



Update #1 to the Technical Drainage Study for

Redpoint Arroyo (Phase 2)
(I-215 Western Beltway)

639-660-2

April 19, 2022

Prepared for:
The Howard Hughes Company, LLC
10801 W. Charleston Blvd.
Las Vegas, NV, 89146
(702)-791-4453

Prepared by GCW, Inc.

1555 South Rainbow Blvd
Las Vegas, NV 89146

P: 702.804.2000
F: 702.804.2298

info@gcwengineering.com
www.gcwengineering.com

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Redpoint Arroyo - Phase 2 Improvements (Update #1) Date: April 19, 2022

Location of Development: a) Descriptive (Cross Streets) North/South: Desert Foothills Drive

East/West: Redpoint Drive

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

c) APN : 137-27-515-001 & 137-27-510-002

Name of Owner: Howard Hughes Company, LLC

Telephone No.: 702.791.4300 Fax No.: _____ E-Mail Address: chris.anderson@howardhughes.com

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

Contact Person-Name: Dr. Kevin Ramage, PE, DBA Telephone No.: 702.804.2089

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

Firm: GCW, Inc.

Address: 1555 South Rainbow Boulevard, Las Vegas, NV 89146

Type of Land Development/Land Disturbance Process:

☐	Rezoning	☐	Subdivision Map	☐	Clearing and Grading Only
☐	Parcel Map	☐	Planned Unit Development	☒	Other (Please specify below)
☐	Large Parcel Map	☐	Building Permit	☐	Park Amenities, Walking Pathways

1. Total Owned Land Area: At Site: +/- 8.24 Acres Being Developed/Disturbed: +/- 8.24 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

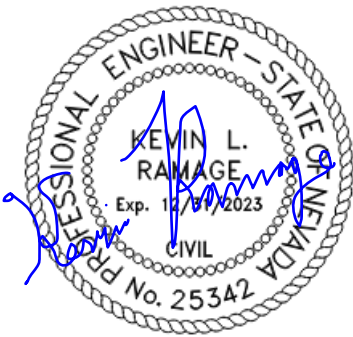
4. Proposed type of development (Residential, Commercial, Etc.): Local Park/Preserved Wash

5. Approximate upstream land area which drains to the subject site: 0-acres due to Fox Hills Cutoff

6. Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation: Flood Control Master Plan Update - Summerlin West Planning Area and subsequent Updates.

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Existing 10'x10' RCB at the southeast corner of Desert Foot Hills Drive and Redpoint Drive

8. Briefly describe your proposed schedule for the subject project: Some sidewalk (630 SF) and minimal grading (0.29 acres) is being added adjacent to Fox Hills Drive.



Engineer's Seal

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

***New Required Field**

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

	Revision	Date
Local Entity File No. _____		

REFERENCE:

STANDARD FORM 1

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Summerlin Village 21 Arroyo Phase II
Update #1

Map ID: 137-27-515-001 & 137-27-510-002

Firm Name: GCW, Inc.

Engineer: Dr. Kevin Ramage, PE, DBA

Address: 1555 South Rainbow Blvd

City: Las Vegas

State: NV

Zip: 89146

Phone Number: 702.804.2089

Fax Number: 702.804.2299

Property Owner: The Howard Hughes Company, LLC

Address: 10801 Charleston Blvd. 3rd Floor

City: Las Vegas

State: NV

Zip: 89146

Reviewed By:

Date Received:

Date Accepted for Review:

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

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

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

I. GENERAL REQUIREMENT

Yes No

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

_____ N/A Design Manual **Standard Form 4**.

☒ _____ 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

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

☒ _____ 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

- ☒ _____ Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.
- ☒ _____ On-site drainage basin maps for existing and proposed conditions showing the existing topography, basin boundaries, concentration points, and on-site and off-site flows in cfs.
- ☒ _____ Vicinity Map with local and major cross streets identified and a north arrow.

III. DRAINAGE PLAN

Yes No

- ☒ _____ Sheet size: 24" x 36" sealed by a registered engineer in the State of Nevada.
- ☒ _____ Minimum scale: 1" = 60'.
- ☒ _____ Project name.
- ☒ _____ Vicinity Map with local and major cross streets.
- ☒ _____ Revision box.
- ☒ _____ North arrow and bar scale.
- ☒ _____ Engineer's/consultant's address and phone number.
- ☒ _____ Elevation datum and benchmark.
- ☒ _____ Legend for symbols and abbreviations.
- ☒ _____ Cut/fill scarps, where applicable.
- ☒ _____ Street names, grades, widths.
- ☒ _____ Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street.
- ☒ _____ Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where appropriate.
- _____ N/A Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.
- _____ N/A Proposed typical street sections.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes No

 N/A Streets with off-set crowns.

X Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.

x Property lines.

x Right-of-way lines and widths, existing and proposed.

 N/A Existing improvements and their elevations.

 N/A Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.

 N/A Concentration points and drainage flow direction with Q100 and V100 and D100 in streets.

 N/A Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.

 N/A Location and cross-section of street capacity calculations.

x Cross-sectional detail for channels, including cutoff wall locations.

x Existing and proposed drainage facilities, appurtenances, and connections (i.e., sidewalk, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, material, shape, and slope with plan and profile and HGL calculations.

x Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.

 N/A Location and detail of existing, proposed, and future block wall openings. Minimum size is 16" x 48". Wrought iron gate is required for flows > 10 cfs.

 N/A Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.

x Perimeter retaining wall locations. All existing and proposed walls (retaining screen and flood) must be shown with adjacent ground elevations. Flood walls with 8-inch concrete masonry unit.

 N/A Building and/or lot numbers.

x Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.

 N/A Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes No

- _____ N/A For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table. Finish floor elevations must be a minimum of 18 inches above BFE.
- _____ N/A Appropriately elevated "humps" 6 inches above the 100 year water surface elevation at site accesses where the intent is to protect the site from the Q100 flows.
- _____ N/A Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.
- _____ N/A Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).

IV. HYDROLOGIC ANALYSIS

Yes No

- _____ N/A Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
- _____ N/A Input and output information for existing conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
- _____ N/A Input and output information for future conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
- _____ N/A Use of correct precipitation values in and around the McCarran Airport rainfall area.
- _____ N/A A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
- _____ N/A A summary table of stormwater flows showing basin area, Q10 and Q100 for both individual basins and combined basin flows, where applicable.
- _____ N/A Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.
- _____ N/A On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners in accordance with current Nevada Drainage Law.
- _____ N/A Calculation for impervious area for parking lots and LIDs (if required).

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

Yes	No	
☐	<u>N/A</u>	Flow split calculations and supporting documentation or reference for the method of flow split calculations used.
☐	<u>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 Q100 and Q10 flows representing the worst case for interior and all perimeter streets. Q100 d x v < 8. Q10 d x v < 6 and 12 foot dry lane for rights-of-way > 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan.
☐	<u>N/A</u>	A summary table of interior and exterior street capacity calculations showing the street name, Q100 flow, slope, depth of flow, velocity and depth times velocity product and streets needing to meet 12 foot dry lane criteria.
☐	<u>N/A</u>	Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged.)
☐	<u>N/A</u>	Appropriate hydraulic calculations at drainage easement entrance and discharge locations to set finish floor elevations. Hydraulic calculations must include submerged weir, superelevation and tee intersection losses, where appropriate.
☐	<u>N/A</u>	Provide necessary freeboard requirements to set the finished floor elevations of all proposed buildings, 2 x depth of flow or depth of flow plus 18 inches of freeboard, whichever is less. The minimum requirement is 6 inches above adjacent upstream top of curb. Buildings adjacent to drainage easements must always be provided with 18 inches of freeboard above the Q100 weir height or flow depth, whichever is greater.
☐	<u>N/A</u>	A complete water surface profile analysis (HEC-2, HEC-RAS, etc.) for channel flows and FEMA Zone A flood zones. • Field survey data. • Input and output information. • Plotted cross-sections based on survey with proper encroachments. • A map showing the location of the cross-sections. • Analysis of both sub and super-critical flow segments. • A summary table and a discussion of the results in the text of the report.
☐	<u>N/A</u>	Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
☐	<u>N/A</u>	Hydraulic calculations for culverts and storm drains. D-Load calculations must be provided for storm drain pipes in public rights-of-way, including headwater pool inundation.
☒	☐	The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.
☐	<u>N/A</u>	Provide BMP type, size and supporting calculations for parking lots and LIDs (if required).

REFERENCE:

STANDARD FORM 2



CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

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

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

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

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

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

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

II. GRADING PLAN INFORMATION		
Yes	No	
	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.
	N/A	On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners. (The project must pass flows through the site every 600 feet where the project is blocking flow paths.)
	N/A	This project uses a solid grouted stem wall (or approved alternate) at the back of sidewalk to provide erosion protection for landscaped areas where the depth of flow in the roadway exceeds the back of walk elevation. A corresponding cross-section detail is included.
	N/A	Commercial and Common Lot Landscape areas are not allowed to drain over the sidewalk. The grading plans show flow lines with grades and sidewalk under drains for all landscape areas draining to the public ROW.

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

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.

639-660-2

April 19, 2022

Albert Sung, PE
City of Las Vegas, Public Works
495 South Main Street
Las Vegas, NV 89101

Re: Technical Drainage Study for Summerlin Village 21 Arroyo Phase 2 (Update #1)

Dear Mr. Kwon,

This letter is to certify that all documents provided with the electronic submittal (CD) match the hard copy submittal of the study.

Cordially,

Dr. Kevin Ramage, PE, DBA
Flood Control
GCW, Inc.





Update #1 to the Technical Drainage Study for

Redpoint Arroyo (Phase 2)
(I-215 Western Beltway)

639-660-2

April 19, 2022

Prepared for:
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info@gcwengineering.com
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639-660-2

April 19, 2022



Albert Sung, PE
Project Engineer
City of Las Vegas, Public Works
495 S. Main Street
Las Vegas, NV 89101

**Re: Update Letter for Technical Drainage Study for Redpoint Arroyo - Phase 2
Improvements (Fox Hill Drive to Desert Foothills Drive) (DS5503A)**

Dear Mr. Sung,

GCW presents this update letter accompanied by revised improvement plans for Redpoint Arroyo – Phase 2. The revised plans has minimal impact to the flows presented in the approved Technical Drainage Study. The revised plans include approximately 0.29 acres of revised grading which includes approximately 630 sq ft of addition of concrete sidewalk adjacent to Fox Hill Drive.

The revised plans are being submitted to Land Development for 2nd review as a result of comments dated 12/28/2021.

Thank you and please call or e-mail back at your earliest convenience if you have any questions.

