3328.000 1 .013 .000 .000 0
REM ##### SDMH#2 DS
R 357.38 3351.300 1 .013 .000 .000 0
R 360.38 3351.400 1 .013 .000 .000 1
R 363.38 3351.500 1 .013 .000 .000 0
REM ##### SDMH#2 US
REM ##### SDMH#3 DS
R 570.64 3365.960 1 .013 .000 .000 0
R 573.64 3366.060 1 .013 .000 .000 1
R 576.64 3366.160 1 .013 .000 2.00 0
REM ##### SDMH#3 US
REM ##### SDMH#4 DS JX SDDI 3,4,5
R 666.17 3372.630 1 .013 .000 .000 0
JX 669.17 3372.730 1 3 2.013 33.0 3.0 3372.83 3372.83 90.0-90.0 .000
R 672.17 3372.830 3 .013 .000 8.00 1
REM ##### SDMH#4 US JX SDDI 3,4,5
REM ##### SDMH#5 DS
R 743.59 3378.080 3 .013 .000 15.000 0
R 744.59 3378.120 3 .013 .000 15.000 0
R 745.59 3378.150 3 .013 .000 15.000 0
R 746.59 3378.180 3 .013 .000 00.000 1
R 747.59 3378.210 3 .013 .000 15.000 0
R 748.59 3378.250 3 .013 .000 15.000 0
R 749.59 3378.280 3 .013 .000 15.000 0
REM ##### SDMH#5 US
REM ##### SDMH#5 DS SDDI #6
R 783.97 3379.230 3 .013 .000 .000 0
SH 785.97 3379.230 3
CD 1 4 1 .000 3.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 2.500 .000 .000 .000 .00
Q 50.000 .0

```


SI_Lateral-MH1N_ULT.OUT

FILE: SI_Lateral-MH1N_ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 1

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 3: 9:32

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 1 NORTH, SDDI #2

ATKINS / ULTIMATE 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				
*****																	*****	
16.680	3327.900	3.000	3330.900	2.50	.80	.01	3330.91	.00	.55	.00	2.000	.000	.00	1	.0			
	3.000	.0334				.0001	.00	3.00	.00	.33	.013	.00	.00	PIPE				
19.680	3328.000	2.901	3330.901	2.50	.80	.01	3330.91	.00	.55	.00	2.000	.000	.00	1	.0			
	3.669	.2456				.0001	.00	2.90	.00	.21	.013	.00	.00	PIPE				
23.349	3328.901	2.000	3330.901	2.50	.80	.01	3330.91	.00	.55	.00	2.000	.000	.00	1	.0			
	.747	.2456				.0001	.00	2.00	.00	.21	.013	.00	.00	PIPE				
24.096	3329.085	1.815	3330.899	2.50	.83	.01	3330.91	.00	.55	1.16	2.000	.000	.00	1	.0			
	.434	.2456				.0001	.00	1.81	.09	.21	.013	.00	.00	PIPE				
24.531	3329.191	1.707	3330.898	2.50	.88	.01	3330.91	.00	.55	1.41	2.000	.000	.00	1	.0			
	.357	.2456				.0001	.00	1.71	.11	.21	.013	.00	.00	PIPE				
24.888	3329.279	1.618	3330.897	2.50	.92	.01	3330.91	.00	.55	1.57	2.000	.000	.00	1	.0			
	.312	.2456				.0001	.00	1.62	.12	.21	.013	.00	.00	PIPE				
25.199	3329.355	1.540	3330.896	2.50	.96	.01	3330.91	.00	.55	1.68	2.000	.000	.00	1	.0			
	.279	.2456				.0001	.00	1.54	.14	.21	.013	.00	.00	PIPE				
25.478	3329.424	1.470	3330.894	2.50	1.01	.02	3330.91	.00	.55	1.77	2.000	.000	.00	1	.0			
	.255	.2456				.0002	.00	1.47	.15	.21	.013	.00	.00	PIPE				
25.733	3329.487	1.406	3330.893	2.50	1.06	.02	3330.91	.00	.55	1.83	2.000	.000	.00	1	.0			
	.235	.2456				.0002	.00	1.41	.16	.21	.013	.00	.00	PIPE				

SI_Lateral-MH1N_ULT.OUT

FILE: SI_Lateral-MH1N_ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 2

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 3: 9:32

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 1 NORTH, SDDI #2

ATKINS / ULTIMATE 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
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
25.968	3329.544	1.347	3330.891	2.50	1.11	.02	3330.91	.00	.55	1.88	2.000	.000	.00	1 .0
.218	.2456					.0002	.00	1.35	.18	.21	.013	.00	.00	PIPE
26.185	3329.598	1.292	3330.889	2.50	1.17	.02	3330.91	.00	.55	1.91	2.000	.000	.00	1 .0
.203	.2456					.0002	.00	1.29	.19	.21	.013	.00	.00	PIPE
26.388	3329.647	1.240	3330.887	2.50	1.22	.02	3330.91	.00	.55	1.94	2.000	.000	.00	1 .0
.189	.2456					.0003	.00	1.24	.21	.21	.013	.00	.00	PIPE
26.577	3329.694	1.191	3330.885	2.50	1.28	.03	3330.91	.00	.55	1.96	2.000	.000	.00	1 .0
.177	.2456					.0003	.00	1.19	.23	.21	.013	.00	.00	PIPE
26.754	3329.738	1.145	3330.883	2.50	1.34	.03	3330.91	.00	.55	1.98	2.000	.000	.00	1 .0
.166	.2456					.0003	.00	1.15	.24	.21	.013	.00	.00	PIPE
26.921	3329.778	1.101	3330.880	2.50	1.41	.03	3330.91	.00	.55	1.99	2.000	.000	.00	1 .0
.156	.2456					.0004	.00	1.10	.26	.21	.013	.00	.00	PIPE
27.077	3329.817	1.060	3330.877	2.50	1.48	.03	3330.91	.00	.55	2.00	2.000	.000	.00	1 .0
.147	.2456					.0004	.00	1.06	.28	.21	.013	.00	.00	PIPE
27.224	3329.853	1.021	3330.873	2.50	1.55	.04	3330.91	.00	.55	2.00	2.000	.000	.00	1 .0
.138	.2456					.0005	.00	1.02	.30	.21	.013	.00	.00	PIPE
27.361	3329.887	.983	3330.870	2.50	1.63	.04	3330.91	.00	.55	2.00	2.000	.000	.00	1 .0
.034	.2456					.0006	.00	.98	.33	.21	.013	.00	.00	PIPE

SI_Lateral-MH1N_ULT.OUT

FILE: SI_Lateral-MH1N_ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 3

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 3: 9:32

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 1 NORTH, SDDI #2

ATKINS / ULTIMATE 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		

27.395	3329.895	.947	3330.842	2.50	1.71	.05	3330.89	.00	.55	2.00	2.000	.000	.00	1	.0	
HYDRAULIC JUMP																
27.395	3329.895	.273	3330.168	2.50	9.71	1.46	3331.63	.00	.55	1.37	2.000	.000	.00	1	.0	
.105	.2456					.0716	.01	.27	3.95	.21	.013	.00	.00	PIPE		
27.500	3329.921	.282	3330.203	2.50	9.25	1.33	3331.53	.00	.55	1.39	2.000	.000	.00	1	.0	
.609	.2456					.0625	.04	.28	3.70	.21	.013	.00	.00	PIPE		
28.109	3330.071	.291	3330.362	2.50	8.82	1.21	3331.57	.00	.55	1.41	2.000	.000	.00	1	.0	
.524	.2456					.0545	.03	.29	3.47	.21	.013	.00	.00	PIPE		
28.633	3330.199	.301	3330.500	2.50	8.41	1.10	3331.60	.00	.55	1.43	2.000	.000	.00	1	.0	
.454	.2456					.0476	.02	.30	3.25	.21	.013	.00	.00	PIPE		
29.087	3330.311	.311	3330.622	2.50	8.02	1.00	3331.62	.00	.55	1.45	2.000	.000	.00	1	.0	
.394	.2456					.0416	.02	.31	3.05	.21	.013	.00	.00	PIPE		
29.481	3330.407	.322	3330.729	2.50	7.65	.91	3331.64	.00	.55	1.47	2.000	.000	.00	1	.0	
.343	.2456					.0363	.01	.32	2.86	.21	.013	.00	.00	PIPE		
29.824	3330.491	.332	3330.824	2.50	7.29	.83	3331.65	.00	.55	1.49	2.000	.000	.00	1	.0	
.299	.2456					.0317	.01	.33	2.68	.21	.013	.00	.00	PIPE		
30.122	3330.565	.344	3330.908	2.50	6.95	.75	3331.66	.00	.55	1.51	2.000	.000	.00	1	.0	
.260	.2456					.0277	.01	.34	2.51	.21	.013	.00	.00	PIPE		

SI_Lateral-MH1N_ULT.OUT

FILE: SI_Lateral-MH1N_ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 4

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 3: 9:32

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 1 NORTH, SDDI #2

ATKINS / ULTIMATE 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				
*****																	*****	
30.383	3330.629	.355	3330.984	2.50	6.63	.68	3331.67	.00	.55	1.53	2.000	.000	.00	1	.0			
	.226	.2456				.0242	.01	.36	2.35	.21	.013	.00	.00	PIPE				
30.609	3330.684	.367	3331.051	2.50	6.32	.62	3331.67	.00	.55	1.55	2.000	.000	.00	1	.0			
	.196	.2456				.0211	.00	.37	2.20	.21	.013	.00	.00	PIPE				
30.805	3330.732	.380	3331.112	2.50	6.03	.56	3331.68	.00	.55	1.57	2.000	.000	.00	1	.0			
	.169	.2456				.0185	.00	.38	2.06	.21	.013	.00	.00	PIPE				
30.974	3330.774	.392	3331.166	2.50	5.75	.51	3331.68	.00	.55	1.59	2.000	.000	.00	1	.0			
	.145	.2456				.0161	.00	.39	1.93	.21	.013	.00	.00	PIPE				
31.119	3330.809	.406	3331.215	2.50	5.48	.47	3331.68	.00	.55	1.61	2.000	.000	.00	1	.0			
	.123	.2456				.0141	.00	.41	1.81	.21	.013	.00	.00	PIPE				
31.242	3330.840	.419	3331.259	2.50	5.22	.42	3331.68	.00	.55	1.63	2.000	.000	.00	1	.0			
	.104	.2456				.0123	.00	.42	1.70	.21	.013	.00	.00	PIPE				
31.347	3330.865	.434	3331.299	2.50	4.98	.39	3331.68	.00	.55	1.65	2.000	.000	.00	1	.0			
	.086	.2456				.0108	.00	.43	1.59	.21	.013	.00	.00	PIPE				
31.433	3330.886	.448	3331.335	2.50	4.75	.35	3331.69	.00	.55	1.67	2.000	.000	.00	1	.0			
	.070	.2456				.0094	.00	.45	1.49	.21	.013	.00	.00	PIPE				
31.503	3330.904	.464	3331.367	2.50	4.53	.32	3331.69	.00	.55	1.69	2.000	.000	.00	1	.0			
	.055	.2456				.0082	.00	.46	1.40	.21	.013	.00	.00	PIPE				

SI_Lateral-MH1N_ULT.OUT

FILE: SI_Lateral-MH1N_ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 5

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 3: 9:32

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 1 NORTH, SDDI #2

ATKINS / ULTIMATE 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		
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****		
31.558	3330.917	.480	3331.396	2.50	4.32	.29	3331.69	.00	.55	1.71	2.000	.000	.00	1	.0	
	.042	.2456				.0072	.00	.48	1.31	.21	.013	.00	.00	PIPE		
31.599	3330.927	.496	3331.423	2.50	4.12	.26	3331.69	.00	.55	1.73	2.000	.000	.00	1	.0	
	.028	.2456				.0063	.00	.50	1.22	.21	.013	.00	.00	PIPE		
31.628	3330.934	.513	3331.448	2.50	3.92	.24	3331.69	.00	.55	1.75	2.000	.000	.00	1	.0	
	.017	.2456				.0055	.00	.51	1.15	.21	.013	.00	.00	PIPE		
31.644	3330.938	.531	3331.469	2.50	3.74	.22	3331.69	.00	.55	1.77	2.000	.000	.00	1	.0	

T1 SUMMERLIN WEST VILLAGE 22 0
T2 KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 1 NORTH, SDDI #2
T3 ATKINS / ULTIMATE CONDITIONS
SO 16.68 3327.900 1 3330.90
R 19.68 3328.000 2 .013 .000 0.000 1
R 31.65 3330.940 2 .013 .000 0.000 0
SH 34.65 3330.940 2
CD 1 4 1 .000 3.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 1.500 .000 .000 .000 .00
Q 2.500 .0

SI_Lateral-MH1S_ULT.OUT

FILE: SI_Lateral-MH1S_ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 1

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10-15-2019 Time:10:24: 2

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 1 SOUTH, SDDI #1

ATKINS / ULTIMATE 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				
*****																	*****	
16.680	3327.900	3.000	3330.900	2.50	.80	.01	3330.91	.00	.55	.00	2.000	.000	.00	1	.0			
	3.000	.0334				.0001	.00	3.00	.00	.33	.013	.00	.00	PIPE				
19.680	3328.000	2.901	3330.901	2.50	.80	.01	3330.91	.00	.55	.00	2.000	.000	.00	1	.0			
13.671	.0660					.0001	.00	2.90	.00	.28	.013	.00	.00	PIPE				
33.351	3328.902	2.000	3330.902	2.50	.80	.01	3330.91	.00	.55	.00	2.000	.000	.00	1	.0			
2.783	.0660					.0001	.00	2.00	.00	.28	.013	.00	.00	PIPE				
36.134	3329.086	1.815	3330.901	2.50	.83	.01	3330.91	.00	.55	1.16	2.000	.000	.00	1	.0			
1.618	.0660					.0001	.00	1.81	.09	.28	.013	.00	.00	PIPE				
37.751	3329.193	1.707	3330.900	2.50	.88	.01	3330.91	.00	.55	1.41	2.000	.000	.00	1	.0			
1.330	.0660					.0001	.00	1.71	.11	.28	.013	.00	.00	PIPE				
39.081	3329.281	1.618	3330.899	2.50	.92	.01	3330.91	.00	.55	1.57	2.000	.000	.00	1	.0			
1.161	.0660					.0001	.00	1.62	.12	.28	.013	.00	.00	PIPE				
40.242	3329.357	1.540	3330.898	2.50	.96	.01	3330.91	.00	.55	1.68	2.000	.000	.00	1	.0			
1.041	.0660					.0001	.00	1.54	.14	.28	.013	.00	.00	PIPE				
41.283	3329.426	1.470	3330.896	2.50	1.01	.02	3330.91	.00	.55	1.77	2.000	.000	.00	1	.0			
.949	.0660					.0002	.00	1.47	.15	.28	.013	.00	.00	PIPE				
42.232	3329.489	1.406	3330.895	2.50	1.06	.02	3330.91	.00	.55	1.83	2.000	.000	.00	1	.0			
.874	.0660					.0002	.00	1.41	.16	.28	.013	.00	.00	PIPE				

SI_Lateral-MH1S_ULT.OUT

FILE: SI_Lateral-MH1S_ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 2

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10-15-2019 Time:10:24: 2

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 1 SOUTH, SDDI #1

ATKINS / ULTIMATE 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				
*****																	*****	
43.107	3329.546	1.347	3330.893	2.50	1.11	.02	3330.91	.00	.55	1.88	2.000	.000	.00	1	.0			
	.811	.0660				.0002	.00	1.35	.18	.28	.013	.00	.00	PIPE				
43.918	3329.600	1.292	3330.891	2.50	1.17	.02	3330.91	.00	.55	1.91	2.000	.000	.00	1	.0			
	.755	.0660				.0002	.00	1.29	.19	.28	.013	.00	.00	PIPE				
44.673	3329.650	1.240	3330.889	2.50	1.22	.02	3330.91	.00	.55	1.94	2.000	.000	.00	1	.0			
	.707	.0660				.0003	.00	1.24	.21	.28	.013	.00	.00	PIPE				
45.380	3329.696	1.191	3330.887	2.50	1.28	.03	3330.91	.00	.55	1.96	2.000	.000	.00	1	.0			
	.661	.0660				.0003	.00	1.19	.23	.28	.013	.00	.00	PIPE				
46.041	3329.740	1.145	3330.885	2.50	1.34	.03	3330.91	.00	.55	1.98	2.000	.000	.00	1	.0			
	.149	.0660				.0003	.00	1.15	.24	.28	.013	.00	.00	PIPE				
46.190	3329.750	1.135	3330.885	2.50	1.36	.03	3330.91	.00	.55	1.98	2.000	.000	.00	1	.0			
	3.000	.0660				.0286	.76	1.13	.25	.28	.013	.00	.00	PIPE				
49.190	3329.750	1.135	3330.885	2.50	1.36	.03	3330.91	.00	.55	1.98	2.000	.000	.00	1	.0			

T1 SUMMERLIN WEST VILLAGE 22 0
T2 KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 1 SOUTH, SDDI #1
T3 ATKINS / ULTIMATE CONDITIONS
SO 16.68 3327.900 1 3330.90
R 19.68 3328.000 2 .013 .000 0.000 1
R 46.19 3329.750 2 .013 .000 0.000 0
SH 49.19 3329.750 2
CD 1 4 1 .000 3.000 .000 .000 .000 .00
CD 2 4 1 .000 2.000 .000 .000 .000 .00
CD 3 4 1 .000 1.500 .000 .000 .000 .00
Q 2.500 .0

SI_Lateral-MH4N_ULT.OUT

FILE: SI_Lateral-MH4N_ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 1

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 3:44:57

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 4 NORTH, SDDI #5

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
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
| | | | | | | | | | | | | | | |
669.170 3372.730 5.970 3378.700 3.00 .95 .01 3378.71 .00 .60 .00 .00 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
3.000 .0334 .0002 .00 5.97 .00 .36 .013 .00 .00 PIPE
| | | | | | | | | | | | | | | |
672.170 3372.830 5.871 3378.701 3.00 .95 .01 3378.72 .00 .60 .00 .00 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
6.050 .1834 .0002 .00 5.87 .00 .24 .013 .00 .00 PIPE
| | | | | | | | | | | | | | | |
678.220 3373.940 4.762 3378.702 3.00 .95 .01 3378.72 .00 .60 .00 .00 2.000 .000 .00 1 .0
-|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|- -|-
3.000 .1834 .0308 .19 4.76 .00 .24 .013 .00 .00

```

T1 SUMMERLIN WEST VILLAGE 220
T2 KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 4 NORTH, SDDI #5
T3 ATKINS / ULTIMATE CONDITIONS
SO ...669.17 3372.73 ...13378.700
R ...672.17 3372.83 ...2013000 ...0.000 1
R ...678.22 3373.94 ...2013000 ...0.000 0
SH ...681.22 3373.94 ...2
CD ...1 4 ...1000 ...3.000000 ...000 ...000 ...00
CD ...2 4 ...1000 ...2.000000 ...000 ...000
.00
Q3.000 ...0

SI_Lateral-MH4S_ULT.OUT

FILE: SI_Lateral-MH4S_ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

PAGE 1

Program Package Serial Number: 7271

WATER SURFACE PROFILE LISTING

Date:10- 9-2019 Time: 3:44:40

SUMMERLIN WEST VILLAGE 22

KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 4 SOUTH, SDDI #4

ATKINS / ULTIMATE 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				
*****																	*****	
669.170	3372.730	5.970	3378.700	33.00	6.72	.70	3379.40	.00	1.95	.00	2.500	.000	.00	1	.0			
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				
3.000	.0334					.0065	.02	5.97	.00	1.16	.013	.00	.00	PIPE				
672.170	3372.830	5.924	3378.754	33.00	6.72	.70	3379.46	.00	1.95	.00	2.500	.000	.00	1	.0			
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				
21.950	.0506					.0065	.14	5.92	.00	1.03	.013	.00	.00	PIPE				
694.120	3373.940	4.957	3378.896	33.00	6.72	.70	3379.60	.00	1.95	.00	2.500	.000	.00	1	.0			
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				
JUNCT STR	.0334					.0059	.02	4.96	.00		.013	.00	.00	PIPE				
697.120	3374.040	5.106	3379.146	30.00	6.11	.58	3379.73	.00	1.87	.00	2.500	.000	.00	1	.0			
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				
3.000	.0333					.0053	.02	5.11	.00	1.10	.013	.00	.00	PIPE				
700.120	3374.140	5.051	3379.191	30.00	6.11	.58	3379.77	.00	1.87	.00	2.500	.000	.00	1	.0			
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				
27.000	.0433					.0053	.14	5.05	.00	1.02	.013	.00	.00	PIPE				
727.120	3375.310	4.026	3379.336	30.00	6.11	.58	3379.92	.00	1.87	.00	2.500	.000	.00	1	.0			
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				
3.510	.0433					.0131	.35	4.03	.00	1.02	.013	.00	.00	PIPE				
730.630	3375.310	4.026	3379.336	30.00	6.11	.58	3379.92	.00	1.87	.00	2.500	.000	.00	1	.0			
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -				

T1 SUMMERLIN WEST VILLAGE 220
T2 KESTREL CREEK AVENUE (STREET I) / LATERAL AT MH 4 SOUTH, SDDI #4
T3 ATKINS / ULTIMATE CONDITIONS
SO ...669.17 3372.73 ...13378.700
R ...672.17 3372.83 ...30130.000 ...0.000 1
REM ##### SDDI #3
R ...694.12 3373.94 ...30130.000 ...0.000 0
JX ...697.12 3374.04 ...3 3 ...013 ...3.0003374.1400.00.000
R ...700.12 3374.14 ...30130.000 ...0.000 1
REM ##### SDDI #3
R ...727.12 3375.31 ...30130.000 ...0.000 0
SH ...730.63 3375.31 ...3
CD ...1 4 ...10.000 ...3.0000.000 ...0.000 ...0.000 ...0.00
CD ...2 4 ...10.000 ...2.0000.000 ...0.000 ...0.000 ...0.00
CD ...3 4 ...10.000 ...2.5000.000 ...0.000 ...0.000 ...
.00
Q30.000 ...0

Appendix D. CD-ROM

SHEET INDEX		
1	COVER SHEET	
2	LEGEND AND ABBREVIATIONS	
3	GENERAL NOTES	
4	HORIZONTAL CONTROL PLAN	
5	MASTER DRAINAGE PLAN	
6	MASTER DRAINAGE PLAN	
7	MASTER WATER PLAN	
8	MASTER SEWER PLAN	
9	ROADWAY GRADING PLAN	STA 22+00 TO END
10	ROADWAY PLAN AND PROFILE	STA 22+00 TO END
11	ROADWAY GRADING PLAN	STA 19+00 TO STA 22+00
12	ROADWAY PLAN AND PROFILE	STA 19+00 TO STA 22+00
13	ROADWAY GRADING PLAN	STA 16+00 TO STA 19+00
14	ROADWAY PLAN AND PROFILE	STA 16+00 TO STA 19+00
15	ROADWAY GRADING PLAN	STA 13+00 TO STA 16+00
16	ROADWAY PLAN AND PROFILE	STA 13+00 TO STA 16+00
17	ROADWAY GRADING PLAN	BEGIN TO STA 13+00
18	ROADWAY PLAN AND PROFILE	BEGIN TO STA 13+00
19	BERM GRADING PLAN	
20	BERM GRADING PLAN	
21	STORM DRAIN LATERAL PROFILES	
22	WATER LATERAL PROFILES	
23	SANITARY SEWER LATERAL PROFILES	
24	STREETLIGHT PLAN	
25	SIGNAGE AND STRIPING PLAN	
26	TYPICAL SECTIONS	
27	STORM DETAILS	
28	PARCEL GRADING DETAILS – PARCEL C	
29	PARCEL GRADING DETAILS – PARCEL D	
30	WATER DETAILS	
31	STREETLIGHT DETAILS	

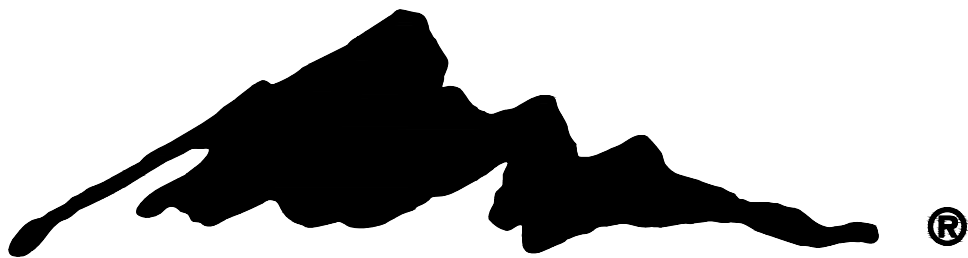
SUMMERLIN VILLAGE 22

IMPROVEMENT PLANS FOR:

KESTREL CREEK AVENUE (STREET I)

DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

FUTURE SID PROJECT



SUMMERLIN®

UTILITY NOTE

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.

CALL BEFORE YOU DIG: 1-800-642-2444

THIS PROPERTY MAY HAVE STATIC WATER PRESSURE IN EXCESS OF 80 PSI. THE UNIFORM PLUMBING CODE REQUIRES THAT INDIVIDUAL, ON-SITE (PRIVATE) PRESSURE REDUCING VALVES BE INSTALLED WHENEVER THE PRESSURE EXCEEDS 80 PSI. PRV'S ARE THE DEVELOPER'S RESPONSIBILITY AND WILL NOTE BE INSPECTED OR INCLUDED IN THE ACCEPTANCE OF THE LAS VEGAS VALLEY WATER DISTRICT FACILITIES.

NOTICE OF INTENT NOTE

NOTE: ALL LAND SURFACE AREA DISTURBANCES OVER 1 ACRE REQUIRE A STORMWATER DISCHARGE PERMIT ISSUED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP). A PHASED CONSTRUCTION UNIT IN A CONTIGUOUS SUBDIVISION IS CONSIDERED UNDER CONSTRUCTION UNTIL ALL STRIPPED SURFACE AREAS HAVE BEEN COVERED BY PAVING, BUILDING CONSTRUCTION OR PLANTING. A STORMWATER DISCHARGE PERMIT APPLICATION AND ASSOCIATED INFORMATION MAY BE DOWNLOADED FROM THE WEB SITE: [HTTP://WWW.STATE.NV.US/BWPC/STORM01.HTM](http://www.state.nv.us/bwpc/storm01.htm) PROJECTS THAT DISTURB MORE THAN ONE ACRE OF LAND MUST SUBMIT TO NDEP A "NOTICE OF INTENT" FOR INCLUSION UNDER STORMWATER PERMIT NO. NVR100000 ALONG WITH APPROPRIATE FILLING FEE.

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.

DISCLAIMER NOTE

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

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.

PROPOSED RIGHT-OF-WAY ACREAGE
1.15 AC.

PROPOSED DISTURBED AREA ACREAGE
7.58 AC.

