

DS #: 5214-1

APN: 137-21-101-001

PROJECT: Summerlin West Village 30A - Rough Street Grading -  
Update #1

SUBMITTAL: 2nd

SCANNED BY/DATE:

CHECKED BY/DATE:



|                                                                                                                    |                                           |                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>CITY OF LAS VEGAS<br/>INTER-OFFICE MEMORANDUM</b>                                                               |                                           | <b>DATE:</b><br>March 1, 2021                                                                     |
| <b>TO:</b><br>Land Development Services<br>Department of Building & Safety                                         |                                           | <b>FROM:</b><br>Albert Sung, P.E.<br>Flood Control Project Engineer<br>Department of Public Works |
| <b>SUBJECT:</b><br>Drainage Study for:<br><b>Summerlin West Village 30A – Rough Street Grading –<br/>Update #1</b> |                                           | <b>COPIES TO:</b><br>Atkins                                                                       |
| <b>Cross Streets:</b>                                                                                              | Future Lake Mead Blvd. & Park Drift Trail | Howard Hughes Company                                                                             |
| <b>File Number:</b>                                                                                                | F:\Depot\DSMemos\DS5214B.doc              | Bart Anderson, P.E., DevCo                                                                        |
| <b>Parcel Number:</b>                                                                                              | 137-21-101-001                            |                                                                                                   |
| <b>Zoning Action:</b>                                                                                              | N/A                                       |                                                                                                   |
| <b>FEMA Flood Zone</b>                                                                                             | YES NO X                                  |                                                                                                   |
| <b>Proposed Storm Drain</b>                                                                                        | YES NO X                                  |                                                                                                   |

| HISTORY                   | DATE RECEIVED | DATE REVIEWED | COMMENTS                   | REVIEW FEES     | FEES PAID<br>Payment Trn # |
|---------------------------|---------------|---------------|----------------------------|-----------------|----------------------------|
| 1 <sup>st</sup> Submittal | 11/6/2019     | 11/21/2019    | Approved                   | \$400.00        | 3638198: \$400             |
| 2 <sup>nd</sup> Submittal | 2/9/2021      | 3/1/2021      | See Comments Below         | \$100.00        | 4163584: \$100             |
|                           |               |               | <b>TOTAL FEES (LDDRS):</b> | <b>\$500.00</b> | ----                       |

#### REMARKS:

#### 2<sup>nd</sup> Submittal: Update to add improvement plans with riprap for erosion protection

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

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

1. In all pertinent improvement plans storm drain construction notes, revise the thickness of riprap to be two times of the D<sub>50</sub> size. Construction Notes #5 to #9 showed only 1.5 times are not adequate. Review and revise accordingly.
2. The approval of this drainage study is for the issuance of rough grading permit for future streets and temporary construction access only.
3. Howard Hughes Company (Summerlin) is solely responsible for the maintenance and erosion control of the interim facilities.

**NOTE:** Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas Flood Control Section*. Additionally, conditional acceptance of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

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

**END OF REMARKS**

ays

T/R/S: T20S/R59E/21

AREA K-21



# Summerlin West Village 30A

Rough Grade Technical Drainage Memo Update

Prepared for Howard Hughes Company, LLC

February 8, 2021



HYDROLOGIC CRITERIA AND DRAINAGE MANUAL  
**DRAINAGE STUDY INFORMATION FORM**

Name of Development: Summerlin West Village 30A Rough Grade Date: February 8, 2021  
Location of Development: a) Descriptive (Cross Streets) North/South: Park Drift Trail (future)  
East/West: Lake Mead Boulevard (future)  
b) Section: 21 Township: 20S Range: 59E  
c) APN : 137-21-101-001

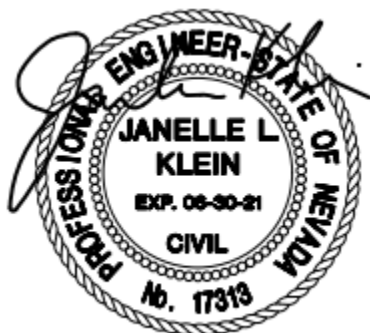
Name of Owner: Howard Hughes Company, LLC  
Telephone No.: (702) 791-4000 Fax No.: (702) 791-4450 E-Mail Address: april.chapman@howardhughes.com  
Address: 10845 Griffith Peak Drive, Suite 160, Las Vegas, NV 89135

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

Type of Land Development/Land Disturbance Process:

|                          |                  |                          |                          |                                     |                              |
|--------------------------|------------------|--------------------------|--------------------------|-------------------------------------|------------------------------|
| <input type="checkbox"/> | Rezoning         | <input type="checkbox"/> | Subdivision Map          | <input checked="" type="checkbox"/> | Clearing and Grading Only    |
| <input type="checkbox"/> | Parcel Map       | <input type="checkbox"/> | Planned Unit Development | <input type="checkbox"/>            | Other (Please specify below) |
| <input type="checkbox"/> | Large Parcel Map | <input type="checkbox"/> | Building Permit          | <input type="checkbox"/>            |                              |

1. Total Owned Land Area: At Site: +/- 2006 acres Being Developed/Disturbed: +/- 47 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.): Rough Grade
5. Approximate upstream land area which drains to the subject site: 6.8 square miles
6. Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation: Overall Master Conceptual Drainage Study for Summerlin West
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: The northern portion of the rough grade discharges to the Grand Park Detention Basin, which eventually discharges to the Western Beltway Channel. The southern portion of the proposed development discharges to DB45.
8. Briefly describe your proposed schedule for the subject project: ASAP



2/8/2021

Engineer's Seal

Submit this form as part of the required drainage study to the local entity which has jurisdiction over the subject property. This form may provide sufficient information to serve as the Conceptual Drainage Study.

**\*New Required Field**

**\*\*Review and concurrence of the Clark County Regional Flood Control District is required.**

|                       | Revision | Date |
|-----------------------|----------|------|
|                       |          |      |
|                       |          |      |
|                       |          |      |
| Local Entity File No. |          |      |

REFERENCE:

STANDARD FORM 1

# HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

## DRAINAGE SUBMITTAL CHECKLIST

Project Name: Summerlin West Village 30A Rough Grade

Map ID:

Firm Name: **Atkins**

Engineer: **Janelle Klein, 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: 10845 Griffith Peak Drive, Suite 160

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.

N/A

Design Manual **Standard Form 4**.

N/A

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

N/A

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

N/A

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    |                                                                                                                                                                                  |
|----------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>X</u> | _____ | Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.              |
| <u>X</u> | _____ | 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. |
| <u>X</u> | _____ | Vicinity Map with local and major cross streets identified and a north arrow.                                                                                                    |

### III. DRAINAGE PLAN

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

**REFERENCE:**

**STANDARD FORM 2**

# HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

## DRAINAGE SUBMITTAL CHECKLIST

### III. DRAINAGE PLAN (Continued)

| Yes      | No         |                                                                                                                                                                                                                                                                             |
|----------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <u>N/A</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>N/A</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>N/A</u> | Building and/or lot numbers.                                                                                                                                                                                                                                                |
|          | <u>N/A</u> | Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.                                                                                                                                                                                    |
|          | <u>N/A</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         |                                                                                                                                                                                                                |
|--------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <u>N/A</u> | 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. |
| <input type="checkbox"/> | <u>N/A</u> | 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.                                          |
| <input type="checkbox"/> | <u>N/A</u> | Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.                                                                                                                            |
| <input type="checkbox"/> | <u>N/A</u> | Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).                                                                                         |

### IV. HYDROLOGIC ANALYSIS

| Yes                      | No                       |                                                                                                                                                                              |
|--------------------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <u>N/A</u>               | Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.                                                        |
| <input type="checkbox"/> | <u>N/A</u>               | 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.                     |
| <input type="checkbox"/> | <u>N/A</u>               | 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.                       |
| <u>X</u>                 | <input type="checkbox"/> | Use of correct precipitation values in and around the McCarran Airport rainfall area.                                                                                        |
| <u>X</u>                 | <input type="checkbox"/> | A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.                                    |
| <u>X</u>                 | <input type="checkbox"/> | A summary table of stormwater flows showing basin area, $Q_{10}$ and $Q_{100}$ for both individual basins and combined basin flows, where applicable.                        |
| <u>X</u>                 | <input type="checkbox"/> | Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.                                              |
| <u>X</u>                 | <input type="checkbox"/> | On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners in accordance with current Nevada Drainage Law. |
| <input type="checkbox"/> | <u>N/A</u>               | 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                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <u>N/A</u>               | Flow split calculations and supporting documentation or reference for the method of flow split calculations used.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <input type="checkbox"/> | <u>N/A</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 $\geq 80$ feet. Calculations must be labeled by street name as indicated on the Grading Plan.                                                                                          |
| <u>X</u>                 | <input type="checkbox"/> | 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.                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> | <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.)                                                                                                                                                                                                                                                                                                                                                                     |
| <input type="checkbox"/> | <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.                                                                                                                                                                                                                                                                                       |
| <input type="checkbox"/> | <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.                                                                                            |
| <input type="checkbox"/> | <u>N/A</u>               | A complete water surface profile analysis (HEC-2, HEC-RAS, etc.) for channel flows and FEMA Zone A flood zones. <ul style="list-style-type: none"> <li>• Field survey data.</li> <li>• Input and output information.</li> <li>• Plotted cross-sections based on survey with proper encroachments.</li> <li>• A map showing the location of the cross-sections.</li> <li>• Analysis of both sub and super-critical flow segments.</li> <li>• A summary table and a discussion of the results in the text of the report.</li> </ul> |
| <input type="checkbox"/> | <u>N/A</u>               | Provide a 50 percent clogging factor in the capacity calculation for drop inlets.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <u>X</u>                 | <input type="checkbox"/> | 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>                 | <input type="checkbox"/> | The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.                                                                                                                                                                                                                                                                                                                                                                                                               |
| <input type="checkbox"/> | <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.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                        | N/A | Copies of all conditions of approval for development related to this property. (e.g. zoning, use permit, tentative map, etc.) Verify compliance with conditions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| X                      |     | <p>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.</p> <p><u>JLK</u> by initial here, the engineer on record acknowledges that the electronic copy is an identical replicate of the original hard copy submitted to the City of Las Vegas.</p> |

| II. GRADING PLAN INFORMATION |     |                                                                                                                                                                                                                                                                                                  |
|------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes                          | No  |                                                                                                                                                                                                                                                                                                  |
| X                            |     | (1) 24" X 36" copy of the Grading Plan, (including all Detail Sheets) sealed by the engineer.                                                                                                                                                                                                    |
|                              | N/A | 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  |                                                                                                                                                                                                                                                                                                                                                                                                              |
|                              | N/A | Proposed on-site and off-site storm drains and other flood control facilities with plan and profile sheets for public storm drains showing the class of pipe, (Class III, IV, V, etc.), design hydraulic grade line, (HGL) and 100 year storm flow. A public drainage easement must be provided over on-site storm drains conveying off-site flows. An overflow path must be provided over all storm drains. |
|                              | N/A | All existing and "to be constructed" walls with cross-sections showing wall type, (e.g. block wall, retaining wall, flood wall, etc.), with limits clearly defined, adjacent ground elevations. Wall heights must meet current ordinances and in no case exceed 14 feet above the adjacent property.                                                                                                         |
|                              | N/A | 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.)                                                                                                                                                                        |
|                              | N/A | This project uses a solid grouted stem wall (or approved alternate) at the back of sidewalk to provide erosion protection for landscaped areas where the depth of flow in the roadway exceeds the back of walk elevation. A corresponding cross-section detail is included.                                                                                                                                  |
|                              | N/A | Commercial and Common Lot Landscape areas are not allowed to drain over the sidewalk. The grading plans show flow lines with grades and sidewalk under drains for all landscape areas draining to the public ROW.                                                                                                                                                                                            |

| III. Local Entity Criteria - City of Las Vegas – Manual Section 1600 |     |                                                                                                                                                                                                          |
|----------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes                                                                  | No  |                                                                                                                                                                                                          |
|                                                                      | N/A | Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.             |
|                                                                      | N/A | Ten-foot wide public drainage easements to be privately maintained are allowed for flow less than 20 cfs. The depth of flow entering the easement must be checked using the submerged weir calculation.  |
| 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.

# 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 **Technical Drainage Memo Update for Summerlin West Village 30A: Rough Grade** electronic submittal matches the paper version bound into the study.

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

# Executive Summary

This Technical Drainage Memo Update, prepared on behalf of Howard Hughes Company, LLC represents the hydrologic and hydraulic analysis for the rough grade roadway improvements of the Summerlin West Village 30A development. Summerlin West Village 30A is located in the northwest Las Vegas Valley west of the CC-215 beltway and Summerlin Parkway. The proposed rough grade street improvements covered in this memo extend from the future site of the 4125 North reservoir, west to the future Park Drift Trail (street K). Five portions of rough grade roadway are included in this study: the reservoir temporary access road, the future reservoir access road, Lake Mead Boulevard from the future access road to Park Drift Trail, Mountain Run Drive (Street Z) from Lake Mead Boulevard to Park Drift Trail, and a portion of Park Drift Trail from just north of the intersection with Mountain Run Drive, south to the intersection with the future Sandstone Rise Drive. A detailed drainage study was performed using HEC-RAS 2D modeling software to ensure that existing hydrologic and hydraulic conditions were not negatively impacted by the proposed rough grade improvements, as well as to ensure that the proposed grading would be able to adequately handle a 100-year storm event without damage from highly erosive stormwater velocities. The following memo provides an update to the key insights and findings from the full-scale Technical Drainage Study (TDS). The complete TDS is available upon request.

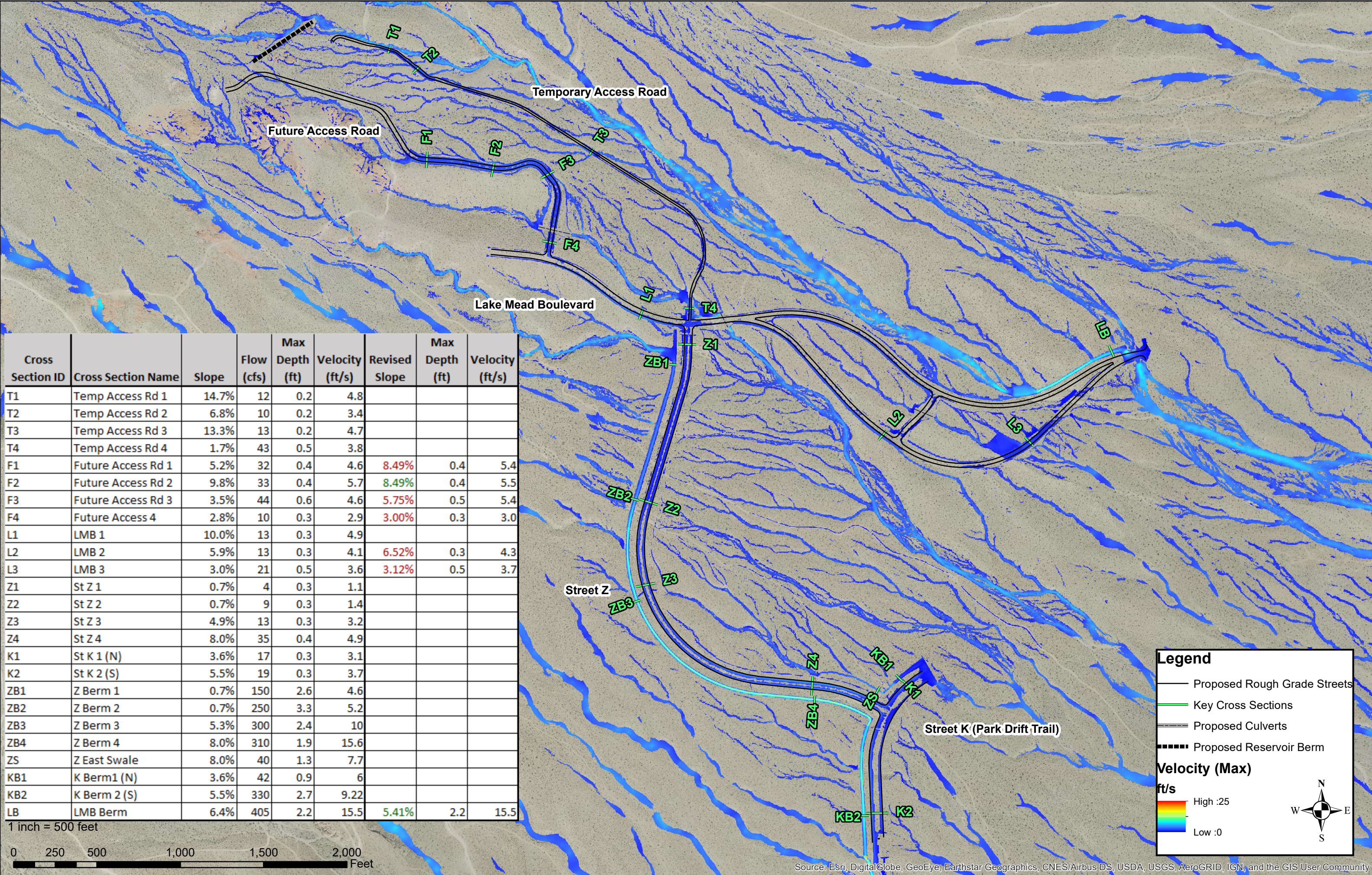
# Hydrologic Analysis

Atkins developed a two-dimensional (2D) hydraulic model of existing terrain in the Summerlin West development area in August 2019 to establish baseline existing hydraulic conditions. The model was developed using the US Army Corps of Engineers HEC-RAS v. 5.0.7. The original 2D model which had four subbasins and covered 20.7 sq. mi. was reduced to one of the original subbasins of 6.8 sq. mi., after determining that no flow from the adjacent subbasins was tributary to the proposed rough grade project area. LiDAR collected by the Southern Nevada Water Authority (SNWA) in 2016 with a resolution of 1-ft was used as a primary source for digital elevation data. Proposed grading for the Village 30A rough grade project was merged with the existing grade topography at 1-ft by 1-ft grid spacing to be used at the terrain in the 2D hydraulics model. HEC-HMS v. 4.3 was used to develop rainfall excess for the project area which was then used as input into the HEC-RAS 2D model. The 2018 Las Vegas Valley Master Plan Update (LVVMPU) rainfall polygon was used to determine the average rainfall depth for the basin tributary to the proposed project site. An SDN3 storm distribution curve was used to calculate the rainfall hyetograph. A depth area reduction factor (DARF) of 0.895 was applied to the rainfall depth of the 6.8 sq. mi basin. A composite runoff curve number of 85.0 was determined from the 2018 LVVMPU soils and undeveloped land use which was used to calculate rainfall losses in HEC-HMS. The 2D model simulations were run for an 8-hour duration of the 100-year 6-hour rainfall storm event using a variable time step based on current conditions.

# Hydraulic Analysis

A Manning's roughness coefficient of 0.027 was used on the surface of all proposed rough grade streets, and a roughness coefficient of 0.035 was used for the remainder of the model domain. Initial model runs highlighted the need for rip-rap on several portions of roadway as well as in interim roadside swales/berms to inhibit erosive velocities. Rip-rap calculations were performed based on HCDDM Section 705 using HEC-11 methodology. These calculations determined a median riprap particle size ( $D_{50}$ ) required to resist the average channel shear stresses. Manning's roughness values representative of the median rip-rap particle size ( $D_{50}$ ) were then overlain in the representative swales/berms and the 2D model was re-run accordingly. Median rip-rap sizes of 6-inches through 2-feet are needed in various areas throughout the project area. In portions of the Mountain Run Drive (street Z) berm where slopes are greater than 8%, and in the Lake Mead berm, grouted rip-rap is needed. Rip-rap sizes and extents are included in the detailed plan-set. To determine average depths and velocities across critical sections of roadways and swales independently from the 2D model, normal depth calculations were performed in Flowmaster 10.2. Maximum depth and velocity 2D model results are shown in Figures 1 and 2, respectively. Tabular data of flows, depths, and velocities from Flowmaster determined at critical cross sections can also be found on Figures 1 and 2. Critical cross sections for each roadway were selected where flows and slopes were the greatest. The analysis was updated with the revised slopes and updated exhibit is provided with this submittal.





| Cross Section ID | Cross Section Name | Slope | Flow (cfs) | Max Depth (ft) | Velocity (ft/s) | Revised Slope | Max Depth (ft) | Velocity (ft/s) |
|------------------|--------------------|-------|------------|----------------|-----------------|---------------|----------------|-----------------|
| T1               | Temp Access Rd 1   | 14.7% | 12         | 0.2            | 4.8             |               |                |                 |
| T2               | Temp Access Rd 2   | 6.8%  | 10         | 0.2            | 3.4             |               |                |                 |
| T3               | Temp Access Rd 3   | 13.3% | 13         | 0.2            | 4.7             |               |                |                 |
| T4               | Temp Access Rd 4   | 1.7%  | 43         | 0.5            | 3.8             |               |                |                 |
| F1               | Future Access Rd 1 | 5.2%  | 32         | 0.4            | 4.6             | 8.49%         | 0.4            | 5.4             |
| F2               | Future Access Rd 2 | 9.8%  | 33         | 0.4            | 5.7             | 8.49%         | 0.4            | 5.5             |
| F3               | Future Access Rd 3 | 3.5%  | 44         | 0.6            | 4.6             | 5.75%         | 0.5            | 5.4             |
| F4               | Future Access 4    | 2.8%  | 10         | 0.3            | 2.9             | 3.00%         | 0.3            | 3.0             |
| L1               | LMB 1              | 10.0% | 13         | 0.3            | 4.9             |               |                |                 |
| L2               | LMB 2              | 5.9%  | 13         | 0.3            | 4.1             | 6.52%         | 0.3            | 4.3             |
| L3               | LMB 3              | 3.0%  | 21         | 0.5            | 3.6             | 3.12%         | 0.5            | 3.7             |
| Z1               | St Z 1             | 0.7%  | 4          | 0.3            | 1.1             |               |                |                 |
| Z2               | St Z 2             | 0.7%  | 9          | 0.3            | 1.4             |               |                |                 |
| Z3               | St Z 3             | 4.9%  | 13         | 0.3            | 3.2             |               |                |                 |
| Z4               | St Z 4             | 8.0%  | 35         | 0.4            | 4.9             |               |                |                 |
| K1               | St K 1 (N)         | 3.6%  | 17         | 0.3            | 3.1             |               |                |                 |
| K2               | St K 2 (S)         | 5.5%  | 19         | 0.3            | 3.7             |               |                |                 |
| ZB1              | Z Berm 1           | 0.7%  | 150        | 2.6            | 4.6             |               |                |                 |
| ZB2              | Z Berm 2           | 0.7%  | 250        | 3.3            | 5.2             |               |                |                 |
| ZB3              | Z Berm 3           | 5.3%  | 300        | 2.4            | 10              |               |                |                 |
| ZB4              | Z Berm 4           | 8.0%  | 310        | 1.9            | 15.6            |               |                |                 |
| ZS               | Z East Swale       | 8.0%  | 40         | 1.3            | 7.7             |               |                |                 |
| KB1              | K Berm1 (N)        | 3.6%  | 42         | 0.9            | 6               |               |                |                 |
| KB2              | K Berm 2 (S)       | 5.5%  | 330        | 2.7            | 9.22            |               |                |                 |
| LB               | LMB Berm           | 6.4%  | 405        | 2.2            | 15.5            | 5.41%         | 2.2            | 15.5            |