Respectfully submitted,

Dr. Kevin Ramage, PE, DBA
Sr. Project Manager
Flood Control Division



1555 South Rainbow Boulevard
Las Vegas, Nevada 89146



O 702.804.2000
F 702.804.2299



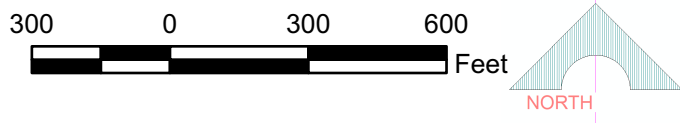
info@gcwengineering.com
gcwengineering.com

APPENDIX A





FIGURE 1
VICINITY MAP



SUMMERLIN VILLAGE 21 ARROYO - PHASE 2

GCV
ENGINEERS \ SURVEYORS

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

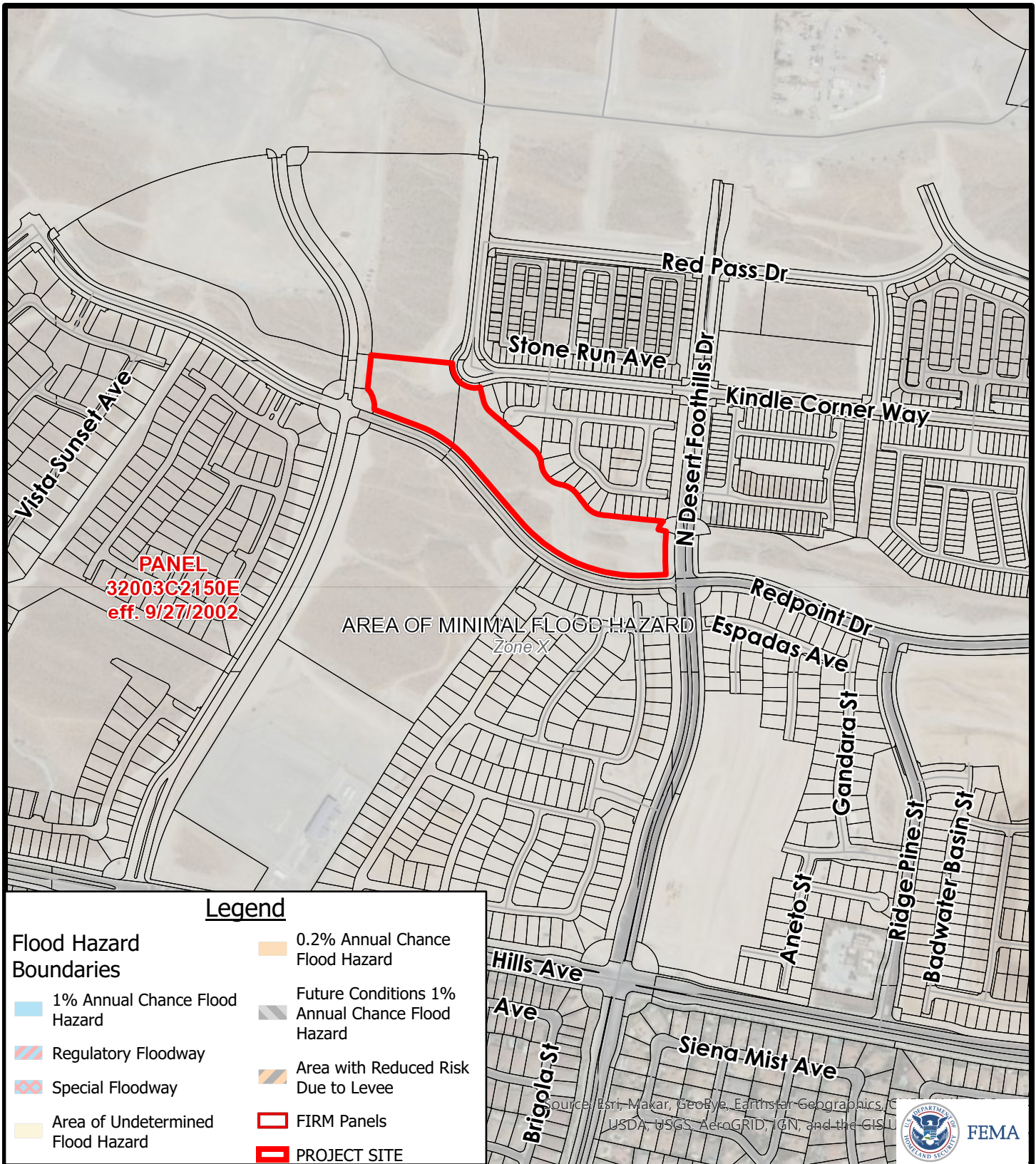
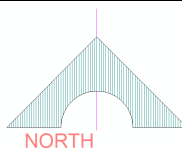


FIGURE 2
FEMA FIRM

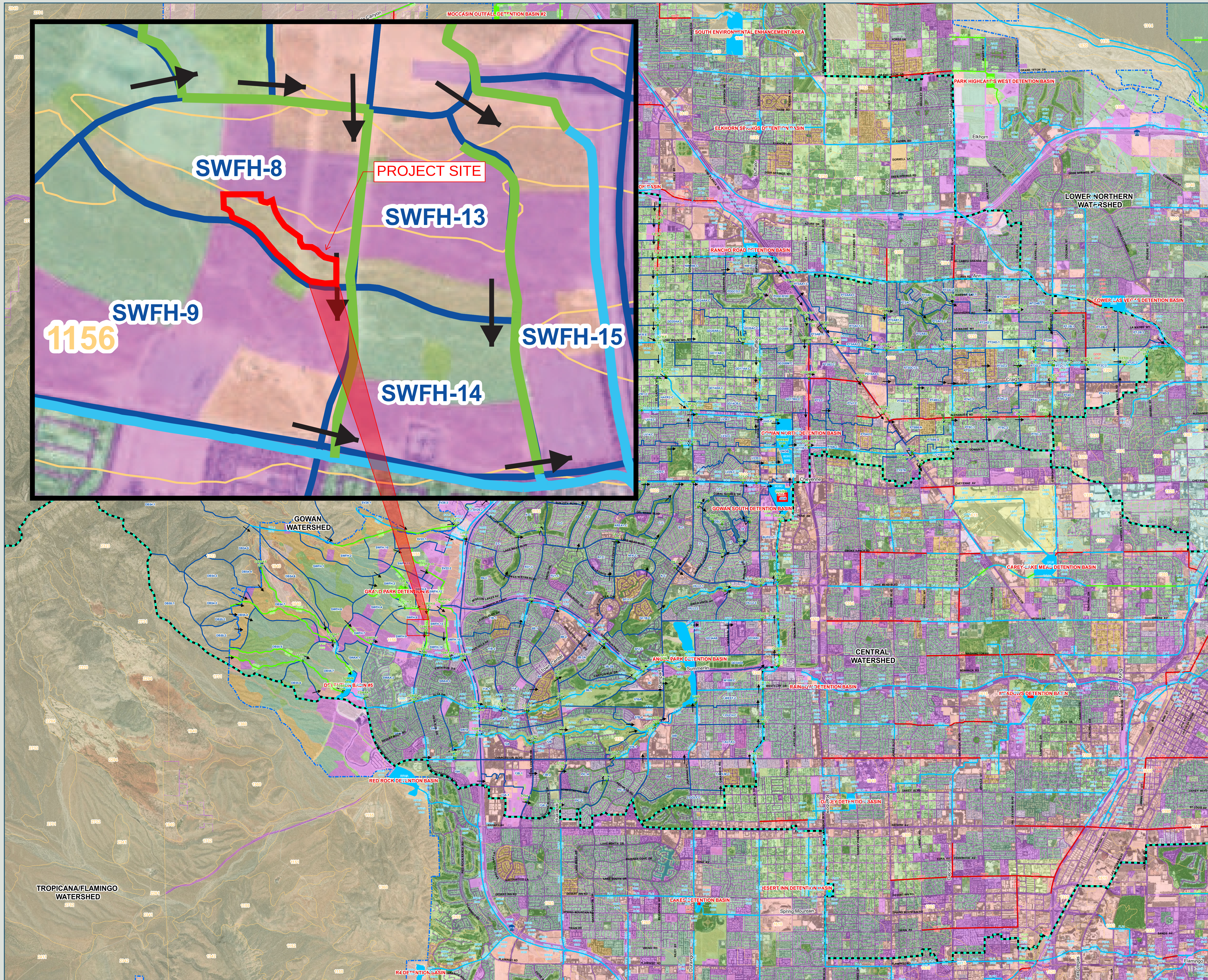
GCV
ENGINEERS \ SURVEYORS

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

375 0 375 750
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SUMMERLIN VILLAGE 21 ARROYO - PHASE 2

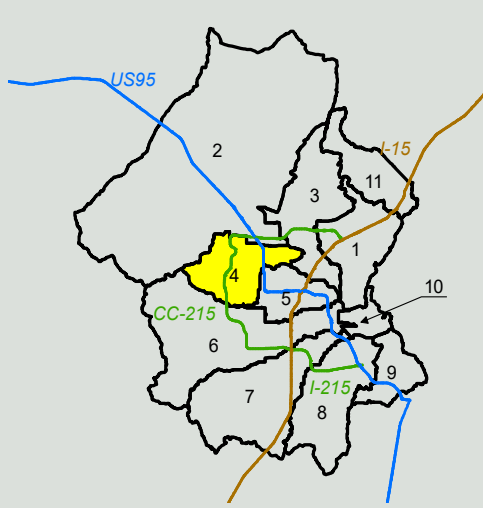


2018 Las Vegas Valley
Master Plan Update

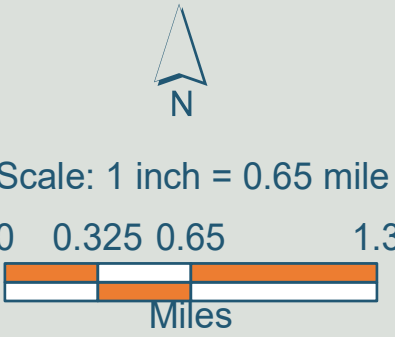
Figure W-4
Gowan Watershed

Legend

- Flow Arrows
- Concentration Points
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Ultimate Development Boundary
- Watershed
- Subbasins
- Soils
- 1: Undeveloped Land, Open desert
- 2: Parks, Golf Courses
- 3: Rural, 0.5-1 units per acre (uses 1 unit/acre)
- 4: Low-Density Residential, 1-2 units per acre (uses 2 units/acre)
- 5: Medium-Density Residential, 2-4 units per acre (uses 3 units/acre)
- 6: High-Density Residential, 4-8 units per acre (uses 6 units/acre)
- 7: Public Facility and Residential, 8-12 units/acre
- 8: Very High-Density Residential, 12 units/acre or more
- 9: Commercial, Retail, Casino, High Rise Condominiums
- 10: Light Industrial
- 11: Heavy Industrial
- 12: Schools
- 13: Lakes