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-18-176
DATED: DECEMBER 3, 2018

OWNER /DEVELOPER

OWNER

CONTACT: KEVIN ORROCK
HOWARD HUGHES COMPANY LLC, A DELAWARE LIMITED LIABILITY COMPANY
10845 GRIFFITH PEAK DRIVE, SUITE 160
LAS VEGAS, NEVADA 89135

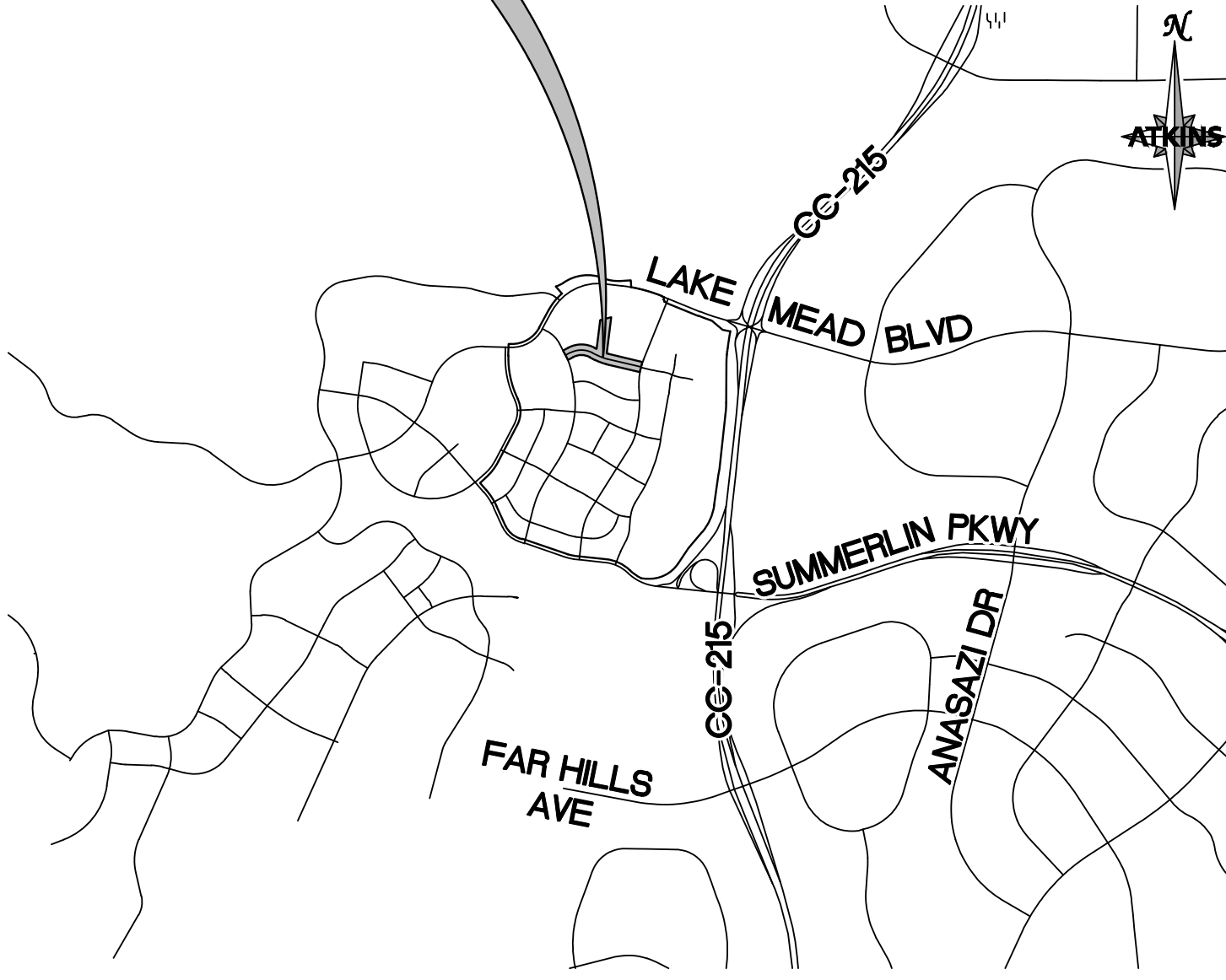
ENGINEER / CONSULTANT

CIVIL

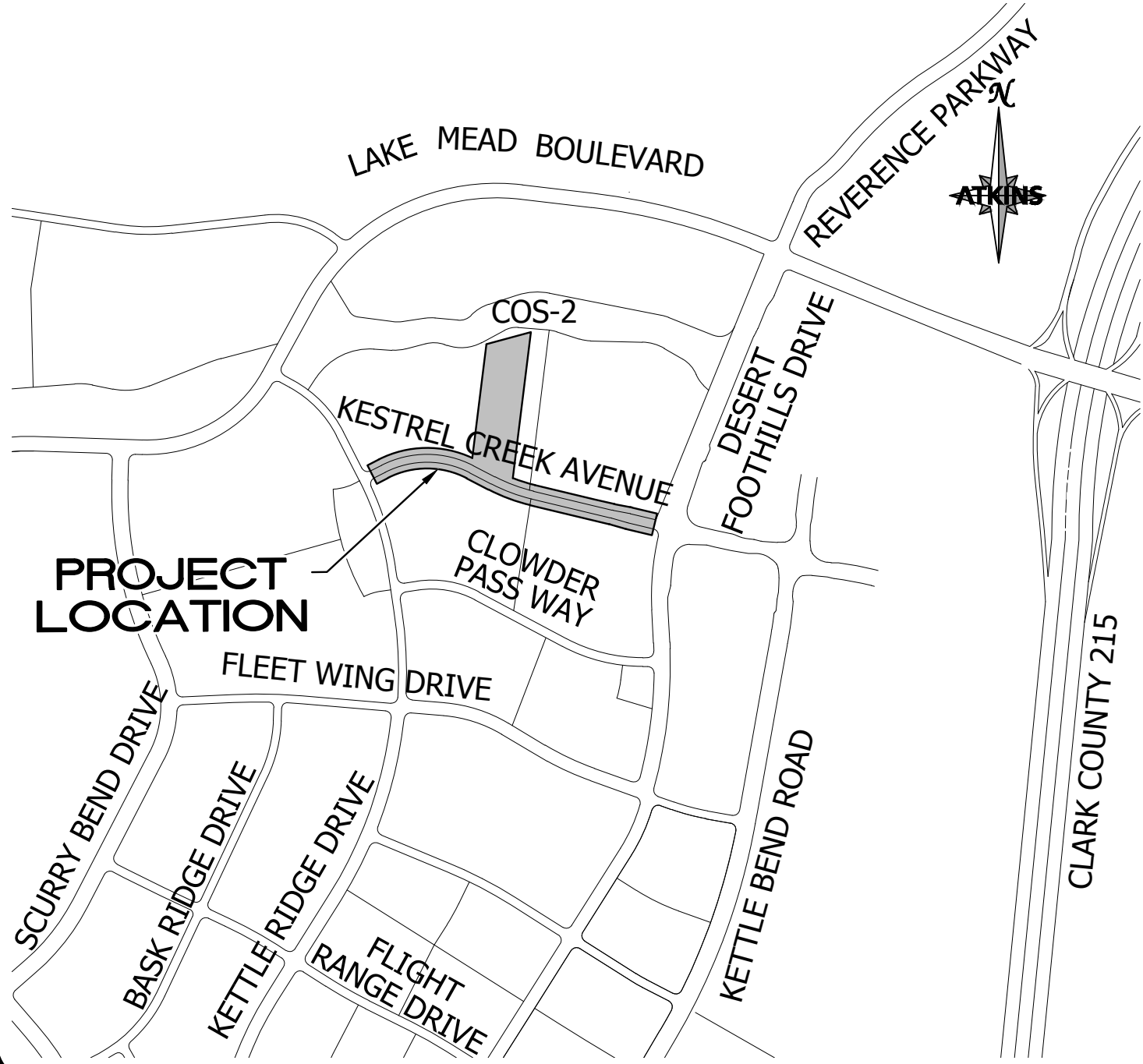
CONTACT: DAVID WILSON P.E.
ATKINS
2270 CORPORATE CIRCLE SUITE 200
HENDERSON, NEVADA 89074
(702) 263-7275

LOCATION MAP

PROJECT SITE
APN 137-14-401-006



VICINITY MAP



APPROVALS

HOWARD HUGHES COMPANY LLC, A DELAWARE LIMITED LIABILITY COMPANY

KEVIN T. ORROCK, VICE PRESIDENT DATE

ALLEN PAVELKA, P.E. #9029 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 ENGINEERING SERVICES

PROJECT NO. 136924 FIRST APPROVED DATE:

SHEETS:

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.

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:

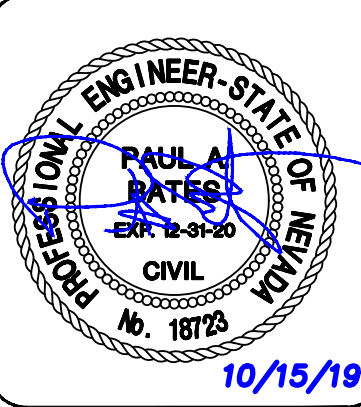
- ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECTED AREA
- GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES)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

BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
CITY OF LAS VEGAS BENCHMARK: 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

LEGAL DESCRIPTION

BEING A PORTION OF LOT 2 AS SHOWN ON THE MAP THEREOF IN BOOK 123 OF PLATS, PAGE 08, OFFICIAL RECORDS, CITY OF LAS VEGAS CLARK COUNTY, NEVADA



DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
HORIZ: NONE
VERT: NONE

JOB NO. 100060654
DATE: OCTOBER, 2019
DRAWING NO. 1 / 31
CLV 00-00000

SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET I)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

COVER SHEET

REVISIONS

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

SUMMERLIN®

ⒺAT #NUMBER ABABANDONED ACASPHALTIC CONCRETE ACPASBESTOS CEMENT PIPE AGGAGGREGATE AIPABANDON IN PLACE ALTALTERNATE APANGLE POINT APPROXAPPROXIMATE ASTMAMERICAN SOCIETY FOR TESTING AND MATERIALS INTERNATIONAL AV/ARAIR VACUUM AIR RELIEF VALVE BCBACK OF CURB BCRBACK OF CURB RETURN BLKBLOCK BLVDBOULEVARD BMBENCHMARK BOBLOW OFF BPBOTTOM OF PIPE BSWBACK OF SIDEWALK BVCBEGIN VERTICAL CURVE BVCEBEGINNING OF VERTICAL CURVE ELEVATION BVCSBEGINNING OF VERTICAL CURVE STATION BWBOTTOM WIDTH C&GCURB AND GUTTER C-CCENTER TO CENTER CATVCABLE TELEVISION CCAUSDCLARK COUNTY AREA UNIFORM STANDARD DRAWING CCRFCDCCLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT CCWRDCLARK COUNTY WATER RECLAMATION DISTRICT CFCUBIC FOOT CIPCAST IRON PIPE OR CAST IN PLACE CLCENTERLINE CLRCLEAR CLVCITY OF LAS VEGAS CMCONSTRUCTION MANAGER CMPCORRUGATED METAL PIPE CMUCONCRETE MASONRY UNIT CNDTCONDUIT CNLVCITY OF NORTH LAS VEGAS COCLEANOUT COHCITY OF HENDERSON COLCOLUMN CON'TCONTINUATION CONCCONCRETE CONSTCONSTRUCT OR CONSTRUCTION CORCORNER COSCOMMUNITY OPEN SPACE CPPCORRUGATED PLASTIC PIPE CSPCORRUGATED STEEL PIPE CUCUBIC CULVCULVERT CYCUBIC YARD DDEPTH DCSWCSDESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS DET, DTLDETAIL DEPTDEPARTMENT DGDESIGN GRADE DIDROP INLET DIA DIAMETER DIAGDIAGONAL DIPDUCTILE IRON PIPE DOCDOCUMENT DWDRIVEWAY DWGDRAWING E EAST EA EACH EBEASTBOUND ECEND OF CURVE ECREND CURB RETURN EF EACH FACE EGEXISTING GROUND ELEC ELECTRICAL ELEV ELEVATION EMBK EMBANKMENT EOPEDGE OF PAVEMENT EPEDGE OF PAVEMENT ALIGNMENT END EQEQUAL ESMTEASEMENT EVCEND VERTICAL CURVE EVCSEND VERTICAL CURVE STATION EW EACH WAY EX, EXSTEXISTING EXP, JTEXPANSION JOINT FA FIRE ALARM FCFACE OF CURB FFFINISHED FLOOR ELEVATION FHFIRE HYDRANT FLFLOW LINE FOFIBER OPTIC FTFOOT OR FEET G GAS LINE GALVGALVANIZED GBGRADE BREAK GLGRATE LENGTH GMGAS METER GUTGUTTER GVGATE VALVE HHEIGHT HDPEHIGH DENSITY POLYETHYLENE PIPE HDWLHEADWALL HEHORIZONTAL ELLIPTICAL HGLHYDRAULIC GRADE LINE HOAHOMEOWNER'S ASSOCIATION HORHORIZONTAL HPHIGH POINT IDINSIDE DIAMETER ININCH(ES) INTINTERSECTION INVINVERT IQACINTERAGENCY QUALITY ASSURANCE COMMITTEE IRRIRRIGATION ISLISLAND JB JUNCTION BOX JCTJUNCTION JTJOINT KVERTICAL CURVE K VALUE LLENGTH LBPOUND(S) LF LINEAR FEET LIN LINEAR LIN #CITY OF LAS VEGAS LOCLENGTH OF CURVE LOL LAYOUT LINE LPLOW POINT LSLANDSCAPE LTLEFT LVCLENGTH OF VERTICAL CURVE LVVWDLAS VEGAS VALLEY WATER DISTRICT MAS MASONRY MAXMAXIMUM MHMANHOLE MINMINIMUM MONMONOLITHIC, MONUMENT MTLMATERIAL MEMATCH EXISTING MUEMUNICIPAL UTILITY EASEMENT N NORTH NAPNOT A PART NDOTNEVADA DEPARTMENT OF TRANSPORTATION NFNEAR FACE NGNUMBER OF GRATES, NATURAL GRADE NICNOT IN CONTRACT No. NUMBER NTSNOT TO SCALE NVENV ENERGY OC ON CENTER ODOUTSIDE DIAMETER OGOPEN GRADE OHOVERHEAD OHPOVERHEAD POWER OSOFFSET PPOWER PBPULL BOX PBSPLANTMIX BITUMINOUS SURFACE PCPOINT OF CURVATURE PCCPORTLAND CEMENT CONCRETE OR POINT OF COMPOUND CURVATURE PEPOLYETHYLENE PGPROPOSED GRADE PGLPROFILE GRADE LINE PHPOT HOLE PIPOINT OF INTERSECTION PIPPROTECT IN PLACE PLPROPERTY LINE PLCSPLACES PMFPAVEMENT MARKING FILM POCPOINT OF CONNECTION PPPOWER POLE PRCPOINT OF REVERSE CURVATURE PROPPROPOSED PSIPOUNDS PER SQUARE INCH PTPOINT, POINT OF TANGENCY PUEPUBLIC UTILITY EASEMENT PVCPOLYVINYL CHLORIDE PVIPPOINT OF VERTICAL INTERSECTION PVMTPAVEMENT QTYQUANTITY (R)RADIAL R/W, ROWRIGHT OF WAY R RADIUS RCREINFORCED CONCRETE RCBREINFORCED CONCRETE BOX RCCROLLER COMPACTED CONCRETE RCPREINFORCED CONCRETE PIPE RDRoad REINFREINFORCED OR REINFORCEMENT RELOCRELOCATE REVREVISION RGROUGH GRADE RPRADIUS POINT RPMRAISED PAVEMENT MARKER RRRAILROAD RTRIGHT SCHEDSCHEDULE SDSTORM DRAIN SDMHSTORM DRAIN MANHOLE SFSQUARE FOOT/SQUARE FEET SHLD SHOULDER SHTSHEET SHPSSTEEL HIGH PRESSURE PIPE SMFOSINGLE MODE FIBER OPTIC SNWASOUTHERN NEVADA WATER AUTHORITY SQSQUARE SSSANITARY SEWER OR SIDE SLOPE SSDSUMMERLIN STANDARD DRAWING SSTSTAINLESS STEEL STSTREET STASTATION STDSTANDARD STLSTEEL STLTSTREETLIGHT SDHWSTORM DRAIN HEADWALL STRUCTSTRUCTURAL OR STRUCTURE SUM #COWRD MANHOLE NUMBER SURVSURVEY SVZSIGHT VISIBILITY ZONE SWSIDEWALK SY SQUARE YARD T TELEPHONE LINE TANTANGENT TBTOP OF BOX TBATO BE ADJUSTED TBCTOP OF BACK OF CURB TBRTO BE REMOVED TC TOP OF CURB TCDTraffic Control Device TDS TECHNICAL DRAINAGE STUDY TEL TELEPHONE TEMPTEMPORARY TF TOP OF FOOTING THKTHICK THRTHRUST THWTOP OF HEADWALL TOFTOP OF FACE TOP TOP OF BANK TW/TOWTOP OF WALL TP TOP OF PIPE TRANS TRANSITION TS TRAFFIC SIGNAL TSITraffic Signal Interconnect TW TOP OF WALL TYP TYPICAL UDACSUNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS UGUNDERGROUND UGPUNDERGROUND POWER UIEUPPER INVERT ELEVATION UNO UNLESS NOTED OTHERWISE UPRRUNION PACIFIC RAILROAD USDUNIFORM STANDARD DRAWING UTACSULTRA THIN ASPHALT CONCRETE SURFACE USTCODEUTILITY, STREETLIGHT, TRAFFIC CONTROL DEVICE EASEMENT V VOLT VARVARIABLE VCVERTICAL CURVE VCPVITRIFIED CLAY PIPE VERT VERTICAL VGVALLEY GUTTER W WEST, WATER W/ WITH WB WEST BOUND WL WATER LINE WM WATER METER W/O WITHOUT WPJWEAKENED PLANE JOINT WV WATER VALVE WW WING WALL YD YARD(S)	EXISTING PROPOSED DAYLIGHT LINE FLOWLINE CENTERLINE PARCEL LINE RIGHT OF WAY PAVEMENT STRIPING OVERHEAD POWER UNDERGROUND POWER SANITARY SEWER WATER STORM DRAIN GAS CABLE T.V. TELEPHONE STREETLIGHT CONDUIT STOP BAR CONCRETE ENCASEMENT FENCE BLOCK WALL RETAINING WALL SAWCUT PAVEMENT CONTOUR SPOT ELEVATION CURB AND GUTTER EDGE OF PAVEMENT EASEMENT MATCHLINE SIGN DOUBLE POST SIGN STORM DRAIN MANHOLE STORM DRAIN STRUCTURE DROP INLET BEEHIVE INLET SEWER MANHOLE FIRE HYDRANT CAP AND BLOWOFF GATE VALVE REDUCER STREETLIGHT PULLBOX SIGNAL POLE ELEVATION WATER PRESSURE ZONE BOUNDARY WATER PRESSURE ZONE HARDSCAPE 15" SS 24"W (3550) STLT 3005 3011.6 3011.6 3550 FUTURE
---	---

ROADWAY ALIGNMENT DESIGNATIONS

"KCA" = KESTREL CREEK AVENUE
"DFD" = DESERT FOOTHILLS DRIVE
"KRD" = KETTLE RIDGE DRIVE
"CPW" = CLOWDER PASS WAY
"KBR" = KETTLE BEND ROAD

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT

PROJECT NO. 136892 FIRST APPROVED DATE: _____

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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

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

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

PAULA BATES
ENGINEER-STATE OF NEVADA
No. 1872

10/15/19

NOTE TO CONTRACTOR

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

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.

DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
HORIZ.: NONE
VERT.: NONE

100060654
OCTOBER, 2019
DRAWING NO.
2 / 31

CLV 00-00000

REVISIONS		BY	DATE	APPROVAL
DESCRIPTION				
REV.				

ATKINS

2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7725
Fax: +1702.263.7200

SUMMERLIN

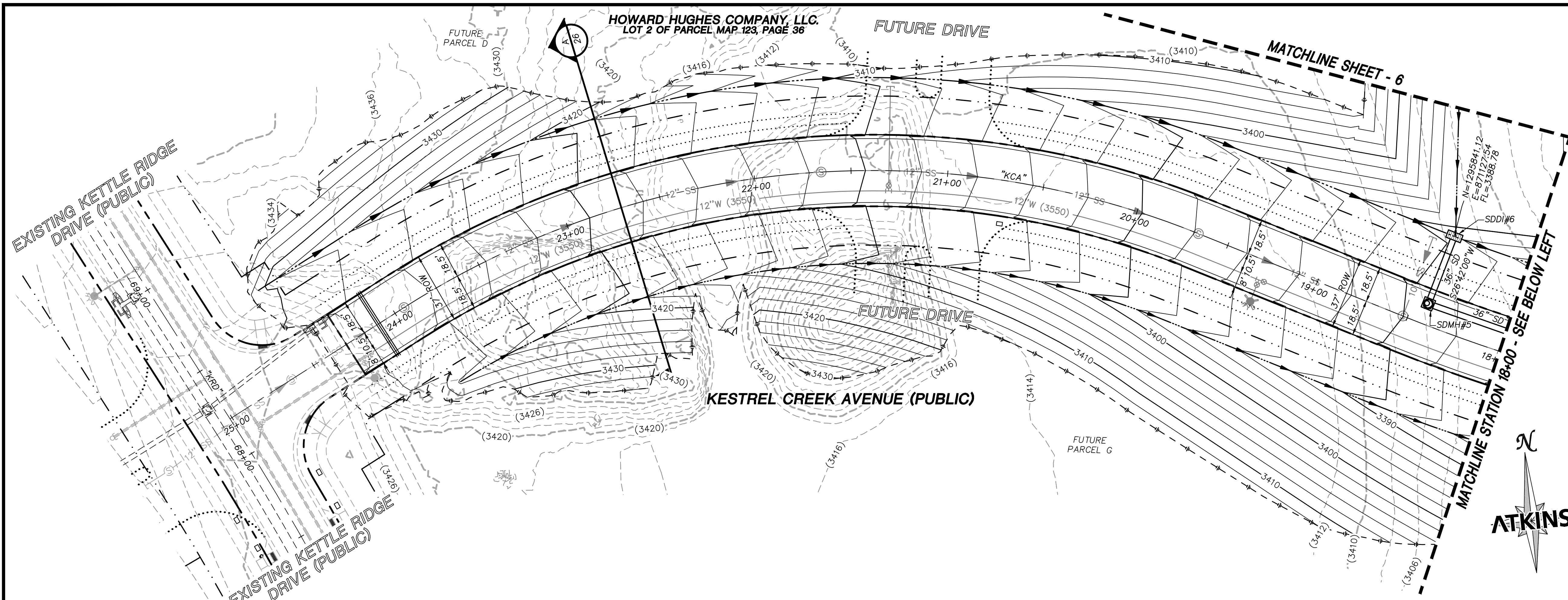
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

SUMMERLIN VILLAGE 22

KESTREL CREEK AVENUE (STREET I)

LEGEND AND ABBREVIATIONS

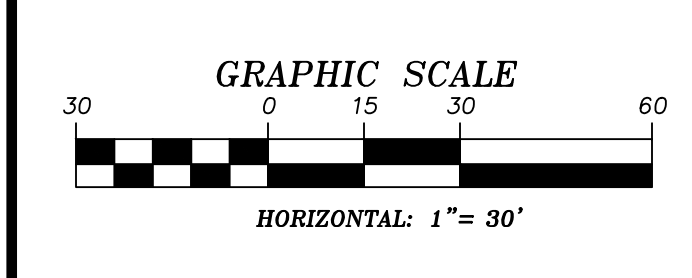
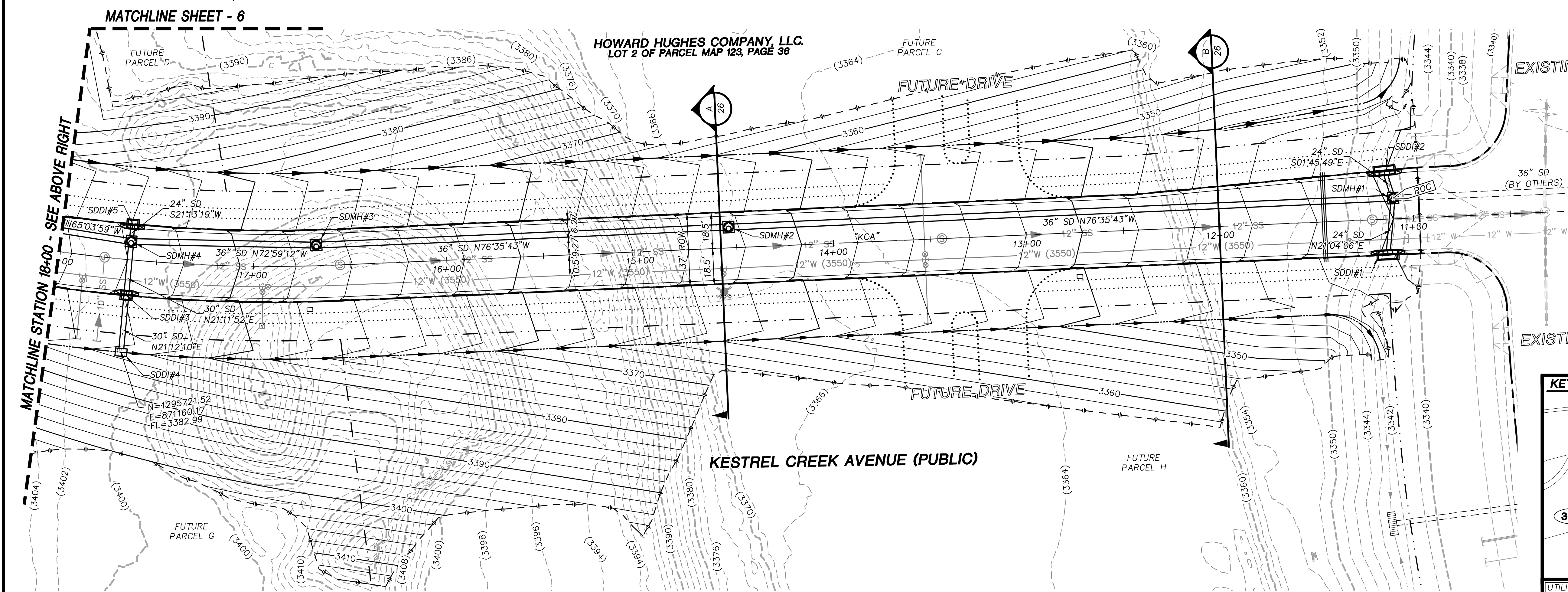
DESIGNED BY:	N. BARCOS
DRAWN BY:	L. MAMACLAY
CHECKED BY:	P. BATES
HORIZ.:	NONE
VERT.:	NONE



SUMMARY OF QUANTITIES		
DESCRIPTION	QUANTITY	UNIT
DRAINAGE		
4' X 6' NDOT TYPE 2 DROP INLET	1	EA
4' X 8' NDOT TYPE 2 DROP INLET	1	EA
5' TYPE CM2 SDDI	2	EA
10' TYPE CM2 SDDI	2	EA
TYPE III SDMH	5	EA
24" RCP CLASS III	54	LF
30" RCP CLASS III	58	LF
36" RCP CLASS III	115	LF
36" RCP CLASS IV	653	LF

MASTER PLAN NOTE
THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY. IT IS AN OVERALL REPRESENTATION OF THE UTILITY FOR REVIEW AND COORDINATION WITH OTHER PROJECT DETAILS WITHIN THIS PLAN SET.

- STORM DRAIN NOTES**
- SEE ROADWAY PLAN AND PROFILE SHEETS FOR CONSTRUCTION DETAILS.
 - 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 INSIDE WALL OF STORM DRAIN STRUCTURES.



