GCW
ENGINEERS \ SURVEYORS

Technical Drainage Study (Addendum #3) For

Axel at Sunstone

831-016

March 14, 2022

Prepared for:
Lennar Homes
9275 West Russell Road, #400
Las Vegas, NV, 89148
(702) 821-4681

Prepared by GCW, Inc.

1555 South Rainbow Blvd
Las Vegas, NV 89146

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HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Axel at Sunstone Date: March 14, 2022

Location of Development: a) Descriptive (Cross Streets) North/South: US 95

East/West: Kyle Canyon Road

b) Section: 6 Township: 19S Range: 60E

c) APN : 125-06-810-002

Name of Owner: Owner: NORTHLAND LLC; Developer: Lennar Homes

Telephone No.: (702) 821-4681 Fax No.: E-Mail Address: Efraim.balizan@lennar.com

Address: 9275 West Russell Road #400, Las Vegas, Nevada 89148

Contact Person-Name: Kevin Ramage, PE **Telephone No.:** (702) 804-2000

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

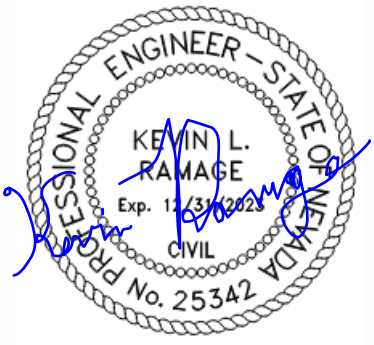
Firm: GCW, Inc.

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

Type of Land Development/Land Disturbance Process:

	Rezoning		Subdivision Map		Clearing and Grading Only
	Parcel Map		Planned Unit Development	X	Other (Please specify below)
	Large Parcel Map		Building Permit	Grading Permit.	

1. Total Owned Land Area: At Site: +/- 32.05 ac Being Developed/Disturbed: +/-32.05
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.): Residential.
5. Approximate upstream land area which drains to the subject site: 0 ac
6. Has the site drainage been evaluated in the past? ☐ **YES** ☒ **NO** If yes, please identify documentation:
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: East to existing storm drain
8. Briefly describe your proposed schedule for the subject project: ASAP.



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.**

Local Entity File No.

Revision	Date

REFERENCE:

STANDARD FORM 1

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: February 25, 2022
TO: **Land Development Services** Department of Building & Safety				FROM: Jennifer Shinn, P.E. Flood Control, Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for:			**COPIES TO:**
Axel at Sunstone				Northland LLC and Lennar Homes
Cross Streets:	US 95 and Kyle Canyon Road			GCW Inc.
File Number:	F:\Depot\DSMemos\DS5499A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	125-06-810-002			
Zoning Action:				
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	9/23/2021	10/18/2021	Not Approved	$400.00	4461754: $400
2nd Submittal	12/22/2021	12/30/2021	Not Approved	$400.00	4579887: $400
3rd Submittal	2/8/2022	2/25/2022	See Comment Below	$400.00	4640935: $400
			TOTAL FEES (LDDRS):	**$1200.00**	**----**

REMARKS:

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

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

The following are comments pertaining to the subject site specific drainage study and grading plans:

1. The subject study assumes that O'Hare Road and the two entry roads (Trailblazer Falls Street and Aurora Fields Lane), including all drainage infrastructure, are constructed and in place. In addition, the subject study assumes the offsite flows from the US95 are being collected in an existing storm drain system per the Iron Mountain Update Study. Substantial completion of the drainage facilities associated with the above-mentioned projects is required prior to issuance of occupancy permits.
2. Address the following comments on Figure 5 Proposed Interim Condition with Section:
    a. Re-verify the 100-Year Prorated Flow Rate Summary and reflect changes accordingly. For example, Subbasin 11 should be 7-cfs based on 3.98-acres times 1.74 cfs/acre. Also, recommend expanding flow rate to tenth to match prorated cfs.
    b. Add concentration points. For example, CP1 should be added at downstream end of Subbasin 2 and shown it on the table as CP1 = Subbasin 1 + Subbasin 2. Add additional concentration points throughout the proposed project site.

c. Check Subbasin boundary limit. For example, portion of Subbasin 5 should be included in Subbasin 7 because half street for Subbasin 5 drains to Subbasin 7. Check Subbasin 8, 9, and 10 and reflect changes accordingly.

d. Add corresponding Subbasin or concentration points to 100-Year Street Flow Summary. For example, add a note to Section 2 to states that flows are from CP1 or Subbasin 1 + Subbasin 2. Also, re-verify the Section flows used in the FlowMaster Calcualtion. Section 2 should be 8-cfs, not 4-cfs. Section 6 should be 20-cfs, not 4-cfs. Check finish floor elevations based on the new flow depth calculation.

e. Recommend using Subbasins for each drop inlet calculation to match street flow calculation instead of total acreage for each drop inlet. Also, consider half street capacity when calculating total flow draining to each drop inlet. Re-verify the drop inlet calculation basin on half street capacity. Provide an explanation on how flow impacting DI 3 and DI 2 are determined. For example, total acreage for DI 2 and DI 3 is 26.72-acres which is equal to 46.5-cfs, but he summary table shows 12-cfs + 33-cfs = 45-cfs. Please re-verify and reflect changes accordingly.

3. Add Public Drainage Easements to "Private Street Note".
4. Improvement plan for Phase II is not included in the drainage study. Please submit Phase II improvement plan.
5. The proposed 30-inch RCP connecting to the side of "DM2" drop inlet doesn't fit. The inter diameter of "DM2" drop inlet is 30-inch which doesn't accommodate thickness of 30-inch RCP. Are you using "CM2" or "DM2"? Please address comment from 2nd Submittal.
6. Delete construction notes 17 and 18 from P sheets.
7. Delete construction notes 20. It should note as "Public Drainage Easement to be privately maintained".
8. For SDDI #2, what's TMH elevation? Is this grate elevation? TMH elevation is higher than TC elevations around the drop inlet. Please verify and reflect changes accordingly. Also, SDDI #1 has RIM elevation and others have TC elevations, please be consistent and use TC elevations.
9. For Sections G/D3, A/D4 and B/D4, use generic numbers and delete lot numbers. Please note that Finish Floor elevation must be minimum of 8-inch above the upstream Flow line elevation. Also, the Lot 47 shows FG elevation of 59.11 at toward the rear gate and FG elevation of 58.43 at the Pad line which drains back to the house. Re-verify the lot grading.

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

END OF REMARKS
HDR/JKS

T/R/S: T19/R60E/S6
AREA G-06

831-016

03/14/2022

Oh-Sang Kwon, P.E.
City of Las Vegas, Public Works
495 S. Main St.
Las Vegas, NV 89106

Re: Technical Drainage Study (Addendum #3) for Axel at Sunstone (Resubmission)

Dear Oh-Sang,

The following are the responses to the comments pertaining to the subject site specific drainage study and grading plans:

1. The subject study assumes that O'Hare Road and the two entry roads (Trailblazer Falls Street and Aurora Fields Lane), including all drainage infrastructure, are constructed and in place. In addition, the subject study assumes the offsite flows from the US95 are being collected in an existing storm drain system per the Iron Mountain Update Study. Substantial completion of the drainage facilities associated with the above-mentioned projects is required prior to issuance of occupancy permits. A note has been placed on the cover sheet stating such. See plans.

2. Address the following comment on Figure 5 Proposed Interim Condition with Section:

   a. Re-verify the 100-Yr. Prorated Flow Rate Summary and reflect changes accordingly. For Example, Subbasin 11 should be 7-cfs based on 3.98-acres times 1.74 cfs/acre. Also, recommend expanding flow rate to tenth to match prorated cfs. Changes were made per request including flow rate to tenth. See Figure 5.
   b. Add concentration points. For example, CP1 should be added at downstream end of Subbasin 2 as shown it on the table as CP1 = Subbasin 1 + Subbasin 2. Add additional concentration points throughout the proposed project site. Additional concentration points have been added per request. See Figure 5.
   c. Check subbasin boundary limit. For example, portion of Subbasin 5 should be included in Subbasin 7 because half street for Subbasin 5 drains to Subbasin 7. Check Subbasin 8, 9, and 10 and reflect changes accordingly. Lines were not matching/touching graphically in AutoCAD. This has been fixed. See Figure 5.
   d. Add corresponding Subbasin or concentration point to the 100-Yr. Street Flow Summary. For example, add a note to Section 2 to states that flows are from CP1 or Subbasin 1 + Subbasin 2. Also, re-verify the Section flows used in the Flowmaster Calculation. Section 2 should be 8-cfs, not 4-cfs. Section 6 should be 20 cfs, not 4-cfs. Check finish floor elevations based on new flow depth calculation. Taken care of per request. See Figure 5 and new Flowmaster Calculations.
   e. Recommend using Subbasins for each drop inlet calculation to match sheet flow calculation instead of total acreage for each drop inlet. Also, consider half street capacity when calculating total flow draining to each drop inlet. Re-verify the drop inlet calculation basin on half street capacity. Provide an explanation on how flow impacting DI 3 to DI 2 are determined. For example, total acreage for DI 2 and DI 3 is 26.72 acres which is equal

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to 46.5 cfs, but the summary table shows 12-cfs + 33-cfs = 45-cfs. Please re-verify and reflect changes accordingly. Completed per request. See Figure 5 and addendum.

3. Add Public Drainage Easements to "Private Street Note". Added per request. See plans.
4. Improvement plan for Phase II is not included in the drainage study. Please submit Phase II improvement plan. Phase 2 has been included per request. See plans.
5. The proposed 30-inch RCP connecting the side of "DM2" drop inlet doesn't fit. The inner diameter of "DM2" drop inlet is 30-inch which doesn't accommodate thickness of 30-inch RCP. Are you using "CM2" or "DM2"? Please address comment from 2nd submittal. Everything should now suffice per your discussion with Todd K. See plans.
6. Delete construction notes 17 and 18 from P sheets. The construction notes have been deleted. See plans.
7. Delete construction note 20. It should note as "Public Drainage Easement to be privately maintained". Deleted per request. See plans.
8. For SDDI #2, what's TMH elevation? Is this grate elevation? TMH elevation is higher than TC elevations around the drop inlet. Please verify and reflect changes accordingly. Also, SDDI #1 has RIM elevation and others have TC elevations, please be consistent and use TC elevations. Taken care of per request. See plans.
9. For Sections G/D3, A/D4, and B/D4, use generic numbers and delete lot numbers. Please note that Finish Floor elevation mush be minimum of 8-inch above the upstream flow line elevation. Also, the lot 47 shows FB elevation of 59.11 at toward the rear gate and FG elevation of 58.43 at the pAd line which drains back to the house. Re-verify the lot grading. Taken care of per request. See plans.

Respectfully submitted,

Kevin Ramage, PE
Flood Control Division
GCW, Inc.

LAS VEGAS CITY COUNCIL

CAROLYN G. GOODMAN
Mayor

STAVROS S. ANTHONY
Mayor Pro Tem

MICHELE FIORE
CEDRIC CREAR
BRIAN KNUDSEN
VICTORIA SEAMAN
OLIVIA DIAZ

JORGE CERVANTES
City Manager

DEPARTMENT OF PLANNING

SETH T. FLOYD

DIRECTOR OF
COMMUNITY DEVELOPMENT

CITY HALL
495 S. MAIN ST.
3RD FLOOR
LAS VEGAS, NV 89101

702.229.6301 | VOICE
702.464.2545 | FAX
711 | TTY

cityoflasvegas
lasvegasnevada.gov

August 11, 2021

Mr. Efraim Balizan
Northland, LLC
9275 W. Russell Road, Ste. 400
Las Vegas, Nevada 89148

RE: 21-0382-TMP1
PLANNING COMMISSION MEETING OF AUGUST 10, 2021

Dear Applicant:

The Planning Commission at a regular meeting held on ***August 10, 2021*** voted to ***APPROVE*** the following Land Use Entitlement project request FOR A 328-LOT SINGLE-FAMILY ATTACHED SUBDIVISION on 32.05 acres on the south side of Trailblazer Falls Street, approximately 325 feet southwest of Ohare Road (APN 125-06-810-002), T-D (Traditional Development) Zone [MLA (Residential Medium Low Attached) Sunstone Special Land Use Designation)], Ward 6 (Fiore).

This approval is subject to the following conditions:

Planning

1. Conformance to the approved Street Name Change (20-0004-SNC1) as applicable.

2. Conformance to the Sunstone Design Guidelines.

3. Handicapped parking shall conform to federal ADA standards.

4. Approval of the Tentative Map shall be for no more than four (4) years. If a Final Map is not recorded on all or a portion of the area embraced by the Tentative Map within four (4) years of the approval of the Tentative Map, this action is void.

5. Street names must be provided in accordance with the City's Street Naming Regulations.

6. A fully operational fire protection system, including fire apparatus roads, fire hydrants and water supply, shall be installed and shall be functioning prior to construction of any combustible structures.

7. In conjunction with creation, declaration and recordation of the subject common-interest community, and prior to recordation of the Covenants, Codes and Restrictions ("CC&R"), or conveyance of any unit within the community, the Developer is required to record a Declaration of Private Maintenance Requirements ("DPMR") as a covenant on all associated properties, and on behalf of all current and future property owners. The DPMR is to include a listing of all privately owned and/or maintained infrastructure improvements, along with assignment of maintenance responsibility for each to the common interest community or the respective individual property owners, and is to provide a brief description of the required level of maintenance for privately maintained components. The DPMR must be reviewed and approved by the City of Las Vegas Department of Field Operations prior to recordation, and must include a statement that all properties within the community are subject to assessment for all associated costs should private maintenance obligations not be met, and the City of Las Vegas be required to provide for said maintenance. Also, the CC&R are to include a statement of obligation of compliance with the DPMR. Following recordation, the Developer is to submit copies of the recorded DPMR and CC&R documents to the City of Las Vegas Department of Field Operations.

8. All development is subject to the conditions of City Departments and State Subdivision Statutes.

Public Works

9. Private streets must be granted and labeled on the Final Map for this site as Public Utility Easements (P.U.E.), Public Sewer Easements, and Public Drainage Easements with private surface maintenance by the Homeowner's Association.

10. In accordance with condition #10 of TMP-76718 and Section 3.04 of the Sunstone Development Agreement, if not already constructed or guaranteed by the master developer, a minimum two lanes of asphalt pavement on village streets providing the main access to this site and a working sanitary sewer connection shall be provided prior to a final inspection of any dwelling units within this Tentative Map. Complete construction of Village Streets shall conform to section 3.04 of the Sunstone Development Agreement. All existing paving damaged or removed by this development shall be restored at its original location and to its original width concurrent with development of this site.

11. Prior to the submittal of construction drawings for this site, submit a pedestrian circulation and safety plan to identify nearby pedestrian attractors and recommend measures to accommodate pedestrians, such as but not limited to pedestrian access, crosswalk, pedestrian activated flashers and temporary sidewalks. Comply with the recommendation of the approved pedestrian circulation plan.

12. If not already constructed or guaranteed by L21-00824, construct a public sewer in Aurora Fields Lane at a location and depth acceptable to the Sanitary Sewer Section of the Department of Public Works.

13. A Drainage Plan and Technical Drainage Study must be submitted to and approved by the Department of Public Works prior to the issuance of any building, grading permits or the recordation of a Final Map, whichever may occur first. Provide and improve all drainageways recommended in the approved drainage plan/study. The developer of this site shall be responsible to construct such neighborhood or local drainage facility improvements as are recommended by the City of Las Vegas Neighborhood Drainage Studies and approved Drainage Plan/Study concurrent with development of this site.

14. The approval of all Public Works related improvements shown on this Tentative Map is in concept only. Specific design and construction details relating to size, type and/or alignment of improvements, including but not limited to street, sewer and drainage improvements, shall be resolved prior to approval of the construction plans by the City. No deviations from adopted City Standards shall be allowed unless specific written approval for such is received from the City Engineer prior to the recordation of a Final Map or the approval of subdivision related construction plans, whichever may occur first. Approval of this Tentative Map does not constitute approval of any deviations. If such approval cannot be obtained, a revised Tentative Map must be submitted showing elimination of such deviations. Roadway locations and parcel entries are schematic and final studies and engineering improvements designs. Geometric design of Parcel entry points must be approved through the development review of each parcel.

15. Site development to comply with all applicable conditions of approval for the Sunstone master Tentative Map (TMP-76718) and any other site related actions.

This action by the Planning Commission on **August 10, 2021** is final unless a written appeal is filed with the City Clerk within seven days of the date of the Planning Commission's decision as allowed by code or there is a review action filed by the City Council within the same time period. For additional information on appeals or review requests submitted please access https://www.lasvegasnevada.gov/Business/Permits-Licenses/Building-Permits/Permit-Application-Status, or contact the Department of Planning and Development at 702.229.6301 after ***August 17, 2021***. No building permits or business licenses related to these items shall be issued prior to the expiration of the required seven day waiting period, or until any filed appeal is resolved pursuant to LVMC Title 19.18.

Sincerely,

Eric McCammond
Senior Management Analyst
Case Planning Division

EM:nl

cc:

Mr. Efraim Balizan
Greystone Nevada, LLC
9275 W. Russell Road, Ste. 400
Las Vegas, Nevada 89148

Ms. Tanya Steadham
Westwood Professional Services
5725 W. Badura Ave., Ste. 100
Las Vegas, Nevada 89118

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Axel at Sunstone	Map ID: 125-06-810-002	
Firm Name: GCW, Inc.	Engineer: Kevin Ramage	
Address: 1555 South Rainbow Boulevard		
City: Las Vegas	State: Nevada	Zip: 89146
Phone Number: (702) 804-2000	Fax Number: (702) 2299	
Property Owner: Owner: NORTHLAND LLC; Developer: Lennar Homes		
Address: 9275 West Russell Road #400		
City: Las Vegas	State: Nevada	Zip: 89148
Reviewed By:	Date Received:	Date Accepted for Review:

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

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

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

I. GENERAL REQUIREMENT

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

II. MAPS AND EXHIBITS

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

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS (Continued)

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

III. DRAINAGE PLAN

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

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
X		Streets with off-set crowns.
X		Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
X		Property lines.
X		Right-of-way lines and widths, existing and proposed.
X		Existing improvements and their elevations.
X		Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
X		Concentration points and drainage flow direction with Q100 and V100 and D100 in streets.
X		Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
X		Location and cross-section of street capacity calculations.
	N/A	Cross-sectional detail for channels, including cutoff wall locations.
	N/A	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.
X		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.
X		Building and/or lot numbers.
X		Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
X		Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

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

IV. HYDROLOGIC ANALYSIS

Yes	No	
X		Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
X		Input and output information for existing conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
X		Input and output information for future conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
X		Use of correct precipitation values in and around the McCarran Airport rainfall area.
X		A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
X		A summary table of stormwater flows showing basin area, Q10 and Q100 for both individual basins and combined basin flows, where applicable.
X		Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.
	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**

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

Yes	No	
_____	N/A	Flow split calculations and supporting documentation or reference for the method of flow split calculations used.
X	_____	Normal depth street flow calculations and cross section diagrams for all interior and perimeter streets. Provide "d x v" products for the Q100 and Q10 flows representing the worst case for interior and all perimeter streets. Q100 d x v < 8. Q10 d x v < 6 and 12 foot dry lane for rights-of-way > 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan.
X	_____	A summary table of interior and exterior street capacity calculations showing the street name, Q100 flow, slope, depth of flow, velocity and depth times velocity product and streets needing to meet 12 foot dry lane criteria.
X	_____	Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged.)
X	_____	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.
X	_____	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.
X	_____	A complete water surface profile analysis (HEC-2, HEC-RAS, etc.) for channel flows and FEMA Zone A flood zones. • Field survey data. • Input and output information. • Plotted cross-sections based on survey with proper encroachments. • A map showing the location of the cross-sections. • Analysis of both sub and super-critical flow segments. • A summary table and a discussion of the results in the text of the report.
X	_____	Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
X	_____	Hydraulic calculations for culverts and storm drains. D-Load calculations must be provided for storm drain pipes in public rights-of-way, including headwater pool inundation.
X	_____	The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.
X	_____	Provide BMP type, size and supporting calculations for parking lots and LIDs (if required).

REFERENCE:	**STANDARD FORM 2**

CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA
STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

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

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

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

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

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

II. GRADING PLAN INFORMATION		
Yes	No	
X		Proposed on-site and off-site storm drains and other flood control facilities with plan and profile sheets for public storm drains showing the class of pipe, (Class III, IV, V, etc.), design hydraulic grade line, (HGL) and 100 year storm flow. A public drainage easement must be provided over on-site storm drains conveying off-site flows. An overflow path must be provided over all storm drains.
X		All existing and "to be constructed" walls with cross-sections showing wall type, (e.g. block wall, retaining wall, flood wall, etc.), with limits clearly defined, adjacent ground elevations. Wall heights must meet current ordinances and in no case exceed 14 feet above the adjacent property.
X		Street slopes for both interior and perimeter streets. Note: The minimum slope for a roadway is 0.4 percent, a minimum 18-inch storm drain must be provided where minimum slopes cannot be met.
X		Back of lot elevations and lot drainage pattern for all lots including common lots.
	N/A	Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
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.
X		Commercial and Common Lot Landscape areas are not allowed to drain over the sidewalk. The grading plans show flow lines with grades and sidewalk under drains for all landscape areas draining to the public ROW.

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

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
	N/A	Lots with "B and C Type Drainage" that drain from one lot to another through a drainage easement shall be required to install an underground nuisance drainage system or a 2-foot valley gutter. 16" x 24" minimum block wall openings are required for both options.
	N/A	Bubblers are required across 80 foot and greater ROW streets. When flows exceed 10 cfs, bubblers larger than 18 inches will be required up to a maximum of 36". Inlets must be sized to match the pipe size provided.

- Contact the Flood Control Section regarding the drainage study review fee. These fees are payable at the time of submittal.
- The Drainage Study must be conditionally approved prior to submitting improvement plans to the Civil and Planning Development of the Department of Building and Safety for review.

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

ENGINEERS \ SURVEYORS

831-016

3/14/2022

Oh Sang Kwon, P.E.
City of Las Vegas, Public Works
333 N. Rancho Drive, 7th Floor,
Las Vegas, NV 89106

Re: **Technical Drainage Study for Axel at Sunstone** (Addendum #3)

Dear Mr. Kwon,

This letter is to certify that all documents provided on the electronic submittal (CD) match the hardcopy version of the study.

Respectfully submitted,

Kevin Ramage, PE
Flood Control Division
GCW, Inc.

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GCW
ENGINEERS \ SURVEYORS

Technical Drainage Study (Addendum #3) For

Axel at Sunstone

831-016

March 14, 2022

Prepared for:
Lennar Homes
9275 West Russell Road, #400
Las Vegas, NV, 89148
(702) 821-4681

Prepared by GCW, Inc.

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I. INTRODUCTION

Lennar Homes is proposing to construct a residential subdivision on the southeast corner of Kyle Canyon Road and Sky Point Drive intersection. The project is identified as Axel at Sunstone (hereafter referred to as the project). The purpose of this report is to accompany the improvement plans, to provide detailed hydrologic and hydraulic analyses for the site, and to determine adequate flood protection for the project site from offsite and onsite flows. The following tasks were performed in the preparation of this report:

- Identify previous drainage studies for the project site and surrounding areas.
- Identify the FEMA floodplain designation for the project site.
- Identify existing and proposed regional drainage facilities adjacent to the site.
- Estimate runoff generated for the existing, interim, and ultimate conditions.
- Recommend drainage facilities required for flood protection.

II. LOCATION AND DESCRIPTION OF IMPROVEMENTS

The proposed site is located within Section 6, Township 19 South, Range 60 East on APN 125-06-810-002 within the jurisdictional limits of the City of Las Vegas (CLV). The site is bordered by undeveloped land to the north, east, and south as well as the US 95 to the west of the site, respectively. Refer to Figure 1 in Appendix D for the location of the project.

For this study, the proposed improvements consist of a 328 lot residential subdivision.

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

Figure 2 in Appendix C shows the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) containing Community Panel 32003C1735E dated September 27, 2002. The Project Site lies within a FEMA designated Zone X area. Areas designated as Zone X are described as areas outside the 0.2 percent annual chance floodplain. Therefore, the project site is not located within a FEMA designated Special Flood Hazard Area (SFHA).

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

Figures 3 and 4, included in Appendix D, are based on information provided in the CCRFCD 2018 Las Vegas Valley Master Plan Update (Reference 2, hereafter referred to as the 2018 MPU). Figure 3 shows the project site in relation to the 2018 MPU sub-basins and land use for the area. Figure 4 shows the project site in relation to CCRFCD facilities in the area according to the 2018 MPU. As shown on Figure 4, the project site is not adjacent to existing or proposed CCRFCD facilities.

V. REFERENCED STUDIES

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

- *Master Drainage Study Skye Canyon* (Reference 3, hereinafter referred to as the Master Study) was approved by the City of Las Vegas (CLV) on February 19, 2020. This study provides the master plan for the area including preliminary facility sizes and was referenced for ultimate condition hydrology.

- *Technical Drainage Study for Sunstone Phase 1 Infrastructure* (Reference 4, hereinafter referred to as the Infrastructure Study) was approved by CLV on May 15, 2020. This study was referenced for the existing condition and provides offsite street sections adjacent to the Project Site. It also designed the storm drain that this project ties into.

- *Technical Drainage Study for Sunstone Phase 1A Infrastructure (Iron Mountain Road to Tee Pee Lane* (Reference 5, hereinafter referred to as the Iron Mountain Study) was approved by CLV on March 23, 2020. This study was referenced to show the plan for offsite flows being directed around the Project Site toward Iron Mountain Road.

- *Update #1 Technical Drainage Study for Sunstone Phase 1A Infrastructure (Iron Mountain Road and Tee Pee Lane* (Reference 6, hereinafter referred to as the Iron Mountain Update Study) was approved by CLV on August 17, 2021. This study extended the storm drain in Iron Mountain to collect the flows coming from the US95.

VI. HYDROLOGY

The methodology presented in this study is in compliance with the *CCRFCD Hydrologic Criteria and Drainage Design Manual* (Reference 1, hereinafter referred to as the Manual).

Model Description: The reference watersheds were modeled using the SCS Unit Hydrograph method within the Army Corps of Engineers HEC-1 Flood Hydrograph package.

Drainage Areas and Flow Patterns: Flow patterns were determined from 1-ft aerial topography, proposed grading, and reference material.

VII. EXISTING CONDITION

In the existing condition the project site is undeveloped land. O'Hare road and 2 entry roads on each side of the Project Site are constructed with storm drain provided in the east entry road. The Project Site flows east toward the existing storm drain in the east entry road. The existing condition was referenced from the Infrastructure Study. Note that offsite flow from the US95 are collected in an existing storm drain per the Iron Mountain Update Study. Refer to referenced Figures in Appendix B for an illustration of the existing condition.

VIII. INTERIM CONDITION

In the interim condition the Project Site is partially developed as shown. Offsite flows from the US95 are collected in an existing storm drain system per the Iron Mountain Update Study. The Project Site drains to proposed inlets at the east side of the Project Site near the entry road. Note that since offsite flows do not impact the Project Site and the adjacent entry street sections assumed the adjacent developments were constructed, a separate ultimate condition figure was not necessary. Refer to Figure 5 in Appendix C for an

illustration of the interim condition.

IX. ULTIMATE CONDITION

The ultimate condition was referenced from the Master Study. Refer to reference material in Appendix B for ultimate condition hydrology and the overall design of the Skye Canyon Master Plan Developments.

X. HYDRAULICS

STREET HYDRAULICS

Adjacent entry road street section were referenced from the Infrastructure Study. Onsite street normal depth calculations are provided in Appendix B. Computations show that velocity times depth (D*V) criteria is met.

Finished floor elevations are set a minimum vertical distance above the flow line of the gutter equal to twice the depth of the 100-year flow in the gutter up to a maximum of 18 inches above the depth of flow.

STORM DRAIN IMPROVEMENTS

Storm drain and drop inlet have been proposed at the east side of the Project Site and tie into the existing storm drain system constructed with the Infrastructure Study. Refer to Appendix A for hydraulic computations.

XI. CONCLUSIONS AND RECOMMENDATIONS

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

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

3. The site is not adjacent to existing or proposed CCRFCD facilities.

4. Storm drain and drop inlets are provided on the east side of the Project Site to collect all runoff from the site.

5. Overall the proposed drainage patterns in this report are generally consistent with the referenced studies. As such, the proposed development does not adversely impact the drainage patterns and downstream properties or facilities.

XII. REFERENCES

1. Clark County Regional Flood Control District. *Hydrologic Criteria and Drainage Design Manual*. August 1999.

2. *CCRFCD 2018 Las Vegas Valley Master Plan Update*. 2018.

3. Westwood Professional Services Inc. *Master Drainage Study Skye Canyon*. December 2019.

4. Westwood Professional Services Inc. *Technical Drainage Study for Sunstone Phase 1*. February 2020.

5. Westwood Professional Services Inc. *Technical Drainage Study for Sunstone Phase 1A Infrastructure (Iron Mountain Road to Tee Pee Lane*. February 2020.

6. Westwood Professional Services Inc. Update No. 1 *Technical Drainage Study for Sunstone Phase 1A Infrastructure (Iron Mountain Road to Tee Pee Lane*. July 2020.

APPENDIX A

100-YEAR STREET FLOW SUMMARY					
Location	**Slope (%)**	**Q_{100} (cfs)**	**Depth (ft)**	**Velocity**	**D*V**
Section 1	2.00	3.00	0.24	2.45	0.59
Section 2 (Sect. 1+ Sect. 2)	1.80	6.00	0.29	2.77	0.80
Section 3 (BYPASS)	1.00	2.00	0.23	1.71	0.39
Section 4	2.00	3.00	0.24	2.45	0.59
Section 5 (Sect. 4 + Sect. 5)	1.90	6.00	0.29	2.83	0.82
Section 6 (Sect. 1 + Sect. 2 + Sect. 4 + Sect. 5 + Sect. 6)	1.55	16.00	0.39	3.37	1.31
Section 7	2.00	3.00	0.24	2.45	0.59
Section 8	1.50	5.00	0.28	2.47	0.69
Section 9	1.20	4.00	0.27	2.15	0.58
Section 10	1.70	4.00	0.26	2.45	0.64
Section 11	2.40	4.00	0.25	2.82	0.71
Section 12	1.80	3.00	0.24	2.36	0.57
Section 13	1.06	6.00	0.31	2.26	0.70
Section 14	4.00	4.00	0.23	3.42	0.79
Section 15 (BYPASS)	2.55	4.00	0.29	2.94	0.85
CP-1 (Subbasin 1 + Subbasin 2)	1.60	6.00	0.37	2.81	1.04
CP-2 (Sub. 1 + Sub. 2 + Sub. 4 + Sub. 5)	1.55	12.00	0.49	4.63	2.27
CP-3 (Sub.'s 1-2 & 4-13)	3.83	49.00	0.59	9.01	5.32
CP-4 (Sub.13 + Sub. 12)	2.00	9.00	0.39	3.81	1.49
CP-5 (Sub. 13 + Sub. 12 + Sub. 11)	1.55	13.00	0.44	4.08	1.80
CP-6 (Sub. 13 + Sub. 12 + Sub. 11 + Sub. 10)	1.20	17.00	0.50	4.90	2.45
CP-7 (Sub. 13 + Sub. 12 + Sub. 11 + Sub. 10 + Sub. 9)	1.20	21.00	0.54	4.55	2.46
CP-8 (Sub. 13 + Sub. 12 + Sub. 11 + Sub. 10 + Sub. 9 + Sub. 8)	1.20	26.00	0.58	4.95	2.87
CP-9 (Sub. 14)	4.00	4.00	0.28	4.02	1.13

Worksheet for Section - 1

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.00 %
Discharge	3.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	2.8 in
Roughness Coefficient	0.016
Elevation	0.24 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	1.2 ft²
Wetted Perimeter	15.12 ft
Hydraulic Radius	1.0 in
Top Width	14.96 ft
Normal Depth	2.8 in
Critical Depth	3.2 in

Worksheet for Section - 1

Results	
Critical Slope	0.83 %
Velocity	2.45 ft/s
Velocity Head	0.09 ft
Specific Energy	0.33 ft
Froude Number	1.511
Flow Type	Supercritical

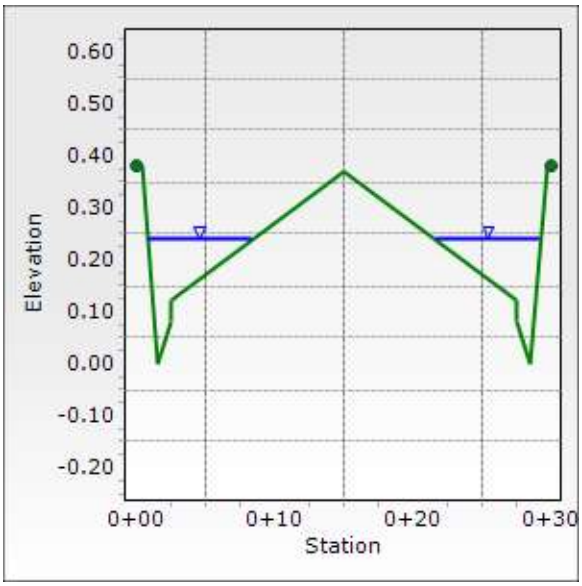
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.8 in
Critical Depth	3.2 in
Channel Slope	2.00 %
Critical Slope	0.83 %

Cross Section for Section - 1

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.00 %
Normal Depth	2.8 in
Discharge	3.00 cfs



Worksheet for Section - 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.80 %
Discharge	6.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.5 in
Roughness Coefficient	0.016
Elevation	0.29 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	2.2 ft²
Wetted Perimeter	20.76 ft
Hydraulic Radius	1.3 in
Top Width	20.57 ft
Normal Depth	3.5 in
Critical Depth	3.9 in

Worksheet for Section - 2

Results	
Critical Slope	0.76 %
Velocity	2.77 ft/s
Velocity Head	0.12 ft
Specific Energy	0.41 ft
Froude Number	1.505
Flow Type	Supercritical

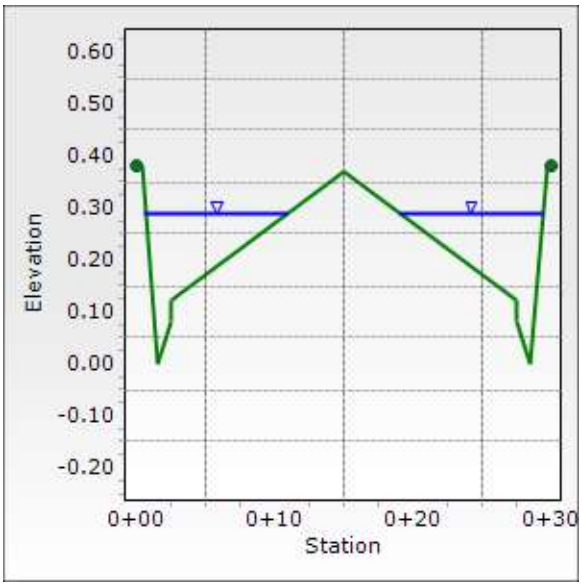
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.5 in
Critical Depth	3.9 in
Channel Slope	1.80 %
Critical Slope	0.76 %

Cross Section for Section - 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.80 %
Normal Depth	3.5 in
Discharge	6.00 cfs



Worksheet for Section - 3

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.00 %
Discharge	2.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	2.8 in
Roughness Coefficient	0.016
Elevation	0.23 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	1.2 ft²
Wetted Perimeter	14.74 ft
Hydraulic Radius	1.0 in
Top Width	14.57 ft
Normal Depth	2.8 in
Critical Depth	2.8 in

Worksheet for Section - 3

Results	
Critical Slope	0.87 %
Velocity	1.71 ft/s
Velocity Head	0.05 ft
Specific Energy	0.28 ft
Froude Number	1.063
Flow Type	Supercritical

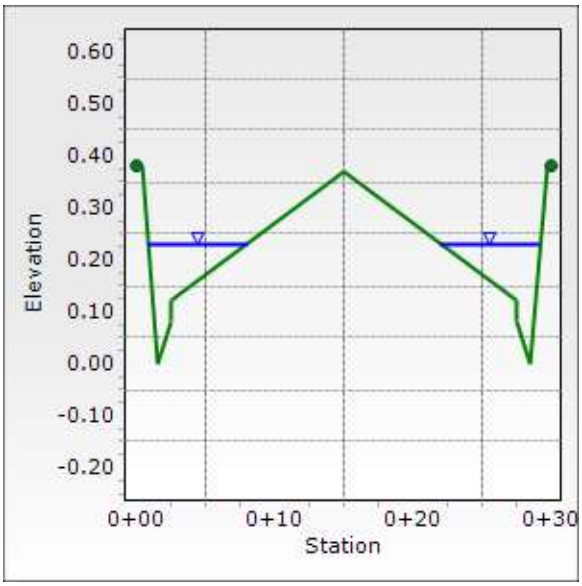
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.8 in
Critical Depth	2.8 in
Channel Slope	1.00 %
Critical Slope	0.87 %

Cross Section for Section - 3

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.00 %
Normal Depth	2.8 in
Discharge	2.00 cfs



Worksheet for Section - 4

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.00 %
Discharge	3.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	2.8 in
Roughness Coefficient	0.016
Elevation	0.24 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	1.2 ft²
Wetted Perimeter	15.12 ft
Hydraulic Radius	1.0 in
Top Width	14.96 ft
Normal Depth	2.8 in
Critical Depth	3.2 in

Worksheet for Section - 4

Results	
Critical Slope	0.83 %
Velocity	2.45 ft/s
Velocity Head	0.09 ft
Specific Energy	0.33 ft
Froude Number	1.511
Flow Type	Supercritical