Atkins

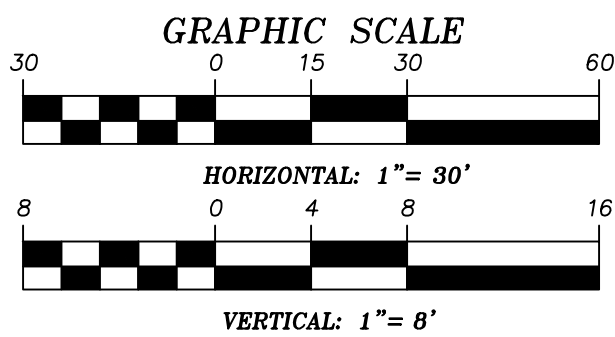
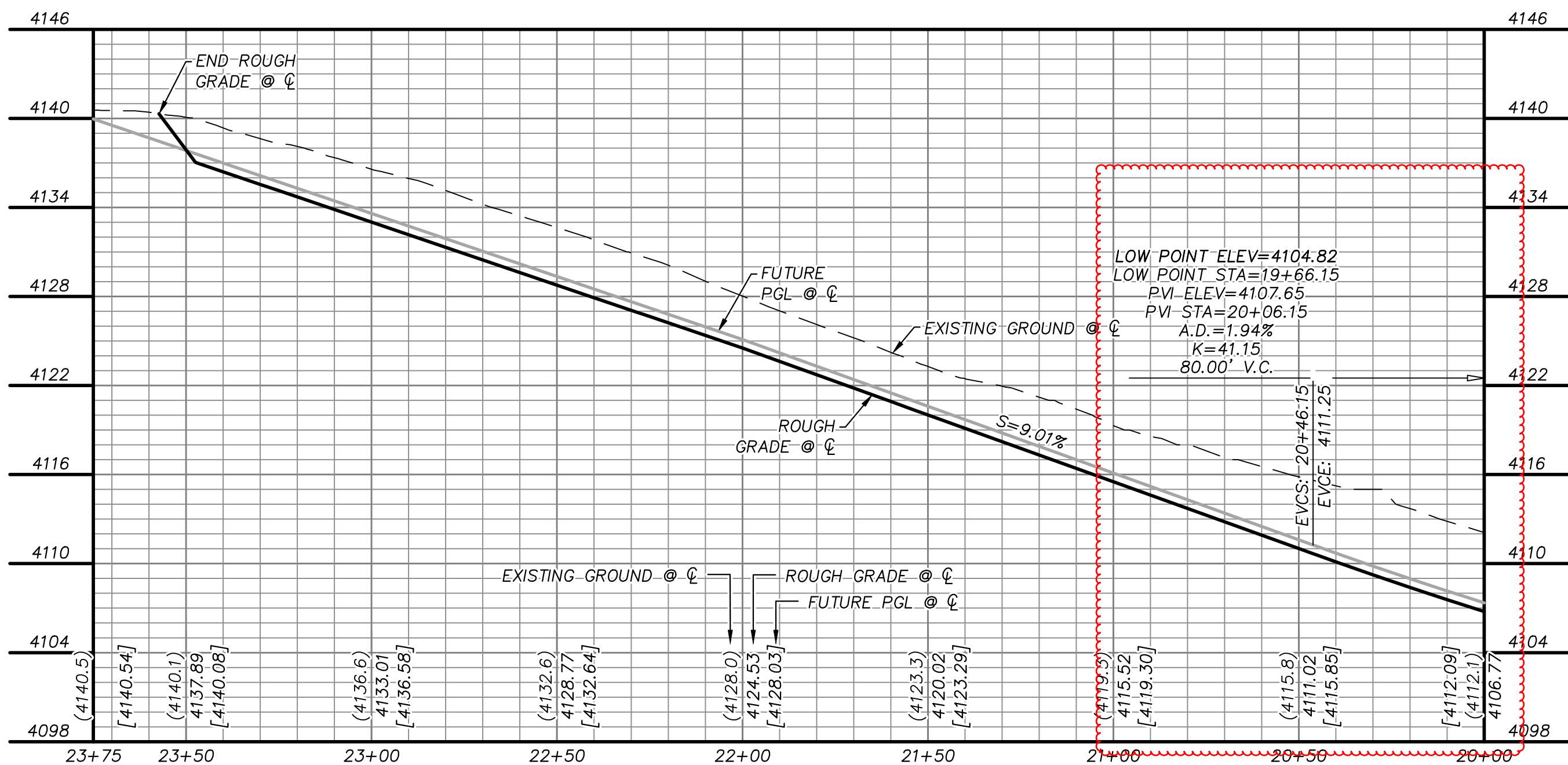
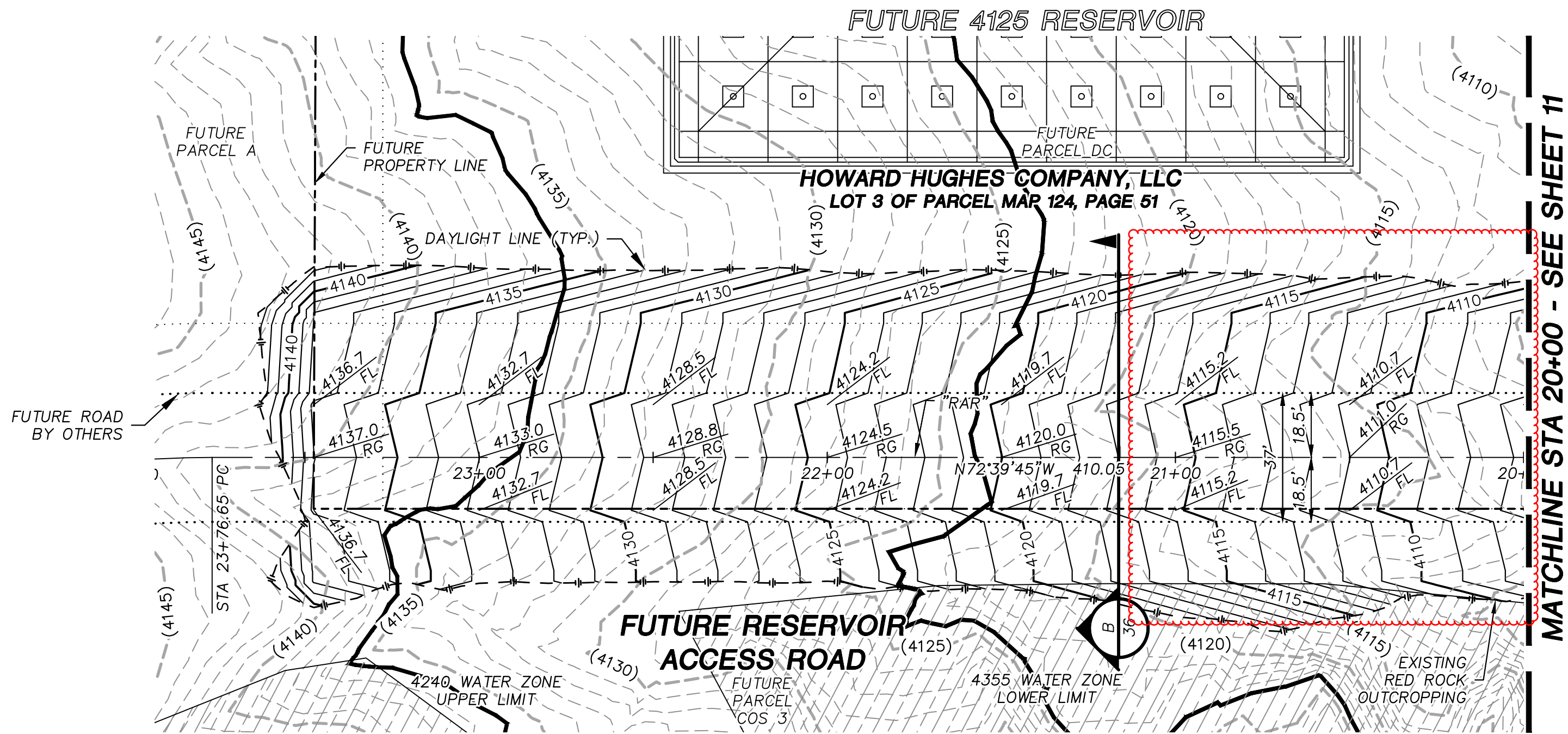
2270 Corporate Circle  
Suite 200  
Henderson, NV 89074-7755

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

**Fax: +1 702 263 7200**

**Direct: 702 551 0365**

**Janelle.Klein@atkinsglobal.com**



SOILS REPORT

BY NOVA GEOTECHNICAL  
PROJECT NO. G-19-183  
DATED 10-21-2019  
EARTHWORK QUANTITIES (RAW):  
CUT= 233,200 CU YDS  
FILL= 146,400 CU YDS

GRADING PLAN CERTIFICATION

ANTHONY J. ORTIZ PE# 18849 DATE 10/1/2020

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.

DS05214

BASIS OF BEARING

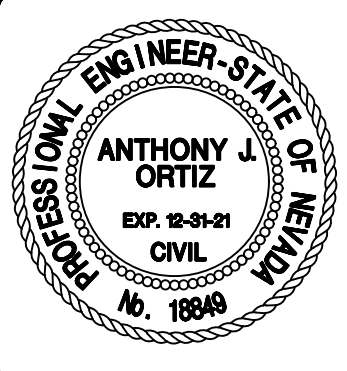
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

BENCHMARK

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



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DESIGNED BY: G. BLAKE  
DRAWN BY: G. BLAKE  
CHECKED BY: G. BLAKE  
HORIZ.: 1"=30'  
VERT.: 1"=8'

JOB NO. 1000063655  
DATE: NOVEMBER, 2020  
DRAWING NO. 10/39  
CLV

STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN PIPE.
2. INSTALL RCP END SECTION PER NDOT STANDARD DRAWING R-2.3.1
3. INSTALL NDOT TYPE II DROP INLET PER NDOT STANDARD DRAWING R-4.2.1
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REVISIONS

| REV. | DESCRIPTION | BY | DATE | APPROVAL |
|------|-------------|----|------|----------|
|      |             |    |      |          |
|      |             |    |      |          |
|      |             |    |      |          |
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ATKINS

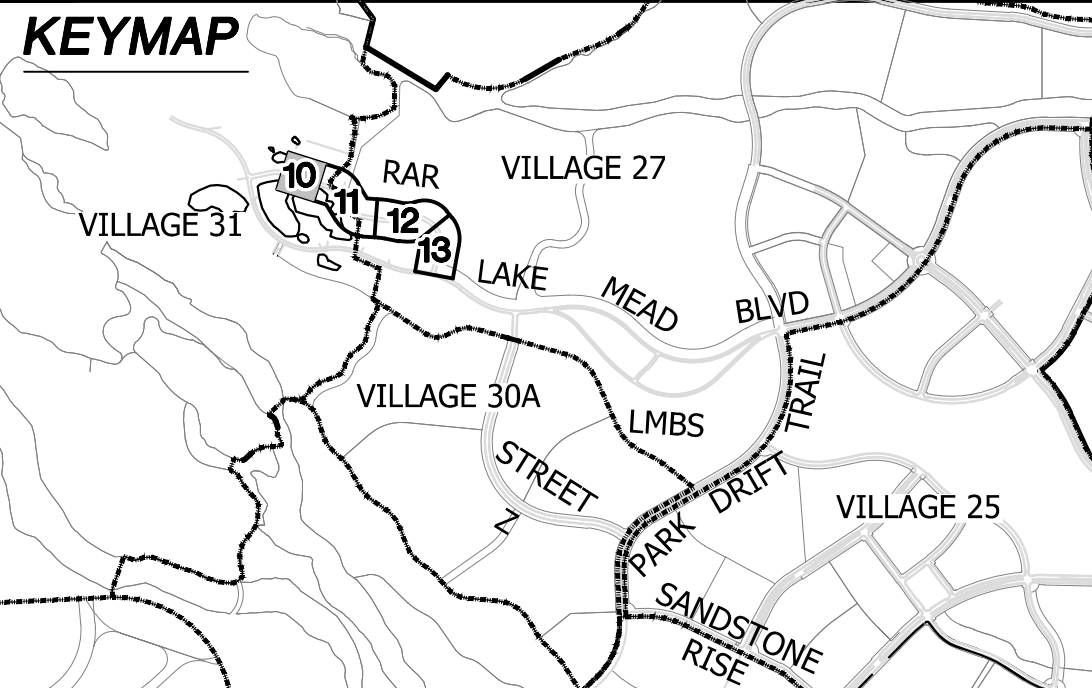
2270 Corporate Circle Suite 200  
Henderson, Nevada 89074  
Telephone: +1702.263.7755  
Fax: +1702.263.7200



SUMMERLIN VILLAGE 30A

ROUGH GRADING

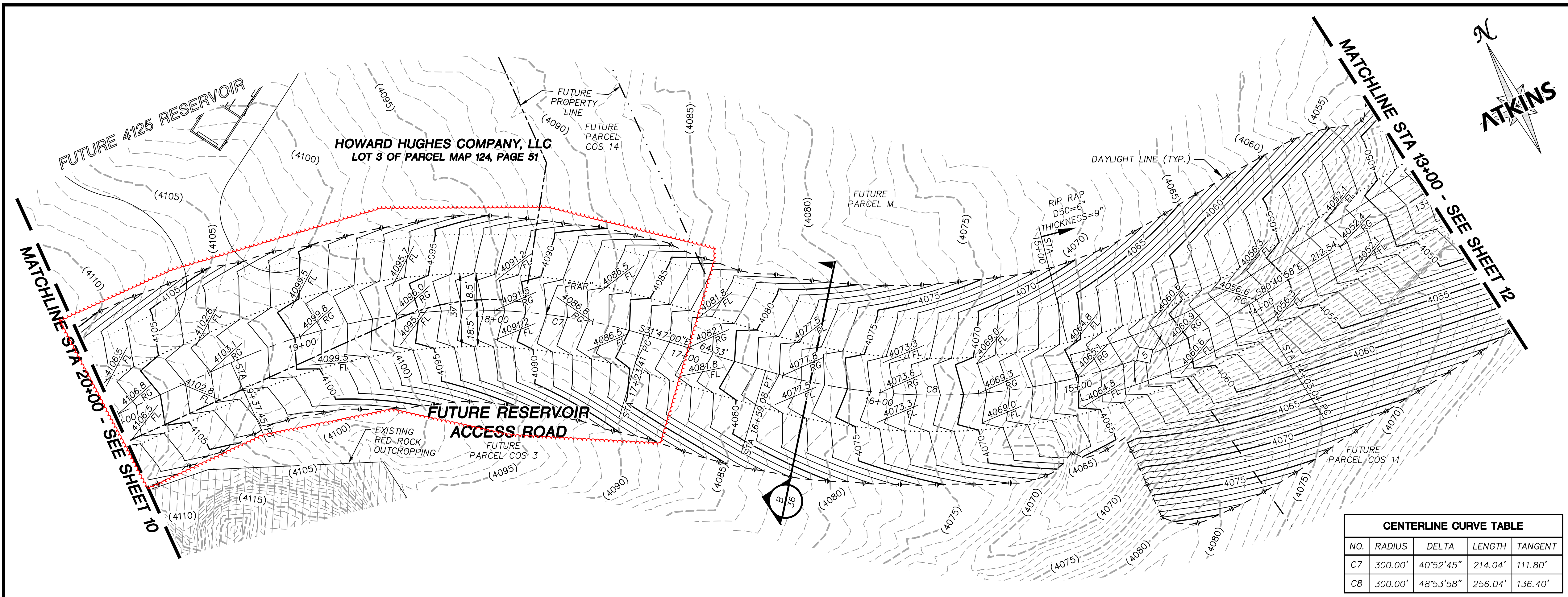
PLAN AND PROFILE - RESERVOIR ACCESS ROAD  
STA 20+00 TO 23+75



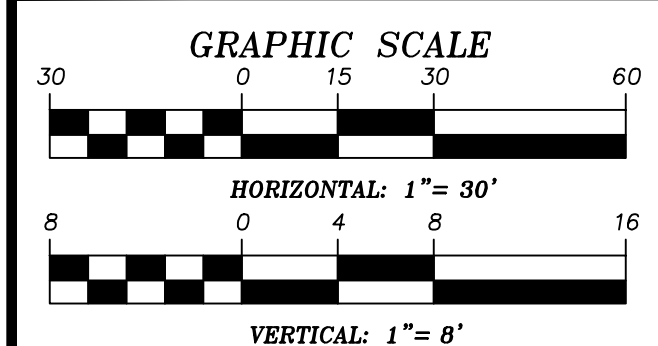
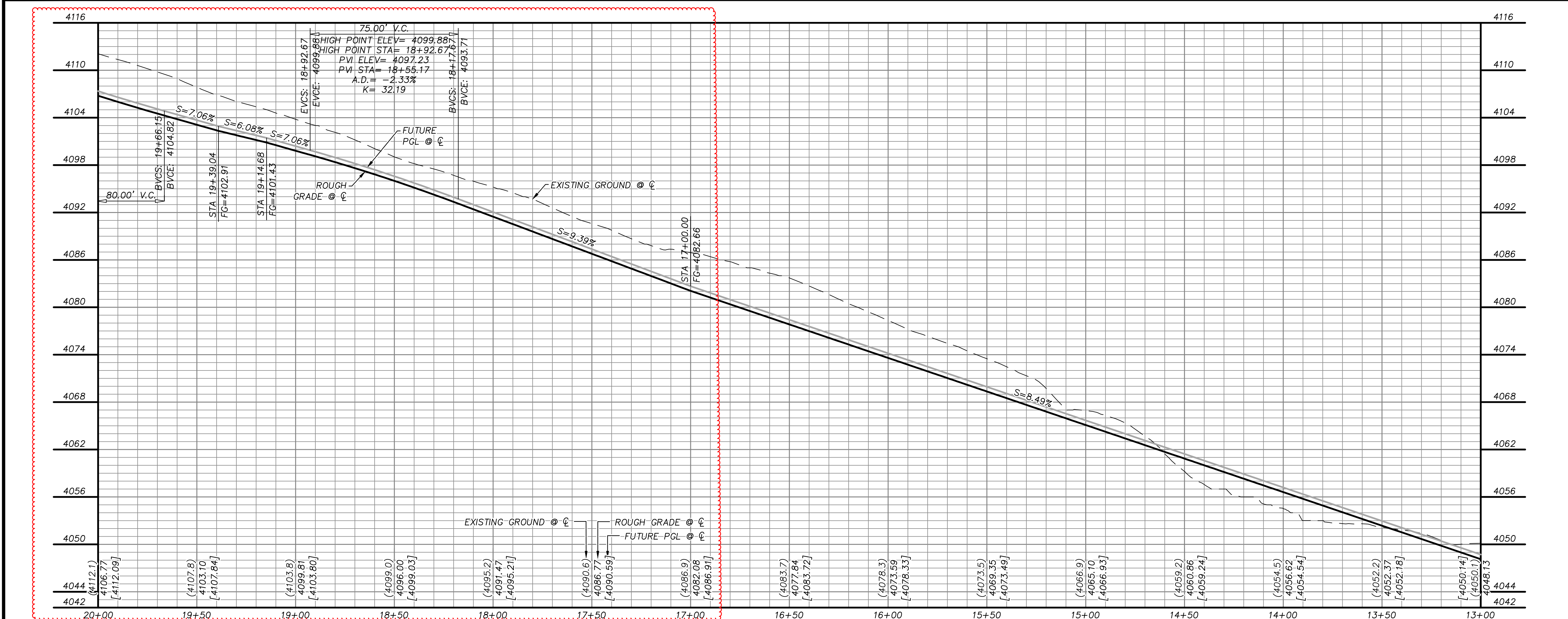
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107V8095  
L20-00015





| CENTERLINE CURVE TABLE |         |           |         |         |
|------------------------|---------|-----------|---------|---------|
| NO.                    | RADIUS  | DELTA     | LENGTH  | TANGENT |
| C7                     | 300.00' | 40°52'45" | 214.04' | 111.80' |
| C8                     | 300.00' | 48°53'58" | 256.04' | 136.40' |



**SOILS REPORT**  
BY NOVA GEOTECHNICAL  
PROJECT NO. G-19-183  
DATED 10-21-2019  
EARTHWORK QUANTITIES (RAW):  
CUT= 233,200 CU YDS  
FILL= 146,400 CU YDS

**GRADING PLAN CERTIFICATION**  
ANTHONY J. ORTIZ PE# 18849 DATE 10/1/2020  
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.  
DS05214

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

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

Call before you dig  
UnderGround  
1-702-432-5300  
PREMIER AND ARTISANAL SYSTEMS OF TRANSPORTATION

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

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

**STORM DRAIN CONSTRUCTION NOTES**

1. INSTALL STORM DRAIN PIPE.
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**RESERVOIR ACCESS ROAD RIP-RAP TABLE**

| STATION | STATION | SIZE/TYPE            |
|---------|---------|----------------------|
| 21+75   | 31+00   | D50=6", THICKNESS=9" |

**ROUGH GRADE**  
THE PROPOSED ROUGH GRADE OF PAVEMENT FOR RESERVOIR ACCESS ROAD IS 7" BELOW THE FUTURE FINISH GRADE SHOWN WITHIN THESE PLANS.