- 1 Range
- 2 Upper Northern Las Vegas Wash
- 3 Lower Northern Las Vegas Wash
- 4 Gowan
- 5 Central
- 6 Flamingo/Tropicana
- 7 Duck Creek/Blue Diamond
- 8 Pittman
- 9 C-1
- 10 Lower Las Vegas Wash
- 11 Apex



PROJECT NO.
639-660-2

DESIGN:
DRAWN:
CHECK:

06/07/2021 10:26 AM

1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gowingengineering.com

HOWARD HUGHES COMPANY, LLC

SUMMERLIN VILLAGE 21 ARROYO PHASE 2

2018 MPU WATERSHED MAP

DRAWING
FIGURE 3

APPENDIX B

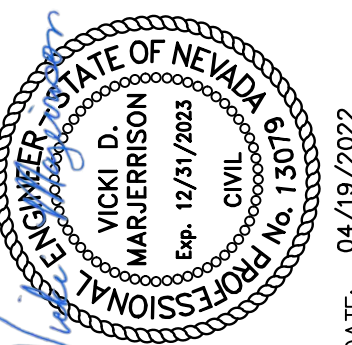


SM

REDPOINT ARROYO - PHASE 2 IMPROVEMENTS

**A.P.N. 137-27-515-001, 137-27-515-002, 137-27-515-003,
137-27-515-004, 137-27-510-002, 137-27-510-006, 137-27-510-007
2021**

SHEET INDEX		
NO.	DWG	DESCRIPTION
1	G1	COVER SHEET
2	G2	GENERAL NOTES
3	G3	PROJECT DATA
4	HC1	HORIZONTAL CONTROL PLAN 1
5	HC2	HORIZONTAL CONTROL PLAN 2
6	HC3	HORIZONTAL CONTROL PLAN 3
7	GD1	GRADING PLAN 1
8	GD2	GRADING PLAN 2
9	GD3	GRADING PLAN 3
10	DT1	SECTIONS & DETAILS
11	DT2	SECTIONS & DETAILS
12	MU	MASTER UTILITY PLAN
13	UT1	UTILITY PLAN 1
14	UT2	UTILITY PLAN 2
15	UT3	UTILITY PLAN 3
16	TR1	SIGNAGE AND STRIPING PLAN

[illegible]

PROJECT NO.	639-660-2
DESIGN:	MF/PB
DRAWN:	PB
CHECK:	MF
PLOT DATE:	04-19-22
PLOT TIME:	11:56:16

GCv'
ENGINEERS \ SURVEYORS

1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gowngengineering.com

PANDORA DATA \ PROJECTS 660-460-1000 \ WWW.PRODUCTION-460-2001-00-000

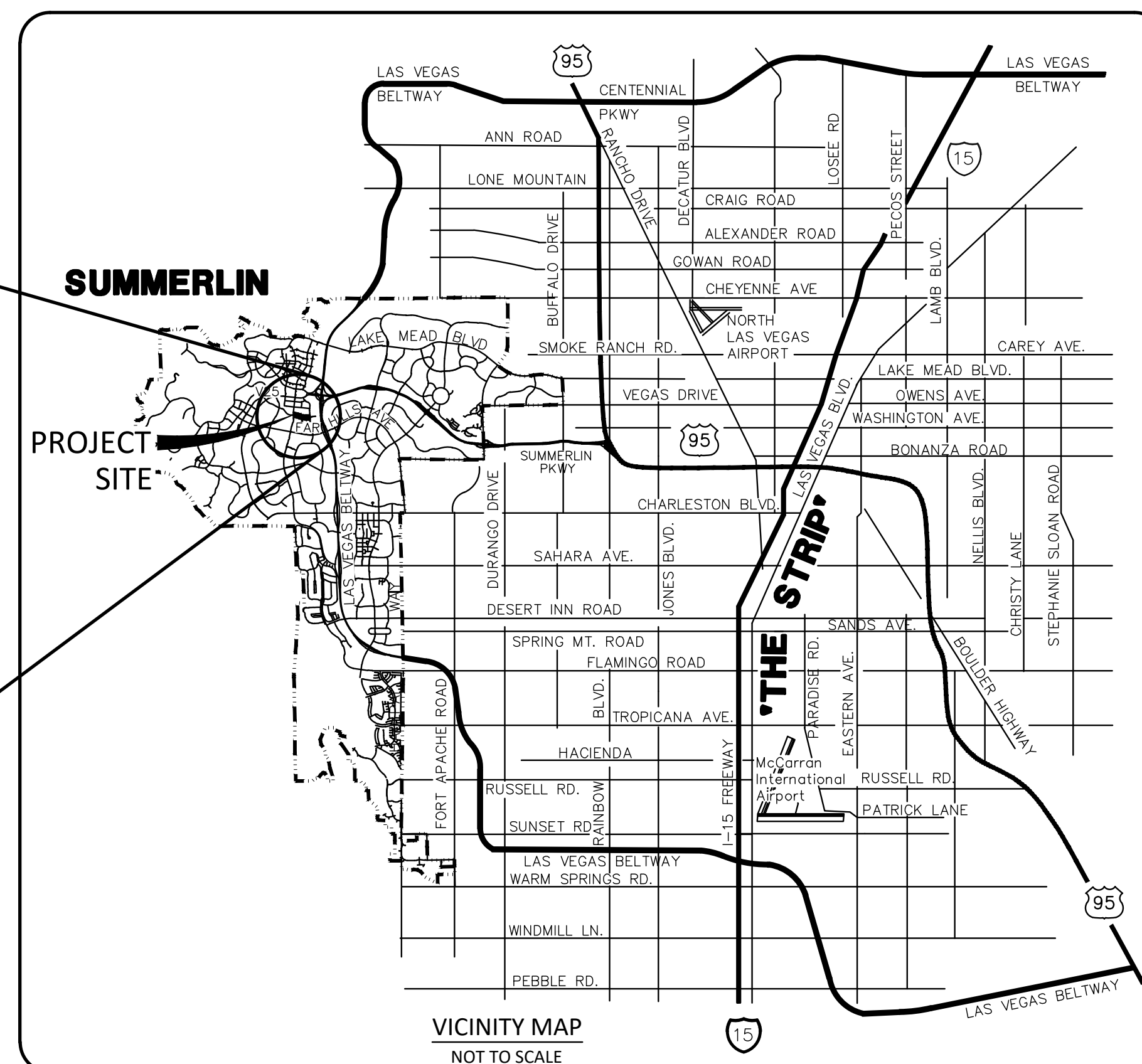
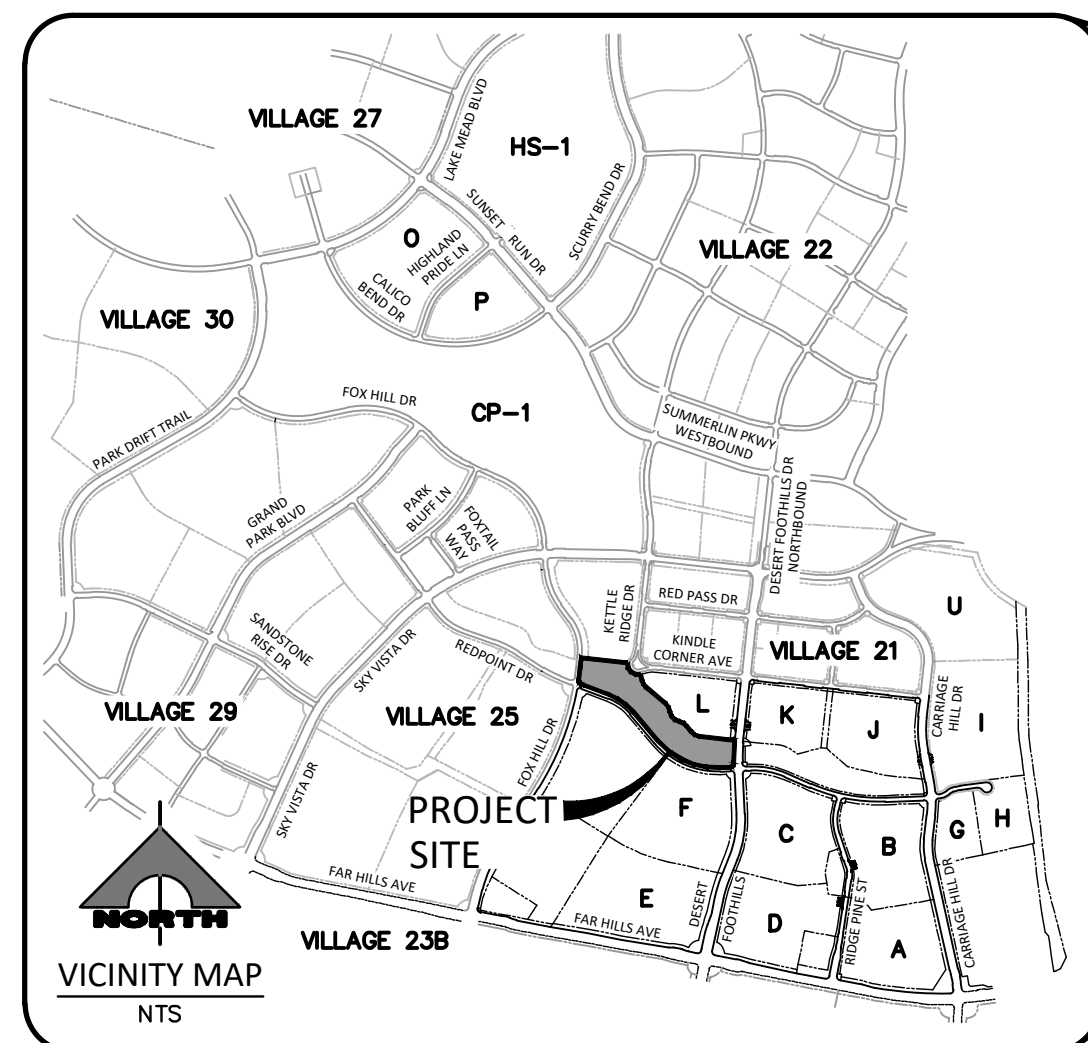
THE HOWARD HUGHES COMPANY, LLC	REDPOINT ARROYO - PHASE 2 IMPROVEMENTS (FOX HILL DRIVE TO DESERT FOOTHILLS DRIVE)	COVER SHEET
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DRAWING

G1

1 OF 16 SHTS

AGENCY APP DATE GCW APP DATE: 6-17-2017 6/17/2017



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

BRIAN P. WALSH, P.E.
VICE PRESIDENT

DATE _____

	N/A
COX COMMUNICATIONS LAS VEGAS, INC.	DATE

CENTRAL TELEPHONE CO., DBA CENTURYLINK	N/A
	DATE

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

	N/A
NV ENERGY	DATE

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

NV ENERGY – TRANSMISSION ENGINEERING	DATE
--------------------------------------	------

SOUTHWEST GAS CORPORATION DATE _____

I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY DS5503 ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