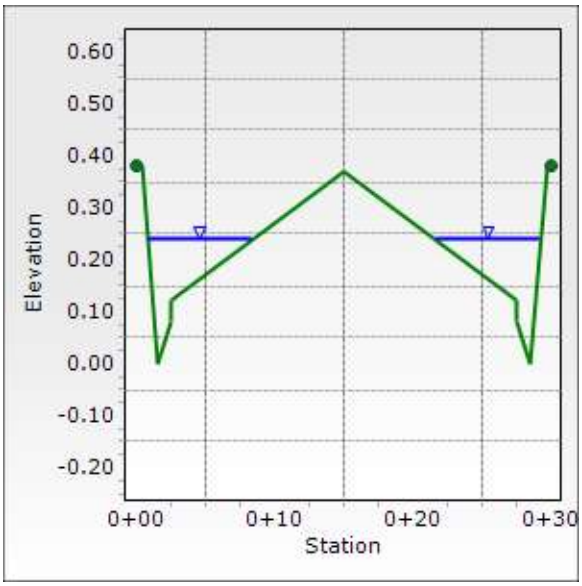
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.8 in
Critical Depth	3.2 in
Channel Slope	2.00 %
Critical Slope	0.83 %

Cross Section for Section - 4

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.00 %
Normal Depth	2.8 in
Discharge	3.00 cfs



Worksheet for Section - 5

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.90 %
Discharge	6.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.4 in
Roughness Coefficient	0.016
Elevation	0.29 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	2.1 ft²
Wetted Perimeter	20.53 ft
Hydraulic Radius	1.2 in
Top Width	20.35 ft
Normal Depth	3.4 in
Critical Depth	3.9 in

Worksheet for Section - 5

Results	
Critical Slope	0.76 %
Velocity	2.83 ft/s
Velocity Head	0.12 ft
Specific Energy	0.41 ft
Froude Number	1.543
Flow Type	Supercritical

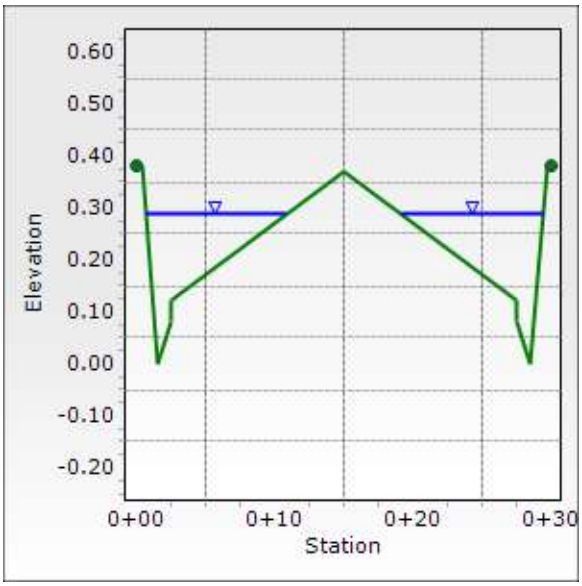
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.4 in
Critical Depth	3.9 in
Channel Slope	1.90 %
Critical Slope	0.76 %

Cross Section for Section - 5

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.90 %
Normal Depth	3.4 in
Discharge	6.00 cfs



Worksheet for Section - 6

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.55 %
Discharge	16.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	4.7 in
Roughness Coefficient	0.016
Elevation	0.39 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	4.8 ft²
Wetted Perimeter	30.23 ft
Hydraulic Radius	1.9 in
Top Width	30.00 ft
Normal Depth	4.7 in
Critical Depth	5.2 in

Worksheet for Section - 6

Results	
Critical Slope	0.64 %
Velocity	3.37 ft/s
Velocity Head	0.18 ft
Specific Energy	0.57 ft
Froude Number	1.492
Flow Type	Supercritical

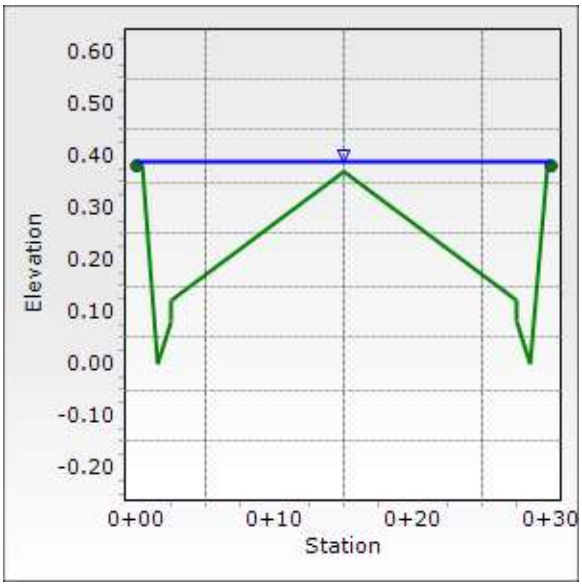
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.7 in
Critical Depth	5.2 in
Channel Slope	1.55 %
Critical Slope	0.64 %

Cross Section for Section - 6

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.55 %
Normal Depth	4.7 in
Discharge	16.00 cfs



Worksheet for Section - 7

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.00 %
Discharge	3.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	2.8 in
Roughness Coefficient	0.016
Elevation	0.24 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	1.2 ft²
Wetted Perimeter	15.12 ft
Hydraulic Radius	1.0 in
Top Width	14.96 ft
Normal Depth	2.8 in
Critical Depth	3.2 in

Worksheet for Section - 7

Results	
Critical Slope	0.83 %
Velocity	2.45 ft/s
Velocity Head	0.09 ft
Specific Energy	0.33 ft
Froude Number	1.511
Flow Type	Supercritical

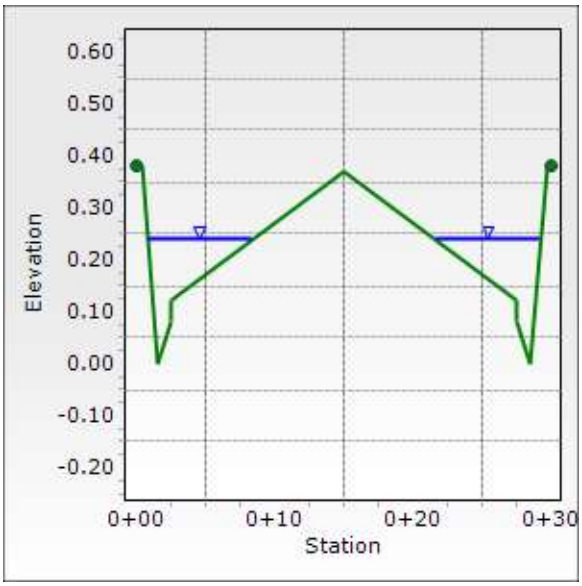
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.8 in
Critical Depth	3.2 in
Channel Slope	2.00 %
Critical Slope	0.83 %

Cross Section for Section - 7

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.00 %
Normal Depth	2.8 in
Discharge	3.00 cfs



Worksheet for Section - 8

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.50 %
Discharge	5.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.4 in
Roughness Coefficient	0.016
Elevation	0.28 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	2.0 ft²
Wetted Perimeter	20.02 ft
Hydraulic Radius	1.2 in
Top Width	19.84 ft
Normal Depth	3.4 in
Critical Depth	3.7 in

Worksheet for Section - 8

Results	
Critical Slope	0.78 %
Velocity	2.47 ft/s
Velocity Head	0.09 ft
Specific Energy	0.38 ft
Froude Number	1.362
Flow Type	Supercritical

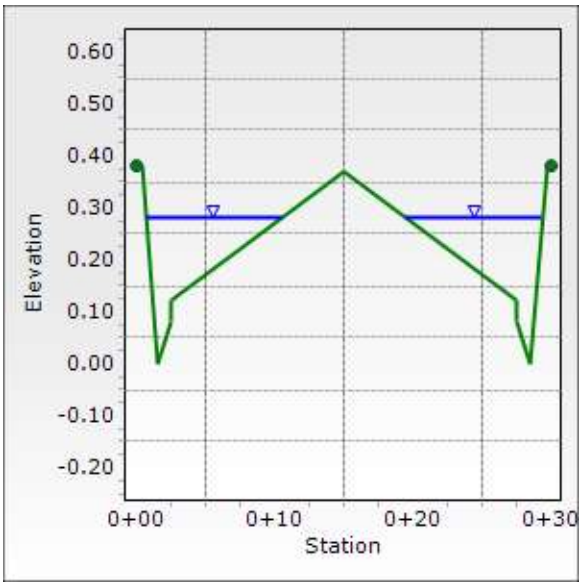
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.4 in
Critical Depth	3.7 in
Channel Slope	1.50 %
Critical Slope	0.78 %

Cross Section for Section - 8

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.50 %
Normal Depth	3.4 in
Discharge	5.00 cfs



Worksheet for Section - 9

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.20 %
Discharge	4.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.3 in
Roughness Coefficient	0.016
Elevation	0.27 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	1.9 ft²
Wetted Perimeter	19.13 ft
Hydraulic Radius	1.2 in
Top Width	18.95 ft
Normal Depth	3.3 in
Critical Depth	3.5 in

Worksheet for Section - 9

Results	
Critical Slope	0.80 %
Velocity	2.15 ft/s
Velocity Head	0.07 ft
Specific Energy	0.34 ft
Froude Number	1.207
Flow Type	Supercritical

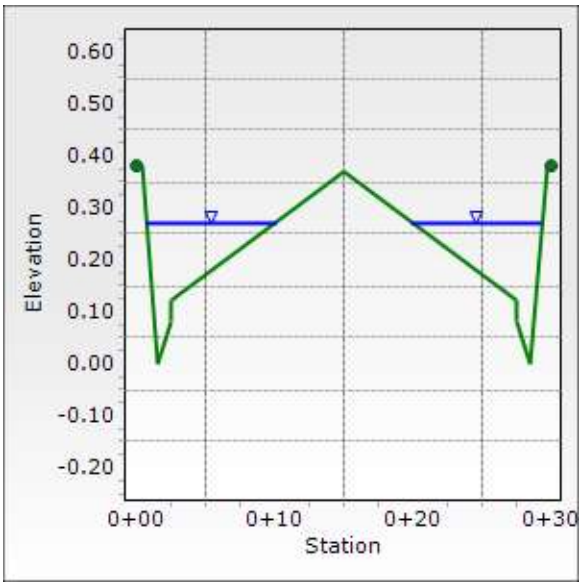
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.3 in
Critical Depth	3.5 in
Channel Slope	1.20 %
Critical Slope	0.80 %

Cross Section for Section - 9

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.20 %
Normal Depth	3.3 in
Discharge	4.00 cfs



Worksheet for Section - 10

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.70 %
Discharge	4.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.1 in
Roughness Coefficient	0.016
Elevation	0.26 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	1.6 ft²
Wetted Perimeter	17.77 ft
Hydraulic Radius	1.1 in
Top Width	17.60 ft
Normal Depth	3.1 in
Critical Depth	3.5 in

Worksheet for Section - 10

Results	
Critical Slope	0.80 %
Velocity	2.45 ft/s
Velocity Head	0.09 ft
Specific Energy	0.35 ft
Froude Number	1.422
Flow Type	Supercritical

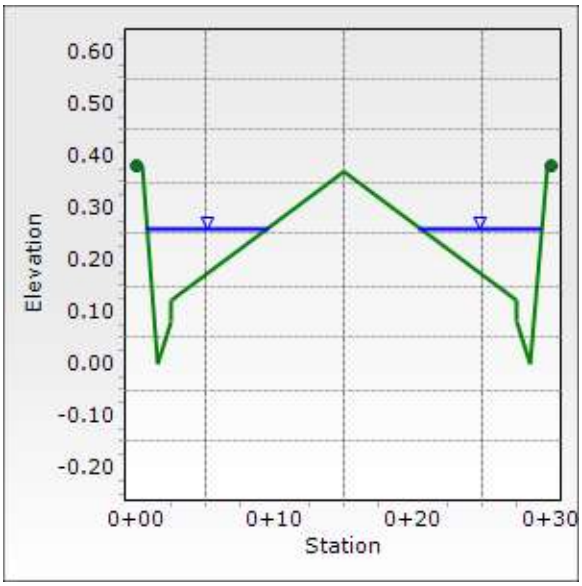
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.1 in
Critical Depth	3.5 in
Channel Slope	1.70 %
Critical Slope	0.80 %

Cross Section for Section - 10

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.70 %
Normal Depth	3.1 in
Discharge	4.00 cfs



Worksheet for Section - 11

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.40 %
Discharge	4.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.0 in
Roughness Coefficient	0.016
Elevation	0.25 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	1.4 ft²
Wetted Perimeter	16.46 ft
Hydraulic Radius	1.0 in
Top Width	16.29 ft
Normal Depth	3.0 in
Critical Depth	3.5 in

Worksheet for Section - 11

Results	
Critical Slope	0.80 %
Velocity	2.82 ft/s
Velocity Head	0.12 ft
Specific Energy	0.37 ft
Froude Number	1.682
Flow Type	Supercritical

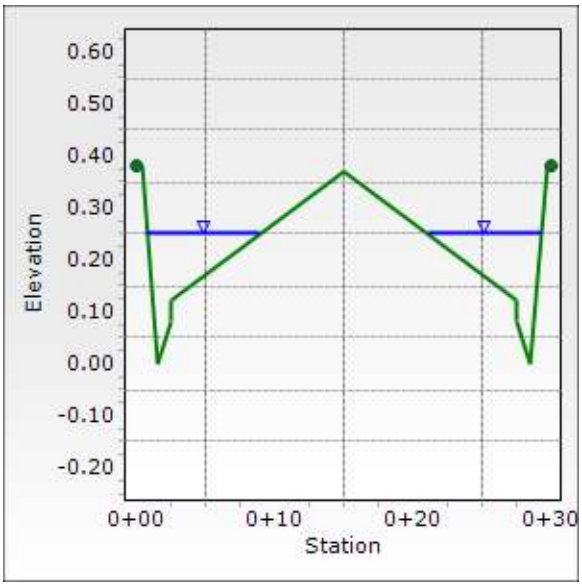
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.0 in
Critical Depth	3.5 in
Channel Slope	2.40 %
Critical Slope	0.80 %

Cross Section for Section - 11

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.40 %
Normal Depth	3.0 in
Discharge	4.00 cfs



Worksheet for Section - 12

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.80 %
Discharge	3.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	2.9 in
Roughness Coefficient	0.016
Elevation	0.24 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	1.3 ft²
Wetted Perimeter	15.44 ft
Hydraulic Radius	1.0 in
Top Width	15.28 ft
Normal Depth	2.9 in
Critical Depth	3.2 in

Worksheet for Section - 12

Results	
Critical Slope	0.83 %
Velocity	2.36 ft/s
Velocity Head	0.09 ft
Specific Energy	0.33 ft
Froude Number	1.445
Flow Type	Supercritical

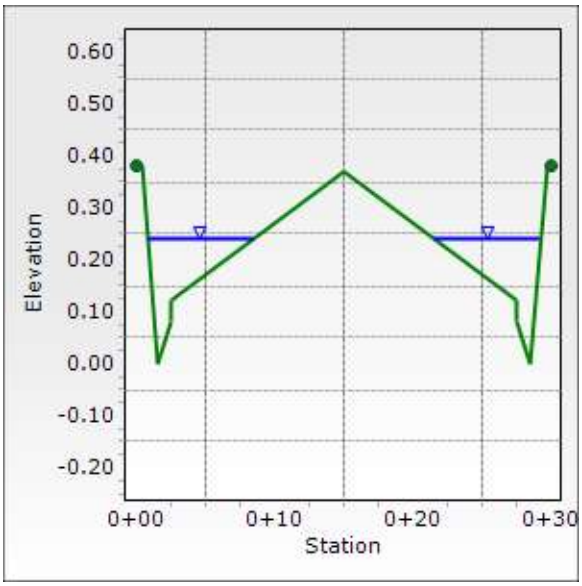
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.9 in
Critical Depth	3.2 in
Channel Slope	1.80 %
Critical Slope	0.83 %

Cross Section for Section - 12

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.80 %
Normal Depth	2.9 in
Discharge	3.00 cfs



Worksheet for Section - 13

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.06 %
Discharge	6.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.7 in
Roughness Coefficient	0.016
Elevation	0.31 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	2.7 ft²
Wetted Perimeter	23.14 ft
Hydraulic Radius	1.4 in
Top Width	22.95 ft
Normal Depth	3.7 in
Critical Depth	3.9 in

Worksheet for Section - 13

Results	
Critical Slope	0.76 %
Velocity	2.26 ft/s
Velocity Head	0.08 ft
Specific Energy	0.39 ft
Froude Number	1.172
Flow Type	Supercritical

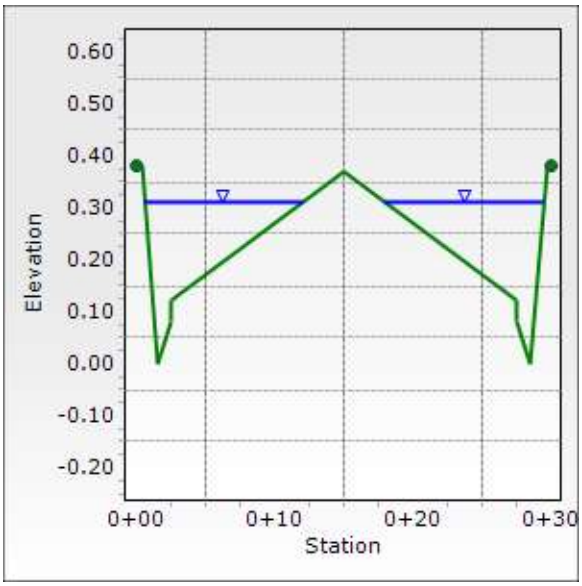
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.7 in
Critical Depth	3.9 in
Channel Slope	1.06 %
Critical Slope	0.76 %

Cross Section for Section - 13

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.06 %
Normal Depth	3.7 in
Discharge	6.00 cfs



Worksheet for Section - 14

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	4.00 %
Discharge	4.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37
0+27.50	0.12
0+27.50	0.08
0+28.50	0.00
0+29.63	0.38
0+30.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+30.00, 0.38)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	2.8 in
Roughness Coefficient	0.016
Elevation	0.23 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	1.2 ft²
Wetted Perimeter	14.74 ft
Hydraulic Radius	1.0 in
Top Width	14.57 ft
Normal Depth	2.8 in
Critical Depth	3.5 in

Worksheet for Section - 14

Results	
Critical Slope	0.80 %
Velocity	3.42 ft/s
Velocity Head	0.18 ft
Specific Energy	0.41 ft
Froude Number	2.127
Flow Type	Supercritical

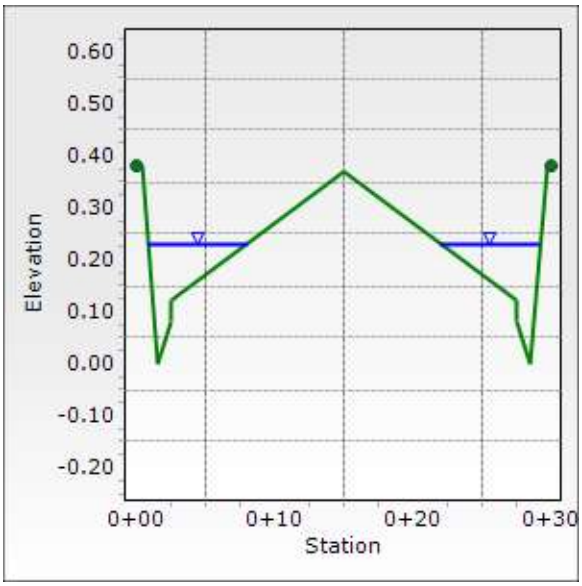
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.8 in
Critical Depth	3.5 in
Channel Slope	4.00 %
Critical Slope	0.80 %

Cross Section for Section - 14

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	4.00 %
Normal Depth	2.8 in
Discharge	4.00 cfs



Worksheet for Irregular Section - 15

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.55 %
Discharge	4.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.50
0+00.50	0.50
0+00.58	0.00
0+02.00	0.13
0+02.00	0.17
0+30.00	0.73
0+58.00	0.17
0+58.00	0.13
0+59.42	0.00
0+59.50	0.50
0+60.00	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.50)	(0+60.00, 0.50)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.5 in
Roughness Coefficient	0.016
Elevation	0.29 ft
Elevation Range	0.00 to 0.73 ft
Flow Area	1.4 ft²
Wetted Perimeter	15.42 ft
Hydraulic Radius	1.1 in
Top Width	14.84 ft
Normal Depth	3.5 in
Critical Depth	4.0 in

Worksheet for Irregular Section - 15

Results	
Critical Slope	0.81 %
Velocity	2.94 ft/s
Velocity Head	0.13 ft
Specific Energy	0.42 ft
Froude Number	1.716
Flow Type	Supercritical

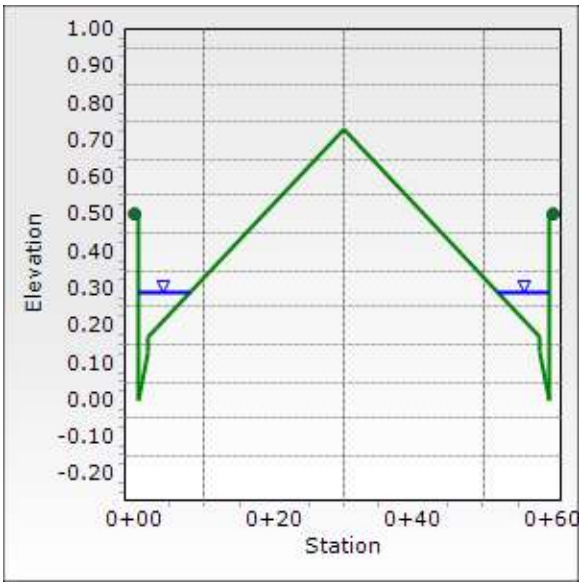
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.5 in
Critical Depth	4.0 in
Channel Slope	2.55 %
Critical Slope	0.81 %

Cross Section for Irregular Section - 15

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.55 %
Normal Depth	3.5 in
Discharge	4.00 cfs



Worksheet for CP-1

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.20 %
Discharge	6.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+15.00, 0.37)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	4.5 in
Roughness Coefficient	0.016
Elevation	0.37 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	2.1 ft²
Wetted Perimeter	14.71 ft
Hydraulic Radius	1.7 in
Top Width	14.60 ft
Normal Depth	4.5 in
Critical Depth	4.8 in
Critical Slope	0.68 %
Velocity	2.81 ft/s
Velocity Head	0.12 ft
Specific Energy	0.50 ft
Froude Number	1.294

Worksheet for CP-1

Results	
Flow Type	Supercritical

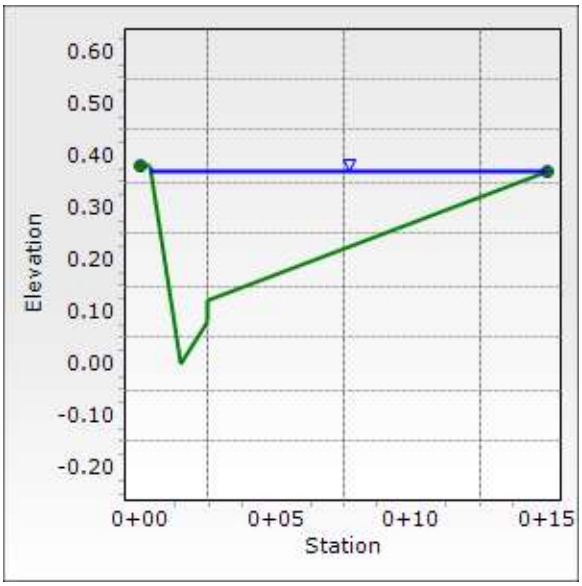
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.5 in
Critical Depth	4.8 in
Channel Slope	1.20 %
Critical Slope	0.68 %

Cross Section for CP-1

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.20 %
Normal Depth	4.5 in
Discharge	6.00 cfs



Worksheet for CP-2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.55 %
Discharge	18.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+15.00, 0.37)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	5.9 in
Roughness Coefficient	0.016
Elevation	0.49 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	3.9 ft²
Wetted Perimeter	15.34 ft
Hydraulic Radius	3.0 in
Top Width	15.00 ft
Normal Depth	5.9 in
Critical Depth	7.0 in
Critical Slope	0.55 %
Velocity	4.63 ft/s
Velocity Head	0.33 ft
Specific Energy	0.82 ft
Froude Number	1.604

Worksheet for CP-2

Results	
Flow Type	Supercritical

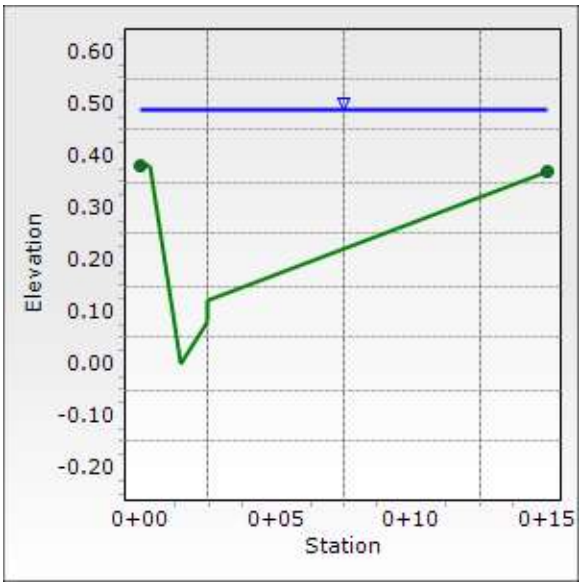
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.9 in
Critical Depth	7.0 in
Channel Slope	1.55 %
Critical Slope	0.55 %

Cross Section for CP-2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.55 %
Normal Depth	5.9 in
Discharge	18.00 cfs



Worksheet for CP-3

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	3.83 %
Discharge	49.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+15.00, 0.37)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	7.1 in
Roughness Coefficient	0.016
Elevation	0.59 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	5.4 ft²
Wetted Perimeter	15.54 ft
Hydraulic Radius	4.2 in
Top Width	15.00 ft
Normal Depth	7.1 in
Critical Depth	11.1 in
Critical Slope	0.47 %
Velocity	9.01 ft/s
Velocity Head	1.26 ft
Specific Energy	1.86 ft
Froude Number	2.640

Worksheet for CP-3

Results	
Flow Type	Supercritical

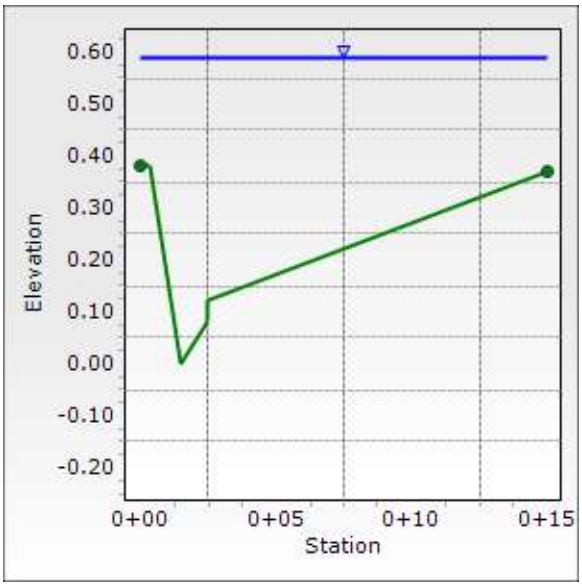
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.1 in
Critical Depth	11.1 in
Channel Slope	3.83 %
Critical Slope	0.47 %

Cross Section for CP-3

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	3.83 %
Normal Depth	7.1 in
Discharge	49.00 cfs



Worksheet for CP-4

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.00 %
Discharge	9.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+15.00, 0.37)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	4.7 in
Roughness Coefficient	0.016
Elevation	0.39 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	2.4 ft²
Wetted Perimeter	15.13 ft
Hydraulic Radius	1.9 in
Top Width	15.00 ft
Normal Depth	4.7 in
Critical Depth	5.5 in
Critical Slope	0.63 %
Velocity	3.81 ft/s
Velocity Head	0.23 ft
Specific Energy	0.61 ft
Froude Number	1.692

Worksheet for CP-4

Results	
Flow Type	Supercritical

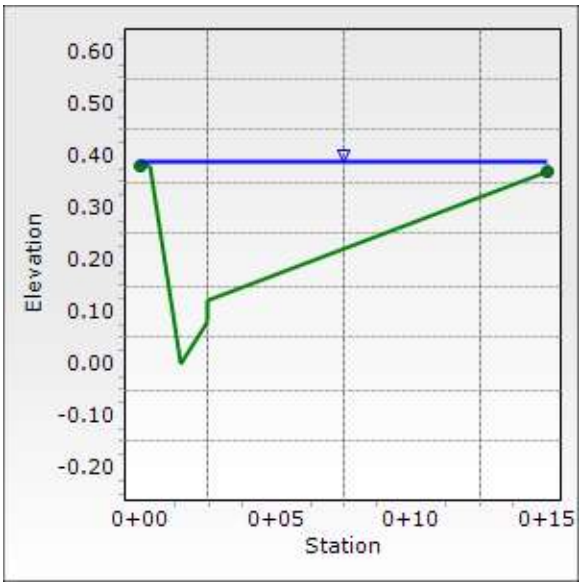
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.7 in
Critical Depth	5.5 in
Channel Slope	2.00 %
Critical Slope	0.63 %

Cross Section for CP-4

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	2.00 %
Normal Depth	4.7 in
Discharge	9.00 cfs



Worksheet for CP-5

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.55 %
Discharge	13.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+15.00, 0.37)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	5.3 in
Roughness Coefficient	0.016
Elevation	0.44 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	3.2 ft²
Wetted Perimeter	15.24 ft
Hydraulic Radius	2.5 in
Top Width	15.00 ft
Normal Depth	5.3 in
Critical Depth	6.2 in
Critical Slope	0.59 %
Velocity	4.08 ft/s
Velocity Head	0.26 ft
Specific Energy	0.70 ft
Froude Number	1.559

Worksheet for CP-5

Results	
Flow Type	Supercritical

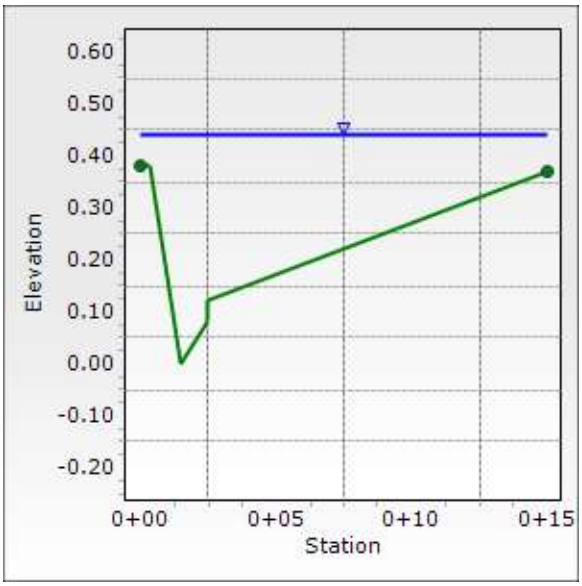
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.3 in
Critical Depth	6.2 in
Channel Slope	1.55 %
Critical Slope	0.59 %

Cross Section for CP-5

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.55 %
Normal Depth	5.3 in
Discharge	13.00 cfs



Worksheet for CP-6

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.20 %
Discharge	17.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+15.00, 0.37)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	6.0 in
Roughness Coefficient	0.016
Elevation	0.50 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	4.1 ft²
Wetted Perimeter	15.36 ft
Hydraulic Radius	3.2 in
Top Width	15.00 ft
Normal Depth	6.0 in
Critical Depth	6.9 in
Critical Slope	0.56 %
Velocity	4.19 ft/s
Velocity Head	0.27 ft
Specific Energy	0.77 ft
Froude Number	1.418

Worksheet for CP-6

Results	
Flow Type	Supercritical

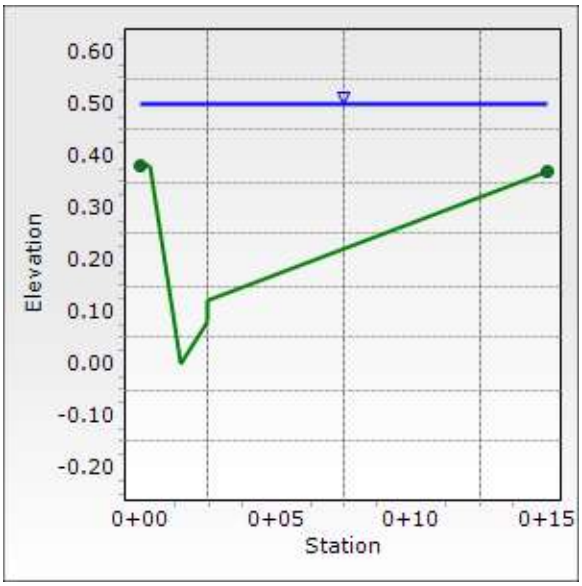
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.0 in
Critical Depth	6.9 in
Channel Slope	1.20 %
Critical Slope	0.56 %

Cross Section for CP-6

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.20 %
Normal Depth	6.0 in
Discharge	17.00 cfs



Worksheet for CP-7

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.20 %
Discharge	21.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+15.00, 0.37)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	6.5 in
Roughness Coefficient	0.016
Elevation	0.54 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	4.6 ft²
Wetted Perimeter	15.43 ft
Hydraulic Radius	3.6 in
Top Width	15.00 ft
Normal Depth	6.5 in
Critical Depth	7.5 in
Critical Slope	0.54 %
Velocity	4.55 ft/s
Velocity Head	0.32 ft
Specific Energy	0.86 ft
Froude Number	1.447

Worksheet for CP-7

Results	
Flow Type	Supercritical

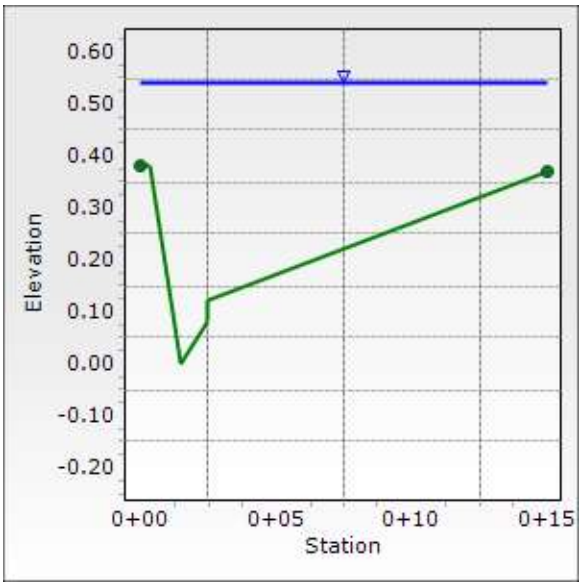
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.5 in
Critical Depth	7.5 in
Channel Slope	1.20 %
Critical Slope	0.54 %

Cross Section for CP-7

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.20 %
Normal Depth	6.5 in
Discharge	21.00 cfs



Worksheet for CP-8

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.20 %
Discharge	26.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+15.00, 0.37)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	7.0 in
Roughness Coefficient	0.016
Elevation	0.58 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	5.3 ft²
Wetted Perimeter	15.52 ft
Hydraulic Radius	4.1 in
Top Width	15.00 ft
Normal Depth	7.0 in
Critical Depth	8.2 in
Critical Slope	0.52 %
Velocity	4.95 ft/s
Velocity Head	0.38 ft
Specific Energy	0.96 ft
Froude Number	1.474

Worksheet for CP-8

Results	
Flow Type	Supercritical

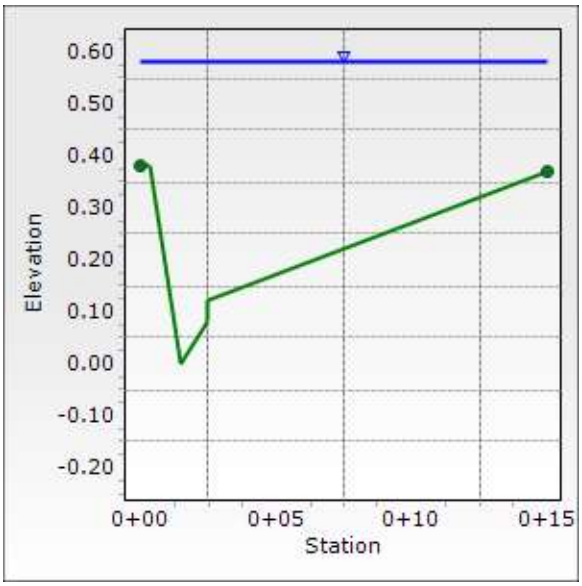
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.0 in
Critical Depth	8.2 in
Channel Slope	1.20 %
Critical Slope	0.52 %

Cross Section for CP-8

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	1.20 %
Normal Depth	7.0 in
Discharge	26.00 cfs



Worksheet for CP-9

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	4.00 %
Discharge	4.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.38
0+00.38	0.38
0+01.50	0.00
0+02.50	0.08
0+02.50	0.12
0+15.00	0.37

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+15.00, 0.37)	0.016

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.4 in
Roughness Coefficient	0.016
Elevation	0.28 ft
Elevation Range	0.00 to 0.38 ft
Flow Area	1.0 ft²
Wetted Perimeter	9.92 ft
Hydraulic Radius	1.2 in
Top Width	9.83 ft
Normal Depth	3.4 in
Critical Depth	4.3 in
Critical Slope	0.73 %
Velocity	4.02 ft/s
Velocity Head	0.25 ft
Specific Energy	0.53 ft
Froude Number	2.224

Worksheet for CP-9

Results	
Flow Type	Supercritical

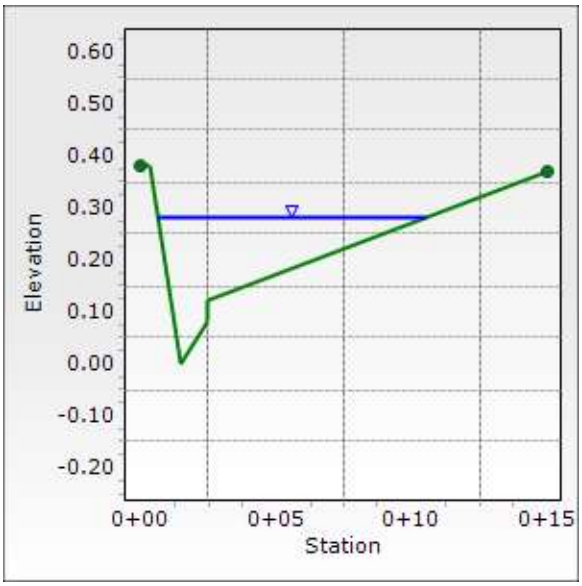
GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.4 in
Critical Depth	4.3 in
Channel Slope	4.00 %
Critical Slope	0.73 %

Cross Section for CP-9

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	4.00 %
Normal Depth	3.4 in
Discharge	4.00 cfs



SUMMARY - INLET CALCULATIONS						
DI	Q_{100}	Slope %	Flow Depth (ft)	Q_{INT} (cfs)	Q_{BYP} (cfs)	DI Type
DI 1	4.0	4.00	0.23	4.0	0.0	7.5'-Curb/Grate Inlet
DI 4	2.4	3.83	0.15	2.4	0.0	10'-Curb/Grate Inlet
DI 3	16.2	3.83	0.30	5.0	11.2	10'-Curb/Grate Inlet
DI 2	37.9	SUMP	0.24	37.9	0.0	30'-Curb/Grate Inlet

*Total Bypass of 5.7 cfs from site considered nuisance flow, therefore, O.K.