**KEYMAP**

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

**SUMMERLIN**

**SUMMERLIN VILLAGE 30A**  
ROUGH GRADING

**PLAN AND PROFILE - RESERVOIR ACCESS ROAD**  
STA 13+00 TO STA 20+00

DESIGNED BY: G. BLAKE  
DRAWN BY: G. BLAKE  
CHECKED BY: G. BLAKE  
DATE: NOVEMBER, 2020  
DRAWING NO. 11/39  
VERT.: 1"=8'  
HORIZ.: 1"=30'

JOB NO. 1000063655  
CLV

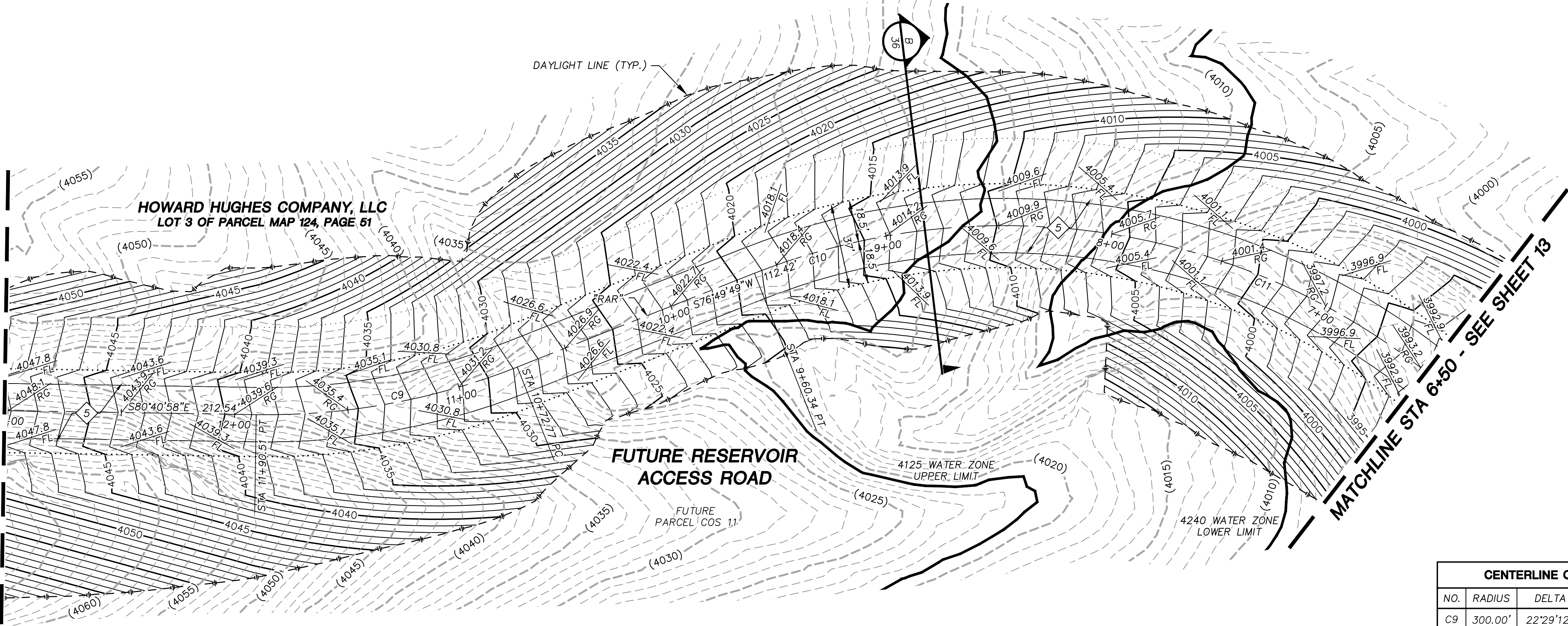
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**PROFESSIONAL ENGINEER-STATE OF NEVADA**  
ANTHONY J. ORTIZ  
EXP. 9-29-9  
CIVIL  
No. 18849

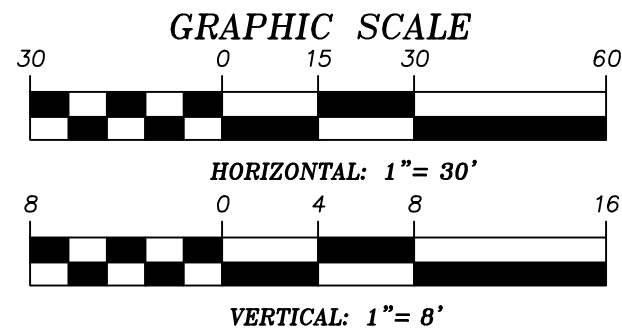
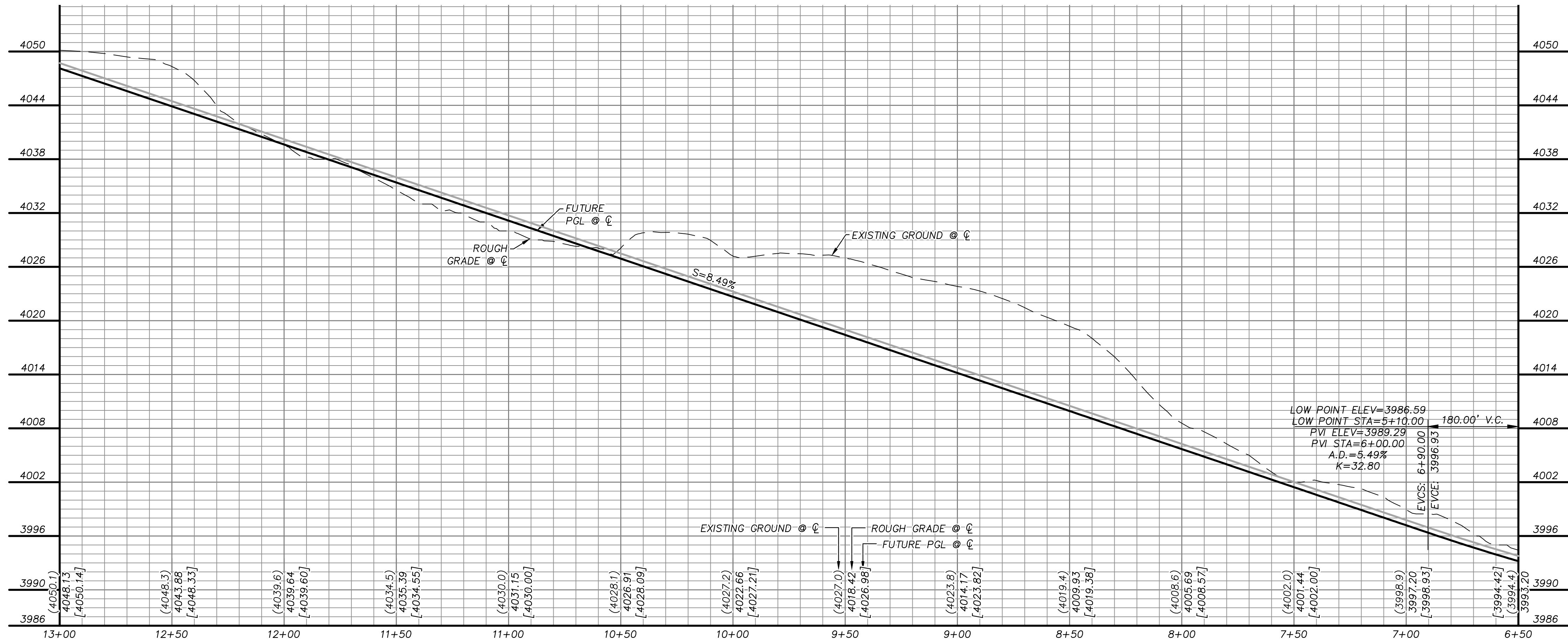
107v8095  
L20-00015



MATCHLINE STA 13+00 - SEE SHEET 11



| CENTERLINE CURVE TABLE |         |            |         |         |
|------------------------|---------|------------|---------|---------|
| NO.                    | RADIUS  | DELTA      | LENGTH  | TANGENT |
| C9                     | 300.00' | 22°29'12"  | 117.74' | 59.64'  |
| C11                    | 300.00' | 126°32'36" | 662.58' | 595.75' |



**SOILS REPORT**  
BY NOVA GEOTECHNICAL  
PROJECT NO. G-19-183  
DATED 10-21-2019  
EARTHWORK QUANTITIES (RAW):  
CUT= 233,200 CU YDS  
FILL= 146,400 CU YDS

**GRADING PLAN CERTIFICATION**  
ANTHONY J. ORTIZ PE# 18849 DATE 10/1/2020  
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.  
DS05214

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DESIGNED BY: G. BLAKE  
DRAWN BY: G. BLAKE  
CHECKED BY: G. BLAKE  
DATE: NOVEMBER, 2020  
DRAWING NO. 12/39  
JOB NO. 1000063655  
CLV

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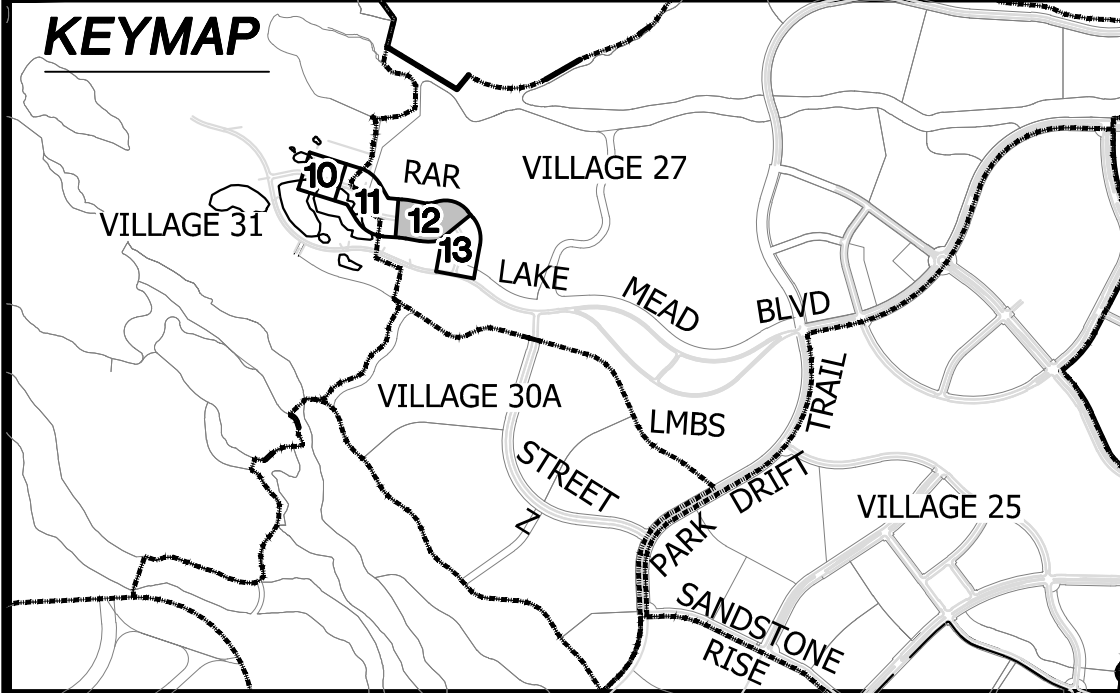
REVISIONS  
DESCRIPTION  
REV.

**ATKINS**  
2270 Corporate Circle Suite 200  
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Telephone: +1702.263.7755  
Fax: +1702.263.7200

**SUMMERLIN**

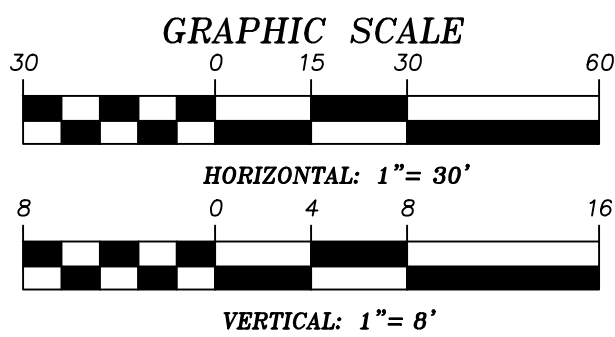
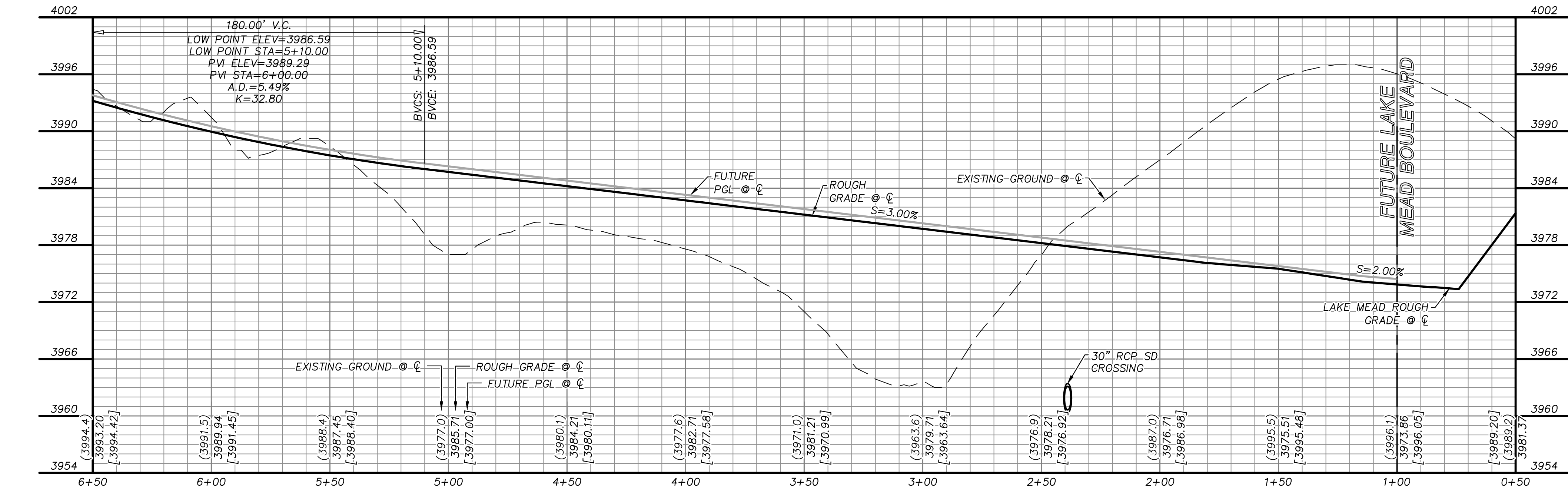
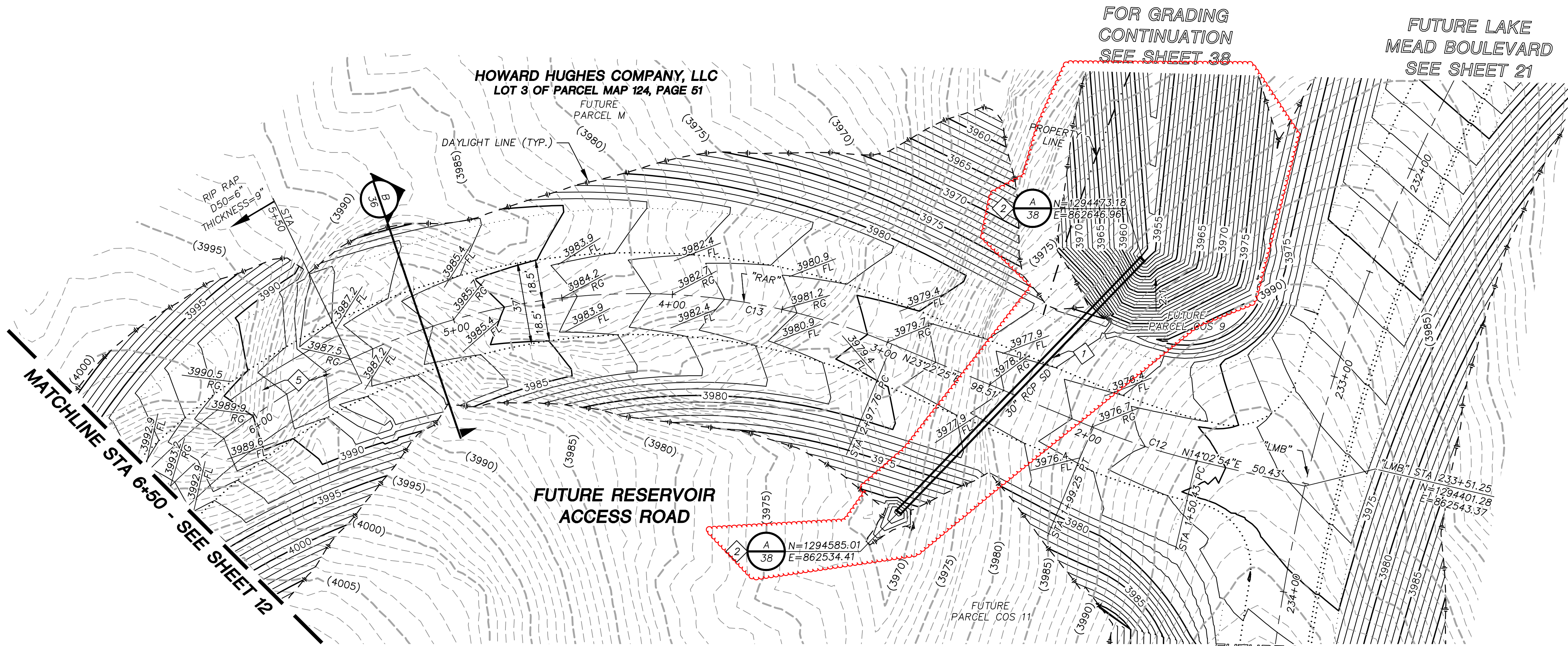
SUMMERLIN VILLAGE 30A  
ROUGH GRADING

PLAN AND PROFILE - RESERVOIR ACCESS ROAD  
STA 6+50 TO STA 13+00



107V8095  
L20-00015





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BY NOVA GEOTECHNICAL  
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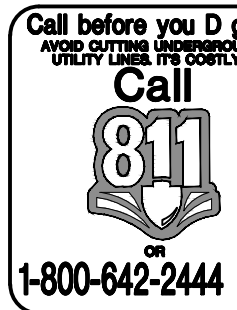
ANTHONY J. ORTIZ PE# 18849 DATE 10/1/2020  
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#### BASIS OF BEARING

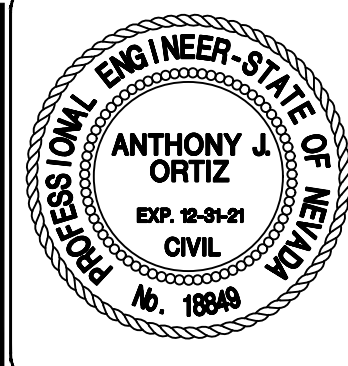
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FND USC&GS DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN. T21S,R59E,S03



UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE 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.



#### STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN PIPE.
2. INSTALL RCP END SECTION PER NDOT STANDARD DRAWING R-2.3.1
3. INSTALL NDOT TYPE II DROP INLET PER NDOT STANDARD DRAWING R-4.2.1
4. INSTALL DOUBLE RCP END SECTION PER NDOT STANDARD DRAWING R-2.5.2
5. INSTALL RIP-RAP (D50=6", THICKNESS=9")
6. INSTALL RIP-RAP (D50=12", THICKNESS=18")
7. INSTALL RIP-RAP (D50=24", THICKNESS=36")
8. INSTALL GROUTED RIP-RAP (D50=24", THICKNESS=36")
9. INSTALL RIP-RAP (D50=18", THICKNESS=27")

#### RESERVOIR ACCESS ROAD RIP-RAP TABLE

| STATION | STATION | SIZE/TYPE            |
|---------|---------|----------------------|
| 21+75   | 31+00   | D50=6", THICKNESS=9" |

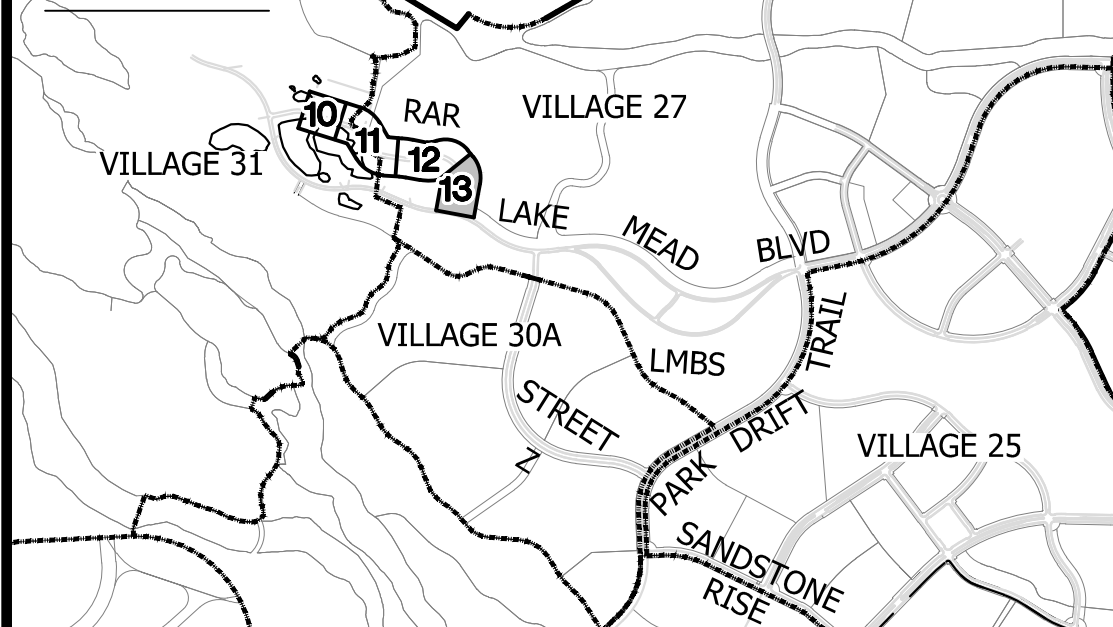
#### CENTERLINE CURVE TABLE

| NO. | RADIUS  | DELTA      | LENGTH  | TANGENT |
|-----|---------|------------|---------|---------|
| C11 | 300.00' | 126°32'36" | 662.58' | 595.75' |
| C12 | 300.00' | 9°19'31"   | 48.83'  | 24.47'  |

#### ROUGH GRADE

THE PROPOSED ROUGH GRADE OF PAVEMENT FOR RESERVOIR ACCESS ROAD IS 7" BELOW THE FUTURE FINISH GRADE SHOWN WITHIN THESE PLANS.