SOILS REPORT
BY NOVA
PROJECT NO. G-18-176
DATED 12/03/18
EARTHWORK QUANTITIES (RAW):
CUT= 105,700 CU YDS
FILL= 146,900 CU YDS

GRADING PLAN CERTIFICATION
PAUL BATES PE#18723 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#5171

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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)
NAVOD88 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.
TZ15RS9E.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

KEYMAP

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: +1702.263.7275
Fax: +1702.263.7200

SUMMERLIN

MASTER DRAINAGE PLAN

SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET J)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
HORIZ.: 1"=30'
VERT.: NONE

JOB NO. 100060654
DATE: OCTOBER, 2019
DRAWING NO. 5 / 31
CLV 00-00000

REVISIONS

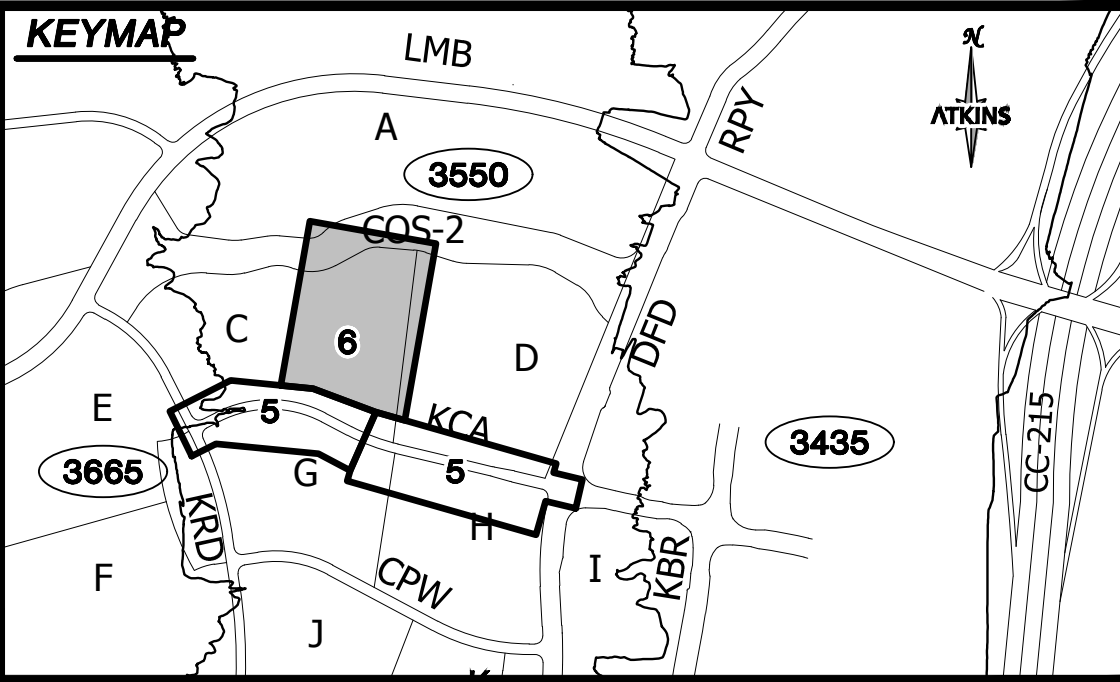
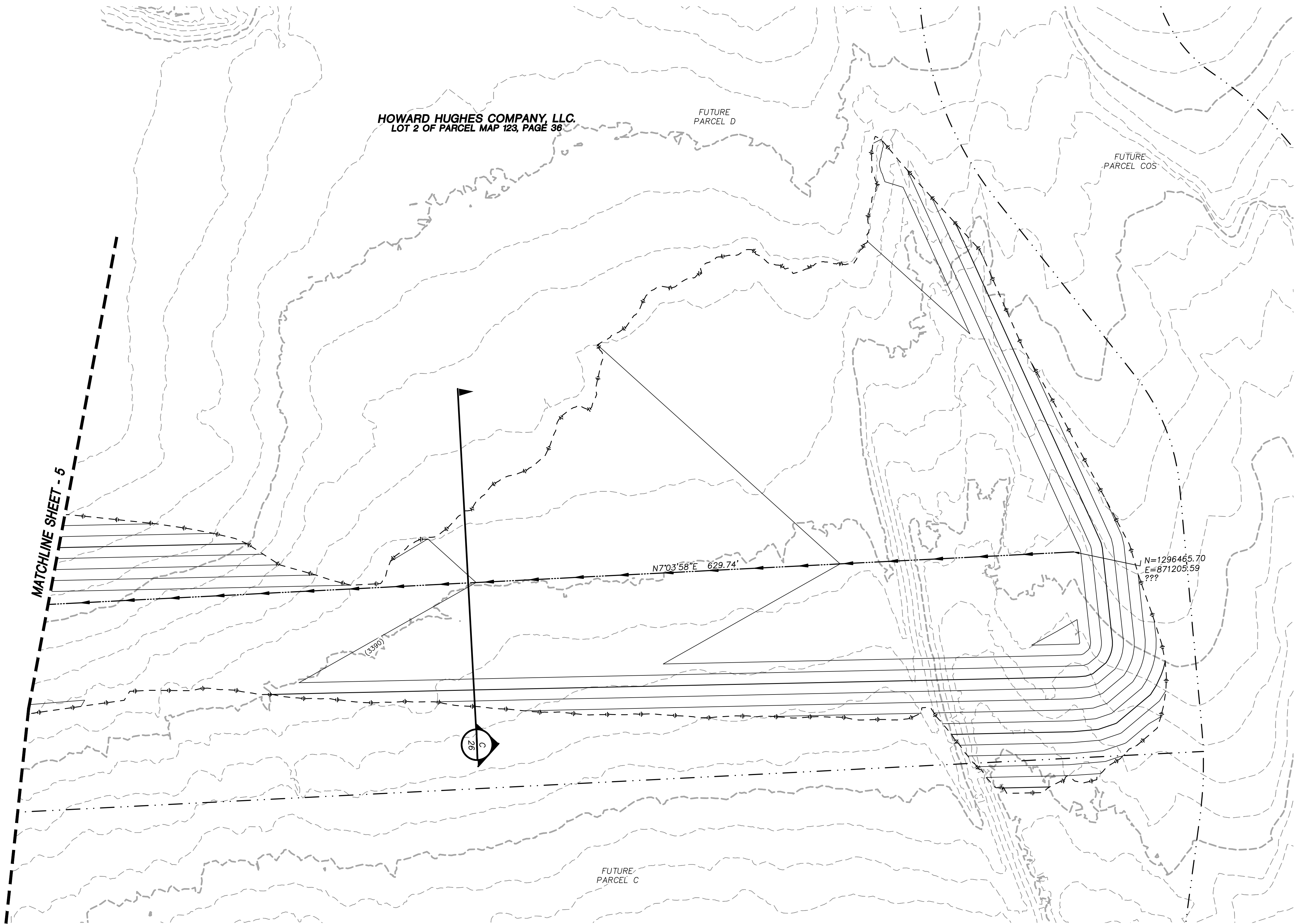
REV.	DESCRIPTION	DATE	APPROVAL

X:\Projects\Summerlin Village 22\100060654 - V22N Street J (Desert Foothills to Street J)\Sheets\60654-06-STRW-SD1.dwg LAYOUT: MASTER DRAINAGE PLAN Oct 15, 2019 - 6:53PM

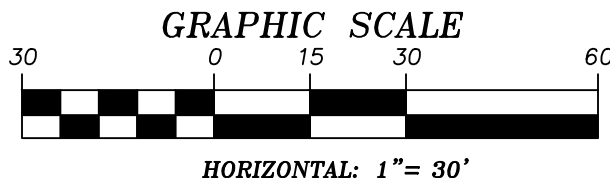
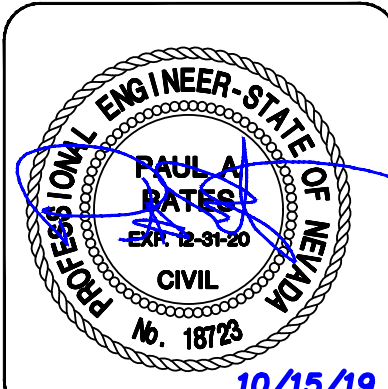
MASTER PLAN NOTE
THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY. IT IS AN OVERALL REPRESENTATION OF THE UTILITY FOR REVIEW AND COORDINATION WITH OTHER PROJECT DETAILS WITHIN THIS PLAN SET.

STORM DRAIN NOTES

1. SEE ROADWAY PLAN AND PROFILE SHEETS FOR CONSTRUCTION DETAILS.
2. ALL STORM DRAIN MATERIAL TO BE CLASS III REINFORCED CONCRETE PIPE, UNLESS OTHERWISE NOTED IN PROFILES.
3. CONTRACTOR TO PROVIDE 6" MINIMUM OF CLEARANCE BETWEEN OUTSIDE OF PIPE TO INSIDE WALL OF STORM DRAIN STRUCTURES.



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.



SOILS REPORT
BY NOVA
PROJECT NO. G-18-176
DATED 12/03/18
EARTHWORK QUANTITIES (RAW):
CUT= 105,700 CU YDS
FILL= 146,900 CU YDS

GRADING PLAN CERTIFICATION
PAUL BATES PE#18723 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#5171

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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.
TZ15R59E.S03



DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
HORIZ.: 1"=30'
VERT.: NONE
JOB NO. 100060654
DATE: OCTOBER, 2019
DRAWING NO. 6 / 31
CLV 00-00000

SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET I)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

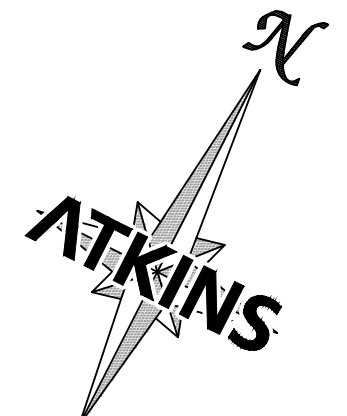
MASTER DRAINAGE PLAN



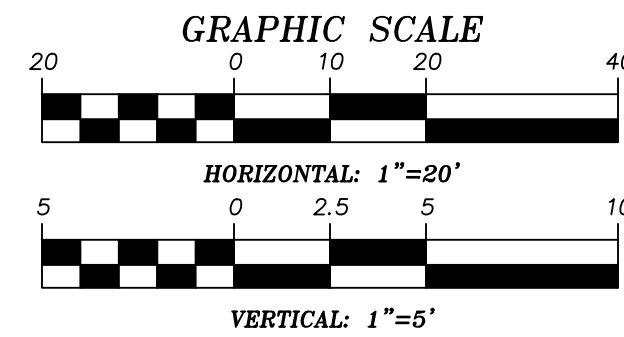
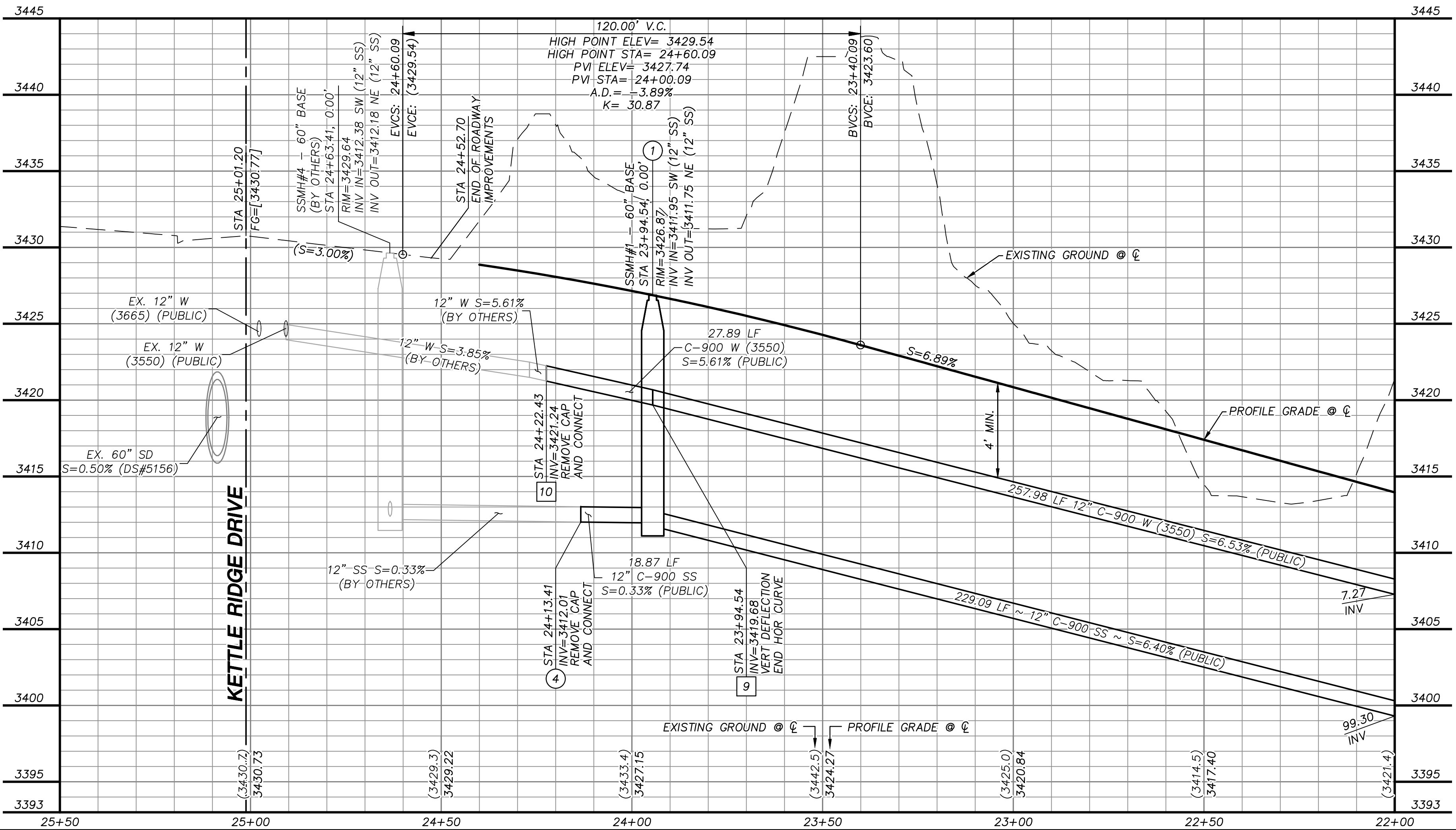
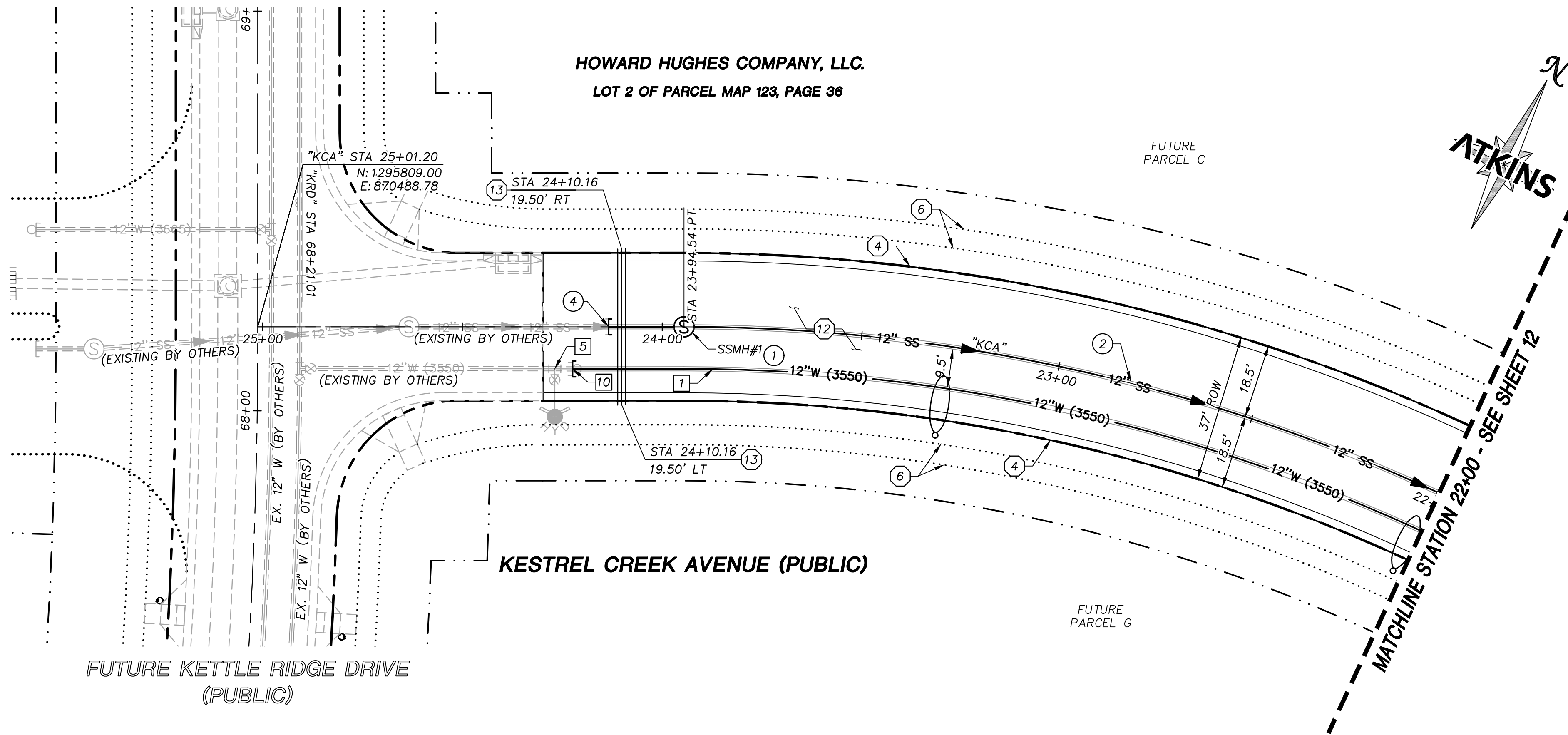
ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7275
Fax: +1702.263.7200

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL



CLV	00-00000	JOB NO. 100060654	DESIGNED BY: N. BARCOS
		DATE: OCTOBER, 2019	DRAWN BY: L. MAMACLAY
		DRAWING NO.	CHECKED BY: P. BATES
		9 /31	HORIZ.: 1"=20' VERT.: NONE



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT

PROJECT NO. 136924 FIRST APPROVED DATE: _____

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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

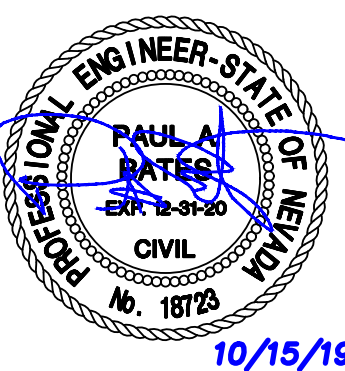
FAST

Call before you Dig
Call 811
1-702-432-5300

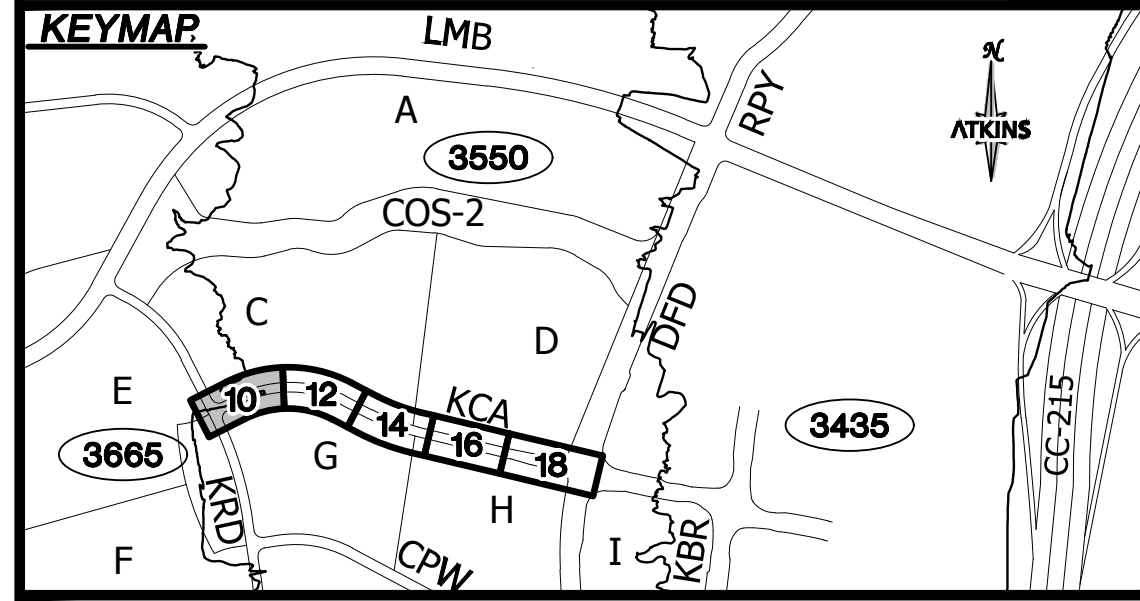
Call before you Dig
Call 811
1-800-642-2444

CALL BEFORE YOU DIG
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.



DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
DATE: OCTOBER, 2019
DRAWING NO. 10 / 31
JOB NO. 100060654
CLV 00-00000



- ROADWAY CONSTRUCTION NOTES**
- SAWCUT AND MATCH EXISTING
 - NOT USED
 - NOT USED
 - CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
 - NOT USED
 - FUTURE SIDEWALK BY OTHERS
 - CONSTRUCT CONCRETE SIDEWALK PER CCAUSD #234
 - CONSTRUCT CURB RAMP, TYPE A, PER NDOT STANDARD PLAN R-5.2.1 (A=B=6.5').
 - CONSTRUCT 0" FLUSH CURB
 - TRANSITION CURB FROM FULL HEIGHT (6") TO FLUSH (0")
 - NOT USED
 - CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 26 FOR TYPICAL PAVEMENT SECTION.
 - INSTALL SCHEDULE 40 PVC IRRIGATION SLEEVES (2-4", 1-6") PER DETAIL C ON SHEET 21

- WATERLINE CONSTRUCTION NOTES**
- INSTALL WATER MAIN PER UDACS PLATES #17 AND PLATE #19
 - INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
 - INSTALL CROSS PER UDACS PLATE #31
 - INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
 - INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
 - INSTALL 11.25' HORIZONTAL BEND PER UDACS PLATE #31
 - INSTALL COMBINATION AIR VALVE ASSEMBLY WITH ALL APPURTENANCES PER UDACS PLATE #38
 - INSTALL DEFLECTION AT PIPE JOINTS (MAXIMUM 1')
 - REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE STUB
 - INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATES #30, #31, #39, AND #40

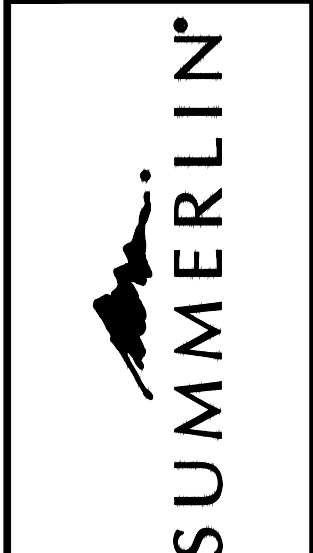
- SEWER CONSTRUCTION NOTES**
- INSTALL SEWER MANHOLE PER DCSWCS SD-1, AND SD-4
 - INSTALL SEWER MAIN PER DCSWCS SD-17
 - STUB AND CAP SEWER PIPE. PLACE MARKER BALL AND 4"x4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
 - REMOVE CAP AND CONNECT TO EXISTING SEWER STUB
 - ADJUST EXISTING MANHOLE TO GRADE PER DCSWCS SD-5.
 - PROTECT SEWER AT UTILITY CROSSING PER DCSWCS SD-19

- STORM DRAIN CONSTRUCTION NOTES**
- INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
 - INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
 - INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
 - INSTALL TYPE I SD MANHOLE PER CCAUSD #403
 - INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
 - INSTALL TYPE III SD MANHOLE PER CCAUSD #406
 - REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
 - INSTALL RIP-RAP (D50=8", THICKNESS=24")

REV.	DESCRIPTION	BY	DATE	APPROVAL

ATKINS

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



SUMMERLIN VILLAGE 22

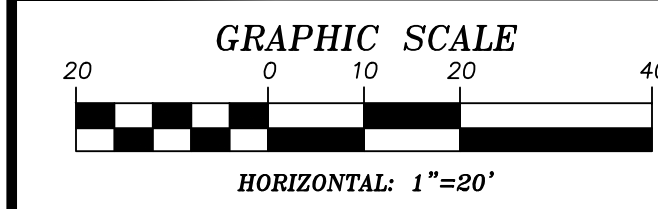
KESTREL CREEK AVENUE (STREET I)

DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

ROADWAY PLAN AND PROFILE

STA 22+00 TO END

X:\Projects\Summerlin\ Village 22\100060654 - V22N Street I (Desert Foothills to Street J)\Sheets\60654-09-PLAN-P1.dwg LAYOUT: ROADWAY PLAN AND PROFILE 1 Oct 15, 2019 - 6:53PM



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT

PROJECT NO. 136924 FIRST APPROVED DATE: _____

GRADING PLAN CERTIFICATION

PAUL BATES PE#18723 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#5171

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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.
TZ15.R59E.S03

FAST

Call before you Dig

UnderGround

1-702-432-5300

Call before you Dig

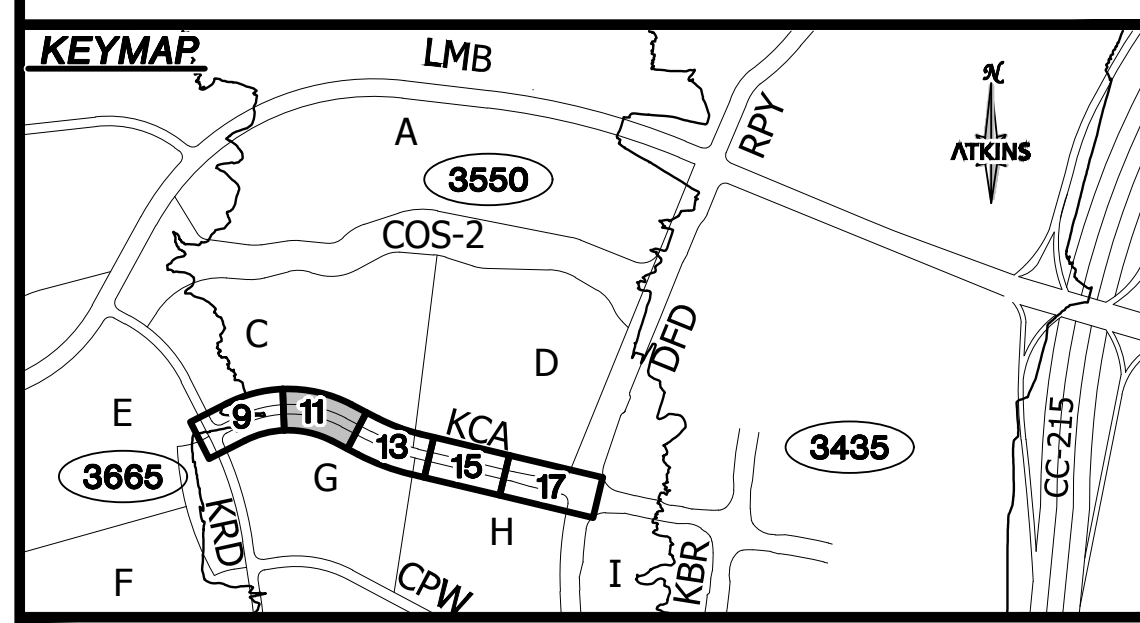
811

1-800-642-2444

CALL BEFORE YOU DIG

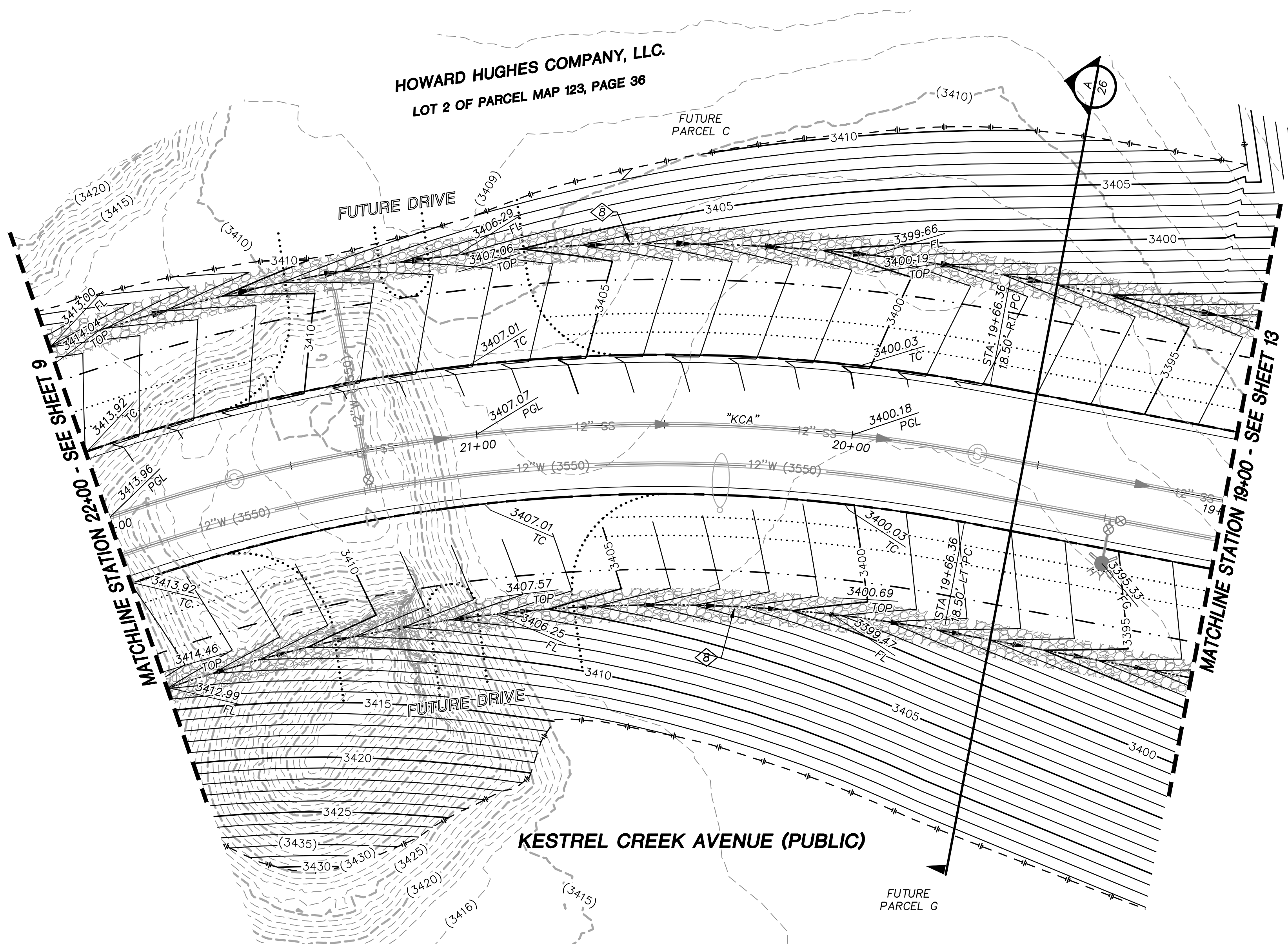
UNDERGROUND

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.