ENGINEERS \ SURVEYORS

Drop Inlet Sizing Calculation

Project Name: Axel at Sunstone
By: KLR
Date: 2/28/2022

Inlet Sizing on a Continuous Grade

DI 1

Known:

Q_s=	Street Flow	4.0	cfs
S_o=	Longitudinal Slope	0.04	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	3.42	fps
D=	Flow Depth	0.23	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	7.5	ft
L_c=	Length of Curb Opening	7.5	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

R_f=	Frontal flow factor = 1-0.09*(V_s-V_o) if V_s>V_o; else R_f=1	1.00	
	V_o= Splash over velocity=p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3†	8.71	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.24	
	Q_w= Frontal flow=A_w*V_s	0.97	cfs
	Q_x= Side flow = Q_s-Q_w	3.03	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.23	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	1.7	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.089	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = 0.60*$Q_s^{0.42}$*$So^{0.30}$*(1/n*S_e)$^{0.6}$	20.88	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	1.2	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**4.0**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**0.0**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.53	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	100	%

ENGINEERS \ SURVEYORS

Inlet Sizing Calculation

Project Name: Axel at Sunstone
By: KLR
Date: 2/3/2022

Inlet Sizing - Sump

DI 2

Known:

Q_s=	Street Flow	37.9	cfs
S_o=	Longitudinal Slope	0.02	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	5.42	fps
D=	Flow Depth	0.24	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	30.0	ft
L_c=	Length of Curb Opening	30.0	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

R_f=	Frontal flow factor = 1-0.09*(V_s-V_o) if V_s>V_o; else R_f=1	1.00	
	V_o= Splash over velocity=p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3†	48.56	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.04	
	Q_w= Frontal flow=A_w*V_s	1.61	cfs
	Q_x= Side flow = Q_s-Q_w	36.29	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.76	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	29.3	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.032	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = 0.60*$Q_s^{0.42}$*$So^{0.30}$*(1/n*S_e)$^{0.6}$	80.31	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	11.8	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**37.9**	**cfs**

ENGINEERS \ SURVEYORS

Drop Inlet Sizing Calculation

Project Name: Axel at Sunstone
By: KLR
Date: 2/28/2022

Inlet Sizing on a Continuous Grade

DI 3

Known:

Q_s=	Street Flow	16.2	cfs
S_o=	Longitudinal Slope	0.0383	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	5.94	fps
D=	Flow Depth	0.3	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	10.0	ft
L_c=	Length of Curb Opening	10.0	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

R_f=	Frontal flow factor = 1-0.09*(V_s-V_o) if V_s>V_o; else R_f=1	1.00	
	V_o= Splash over velocity=p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3†	9.86	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.14	
	Q_w= Frontal flow=A_w*V_s	2.30	cfs
	Q_x= Side flow = Q_s-Q_w	13.90	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.18	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	4.8	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.061	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = 0.60*$Q_s^{0.42}$*$So^{0.30}$*(1/n*S_e)$^{0.6}$	46.71	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	3.0	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**5.0**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**11.2**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.50	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	31	%

ENGINEERS \ SURVEYORS

Drop Inlet Sizing Calculation

Project Name: Axel at Sunstone
By: KLR
Date: 2/3/2022

Inlet Sizing on a Continuous Grade

DI 4

Known:

Q_s=	Street Flow	2.4	cfs
S_o=	Longitudinal Slope	0.0383	ft/ft
n=	Manning's Roughness Coefficient	0.016	
V_s=	Flow Velocity	3.79	fps
D=	Flow Depth	0.15	ft
S_x=	Street Transverse Slope	0.02	ft/ft
W=	Grate Width	1.5	ft
a=	Gutter Depression	5.0	in
L_g=	Length of Grate	10.0	ft
L_c=	Length of Curb Opening	10.0	ft
C_{fg}=	Clogging Factor for Grate	50	%
C_{fc}=	Clogging Factor for Curb Opening	50	%

Grate Capacity Calculations:

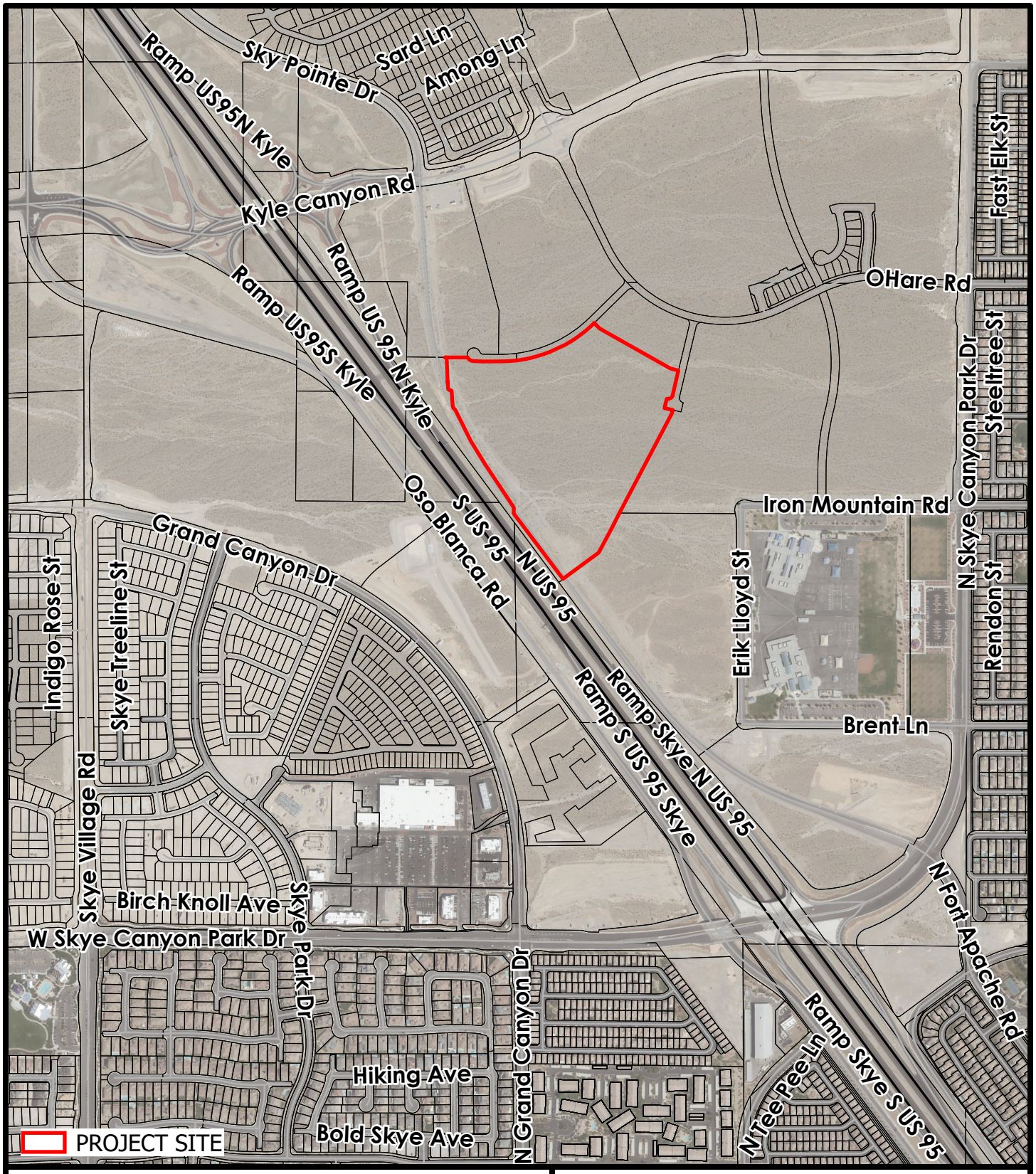
R_f=	Frontal flow factor = 1-0.09*(V_s-V_o) if V_s>V_o; else R_f=1	1.00	
	V_o= Splash over velocity=p+q*(L_g*(1-(C_{fg}/100)))-r*(L_g*(1-(C_{fg}/100)))^2+s*(L_g*(1-(C_{fg}/100)))^3†	9.86	fps
E_o=	Grate flow ratio = Q_w/Q_s	0.26	
	Q_w= Frontal flow=A_w*V_s	0.62	cfs
	Q_x= Side flow = Q_s-Q_w	1.78	cfs
R_s=	Side flow factor = 1/(1+(0.15*$V_s^{1.8}$)/(S_x*(L_g*(1-C_{fg}/100))$^{2.3}$))	0.33	
Q_{ig}=	Flow intercepted = [R_f*E_o+R_s*(1-E_o)]*Q_s	1.2	cfs
	†p=1.76;q=3.12;r=0.45;s=0.03 (based on Bar P 1-1/8 grate)		

Curb Opening Capacity Calculations

S_e=	Equivalent cross slope = Sx+Sw*Eo	0.093	ft/ft
S_w=	Gutter cross slope = (0.137+afeet)/W	0.285	ft/ft
L_t=	Total interception L = 0.60*$Q_s^{0.42}$*$So^{0.30}$*(1/n*S_e)$^{0.6}$	16.17	ft
Q_{ic}=	Flow intercepted = (1-(1-(L_c*(1-C_{fc}/100))/L_t)$^{1.8}$)*Q_s	1.2	cfs

Total Inlet Calculations

Q_{ti}=	**Total flow intercepted = Q_{ig}+Q_{ic}**	**2.4**	**cfs**
Q_{tq}=	**Flow bypass = Q_s-Q_{ti}**	**0.0**	**cfs**
q=	Interception per unit ratio = Q_{ti}/L_g	0.24	cfs/ft
E_q=	Efficiency = (Qti/Qs)*100	99	%



500 0 500 1,000 Feet

NORTH

AXEL AT SUNSTONE

FIGURE 1
VICINITY MAP

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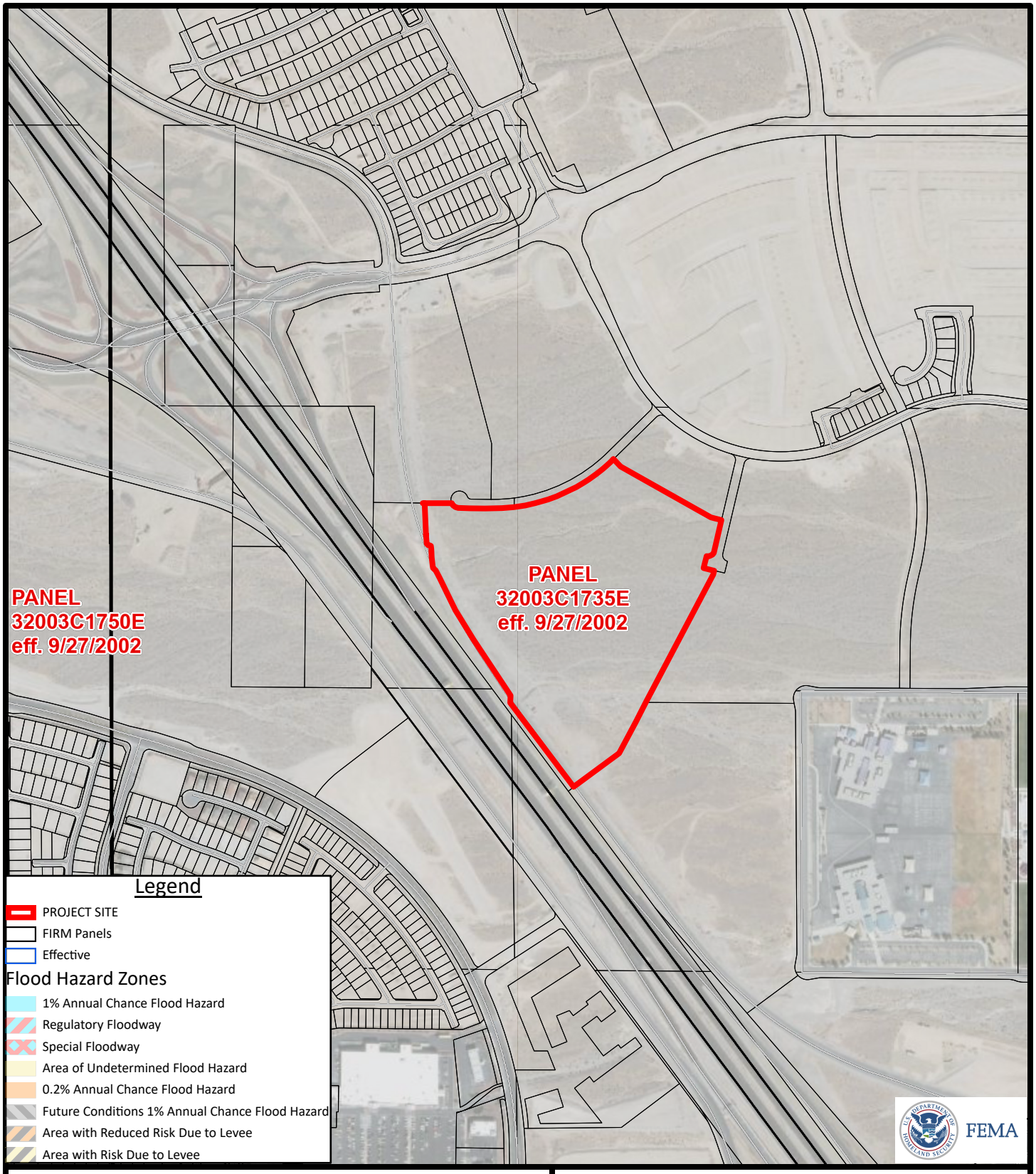

400 0 400 800 Feet

NORTH

AXEL AT SUNSTONE

FIGURE 2
FEMA FIRM

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REGIONAL FLOOD CONTROL DISTRICT

2018 Las Vegas Valley Master Plan Update

Figure W-2A
Upper Northern Las Vegas Wash Watershed

Legend

- Flow Arrows
- NodeID flow(cfs) — Concentration Points
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Ultimate Development Boundary
- Watershed
- BasinID — Subbasins
- MUSYM — 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

N

Scale: 1 inch = 1.6 mile

0 0.8 1.6 3.2

Miles

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PROJECT SITE

UPPER NORTHERN WATERSHED

LOWER NORTHERN WATERSHED

CENTRAL WATERSHED

APEX WATERSHED

RANGE WASH WATERSHED

UPPER LAS VEGAS WASH DETENTION BASIN

KYLE CANYON SEDIMENT BASIN

KYLE CANYON DETENTION BASIN

ELKHORN SPRINGS DETENTION BASIN

NORTH LAS VEGAS DETENTION BASIN

SPEEDWAY NORTH DETENTION BASIN

RANGE WASH - RAILROAD EAST BRANCH 1

DUNES DETENTION BASIN

VANDENBERG DETENTION BASIN

CHEYENNE BEARING BASIN

CONFLUENCE DETENTION BASIN

GOWAN NORTH DETENTION BASIN

CAREY-LAKE MEAD DETENTION BASIN

GWENS DETENTION BASIN

ANN ROAD DETENTION BASIN

LONE MOUNTAIN DETENTION BASIN

VILLAGE 26 DETENTION BASIN

ANGEL PARK DETENTION BASIN

RAINBOW DETENTION BASIN

MEADOWS DETENTION BASIN

FOOTHILL MOUNTAIN-BEETWAY DETENTION BASIN

NORTH APEX SYSTEM 1

Las Canyon

Kyle Canyon

Craig

Durango

Buffalo

Grand Teton Dr

Decrease Av

Log Cabin Wy

Apache Rd

Iron Mountain Rd

Moccasin Rd

Lake Mead

Las Vegas

US95

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F:\Projects\8001831-01\Division\Fet\Figures\New Folder\FIG 1-4.aprx
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PROJECT NO. 831-016

DESIGN:
DRAWN:
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REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE:

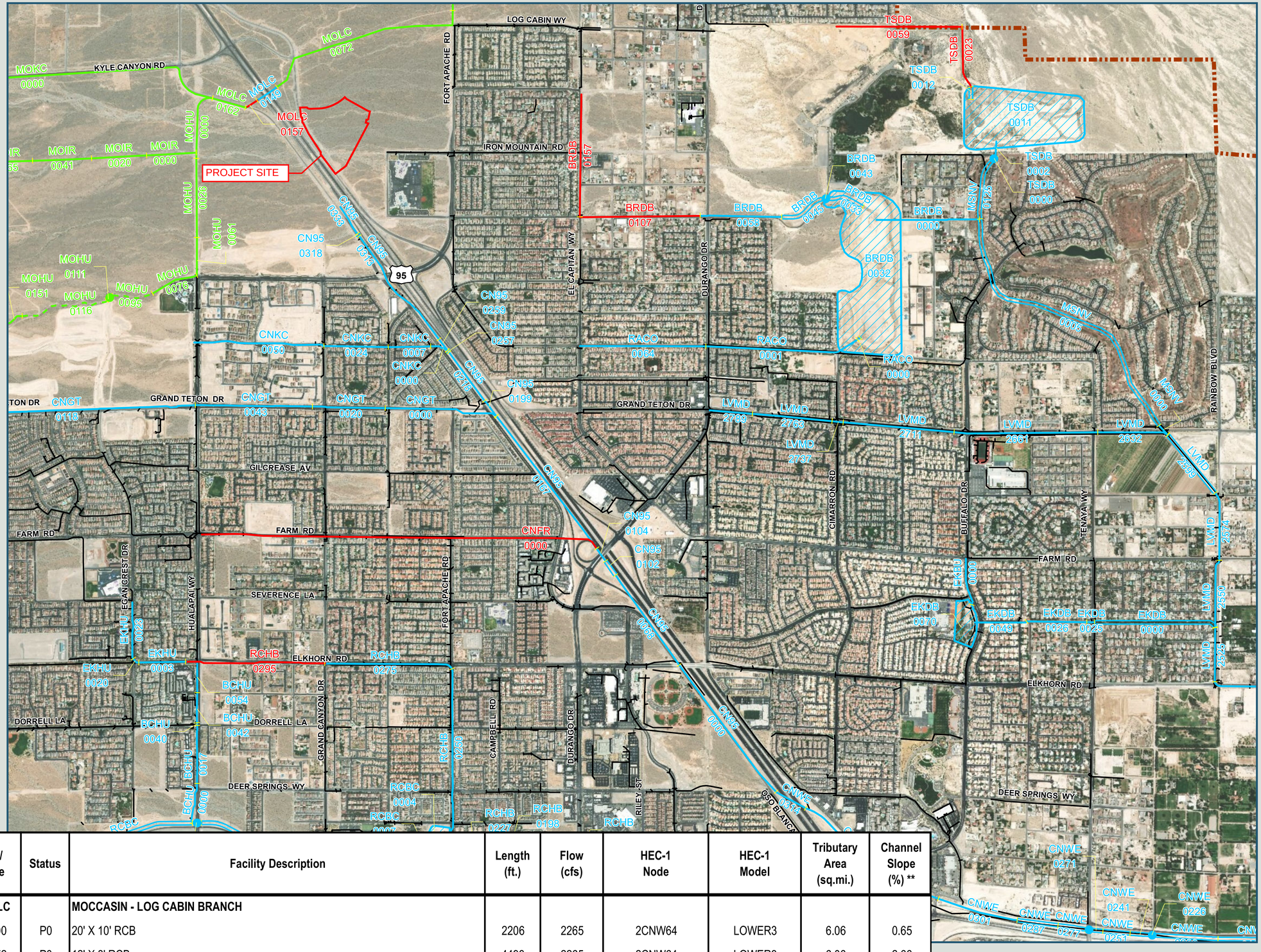
LENNAR HOMES

AXEL AT SUNSTONE

2018 MPU WATERSHED MAP

DRAWING

FIGURE 3



ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
MOLC		**MOCCASIN - LOG CABIN BRANCH**						
0000	P0	20' X 10' RCB	2206	2265	2CNW64	LOWER3	6.06	0.65
0072	P0	12' X 8' RCB	4493	2265	2CNW64	LOWER3	6.06	2.66
0149	E	13' X 8' RCB	520	1817	CNW62-N	LOWER3	4.88	2.00
0157	P	13' X 8' RCB	288	1817	CNW62-N	LOWER3	4.88	1.40
0162	P0	13' X 6' RCB	435	1817	CNW62-N	LOWER3	4.88	1.80

REGIONAL FLOOD CONTROL DISTRICT

2018
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F-11
FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator

Remove & Replace/Parallel Facilities

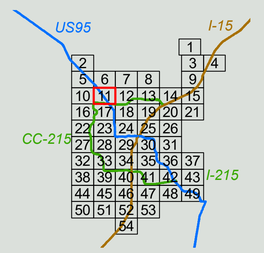
Category A	Category B
Channel	Channel
Stormdrain	Stormdrain
Crossing	Crossing

N

0 500 1,000 2,000 3,000
Feet

Scale: 1 inch = 2,000 feet

AAerialSource:Esri World Imagery 2017



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CCVV APP
DATE
AGEN APP
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F:\Projects\8000\831-016\Division\Test\Figures\New Folder\FIG 1-4.aprx
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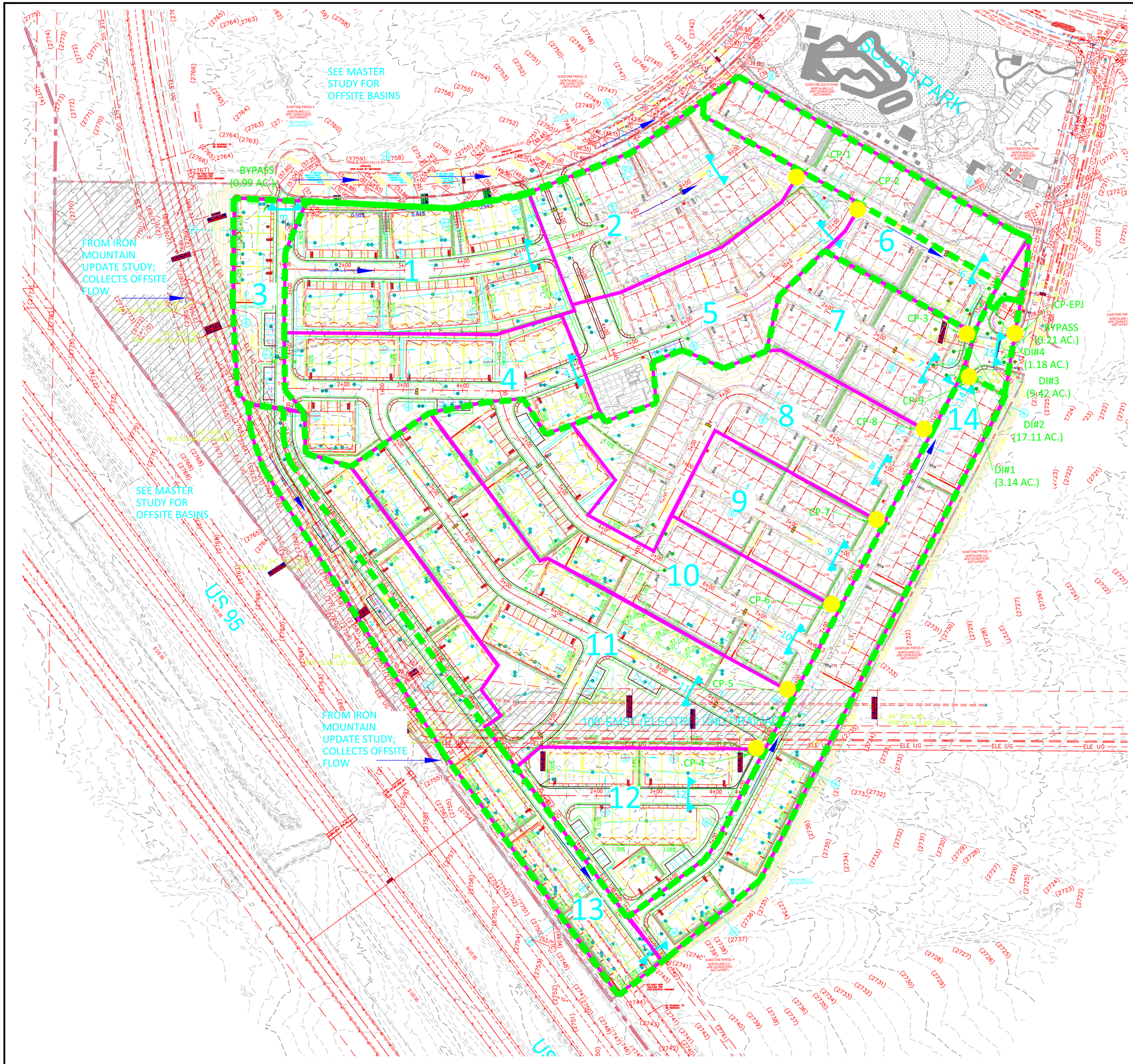
LENNAR HOMES
AXEL AT SUNSTONE
2018 MPU FACILITY MAP

DRAWING
FIGURE 4



GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

NORTH

LEGEND:

- FINISHED FLOOR CHECK PRORATED BASIN BOUNDARY
- FLOW DIRECTION
- INLET PRORATED BASIN BOUNDARY
- STREET FLOW SECTION

100 YR. PRORATED FLOW RATE SUMMARY

Subbasin	Q_{100} (cfs)	Area (ac.)	cfs/acre
EPJ*	55 cfs	32.05	1.74
Onsite Parent Basin	**Q_{100} (cfs)**	**Area (ac.)**	**cfs/acre**
1	4.3	2.49	1.74
2	3.6	2.08	1.74
3	1.7	0.99	1.74
4	3.6	2.10	1.74
5	3.5	2.05	1.74
6	3.6	2.09	1.74
7	2.6	1.55	1.74
8	4.4	2.55	1.74
9	2.4	1.41	1.74
10	4.6	2.65	1.74
11	6.9	3.98	1.74
12	2.9	1.64	1.74
13	5.6	3.24	1.74
14	5.5	3.14	1.74

*Referenced from the Master Study.

100-YEAR STREET FLOW SUMMARY

Location	Slope (%)	Q_{100} (cfs)	Depth (ft)	Velocity	D*V
Section 1	2.00	3.00	0.24	2.45	0.59
Section 2 (Sect. 1+ Sect. 2)	1.80	6.00	0.29	2.77	0.80
Section 3 (BYPASS)	1.00	2.00	0.23	1.71	0.39
Section 4	2.00	3.00	0.24	2.45	0.59
Section 5 (Sect. 4 + Sect. 5)	1.90	6.00	0.29	2.83	0.82
Section 6 (Sect. 1 + Sect. 2 + Sect. 4 + Sect. 5 + Sect. 6)	1.55	16.00	0.39	3.37	1.31
Section 7	2.00	3.00	0.24	2.45	0.59
Section 8	1.50	5.00	0.28	2.47	0.69
Section 9	1.20	4.00	0.27	2.15	0.58
Section 10	1.70	4.00	0.26	2.45	0.64
Section 11	2.40	4.00	0.25	2.82	0.71
Section 12	1.80	3.00	0.24	2.36	0.57
Section 13	1.06	6.00	0.31	2.26	0.70
Section 14	4.00	4.00	0.23	3.42	0.79
Section 15 (BYPASS)	2.55	4.00	0.29	2.94	0.85
CP-1 (Subbasin 1 + Subbasin 2)	1.60	6.00	0.37	2.81	1.04
CP-2 (Sub. 1 + Sub. 2 + Sub. 4 + Sub. 5)	1.55	12.00	0.49	4.63	2.27
CP-3 (Sub.'s 1-2 & 4-13)	3.83	49.00	0.59	9.01	5.32
CP-4 (Sub.13 + Sub. 12)	2.00	9.00	0.39	3.81	1.49
CP-5 (Sub. 13 + Sub. 12 + Sub. 11)	1.55	13.00	0.44	4.08	1.80
CP-6 (Sub. 13 + Sub. 12 + Sub. 11 + Sub. 10)	1.20	17.00	0.50	4.90	2.45
CP-7 (Sub. 13 + Sub. 12 + Sub. 11 + Sub. 10 + Sub. 9)	1.20	21.00	0.54	4.55	2.46
CP-8 (Sub. 13 + Sub. 12 + Sub. 11 + Sub. 10 + Sub. 9 + Sub. 8)	1.20	26.00	0.58	4.95	2.87
CP-9 (Sub. 14)	4.00	4.00	0.28	4.02	1.13

SUMMARY - INLET CALCULATIONS

DI	Q_{100}	Slope %	Flow Depth (ft)	Q_{INT} (cfs)	Q_{BYP} (cfs)	DI Type
DI 1	4.0	4.00	0.23	4.0	0.0	7.5'-Curb/Grate Inlet
DI 4	2.4	3.83	0.15	2.4	0.0	10'-Curb/Grate Inlet
DI 3	16.2	3.83	0.30	5.0	11.2	10'-Curb/Grate Inlet
DI 2	37.9	SUMP	0.24	37.9	0.0	30'-Curb/Grate Inlet

*Total Bypass of 5.7 cfs from site considered nuisance flow, therefore, O.K.

NOTE: REFER TO THE GRADING PLANS FOR FFE'S AND MICRO-GRADING.

L#: CLV#:

TODD N. KELLEY
Exp. 6/30/2023
CIVIL
STATE OF NEVADA No. 14711
DATE: 03/14/2022

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KEVIN_RAMAGE

NOT FOR CONSTRUCTION

PROJECT NO. 831-016

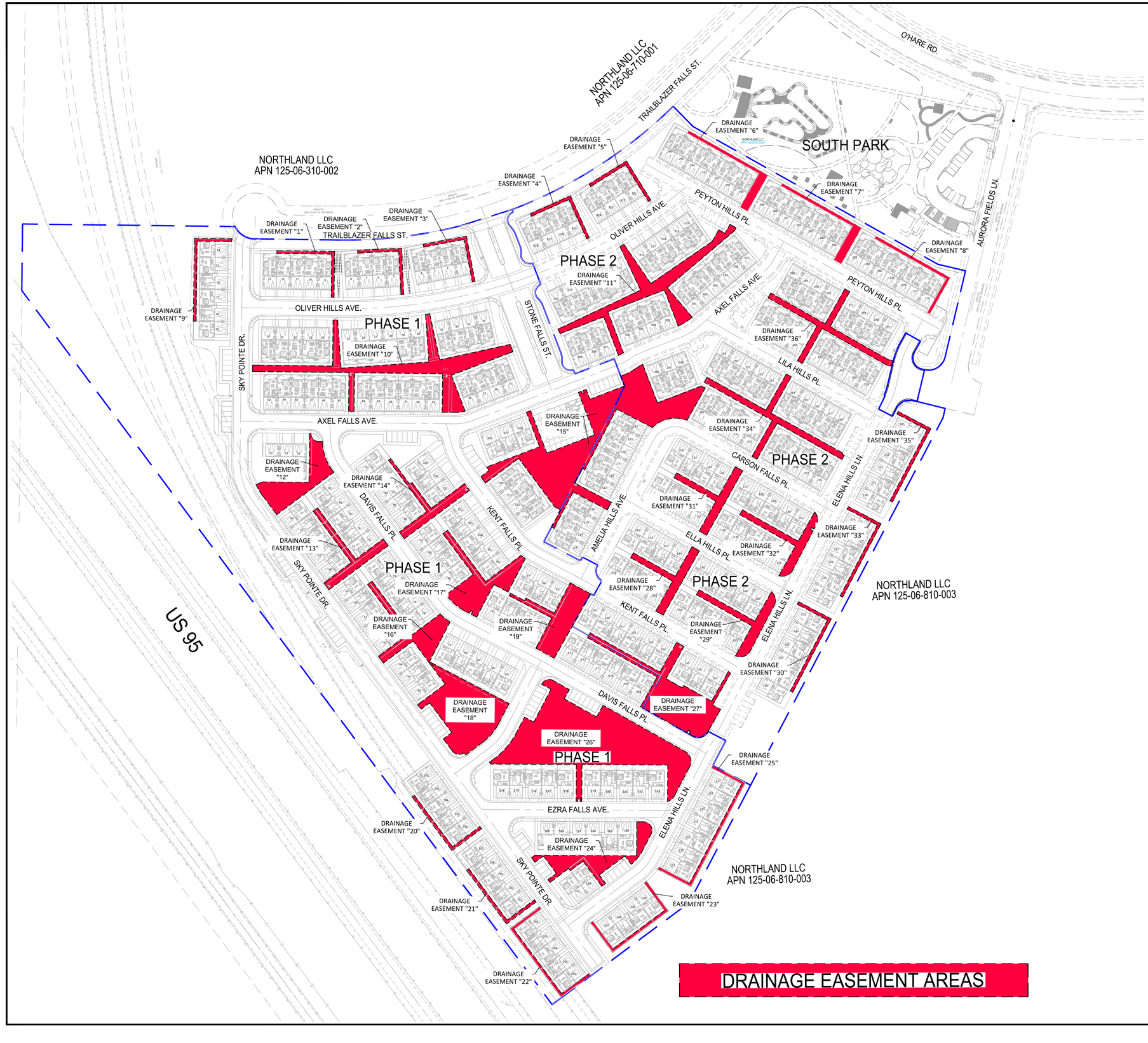
DESIGN: JOH
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-14-22
PLOT BY: TNK

LENNAR

AXEL AT SUNSTONE (PHASE 1)

PROP_INTERIM_CONDWITHSECTIONS

DRAWING
FIG5
SHT# OF 49 SHTS



TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
STATE OF NEVADA
PROFESSIONAL ENGINEER

DATE: 02/01/2022

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO.
831-016

DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 02-01-22
PLOT TIME: 16:44:45
PLOT BY: DANIEL LEE

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LENNAR

AXEL AT SUNSTONE

OVERALL DRAINAGE EASEMENT EXHIBIT

DRAWING
OADE
1 OF 1 SHTS

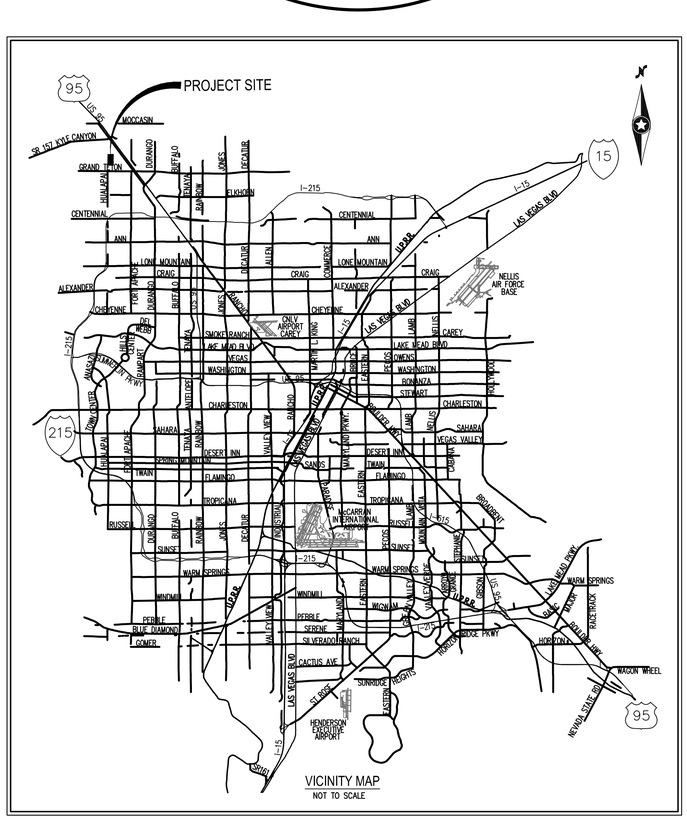
INDEX OF DRAWINGS

SHEET NUMBER	SHEET NAME	SHEET TITLE
1	C1	COVER SHEET
2	C2	GENERAL NOTES
3	C3	LEGEND, ABBREVIATIONS, AND QUANTITIES
4	G1	GRADING PLAN I
5	G2	GRADING PLAN II
6	G3	GRADING PLAN III
7	G4	GRADING PLAN IV
8	G5	GRADING PLAN V
9	G6	GRADING PLAN VI
10	G7	GRADING PLAN VII
11	G8	GRADING PLAN VIII
12	G9	GRADING PLAN IX
13	G10	GRADING PLAN X
14	D1	GRADING SECTIONS
15	D2	MISCELLANEOUS DETAILS 1
16	D3	MISCELLANEOUS DETAILS 2
17	D4	MISCELLANEOUS DETAILS 3
18	P1	STONE FALLS ST. STA: 1+00.00 TO STA. 4+46.11 PLAN AND PROFILE
19	P2	OLIVER HILLS AVE. STA: 1+00.00 TO STA. 4+50.00 PLAN AND PROFILE
20	P3	OLIVER HILLS AVE. STA: 4+50.00 TO STA. 9+33.63 PLAN AND PROFILE
21	P4	AXEL FALLS AVE. STA: 1+00.00 TO STA. 5+50.00 PLAN AND PROFILE
22	P5	AXEL FALLS AVE. STA: 5+50.00 TO STA. 11+55.11 PLAN AND PROFILE
23	P6	SKY POINTE DR. STA: 1+00.00 TO STA. 5+50.00 PLAN AND PROFILE
24	P7	SKY POINTE DR. STA: 5+50.00 TO STA. 10+50.00 PLAN AND PROFILE
25	P8	SKY POINTE DR. STA: 10+50.00 TO STA. 16+36.86 PLAN AND PROFILE
26	P9	MILA FALLS AVE. STA: 1+00.00 TO STA. 3+55.30 PLAN AND PROFILE
27	P10	EZRA FALLS AVE. STA: 1+00.00 TO STA. 4+42.79 PLAN AND PROFILE
28	P11	DAVIS FALLS PL. STA: 1+00.00 TO STA. 5+50.00 PLAN AND PROFILE
29	P12	DAVIS FALLS PL. STA: 5+50.00 TO STA. 10+17.32 PLAN AND PROFILE
30	P13	KENT FALLS PL. STA: 1+00.00 TO STA. 3+50.00 PLAN AND PROFILE
31	P14	KENT FALLS PL. STA: 3+50.00 TO STA. 8+12.51 PLAN AND PROFILE
32	P15	AMELIA HILLS AVE. STA: 1+00.00 TO STA. 3+50.00 PLAN AND PROFILE
33	P16	CARSON FALLS PL. STA: 3+50.00 TO STA. 7+38.69 PLAN AND PROFILE
34	P17	ELLA HILLS PL. STA: 1+00.00 TO STA. 4+38.15 PLAN AND PROFILE
35	P18	LILA HILLS PL. STA: 1+00.00 TO STA. 4+53.90 PLAN AND PROFILE
36	P19	PEYTON HILLS PL. STA: 1+00.00 TO STA. 4+50.00 PLAN AND PROFILE
37	P20	PEYTON HILLS PL. STA: 4+50.00 TO STA. 7+06.67 PLAN AND PROFILE
38	P21	ELENA HILLS LN. STA: 1+00.00 TO STA. 7+50.00 PLAN AND PROFILE
39	P22	ELENA HILLS LN. STA: 7+50.00 TO STA. 13+52.54 PLAN AND PROFILE
40	U1	MASTER UTILITY PLAN
41	U1	UTILITY PLAN I
42	U2	UTILITY PLAN II
43	U3	UTILITY PLAN III
44	U4	UTILITY PLAN IV
45	U5	UTILITY PLAN V
46	U6	UTILITY PLAN VI
47	U7	UTILITY PLAN VII
48	U8	UTILITY PLAN VIII
49	U9	UTILITY PLAN IX

IMPROVEMENT PLAN
FOR
AXEL AT SUNSTONE
(PHASE 1)

A SINGLE FAMILY PROJECT LOCATED IN THE CITY OF LAS VEGAS, NEVADA
APN: 125-06-810-002

CITY OF LAS VEGAS NEVADA



VICINITY MAP
NOT TO SCALE

OWNER
GREYSTONE NEVADA, LLC
9275 WEST RUSSELL ROAD,
SUITE 400
LAS VEGAS, NV 89145
PH: (702) 821-4683
CONTACT: DAVE CORNOYER

DEVELOPER
GREYSTONE NEVADA, LLC
9275 WEST RUSSELL ROAD,
SUITE 400
LAS VEGAS, NV 89145
PH: (702) 821-4683
CONTACT: DAVE CORNOYER

ARCHITECT
WESTWOOD PROFESSIONAL SERVICES, INC.
5725 W BADURA AVE, SUITE 100
LAS VEGAS, NEVADA 89118
PH: (702) 284-5300
FAX: (702) 284-5399
CONTACT: TODD STEADHAM, P.E.