#### KEYMAP



DESIGNED BY: G. BLAKE  
DRAWN BY: G. BLAKE  
CHECKED BY: G. BLAKE  
DATE: NOVEMBER, 2020  
DRAWING NO. 13/39  
VERT.: 1"=8'

SUMMERLIN VILLAGE 30A  
ROUGH GRADING

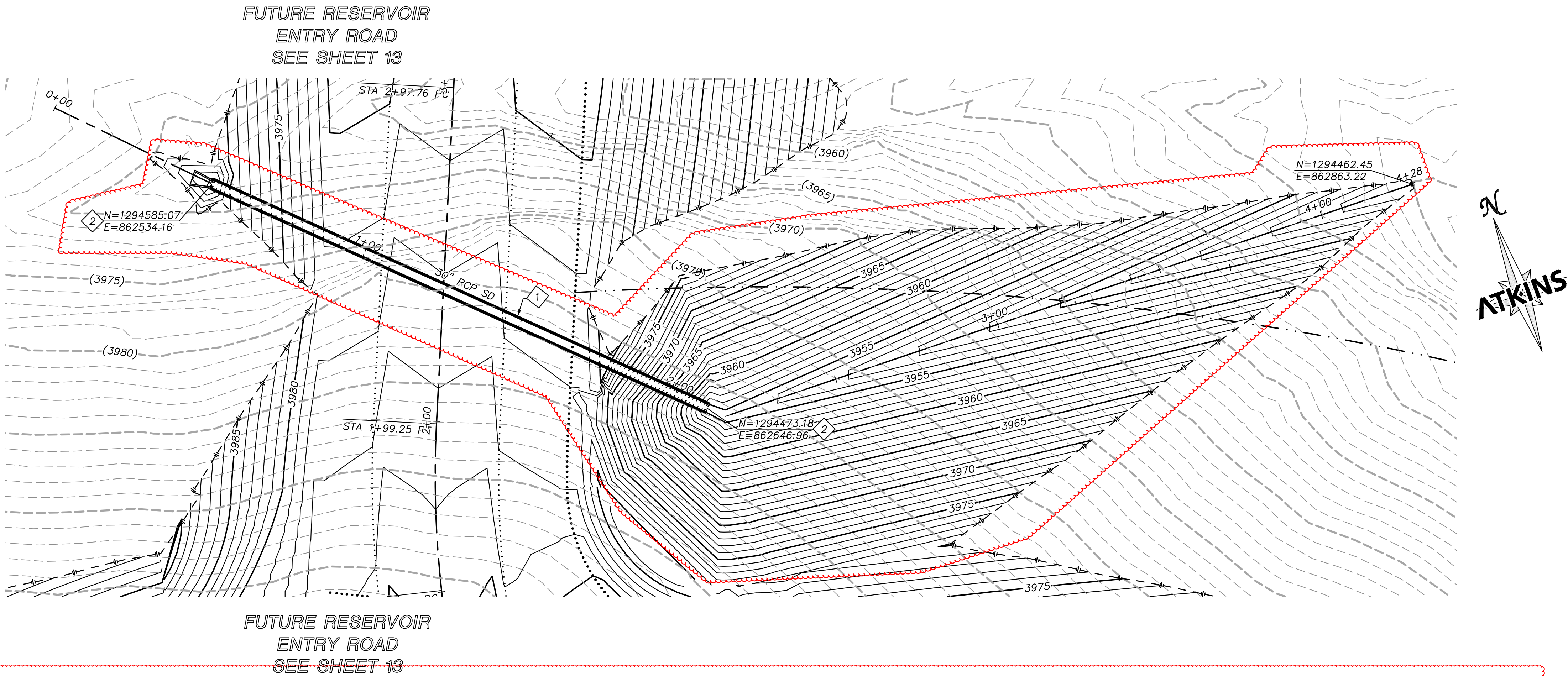
PLAN AND PROFILE - RESERVOIR ACCESS ROAD  
BEGIN TO STA 6+50

REVISIONS  
DESCRIPTION  
BY  
DATE  
APPROVAL

ATKINS  
2270 Corporate Circle Suite 200  
Henderson, Nevada 89074  
Telephone: +1702.263.7755  
Fax: +1702.263.7700

SUMMERLIN





### STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN PIPE.
2. INSTALL RCP END SECTION PER NDOT STANDARD DRAWING R-2.3.1
3. INSTALL NDOT TYPE II DROP INLET PER NDOT STANDARD DRAWING R-4.2.1
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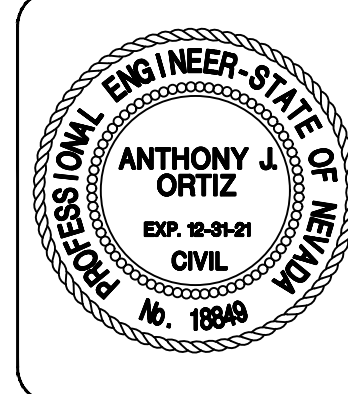
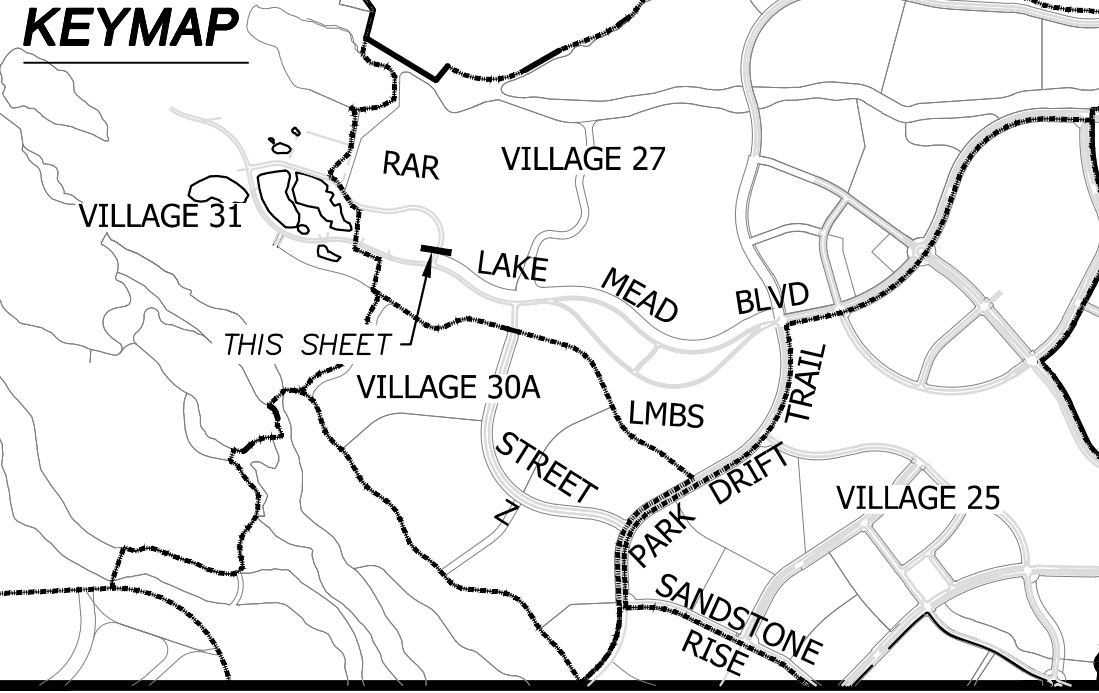
### REVISIONS

| REV. | DESCRIPTION | BY | DATE | APPROVAL |
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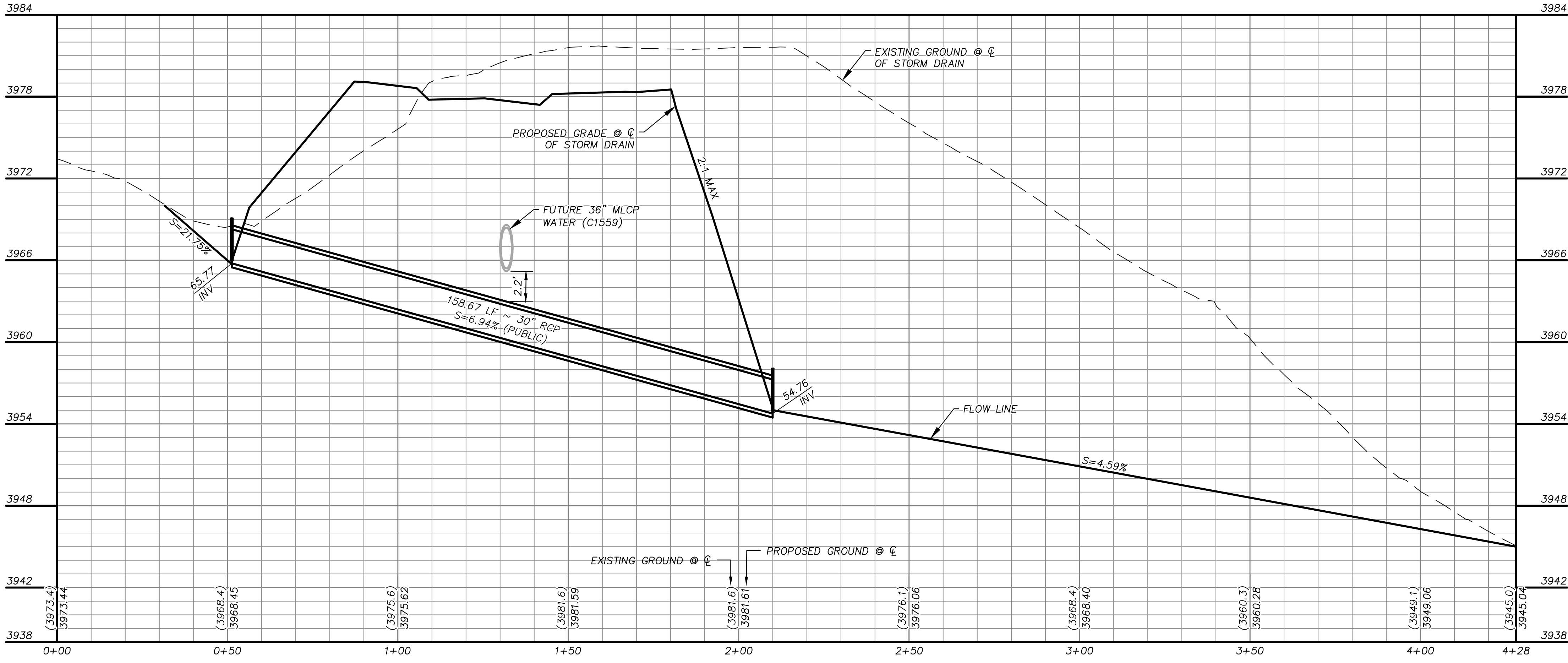
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**SUMMERLIN**

**SUMMERLIN VILLAGE 30A**  
ROUGH GRADING  
LATERAL DETAILS 1



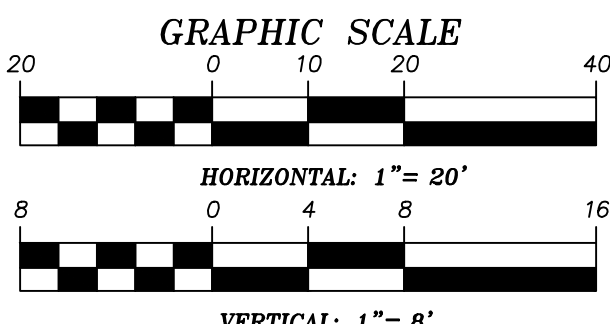
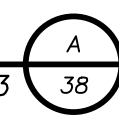
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|--------------------------|-----------------------|-------------------------|----------------|--------------|
| DESIGNED BY:<br>G. BLAKE | DRAWN BY:<br>G. BLAKE | CHECKED BY:<br>G. BLAKE | HORIZ.: 1"=20' | VERT.: 1"=8' |
| 100063655                | NOVEMBER, 2020        | DRAWING NO.             | 38/39          |              |



### RESERVOIR ACCESS ROAD STORM DRAIN DETAIL

SCALE: 1"=20'

SEE DRAWING 13



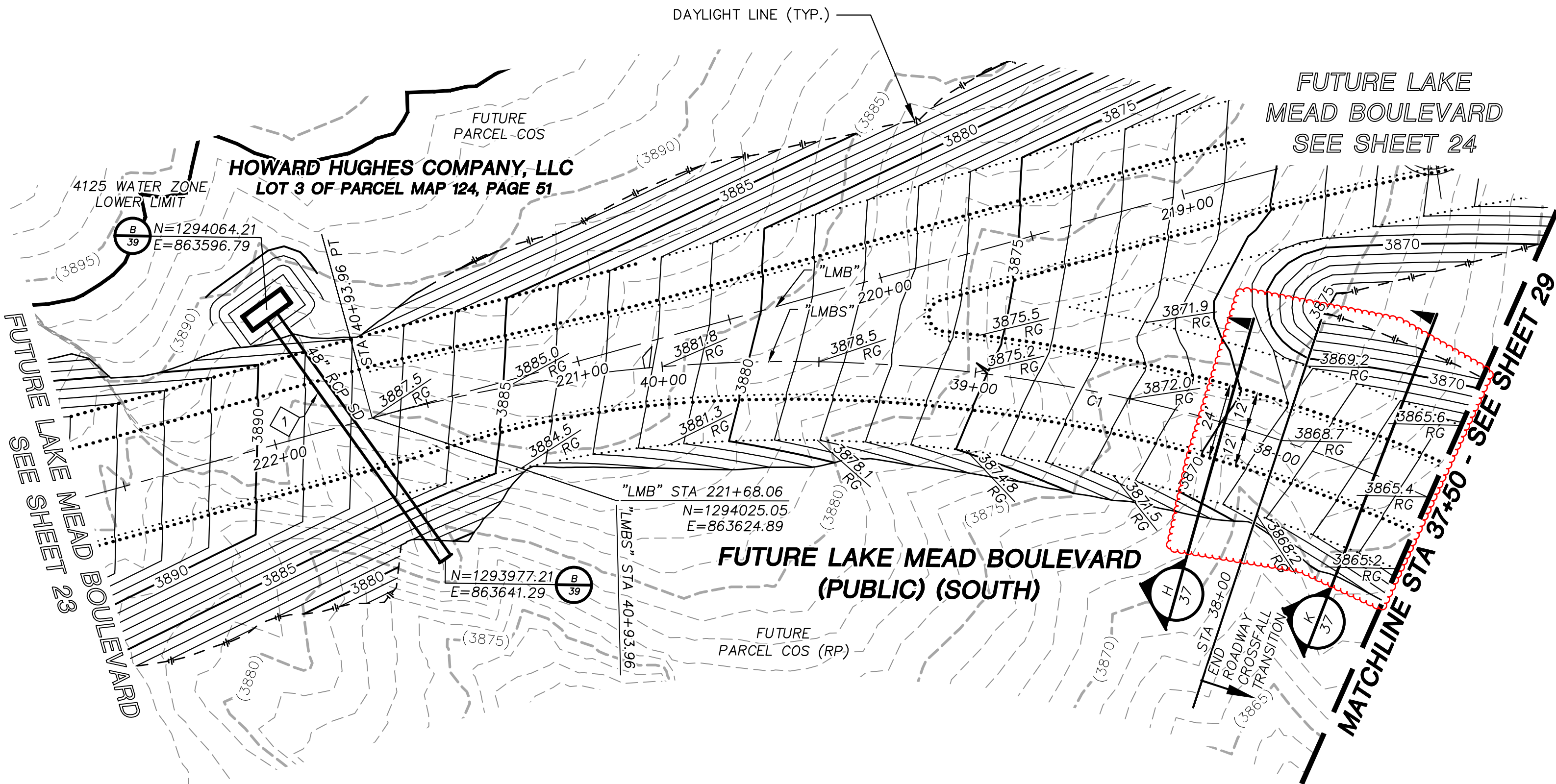
### SOILS REPORT

BY NOVA GEOTECHNICAL  
PROJECT NO. G-19-183  
DATED 10-21-2019  
EARTHWORK QUANTITIES (RAW):  
CUT= 233,200 CU YDS  
FILL= 146,400 CU YDS

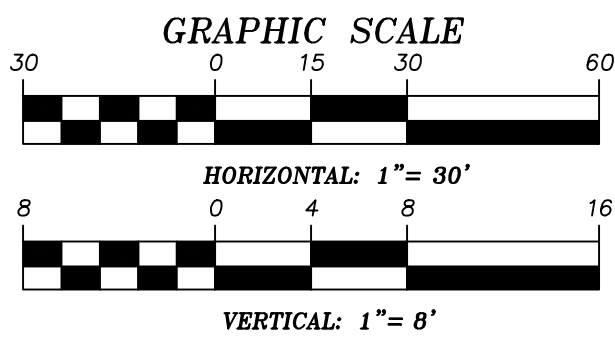
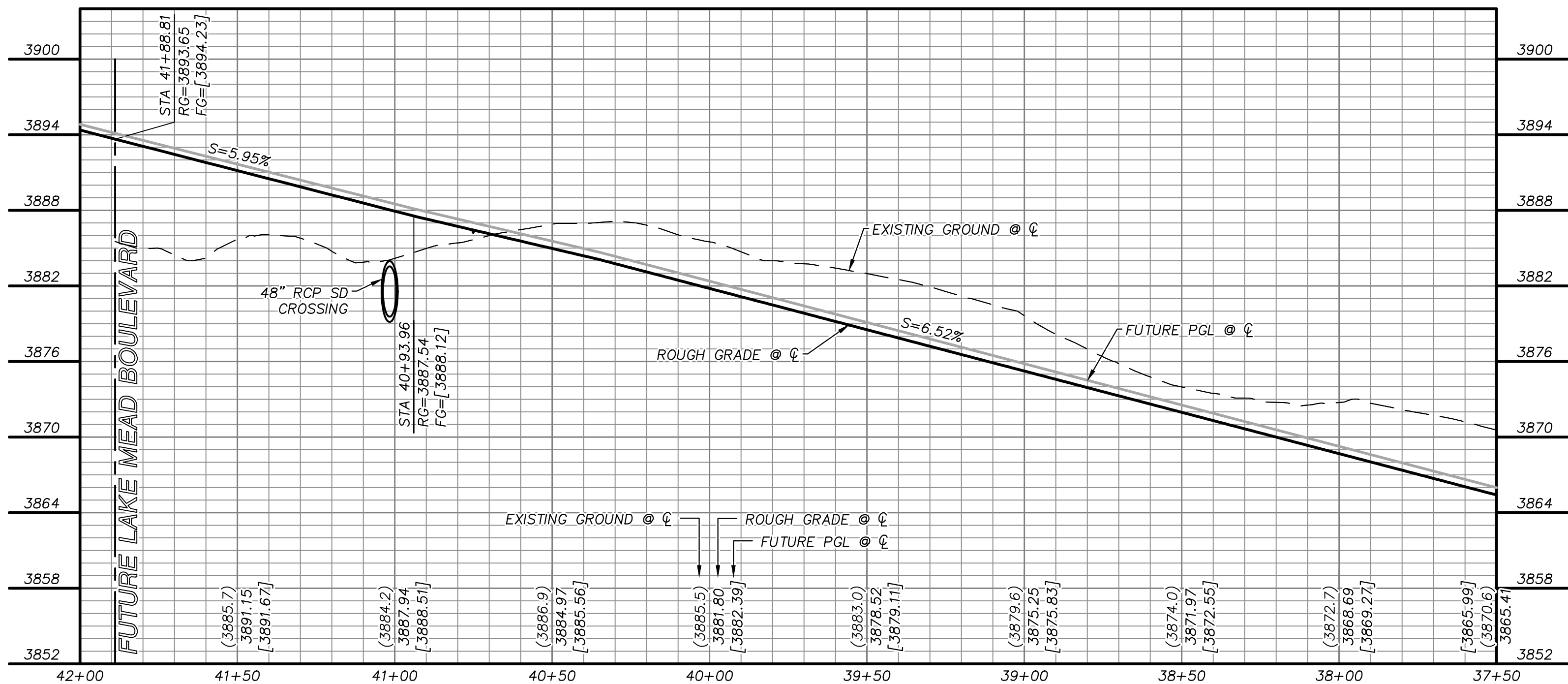
### GRADING PLAN CERTIFICATION

ANTHONY J. ORTIZ PE# 18849 DATE 10/1/2020  
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.  
DS05214





| CENTERLINE CURVE TABLE |         |           |         |         |
|------------------------|---------|-----------|---------|---------|
| NO.                    | RADIUS  | DELTA     | LENGTH  | TANGENT |
| C1                     | 500.00' | 55°27'18" | 483.94' | 262.81' |



#### SOILS REPORT

BY NOVA GEOTECHNICAL  
PROJECT NO. G-19-183  
DATED 10-21-2019  
EARTHWORK QUANTITIES (RAW):  
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DS05214

#### BASIS OF BEARING

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

#### BENCHMARK

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



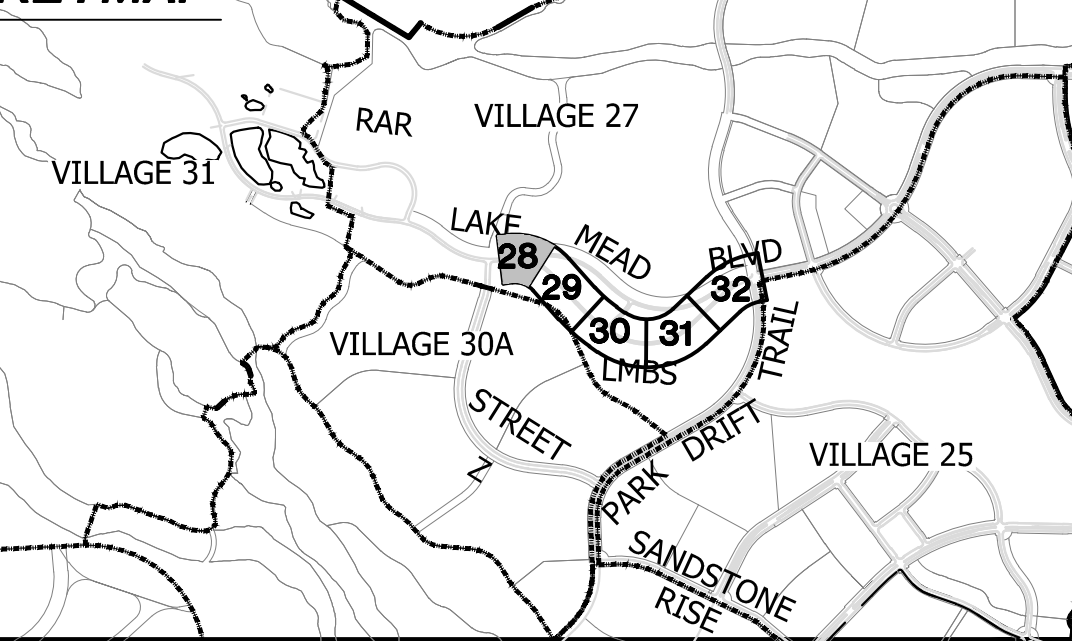
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#### ROUGH GRADE

THE PROPOSED ROUGH GRADE OF PAVEMENT FOR LAKE MEAD  
BOULEVARD IS 7" BELOW THE FUTURE FINISH GRADE SHOWN  
WITHIN THESE PLANS.