PAUL A. BATES
ENGINEER-STATE OF NEVADA
No. 18725
10/15/19



- STORM DRAIN CONSTRUCTION NOTES**
1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
 2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
 3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
 4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
 5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
 6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
 7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
 8. INSTALL RIP-RAP (D50=8", THICKNESS=24")

ATKINS

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

SUMMERLIN

SUMMERLIN VILLAGE 22

KESTREL CREEK AVENUE (STREET J)

DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

ROADWAY GRADING PLAN

STA 19+00 TO STA 22+00

DESIGNED BY: N. BARCOS

DRAWN BY: L. MAMACLAY

CHECKED BY: P. BATES

HORIZ.: 1"=20'

VERT.: NONE

DOB NO. 100060654

DATE: OCTOBER, 2019

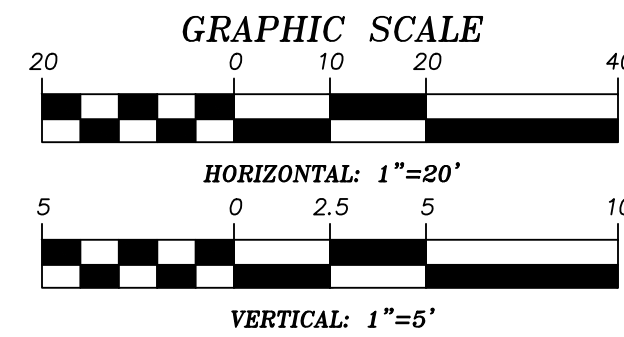
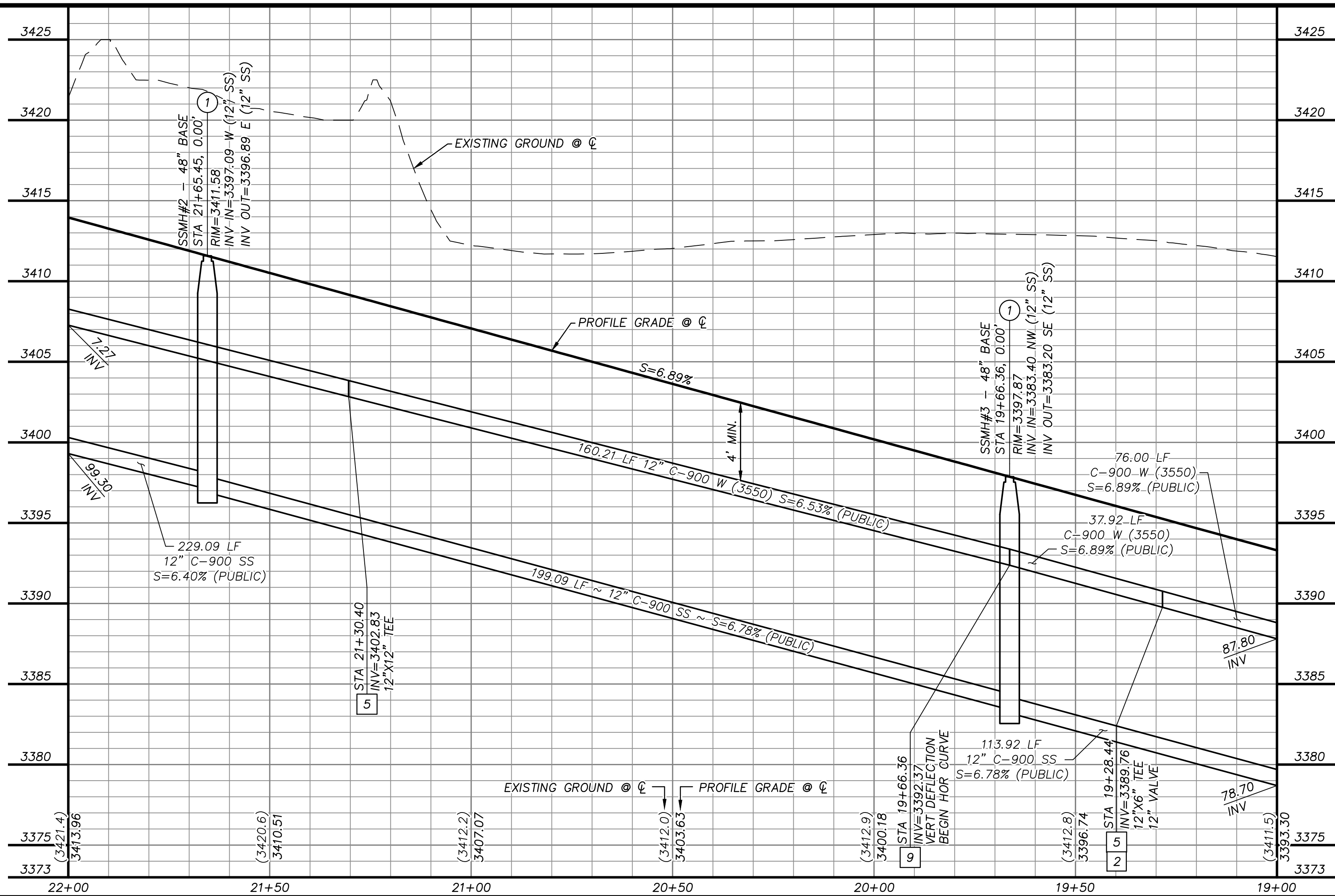
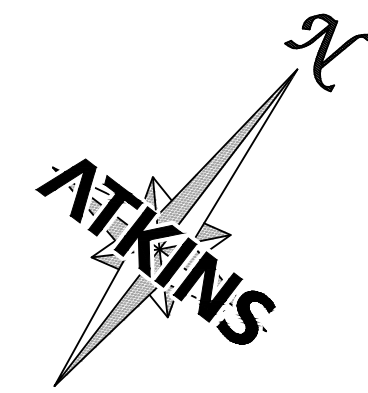
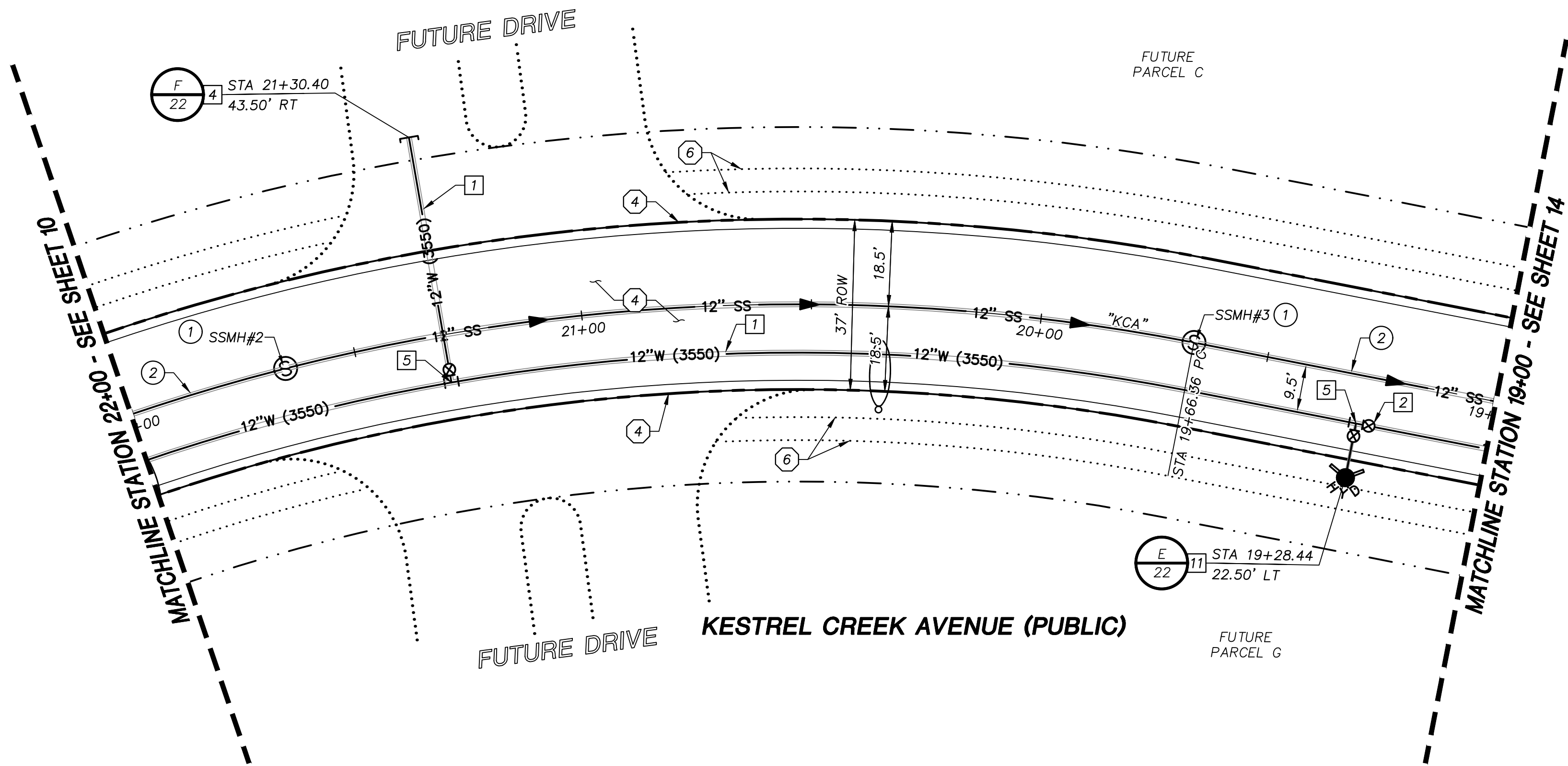
DRAWING NO. 00-00000

CLV 11 / 31

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

X: \Projects\Summerlin Village 22\100060654 - V22N Street\Desert Foothills to Street J\Sheets\60654-08-GRAD-GI.dwg LAYOUT: 12 Oct 15, 2019 - 6:53PM



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT

PROJECT NO. 136924 FIRST APPROVED DATE: _____

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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

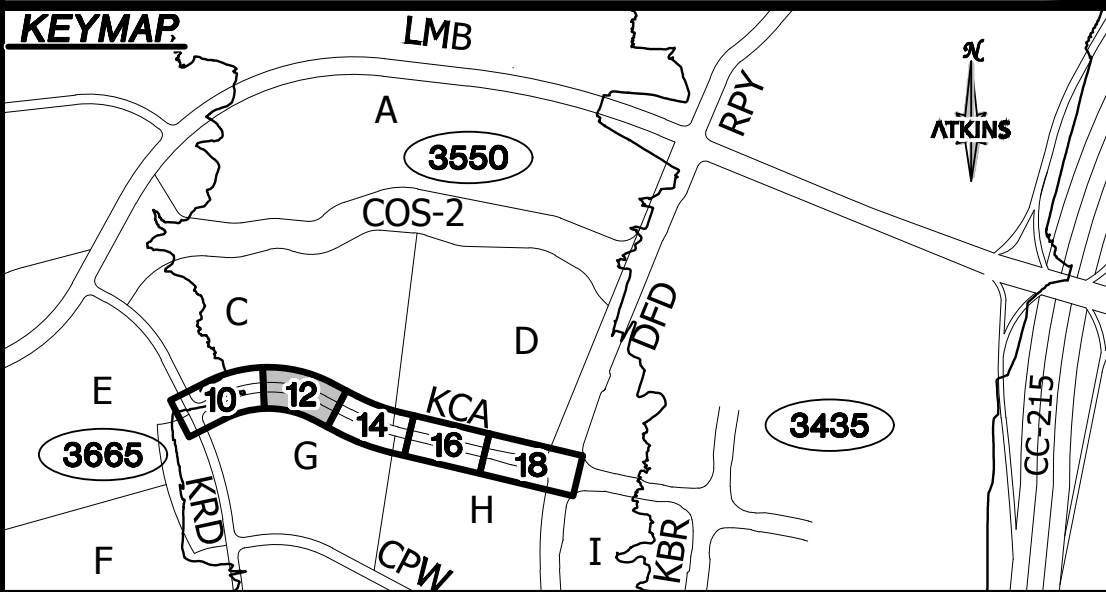
Call before you Dig
1-702-432-5300

Call before you Dig
1-800-642-2444

CALL BEFORE YOU DIG
1-702-227-2929

- ### STORM DRAIN CONSTRUCTION NOTES
1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
 2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
 3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
 4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
 5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
 6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
 7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
 8. INSTALL RIP-RAP (D50=8", THICKNESS=24")
- ### SEWER CONSTRUCTION NOTES
1. INSTALL SEWER MANHOLE PER DCSWCS SD-1, AND SD-4
 2. INSTALL SEWER MAIN PER DCSWCS SD-17
 3. STUB AND CAP SEWER PIPE. PLACE MARKER BALL AND 4"x4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
 4. REMOVE CAP AND CONNECT TO EXISTING SEWER STUB
 5. ADJUST EXISTING MANHOLE TO GRADE PER DCSWCS SD-5.
 6. PROTECT SEWER AT UTILITY CROSSING PER DCSWCS SD-19
- ### WATERLINE CONSTRUCTION NOTES
1. INSTALL WATER MAIN PER UDACS PLATES #17 AND PLATE #19
 2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
 3. INSTALL CROSS PER UDACS PLATE #31
 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
 7. INSTALL 11.25' HORIZONTAL BEND PER UDACS PLATE #31
 8. INSTALL COMBINATION AIR VALVE ASSEMBLY WITH ALL APPURTENANCES PER UDACS PLATE #38
 9. INSTALL DEFLECTION AT PIPE JOINTS (MAXIMUM 1')
 10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE STUB
 11. INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATES #30, #31, #39, AND #40

- ### ROADWAY CONSTRUCTION NOTES
1. SAWCUT AND MATCH EXISTING
 2. NOT USED
 3. NOT USED
 4. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
 5. NOT USED
 6. FUTURE SIDEWALK BY OTHERS
 7. CONSTRUCT CONCRETE SIDEWALK PER CCAUSD #234
 8. CONSTRUCT CURB RAMP, TYPE A, PER NDOT STANDARD PLAN R-5.2.1 (A=B=6.5').
 9. CONSTRUCT 0" FLUSH CURB
 10. TRANSITION CURB FROM FULL HEIGHT (6") TO FLUSH (0")
 11. NOT USED
 12. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 26 FOR TYPICAL PAVEMENT SECTION.
 13. INSTALL SCHEDULE 40 PVC IRRIGATION SLEEVES (2-4", 1-6") PER DETAIL C ON SHEET 21



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.

DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
DATE: OCTOBER, 2019
HORIZ.: 1"=20'
VERT.: 1"=5'

CLV 00-00000

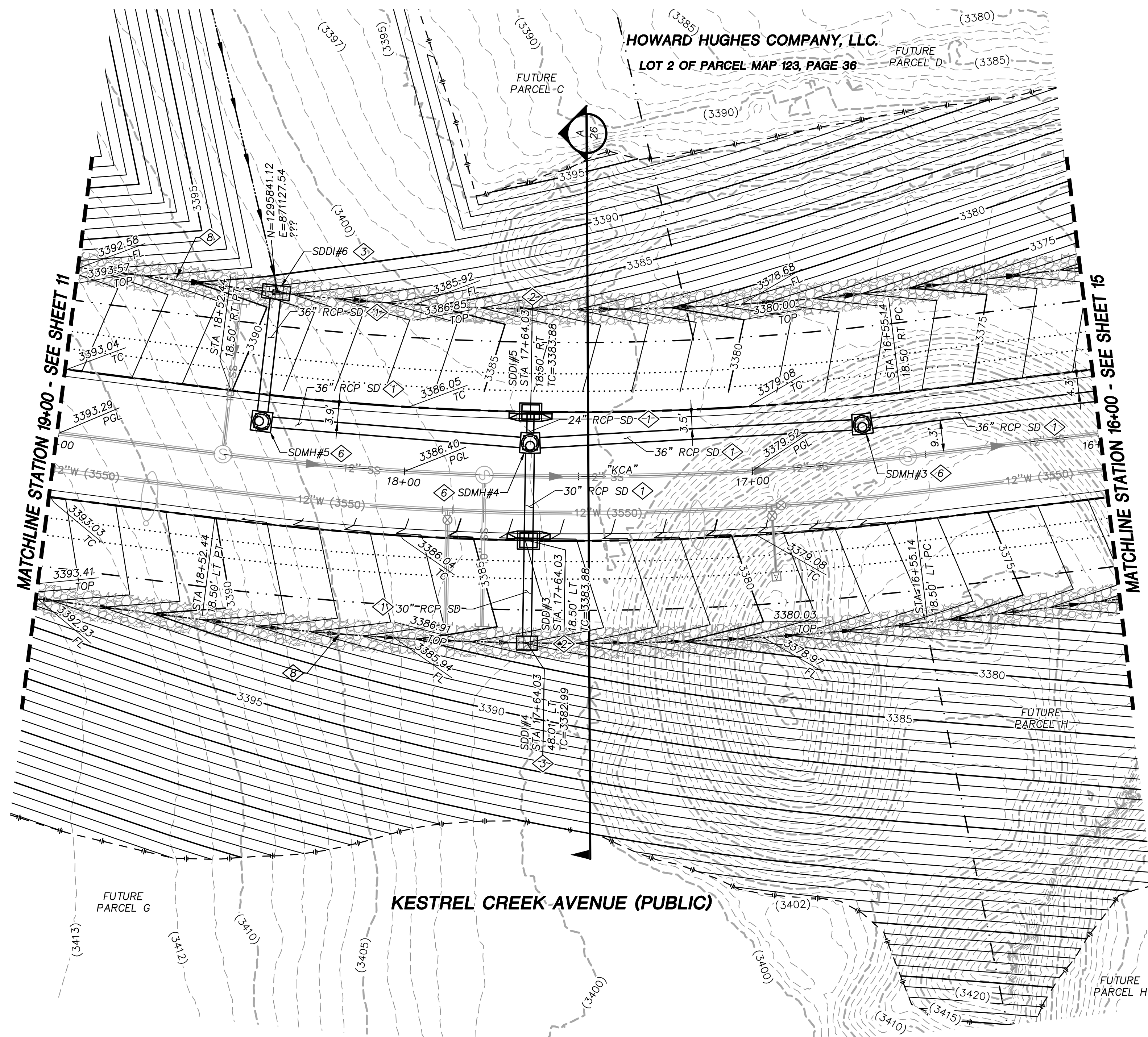
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7275
Fax: +1702.263.7200

SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET J)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

ROADWAY PLAN AND PROFILE
STA 19+00 TO STA 22+00

DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
DATE: OCTOBER, 2019
HORIZ.: 1"=20'
VERT.: 1"=5'

CLV 00-00000



- STORM DRAIN CONSTRUCTION NOTES**
1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
 2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
 3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
 4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
 5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
 6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
 7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
 8. INSTALL RIP-RAP (D50=8", THICKNESS=24")

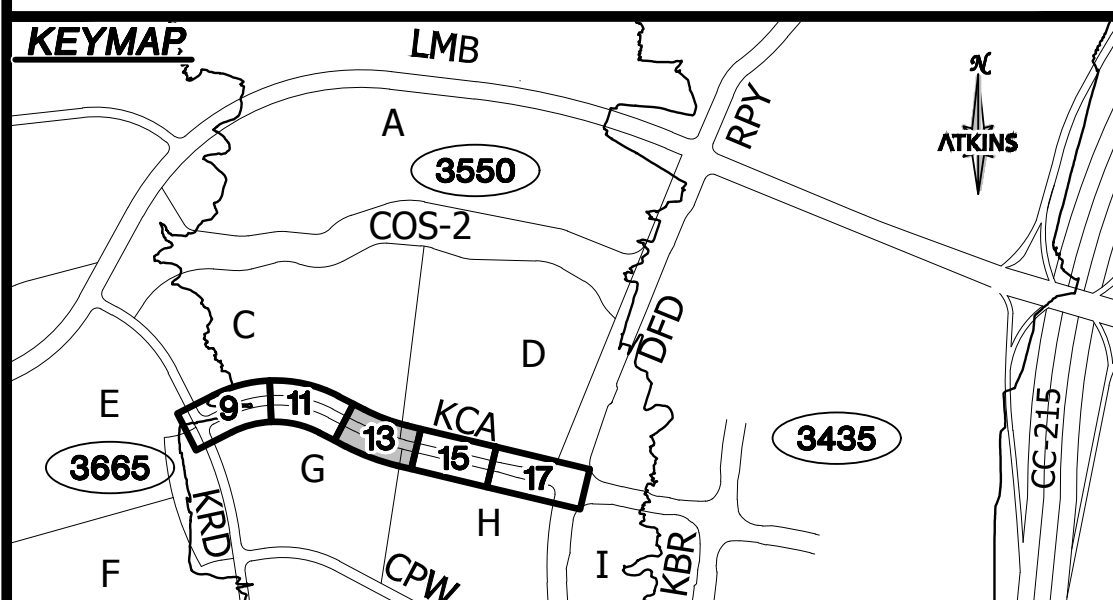
REVISIONS	
REV.	DESCRIPTION

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

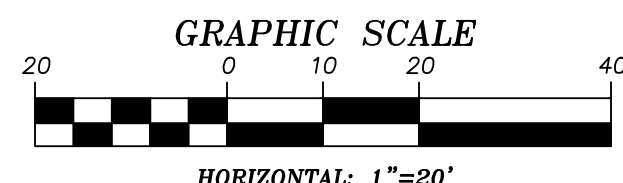
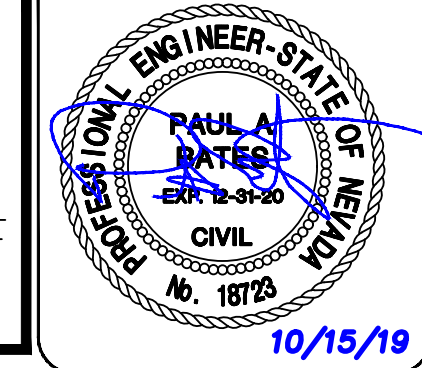
SUMMERLIN

SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET J)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)
ROADWAY GRADING PLAN
STA 16+00 TO STA 19+00

DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
DATE: OCTOBER, 2019
HORIZ.: 1"=20'
VERT.: NONE
JOB NO.: 100060654
CLV: 00-00000
DRAWING NO.: 13 / 31



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.