ENGINEER
GCW, INC.
1555 SOUTH RAINBOW BLVD.
LAS VEGAS, NEVADA 89146
(702) 804-2000 (702) 804-2299 (FAX)

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-642-2444

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

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

DRAINAGE NOTE:
THE SUBJECT PLANS AND ACCOMPANYING TECHNICAL DRAINAGE STUDY ASSUME THAT O'HARE ROAD AND THE TWO ENTRY ROADS (TRAILBLAZER FALLS STREET AND AURORA FIELDS LANE), INCLUDING ALL DRAINAGE INFRASTRUCTURE, ARE CONSTRUCTED AND IN PLACE. IN ADDITION, THE SUBJECT STUDY ASSUMES THE OFFSITE FLOWS FROM THE US95 ARE BEING COLLECTED IN AN EXISTING STORM DRAIN SYSTEM PER THE IRON MOUNTAIN UPDATE STUDY. SUBSTANTIAL COMPLETION OF THE DRAINAGE FACILITIES ASSOCIATED WITH THE ABOVE-MENTIONED PROJECTS IS REQUIRED PRIOR TO ISSUANCE OF OCCUPANCY PERMITS.

BASIS OF BEARING:
NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK:
MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS
(NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-
2008 ADJUSATMENT (UPDATED 05/24/2010)

UTILITY/AGENCY APPROVALS

COX COMMUNICATIONS LAS VEGAS, INC. — DATE

CENTRAL TELEPHONE COMPANY, DBA CENTURY LINK — DATE

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

NV ENERGY — DATE

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

SOUTHWEST GAS CORPORATION — SWG UID — DATE

CITY OF LAS VEGAS ENGINEERING — DATE

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

PLANNING DEPARTMENT — DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS FIRE AND RESCUE, FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANING AND ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW _____ GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM
SHEETS:

L#: CLV#:

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:36:24
DANIEL LEE

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

F:\PROJECTS\831\EXH-01\E1\DWG\PRODUCTION\PHASE-1\831-01EC01.DWG

LENNAR

AXEL AT SUNSTONE (PHASE 1)

COVER SHEET

DRAWING
C1
1 OF 49 SHTS

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA". LATEST REVISED EDITION; THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-HALF INCH (½") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY _____, REPORT # _____, DATE _____ APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.380 & CITY OF LAS VEGAS TITLE 18, APPENDIX D.
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.

WALL NOTES:

16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.
20. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKER BALLS, LOCATING RIBBON, ETC, THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO OFFSITE INSPECTION AND TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.
21. AFTER HAUNCHING AND PRIOR TO BACKFILL OPERATIONS WHICH WOULD COVER SANITARY SEWER AND STORM DRAIN FACILITIES, CONTRACTOR IS REQUIRED TO SCHEDULE CUT SHEET TRENCH UTILITY SURVEY INSPECTION AND DETERMINATION OF FINAL LOCATION COORDINATES. FACILITIES TO BE LOCATED BY CLV SHALL INCLUDE AT A MINIMUM THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY, SEWER AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS.

OR

(MAY BE USED ONLY ON PROJECTS ASSOCIATED WITH A TENTATIVE MAP CONTAINING 5 LOTS OR MORE)

- SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION. THE MAP(S) SHALL INCLUDE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY, SEWER AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS. THE LOCATION SHALL BE DESCRIBED BY COORDINATES WHICH SHALL BE BASED ON THE OFFICIAL HORIZONTAL AND VERTICAL CONTROL NETWORKS OF THE CITY OF LAS VEGAS. FINAL LOCATION MAPS MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIONAL CERTAINTIES OF ± 0.09 METERS (± 0.3 FEET) HORIZONTALLY AND VERTICALLY. A SEPARATE ELECTRONIC COMMA DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).

22. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.
23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

REVISED 06/04/18

CITY OF LAS VEGAS FIRE AND RESCUE GENERAL NOTES FOR HYDRANTS AND ACCESS

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6631 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICT'S – APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. [IFC SECTION 105.6.15]
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. [IFC SECTION 3310, SECTION 3312]
5. TO IDENTIFY FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. [IFC SECTION 507.5.7.3]
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. [IFC SECTION 106.3]
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A. APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. [IFC SECTION 507.2.1, NFPA 24]
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. [IFC SECTION 507]
9. PRIVATE FIRE HYDRANTS SHALL BE PAINTED RED. [IFC SECTION 507.5.7.1]
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. [IFC SECTION 507]
11. FIRE HYDRANTS SPACING SHALL BE AS FOLLOWS: [IFC SECTION C102]
RESIDENTIAL – 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
COMMERCIAL – 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1,000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. [IFC SECTION C102.8]
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. [IFC SECTION C102.10]
15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. [IFC SECTION C102.4]
16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. [IFC SECTION C102.7]
17. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. [IFC SECTION C102.6]
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. FOR SYSTEMS REQUIRED TO HAVE TWO (2) SOURCES OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS AND/OR SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. FOR SYSTEMS PERMITTED TO HAVE ONE SOURCE OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 3 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OF SERVICE DUE TO A SERVICE INTERRUPTION. [IFC SECTION C104]
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. [IFC SECTION 503.2.3]
20. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12% ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6% [IFC SECTION 503.2.7, 503.2.8]
21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS. [IFC 503.2.4]
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13 FT 6 IN. [IFC SECTION 503.2.1]
23. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 33 FT WITH PARKING ON BOTH SIDES MEASURED TO FACE OF CURB. NOT LESS THAN 28 FT WIDE WITH PARKING RESTRICTED TO ONE SIDE MEASURED TO FACE OF CURB. NOT LESS THAN 24 FT WIDE WITH NO PARKING ON EITHER SIDE MEASURED TO FACE OF CURB. FIRE LANES THROUGH PARKING LOTS SHALL NOT BE LESS THAN 24 FT. [IFC SECTION 503.2.1.1]
24. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. [IFC SECTION 503.1.1]
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS OR SINGLE POINT OF ACCESS IN EXCESS of 600 FT. CLV REGULATION AND MOU.
26. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. CLV REGULATION
27. ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE, ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. [IFC SECTION 503.3]
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. [IFC SECTION 503.6]
29. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS, OR HAVING FOUR OR MORE TRAVEL LANES AND A TRAFFIC COUNT OF MORE THAN 30,000 VEHICLES PER DAY, ALL HYDRANTS BEING UTILIZED TO DELIVER FIRE FLOW TO PROPOSED LOCATION SHALL BE LOCATED ON THE SAME SIDE OF THE STREET AS THE PROPOSED DEVELOPMENT. CLV REGULATION.

REVISED FEBRUARY 4, 2019

FLOOD ZONE NOTE

THIS PROJECT IS LOCATED WITHIN A FEMA DESIGNATED FLOOD ZONE X PER FIRM PANEL 32003C1735E DATED NOVEMBER 16, 2011. A ZONE X IS DEFINED AS BEING OUTSIDE THE 100-YEAR FLOODPLAIN AND NOT LOCATED WITHIN A FEMA-DESIGNATED SPECIAL FLOOD HAZARD AREA.

CITY OF LAS VEGAS GRADING NOTES

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.
3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAVING OF THE EXCAVATION.
4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LESSER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.
6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

		HORIZONTAL/VERTICAL	COMPACTION
A.	PAVEMENT AREA SUBGRADE	0.1'± +0.0' TO –0.1'	SEE SOILS REPORT
B.	ENGINEERED FILL	0.5'± +0.1' TO –0.1'	SEE SOILS REPORT

- REPORT COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE.

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIW OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

REVISED 4/15/10

CITY OF LAS VEGAS SEWER NOTES

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

REVISED 04/15/10

LAS VEGAS VALLEY CONSTRUCTION STORMWATER RUNOFF MANAGEMENT - STANDARD NOTES

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATE IN, THE PUBLIC RIGHTS OF WAYS OF THE CITY OF LAS VEGAS AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CLARK COUNTY UDACS AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY; REFER TO NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPS WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.12.
5. ACCUMULATED SEDIMENT IN BMPS SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT, WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

LAS VEGAS VALLEY WATER DISTRICT LVVWD PROJECT # _____

(REVISED 08/01/2017)

1. NO WORK SHALL BEGIN UNTIL THE WATER PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE LVVWD. FOLLOWING WATER PLAN APPROVAL, NOTICE SHALL BE GIVEN TO THE LVVWD COMMUNICATION SUPPORT CENTER (258-7171) TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION. FOR FUTURE INSPECTIONS, NOTICE MUST BE GIVEN BY 2:00 P.M. THE BUSINESS DAY PRIOR TO THE REQUESTED LVVWD INSPECTION. WHEN REQUESTING INSPECTIONS, PLEASE REFER TO THE PROJECT # IDENTIFIED ABOVE.
2. ALL WORK SHALL CONFORM TO LVVWD STANDARD PLATES, DRAWINGS, AND SPECIFICATIONS, AND TO THE 2010 EDITION OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS). THE LATEST EDITION OF UDACS SHALL SUPERSEDE ANY CONFLICTS CONTAINED IN THE APPROVED DRAWINGS AND/OR SPECIFICATIONS.
3. ALL WORK, EXCEPT AS MODIFIED BY THESE PLANS OR BY NOTE 2 ABOVE, SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT DRAFT OR EDITION OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENT, CLARK COUNTY AREA.
4. A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE LVVWD.
5. ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING WITH LVVWD APPROVED SERVICE SADDLES.
6. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS.
7. ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB GUTTERS.
8. ALL WATER AND STORM DRAIN OR SANITARY SEWER CROSSINGS SHALL CONFORM TO SECTION 2.22 OF THE 2010 EDITION OF THE UDACS
9. ALL WATER FACILITIES AND APPURTENANCES SHALL BE DISINFECTED, PRESSURE TESTED, AND HAVE AN ACCEPTABLE PASSING HEALTH WATER SAMPLE OBTAINED, PRIOR TO OPERATION AND USE.
10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES. TELEPHONE 258-3152 OR 258-3802, TWO (2) WORKING DAYS PRIOR TO METER PICKUP.
11. ANY INTERRUPTION OF SERVICE MUST BE PERFORMED IN ACCORDANCE WITH UDACS SECTION 3.14.01, AND APPROVED BY THE LVVWD INSPECTION DIVISION PRIOR TO SHUTDOWN. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.
12. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE LISTED ON THE LVVWD APPROVED PRODUCT'S LIST FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS BY SUBMITTING SHOP DRAWINGS.
13. TELEPHONE "CALL BEFORE YOU DIG" AT 811 OR 1-800-227-2600
14. THE INSTALLATION OF LVVWD MUNICIPAL WATER FACILITIES WITHIN ALL STREETS IS ASSUMED TO BE IN COMPLIANCE WITH THE UNIFORM STANDARDS, INCLUDING THE PLACEMENT OF ASPHALT PAVING STREET SURFACES. ANY REPAIR WORK DONE BY THE LVVWD TO THE MUNICIPAL WATER

ABBREVIATIONS

A	AIR	DIA, ø	DIAMETER	NOSHA	STATE OF NEVADA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION	SF	SQUARE FOOT/FEET
AC	ASPHALT CONCRETE, ACRE	DIP	DUCTILE IRON PIPE			SHLDR	SHOULDER
ACP	ASBESTOS CEMENT PIPE	DIST	DISTANCE			SHT	SHEET
ADD'L	ADDITIONAL	DR	DRIVE	NPC	NEVADA POWER COMPANY	SIS	SUMMERLIN IMPROVEMENT STANDARDS
AP	ANGLE POINT	DS	DOWNSPOUT	NTS	NOT TO SCALE		
APN	ASSESSOR'S PARCEL NUMBER	DTL	DETAIL	NVE	NV ENERGY	SL	STREET LIGHT
APPROX	APPROXIMATELY	DW	DRIVEWAY	OB	OVERBUILD	SP	SERVICE POINT
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS	DWG	DRAWING	OC	ON CENTER	SQ	SQUARE
		E	EAST	OHC	OVERHEAD COX COMMUNICATION	SR	SEWER RECLAIM MAIN
		ECR	END CURB RETURN	OHP	OVERHEAD POWER LINE	SS	SANITARY SEWER
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	ELEC,ELE	ELECTRICAL	P	POWER LINE	SSMH	SANITARY SEWER MANHOLE
		ELEV	ELEVATION	PAC	PUBLIC ACCESS EASEMENT	STA	STATION
AVE	AVENUE	EP,EOP	EDGE OF PAVEMENT	PB	PULL BOX	ST	STREET
AVAR	AIR VALVE, AIR RELEASE ASSEMBLY	ESMT	EASEMENT	PBS	PLANTMIX BITUMINOUS SURFACE	STD	STANDARD
		EVC	END VERTICAL CURVE	PDE	PUBLIC DRAINAGE EASEMENT	STL	STEEL
AWWA	AMERICAN WATER WORKS ASSOCIATION	EVP	END VERTICAL POINT	PLT	PLATE	STRUCT	STRUCTURE
		EX,EXIST	EXISTING	PC	POINT OF CURVE, PRESSURE CLASS	SV	SKY VISTA DRIVE
BC	BACK OF CURB	EXP	EXPANSION JOINT			SVZ	SIGHT VISIBILITY ZONE
BCR	BEGIN CURB RETURN	FC	FACE OF CURB	PCC	POINT OF COMPOUND CURVE	SW	SIDEWALK
BLM	BUREAU OF LAND MANAGEMENT	FF, FFE	FINISH FLOOR ELEVATION	PE	PROJECT ENGINEER OR POLYETHYLENE	SWG	SOUTHWEST GAS
BLVD	BOULEVARD	FG	FINISH GRADE			T	TELEPHONE OR TOP
BM	BENCHMARK	FH	FIRE HYDRANT	PED	PEDESTRIAN	TAN	TANGENT
BO	BLOW-OFF	FL	FLOW LINE	PGL	PROFILE GRADE LINE	TB	TOP OF BERM
BVCE	BEGIN VERTICAL CURVE ELEVATION	FO	FIBER OPTIC	PH	POTHOLE	TC	TOP OF CURB
		FRP	FIBERGLASS REINFORCED PLASTIC	PI	POINT OF INTERSECTION	TCE	TEMPORARY CONSTRUCTION ESMT
BVCS	BEGIN VERTICAL CURVE STATION	FS	FINISH SURFACE	PIV	POST INDICATOR VALVE	TEL,TELE	TELEPHONE
BVP	BEGIN VERTICAL POINT	FT	FOOT/FEET	PL, P/L	PROPERTY LINE	TEMP	TEMPORARY
BW	BACK OF SIDEWALK	FTG	FOOTING	PLCP	POLYURETHANE LINED AND COATED STEEL PIPE	TF	TOP OF FOOTING
C, ℄	CENTERLINE	FUT	FUTURE			TG	TOP OF GRATE
C&G	CURB AND GUTTER	G	GAS	PMF	PAVEMENT MARKING FILM	TMH	TOP OF MANHOLE
CATV	UNDERGROUND CABLE TV	GA	GAGE, GUY ANCHOR	POB	POINT OF BEGINNING	TOP	TOP OF PIPE
CCBM	CLARK COUNTY BENCH MARK	GB	GRADE BREAK	POC	POINT ON CURVE, POINT OF CONNECTION	TP	TELEPHONE POLE
CCPW	CLARK COUNTY PUBLIC WORKS	GND	GROUND			TRANS	TRANSITION
CCTV	CLOSED-CIRCUIT TELEVISION	GRD	GRADE, GROUND	POT	POINT ON TANGENT	TRW	TOP OF RETAINING WALL
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT	H, HGT	HEIGHT	PP	POWER POLE	TS	TEST STATION
		HDWL	HEADWALL	PROP	PROPOSED	TS&V	TAPPING SLEEVE & VALVE
CE	COMMON ELEMENT	HGL	HYDRAULIC GRADE LINE	PRC	POINT OF REVERSE CURVE	TW	TOP OF WALL
CFS	CUBIC FEET PER SECOND	HORIZ	HORIZONTAL	PRVC	POINT OF REVERSE VERTICAL CURVE	TWIF	TOP OF WROUGHT IRON FENCE
CIP	CAPITAL IMPROVEMENTS PROJECT, CORRUGATED IRON PIPE	HP	HIGH POINT, HIGH PRESSURE			TYP.(TYP)	TYPICAL
		HPS	HIGH PRESSURE SODIUM	PSI	POUNDS PER SQUARE INCH	UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS (LATEST EDITION)
CIPM	CURED-IN-PLACE MANHOLE	IBC	INTERNATIONAL BUILDING CODE	PT	POINT OF TANGENCY		
CIPP	CURED-IN-PLACE PIPE	INV	INVERT	PUE	PUBLIC UTILITY EASEMENT		
CIR	CIRCLE	INT	INTERIM	PVC	POLYVINYL CHLORIDE		
CLR	CLEAR OR CLEARANCE	JT	JOINT	PVI	POINT OF VERTICAL INTERSECTION	UG	UNDERGROUND
CLSM	CONTROLLED LOW STRENGTH MATERIAL	L	LENGTH	PVMT	PAVEMENT	ULT	ULTIMATE
		LT	LEFT	PZ	PRESSURE ZONE	USDCCA, USD	UNIFORM STD. DRAWINGS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA, NEVADA (LATEST EDITION)
CLV	CITY OF LAS VEGAS	LF	LINEAR FEET	R, RAD	RADIAL, RADIUS		
CMP	CORRUGATED METAL PIPE	LIP	LIP OF GUTTER	RT	RIGHT		
CMU	CONCRETE MASONRY UNIT	LN	LANE	RCB	REINFORCED CONCRETE BOX		
CNLV	CITY OF NORTH LAS VEGAS	LP	LOW POINT, LIGHT POLE	RCP	REINFORCED CONCRETE PIPE		
CO	CLEANOUT	LS,LSCP	LANDSCAPE	RD	ROAD		
CONC	CONCRETE	LVWD	LAS VEGAS VALLEY WATER DISTRICT	RDWY	ROADWAY	UT	UNDERGROUND TELEPHONE
COND	CONDUIT			REC	RECTANGULAR	VAR	VARIABLE/VARIES
CONST	CONSTRUCT OR CONSTRUCTION	MAX	MAXIMUM	REF	REFERENCE	VC	VERTICAL CURVE
COORD	COORDINATE	MH	MANHOLE	REINF	REINFORCED	VCP	VITRIFIED CLAY PIPE
COR	CORNER	MIN	MINIMUM	REQD	REQUIRED	VERT	VERTICAL
CPEP	CORRUGATED POLYETHELYNE PIPE	MLTMCP	MORTAR LINED TAPE & MORTAR COATED PIPE	RIM	TOP OF RIM ELEVATION	VG	VALLEY GUTTER
CT	COURT			RND	ROUND	VOL	VOLUME
CY	CUBIC YARD(S)	MP	MESA PARK	R/W,ROW	RIGHT OF WAY	W	WATER, WEST
Δ	DELTA	MOD	MODIFY/MODIFIED	RP	RADIUS POINT	W/	WITH
DBL	DOUBLE	MON	MONUMENT	RPM	RAISED PAVEMENT MARKERS	WMH	WATER MANHOLE
DCSWCS	DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEM (LATEST ED.)	MPH	MILES PER HOUR	RSGV	RESILIENT SEAT GATE VALVE	WS	WATER SUPPLY
		N	NORTH	S	SEWER, SOUTH	WT	WEIGHT
		NAP	NOT A PART	SCH	SCHEDULE	WTR	WATER
DE	DRAINAGE EASEMENT	NDOT	NEVADA DEPARTMENT OF TRANSPORTATION	SDWK	SIDEWALK	XING	CROSSING
DEFL	DEFLECTION			SD	STORM DRAIN	YD	YARD, YARD DRAIN
DG	DESIGN GRADE	N.I.C.	NOT IN CONTRACT	SDMH	STORM DRAIN MANHOLE	Z	PRESSURE ZONE
DI/D.I.	DROP INLET	No.	NUMBER	SECT	SECTION		

LEGEND

- TYPICAL PROPOSED LINEWORK
- TYPICAL EXISTING LINEWORK
- TYPICAL FUTURE LINEWORK
- SECTION LINE
- EASEMENT LINE
- EDGE OF PAVEMENT
- LOTLINE
- RIGHT-OF-WAY LINE
- PROPERTY LINE
- CENTERLINE
- TYPICAL UTILITY LINE 4" – 12" (SINGLE LINE)
- TYPICAL UTILITY LINE > THAN 12" (DOUBLE LINE)
- TYPICAL SEWER LINE W/MH
- TYPICAL WATER LINE W/GV
- TYPICAL STORM LINE W/MH
- 100 YR HYDRAULIC GRADE LINE
- CONCRETE OR STEEL ENCASEMENT
- TYPICAL STUB & BLOW-OFF
- -PE GAS- EX. GAS LINE
- -ELEC- EX. ELECTRICAL
- CBL EX. CABLE TV
- TEL EX. TELEPHONE
- OPL EX. OVERHEAD POWER LINES
- EX. ELEC & PWR POLES
- TYPICAL CURB & GUTTER, SIDEWALK AND RAMP
- POST AND CABLE FENCE
- WROUGHT IRON FENCE
- CHAIN LINK FENCE
- SAWCUT
- PAVEMENT RESORATION AREA
- PROPOSED ABANDONMENT
- EXISTING ABANDONMENT
- CUT LINE LIMITS
- FILL LINE LIMITS

- 1/C DETAIL BUBBLE W/ REF.
- BENCHMARK
- GATE VALVE
- PRV PRESSURE REDUCING VALVE
- BWV BACK WATER VALVE
- DROP INLET
- FIRE HYDRANT
- WATER METER
- WATER RPPA
- WATER RPDA
- TRAFFIC SIGNAL PULL BOX
- STREET LIGHT CLARK COUNTY
- STREET LIGHT SUMMERLIN STD
- TRAFFIC SIGNAL/FLASHER
- T EXISTING TELE POLE
- EXISTING POWER POLE
- EXISTING POLE
- EX. ELEC MARKER
- TRANSFORMER PAD
- SERVICE PEDESTAL
- PULLBOX
- 3005 PROPOSED CONTOUR
- (3005) EXISTING CONTOUR
- 60.50 TC PROPOSED SPOT ELEVATION
- (60.5) TC EXISTING SPOT ELEVATION
- 1.00% PROPOSED SLOPE
- TOP SLOPE / TOE SLOPE SLOPE DIRECTION
- FF = 2333.25 FINISH FLOOR ELEVATION

CAUTION: HIGH PRESSURE GAS!!

CALL SOUTHWEST GAS AT 702-400-1789 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES 48 HOURS PRIOR TO CONSTRUCTION.

SOUTHERN NEVADA - SOUTHWEST GAS CORPORATION GENERAL NOTES

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6020.
2. MINIMUM HORIZONTAL AND VERTICAL CLEARANCES BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND UTILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRIC SHALL BE AT LEAST 12-INCHES OR GREATER AS DICTATED BY LOCAL CODES AND STANDARDS.
   o) ANY DEVIATION FROM SPECIFIED MINIMUM CLEARANCES MUST BE APPROVED BY ALL AFFECTED UTILITIES AND/OR MUNICIPALITIES
3. FOR VALVE ADJUSTMENT CONTACT 702-528-7881 14 DAYS PRIOR TO CONSTRUCTION
4. IN THE EVENT OF A NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND STRUCTURES CONTACT 702-365-2099
5. FOR STANDBY WHEN EXCAVATING (INCLUDING SAW CUTTING AND PAVEMENT REMOVAL) OVER OR NEAR HIGH PRESSURE GAS LINES CONTACT 702-278-8451 48 HOURS PRIOR TO CONSTRUCTION.

SOUTHWEST GAS APPROVAL

SOUTHWEST GAS CORPORATION | SWG UID | DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVAL DATE: _____

L#: | CLV#:

PROFESSIONAL ENGINEER STATE OF NEVADA — TODD N. KELLEY — Exp. 6/30/2023 — CIVIL — No. 14711 — DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016

DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:36:31

DANIEL LEE

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

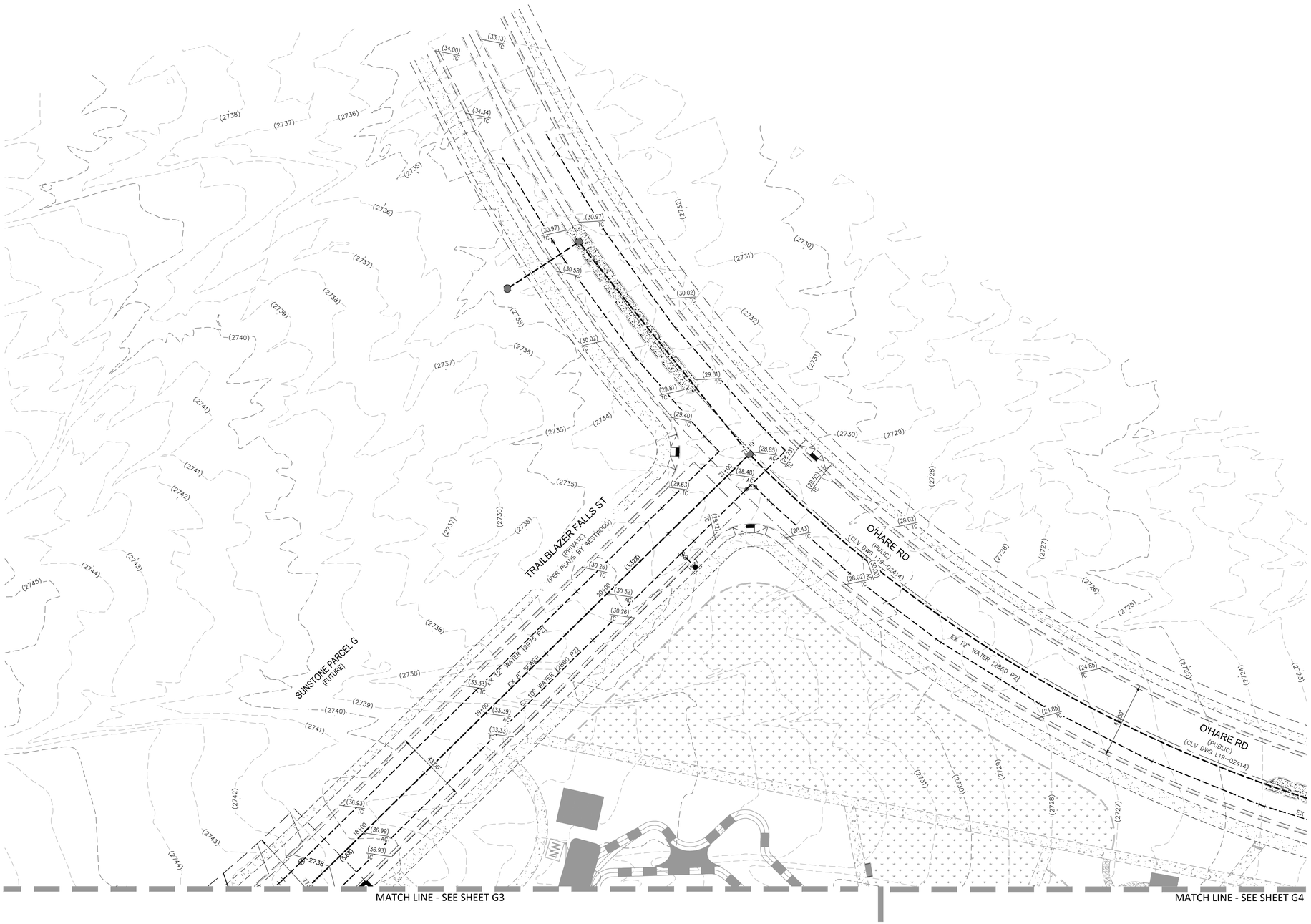
F:\PROJECTS\800\831-016\DWG\PRODUCTION\PHASE-1\831-016CCT.DWG

LENNAR

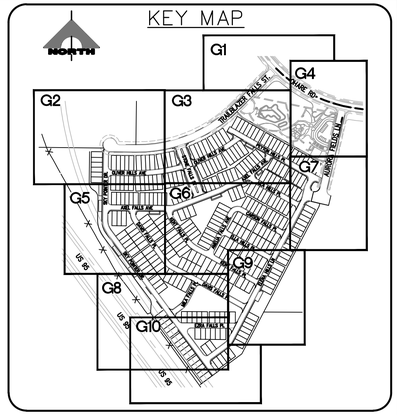
AXEL AT SUNSTONE (PHASE 1)

LEGEND, ABBREVIATIONS, AND QUANTITIES

DRAWING
C3
3 OF 49 SHTS



KEY MAP



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

NORTH

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER UDSCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' OR 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "N" SHEET D2.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. MATCH EX. CURB, GUTTER, AND SIDEWALK, SEE PLAN FOR GRADING DETAILS.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. CONSTRUCT NATURAL GRADE DRAINAGE SWALE. SEE PLAN FOR SLOPE. 1.0% MIN.
18. SEE DETAIL P SHEET D2 FOR STORM DRAIN DAYLIGHT AT CURB FACE, WITH TRANSITION FROM ROLL CURB TO "L" CURB.
19. INSTALL 2'(W) x 1'(H) WALL OPENING. FLOWLINE VERTICAL DIFFERENCE AT STEPPED UNITS = 0.9' FROM LOW SIDE TO HIGH SIDE.
20. PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED
21. FOR LOTS WITH CONCRETE VALLEY GUTTER'S CONSTRUCT 2' WIDE VALLEY GUTTER, PER DETAIL P SHEET D2.
22. FOR REAR ENTRY UNITS, SEE DETAIL G SHEET D3, FOR LOT TO LOT DRAINAGE, FOR TYPICAL DETAIL GRADING.
23. FOR UNITS WITH REAR LOT DRAINAGE INTO COMMON AREAS, SEE DETAIL A ON SHEET D4, FOR TYPICAL DETAIL GRADING.
24. FOR UNITS WITH COMMON REAR & SIDE LOT DRAINAGE, FOR TYPICAL DETAIL GRADING, SEE DETAIL B SHEET D4
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NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

NOTE

1. ALL ONSITE STORM DRAINS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE HOA.
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EARTHWORKS

ADJUSTED CUT	ADJUSTED FILL
28,245 CY	24,655 CY

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NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSATMENT (UPDATED 05/24/2010)

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LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM-_____

DRAINAGE STUDY COMPLIANCE

I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY DS5499A ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

TODD KELLEY, P.E.
NEVADA PE #14711

DATE

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
ON PROF
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

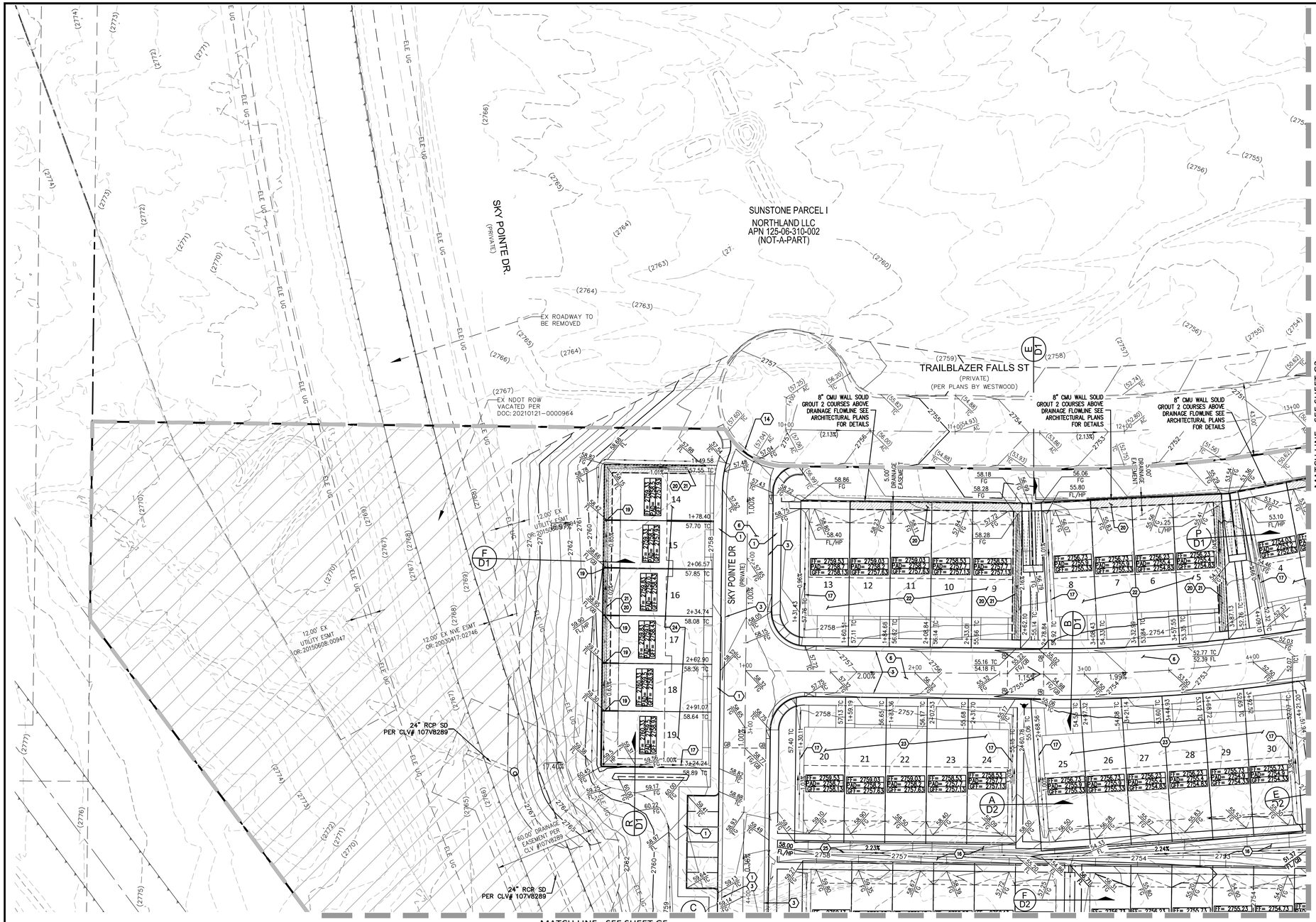
PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:38:50

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

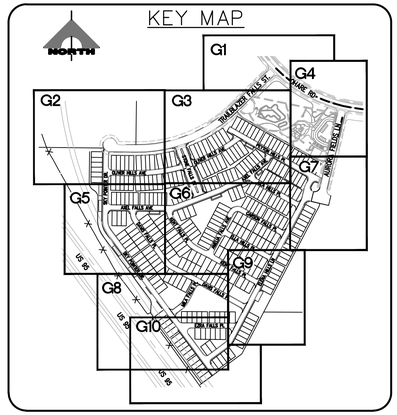
F:\PROJECTS\831\831-016\CIVIL\PRODUCTION\PHASE-1\831-016CC.DWG
DANIEL LEE