Vicki Marjerrison 04/19/2022

VICKI D. MARJERRISON, P.E. 13079 DATE

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. 139737 FIRST APPROVAL DATE: _____
LWVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
SHEETS: G1-G3, DT1, MU, UT1-UT3

LAS VEGAS FIRE & RESCUE DATE _____

**THE HOWARD HUGHES COMPANY, LLC
10845 GRIFFITH PEAK DRIVE, SUITE 160
LAS VEGAS, NEVADA 89135
OFFICE PHONE NO. (702) 791-4300**

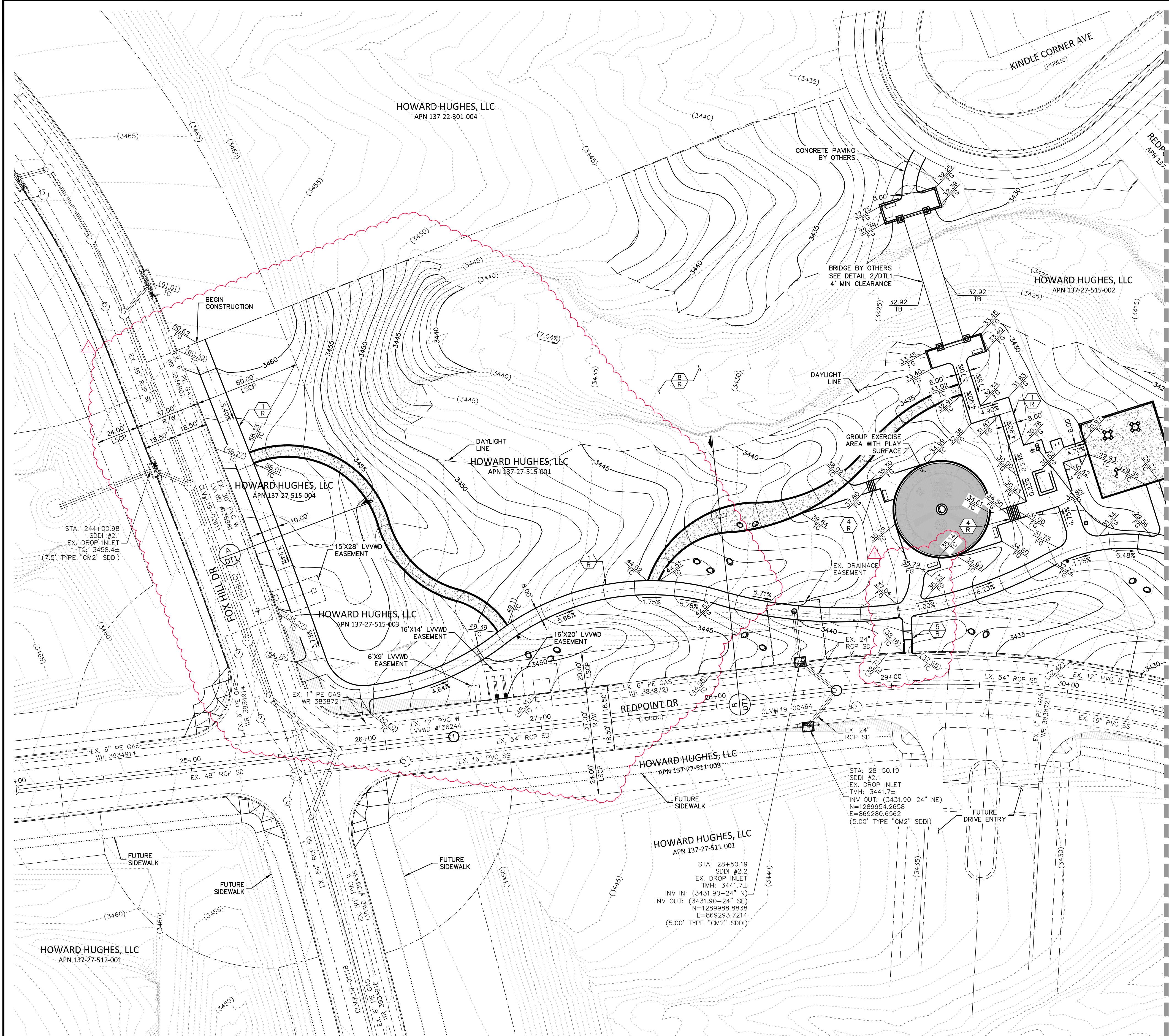
GCV
ENGINEERS \ SURVEYORS

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



L#: L21-02496	CLV#: 650.141
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1 OF 16 SHTS

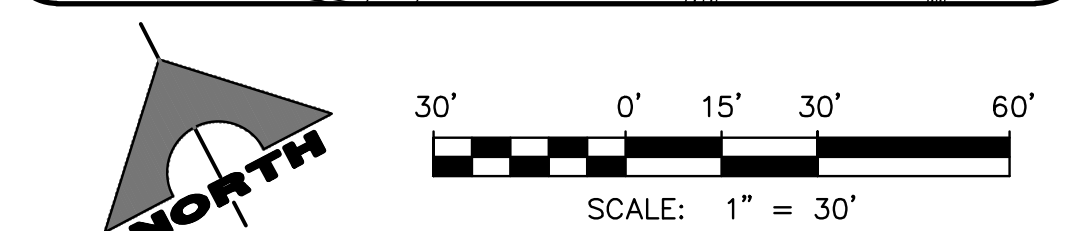
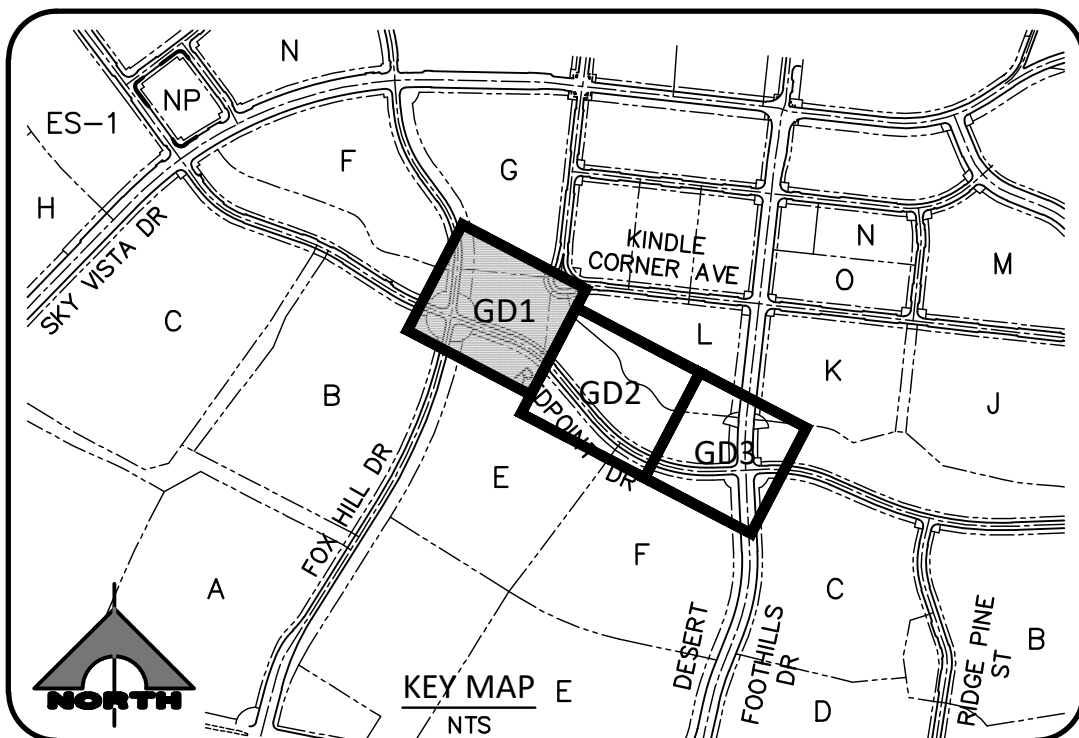


MATCH LINE - SEE SHEET GD2

NOTE
ALL ONSITE STORM DRAIN AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY SUMMERLINE

STORM DRAIN CONSTRUCTION NOTES

- 1. CONSTRUCT TYPE "CM2" DROP INLET (L=10')
- 2. INSTALL 24" RCP STORM DRAIN (CLASS III UNLESS OTHERWISE NOTED)
- 3. CONSTRUCT NDOT TYPE 2 DROP INLET
- 4. INSTALL MULCH (SEE LANDSCAPE PLANS)



- ROADWAY CONSTRUCTION NOTES**
- 1. PROPOSED SIDEWALK (SEE LANDSCAPE PLANS)
 - 2. INSTALL DECORATIVE/RETAINING WALLS (SEE STRUCTURAL PLANS)
 - 3. INSTALL GRASS SURFACE (SEE LANDSCAPE PLANS)
 - 4. INSTALL STAIRS (SEE LANDSCAPE PLANS)
 - 5. INSTALL ADA RAMP PER
 - 6. INSTALL 0" FLUSH CURB (SEE LANDSCAPE PLANS)
 - 7. INSTALL DECOMPOSED GRANITE PAVING (SEE LANDSCAPE PLANS)
 - 8. PROTECT EXISTING ARROYO
 - 9. INSTALL 3" A.C. PAVEMENT PER TYPICAL STREET SECTION
 - 10. INSTALL 6" PVC PIPE FOR SIDEWALK UNDERDRAIN
 - 11. INSTALL 24" "L" TYPE CURB & GUTTER
 - 12. INSTALL MODIFIED "A" CURB PER
 - 13. SAW CUT AND APPROXIMATE LIMITS OF PAVEMENT RESTORATION
 - 14. CONSTRUCT CURB OPENING PER DETAIL
 - 15. INSTALL 4' CROSS GUTTER PER
 - 16. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "A" CURB PER
 - 17. INSTALL 2' CROSS GUTTER PER
 - 18. CONSTRUCT REINFORCED CONCRETE SLAB ON-GRADE

NOTE
SEE SUMMERLIN VILLAGE 21 - UNIT 3 FINAL MAP BOOK 159 PAGE 50 OF PLATS BOOK NO. 20190620 FOR PEDESTRIAN ACCESS EASEMENT

BASIS OF BEARING AND COORDINATES
GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS HIGH ELEVATION ZONE, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.
LINEAR UNIT: US SURVEY FOOT (FTUS)
DATUM (REFERENCE FRAME): NAD 83 (2011) EPOCH 2010.00
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)
ZONE: LAS VEGAS HIGH ELEVATION ZONE
PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W
NORTHING AT GRID ORIGIN: 400,000.00 M (1,312,333.3333 FTUS)
EASTING AT CENTRAL MERIDIAN: 300,000.00 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)
NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.
2. GRID BEARINGS SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARINGS DUE TO MERIDIAN CONVERGENCE.