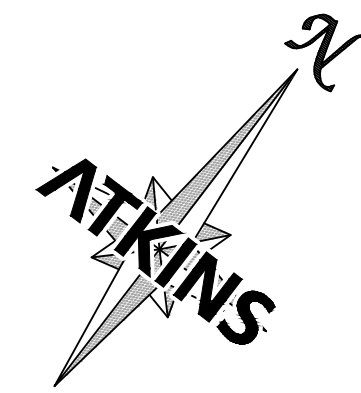
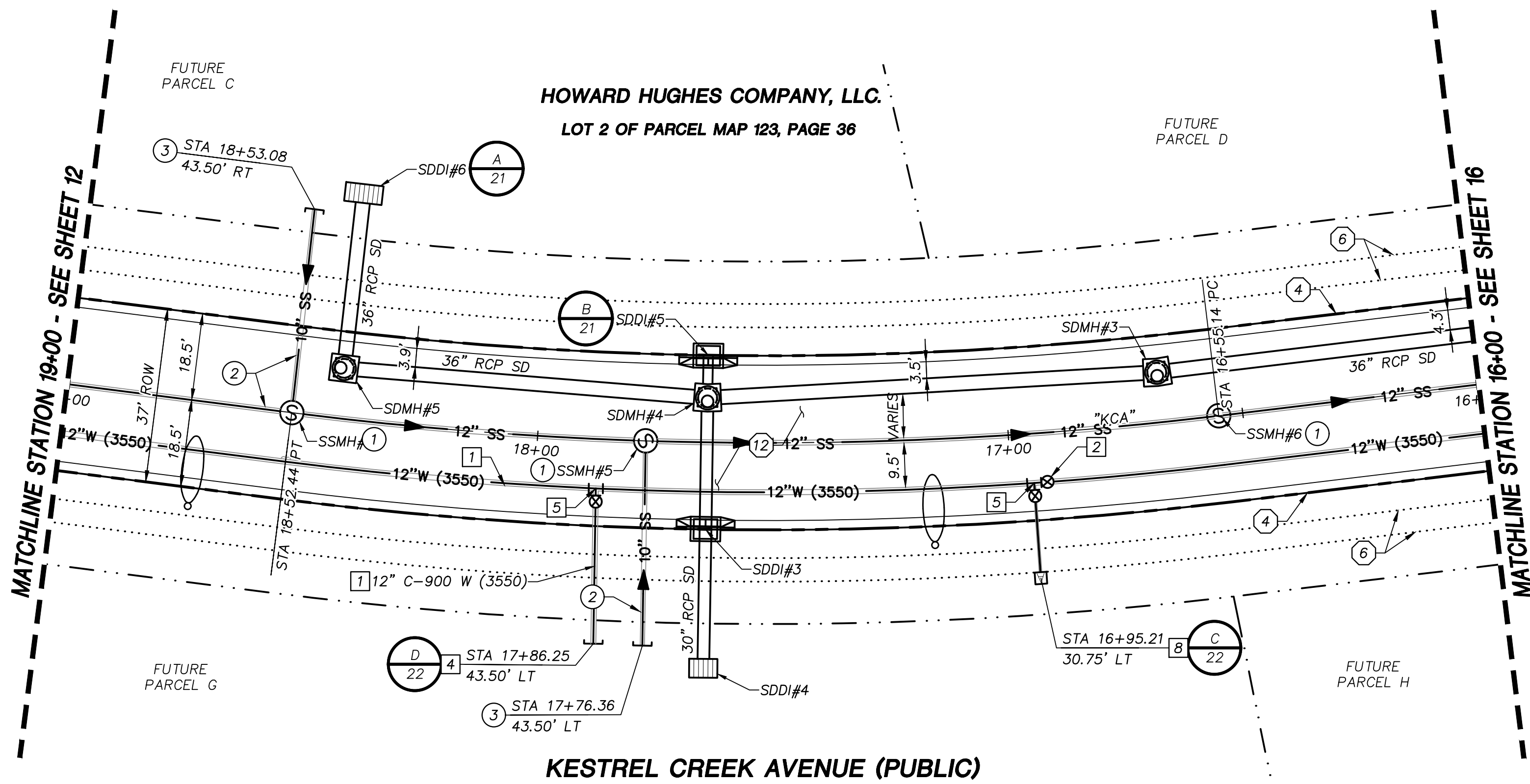
APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT
PROJECT NO. 136924 FIRST APPROVED DATE: _____

GRADING PLAN CERTIFICATION
PAUL BATES PE#18723 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#5171

BASIS OF BEARING
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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 ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
8. INSTALL RIP-RAP (D50=8", THICKNESS=24")

SEWER CONSTRUCTION NOTES

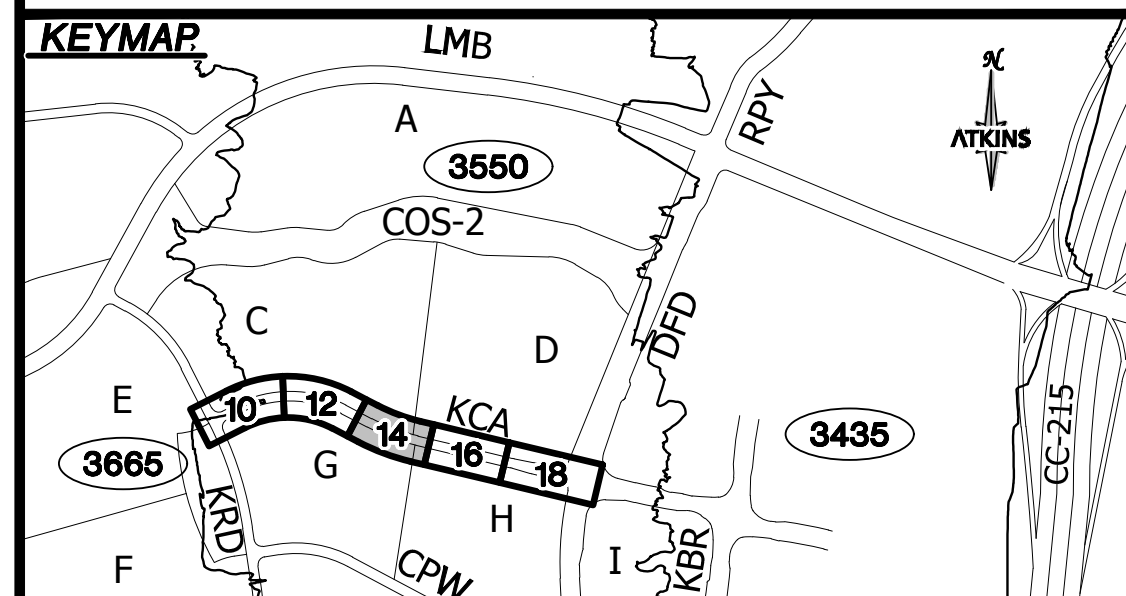
1. INSTALL SEWER MANHOLE PER DCSWCS SD-1, AND SD-4
2. INSTALL SEWER MAIN PER DCSWCS SD-17
3. STUB AND CAP SEWER PIPE. PLACE MARKER BALL AND "4"x" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. REMOVE CAP AND CONNECT TO EXISTING SEWER STUB
5. ADJUST EXISTING MANHOLE TO GRADE PER DCSWCS SD-5.
6. PROTECT SEWER AT UTILITY CROSSING PER DCSWCS SD-19

WATERLINE CONSTRUCTION NOTES

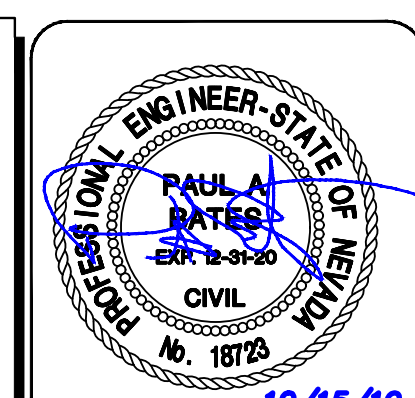
1. INSTALL WATER MAIN PER UDACS PLATES #17 AND PLATE #19
2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
3. INSTALL CROSS PER UDACS PLATE #31
4. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
5. INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
7. INSTALL 11.25' HORIZONTAL BEND PER UDACS PLATE #31
8. INSTALL COMBINATION AIR VALVE ASSEMBLY WITH ALL APPURTENANCES PER UDACS PLATE #38
9. INSTALL DEFLECTION AT PIPE JOINTS (MAXIMUM 1')
10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE STUB
11. INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATES #30, #31, #39, AND #40

ROADWAY CONSTRUCTION NOTES

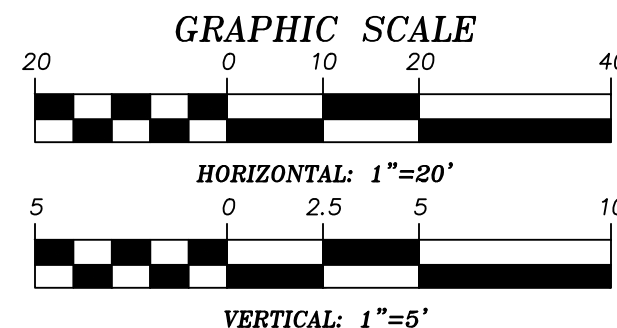
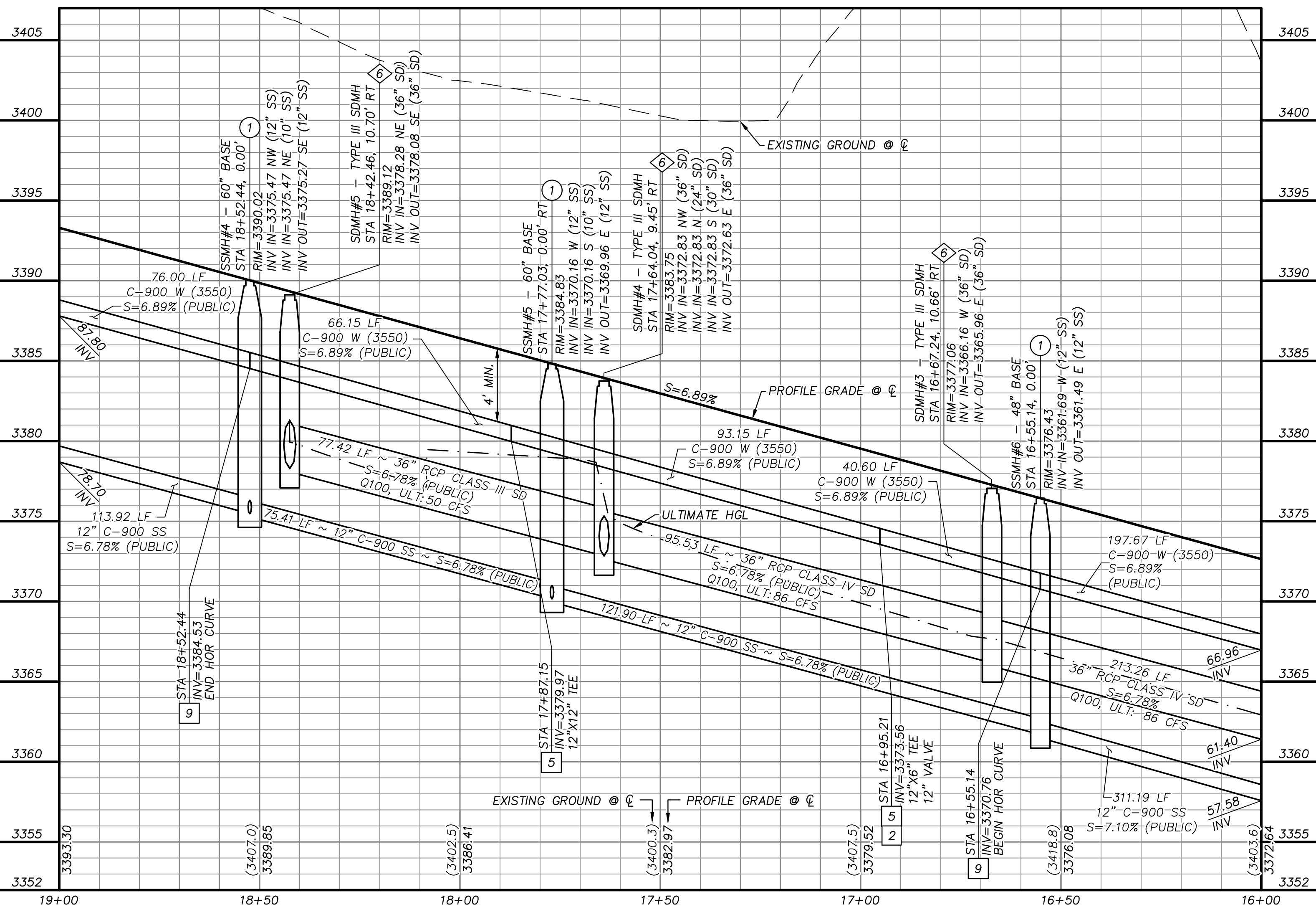
1. SAWCUT AND MATCH EXISTING
2. NOT USED
3. NOT USED
4. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
5. NOT USED
6. FUTURE SIDEWALK BY OTHERS
7. CONSTRUCT CONCRETE SIDEWALK PER CCAUSD #234
8. CONSTRUCT CURB RAMP, TYPE A, PER NDOT STANDARD PLAN R-5.2.1 (A=B=6.5').
9. CONSTRUCT 0" FLUSH CURB
10. TRANSITION CURB FROM FULL HEIGHT (6") TO FLUSH (0")
11. NOT USED
12. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 26 FOR TYPICAL PAVEMENT SECTION.
13. INSTALL SCHEDULE 40 PVC IRRIGATION SLEEVES (2-4", 1-6") PER DETAIL C ON SHEET 21



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.



DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
DATE: OCTOBER, 2019
DRAWING NO.: 14 / 31
JOB NO.: 100060654
CLV: 00-000000



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT
PROJECT NO. 136924 FIRST APPROVED DATE: _____

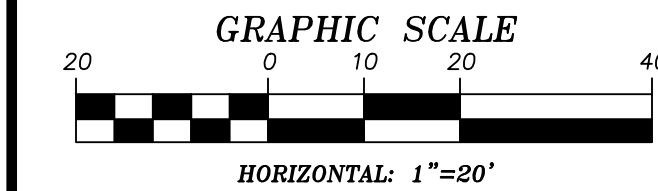
BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS). 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





APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT
PROJECT NO. 136924 FIRST APPROVED DATE: _____

GRADING PLAN CERTIFICATION

PAUL BATES PE#18723 DATE _____

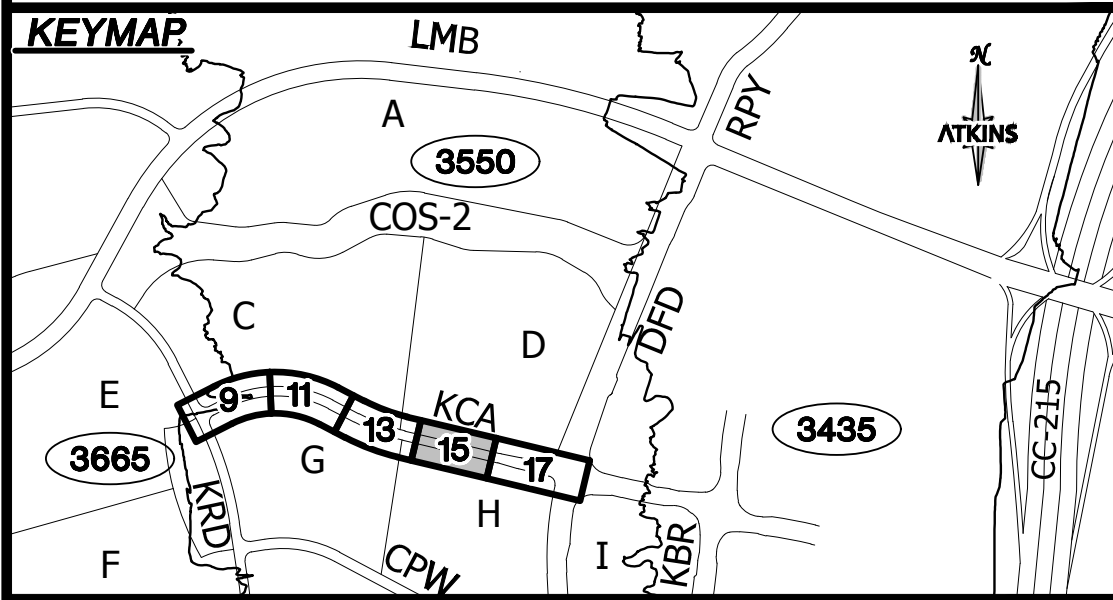
CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.
DS#5171

BASIS OF BEARING

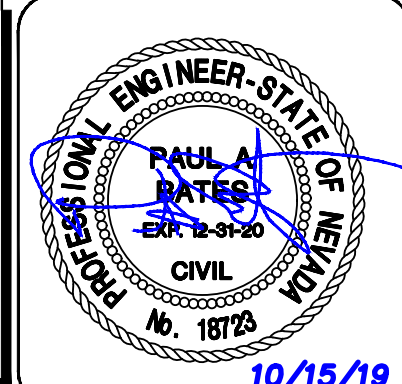
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

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

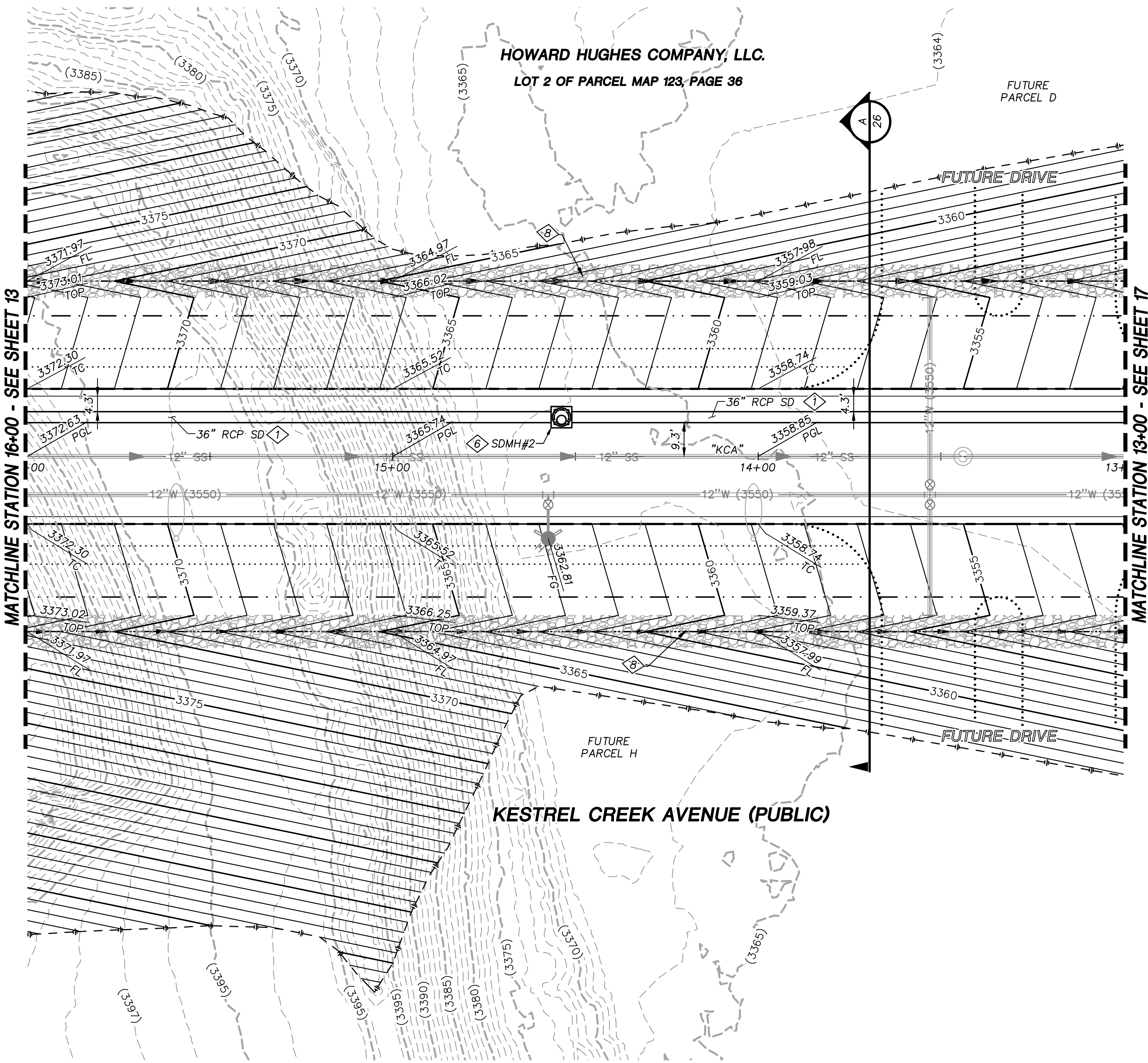


UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER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



DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
HORIZ.: 1"=20'
VERT.: NONE

DOB NO. 100060654
DATE: OCTOBER, 2019
DRAWING NO. 15 / 31
CLV 00-00000



STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
8. INSTALL RIP-RAP (D50=8", THICKNESS=24")

REVISIONS	
REV.	DESCRIPTION

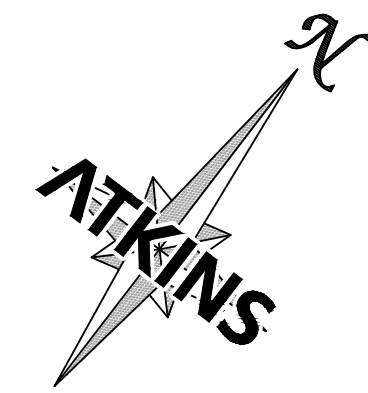
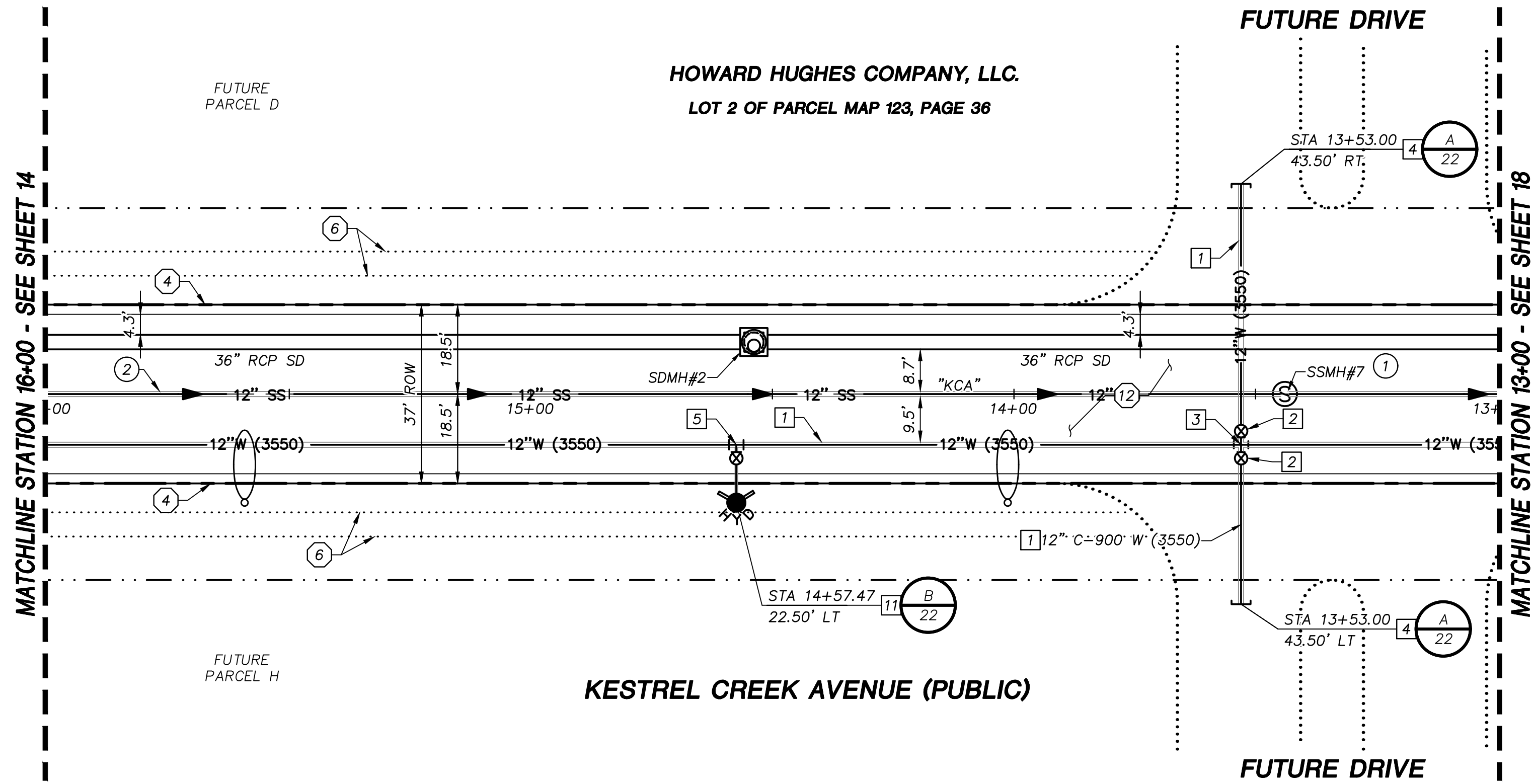
ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7275
Fax: +1702.263.7200



SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET J)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)
ROADWAY GRADING PLAN
STA 13+00 TO STA 16+00

DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
HORIZ.: 1"=20'
VERT.: NONE

DOB NO. 100060654
DATE: OCTOBER, 2019
DRAWING NO. 15 / 31
CLV 00-00000



STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
8. INSTALL RIP-RAP (D50=8", THICKNESS=24")

SEWER CONSTRUCTION NOTES

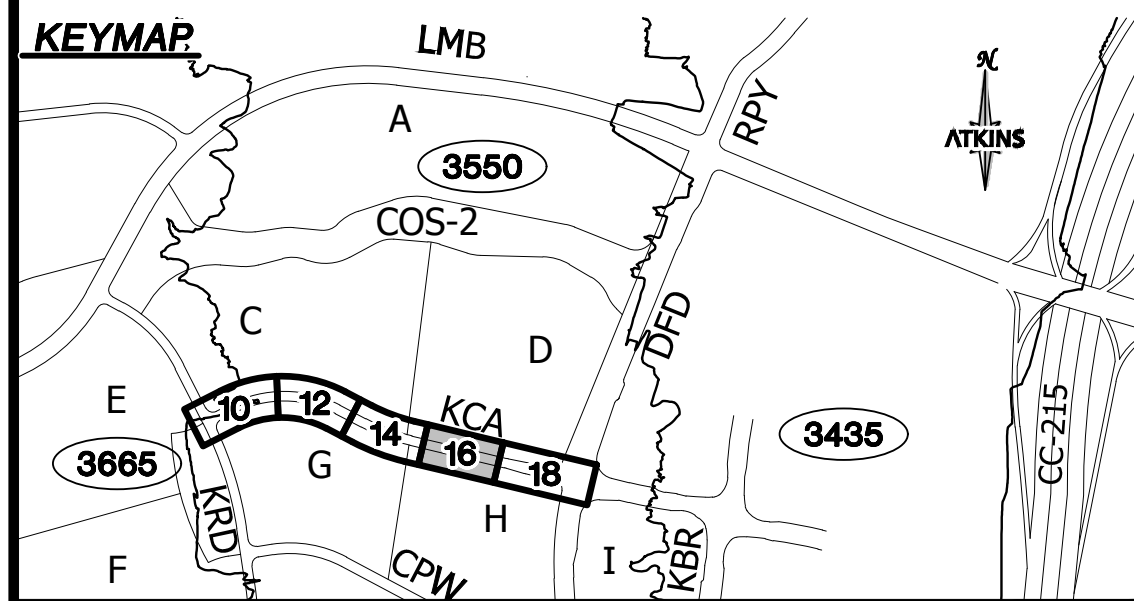
1. INSTALL SEWER MANHOLE PER DCSWCS SD-1, AND SD-4
2. INSTALL SEWER MAIN PER DCSWCS SD-17
3. STUB AND CAP SEWER PIPE. PLACE MARKER BALL AND 4"x4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. REMOVE CAP AND CONNECT TO EXISTING SEWER STUB
5. ADJUST EXISTING MANHOLE TO GRADE PER DCSWCS SD-5.
6. PROTECT SEWER AT UTILITY CROSSING PER DCSWCS SD-19

WATERLINE CONSTRUCTION NOTES

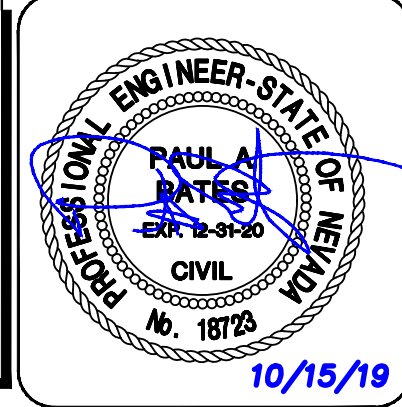
1. INSTALL WATER MAIN PER UDACS PLATES #17 AND PLATE #19
2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
3. INSTALL CROSS PER UDACS PLATE #31
4. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
5. INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
7. INSTALL 11.25' HORIZONTAL BEND PER UDACS PLATE #31
8. INSTALL COMBINATION AIR VALVE ASSEMBLY WITH ALL APPURTENANCES PER UDACS PLATE #38
9. INSTALL DEFLECTION AT PIPE JOINTS (MAXIMUM 1')
10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE STUB
11. INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATES #30, #31, #39, AND #40

ROADWAY CONSTRUCTION NOTES

1. SAWCUT AND MATCH EXISTING
2. NOT USED
3. NOT USED
4. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
5. NOT USED
6. FUTURE SIDEWALK BY OTHERS
7. CONSTRUCT CONCRETE SIDEWALK PER CCAUSD #234
8. CONSTRUCT CURB RAMP, TYPE A, PER NDOT STANDARD PLAN R-5.2.1 (A=B=6.5').
9. CONSTRUCT 0" FLUSH CURB
10. TRANSITION CURB FROM FULL HEIGHT (6") TO FLUSH (0")
11. NOT USED
12. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 26 FOR TYPICAL PAVEMENT SECTION.
13. INSTALL SCHEDULE 40 PVC IRRIGATION SLEEVES (2-4", 1-6") PER DETAIL C ON SHEET 21



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.