LENNAR
AXEL AT SUNSTONE (PHASE 1)
EXISTINGCOND

DRAWING
G1
X OF 49 SHTS



KEY MAP



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

NORTH

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
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9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
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11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. MATCH EX. CURB, GUTTER, AND SIDEWALK, SEE PLAN FOR GRADING DETAILS.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. CONSTRUCT NATURAL GRADE DRAINAGE SWALE. SEE PLAN FOR SLOPE. 1.0% MIN.
18. SEE DETAIL P SHEET D2 FOR STORM DRAIN DAYLIGHT AT CURB FACE, WITH TRANSITION FROM ROLL CURB TO "L" CURB.
19. INSTALL 2'(W) x 1'(H) WALL OPENING. FLOWLINE VERTICAL DIFFERENCE AT STEPPED UNITS = 0.9' FROM LOW SIDE TO HIGH SIDE.
20. PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED
21. FOR LOTS WITH CONCRETE VALLEY GUTTER'S CONSTRUCT 2' WIDE VALLEY GUTTER, PER DETAIL P SHEET D2.
22. FOR REAR ENTRY UNITS, SEE DETAIL G SHEET D3, FOR LOT TO LOT DRAINAGE, FOR TYPICAL DETAIL GRADING.
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MONUMENT ID: USDA (1934) 19

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ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

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TODD KELLEY, P.E. DATE
NEVADA PE #14711

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:39:00
DANIEL LEE

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

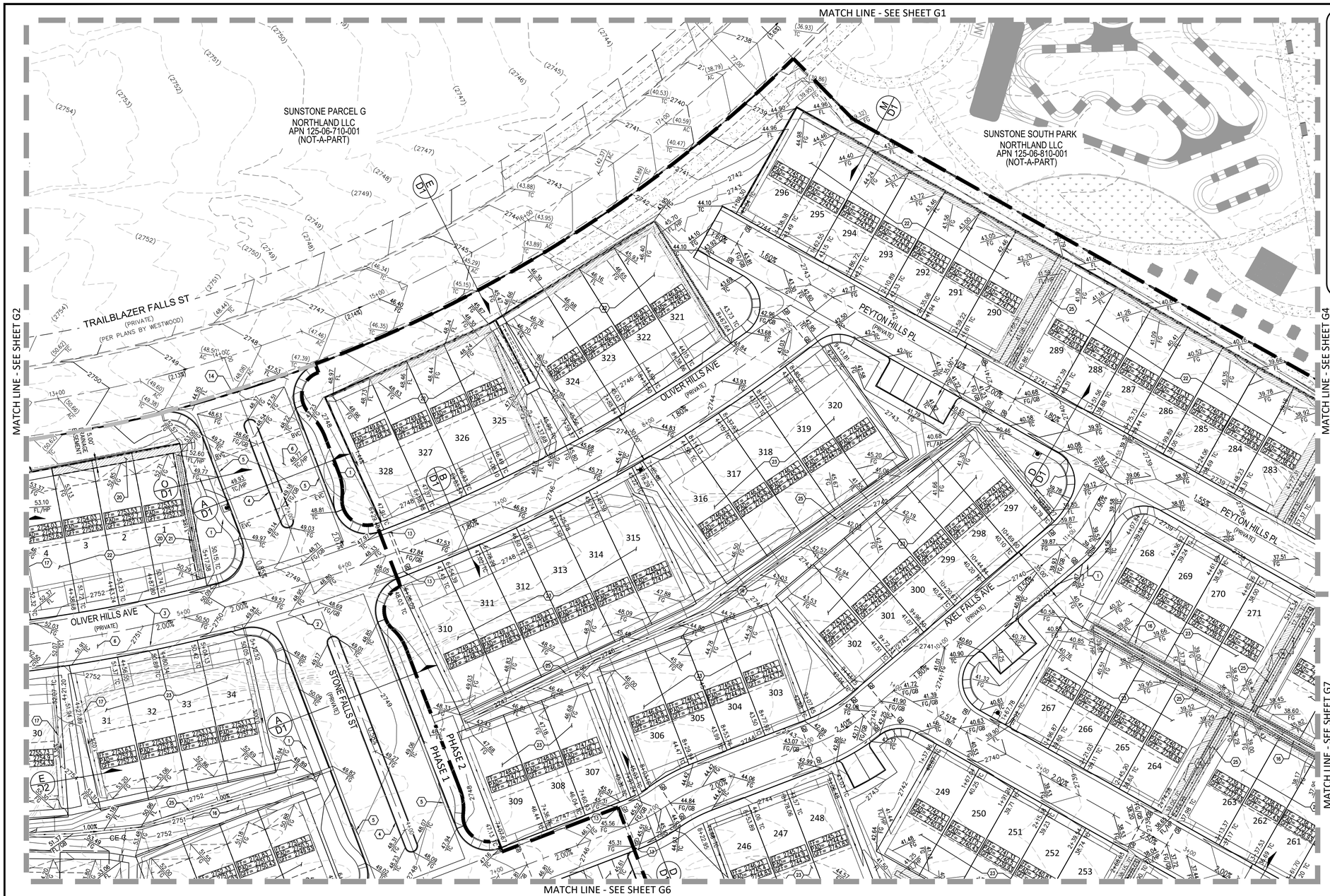
F:\PROJECTS\800\831-016\DWG\PRODUCTION\PHASE-II\831-016CG2.DWG

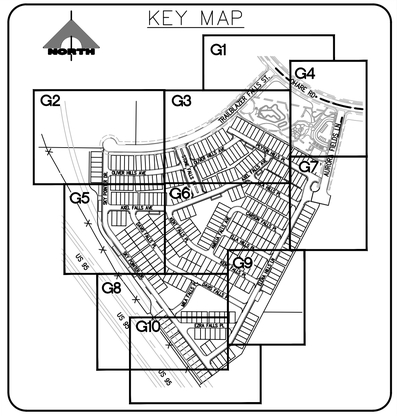
LENNAR

AXEL AT SUNSTONE (PHASE 1)

GRADING PLAN II

DRAWING
G2
X OF 49 SHTS





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Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/14/2022
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REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-14-22
PLOT TIME: 11:48:34
DANIEL LEE

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

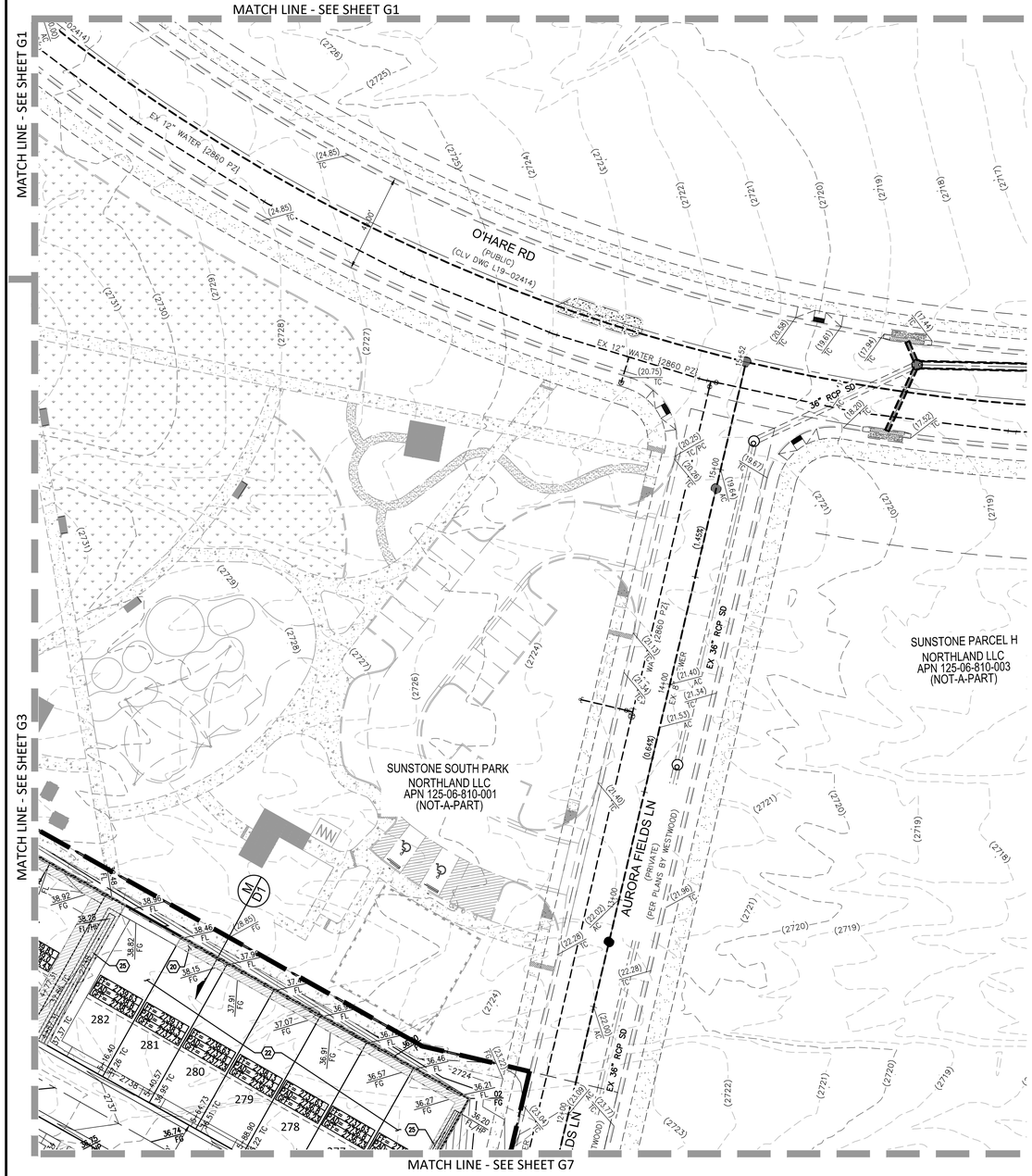
F:\PROJECTS\831\831-016\GWO\PRODUCTION\PHASE-1\831-016CO.DWG

LENNAR

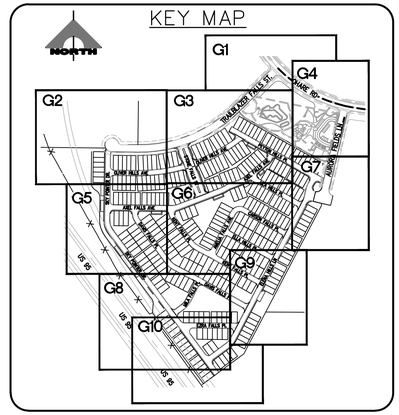
AXEL AT SUNSTONE (PHASE 1)

GRADING PLAN III

DRAWING
G3
X OF 49 SHTS



KEY MAP



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30 0 15 30 60 120

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18. SEE DETAIL P SHEET D2 FOR STORM DRAIN DAYLIGHT AT CURB FACE, WITH TRANSITION FROM ROLL CURB TO "L" CURB.
19. INSTALL 2'(W) x 1'(H) WALL OPENING. FLOWLINE VERTICAL DIFFERENCE AT STEPPED UNITS = 0.9' FROM LOW SIDE TO HIGH SIDE.
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NOTE

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BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

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ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM-_____

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TODD KELLEY, P.E. DATE
NEVADA PE #14711

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:39:30
DANIEL LEE
F:\PROJECTS\800\831-016\DWG\PRODUCTION\PHASE-1\831-016CG.DWG

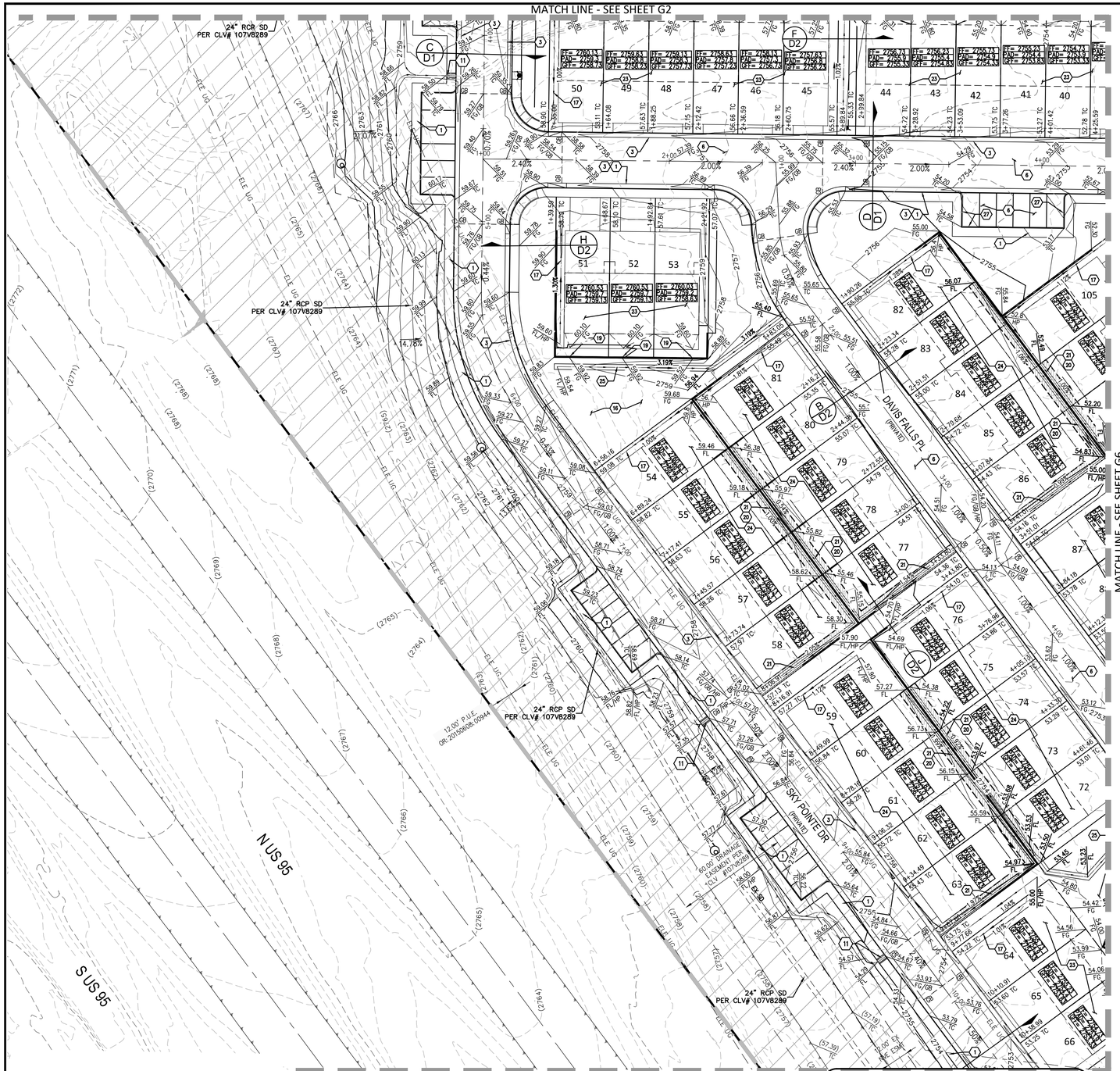
GCW
ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

LENNAR

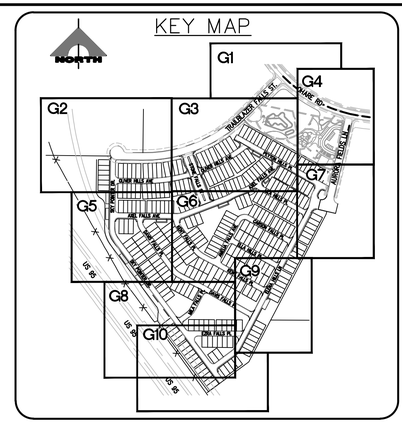
AXEL AT SUNSTONE (PHASE 1)

GRADING PLAN IV

DRAWING
G4
X OF 49 SHTS



KEY MAP



GRAPHIC SCALE

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(IN FEET)
1 inch = 30 ft.

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TODD KELLEY, P.E. NEVADA PE #14711 — DATE

PROFESSIONAL ENGINEER STATE OF NEVADA TODD N. KELLEY Exp. 6/30/2023 CIVIL No. 14711 — DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016

DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:39:46

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

F:\PROJECTS\831\63-01E\GWC\PRODUCTION\PHASE-1\63-01EGCD.DWG

DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

GRADING PLAN V

DRAWING G5

X OF 49 SHTS

MATCH LINE - SEE SHEET G3

MATCH LINE - SEE SHEET G5

MATCH LINE - SEE SHEET G7

MATCH LINE - SEE SHEET G8

MATCH LINE - SEE SHEET G9

AXEL FALLS AVE (PRIVATE)

LILA HILLS PL (PRIVATE)

CARSON FALLS PL (PRIVATE)

AMELIA HILLS AVE (PRIVATE)

KENT FALLS PL (PRIVATE)

ELLA HILLS PL (PRIVATE)

ELEMA HILLS LN (PRIVATE)

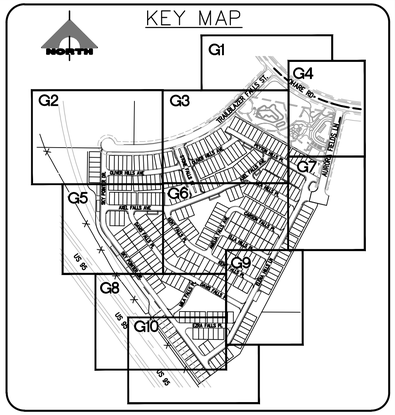
DAVIS FALLS PL (PRIVATE)

PHASE 1

PHASE 2

SUNSTONE PARCEL H
NORTHLAND LLC
APN 125-06-810-003
(NOT-A-PART)

KEY MAP



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F:\PROJECTS\831-016\CIVIL\PRODUCTION\PHASE-1\831-016CC.DWG

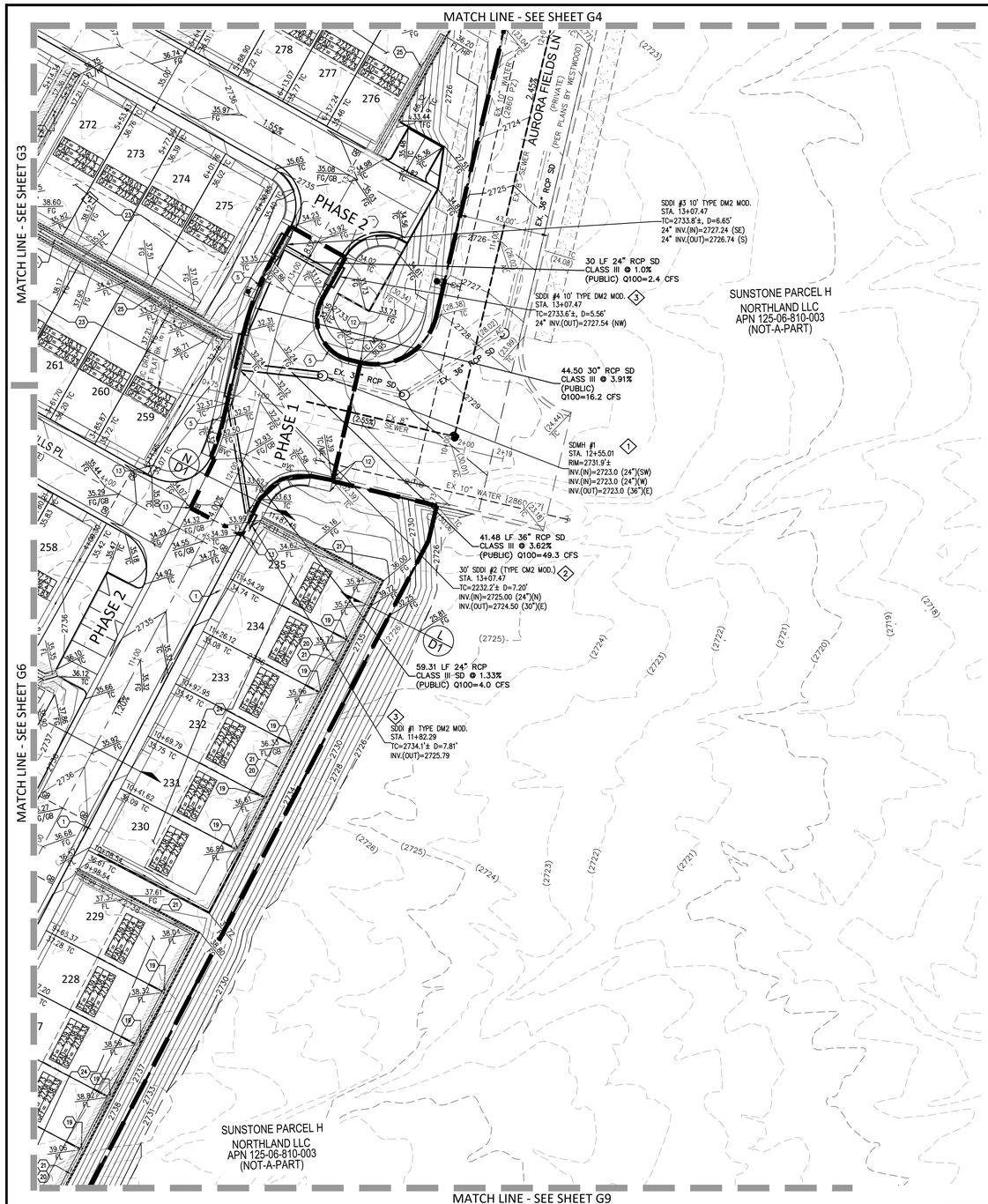
DANIEL LEE

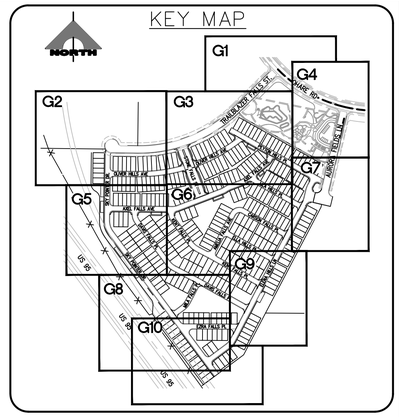
LENNAR

AXEL AT SUNSTONE (PHASE 1)

GRADING PLAN VI

DRAWING
G6
X OF 49 SHTS





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14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
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16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. CONSTRUCT NATURAL GRADE DRAINAGE SWALE. SEE PLAN FOR SLOPE. 1.0% MIN.
18. SEE DETAIL P SHEET D2 FOR STORM DRAIN DAYLIGHT AT CURB FACE, WITH TRANSITION FROM ROLL CURB TO "L" CURB.
19. INSTALL 2'(W) x 1'(H) WALL OPENING. FLOWLINE VERTICAL DIFFERENCE AT STEPPED UNITS = 0.9' FROM LOW SIDE TO HIGH SIDE.
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STORM DRAIN CONSTRUCTION NOTES

1. CONSTRUCT 48" TYPE II STORM DRAIN MANHOLE PER STD. DWG 405.
2. CONSTRUCT TYPE "CM2" MODIFIED DROP INLET PER DETAILS C SHEET D4, AND STD DWG. 412.1 & 421.
3. CONSTRUCT TYPE "DM2" MODIFIED DROP INLET PER STD DWG. 412.1 & 421.

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NOTE

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ADJUSTED CUT	ADJUSTED FILL
28,245 CY	24,655 CY

NOTES:

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BASIS OF BEARING:

NORTH 00° 01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM-_____

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TODD KELLEY, P.E. DATE
NEVADA PE #14711

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/14/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-14-22
PLOT TIME: 12:08:04

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

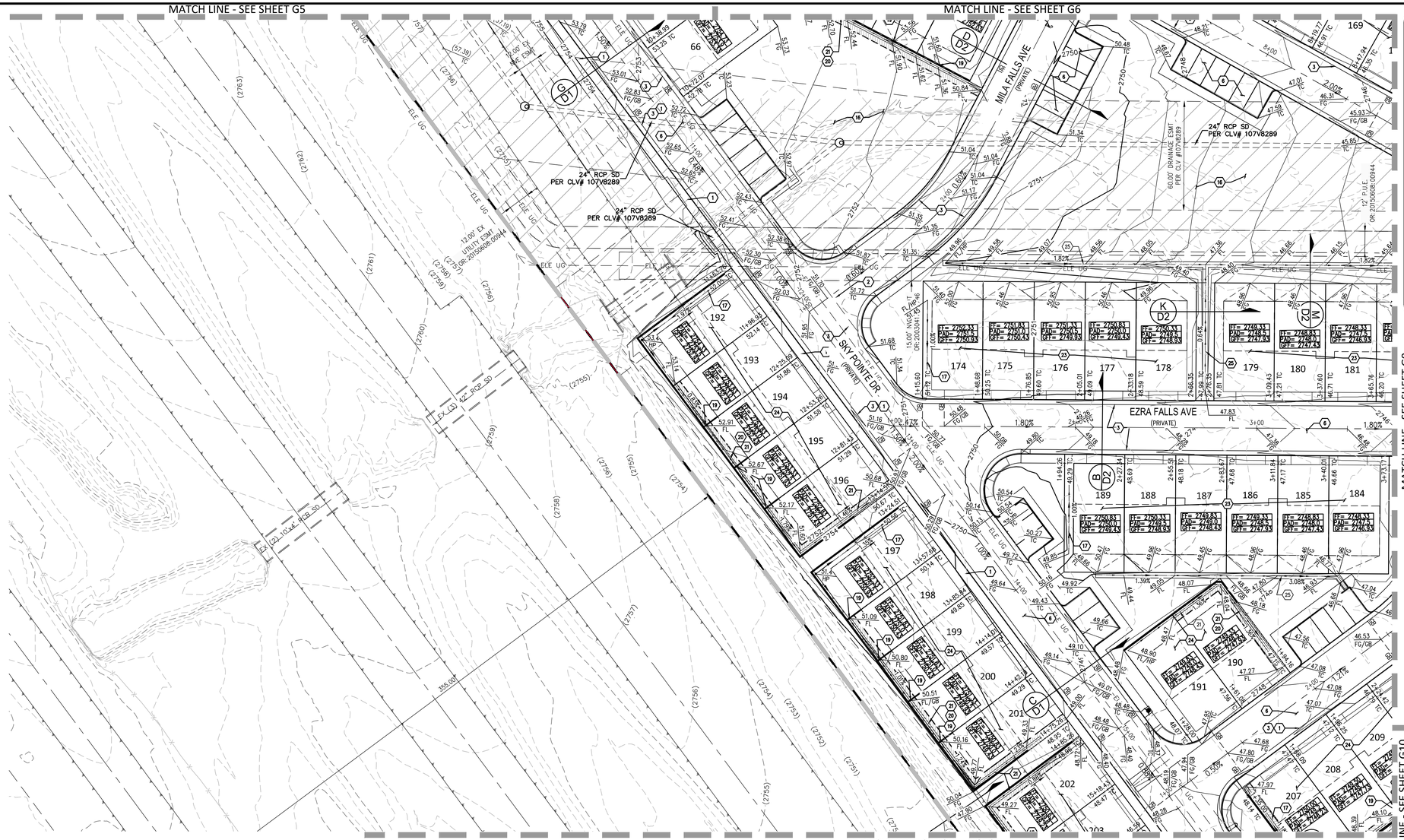
F:\PROJECTS\831\831-016\GWO\PRODUCTION\PHASE-1\831-016CCD.DWG
DANIEL LEE

LENNAR

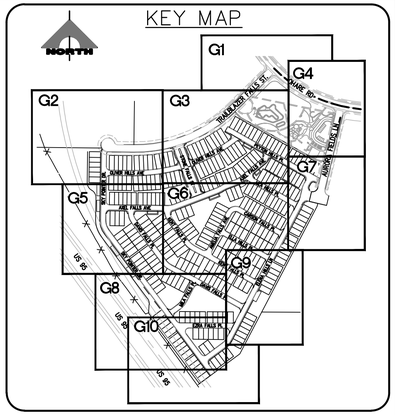
AXEL AT SUNSTONE (PHASE 1)

GRADING PLAN VII

DRAWING
G7
X OF 49 SHTS



KEY MAP



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28,245 CY	24,655 CY

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MONUMENT ID: USDA (1934) 19

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TODD KELLEY, P.E. NEVADA PE #14711 — DATE

PROFESSIONAL ENGINEER — TODD N. KELLEY — Exp. 6/30/2023 — CIVIL — No. 14711 — DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016

DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:40:31

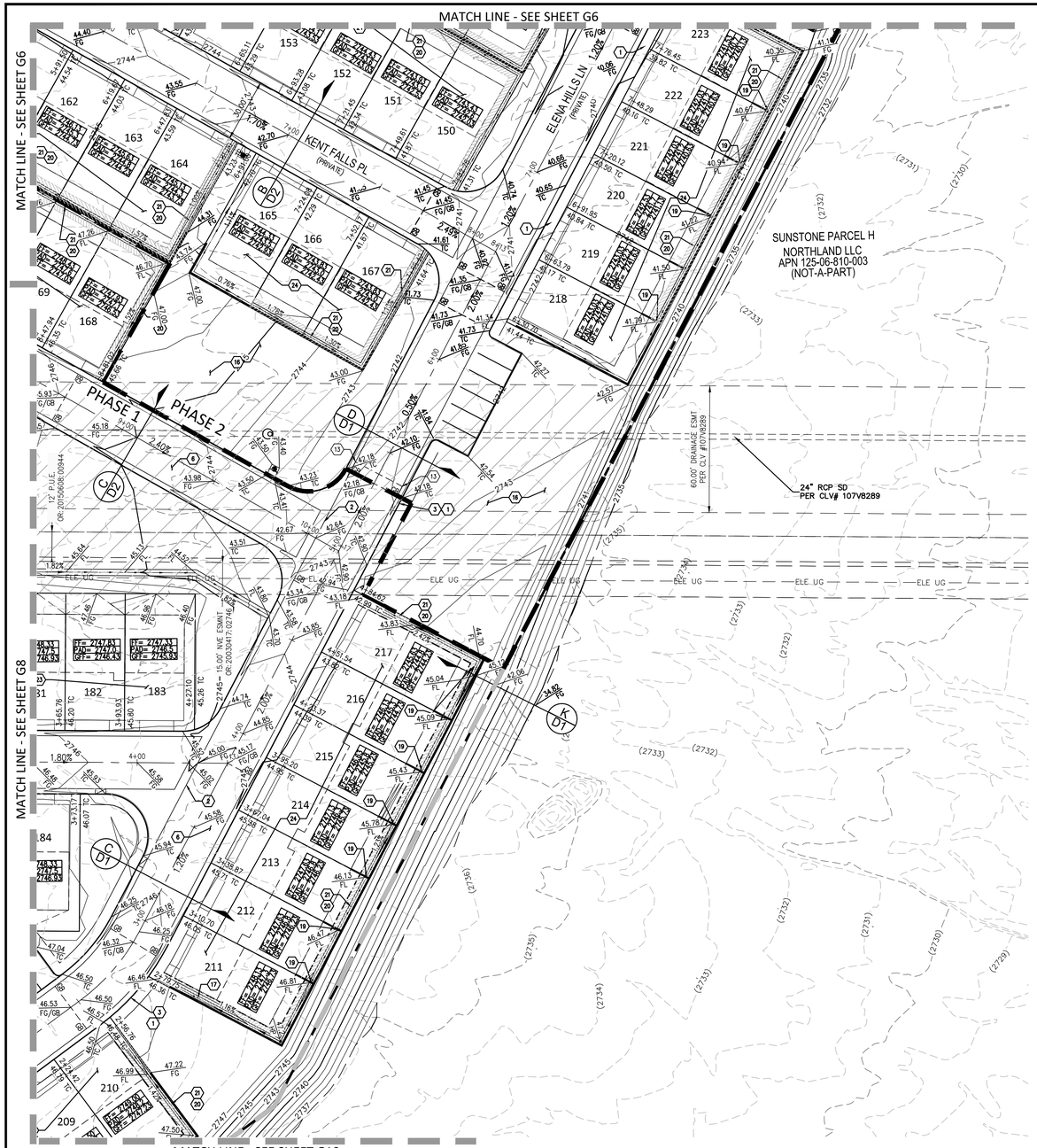
GCW ENGINEERS & SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\831-01\LVWC\PRODUCTION\PHASE-1\831-01GCC.DWG
DANIEL LEE

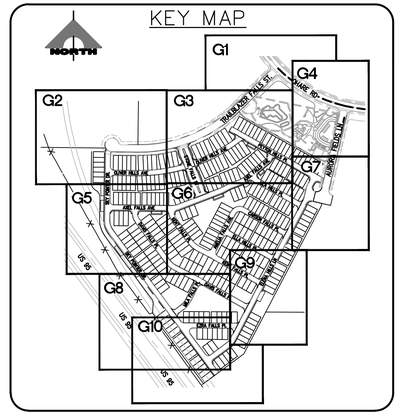
LENNAR

AXEL AT SUNSTONE (PHASE 1)

GRADING PLAN VIII

DRAWING G8 X OF 49 SHTS





GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

NORTH

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PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:40:45

GCW
ENGINEERS \ SURVEYORS
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F:\PROJECTS\831\831-01E\GWC\PRODUCTION\PHASE-1\831-01EGC.DWG

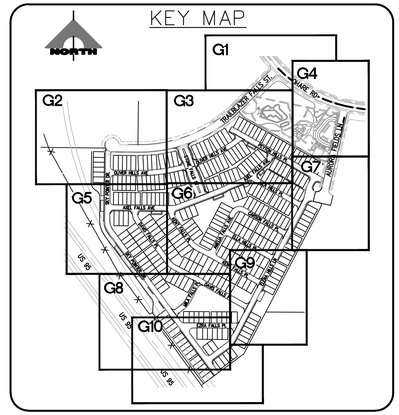
DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

GRADING PLAN IX

DRAWING
G9
X OF 49 SHTS



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3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER UDSCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' OR 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "N" SHEET D2.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. MATCH EX. CURB, GUTTER, AND SIDEWALK, SEE PLAN FOR GRADING DETAILS.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. CONSTRUCT NATURAL GRADE DRAINAGE SWALE. SEE PLAN FOR SLOPE. 1.0% MIN.
18. SEE DETAIL P SHEET D2 FOR STORM DRAIN DAYLIGHT AT CURB FACE, WITH TRANSITION FROM ROLL CURB TO "L" CURB.
19. INSTALL 2'(W) x 1'(H) WALL OPENING. FLOWLINE VERTICAL DIFFERENCE AT STEPPED UNITS = 0.9' FROM LOW SIDE TO HIGH SIDE.
20. PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED
21. FOR LOTS WITH CONCRETE VALLEY GUTTER'S CONSTRUCT 2' WIDE VALLEY GUTTER, PER DETAIL P SHEET D2.
22. FOR REAR ENTRY UNITS, SEE DETAIL G SHEET D3, FOR LOT TO LOT DRAINAGE, FOR TYPICAL DETAIL GRADING.
23. FOR UNITS WITH REAR LOT DRAINAGE INTO COMMON AREAS, SEE DETAIL A ON SHEET D4, FOR TYPICAL DETAIL GRADING.
24. FOR UNITS WITH COMMON REAR & SIDE LOT DRAINAGE, FOR TYPICAL DETAIL GRADING, SEE DETAIL B SHEET D4
25. FOR COMMON AREAS WITH CONCRETE VALLEY GUTTER'S CONSTRUCT 3' WIDE VALLEY GUTTER PER DETAIL P SHEET D2.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

NOTE

1. ALL ONSITE STORM DRAINS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE HOA.
2. CURB FLOW LINES LESS THAN 0.60% GRADE SHALL BE WATER TESTED. ANY CURB THAT DOES NOT FLOW SHALL BE REMOVED AND REPLACED AT NO COAST TO THE CITY.

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-227-2600

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

FEMA FLOOD ZONE DESIGNATION

THIS PROJECT IS LOCATED WITHIN A FEMA DESIGNATED FLOOD ZONE X PER FIRM PANEL 32003C1735E DATED NOVEMBER 16, 2011. A ZONE X IS DEFINED AS BEING OUTSIDE THE 100-YEAR FLOODPLAIN AND NOT LOCATED WITHIN A FEMA-DESIGNATED SPECIAL FLOOD HAZARD AREA.