BENCHMARK			
BM#	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM NO. SLV0926W6	CITY OF LAS VEGAS RIVET AND PLATE IN TOP OF CURB AT THE SOUTHEAST CORNER OF CARRIAGE HILLS DR. AND FAR HILLS AVE.	3229.22 (FEET)	984.267 (METERS)

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

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

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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.

1-702-227-2929

THE HOWARD HUGHES COMPANY, LLC
REDPOINT ARROYO - PHASE 2 IMPROVEMENTS
(FOX HILL DRIVE TO DESERT FOOTHILLS DRIVE)

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

WICKI D. MARJERISON
CIVIL
Exp. 12/31/2023
130191

PROJECT NO.
639-660-2

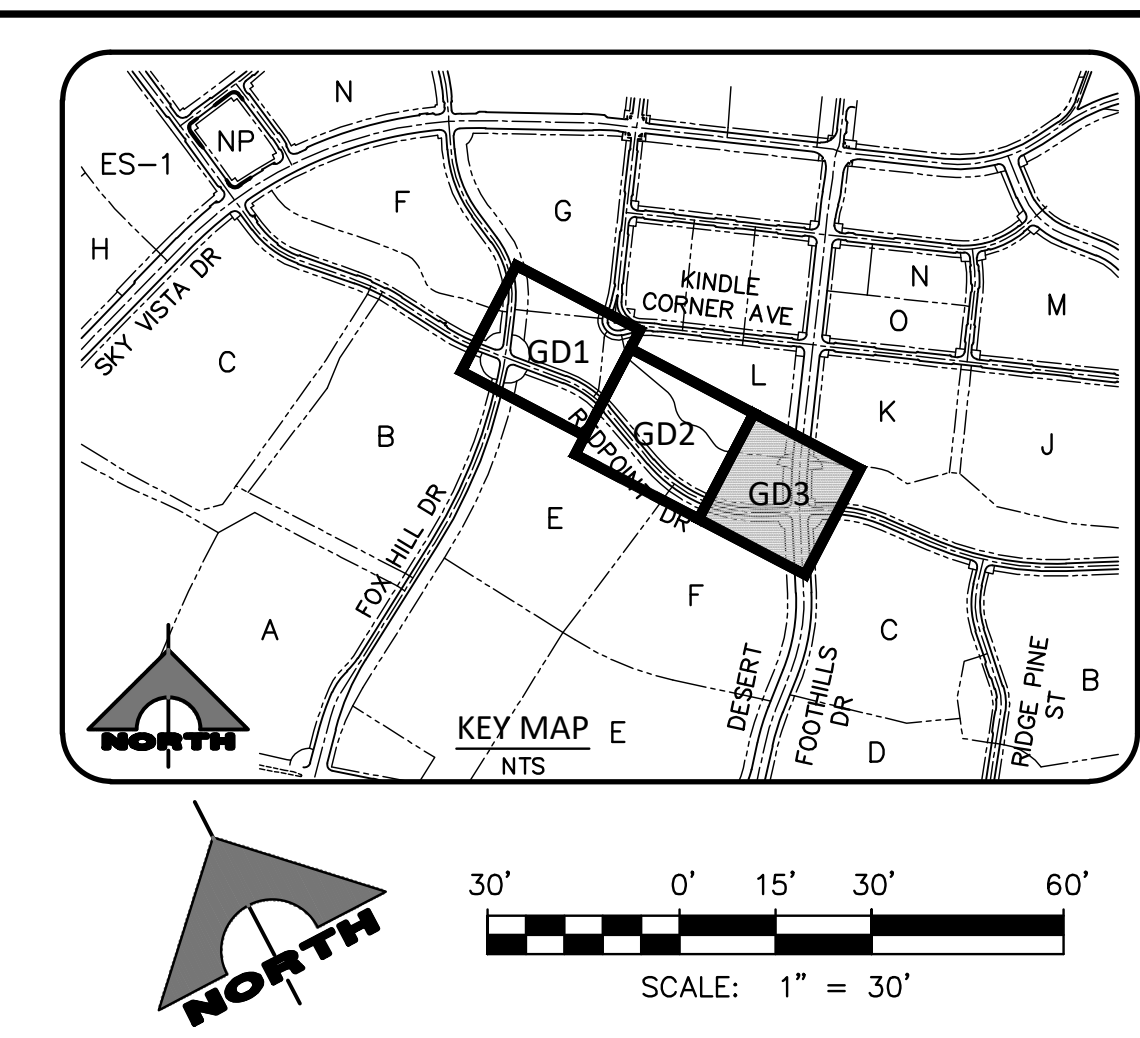
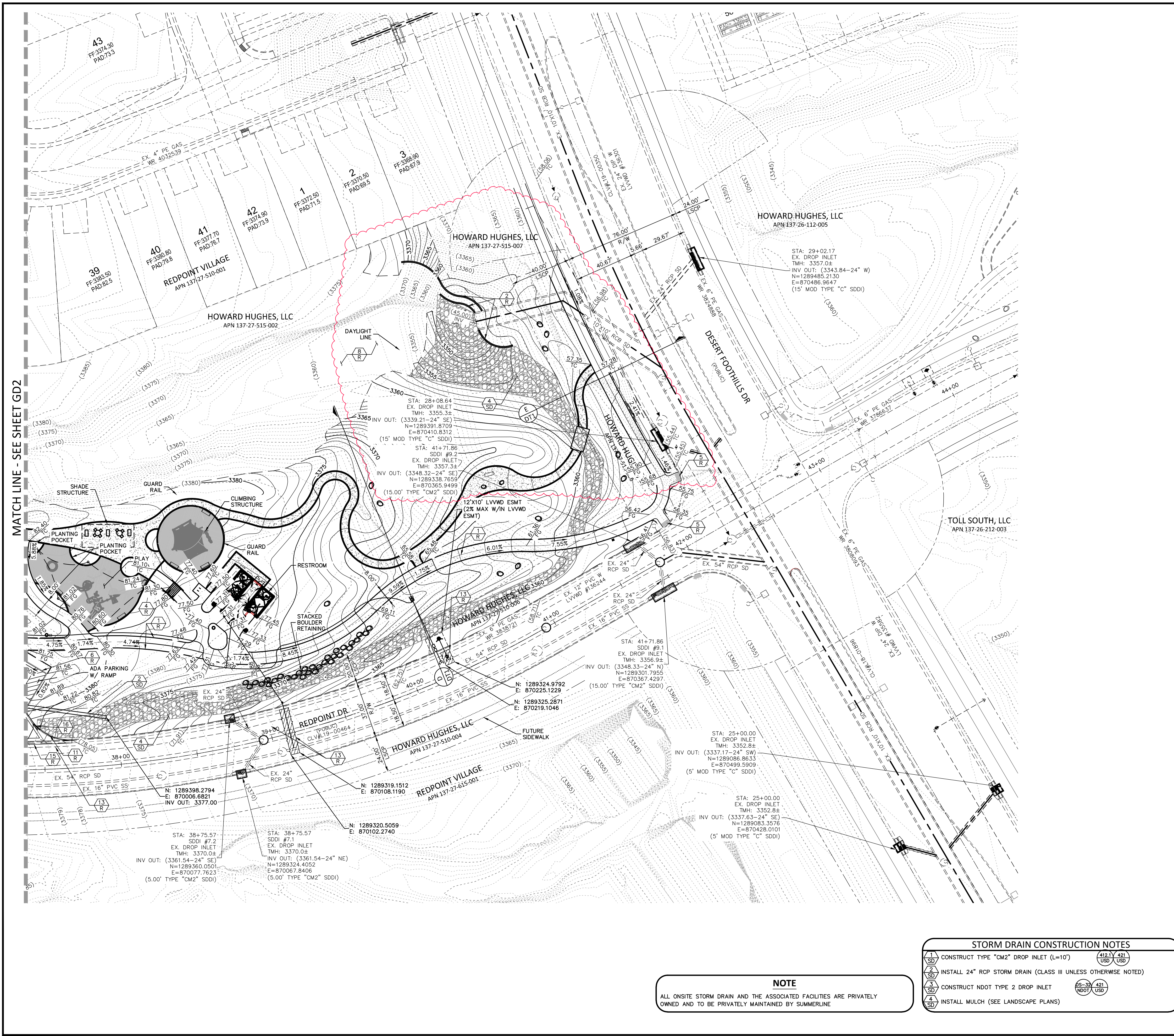
DESIGN: MF/PB
DRAWING: PB
CHECK: MF

PLOT DATE: 04-19-22
PLOT TIME: 11:56:41

GRADING PLAN 1

DRAWING
GD1

9 OF 16 SHTS



- ### ROADWAY CONSTRUCTION NOTES
- PROPOSED SIDEWALK (SEE LANDSCAPE PLANS)
 - INSTALL DECORATIVE/RETAINING WALLS (SEE STRUCTURAL PLANS)
 - INSTALL GRASS SURFACE (SEE LANDSCAPE PLANS)
 - INSTALL STAIRS (SEE LANDSCAPE PLANS)
 - INSTALL ADA RAMP PER $\frac{238}{100}$ USF
 - INSTALL 0" FLUSH CURB (SEE LANDSCAPE PLANS)
 - INSTALL DECOMPOSED GRANITE PAVING (SEE LANDSCAPE PLANS)
 - PROTECT EXISTING ARROYO
 - INSTALL 3" A.C. PAVEMENT PER TYPICAL STREET SECTION $\frac{10}{10}$
 - INSTALL 6" PVC PIPE FOR SIDEWALK UNDERDRAIN
 - INSTALL 24" "L" TYPE CURB & GUTTER $\frac{218}{10}$ USF
 - INSTALL MODIFIED "A" CURB PER $\frac{3}{10}$
 - SAW CUT AND APPROXIMATE LIMITS OF PAVEMENT RESTORATION $\frac{500.2}{10}$ USF
 - CONSTRUCT CURB OPENING PER DETAIL $\frac{4}{10}$
 - INSTALL 4" CROSS GUTTER PER $\frac{11}{10}$
 - CONSTRUCT 5' TRANSITION FROM "L" CURB TO "A" CURB PER $\frac{KX}{10}$
 - INSTALL 2' CROSS GUTTER PER $\frac{B}{11}$
 - CONSTRUCT REINFORCED CONCRETE SLAB ON-GRADE $\frac{C}{11}$

NOTE

SEE SUMMERLIN VILLAGE 21 - UNIT 3 FINAL MAP BOOK 159 PAGE 50 OF PLATS BOOK NO. 20190620 FOR PEDESTRIAN ACCESS EASEMENT

BASIS OF BEARING AND COORDINATES

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

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

PROJECTION: TRANSVERSE MERCATOR
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LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W
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EASTING AT CENTRAL MERIDIAN: 300,000 M (984,250.0000 FTUS)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.000135 (EXACT)