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

SUMMERLIN

SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET J)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

ROADWAY PLAN AND PROFILE
STA 13+00 TO STA 16+00

DESIGNED BY:
N. BARCOS

DRAWN BY:
L. MAMACLAY

CHECKED BY:
P. BATES

HORIZ.: 1"=20'

VERT.: 1"=5'

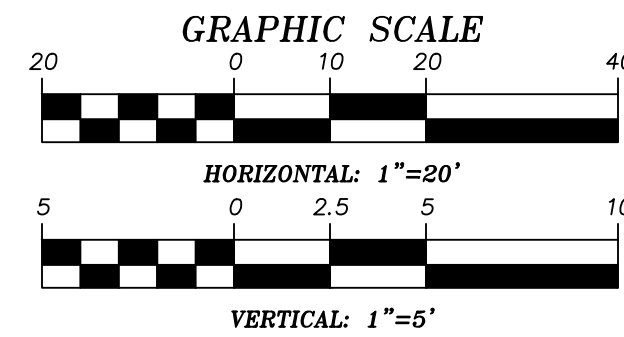
100060654

10/15/19

CLV

00-00000

16 / 31



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT
PROJECT NO. 136924 FIRST APPROVED DATE: _____

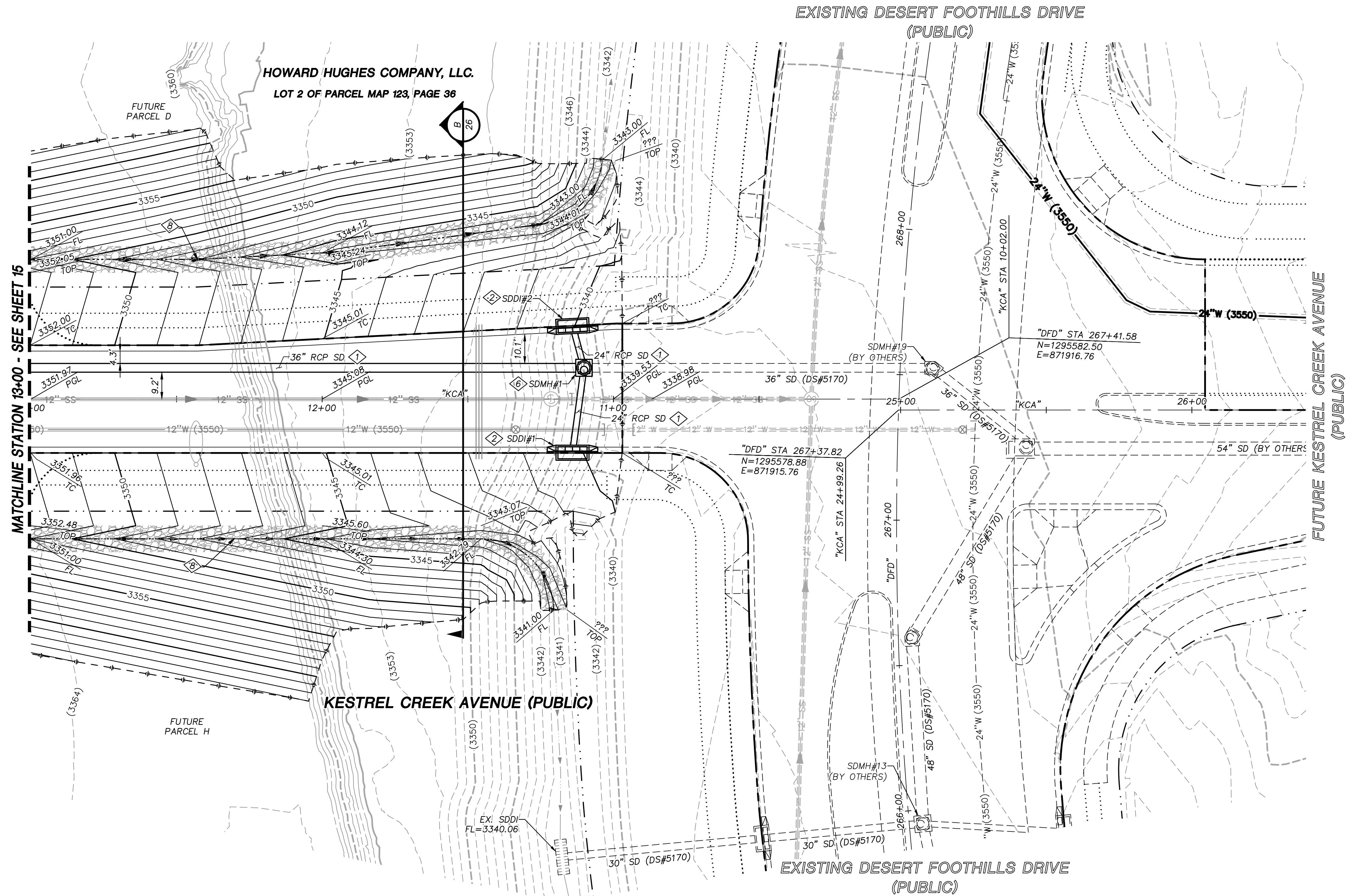
BASIS OF BEARING

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

BENCHMARK

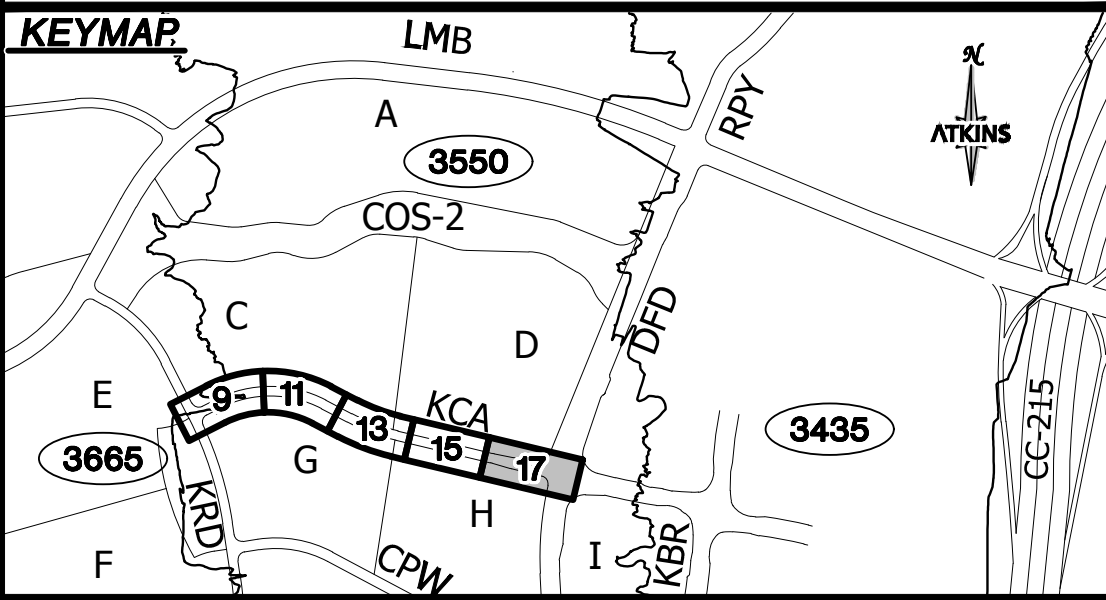
CITY OF LAS VEGAS BENCHMARK: D368 (REVISED 2008)
NAVD88 ELEVATION: 989.574 METERS (3,246.63 FEET)
FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.
T21S,R59E,S03



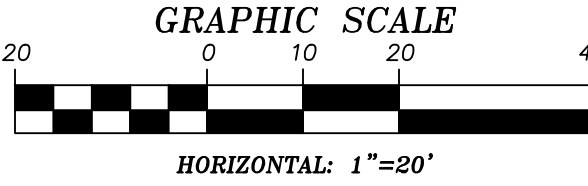
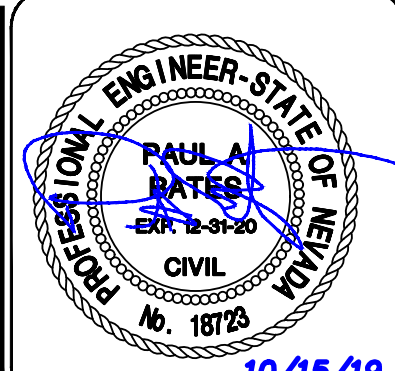


STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
8. INSTALL RIP-RAP (D50=8", THICKNESS=24")



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.



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT
PROJECT NO. 136924 FIRST APPROVED DATE: _____

GRADING PLAN CERTIFICATION

PAUL BATES PE#18723 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#5171

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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



SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET J)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

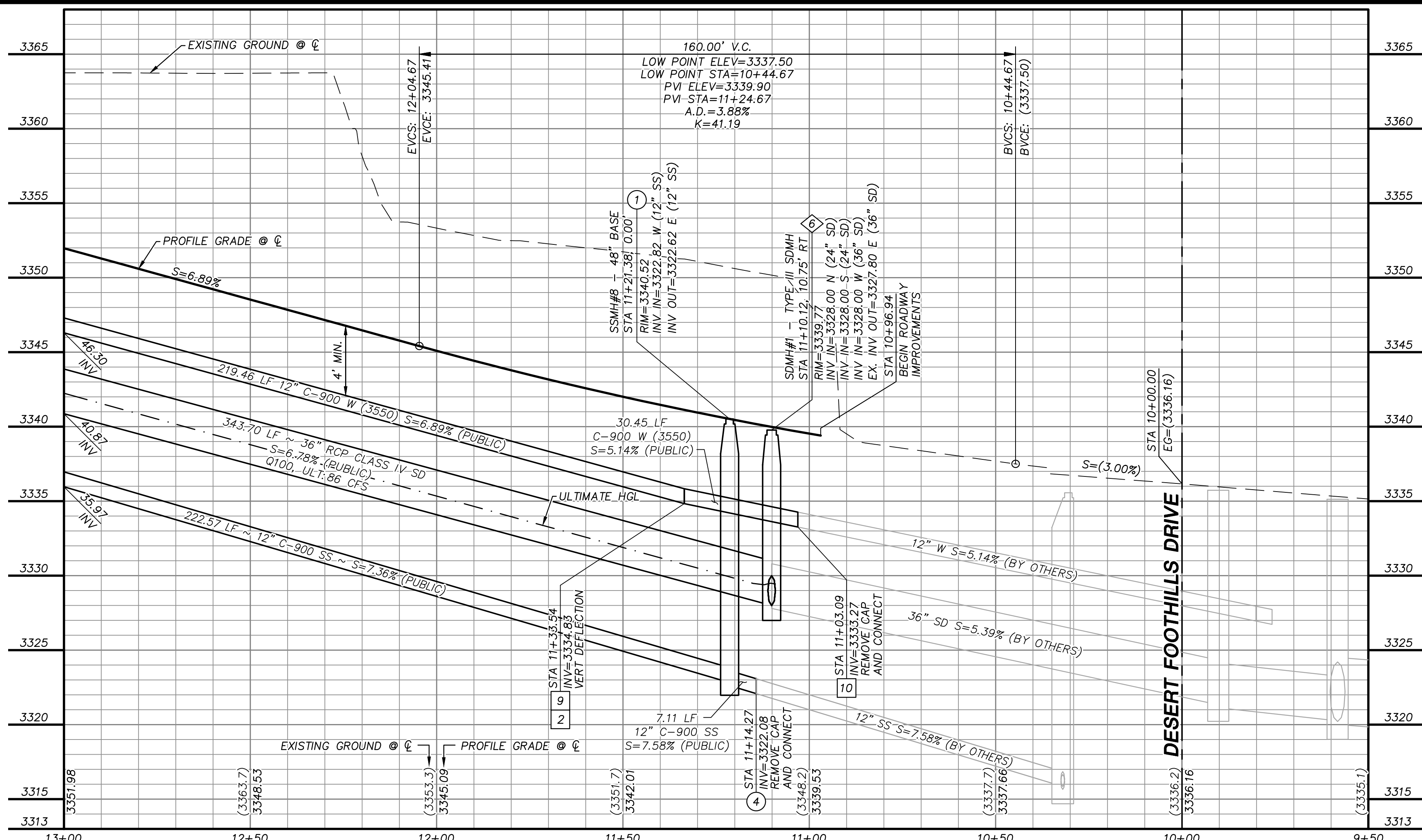
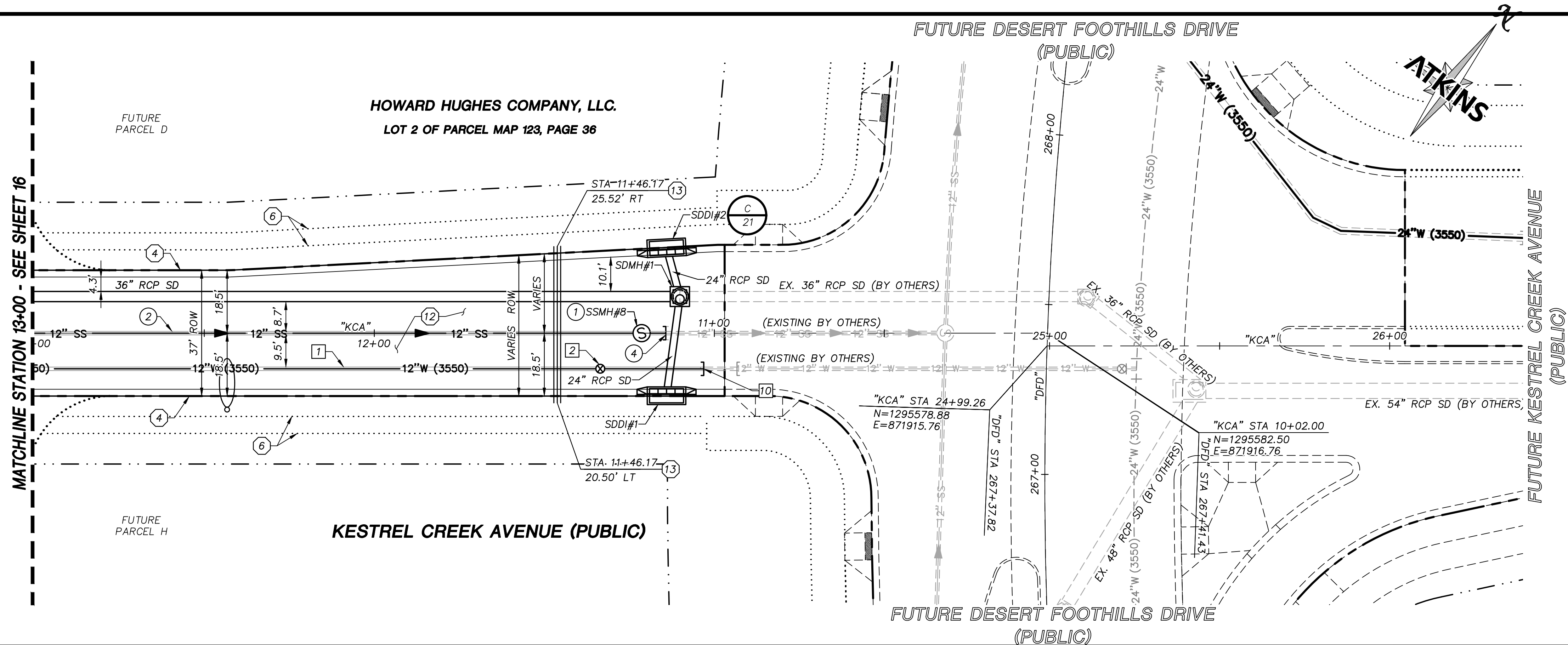
ROADWAY GRADING PLAN
BEGIN TO STA 13+00

DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
HORIZ.: 1"=20'
VERT.: NONE
JOB NO. 100060654
DATE: OCTOBER, 2019
DRAWING NO. 17 / 31
CLV 00-00000

REV.	DESCRIPTION	BY	DATE	APPROVAL

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





STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
8. INSTALL RIP-RAP (D50=8", THICKNESS=24")

SEWER CONSTRUCTION NOTES

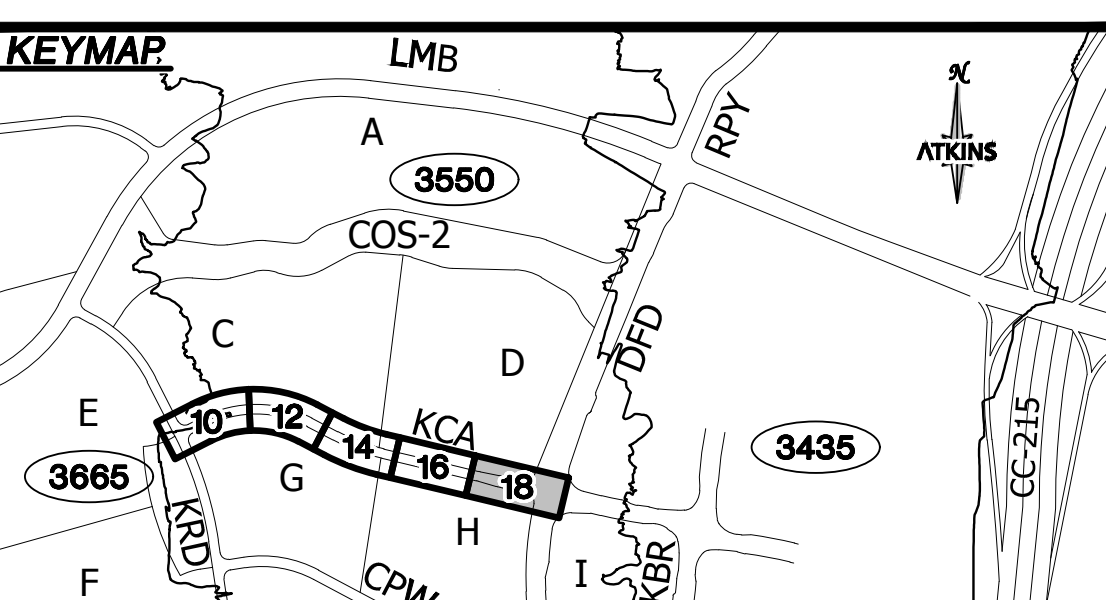
1. INSTALL SEWER MANHOLE PER DCSWCS SD-1, AND SD-4
2. INSTALL SEWER MAIN PER DCSWCS SD-17
3. STUB AND CAP SEWER PIPE. PLACE MARKER BALL AND 4"x4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. REMOVE CAP AND CONNECT TO EXISTING SEWER STUB
5. ADJUST EXISTING MANHOLE TO GRADE PER DCSWCS SD-5.
6. PROTECT SEWER AT UTILITY CROSSING PER DCSWCS SD-19

WATERLINE CONSTRUCTION NOTES

1. INSTALL WATER MAIN PER UDACS PLATES #17 AND PLATE #19
2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
3. INSTALL CROSS PER UDACS PLATE #31
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
7. INSTALL 11.25' HORIZONTAL BEND PER UDACS PLATE #31
8. INSTALL COMBINATION AIR VALVE ASSEMBLY WITH ALL APPURTENANCES PER UDACS PLATE #38
9. INSTALL DEFLECTION AT PIPE JOINTS (MAXIMUM 1')
10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE STUB
11. INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATES #30, #31, #39, AND #40

ROADWAY CONSTRUCTION NOTES

1. SAWCUT AND MATCH EXISTING
2. NOT USED
3. NOT USED
4. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
5. NOT USED
6. FUTURE SIDEWALK BY OTHERS
7. CONSTRUCT CONCRETE SIDEWALK PER CCAUSD #234
8. CONSTRUCT CURB RAMP, TYPE A, PER NDOT STANDARD PLAN R-5.2.1 (A=B=6.5').
9. CONSTRUCT 0" FLUSH CURB
10. TRANSITION CURB FROM FULL HEIGHT (6") TO FLUSH (0")
11. NOT USED
12. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 26 FOR TYPICAL PAVEMENT SECTION.
13. INSTALL SCHEDULE 40 PVC IRRIGATION SLEEVES (2-4", 1-6") PER DETAIL C ON SHEET 21



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: +1702.263.7275
Fax: +1702.263.7200

SUMMERLIN

DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

SUMMERLIN VILLAGE 22

KESTREL CREEK AVENUE (STREET I)

DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

ROADWAY PLAN AND PROFILE

BEGIN TO STA 13+00

DESIGNED BY:

N. BARCOS

DRAWN BY:

L. MAMACLAY

CHECKED BY:

P. BATES

HORIZ: 1"=20'

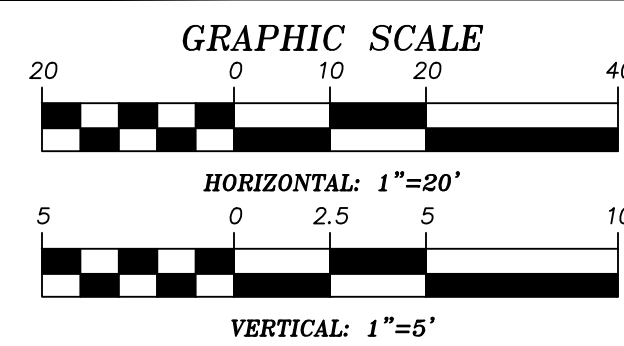
VERT: 1"=5'

10/15/19

18 / 31

100060654

00-00000



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT

PROJECT NO. 136924 FIRST APPROVED DATE: _____

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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

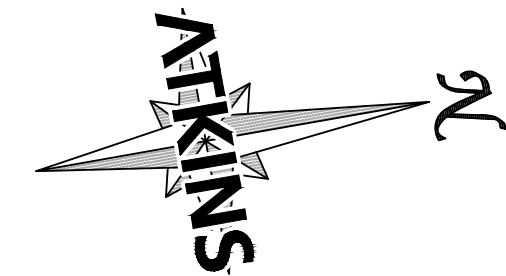
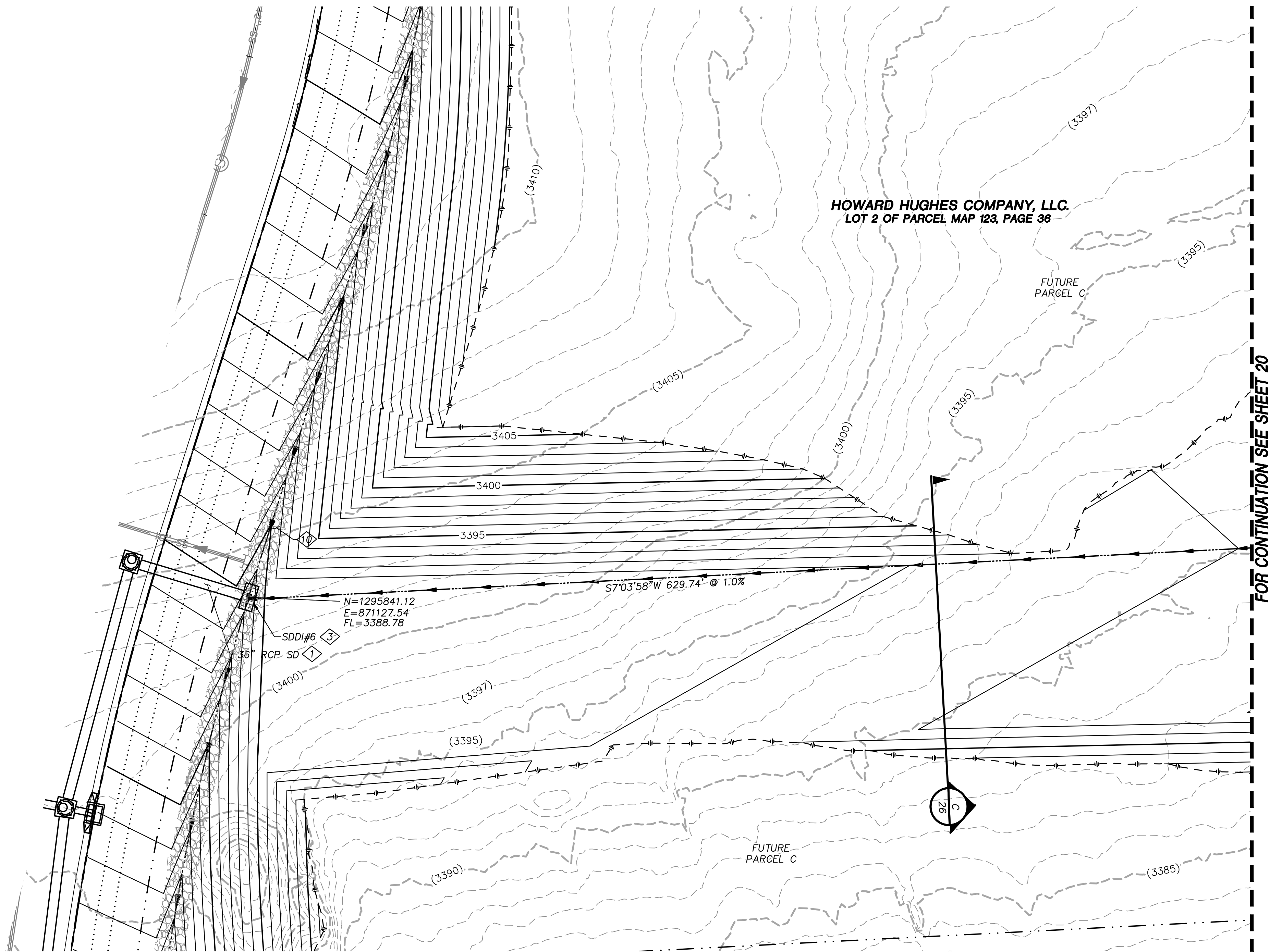
Call before you Dig

811

1-702-432-5300

CALL BEFORE YOU DIG

1-702-227-2929



STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
8. INSTALL RIP-RAP (D50=8", THICKNESS=24")

KEYMAP

GRAPHIC SCALE

HORIZONTAL: 1"=20'

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT
PROJECT NO. 136924 FIRST APPROVED DATE: _____

GRADING PLAN CERTIFICATION

PAUL BATES PE#18723 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#5171

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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

Call before you Dig
1-702-432-5300

811

Call before you Dig
1-800-642-2444

CALL BEFORE YOU DIG

1-702-227-2929

PAUL A. BATES

ENGINEER-STATE OF NEVADA
No. 18728
10/15/19

DESIGNED BY:

N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
HORIZ.: 1"=20'
VERT.: NONE

100060654

CLV 00-00000
DATE: OCTOBER, 2019
DRAWING NO. 19 / 31

ATKINS

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

SUMMERLIN

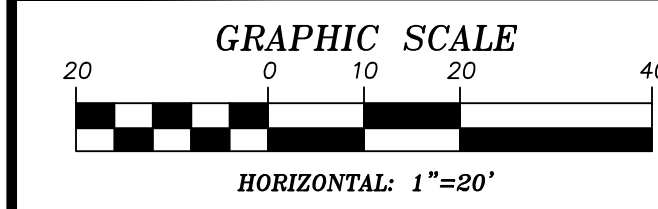
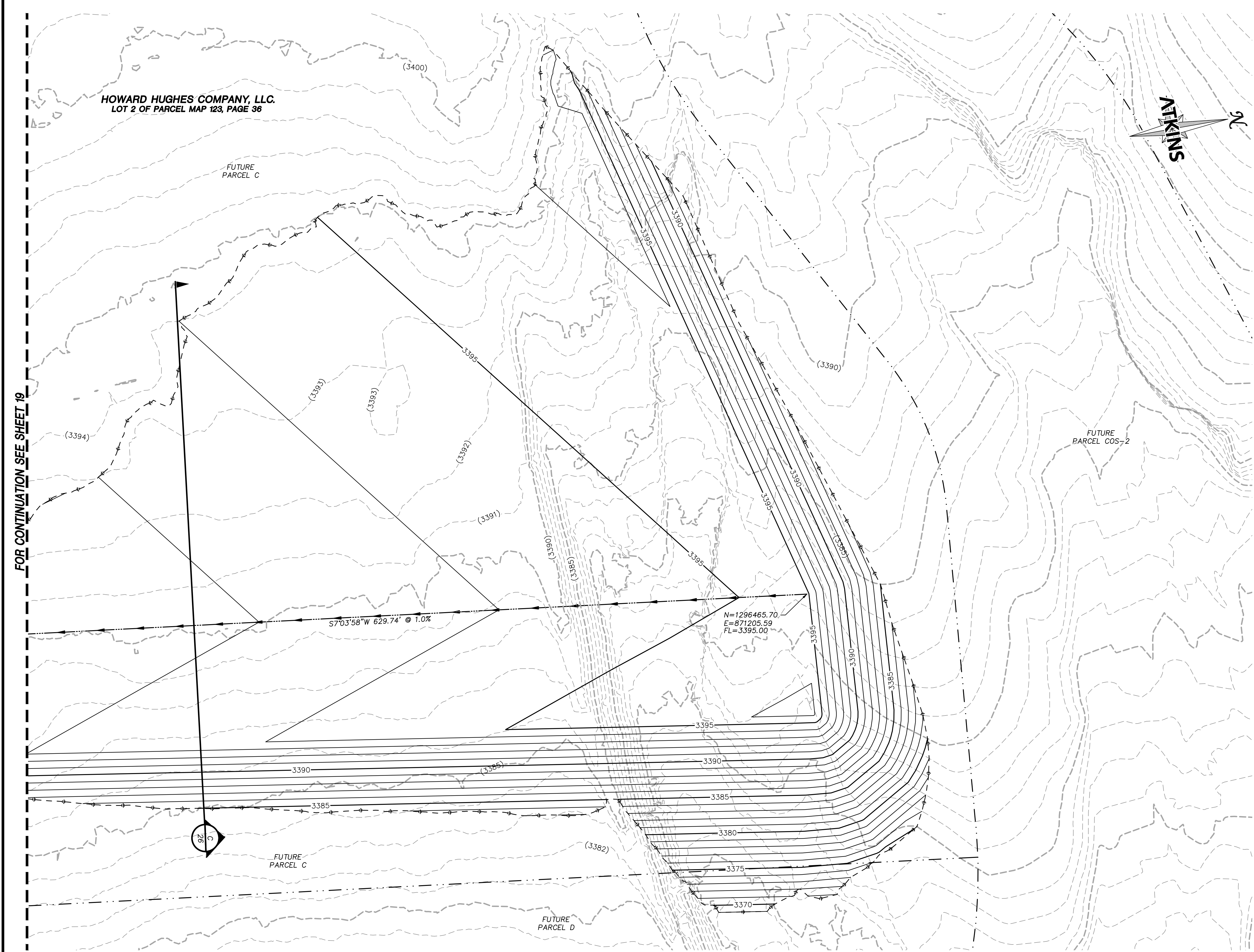
SUMMERLIN VILLAGE 22

KESTREL CREEK AVENUE (STREET I)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

BERM GRADING PLAN

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.