#### KEYMAP



DESIGNED BY:  
G. BLAKE  
DRAWN BY:  
G. BLAKE  
CHECKED BY:  
G. BLAKE  
HORIZ.: 1"=30'  
VERT.: 1"=8'

JOB NO. 1000063655  
DATE: NOVEMBER, 2020  
DRAWING NO. 28/39  
CLV

SUMMERLIN VILLAGE 30A  
ROUGH GRADING

PLAN AND PROFILE - LAKE MEAD BOULEVARD (SOUTH)  
STA 37+50 TO END

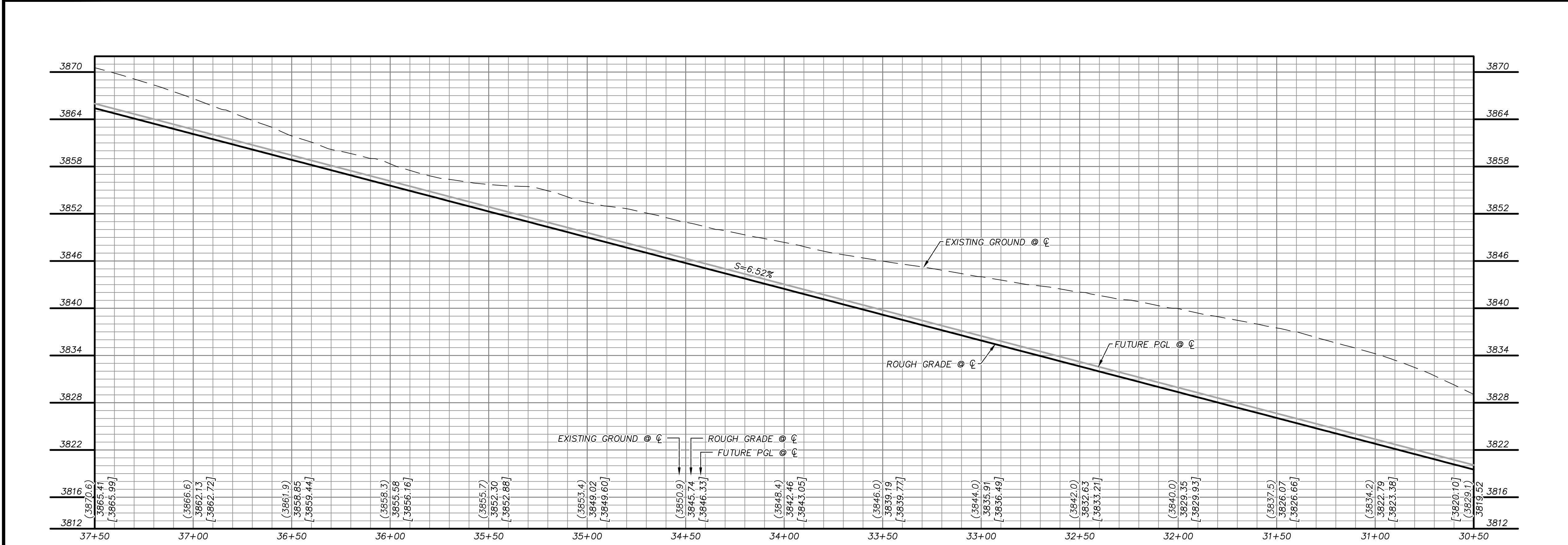
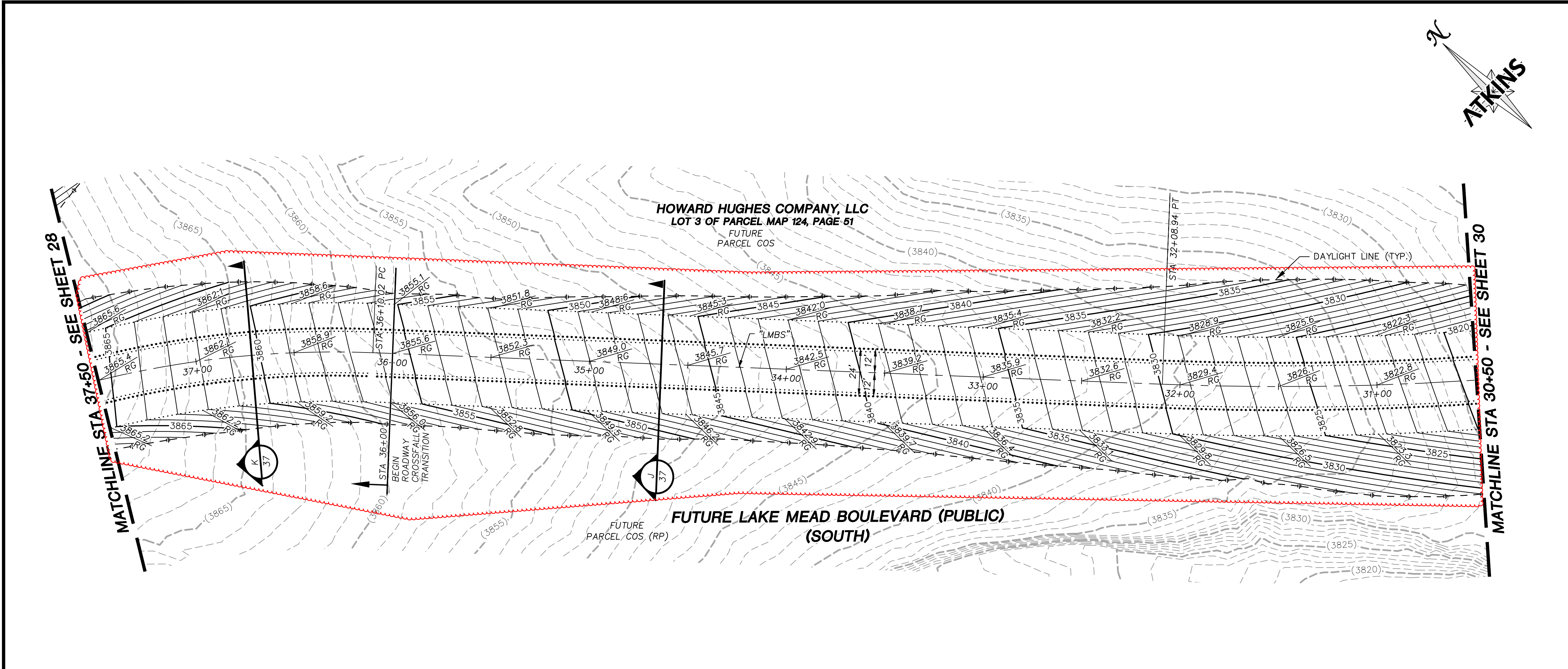


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Henderson, Nevada 89074  
Telephone: +1702.263.7755  
Fax: +1702.263.7200

| REVISIONS |             |                  |
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| REV.      | DESCRIPTION | BY DATE APPROVAL |
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| SOILS REPORT                |  |  |  |
|-----------------------------|--|--|--|
| BY NOVA GEOTECHNICAL        |  |  |  |
| PROJECT NO. G-19-183        |  |  |  |
| DATED 10-21-2019            |  |  |  |
| EARTHWORK QUANTITIES (RAW): |  |  |  |
| CUT= 233,200 CU YDS         |  |  |  |
| FILL= 146,400 CU YDS        |  |  |  |

| GRADING PLAN CERTIFICATION                                                                                                                         |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| ANTHONY J. ORTIZ PE# 18849 10/1/2020 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. |  |  |  |
| DS05214                                                                                                                                            |  |  |  |

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

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

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SYSTEM OF TRANSPORTATION

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1-800-642-2444

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

### STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN PIPE.
2. INSTALL RCP END SECTION PER NDOT STANDARD DRAWING R-2.3.1
3. INSTALL NDOT TYPE II DROP INLET PER NDOT STANDARD DRAWING R-4.2.1
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9. INSTALL RIP-RAP (D50=18", THICKNESS=27")

### ROUGH GRADE

THE PROPOSED ROUGH GRADE OF PAVEMENT FOR LAKE MEAD BOULEVARD IS 7" BELOW THE FUTURE FINISH GRADE SHOWN WITHIN THESE PLANS.

### 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.

|                |          |
|----------------|----------|
| DESIGNED BY:   | G. BLAKE |
| DRAWN BY:      | G. BLAKE |
| CHECKED BY:    | G. BLAKE |
| HORIZ.: 1"=30' |          |
| VERT.: 1"=8'   |          |

|             |                |
|-------------|----------------|
| JOB NO.     | 1000063655     |
| DATE:       | NOVEMBER, 2020 |
| DRAWING NO. | 29/39          |
| CLV         |                |

### ATKINS

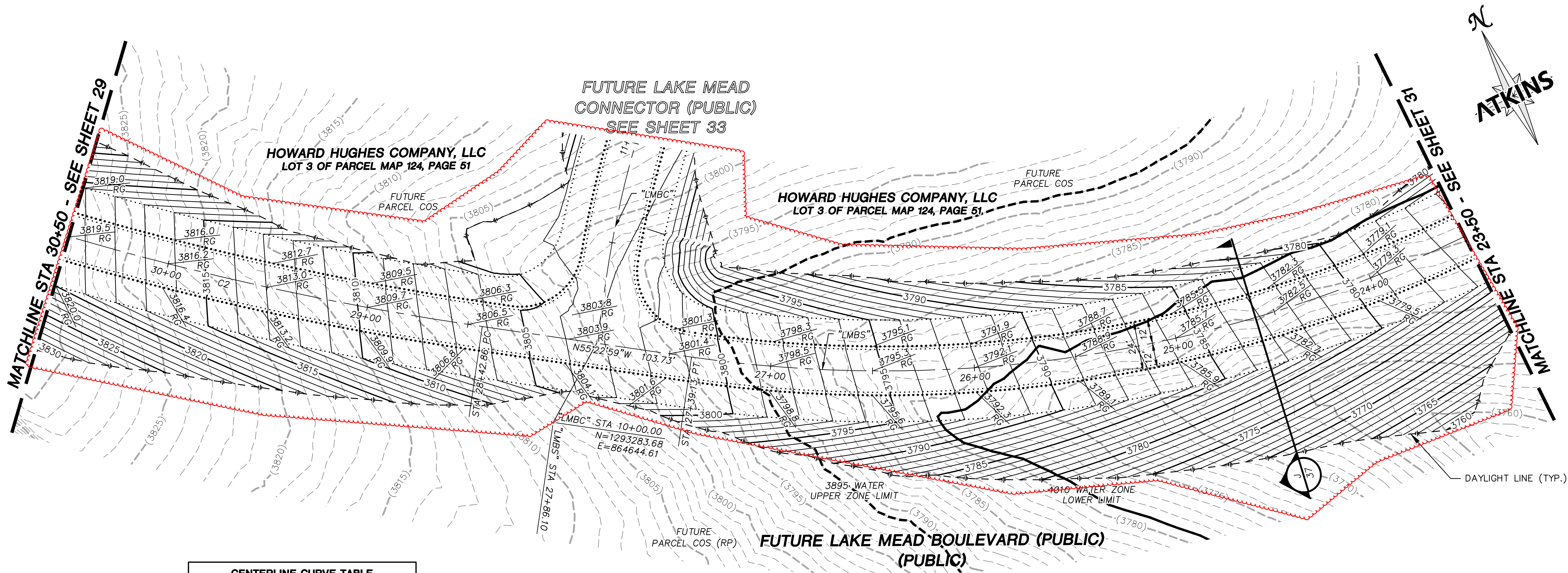
2270 Corporate Circle Suite 200  
Henderson, Nevada 89074  
Telephone: +1702.263.7755  
Fax: +1702.263.7700

### SUMMERLIN

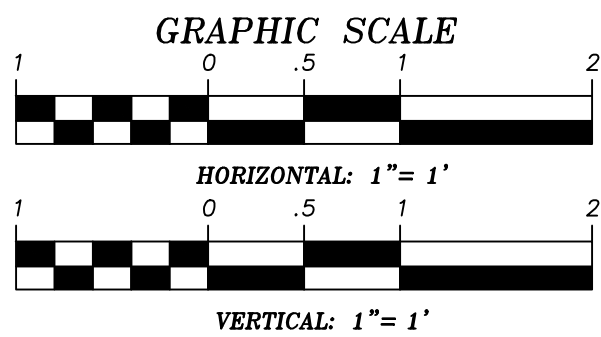
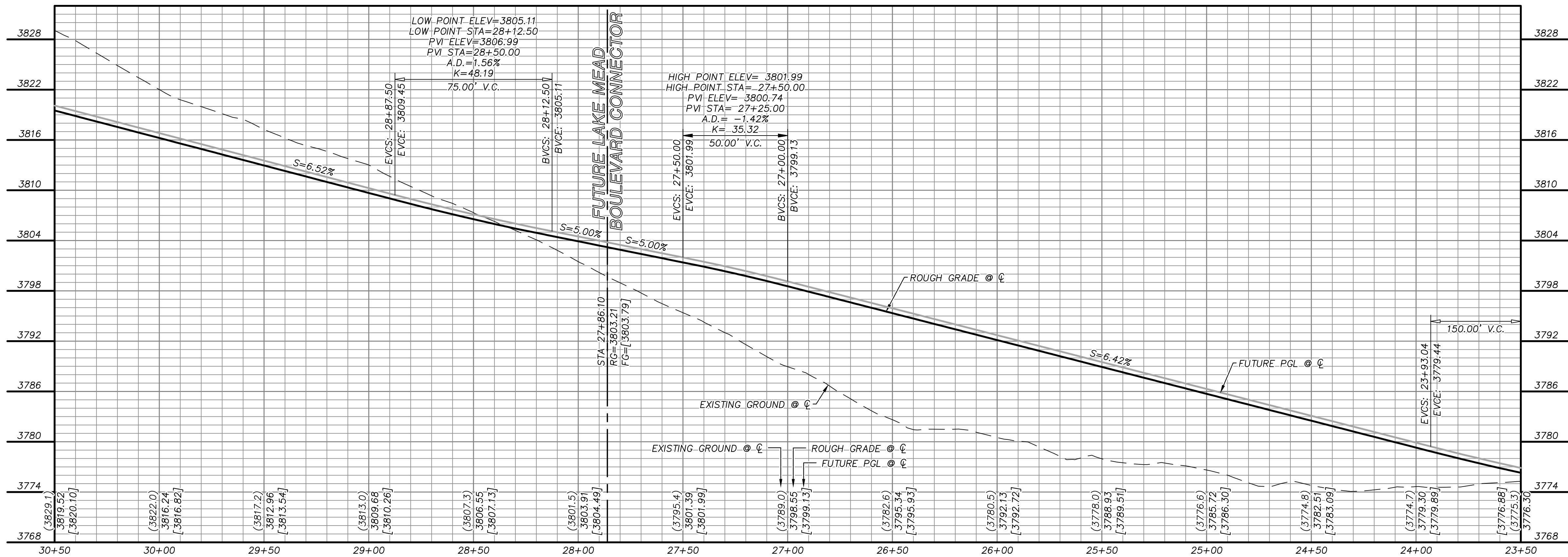
SUMMERLIN VILLAGE 30A  
ROUGH GRADING  
PLAN AND PROFILE - LAKE MEAD BOULEVARD (SOUTH)  
STA 30+50 TO STA 37+50

107V8095  
L20-00015





| CENTERLINE CURVE TABLE |          |           |         |         |
|------------------------|----------|-----------|---------|---------|
| NO.                    | RADIUS   | DELTA     | LENGTH  | TANGENT |
| C2                     | 1500.00' | 13°59'00" | 366.08' | 183.95' |



#### SOILS REPORT

BY NOVA GEOTECHNICAL  
PROJECT NO. G-19-183  
DATED 10-21-2019  
EARTHWORK QUANTITIES (RAW):  
CUT= 233,200 CU YDS  
FILL= 146,400 CU YDS

#### GRADING PLAN CERTIFICATION

ANTHONY J. ORTIZ PE# 18849 DATE 10/1/2020  
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.  
DS05214

#### BASIS OF BEARING

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

#### BENCHMARK

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



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DESIGNED BY: G. BLAKE  
DRAWN BY: G. BLAKE  
CHECKED BY: G. BLAKE  
DATE: NOVEMBER, 2020  
DRAWING NO. 30/39  
JOB NO. 1000063655  
CLV

#### STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN PIPE.
2. INSTALL RCP END SECTION PER NDOT STANDARD DRAWING R-2.3.1
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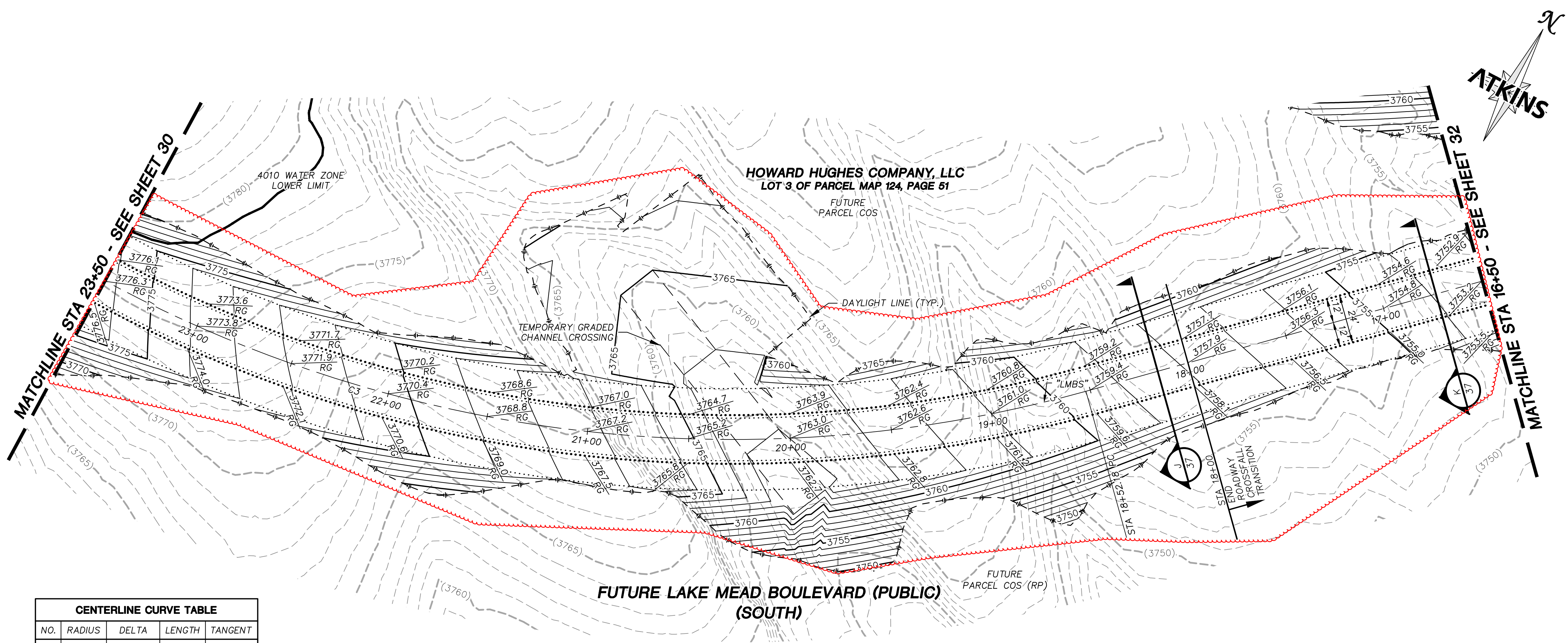
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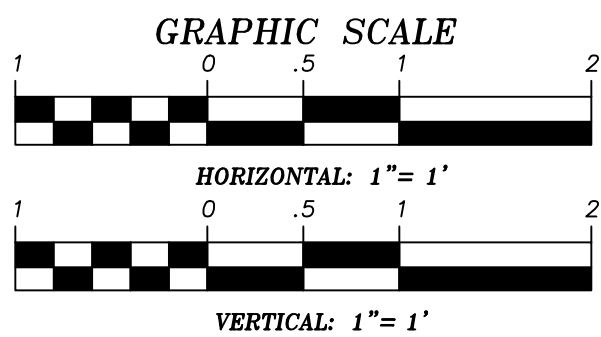
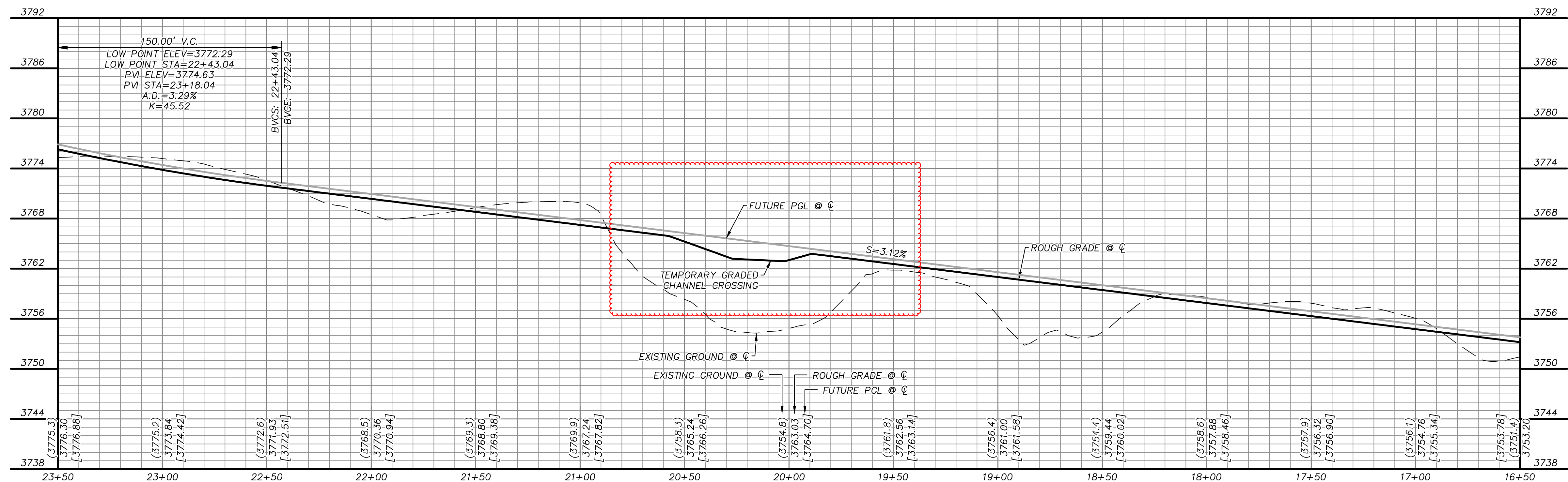
SUMMERLIN VILLAGE 30A  
ROUGH GRADING  
PLAN AND PROFILE - LAKE MEAD BOULEVARD (SOUTH)  
STA 23+50 TO STA 30+50