NOTES TO CONTRACTOR

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

EARTHWORKS

ADJUSTED CUT	ADJUSTED FILL
28,245 CY	24,655 CY

NOTES:

1. ALL GRADING SHOULD CONFORM TO THE 2018 IBC.
2. THE SITE SHALL BE GRADED IN ACCORDANCE WITH THE APPROVED GEOTECHNICAL REPORT.
3. ALL PRIVATE STREETS AND COMMON ELEMENTS ARE PUBLIC DRAINAGE EASEMENTS, PUBLIC UTILITY EASEMENTS, AND PUBLIC SEWER EASEMENTS, TO BE PRIVATELY MAINTAINED BY THE HOA

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

CAUTION TO CONTRACTOR

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

SVZ NOTE:

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM-_____

DRAINAGE STUDY COMPLIANCE

I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY DS5499A ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

TODD KELLEY, P.E. NEVADA PE #14711 — DATE

PROFESSIONAL ENGINEER
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
STATE OF NEVADA
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:41:00

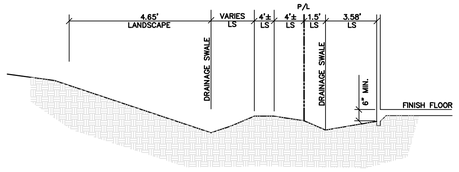
GCW
ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\831-016\DWG\PRODUCTION\PHASE-1\831-016GG.DWG
DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

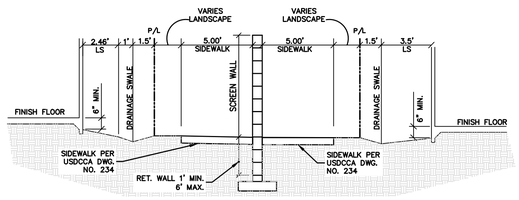
GRADING PLAN X

DRAWING
G10
X OF 49 SHTS



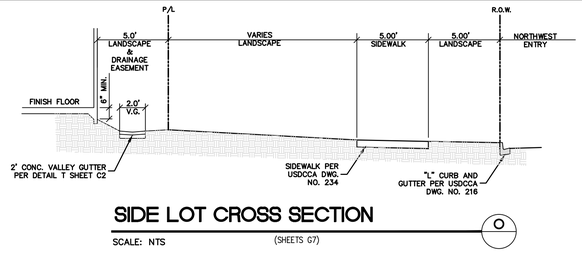
SIDE LOT SECTION

SCALE: NTS (SHEETS G7) R



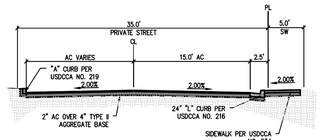
LOT TO LOT CROSS SECTION

SCALE: NTS (SHEETS G7) P



SIDE LOT CROSS SECTION

SCALE: NTS (SHEETS G7) O



PRIVATE STREET SECTION

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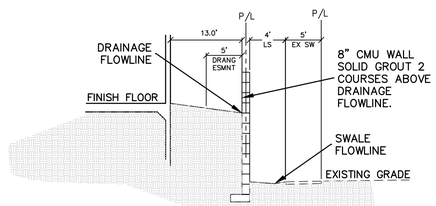
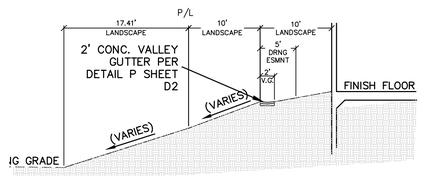


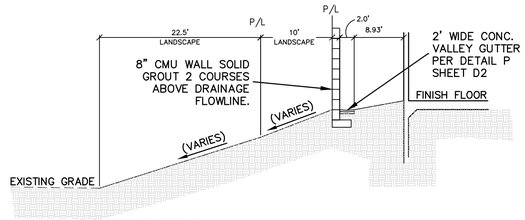
CROSS SECTION

SCALE: NTS (SHEETS G4) M



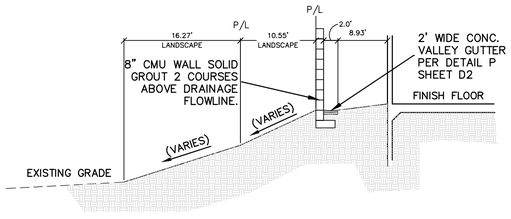
CROSS SECTION

SCALE: NTS (SHEETS G7) L



CROSS SECTION

SCALE: NTS (SHEETS G9) K



CROSS SECTION

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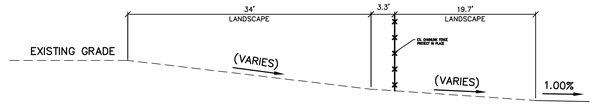
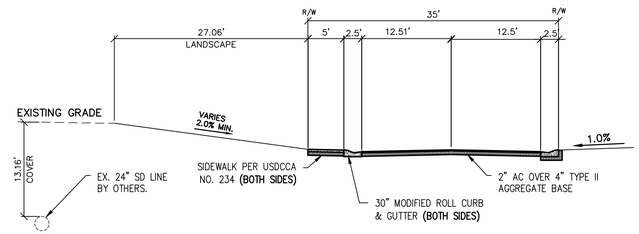


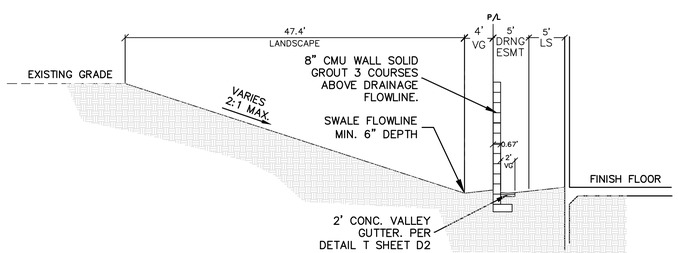
CROSS SECTION

SCALE: NTS (SHEETS G10) H



CROSS SECTION

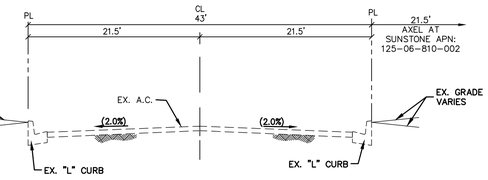
SCALE: NTS (SHEETS G8) G



CROSS SECTION

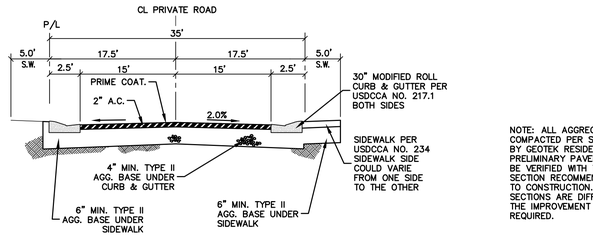
SCALE: NTS (SHEETS G2) F

NOTE: ALL AGGREGATE BASES SHALL BE COMPACTED PER SOILS REPORT PREPARED BY GEOTEK RESIDENTIAL PW19-18917 PRELIMINARY PAVEMENT SECTIONS SHALL BE VERIFIED WITH THE FINAL PAVEMENT SECTION RECOMMENDATION REPORT PRIOR TO CONSTRUCTION. IF FINAL PAVEMENT SECTIONS ARE DIFFERENT, A REVISION TO THE IMPROVEMENT PLANS WILL BE REQUIRED.



CROSS SECTION

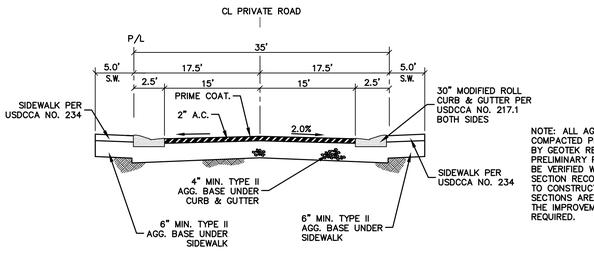
SCALE: NTS (SHEETS G2) & (G3) E



NOTE: ALL AGGREGATE BASES SHALL BE COMPACTED PER SOILS REPORT PREPARED BY GEOTEK RESIDENTIAL PW19-18917 PRELIMINARY PAVEMENT SECTIONS SHALL BE VERIFIED WITH THE FINAL PAVEMENT SECTION RECOMMENDATION REPORT PRIOR TO CONSTRUCTION. IF FINAL PAVEMENT SECTIONS ARE DIFFERENT, A REVISION TO THE IMPROVEMENT PLANS WILL BE REQUIRED.

35' PRIVATE STREET SECTION

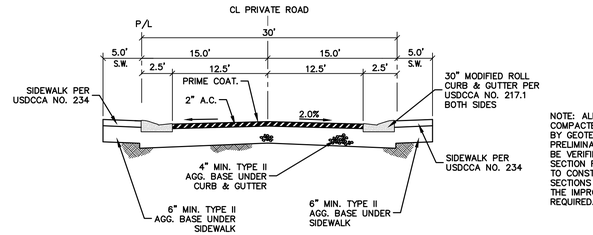
SCALE: NTS (SHEETS G3, & G5) D



NOTE: ALL AGGREGATE BASES SHALL BE COMPACTED PER SOILS REPORT PREPARED BY GEOTEK RESIDENTIAL PW19-18917 PRELIMINARY PAVEMENT SECTIONS SHALL BE VERIFIED WITH THE FINAL PAVEMENT SECTION RECOMMENDATION REPORT PRIOR TO CONSTRUCTION. IF FINAL PAVEMENT SECTIONS ARE DIFFERENT, A REVISION TO THE IMPROVEMENT PLANS WILL BE REQUIRED.

35' PRIVATE STREET SECTION

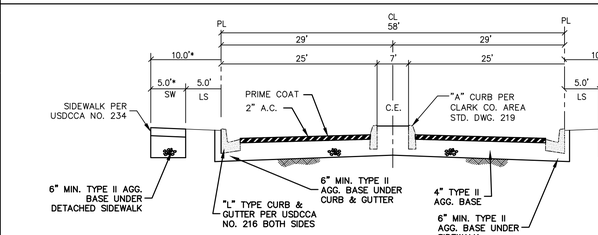
SCALE: NTS (SHEETS G5, & G8) C



NOTE: ALL AGGREGATE BASES SHALL BE COMPACTED PER SOILS REPORT PREPARED BY GEOTEK RESIDENTIAL PW19-18917 PRELIMINARY PAVEMENT SECTIONS SHALL BE VERIFIED WITH THE FINAL PAVEMENT SECTION RECOMMENDATION REPORT PRIOR TO CONSTRUCTION. IF FINAL PAVEMENT SECTIONS ARE DIFFERENT, A REVISION TO THE IMPROVEMENT PLANS WILL BE REQUIRED.

30' PRIVATE STREET SECTION

SCALE: NTS (SHEETS G2, G3, G5, G6, & G9) B



58' ENTRY

SCALE: NTS (SHEETS G3) A

NOTE: ALL AGGREGATE BASES SHALL BE COMPACTED PER SOILS REPORT PREPARED BY GEOTEK RESIDENTIAL PW19-18917 PRELIMINARY PAVEMENT SECTIONS SHALL BE VERIFIED WITH THE FINAL PAVEMENT SECTION RECOMMENDATION REPORT PRIOR TO CONSTRUCTION. IF FINAL PAVEMENT SECTIONS ARE DIFFERENT, A REVISION TO THE IMPROVEMENT PLANS WILL BE REQUIRED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. 135621 FIRST APPROVED DATE: _____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

PROFESSIONAL ENGINEER — TODD N. KELLEY — No. 14711 — Exp. 6/30/2023 — CIVIL — STATE OF NEVADA

DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	ACEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016

DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:36:54

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

F:\PROJECTS\800\831-016\GRAD\PRODUCTION\PHASE 1\831-016D1.DWG DANIEL LEE

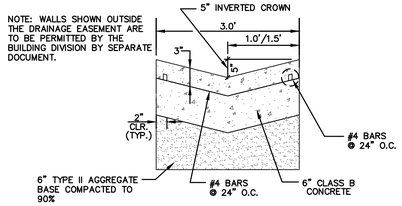
LENNAR

AXEL AT SUNSTONE (PHASE 1)

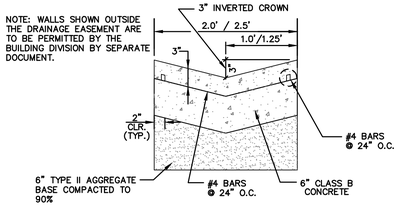
GRADING SECTIONS

DRAWING D1

5 OF 49 SHTS

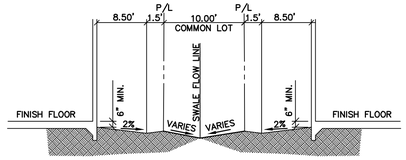


3.0' VALLEY GUTTER



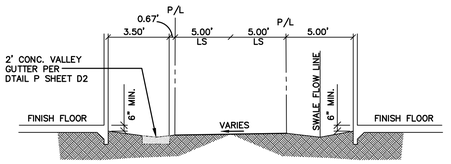
2.0' AND 2.5' VALLEY GUTTER

SCALE: NTS (P)



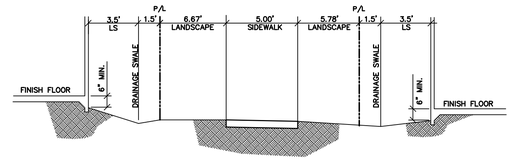
LOT TO COMMON LOT SECTION

SCALE: NTS (SHEETS G8) (K)



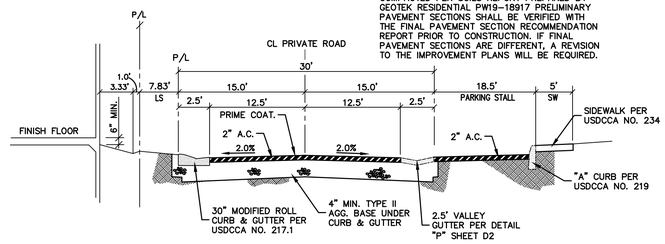
LOT TO LOT SECTION

SCALE: NTS (SHEETS G5) (J)



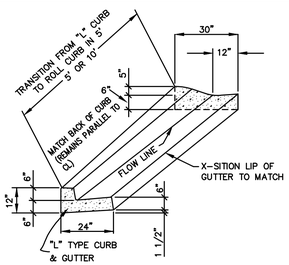
LOT TO LOT CROSS SECTION

SCALE: NTS (SHEETS G1 & G2) (E)



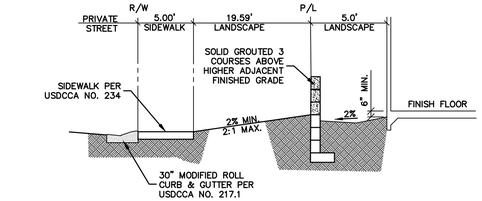
30' PRIVATE STREET AND PARKING SECTION

SCALE: NTS (SHEETS G2, G3, G5, G6, & G9) (D)



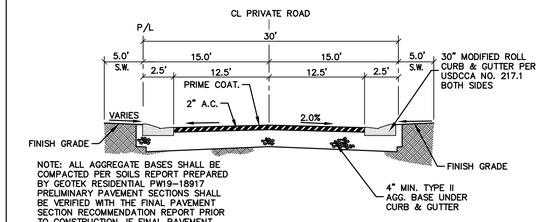
5' AND 10' TRANSITION FROM "L" CURB TO ROLL CURB

SCALE: NTS (N)



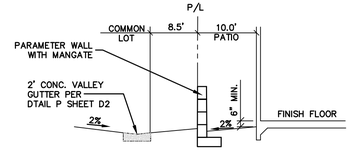
LANDSCAPE SECTION

SCALE: NTS (SHEETS G5) (H)



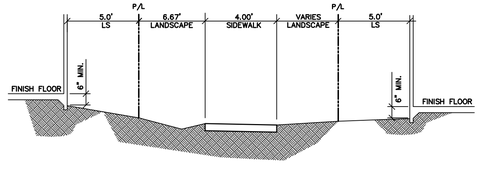
30' PRIVATE STREET SECTION

SCALE: NTS (SHEETS G2, G3, G5, G6, & G9) (C)



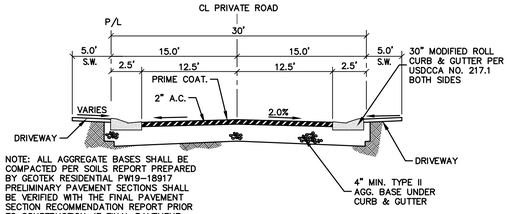
LOT TO COMMON LOT SECTION

SCALE: NTS (SHEETS G8) (M)



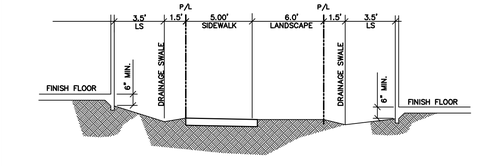
LOT TO LOT CROSS SECTION

SCALE: NTS (SHEETS G6) (G)



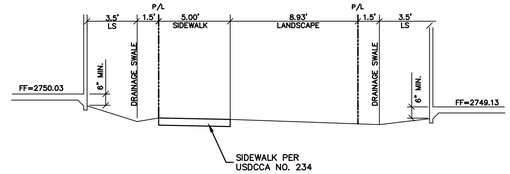
30' PRIVATE STREET SECTION

SCALE: NTS (SHEETS G2, G3, G5, G6, & G9) (B)



LOT TO LOT CROSS SECTION

SCALE: NTS (SHEETS G5) (F)



LOT TO LOT CROSS SECTION

SCALE: NTS (SHEETS G7) (A)

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

PROFESSIONAL ENGINEER — TODD N. KELLEY — Exp. 6/30/2023 — CIVIL — No. 14711 — STATE OF NEVADA

NOT FOR CONSTRUCTION

DESCRIPTION	REV DATE	ACEN APP	DATE	GCW APP	DATE
					03/11/2022

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:36:56
DANIEL LEE
P:\PROJECTS\800\831-016\DWG\PRODUCTION\PHASE-1\831-016D01.DWG

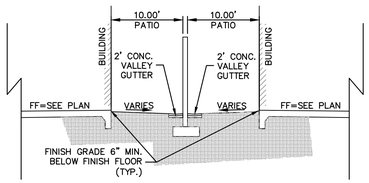
LENNAR

AXEL AT SUNSTONE (PHASE 1)

GRADING SECTIONS AND DETAILS 1

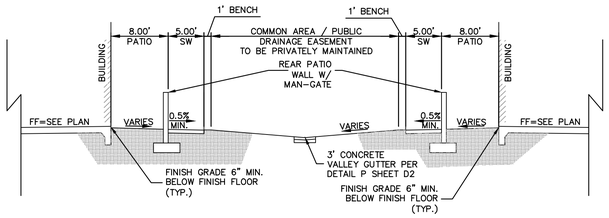
DRAWING D2

5 OF 49 SHTS



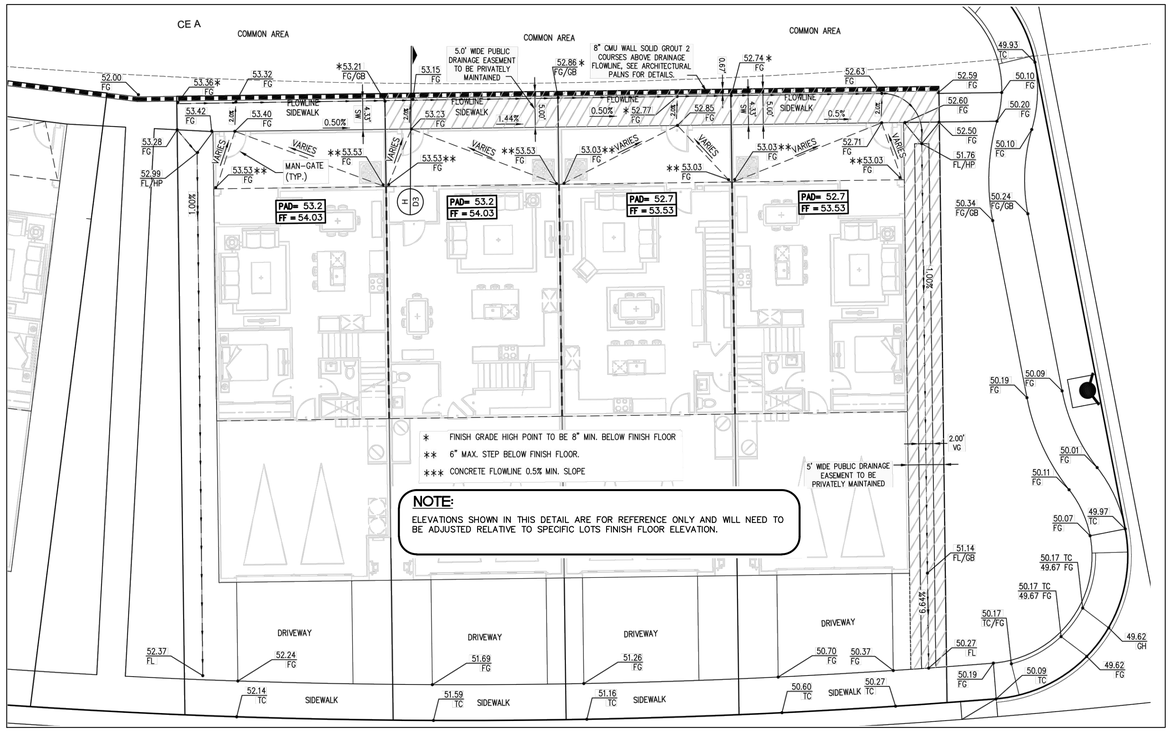
UNITS WITH COMMON REAR WALL DRAINAGE SECTION (K)

SCALE: NTS



UNITS WITH COMMON AREA DRAINAGE SECTION (J)

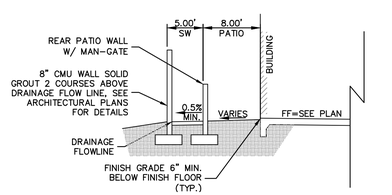
SCALE: NTS



NOTE:
ELEVATIONS SHOWN IN THIS DETAIL ARE FOR REFERENCE ONLY AND WILL NEED TO BE ADJUSTED RELATIVE TO SPECIFIC LOTS FINISH FLOOR ELEVATION.

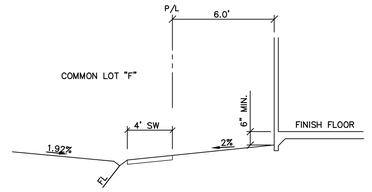
(TYP.) REAR ENTRY UNITS, LOT TO LOT DRAINAGE DETAIL (G)

SCALE: NTS



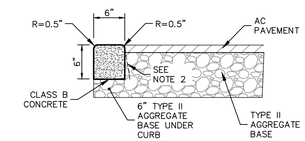
REAR ENTRY DRAINAGE SECTION (H)

SCALE: NTS



TYPICAL SECTION (D)

SCALE: NTS (SHEETS G1)

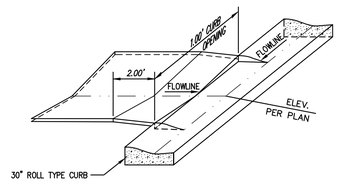


NOTES:

1. CONSTRUCT 0.5" EXPANSION JOINT AT ALL COLD JOINTS, AT BEGINNING AND END OF CURB RETURN, AND AT 300 FT. MAX. INTERVALS FOR EXTRUDED CURB AND 30 FT. MAX. INTERVALS FOR FORMED CURB. WEAKENED PLANE JOINTS SHALL BE FORMED AT REMAINING 15 FT. INTERVALS. SEE USDCCA DWG. NO. 234 FOE JOINT DETAIL.
2. ONE INCH BATTER AT CURB FACE IS OPTIONAL.

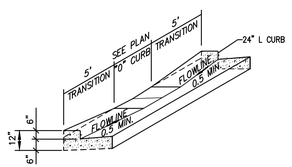
6" ZERO FACE CONCRETE CURB (B)

SCALE: NTS



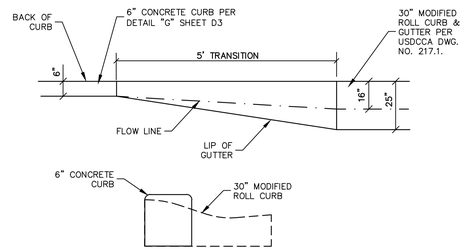
CURB OPENING DETAIL (F)

SCALE: NTS



5' TRANSITION FROM "L" CURB TO "0" CURB (E)

SCALE: NTS



5' TRANSITION FROM 6" ZERO FACE CONCRETE CURB TO 30" MODIFIED ROLL CURB (A)

SCALE: NTS

TO ENSURE LVVWD ACCESS WITHIN EASEMENT

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

CLARK COUNTY WATER RECLAMATION DISTRICT

CLARK COUNTY WATER RECLAMATION DISTRICT DATE

CCWRD PIPES #: 20.905

SIGNATURE ON THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF CLARK COUNTY WATER RECLAMATION DISTRICT RULES, REGULATIONS, OR DESIGN AND CONSTRUCTION STANDARDS.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO. 135615 FIRST APPROVAL DATE:

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:37:14

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

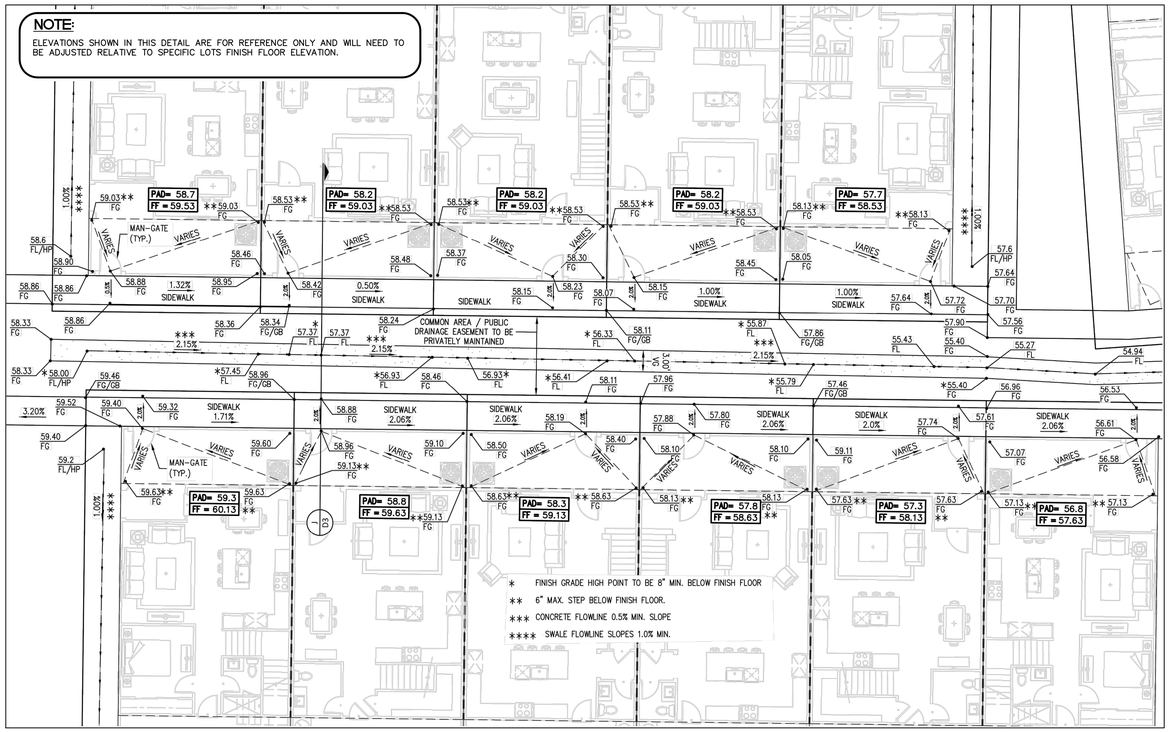
F:\PROJECTS\800\831-016\DWG\PRODUCTION\PHASE-1\831-016D01.DWG
DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

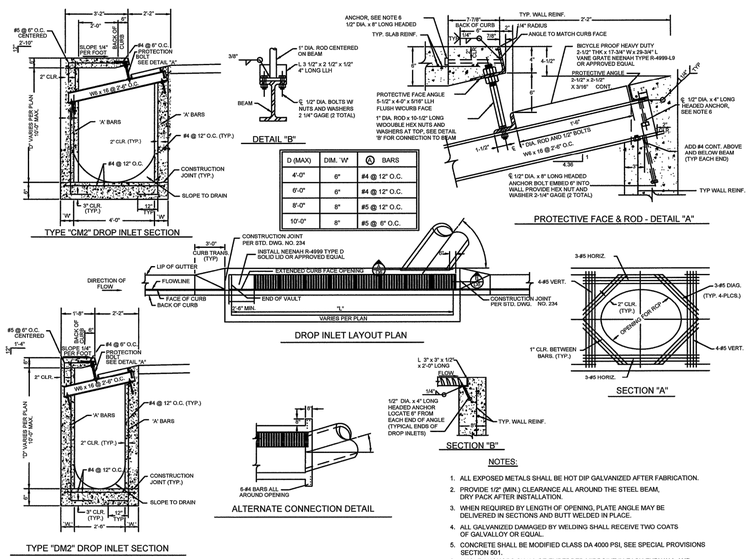
GRADING SECTIONS AND DETAILS 2

DRAWING
D3
7 OF 49 SHTS



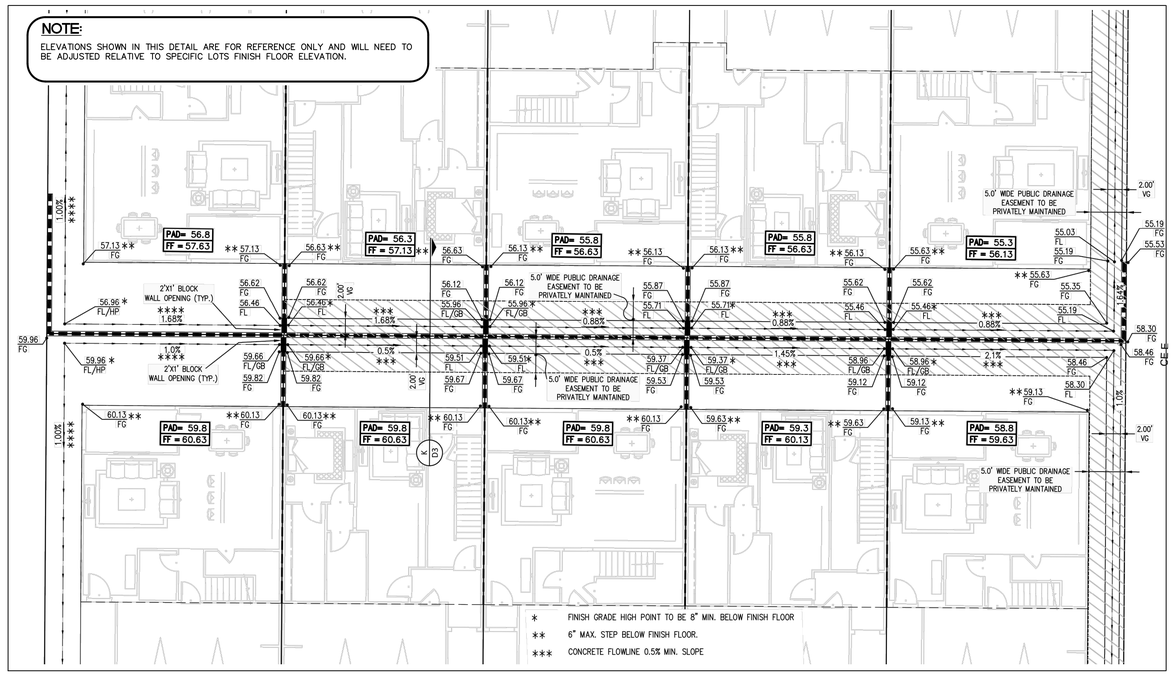
(TYP.) UNITS WITH COMMON REAR & SIDE WALLS / VALLEY GUTTER DRAINAGE DETAIL (B)

SCALE: NTS



TYPE "C - D" MODIFIED DROP INLET DETAIL (C)

SCALE: NTS



(TYP.) REAR LOT DRAINAGE INTO COMMON AREA DETAIL (A)

SCALE: NTS

TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
PROFESSIONAL ENGINEER STATE OF NEVADA
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 831-016

DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:54:36

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

F:\PROJECTS\800\A31-016\DWG\PRODUCTION\PHASE-1\A31-016D1.DWG

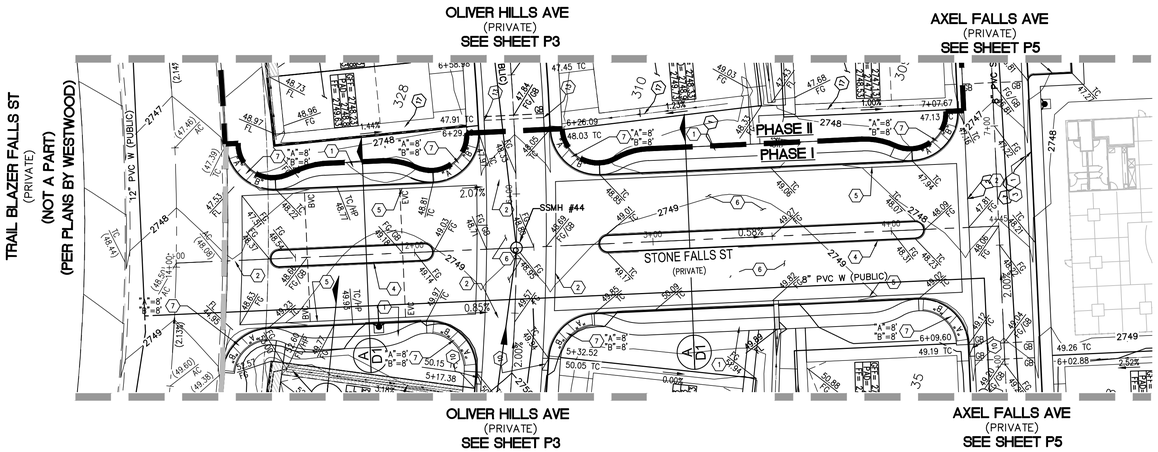
DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

GRADING SECTIONS AND DETAILS 3

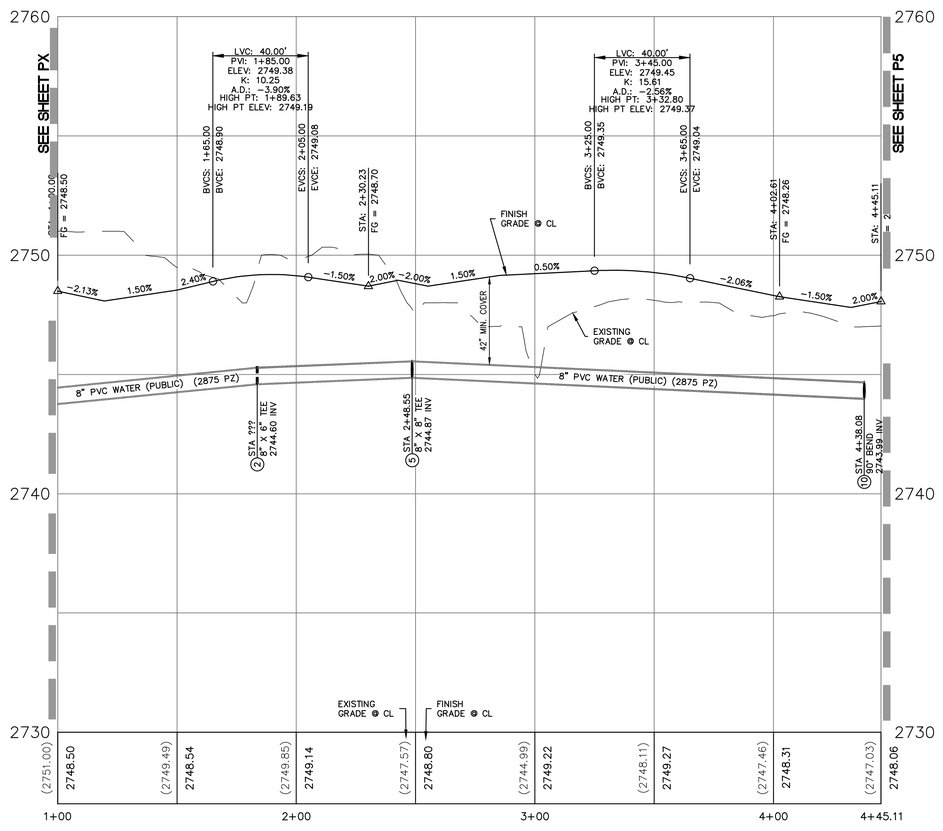
DRAWING
D4
7 OF 49 SHTS

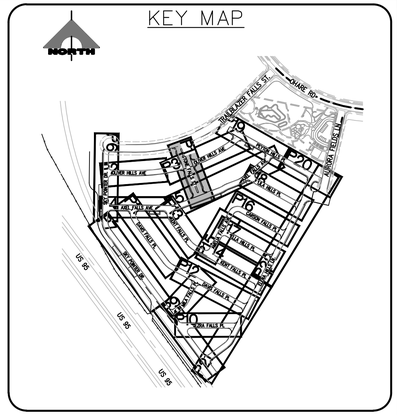


VANTAGE RIDGE AVE
(PRIVATE)

PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'





CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5" BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4" BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2" BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
or
1-800-227-2600

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

NORTH
30' 0' 15' 30' 60'
SCALE: 1" = 30'

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

L#: CLV#:

TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
STATE OF NEVADA
PROFESSIONAL ENGINEER
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:42:59

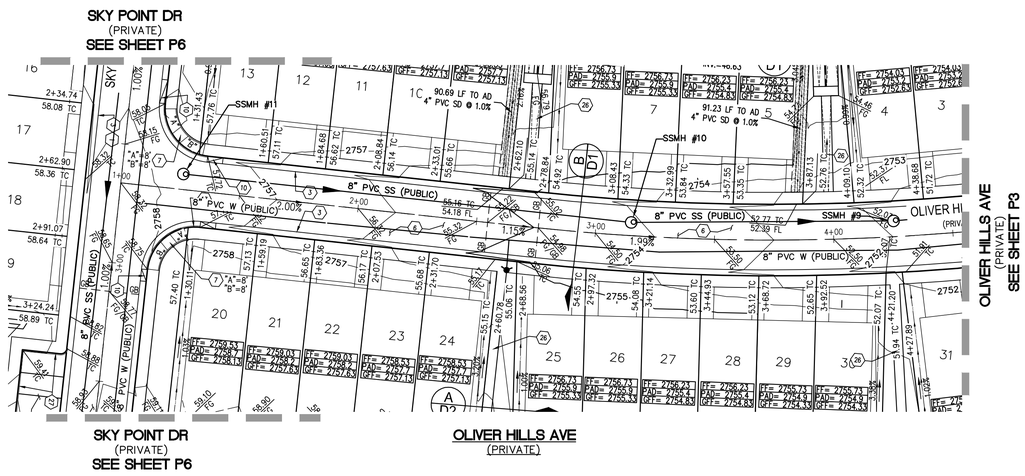
GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\800\831-016\DWG\PRODUCTION\PHASE-1\831-016P1-8.DWG
DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