FOR CONTINUATION SEE SHEET 19



APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT

PROJECT NO. 136924 FIRST APPROVED DATE: _____

GRADING PLAN CERTIFICATION

PAUL BATES PE#18723 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#5171

BASIS OF BEARING

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

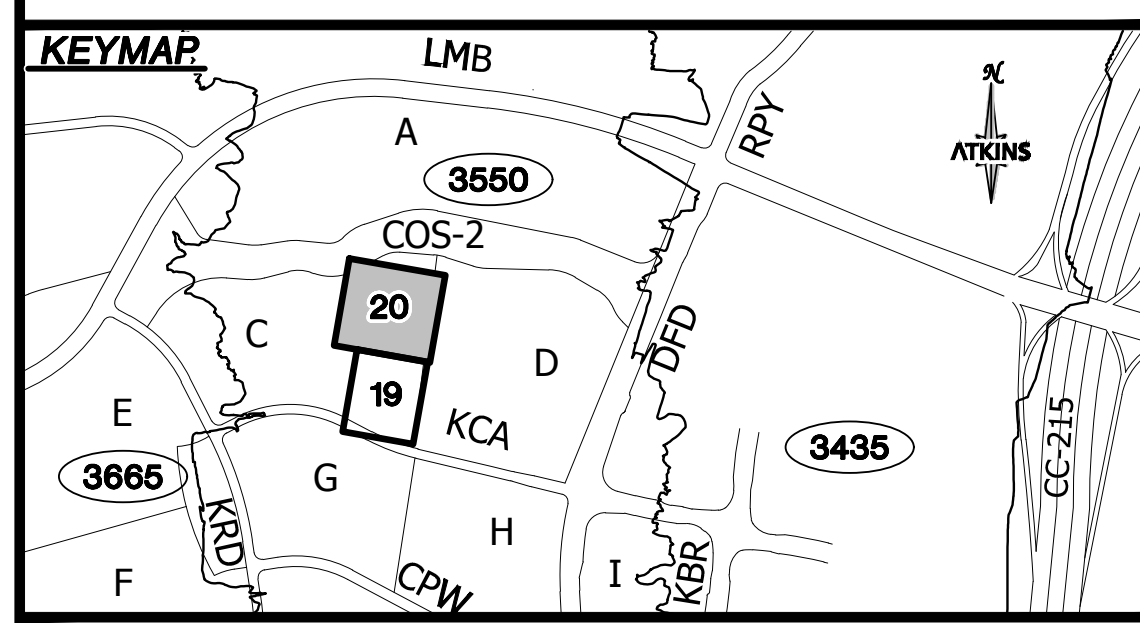
BENCHMARK

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.
TZ15R59E.S03

Call before you Dig
800-432-5300

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 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.

DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
HORIZ.: 1"=20'
VERT.: NONE

JOB NO. 100060654
DATE: OCTOBER, 2019
DRAWING NO. 20/31
CLV 00-00000

- STORM DRAIN CONSTRUCTION NOTES**
1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
 2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
 3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
 4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
 5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
 6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
 7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
 8. INSTALL RIP-RAP (D50=8", THICKNESS=24")

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

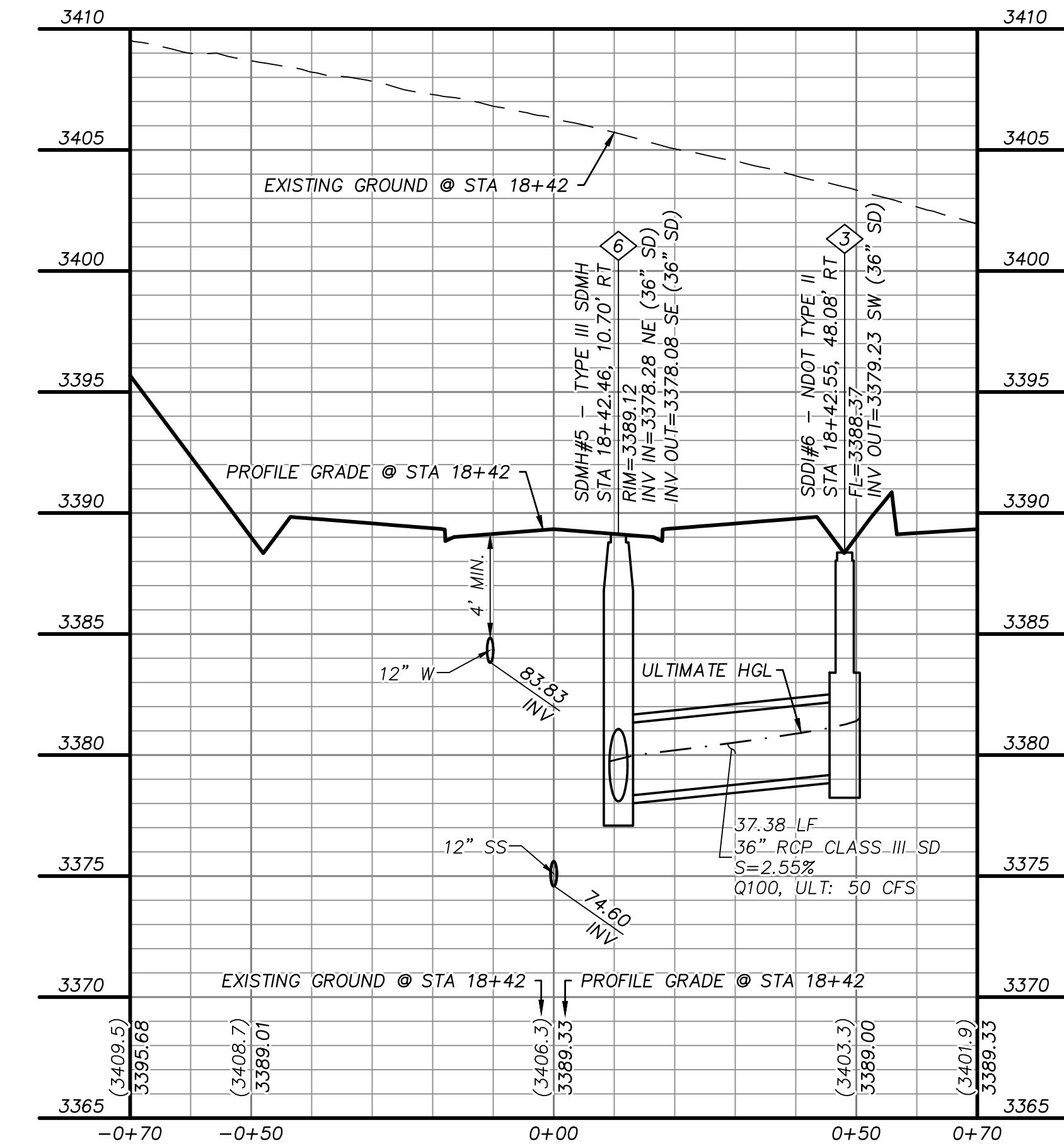
SUMMERLIN

SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET I)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

BERM GRADING PLAN

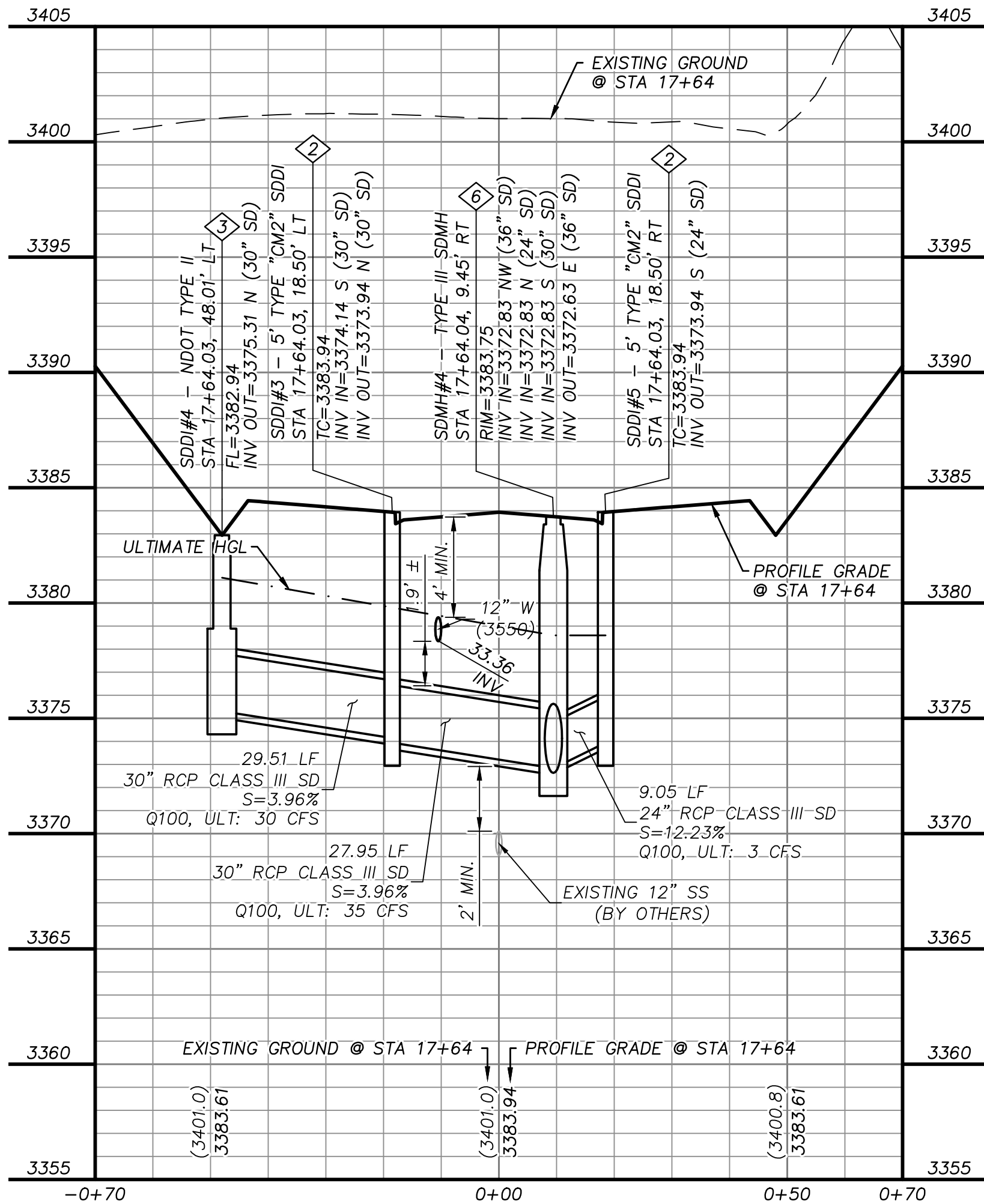
REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL



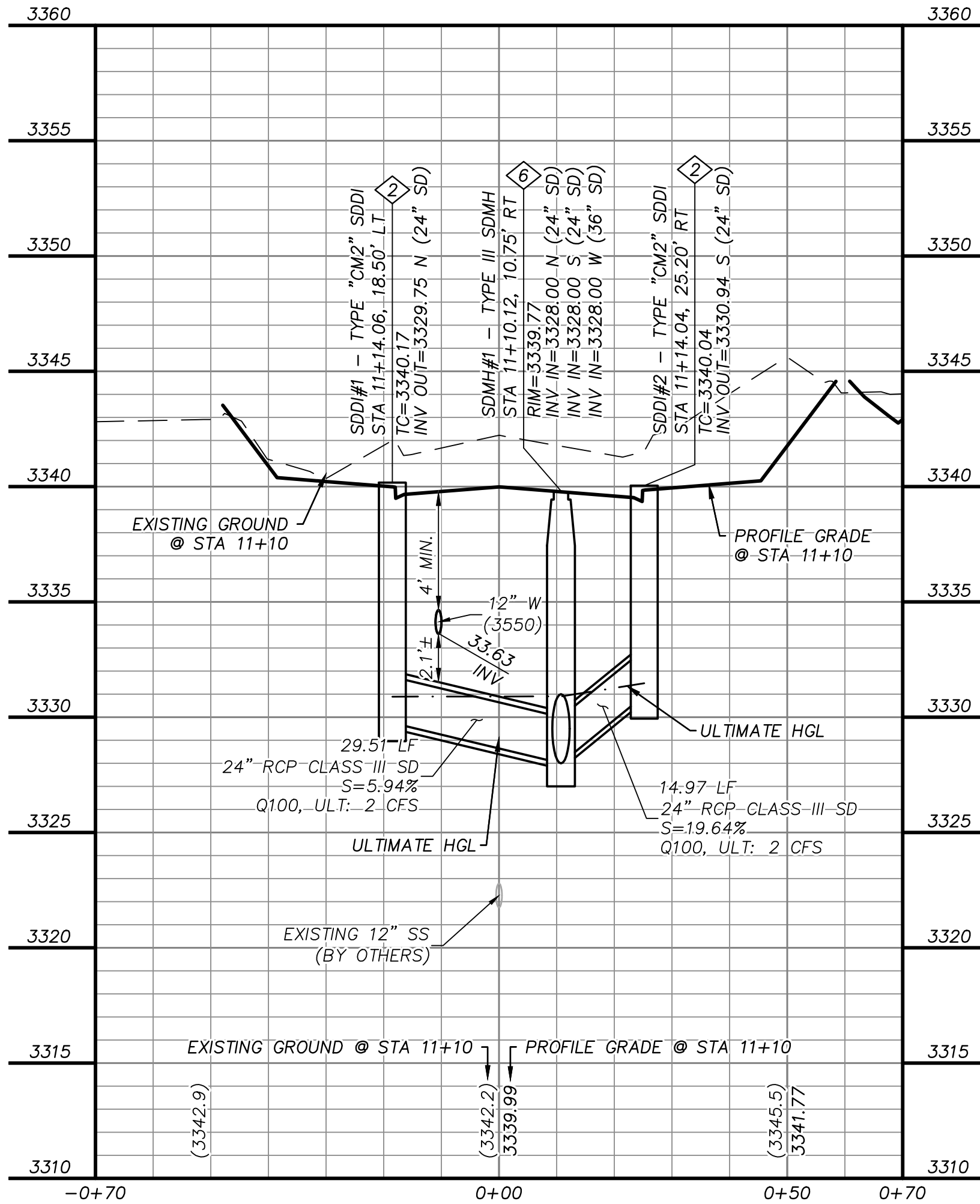
STORM DRAIN LATERAL PROFILE

"KCA" STA. 18+42 SEE SHEET 14



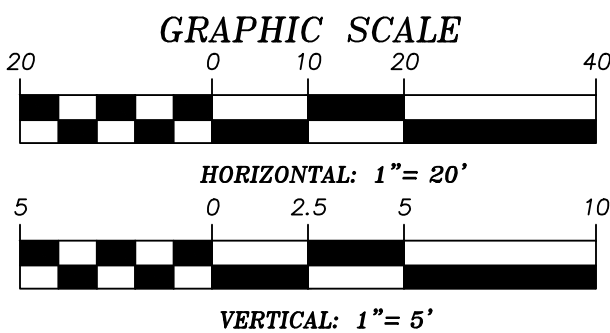
STORM DRAIN LATERAL PROFILE

"KCA" STA. 17+64 SEE SHEET 14



STORM DRAIN LATERAL PROFILE

"KCA" STA. 10+95 SEE SHEET 18



BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NORS), 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 ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
- 2 INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
- 3 INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
- 4 INSTALL TYPE I SD MANHOLE PER CCAUSD #403
- 5 INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
- 6 INSTALL TYPE III SD MANHOLE PER CCAUSD #406
- 7 REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
- 8 INSTALL RIP-RAP (D50=8", THICKNESS=24")

SEWER CONSTRUCTION NOTES

- 1 INSTALL SEWER MANHOLE PER DCSWCS SD-1, AND SD-4
- 2 INSTALL SEWER MAIN PER DCSWCS SD-17
- 3 STUB AND CAP SEWER PIPE. PLACE MARKER BALL AND 4"x4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
- 4 REMOVE CAP AND CONNECT TO EXISTING SEWER STUB
- 5 ADJUST EXISTING MANHOLE TO GRADE PER DCSWCS SD-5.
- 6 PROTECT SEWER AT UTILITY CROSSING PER DCSWCS SD-19

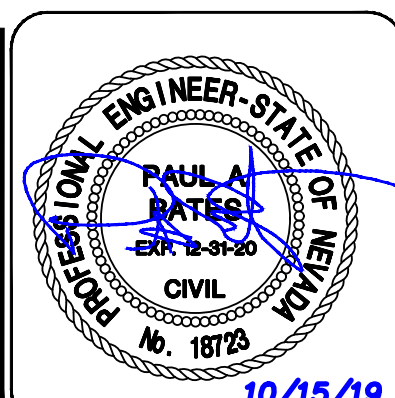
WATERLINE CONSTRUCTION NOTES

- 1 INSTALL WATER MAIN PER UDACS PLATES #17 AND PLATE #19
- 2 INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
- 3 INSTALL CROSS PER UDACS PLATE #31
- 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
- 7 INSTALL 11.25' HORIZONTAL BEND PER UDACS PLATE #31
- 8 INSTALL COMBINATION AIR VALVE ASSEMBLY WITH ALL APPURTENANCES PER UDACS PLATE #38
- 9 INSTALL DEFLECTION AT PIPE JOINTS (MAXIMUM 1')
- 10 REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE STUB
- 11 INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATES #30, #31, #39, AND #40

ROADWAY CONSTRUCTION NOTES

- 1 SAWCUT AND MATCH EXISTING
- 2 NOT USED
- 3 NOT USED
- 4 CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
- 5 NOT USED
- 6 FUTURE SIDEWALK BY OTHERS
- 7 CONSTRUCT CONCRETE SIDEWALK PER CCAUSD #234
- 8 CONSTRUCT CURB RAMP, TYPE A, PER NDOT STANDARD PLAN R-5.2.1 (A=B=6.5').
- 9 CONSTRUCT 0" FLUSH CURB
- 10 TRANSITION CURB FROM FULL HEIGHT (6") TO FLUSH (0")
- 11 NOT USED
- 12 CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 26 FOR TYPICAL PAVEMENT SECTION.
- 13 INSTALL SCHEDULE 40 PVC IRRIGATION SLEEVES (2-4", 1-6") PER DETAIL C ON SHEET 21

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.



DESIGNED BY:	N. BARCOS
DRAWN BY:	L. MAMACLAY
CHECKED BY:	P. BATES
DATE:	OCTOBER, 2019
DRAWING NO.	21 / 31
CLV	00-00000

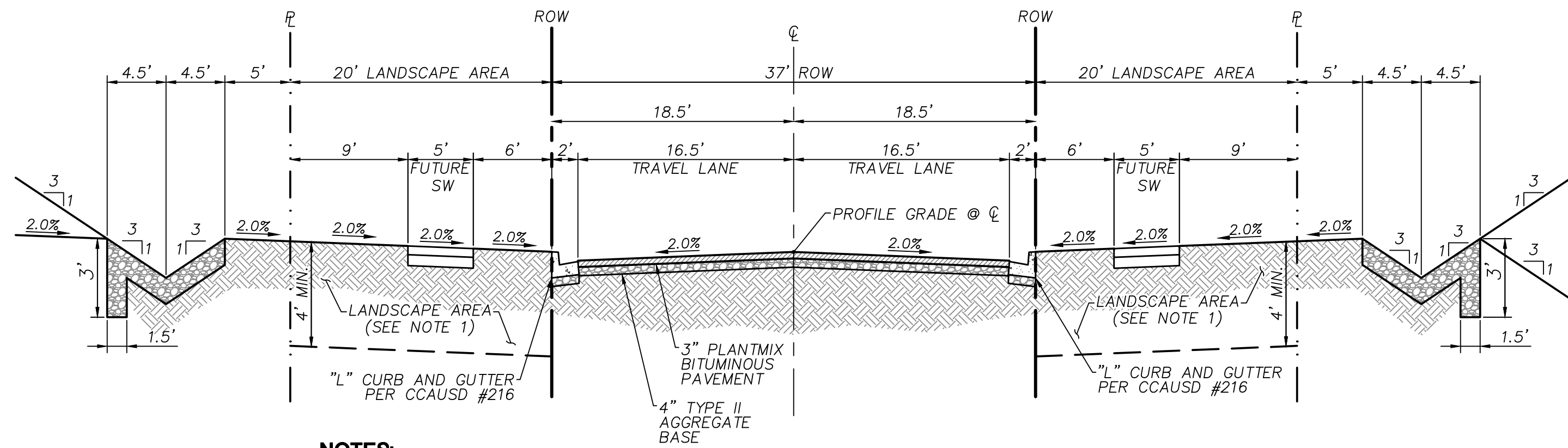
ATKINS
2270 Corporate Circle Suite 200
Henderson, Nevada 89074
Telephone: +1702.263.7755
Fax: +1702.263.7200

SUMMERLIN

SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET I)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)
STORM DRAIN LATERAL PROFILES

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

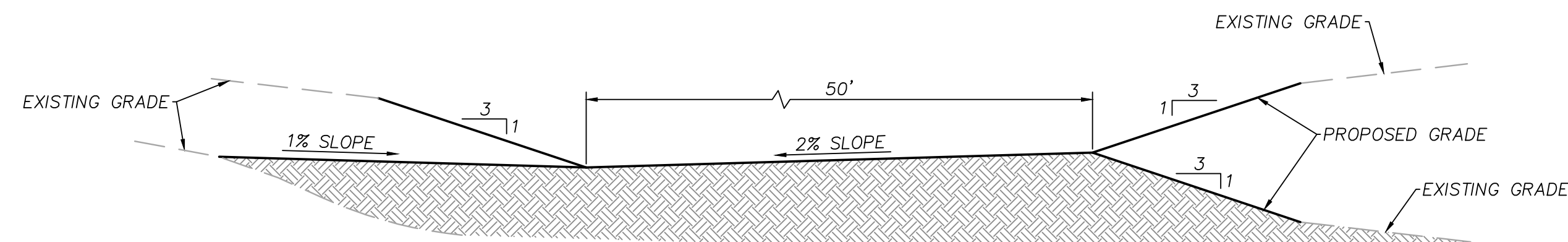
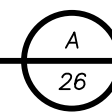


NOTES:

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.

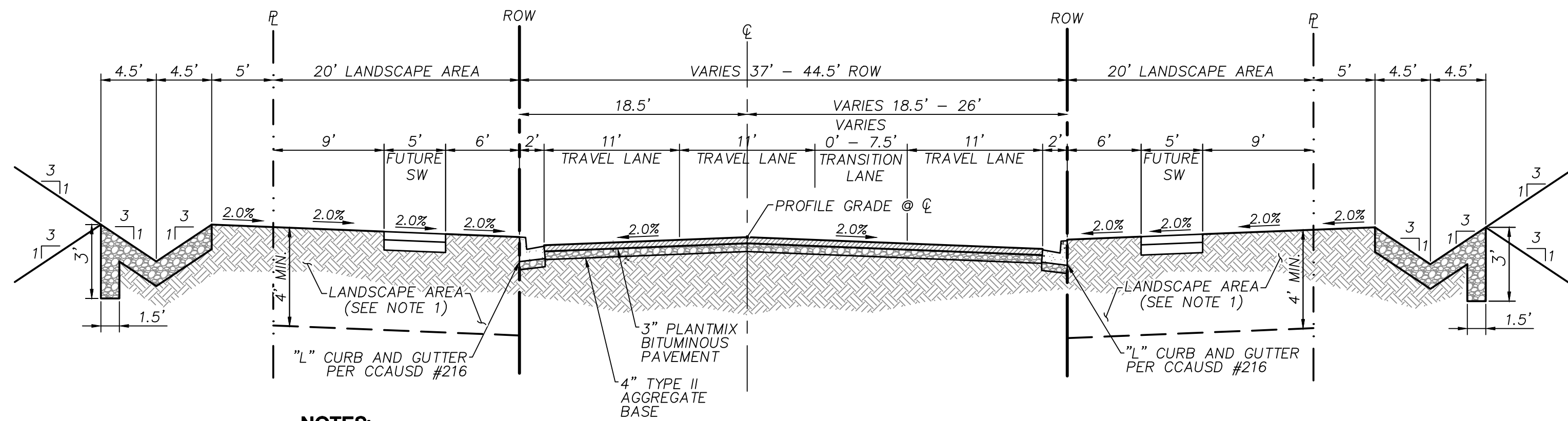
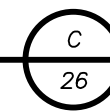
KESTREL CREEK DRIVE- TYPICAL SECTION

N.T.S.