107V8095  
L20-00015





| CENTERLINE CURVE TABLE |         |           |         |         |
|------------------------|---------|-----------|---------|---------|
| NO.                    | RADIUS  | DELTA     | LENGTH  | TANGENT |
| C3                     | 650.00' | 78°10'55" | 886.95' | 528.07' |



**SOILS REPORT**  
BY NOVA GEOTECHNICAL  
PROJECT NO. G-19-183  
DATED 10-21-2019  
EARTHWORK QUANTITIES (RAW):  
CUT= 233,200 CU YDS  
FILL= 146,400 CU YDS

**GRADING PLAN CERTIFICATION**  
ANTHONY J. ORTIZ PE# 18849 DATE 10/1/2020  
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.  
DS05214

**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.

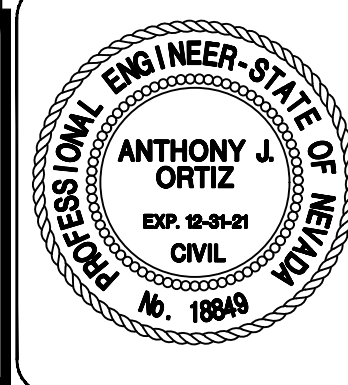
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DESIGNED BY: G. BLAKE  
DRAWN BY: G. BLAKE  
CHECKED BY: G. BLAKE  
DATE: NOVEMBER, 2020  
DRAWING NO.: 31/39  
JOB NO.: 100063655  
CLV

### STORM DRAIN CONSTRUCTION NOTES

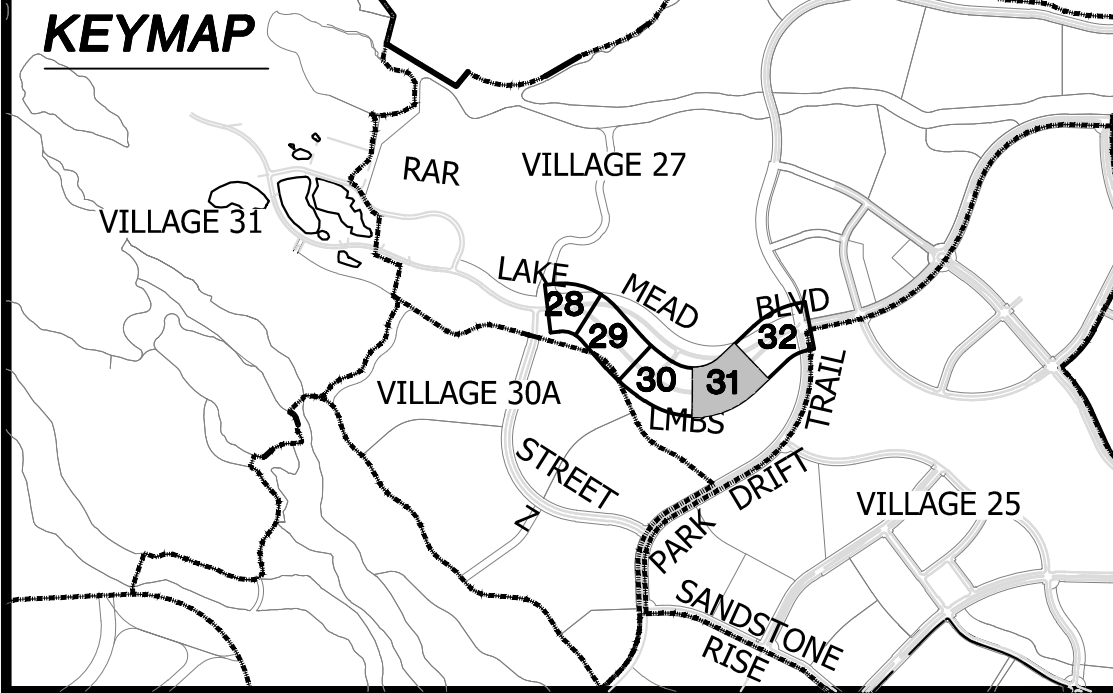
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| REVISIONS |             | BY | DATE | APPROVAL |
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2270 Corporate Circle Suite 200  
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Telephone: +1702.263.7755  
Fax: +1702.263.7200

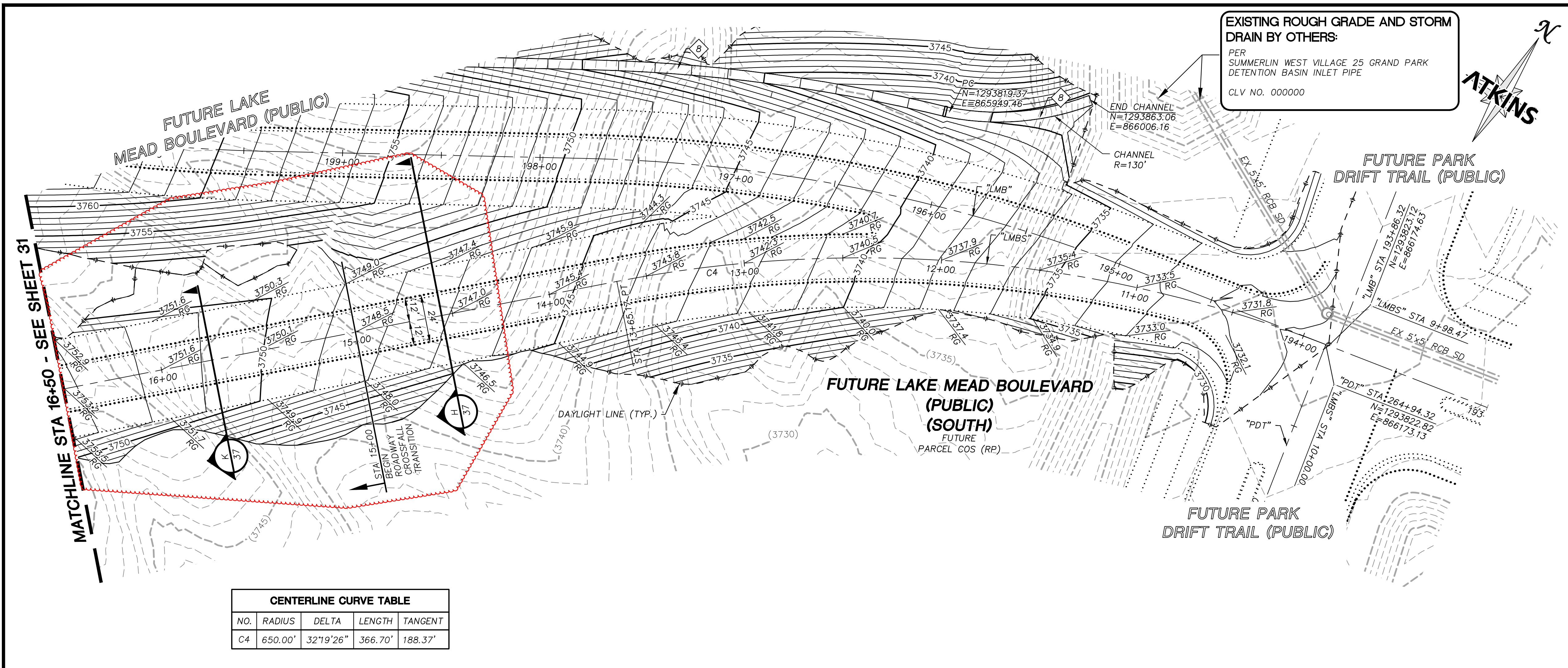


**SUMMERLIN VILLAGE 30A**  
ROUGH GRADING  
**PLAN AND PROFILE - LAKE MEAD BOULEVARD (SOUTH)**  
STA 16+50 TO STA 23+50



PLAN AND PROFILE - LAKE MEAD BOULEVARD (SOUTH)  
STA 16+50 TO STA 23+50





**STORM DRAIN CONSTRUCTION NOTES**

1. INSTALL STORM DRAIN PIPE.
2. INSTALL RCP END SECTION PER NDOT STANDARD DRAWING R-2.3.1
3. INSTALL NDOT TYPE II DROP INLET PER NDOT STANDARD DRAWING R-4.2.1
4. INSTALL DOUBLE RCP END SECTION PER NDOT STANDARD DRAWING R-2.5.2
5. INSTALL RIP-RAP (D50=6", THICKNESS=9")
6. INSTALL RIP-RAP (D50=12", THICKNESS=18")
7. INSTALL RIP-RAP (D50=24", THICKNESS=36")
8. INSTALL GROUDED RIP-RAP (D50=24", THICKNESS=36")
9. INSTALL RIP-RAP (D50=18", THICKNESS=27")

**ATKINS**

**SUMMERLIN**

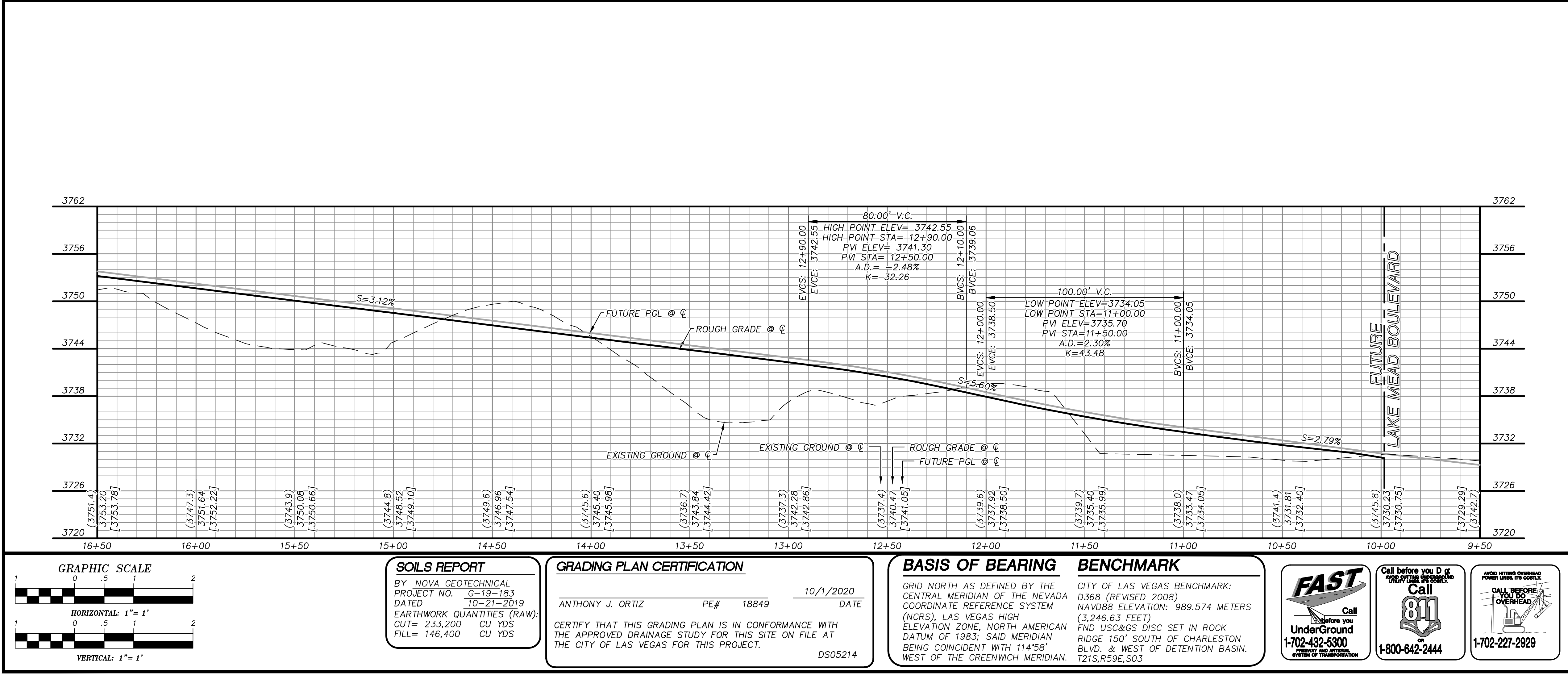
**PLAN AND PROFILE - LAKE MEAD BOULEVARD (SOUTH) BEGIN TO STA 16+50**

**DESIGNED BY:** G. BLAKE  
**DRAWN BY:** G. BLAKE  
**CHECKED BY:** G. BLAKE  
**DATE:** NOVEMBER, 2020  
**DRAWING NO.:** 32/39  
**CLV NO.:** 1000063655

**REVISIONS**

| REV. | DESCRIPTION | BY | DATE | APPROVAL |
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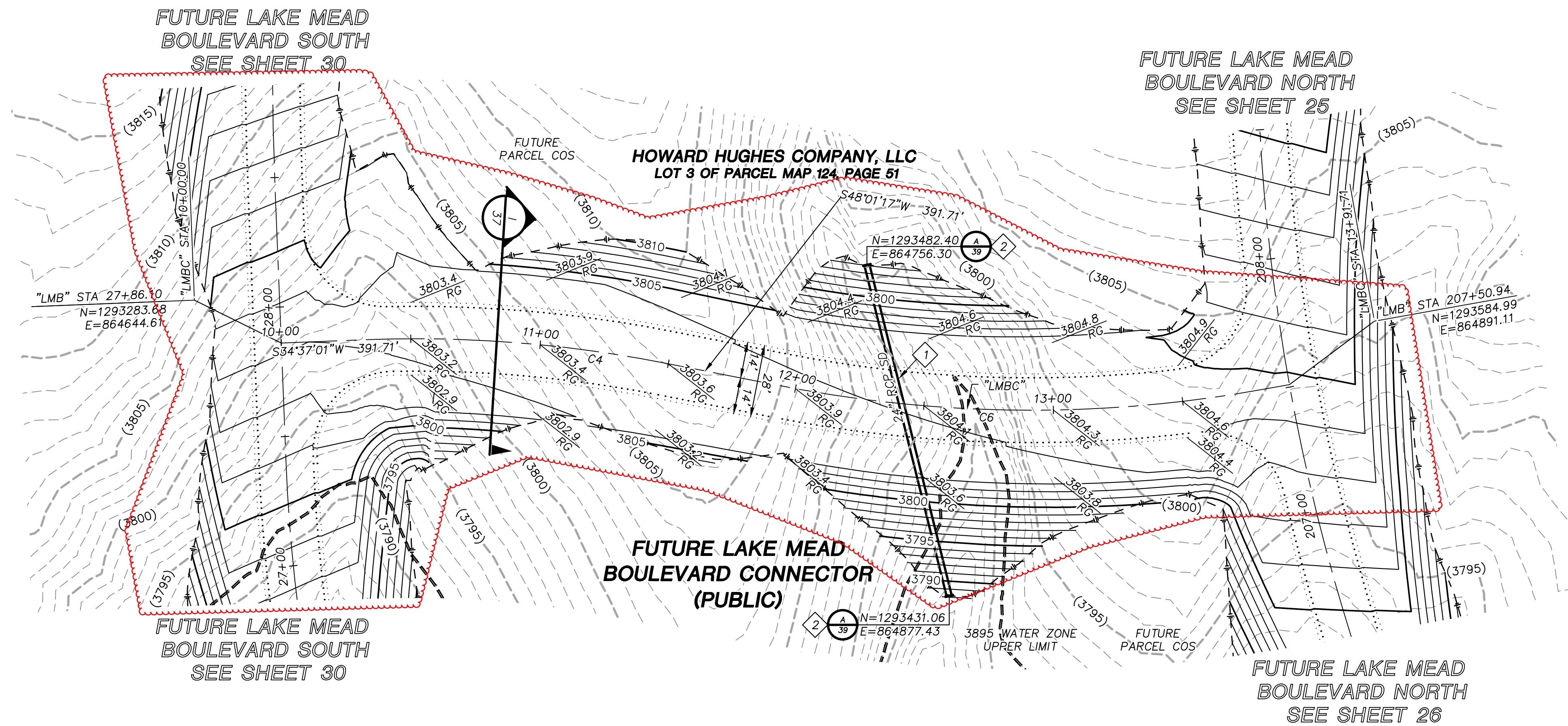
**ATKINS**  
2270 Corporate Circle Suite 200  
Henderson, Nevada 89074  
Telephone: +1702.263.7755  
Fax: +1702.263.7200



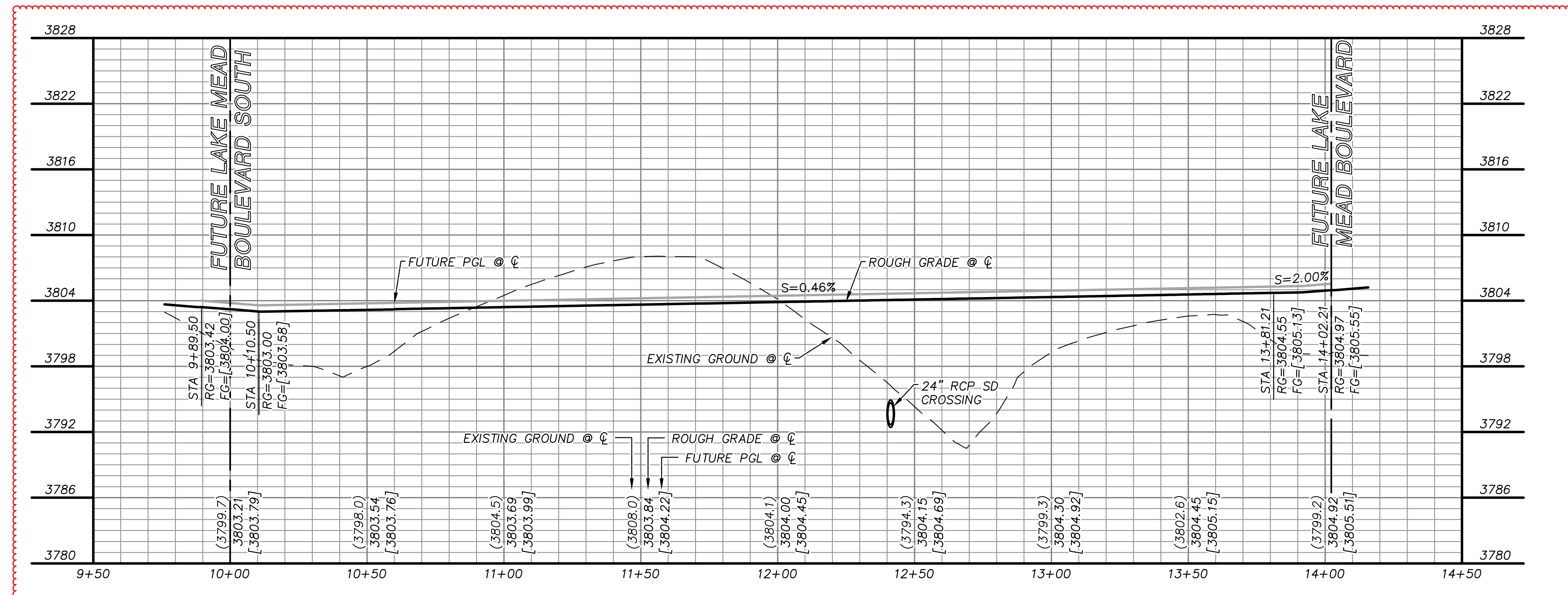








| CENTERLINE CURVE TABLE |         |           |         |         |
|------------------------|---------|-----------|---------|---------|
| NO.                    | RADIUS  | DELTA     | LENGTH  | TANGENT |
| C4                     | 500.00' | 13°24'15" | 116.97' | 58.76'  |
| C6                     | 500.00' | 21°15'47" | 185.56' | 93.86'  |