NOTES:
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CLV BM NO. SLV0926W6	CITY OF LAS VEGAS RIVET AND PLATE IN TOP OF CURB AT THE SOUTHEAST CORNER OF CARRIAGE HILLS DR. AND FAR HILLS AVE.	3229.22 (FEET)	984.267 (METERS)

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FREEMAN AND ARTERIAL SYSTEM OF TRANSPORTATION

CALL BEFORE YOU DO OVERHEAD
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- ### STORM DRAIN CONSTRUCTION NOTES
- CONSTRUCT TYPE "CM2" DROP INLET (L=10') $\frac{412.1}{100}$ USF
 - INSTALL 24" RCP STORM DRAIN (CLASS III UNLESS OTHERWISE NOTED)
 - CONSTRUCT NDOT TYPE 2 DROP INLET $\frac{421}{100}$ USF
 - INSTALL MULCH (SEE LANDSCAPE PLANS)

NOTE

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THE HOWARD HUGHES COMPANY, LLC
REDPOINT ARROYO - PHASE 2 IMPROVEMENTS
(FOX HILL DRIVE TO DESERT FOOTHILLS DRIVE)

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1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcvengineering.com

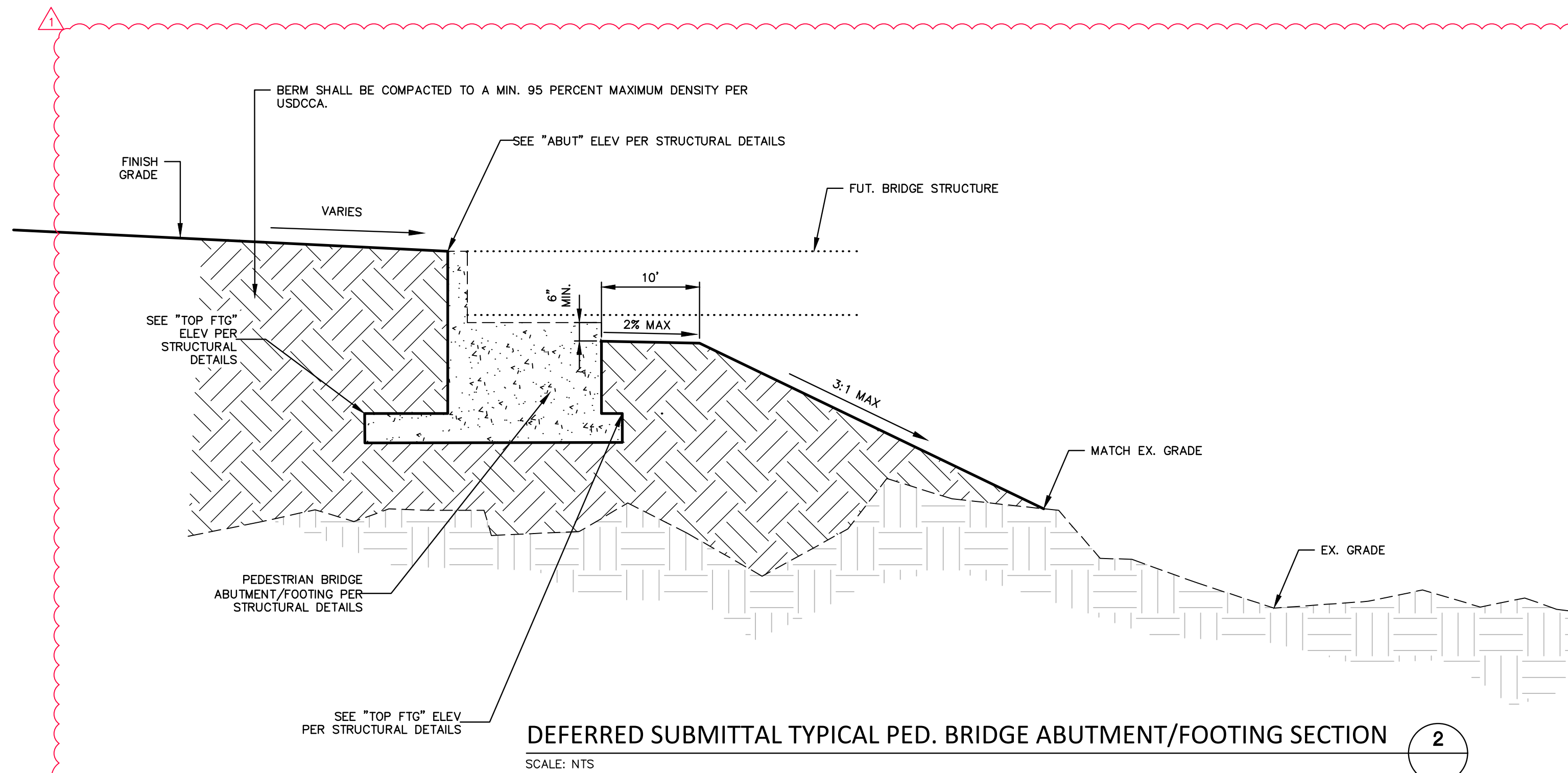
WICKI D. MARJERSON
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEVADA
Exp. 12/31/2023
CIVIL
130175

AGENCY REVIEW - NOT FOR CONSTRUCTION

PROJECT NO. 639-660-2
DESIGN: MF/PB
DRAWING: PB
CHECK: MF
PLOT DATE: 04-19-22
PLOT TIME: 11:56:48

GRADING PLAN 3

GD3
9 OF 16 SHTS



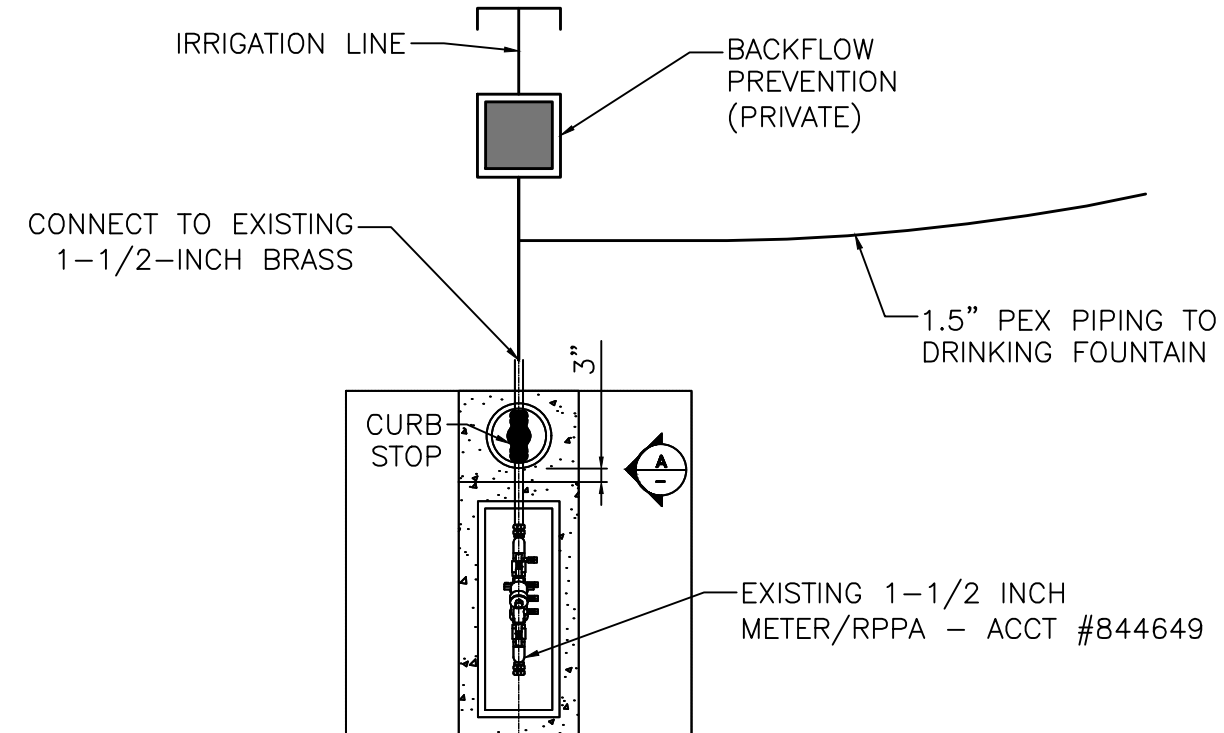
DEFERRED SUBMITTAL TYPICAL PED. BRIDGE ABUTMENT/FOOTING SECTION

SCALE: NTS

2

APPROVED FOR CONSTRUCTION

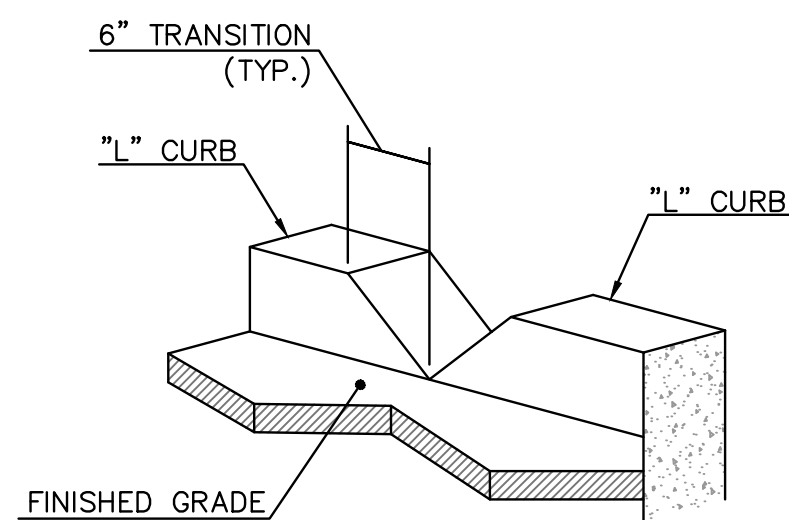
LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES
PROJECT NO. 139737 FIRST APPROVAL DATE: / /21
LVVWD APPROVED FIRE FLOW: TOTAL GPM AT 20 PSI RESIDUAL