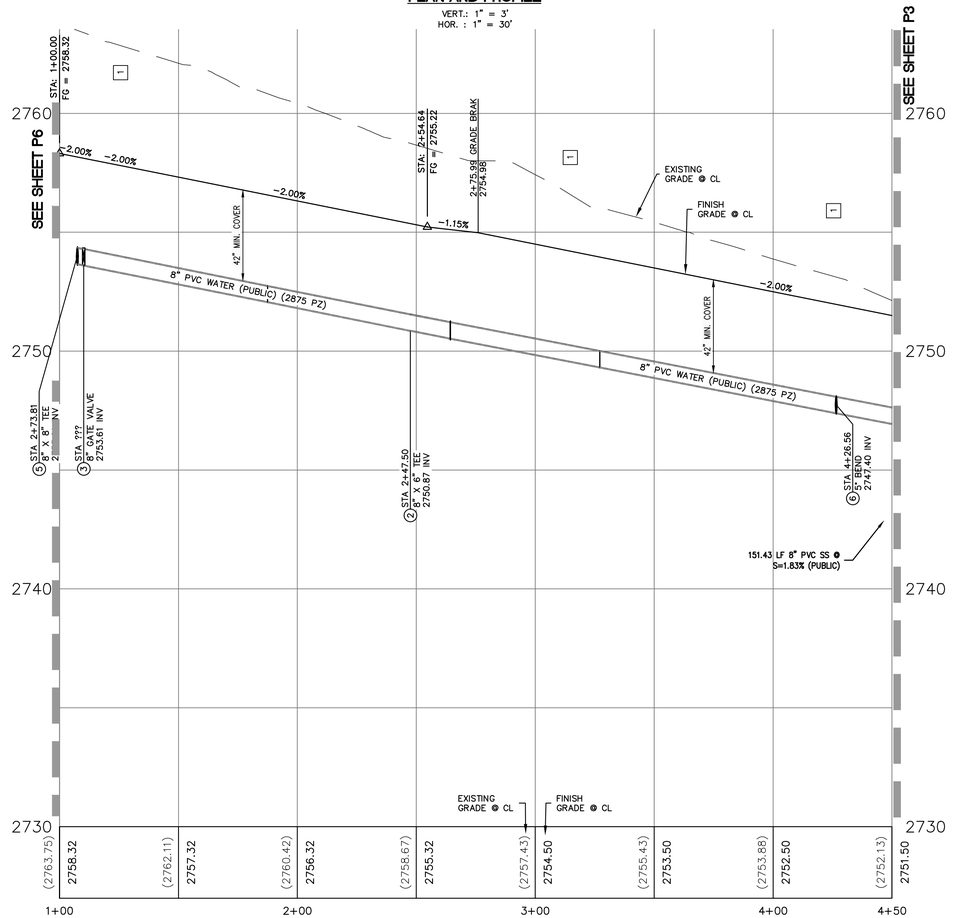
STONE FALLS ST. STA. 1+00.00 TO STA. 4+46.11
PLAN AND PROFILE

DRAWING
P1
18 OF 49 SHTS

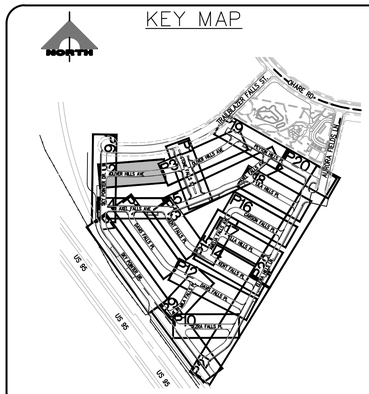


PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



KEY MAP



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15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
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17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

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SEWER CONSTRUCTION NOTES

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WATER CONSTRUCTION NOTES

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3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
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WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY

CALL BEFORE YOU DO OVERHEAD

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Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-227-2600

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

NORTH

30' 0' 15' 30' 60'

SCALE: 1" = 30'

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

L#: CLV#:

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016

DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:43:13

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

F:\PROJECTS\831\831-016\GWG\PRODUCTION\PHASE-1\831-016P1-1.DWG

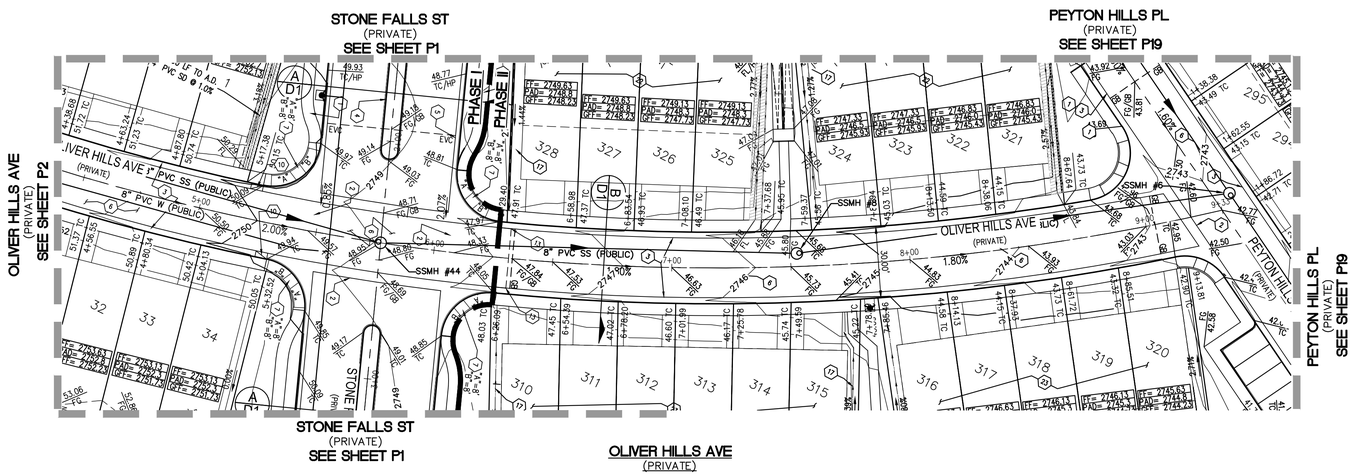
DANIEL LEE

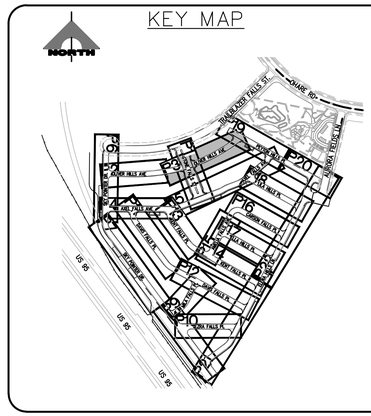
LENNAR

AXEL AT SUNSTONE (PHASE 1)

OLIVER HILLS AVE. STA. 1+00.00 TO STA.4+50.00
PLAN AND PROFILE

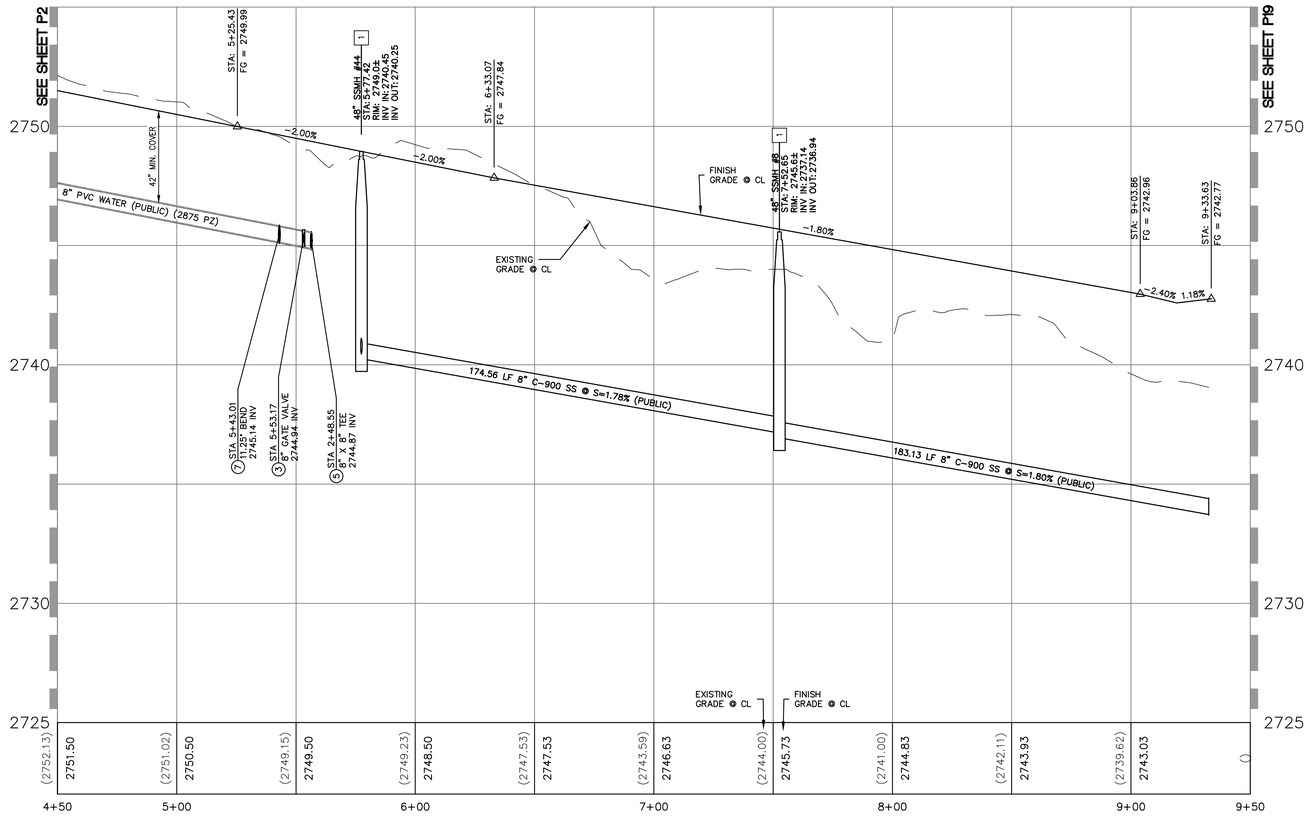
DRAWING
P2
19 OF 49 SHTS





PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
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5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
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Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
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FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

NORTH
30' 0' 15' 30' 60'
SCALE: 1" = 30'

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE: _____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

L#: CLV#:

SESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
NOT FOR CONSTRUCTION
DATE: 03/11/2022

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:43:28
DANIEL LEE

GCW ENGINEERS \ SURVEYORS
1556 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com

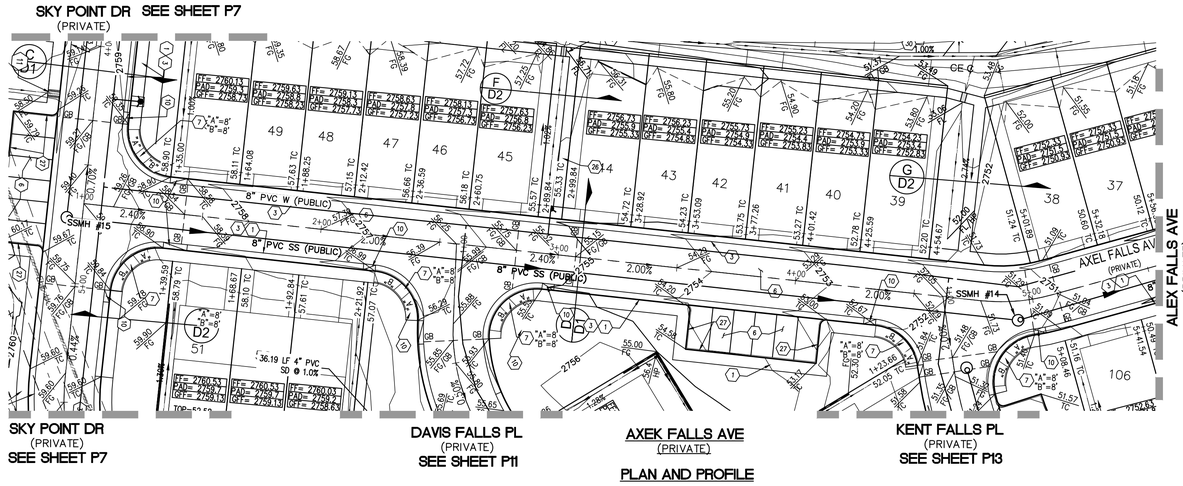
F:\PROJECTS\831-016\DWG\PRODUCTION\PHASE-1\831-016PH-1.DWG

LENNAR

AXEL AT SUNSTONE (PHASE 1)

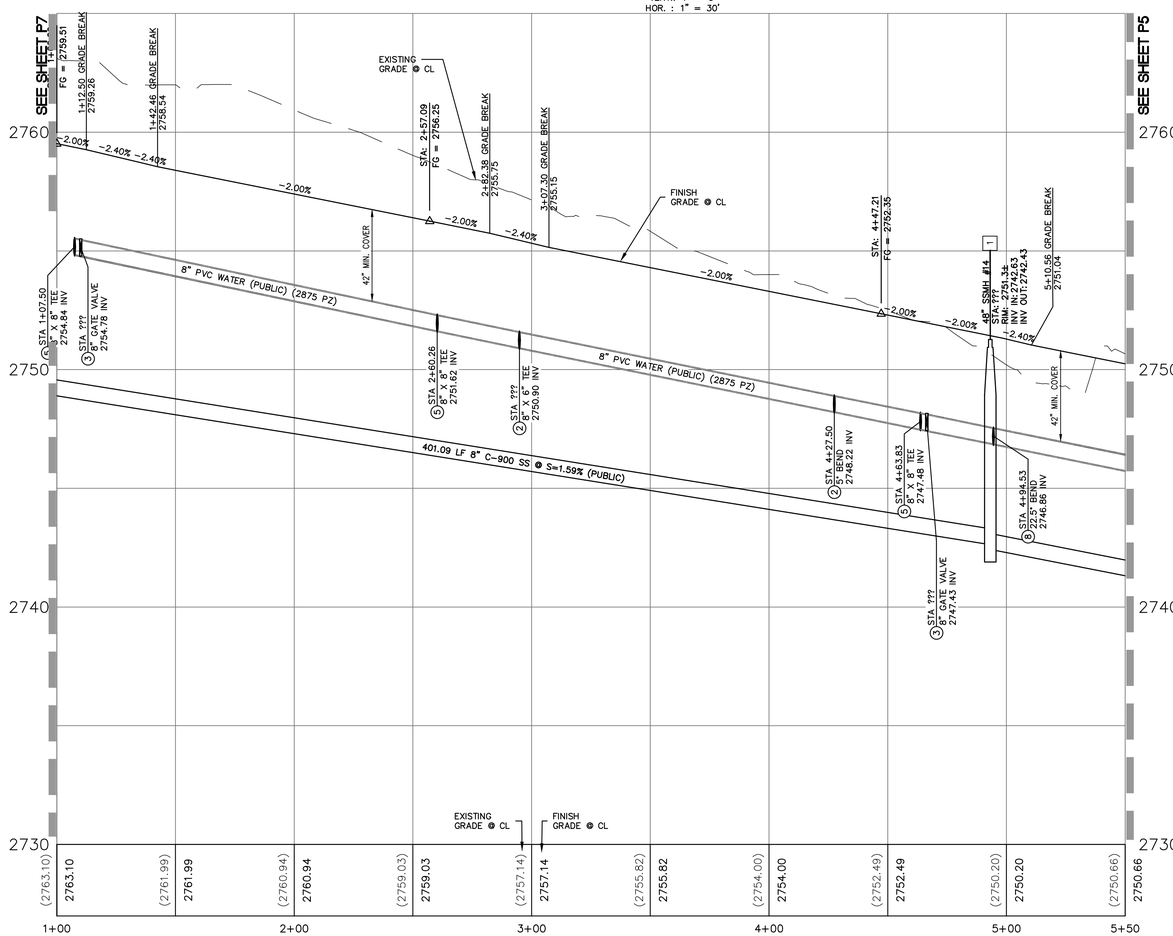
OLIVER HILLS AVE. STA. 4+50.00 TO STA. 9+33.63
PLAN AND PROFILE

DRAWING
P3
20 OF 49 SHTS

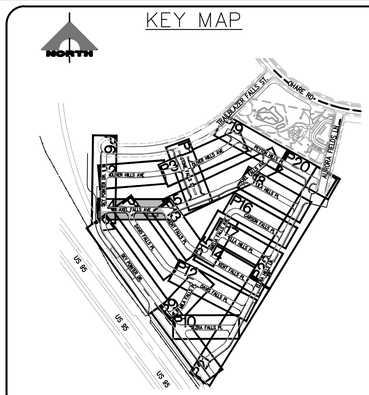


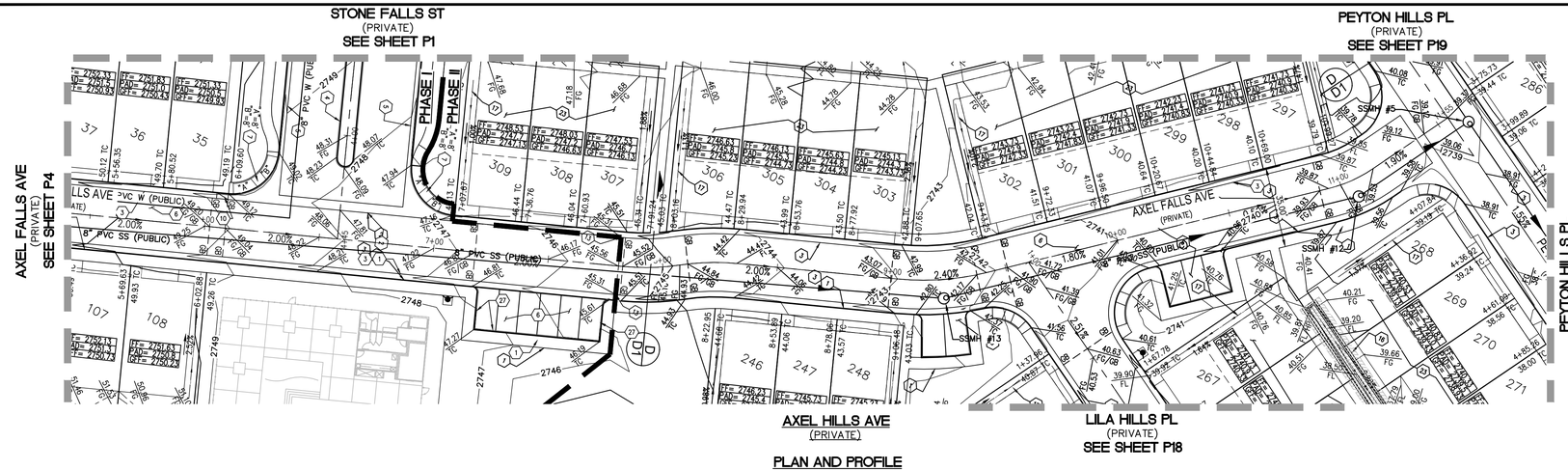
PLAN AND PROFILE

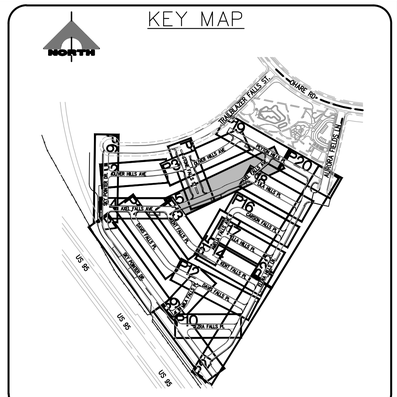
VERT.: 1" = 3'
HOR. : 1" = 30'



KEY MAP


NORTH
SILVER FALLS ST.
SQUARE INCH
SILVER FALLS AVE.
SILVER MIST AVE.
SILVER MIST PL.
SILVER MIST ST.
SILVER FALLS PL.
SILVER FALLS ST.
SILVER MIST WAY
SILVER FALLS WAY
SILVER MIST AVE.
SILVER FALLS AVE.
SILVER MIST PL.
SILVER FALLS PL.
SILVER MIST ST





PLAN AND PROFILE

VERT.: 1" = 3'
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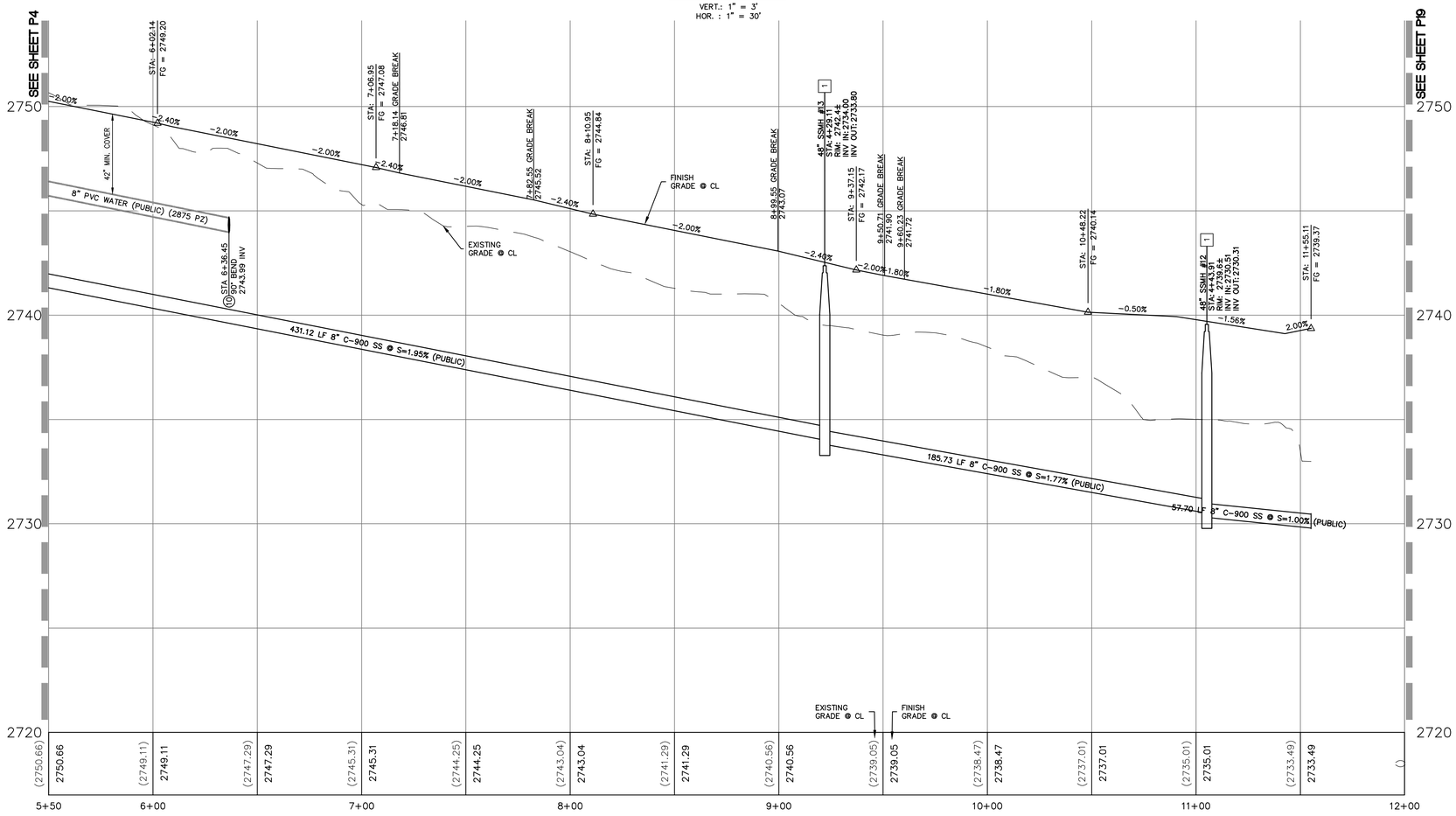

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

30' 0' 15' 30' 60'

SCALE: 1" = 30'

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

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BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE: _____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 30 GPM

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5" BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
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10. INSTALL 90" BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

NORTH

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR 1-800-227-2600

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

NOT FOR CONSTRUCTION
DATE: 03/11/2022

PROFESSIONAL ENGINEER
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:43:58
DANIEL LEE

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
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F:\PROJECTS\800\831-016\DWG\PRODUCTION\PHASE-1\831-016PH-1.DWG

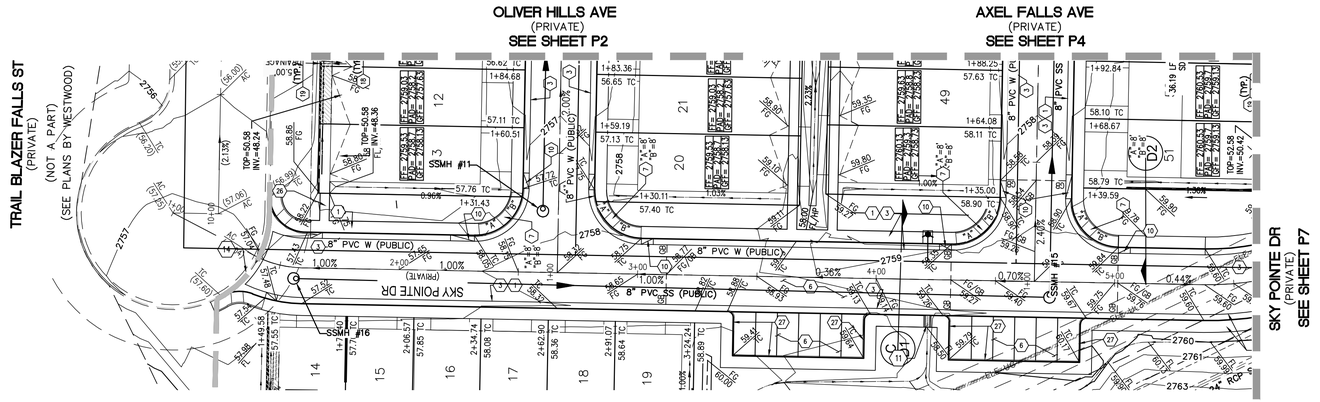
LENNAR

AXEL AT SUNSTONE (PHASE 1)

AXEL FALLS AVE. STA. 5+50.00 TO STA. 11+55.11
PLAN AND PROFILE

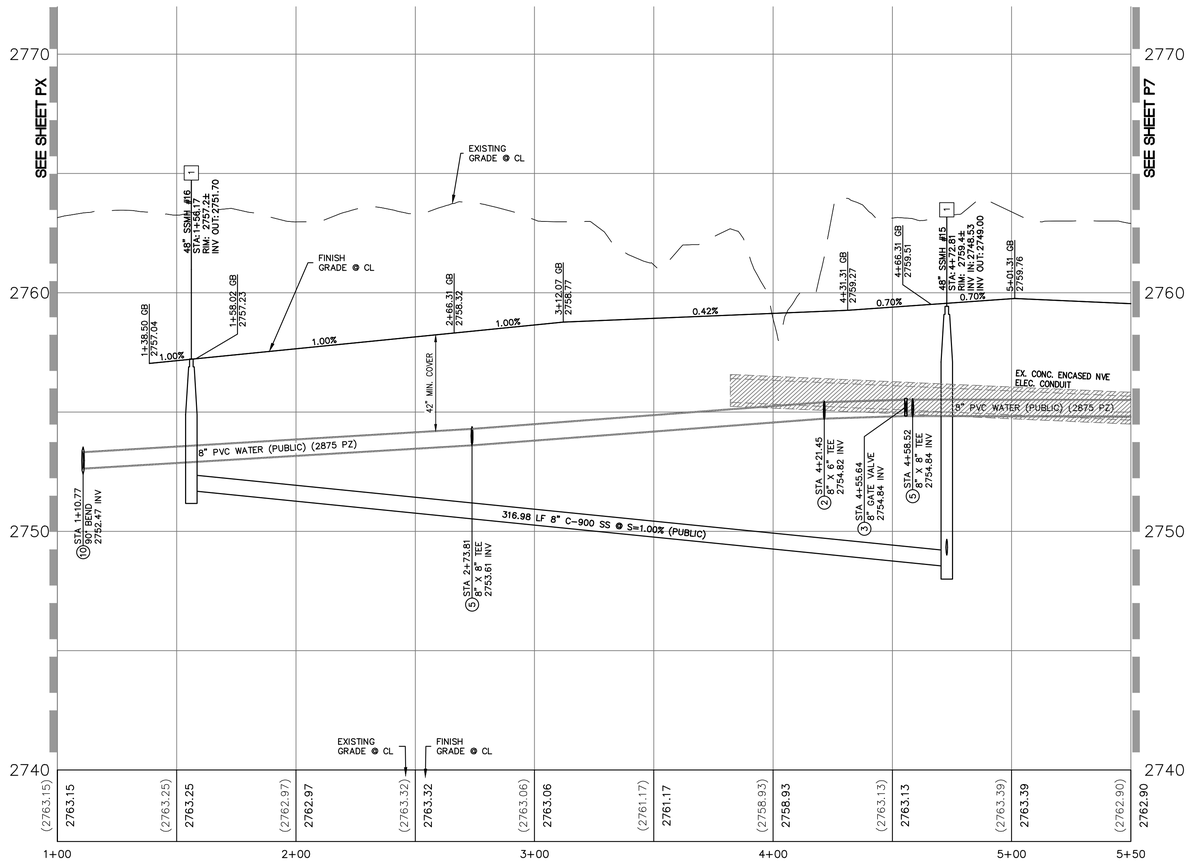
DRAWING
P5
?? OF 49 SHTS

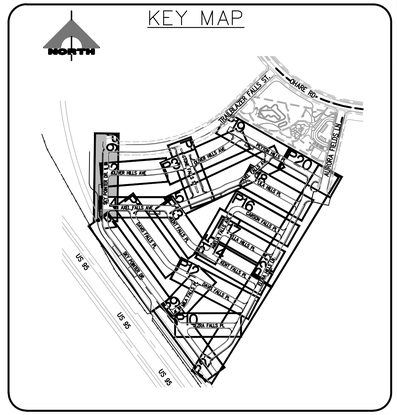
L#: CLV#:



SKY POINTE DR
(PRIVATE)

PLAN AND PROFILE
VERT.: 1" = 3'
HOR. : 1" = 30'





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LEGEND:

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BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

SESSIONAL ENGINEER
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
STATE OF NEVADA
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:46:14

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

F:\PROJECTS\831\831-016\GWC\PRODUCTION\PHASE-1\831-016SP1-1-B.DWG
DANIEL LEE

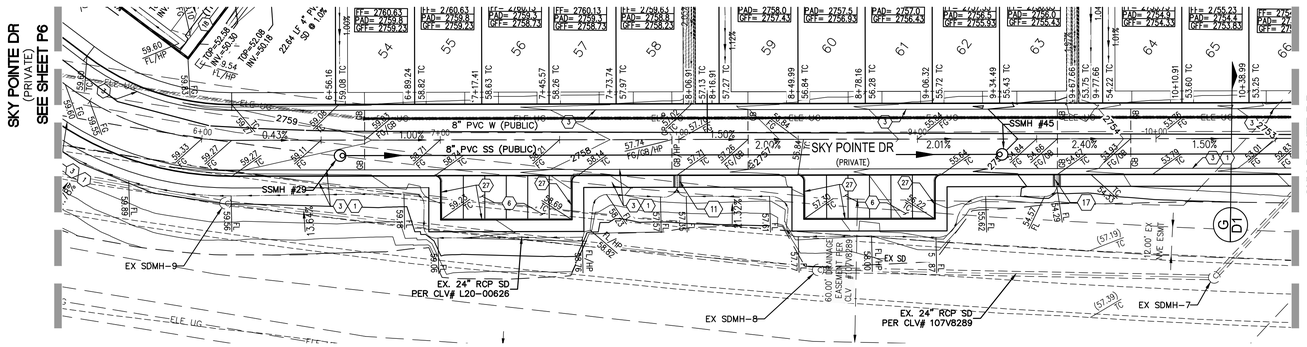
LENNAR

AXEL AT SUNSTONE (PHASE 1)

SKY POINTE DR. STA. 1+00.00 TO STA. 5+50.00
PLAN AND PROFILE

DRAWING
P6
23 OF 49 SHTS

L#: CLV#:

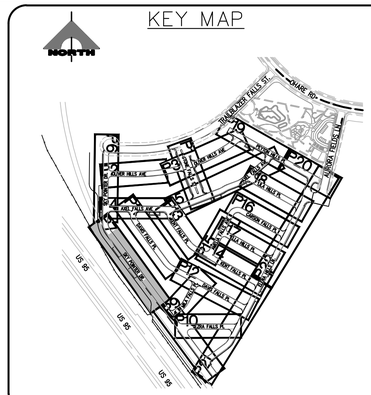


SKY POINTE DR
(PRIVATE)

PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'

KEY MAP



CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR 1-800-227-2600

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

NORTH
30' 0' 15' 30' 60'
SCALE: 1" = 30'

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE: _____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

L#: CLV#:

PROFESSIONAL ENGINEER
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
STATE OF NEVADA
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:46:29

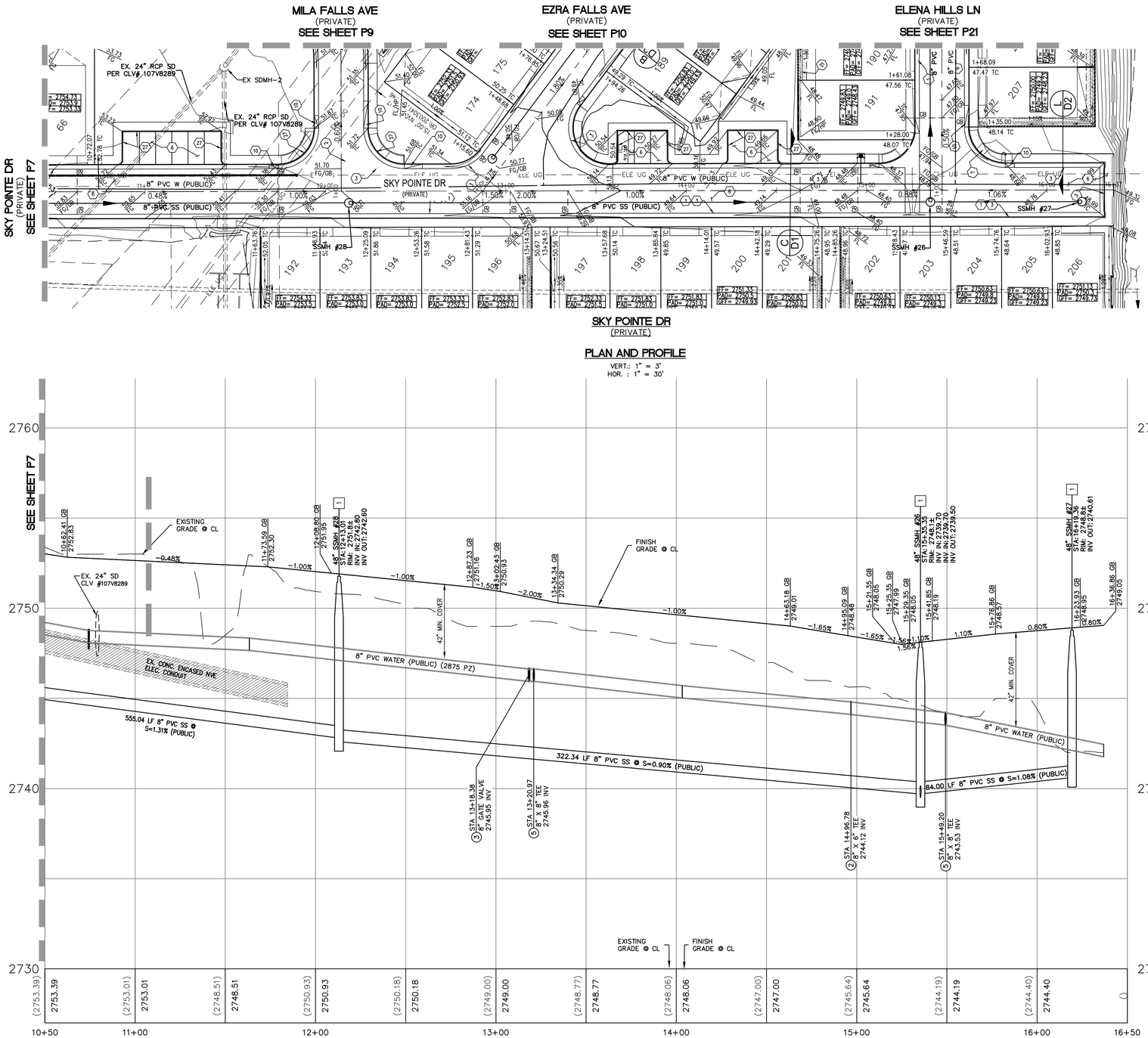
GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\800\831-016\GWV\PRODUCTION\PHASE-1\831-016CPT-B.DWG
DANIEL LEE

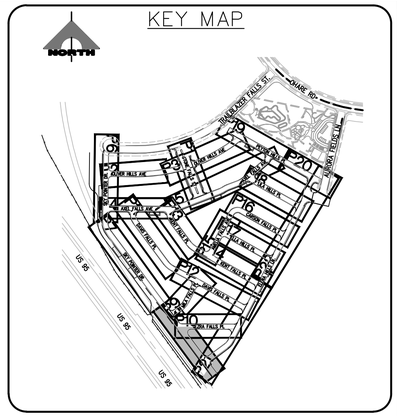
LENNAR

AXEL AT SUNSTONE (PHASE 1)

SKY POINTE DR. STA. 5+50.00 TO STA. 10+50.00
PLAN AND PROFILE

DRAWING
P7
24 OF 49 SHTS





CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
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4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
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14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

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3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:46:44

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

F:\PROJECTS\831\831-016\GWC\PRODUCTION\PHASE-1\831-016SP1-1-8.DWG
DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

SKY POINTE DR. STA. 10+50.00 TO STA. 16+36.86
PLAN AND PROFILE

DRAWING
P8
25 OF 49 SHTS

L#: CLV#:

NORTH

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

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

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BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

30' 0' 15' 30' 60'
SCALE: 1" = 30'