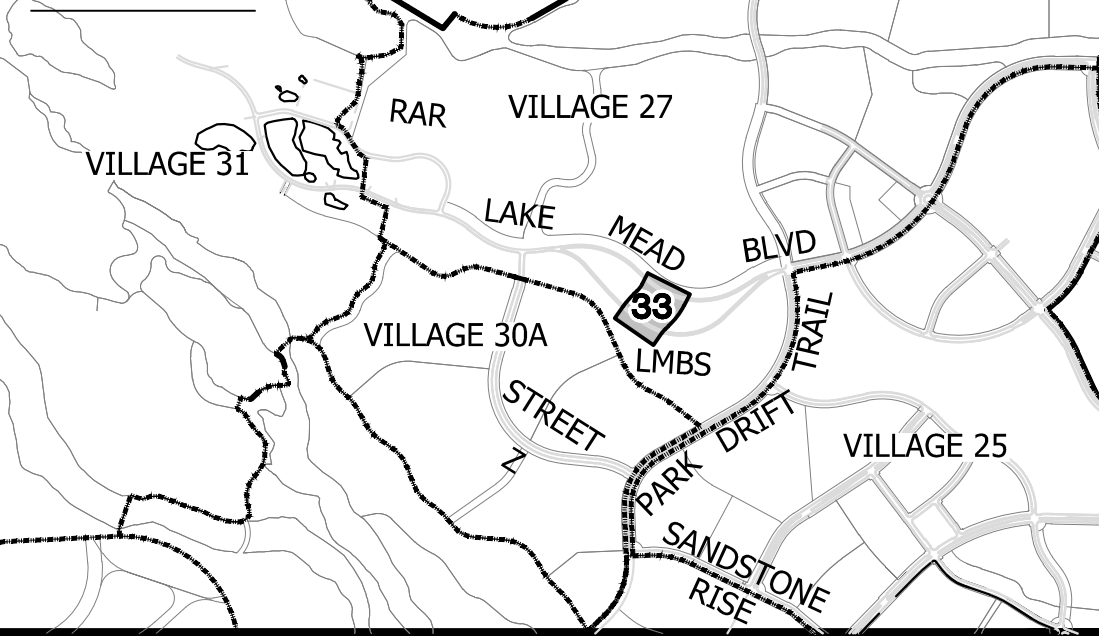
#### STORM DRAIN CONSTRUCTION NOTES

1. INSTALL STORM DRAIN PIPE.
2. INSTALL RCP END SECTION PER NDOT STANDARD DRAWING R-2.3.1
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8. INSTALL GROUTED RIP-RAP (D50=24", THICKNESS=36")
9. INSTALL RIP-RAP (D50=18", THICKNESS=27")

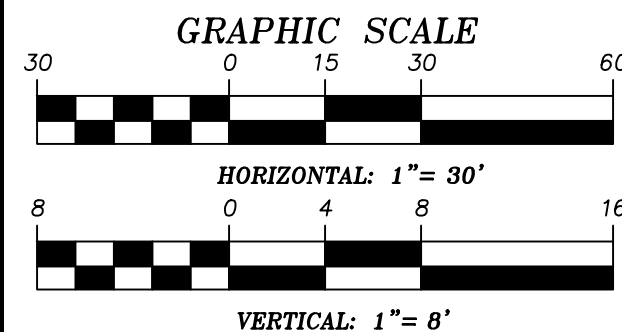
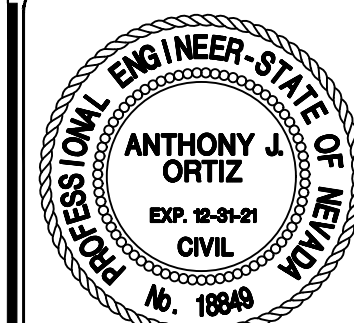
#### ROUGH GRADE

THE PROPOSED ROUGH GRADE OF PAVEMENT FOR LAKE MEAD BOULEVARD IS 7" BELOW THE FUTURE FINISH GRADE SHOWN WITHIN THESE PLANS.

#### 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.



#### SOILS REPORT

BY NOVA GEOTECHNICAL  
PROJECT NO. G-19-183  
DATED 10-21-2019  
EARTHWORK QUANTITIES (RAW):  
CUT= 233,200 CU YDS  
FILL= 146,400 CU YDS

#### GRADING PLAN CERTIFICATION

ANTHONY J. ORTIZ PE# 18849 DATE 10/1/2020

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.

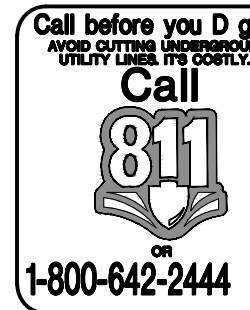
DS05214

#### BASIS OF BEARING

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

#### BENCHMARK

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



#### REVISIONS

| REV. | DESCRIPTION | BY | DATE | APPROVAL |
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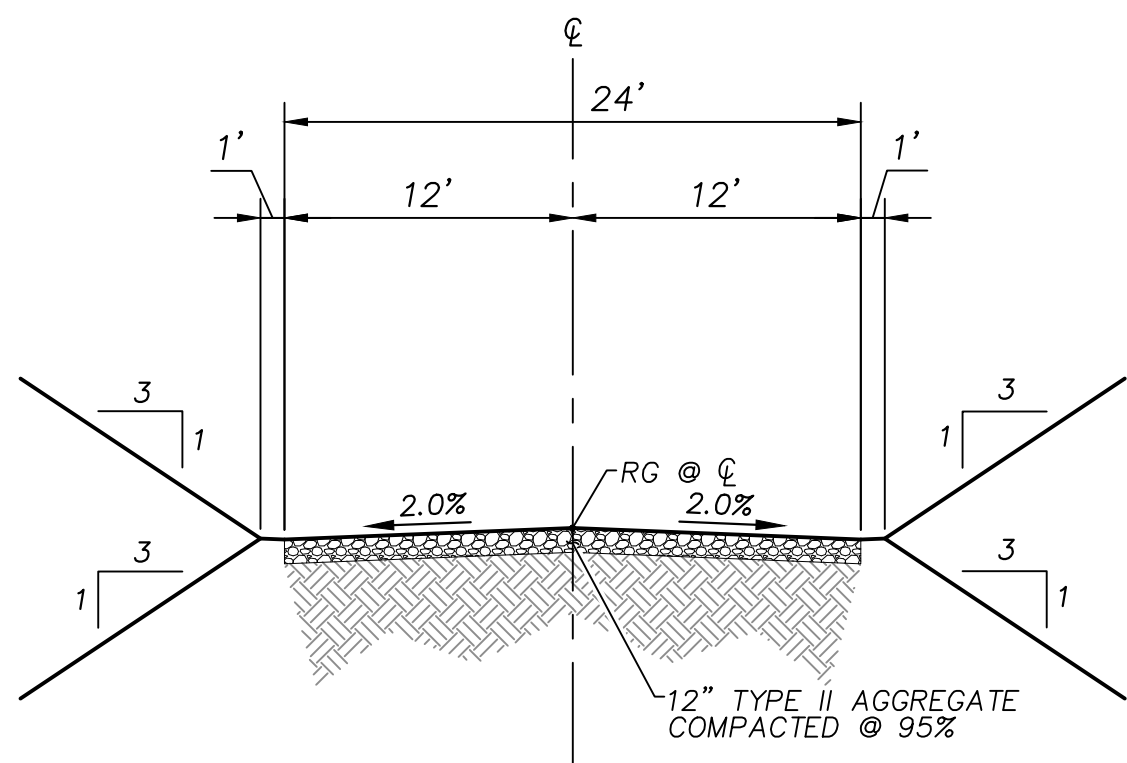
**SUMMERLIN**

SUMMERLIN VILLAGE 30A  
ROUGH GRADING  
PLAN AND PROFILE - LAKE MEAD BOULEVARD CONNECTOR  
BEGIN TO END

DESIGNED BY: G. BLAKE  
DRAWN BY: G. BLAKE  
CHECKED BY: G. BLAKE  
HORIZ.: 1"=30'  
VERT.: 1"=8'

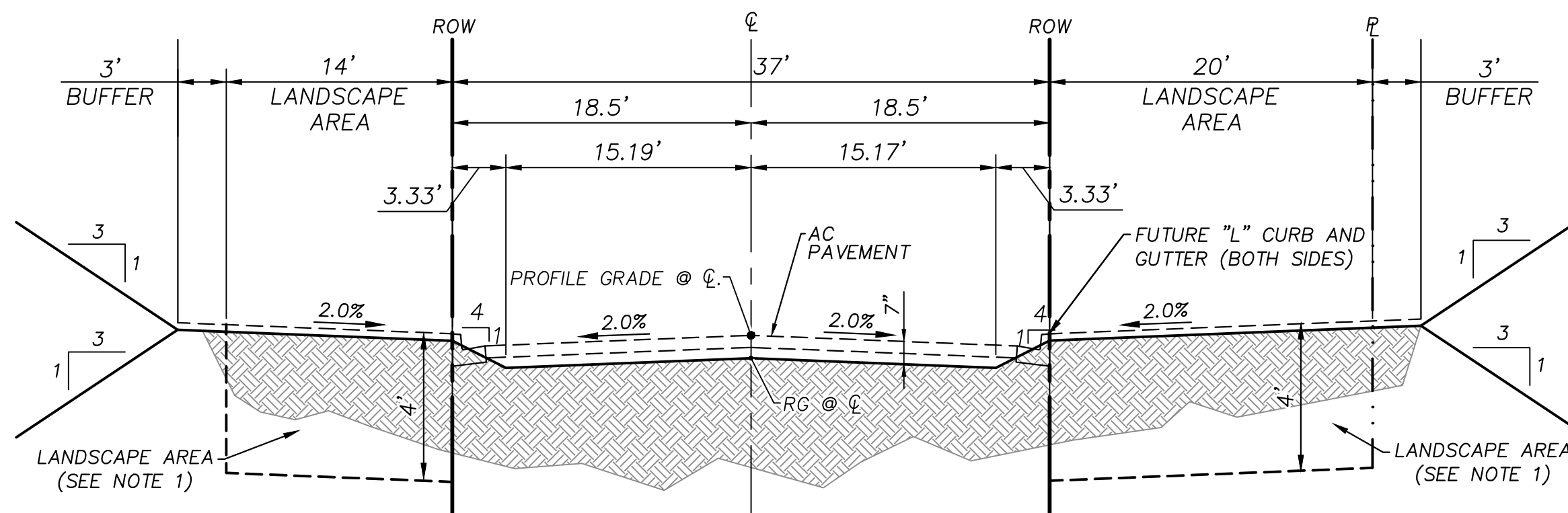
JOB NO. 1000063655  
DATE: NOVEMBER, 2020  
DRAWING NO. 33/39  
CLV





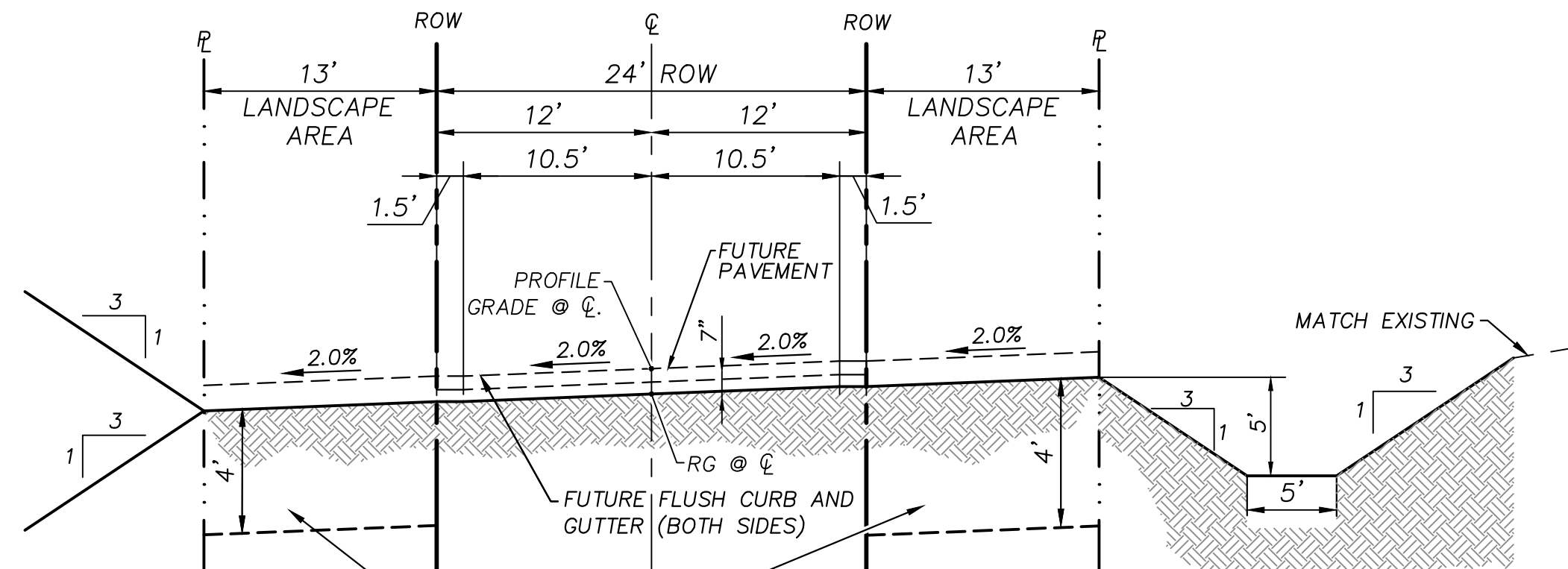
**NOTES:**

1. DRIVING SURFACE TO BE CAPABLE OF SUPPORTING H-20 LOADING PER GEOTECHNICAL ENGINEER, NATIVE SOILS ARE ACCETABLE. ANY MATERIAL OVER 1" IN DIAMETER MUST BE REMOVED.



**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.
2. DRIVING SURFACE TO BE CAPABLE OF SUPPORTING H-20 LOADING PER GEOTECHNICAL ENGINEER, NATIVE SOILS ARE ACCEPTABLE. ANY MATERIAL OVER 1" IN DIAMETER MUST BE REMOVED.
3. ROUGH GRADE LANDSCAPE AREAS TO 2" BELOW FINISHED GRADE



**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.
2. DRIVING SURFACE TO BE CAPABLE OF SUPPORTING H-20 LOADING PER GEOTECHNICAL ENGINEER, NATIVE SOILS ARE ACCEPTABLE. ANY MATERIAL OVER 1" IN DIAMETER MUST BE REMOVED.
3. ROUGH GRADE LANDSCAPE AREAS TO 7" BELOW FINISHED GRADE

**TEMPORARY CONSTRUCTION ACCESS - ROUGH GRADE SECTION**

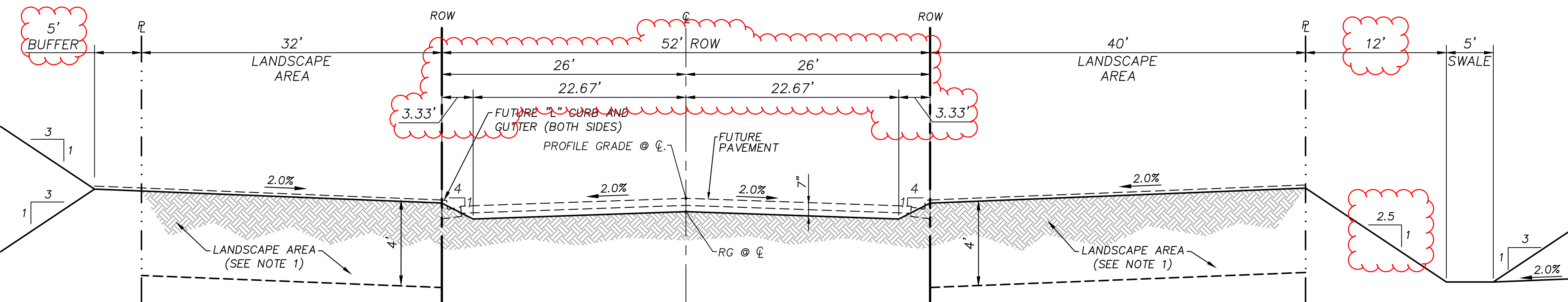
N.T.S.

**RESERVOIR ACCESS ROAD - ROUGH GRADE SECTION**

N.T.S.

**LAKE MEAD BOULEVARD ONE-WAY - ROUGH GRADE SECTION**

N.T.S.

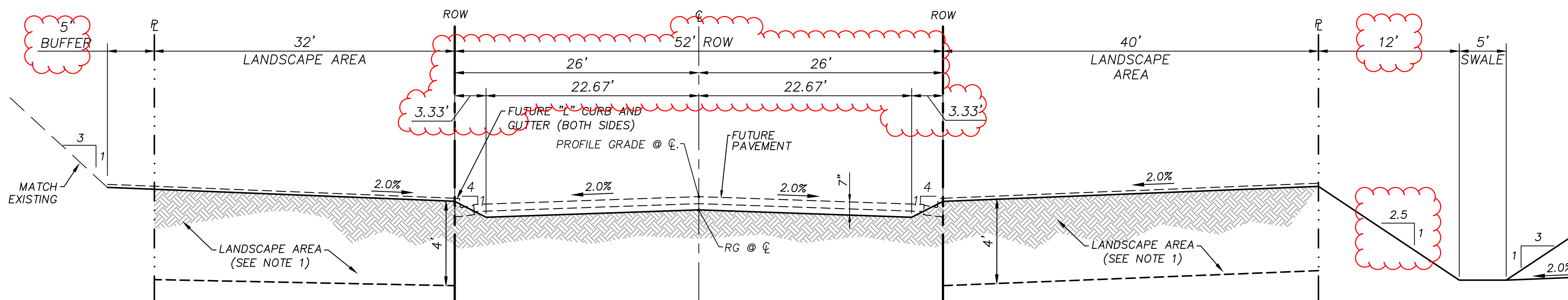


**NOTES:**

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3. ROUGH GRADE LANDSCAPE AREAS TO 2" BELOW FINISHED GRADE

**STREET Z - ROUGH GRADE SECTION - STA 10+50 TO 26+50, STA 31+11 TO 32+31, STA 38+55 TO 39+12**

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.
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3. ROUGH GRADE LANDSCAPE AREAS TO 2" BELOW FINISHED GRADE

**STREET Z - SHORTENED ROUGH GRADE SECTION - STA 26+50 TO 31+11, STA 32+31 TO 38+55**

N.T.S.

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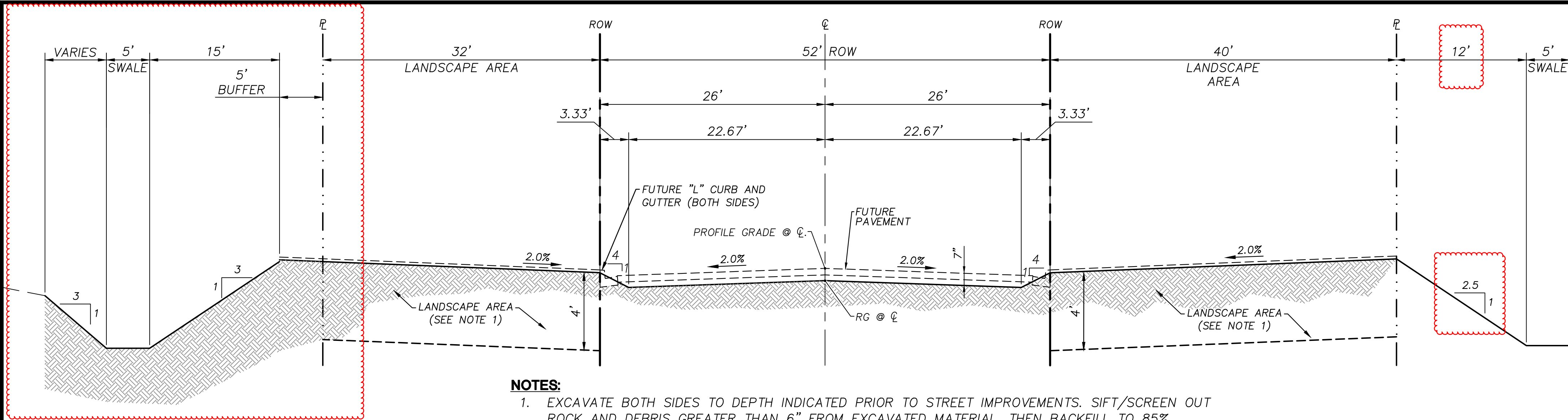
**SUMMERLIN**

**SUMMERLIN VILLAGE 30A**  
ROUGH GRADING  
TYPICAL SECTIONS 1



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|--------------------------|---------------------------------|----------------------|
| DESIGNED BY:<br>G. BLAKE | DATE:<br>NOVEMBER, 2020         | DRAWING NO.<br>36/39 |
| DRAWN BY:<br>G. BLAKE    | CHECKED BY:<br>ANTHONY J. ORTIZ | HORIZ.: N.T.S.       |
| VERT.: N.T.S.            |                                 |                      |

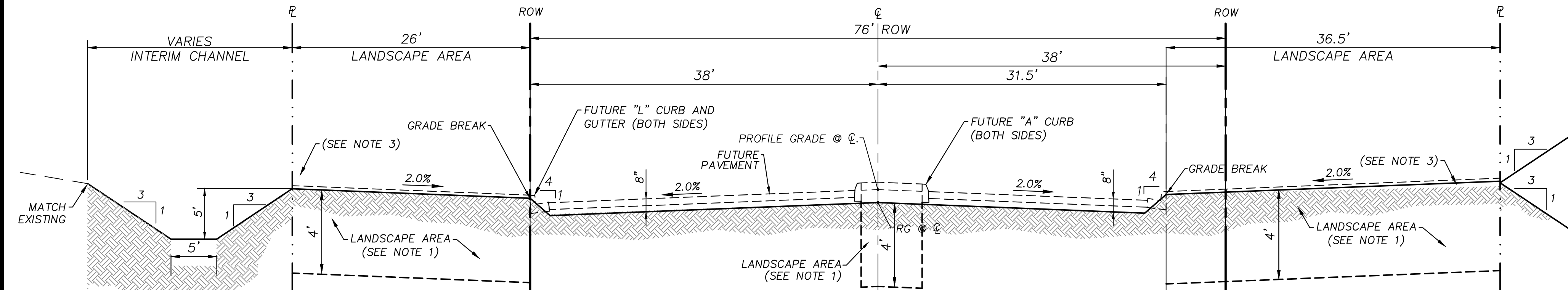




STREET Z - ROUGH GRADE SECTION WITH DOUBLE SWALE - STA 39+12 TO 43+00

N.T.S.