WATER CONECTION

SCALE: NTS

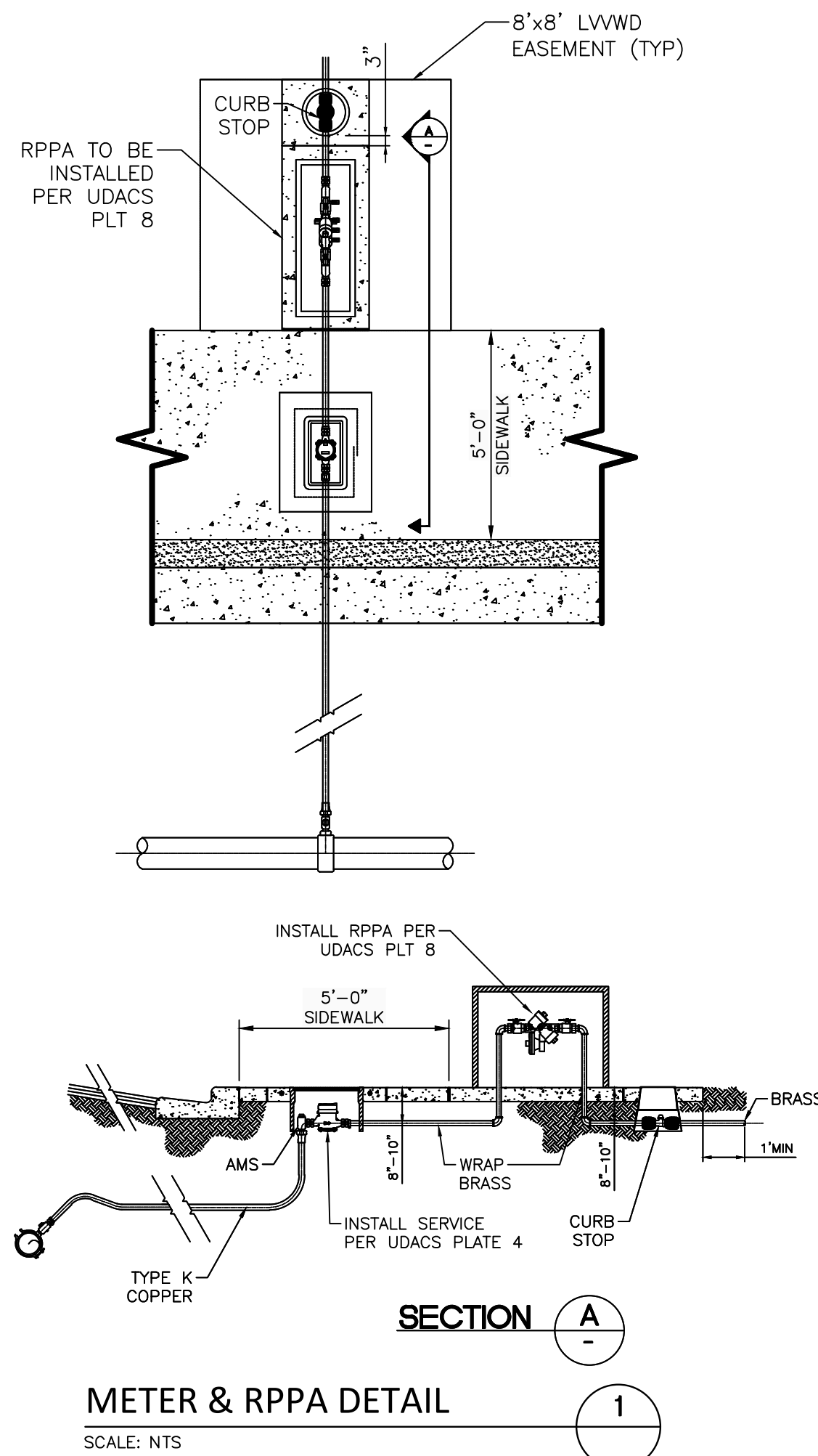
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CURB OPENING DETAIL

SCALE: NTS

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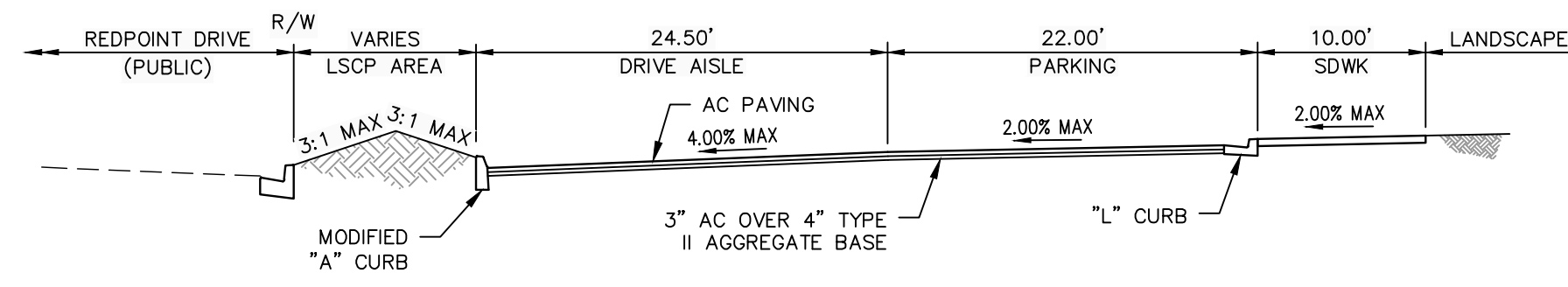


SECTION A

METER & RPPA DETAIL

SCALE: NTS

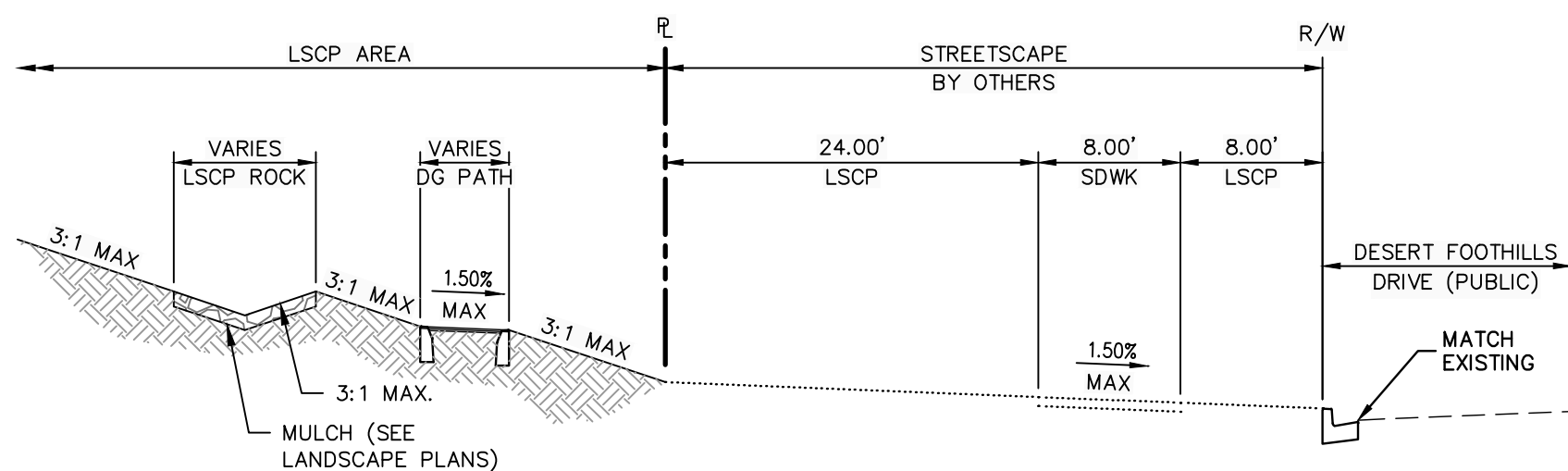
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PARKING LOT SECTION

SCALE: NTS

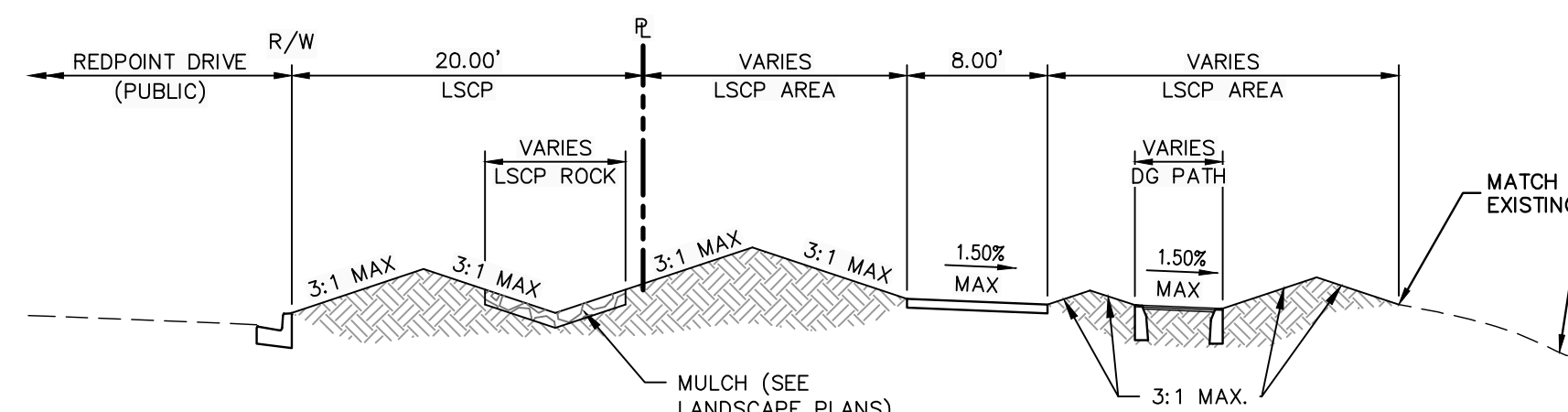
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EAST PERIMETER SECTION (PUBLIC)

SCALE: NTS

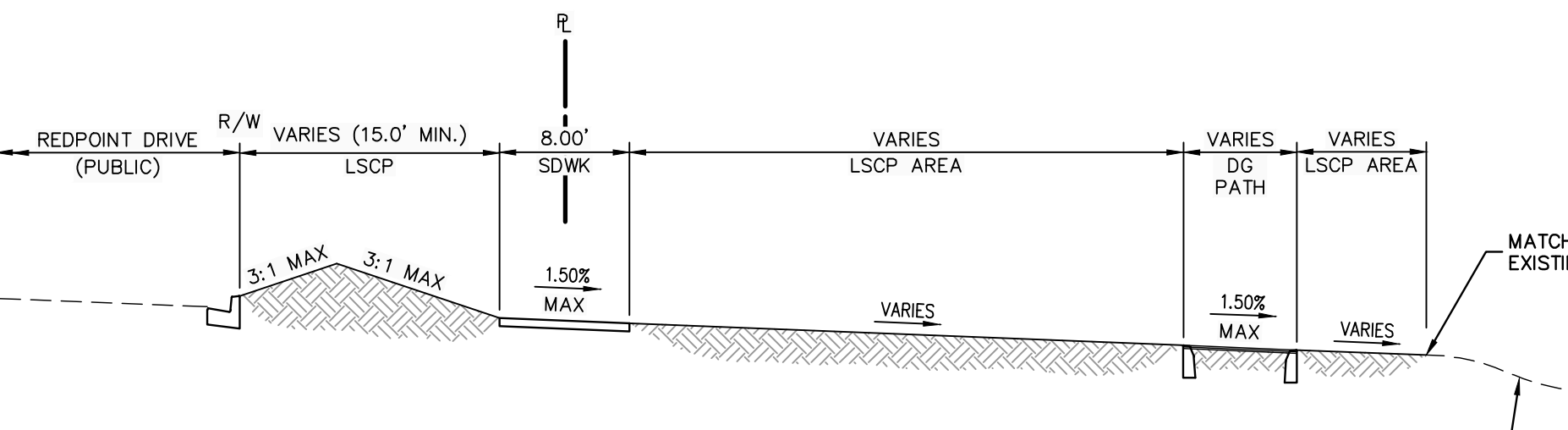
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SOUTH PERIMETER SECTION (PUBLIC)