KESTREL CREEK DRIVE - BERM TYPICAL SECTION

N.T.S.

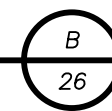


NOTES:

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.

KESTREL CREEK DRIVE- LEFT TURN LANE SECTION

N.T.S.



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

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

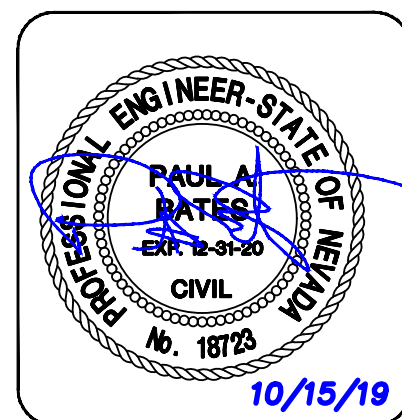


SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET 1)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)

TYPICAL SECTIONS

DESIGNED BY: N. BARCOS
DRAWN BY: L. MAMACLAY
CHECKED BY: P. BATES
HORIZ.: NONE
VERT.: NONE

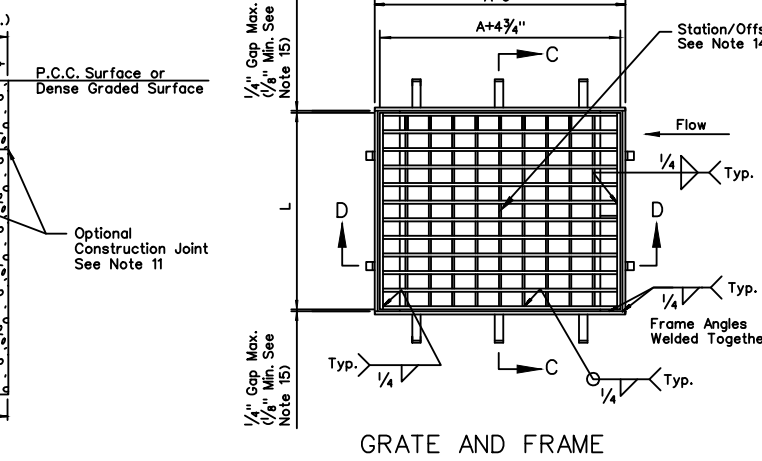
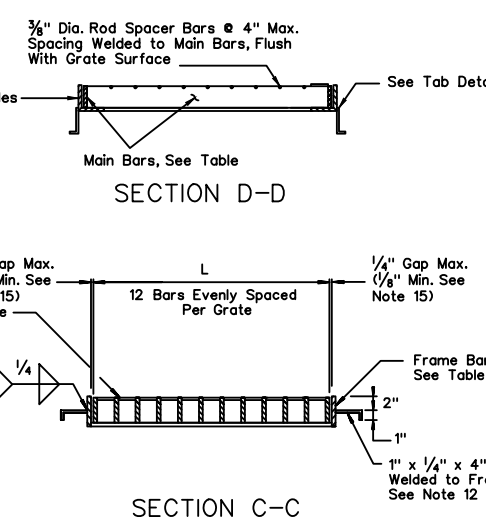
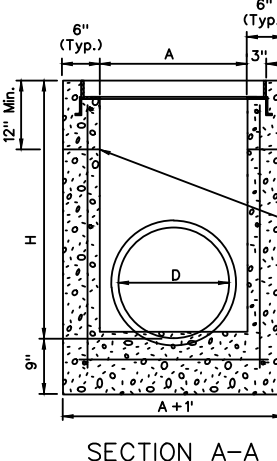
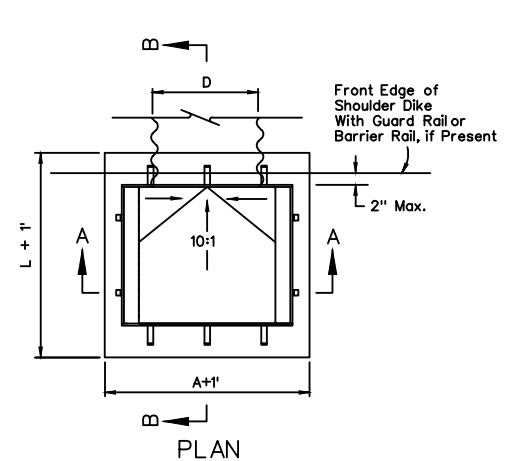
JOB NO. 100060654
DATE: OCTOBER, 2019
DRAWING NO. 26/31
CLV 00-00000



X: [Project] Summerlin Village 22\100060654 - V22N Street 1 (Desert Foothills to Street J)_Sheets\60654-12-DET-D1.dwg LAYOUT: TYPICAL SECTIONS Oct 15, 2019 - 6:54PM

PIPE SIZE (INCH)	A (INCH)	H (INCH)	MAN BARS (ONCH)	FRAME ANGLES (ONCH)	FRAME BARS (ONCH)	FRAME BARS (ONCH)	SINGLE GRATE	L (FT) DOUBLE GRATE	TRIPLE GRATE
15	2'	2.50	3/4" x 3/4"	4 x 3 x 3/4"	4 x 3/4"	2"	4'	6'	
18	2'6"	3.00	4/4" x 3/4"	5 x 3 x 3/4"	5 x 3/4"	2"	4'	6'	
24	3'	3.50	4/4" x 3/4"	5 x 3 x 3/4"	5 x 3/4"	2"	4'	6'	
30	3'6"	4.00	4/4" x 3/4"	5 x 3 x 3/4"	5 x 3/4"	2"	4'	6'	
36	4'	4.50	5/4" x 3/4"	6 x 3/4" x 3/4"	6 x 3/4"	2"	4'	6'	
42	4'6"	5.00	5/4" x 3/4"	6 x 3/4" x 3/4"	6 x 3/4"	2"	4'	6'	
48	5'	5.50	5/4" x 3/4"	6 x 3/4" x 3/4"	6 x 3/4"	2"	4'	6'	

SECTION B-B



STATE OF NEVADA DEPARTMENT OF TRANSPORTATION	
DROP INLET TYPE 2	
R-4.2.1 (609)	Signed Original On File
APPROVED	REVIEWED

15. Grate is to fit in the frame and be easily removed.
If the gap between the grate and frame is greater than $\frac{1}{8}$ " on each side of the grate, the grate and frame shall be removed and reconstructed to the tolerances specified or, with approval of the engineer, a filler strip up to $\frac{1}{8}$ " in thickness may be welded flush to the top of the frame to reduce the gap to a maximum of $\frac{1}{8}$ "



JOB NO.	100060654
DATE:	OCTOBER, 2019
DRAWING NO.	
	27 /31

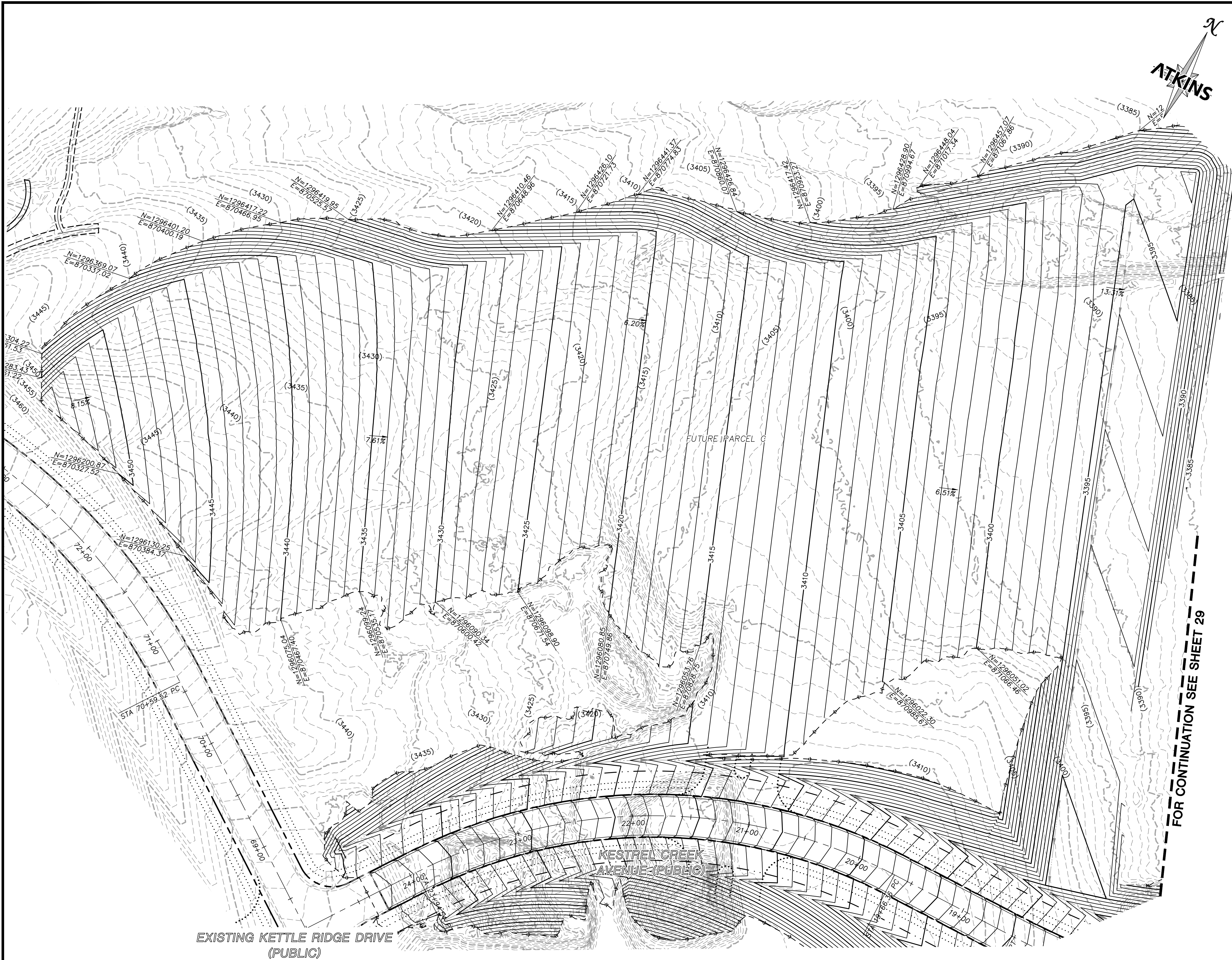
SUMMERLIN VILLAGE 22
KESTREL CREEK AVENUE (STREET 1)
DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET 2)

STORM DETAILS

\\Projects\Summ West\ Village 22\100060654 - V22N Street / (Desert Foothills to Street J)\ Sheets\60654-16-DET-STRM.dwg LAYOUT: STORM DETAILS Oct 15, 2019 - 6:54PM

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

[illegible]



FOR CONTINUATION SEE SHEET 29

STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
8. INSTALL RIP-RAP (D50=8", THICKNESS=24")

SEWER CONSTRUCTION NOTES

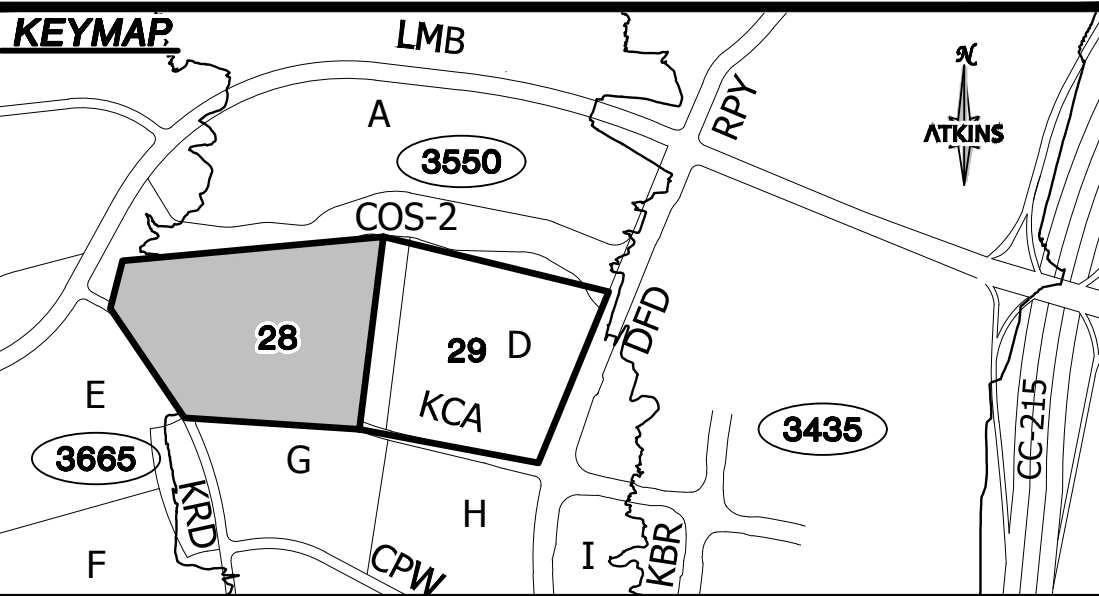
1. INSTALL SEWER MANHOLE PER DCSWCS SD-1, AND SD-4
2. INSTALL SEWER MAIN PER DCSWCS SD-17
3. STUB AND CAP SEWER PIPE. PLACE MARKER BALL AND 4"x4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
4. REMOVE CAP AND CONNECT TO EXISTING SEWER STUB
5. ADJUST EXISTING MANHOLE TO GRADE PER DCSWCS SD-5.
6. PROTECT SEWER AT UTILITY CROSSING PER DCSWCS SD-19

WATERLINE CONSTRUCTION NOTES

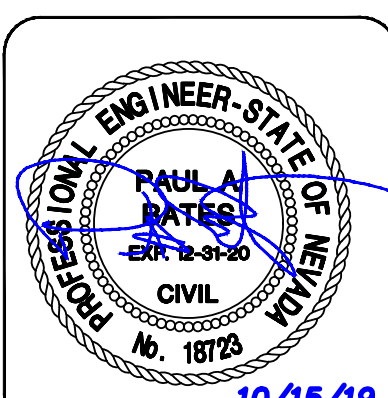
1. INSTALL WATER MAIN PER UDACS PLATES #17 AND PLATE #19
2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
3. INSTALL CROSS PER UDACS PLATE #31
4. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
5. INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
7. INSTALL 11.25" HORIZONTAL BEND PER UDACS PLATE #31
8. INSTALL COMBINATION AIR VALVE ASSEMBLY WITH ALL APPURTENANCES PER UDACS PLATE #38
9. INSTALL DEFLECTION AT PIPE JOINTS (MAXIMUM 1')
10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE STUB
11. INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATES #30, #31, #39, AND #40

ROADWAY CONSTRUCTION NOTES

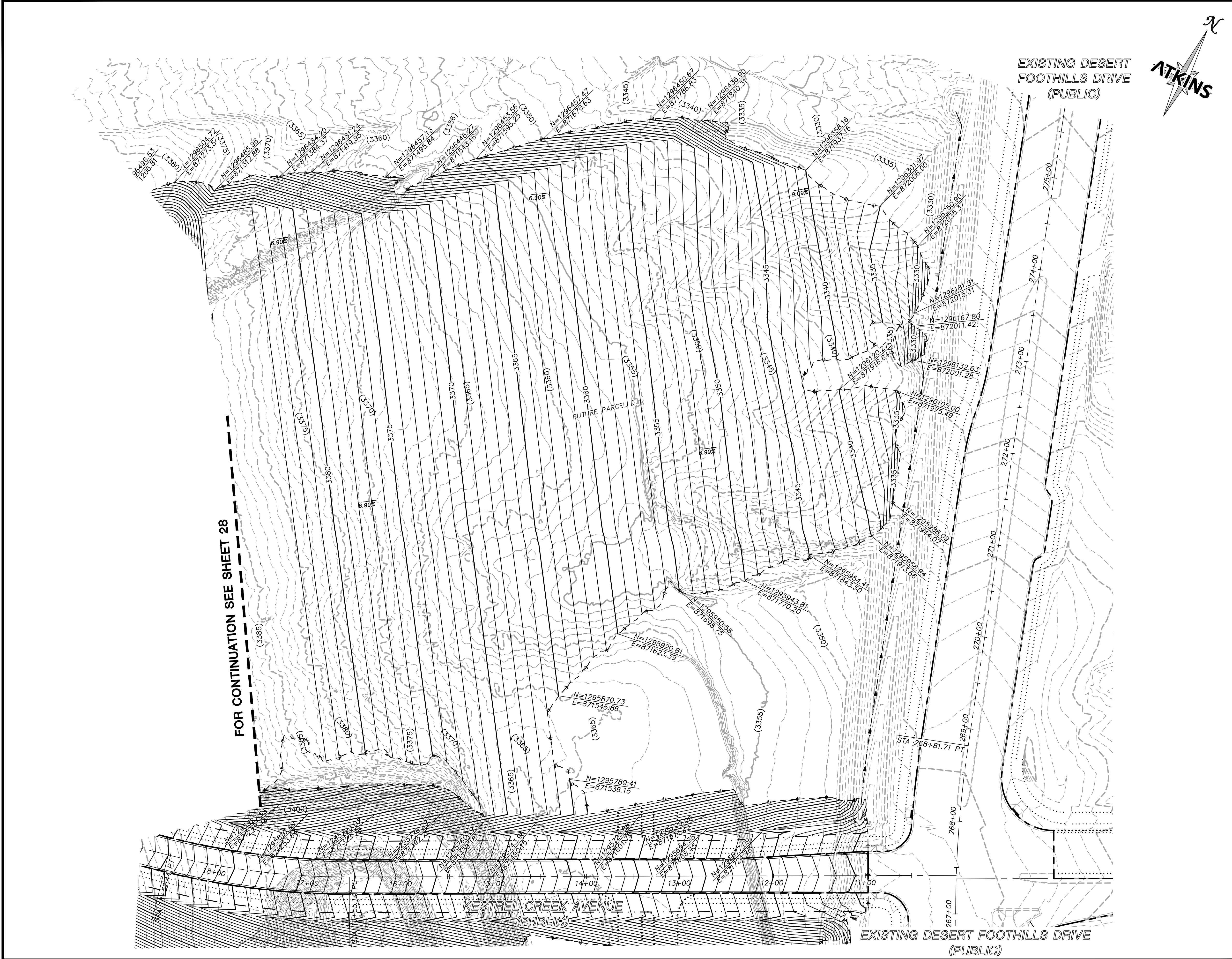
1. SAWCUT AND MATCH EXISTING
2. NOT USED
3. NOT USED
4. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
5. NOT USED
6. FUTURE SIDEWALK BY OTHERS
7. CONSTRUCT CONCRETE SIDEWALK PER CCAUSD #234
8. CONSTRUCT CURB RAMP, TYPE A, PER NDOT STANDARD PLAN R-5.2.1 (A=B=6.5').
9. CONSTRUCT 0" FLUSH CURB
10. TRANSITION CURB FROM FULL HEIGHT (6") TO FLUSH (0")
11. NOT USED
12. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 26 FOR TYPICAL PAVEMENT SECTION.
13. INSTALL SCHEDULE 40 PVC IRRIGATION SLEEVES (2-4", 1-6") PER DETAIL C ON SHEET 21



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.



REVISIONS		BY	DATE	APPROVAL
DESCRIPTION				
REV.				
ATKINS 2270 Corporate Circle Suite 200 Henderson, Nevada 89074 Telephone: +1702.263.7275 Fax: +1702.263.7200				
SUMMERLIN				
SUMMERLIN VILLAGE 22 KESTREL CREEK AVENUE (STREET I) DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)				
ROADWAY GRADING PLAN				
DESIGNED BY: N. BARCOS	DRAWN BY: L. MAMACLAY	CHECKED BY: P. BATES	HORIZ.: 1"=20'	VERT.: NONE
JOB NO. 100060654	DATE: OCTOBER, 2019	DRAWING NO. 28/31	CLV 00-00000	X:\Projects\Summerlin\ Village 22\100060654 - V22N Street I\Desert Foothills to Street J\ Sheets\60654-09-GRADING PARCEL.dwg LAYOUT: PARCEL C Oct 15, 2019 - 6:54PM



STORM DRAIN CONSTRUCTION NOTES

- 1. INSTALL STORM DRAIN SEE ROADWAY PLAN AND PROFILE SHEETS FOR ADDITIONAL STORM DRAIN NOTES AND INFORMATION.
- 2. INSTALL TYPE "CM2" DROP INLET PER CCAUSD #412.1 & #421
- 3. INSTALL NDOT TYPE II DROP INLET PER NDOT R-4.2.1 (SEE SHEET 26)
- 4. INSTALL TYPE I SD MANHOLE PER CCAUSD #403
- 5. INSTALL TYPE II SD MANHOLE PER CCAUSD #405.2
- 6. INSTALL TYPE III SD MANHOLE PER CCAUSD #406
- 7. REMOVE CAP AND CONNECT TO EXISTING STORM DRAIN STUB
- 8. INSTALL RIP-RAP (D50=8", THICKNESS=24")

SEWER CONSTRUCTION NOTES

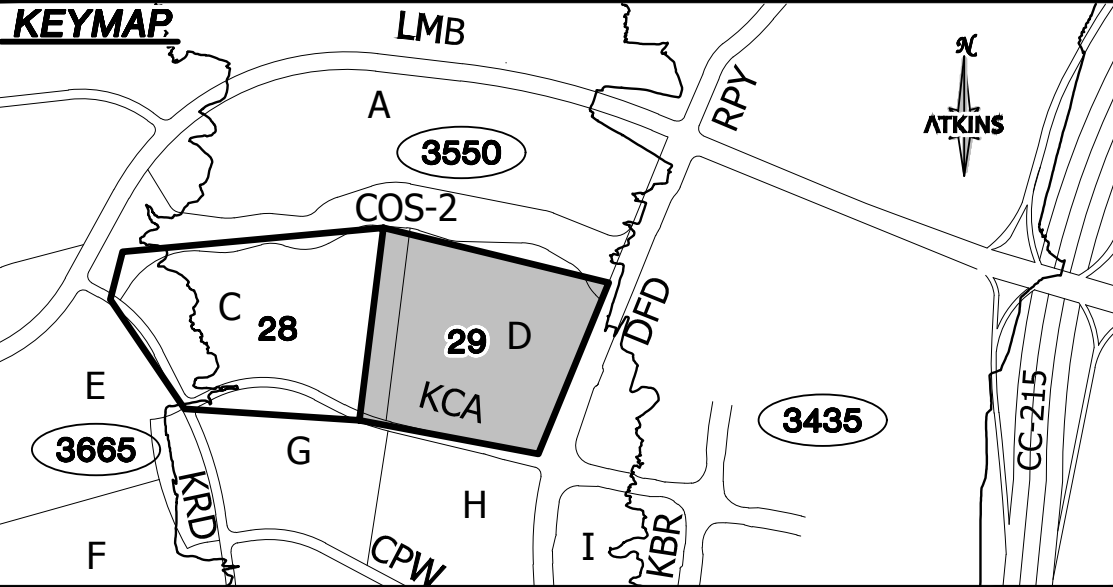
- 1. INSTALL SEWER MANHOLE PER DCSWCS SD-1, AND SD-4
- 2. INSTALL SEWER MAIN PER DCSWCS SD-17
- 3. STUB AND CAP SEWER PIPE. PLACE MARKER BALL AND 4"x4" POST, DOUGLAS FIR, OVER END OF PIPE AND INSTALL THRUST BLOCK (1 CUBIC FT. MINIMUM).
- 4. REMOVE CAP AND CONNECT TO EXISTING SEWER STUB
- 5. ADJUST EXISTING MANHOLE TO GRADE PER DCSWCS SD-5.
- 6. PROTECT SEWER AT UTILITY CROSSING PER DCSWCS SD-19

WATERLINE CONSTRUCTION NOTES

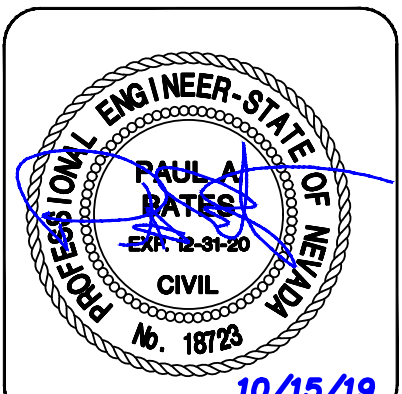
- 1. INSTALL WATER MAIN PER UDACS PLATES #17 AND PLATE #19
- 2. INSTALL GATE VALVE PER UDACS PLATES #30 AND #39
- 3. INSTALL CROSS PER UDACS PLATE #31
- 4. INSTALL CAP AND 2" MANUAL BLOWOFF ASSEMBLY PER UDACS PLATE #36
- 5. INSTALL TEE W/ VALVE AND LATERAL PER UDACS PLATES #17, #19, #30, #31 AND #39
- 7. INSTALL 11.25" HORIZONTAL BEND PER UDACS PLATE #31
- 8. INSTALL COMBINATION AIR VALVE ASSEMBLY WITH ALL APPURTENANCES PER UDACS PLATE #38
- 9. INSTALL DEFLECTION AT PIPE JOINTS (MAXIMUM 1')
- 10. REMOVE CAP AND 2" BLOWOFF AND CONNECT TO EXISTING WATERLINE STUB
- 11. INSTALL FIRE HYDRANT WITH APPURTENANCES (CONCRETE PAD, LATERAL, VALVE, AND TEE) PER UDACS PLATES #30, #31, #39, AND #40

ROADWAY CONSTRUCTION NOTES

- 1. SAWCUT AND MATCH EXISTING
- 2. NOT USED
- 3. NOT USED
- 4. CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD #216
- 5. NOT USED
- 6. FUTURE SIDEWALK BY OTHERS
- 7. CONSTRUCT CONCRETE SIDEWALK PER CCAUSD #234
- 8. CONSTRUCT CURB RAMP, TYPE A, PER NDOT STANDARD PLAN R-5.2.1 (A=B=6.5').
- 9. CONSTRUCT 0" FLUSH CURB
- 10. TRANSITION CURB FROM FULL HEIGHT (6") TO FLUSH (0")
- 11. NOT USED
- 12. CONSTRUCT PLANTMIX BITUMINOUS SURFACE OVER TYPE II AGGREGATE BASE PER SOILS REPORT. SEE SHEET 26 FOR TYPICAL PAVEMENT SECTION.
- 13. INSTALL SCHEDULE 40 PVC IRRIGATION SLEEVES (2-4", 1-6") PER DETAIL C ON SHEET 21



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.



DESIGNED BY: N. BARCOS		DRAWN BY: L. MAMACLAY		CHECKED BY: P. BATES		HORIZ.: 1"=20'		VERT.: NONE																																													
JOB NO. 100060654		DATE: OCTOBER, 2019		DRAWING NO.		29 / 31																																															
CLV		00-00000																																																			
SUMMERLIN VILLAGE 22 KESTREL CREEK AVENUE (STREET J) DESERT FOOTHILLS DRIVE TO KETTLE RIDGE DRIVE (STREET J)																																																					
PARCEL GRADING DETAILS - PARCEL D																																																					
																																																					
ATKINS 2270 Corporate Circle Suite 200 Henderson, Nevada 89074 Telephone: +1/702.263.7275 Fax: +1/702.263.7200																																																					
<table><thead><tr><th colspan="4">REVISIONS</th></tr><tr><th>REV.</th><th>DESCRIPTION</th><th>BY</th><th>DATE</th><th>APPROVAL</th></tr></thead><tbody><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></tbody></table>										REVISIONS				REV.	DESCRIPTION	BY	DATE	APPROVAL																																			
REVISIONS																																																					
REV.	DESCRIPTION	BY	DATE	APPROVAL																																																	



2270 Corporate Circle
Suite 200
Henderson NV 89074-7755
Tel: 702.263.7275
www.atkinsglobal.com/northamerica