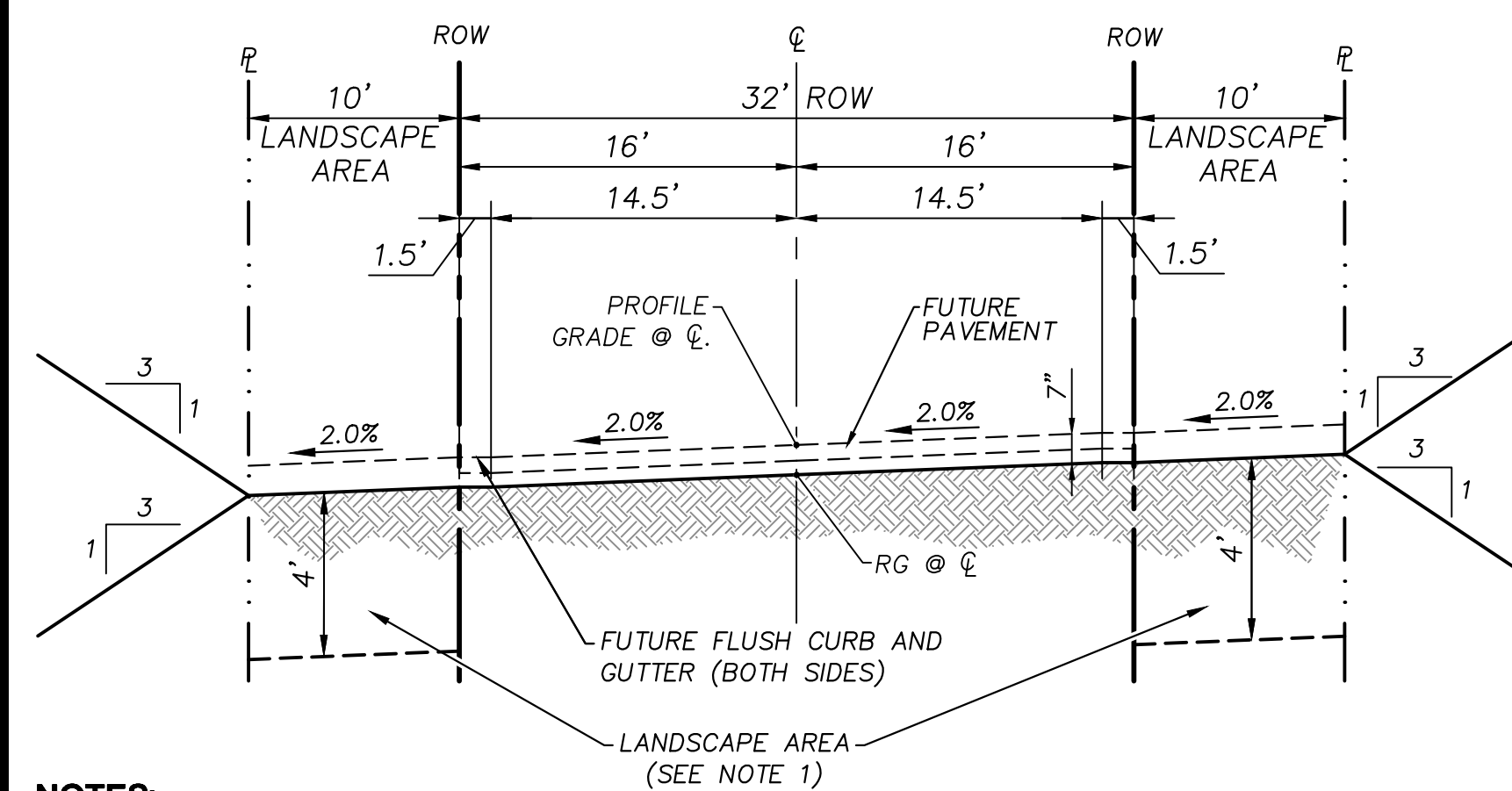
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PARK DRIFT TRAIL - ROUGH GRADING SECTION

N.T.S.

F  
37



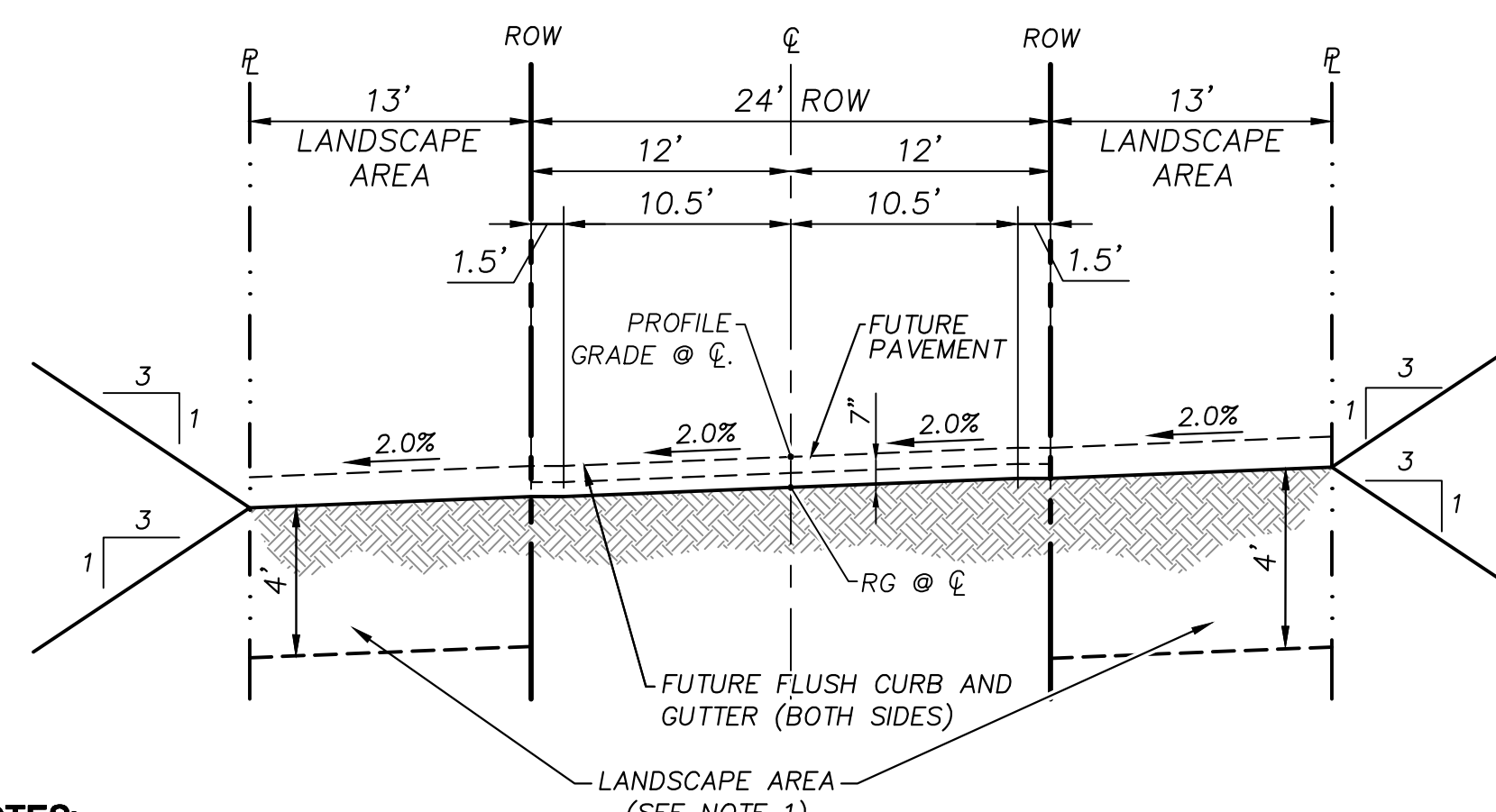
NOTES:

- 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.
- DRIVING SURFACE TO BE CAPABLE OF SUPPORTING H-20 LOADING PER GEOTECHNICAL ENGINEER, NATIVE SOILS ARE ACCEPTABLE. ANY MATERIAL OVER 1" IN DIAMETER MUST BE REMOVED.
- ROUGH GRADE LANDSCAPE AREAS TO 7" BELOW FINISHED GRADE

LAKE MEAD BOULEVARD - ROUGH GRADE SECTION

N.T.S.

G  
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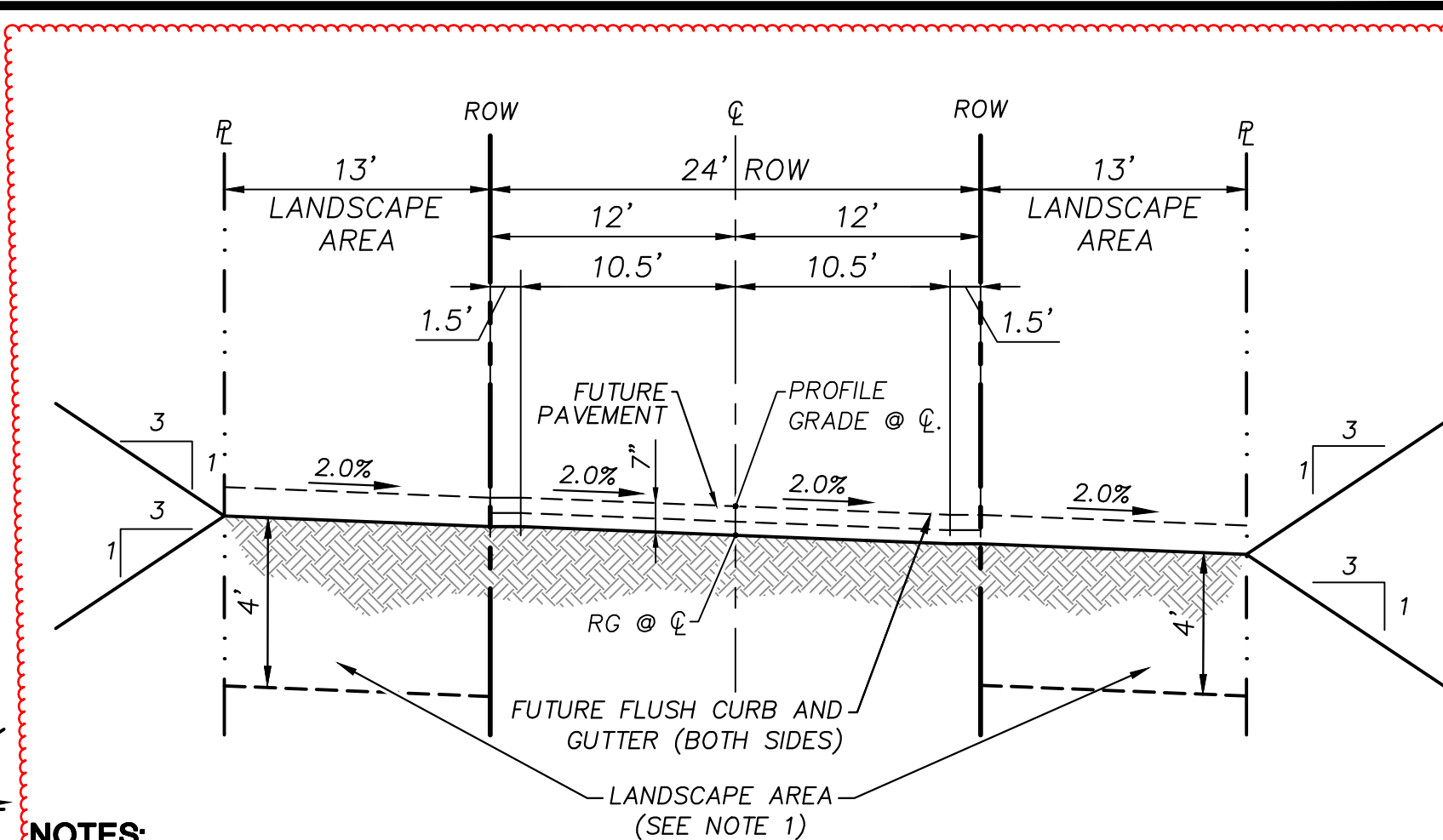
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- ROUGH GRADE LANDSCAPE AREAS TO 7" BELOW FINISHED GRADE

LAKE MEAD BOULEVARD ONE-WAY - ROUGH GRADE SECTION

N.T.S.

H  
37



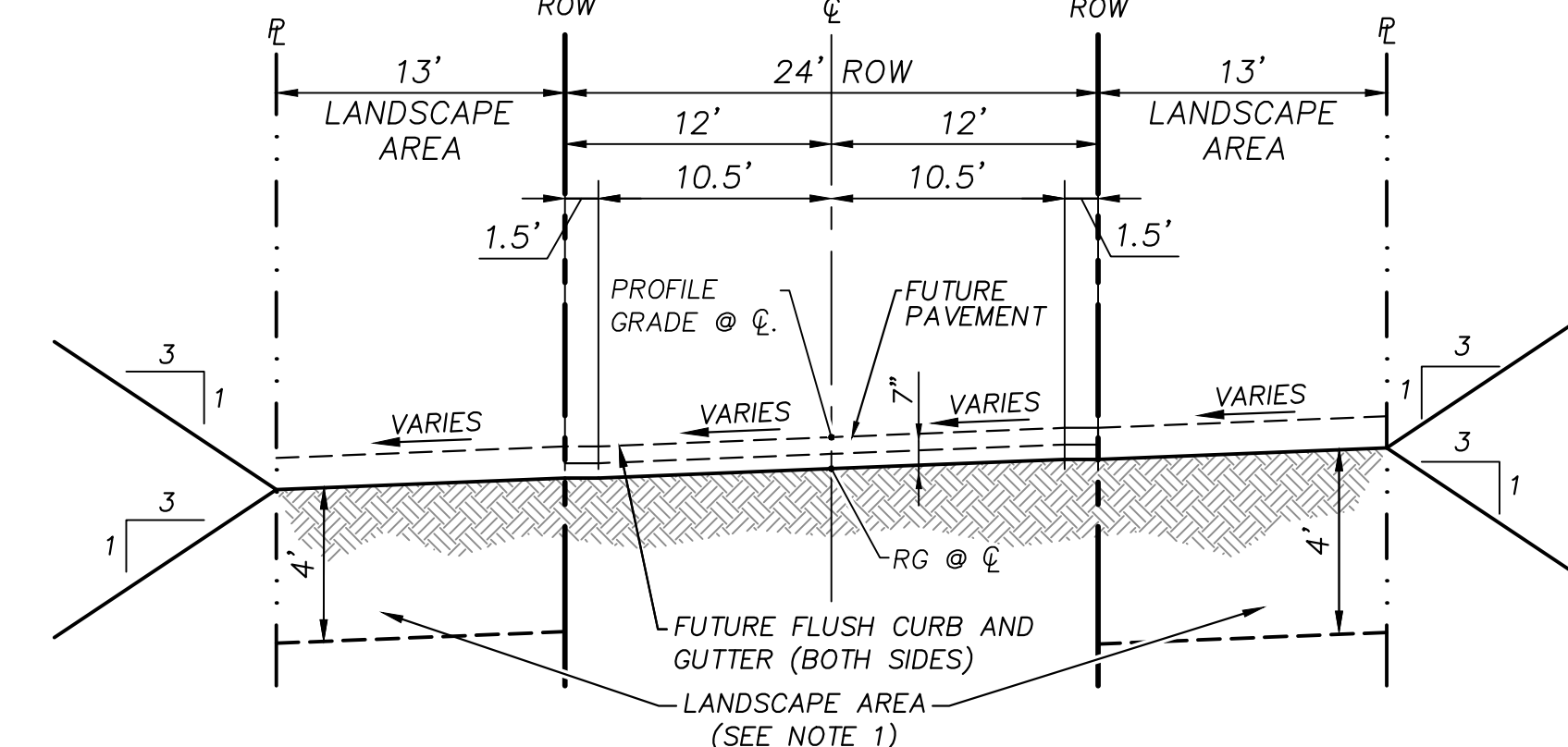
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- ROUGH GRADE LANDSCAPE AREAS TO 7" BELOW FINISHED GRADE

LAKE MEAD BOULEVARD ONE-WAY - ROUGH GRADE SECTION

N.T.S. (STATION 17+00 TO 36+00)

J  
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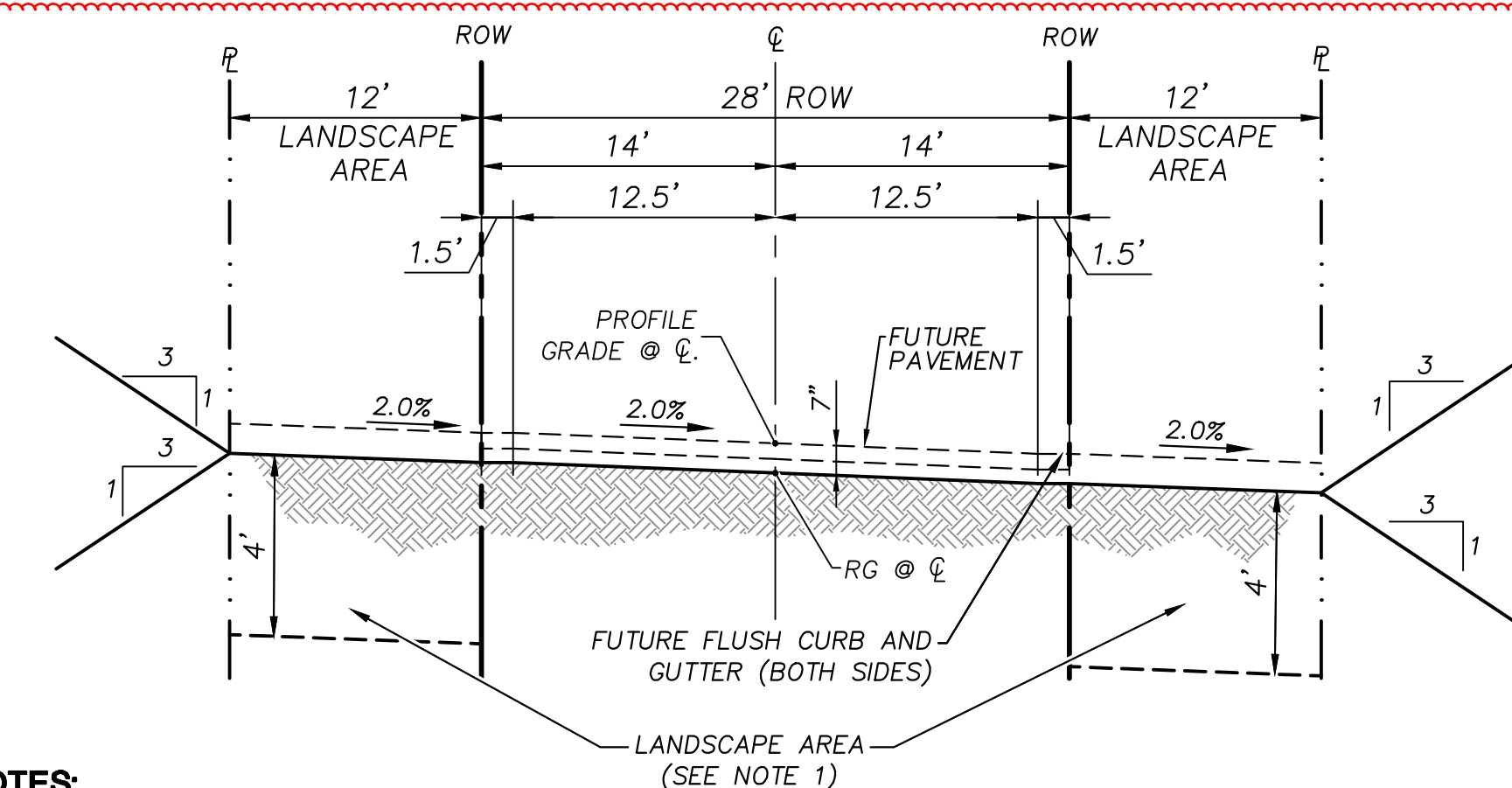
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- ROUGH GRADE LANDSCAPE AREAS TO 7" BELOW FINISHED GRADE

LAKE MEAD BOULEVARD ONE-WAY - TRANSITION ROUGH GRADE SECTION

N.T.S. (STATION 15+00 TO 17+00 AND 36+00 TO 38+00)

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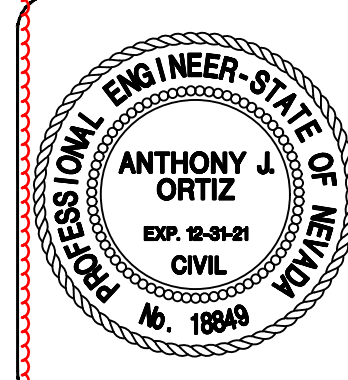
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LAKE MEAD BOULEVARD CONNECTOR - ROUGH GRADE SECTION

N.T.S.

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| REVISIONS | DESCRIPTION | BY | DATE | APPROVAL |
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**SUMMERLIN**

SUMMERLIN VILLAGE 30A  
ROUGH GRADING  
TYPICAL SECTIONS 2

|                          |                       |                         |               |              |
|--------------------------|-----------------------|-------------------------|---------------|--------------|
| DESIGNED BY:<br>G. BLAKE | DRAWN BY:<br>G. BLAKE | CHECKED BY:<br>G. BLAKE | HORIZ. N.T.S. | VERT. N.T.S. |
| DATE:<br>NOVEMBER, 2020  | DRAWING NO.           | 37/39                   |               |              |
| JOB NO.<br>100063655     |                       |                         |               |              |

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