SCALE: NTS

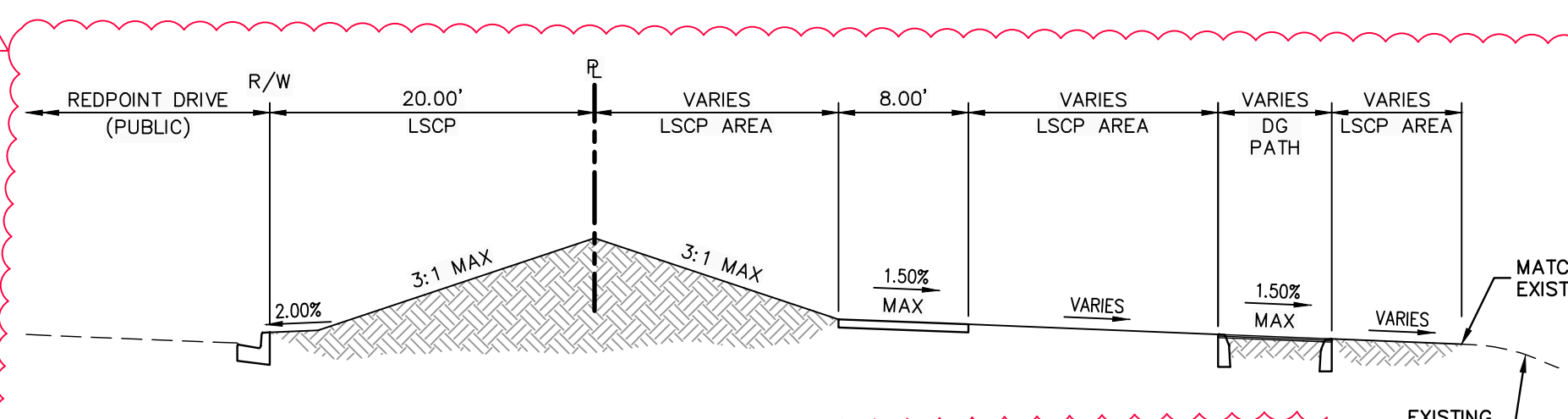
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SOUTH PERIMETER SECTION (PUBLIC)

SCALE: NTS OUT CURVE W/ GRANITE WALK PATH

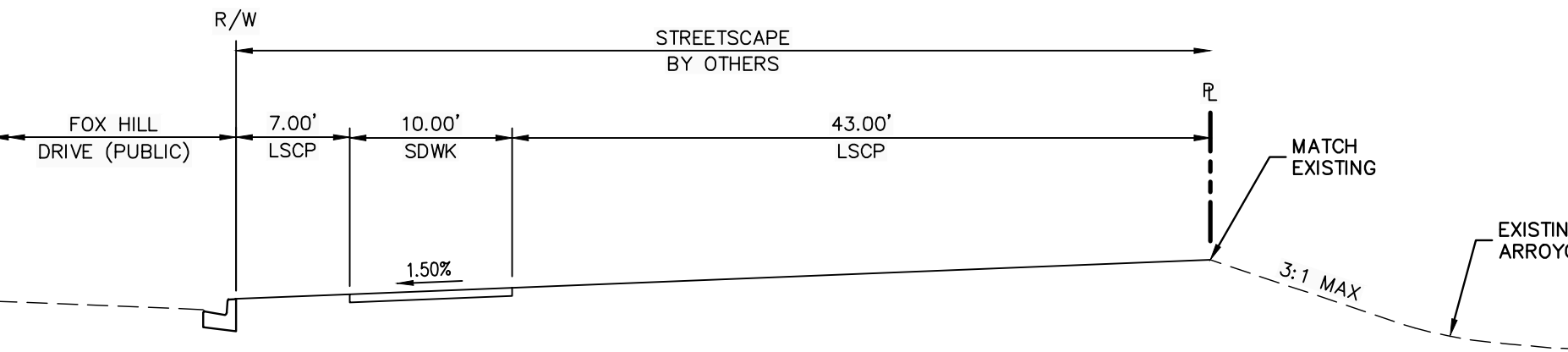
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SOUTH PERIMETER SECTION (PUBLIC)

SCALE: NTS

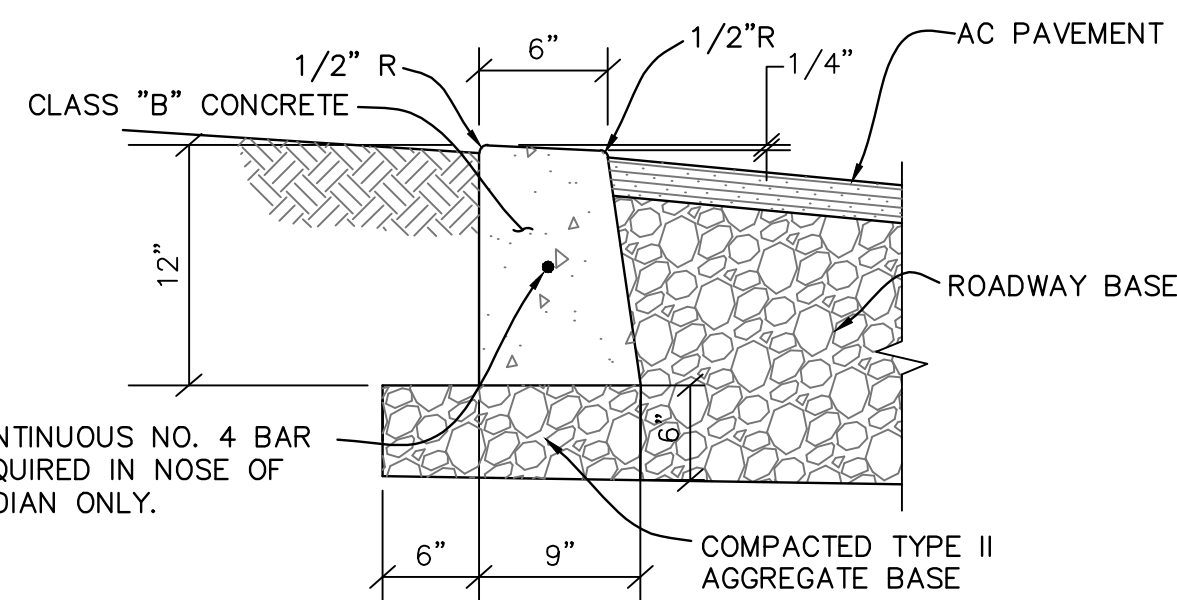
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WEST PERIMETER SECTION (PUBLIC)

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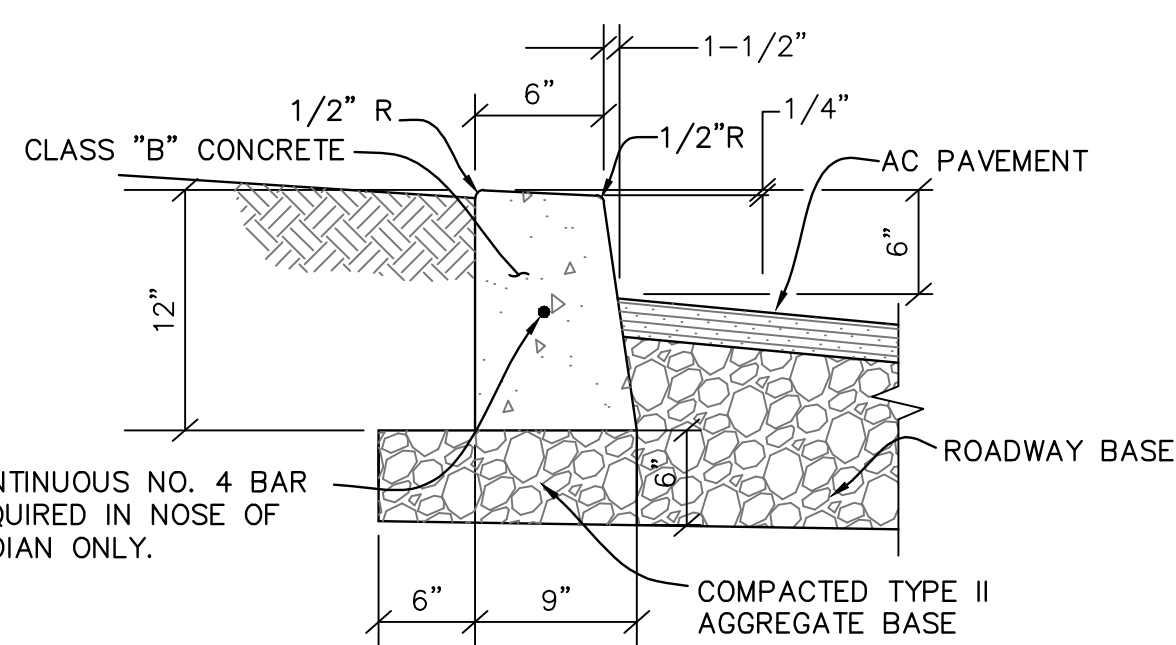
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"ZERO" TYPE CURB DETAIL

SCALE: NTS

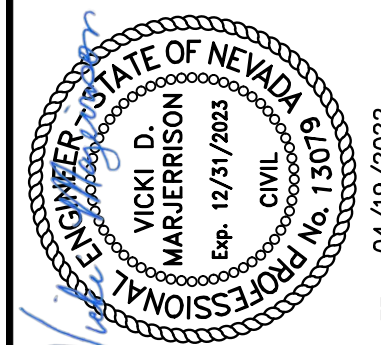
5



MODIFIED "A" TYPE CURB DETAIL

SCALE: NTS

3



DATE	AGENCY	DATE	AGENCY	DATE	AGENCY
04/19/22	REVISED AND ADDED DETAILS				

PROJECT NO.	639-660-2
DESIGN:	MF/PB
DRAWING:	PB
CHECK:	MF
PLOT DATE:	04-19-22
PLOT TIME:	11:56:58

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(FOX HILL DRIVE TO DESERT FOOTHILLS DRIVE)

DRAWING
DT1
10 OF 16 SHTS