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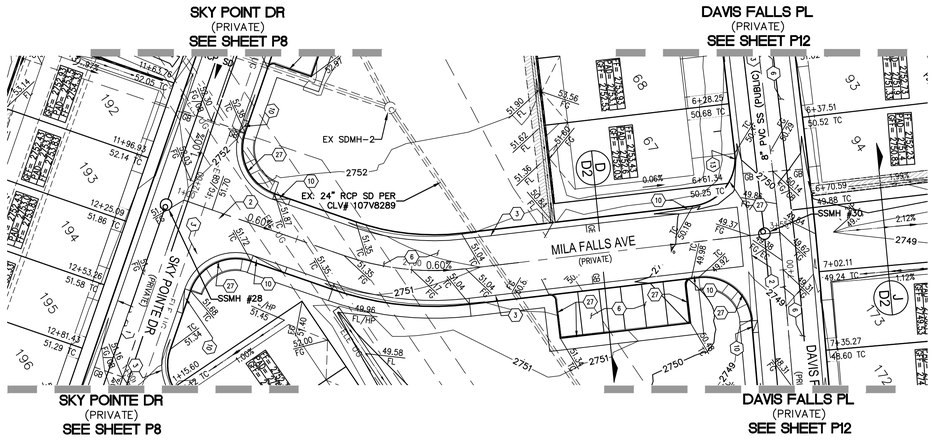
NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

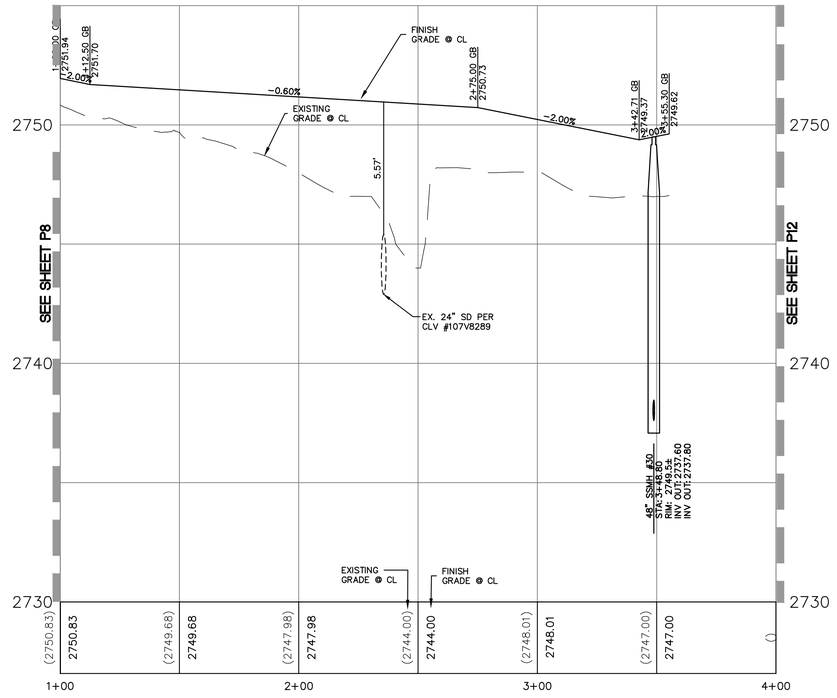
LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

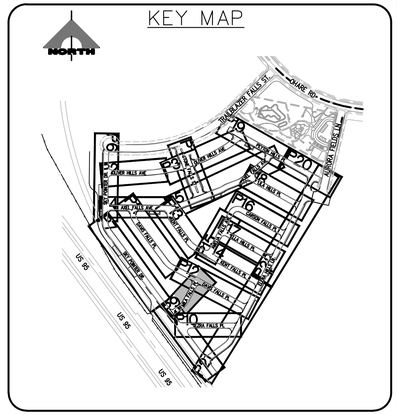
PROJECT NO._____ FIRST APPROVED DATE:_____
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ____30____ GPM



MILA FALLS AVE
(PRIVATE)

PLAN AND PROFILE
VERT.: 1" = 3'
HOR. : 1" = 30'





CONSTRUCTION NOTES

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16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
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5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
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WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
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Call before you Dig
Avoid cutting underground utility lines. It's costly.
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FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

NORTH
30' 0' 15' 30' 60'
SCALE: 1" = 30'

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

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BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

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BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

SESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:49:24
DANIEL LEE

GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\800\831-016\DWG\PRODUCTION\PHASE-1\831-016PS9-16.DWG

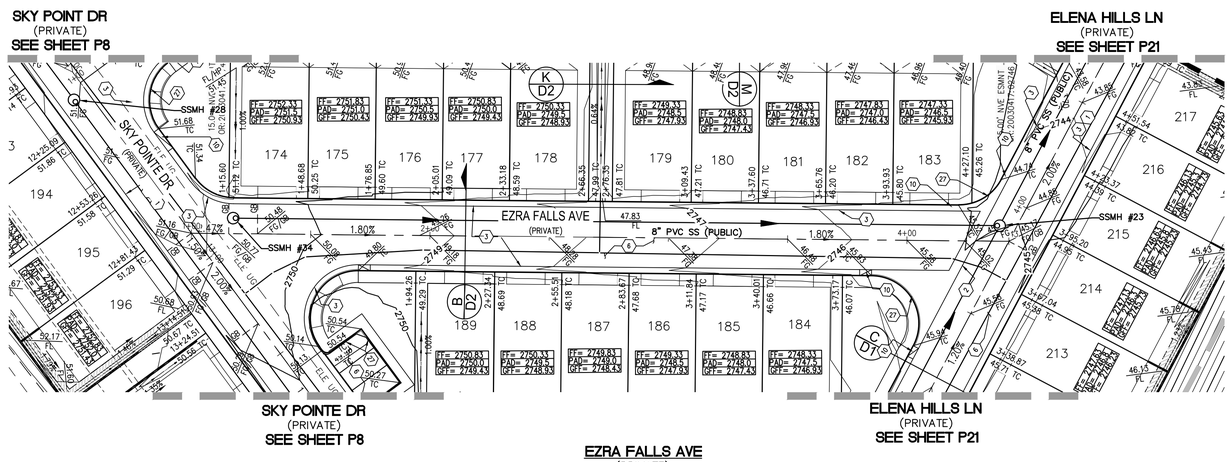
LENNAR

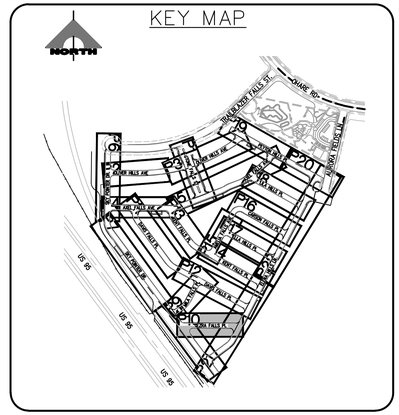
AXEL AT SUNSTONE (PHASE 1)

MILA FALLS AVE. STA. 1+00.00 TO STA. 3+55.30
PLAN AND PROFILE

DRAWING
P9
?? OF 49 SHTS

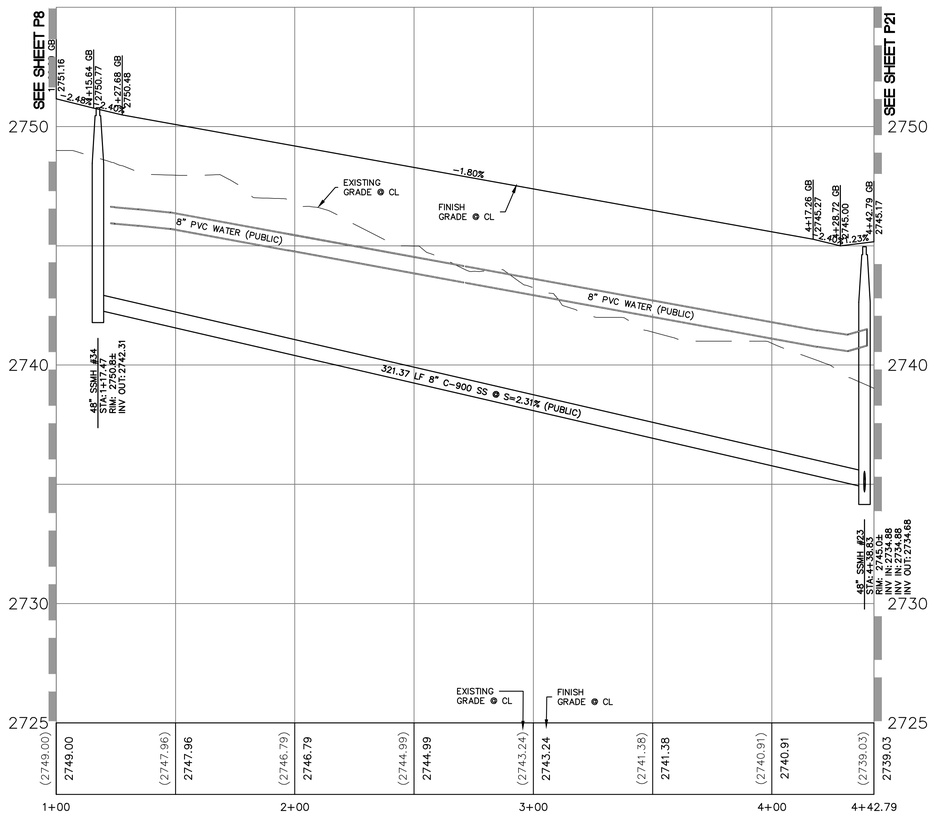
L#: CLV#:

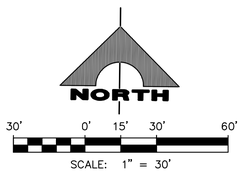




EZRA FALLS AVE
(PRIVATE)

PLAN AND PROFILE
VERT.: 1" = 3'
HOR. : 1" = 30'





LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

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NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

L#: CLV#:

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:49:38

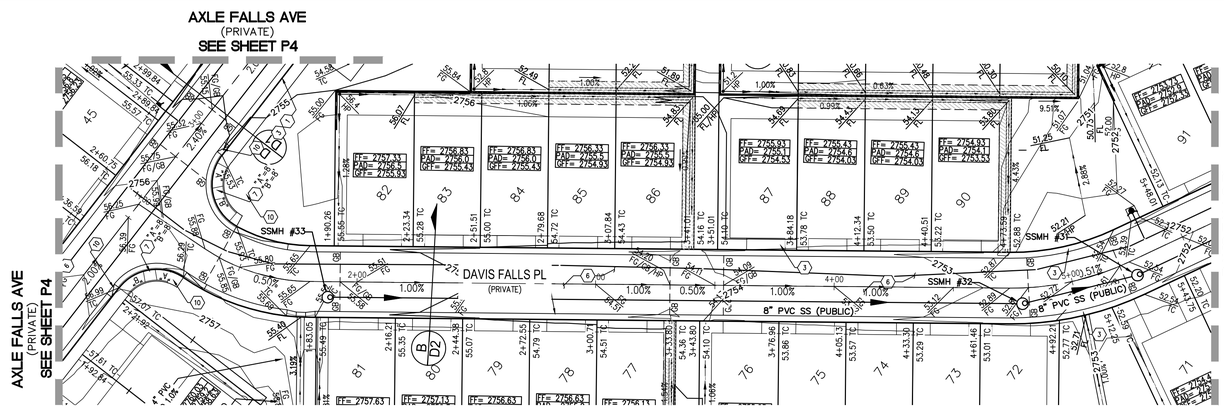
GCW
ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\800\831-016\DWG\PRODUCTION\PHASE-1\831-016CPSH-16.DWG
DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

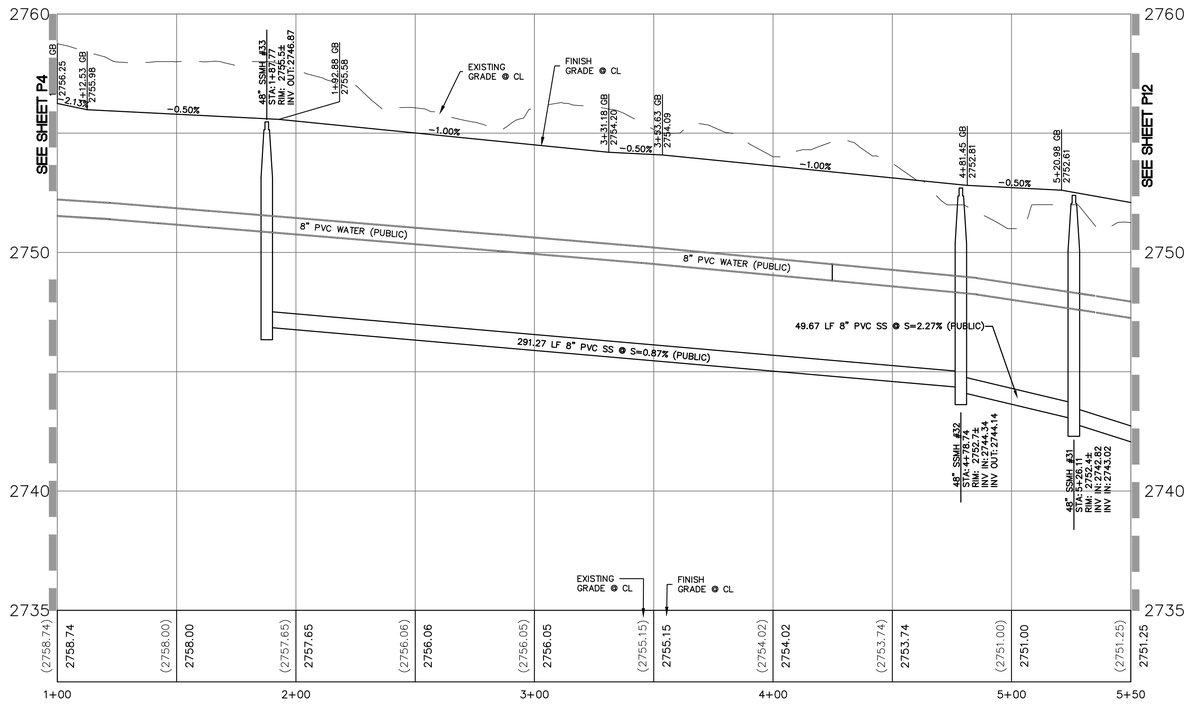
EZRA FALLS AVE. STA. 1+00.00 TO STA. 4+42.79
PLAN AND PROFILE

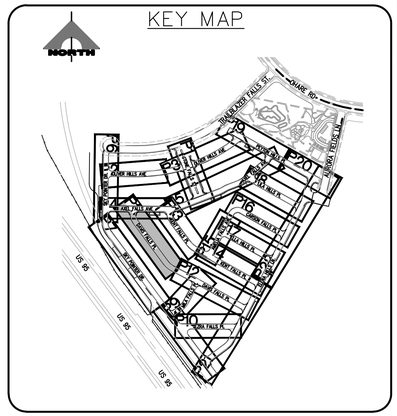
DRAWING
P10
?? OF 49 SHTS



DAVIS FALLS PL
(PRIVATE)

PLAN AND PROFILE
VERT.: 1" = 3'
HOR. : 1" = 30'





CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-227-2600

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

NORTH
30' 0' 15' 30' 60'
SCALE: 1" = 30'

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE: _____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

L#: CLV#:

SESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:49:54

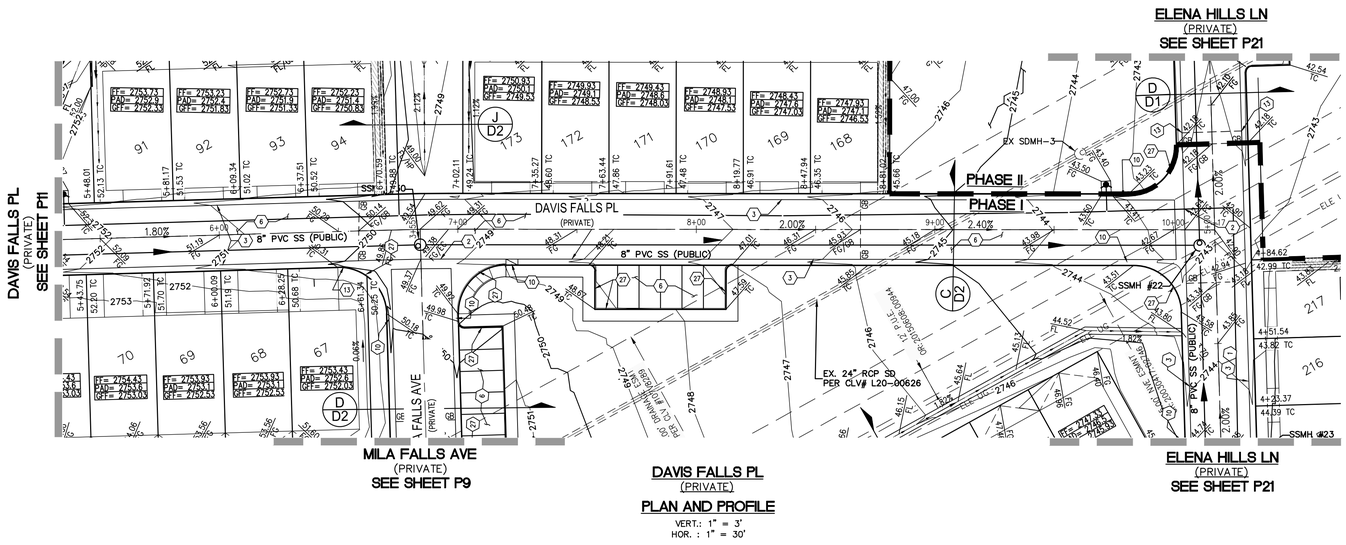
GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
DANIEL LEE
F:\PROJECTS\800\831-016\LVVWD\PRODUCTION\PHASE-1\831-016CP9-16.DWG

LENNAR

AXEL AT SUNSTONE (PHASE 1)

DAVIS FALLS PL. STA. 1+00.00 TO STA. 5+50.00
PLAN AND PROFILE

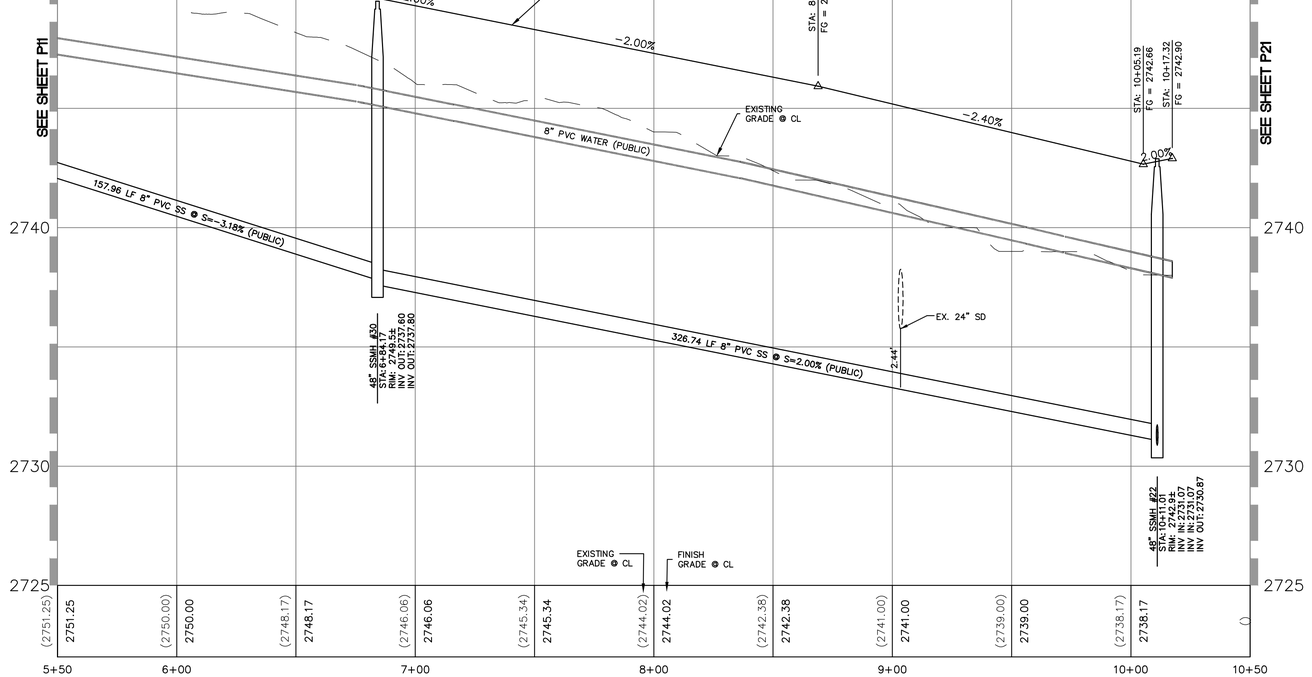
DRAWING
P11
?? OF 49 SHTS



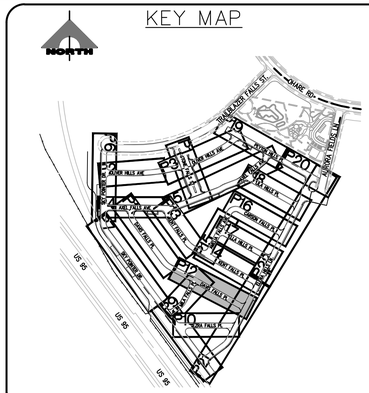
DAVIS FALLS PL
(PRIVATE)

PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



KEY MAP



CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER UDSCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 or 1-800-227-2600

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

NORTH
30' 0' 15' 30' 60'
SCALE: 1" = 30'

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

L#: CLV#:

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:50:09

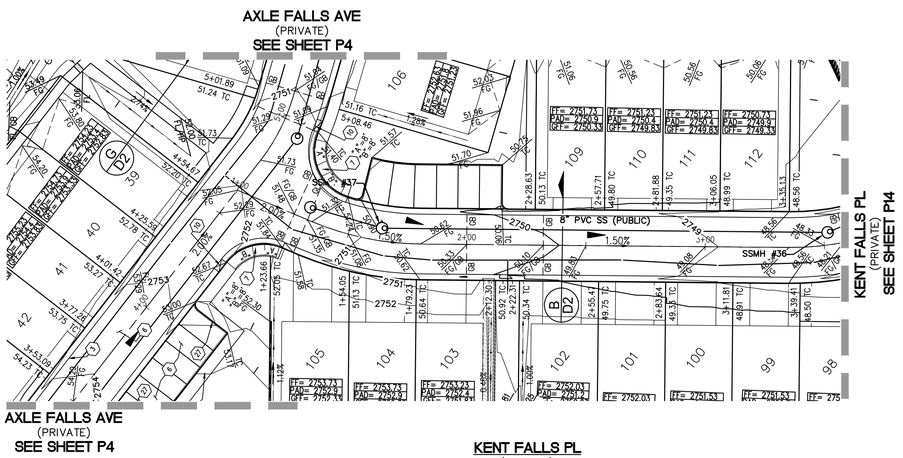
GCW
ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\831\01-016\GWC\PRODUCTION\PHASE-1\831-016CP9-16.DWG
DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

DAVIS FALLS PL. STA. 5+50.00 TO STA. 10+17.32
PLAN AND PROFILE

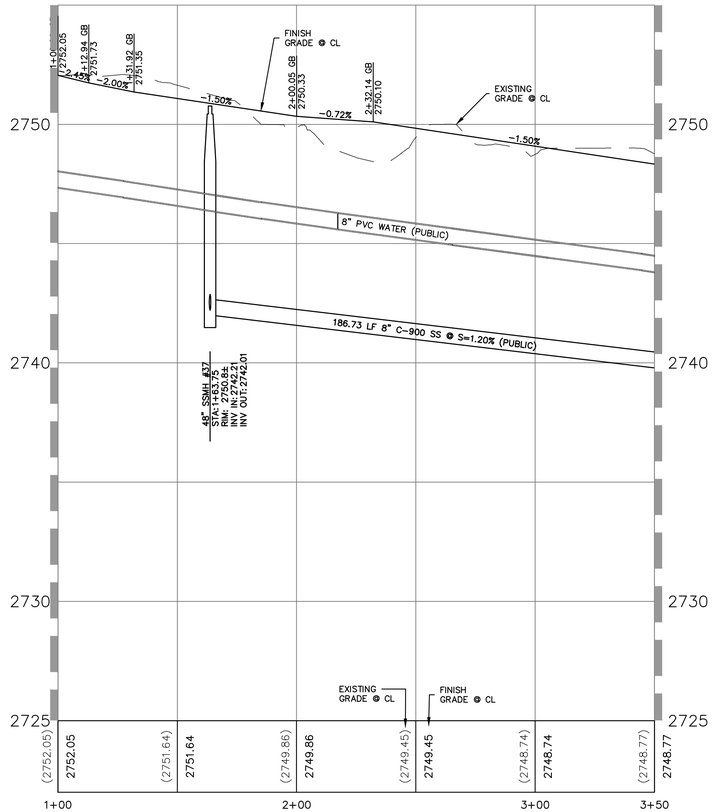
DRAWING
P12
?? OF 49 SHTS

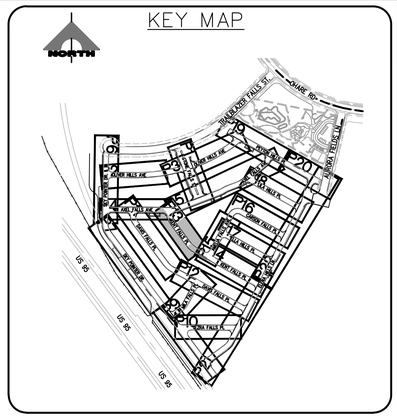


KENT FALLS PL
(PRIVATE)

PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'





CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
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4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
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WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY

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Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
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FAST
Call before you
UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

NORTH

30' 0' 15' 30' 60'

SCALE: 1" = 30'

LEGEND:

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BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

L#: CLV#:

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 831-016

DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:50:24

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

F:\PROJECTS\831\A31-01E\CIVIL\PRODUCTION\PHASE-1\A31-01EPH1-16.DWG

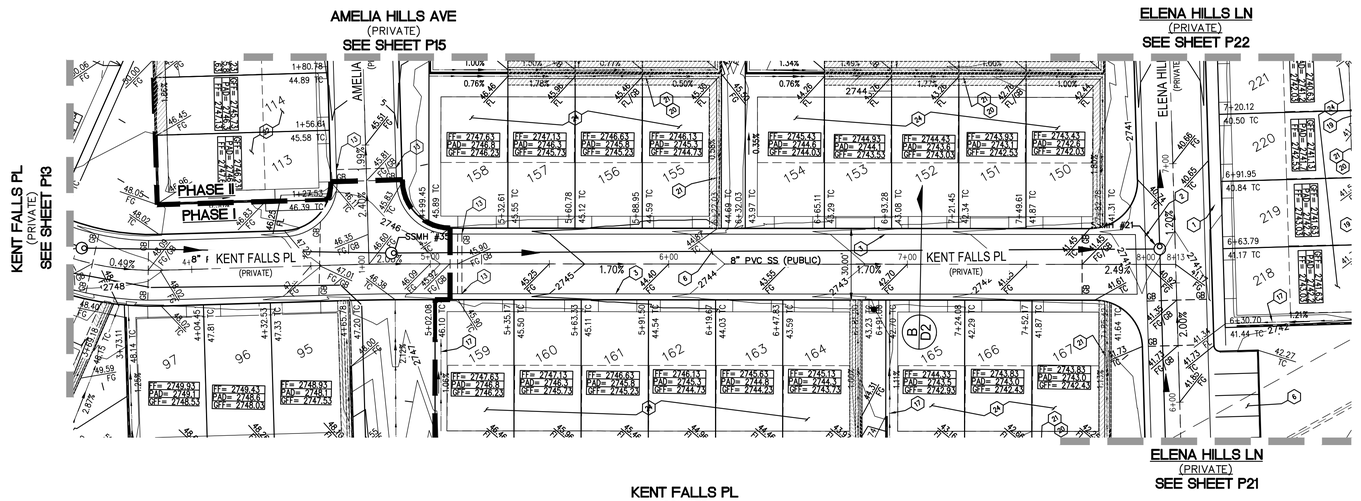
DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

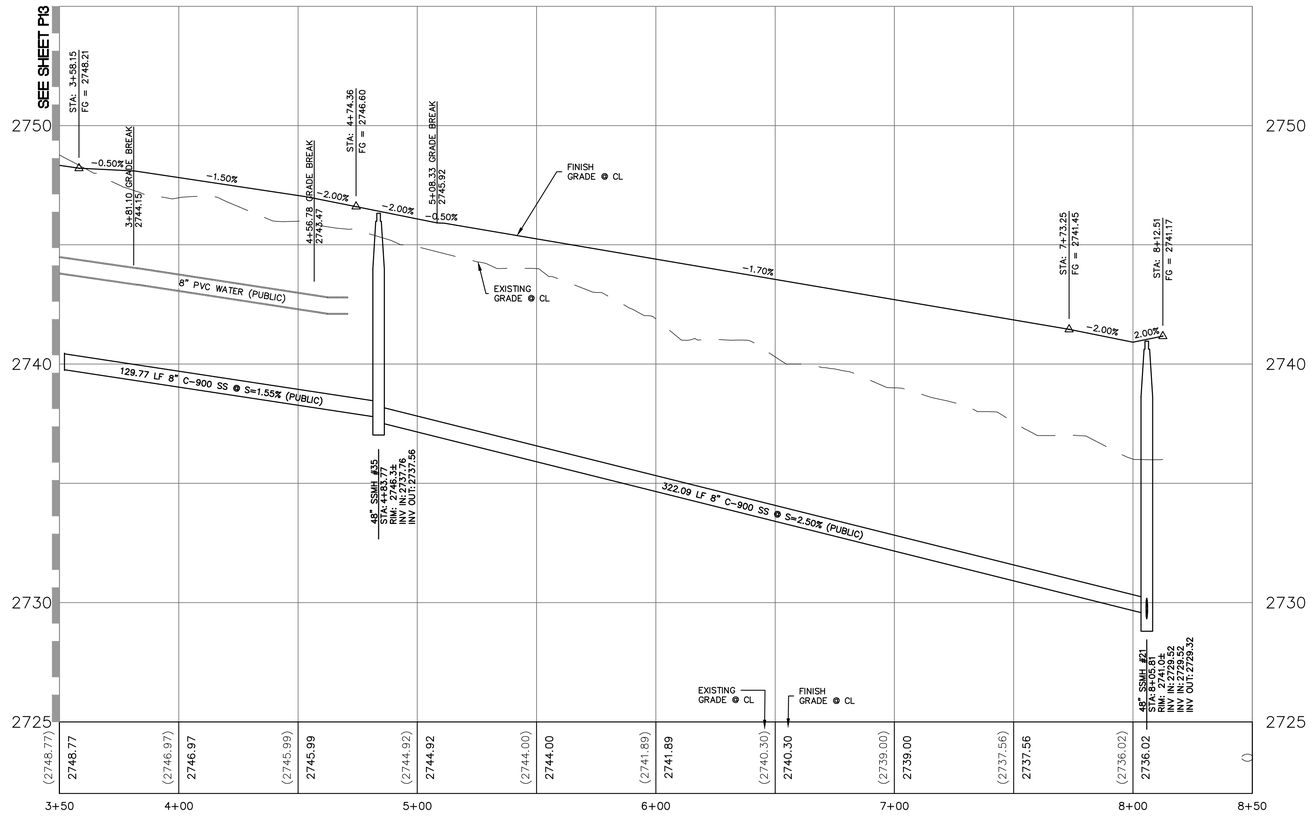
KENT FALLS PL. STA. 1+00.00 TO STA. 3+50.00
PLAN AND PROFILE

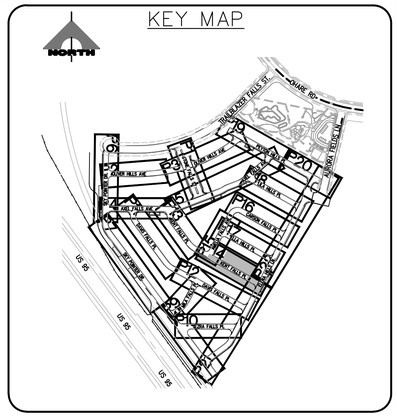
DRAWING
P13
?? OF 49 SHTS



KENT FALLS PL
(PRIVATE)
PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'





CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

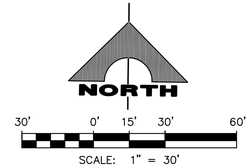
1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-227-2600

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



LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO. _____ FIRST APPROVED DATE: _____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

L#: CLV#:

TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
PROFESSIONAL ENGINEER
STATE OF NEVADA
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:50:39

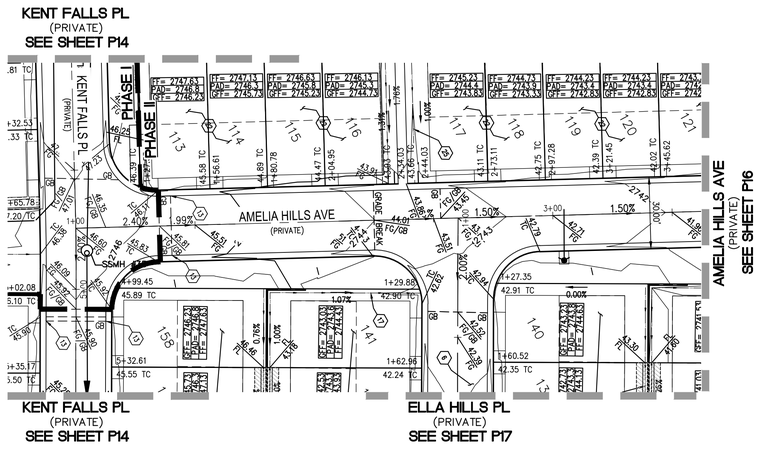
GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\800\831-016\DWG\PRODUCTION\PHASE-I\831-016P9-16.DWG
DANIEL LEE

LENNAR

AXEL AT SUNSTONE (PHASE 1)

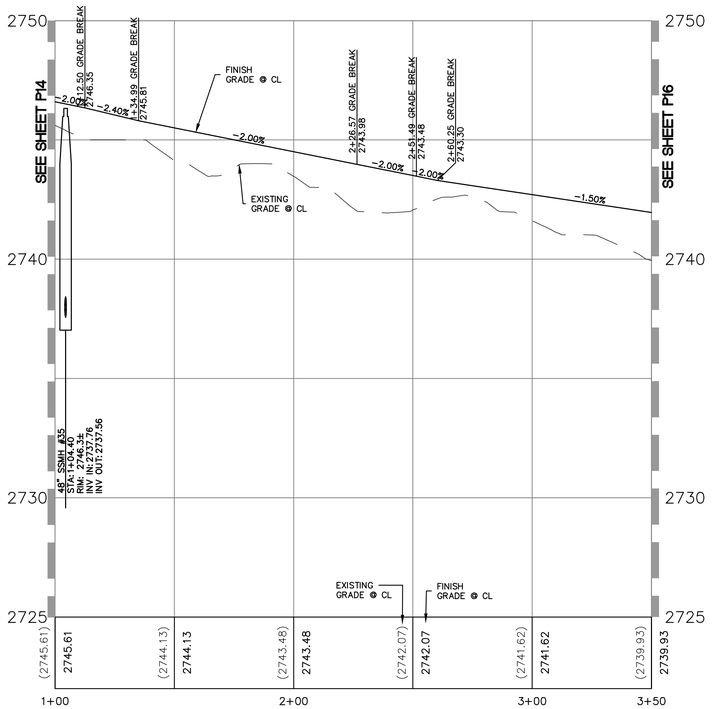
KENT FALLS PL. STA. 3+50.00 TO STA. 8+12.51
PLAN AND PROFILE

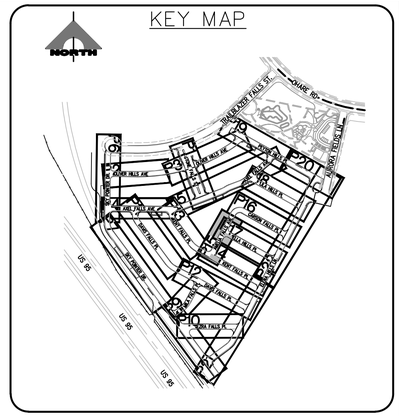
DRAWING
P14
?? OF 49 SHTS



AMELIA HILLS AVE
(PRIVATE)

PLAN AND PROFILE
VERT.: 1" = 3'
HOR. : 1" = 30'





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16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

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

NORTH
30' 0' 15' 30' 60'
SCALE: 1" = 30'

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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BENCHMARK:

MONUMENT ID: USDA (1934) 19

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REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

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DESIGN: GCW
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CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:50:54
DANIEL LEE

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

F:\PROJECTS\800\831-016\GWC\PRODUCTION\PHASE-1\831-016PH1-16.DWG

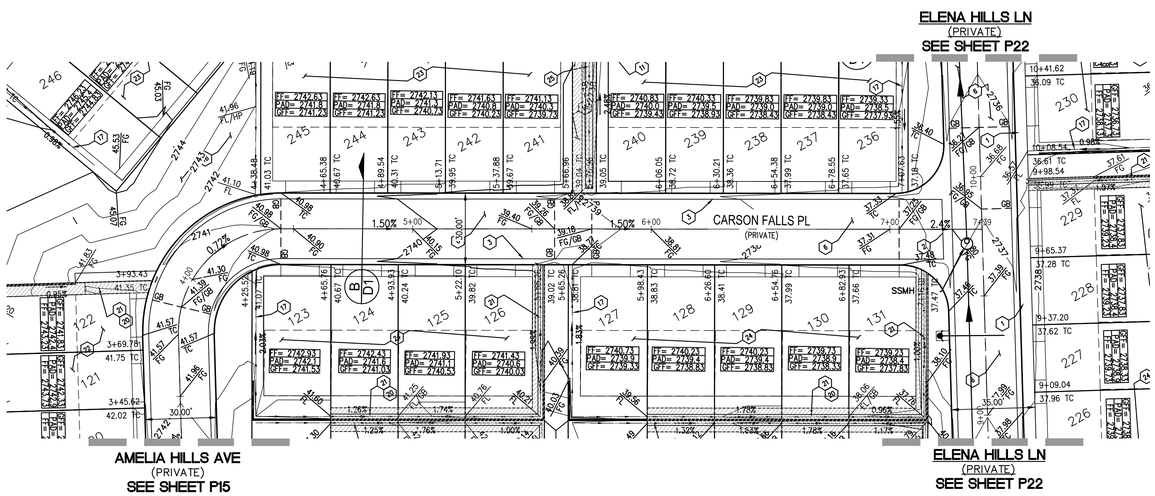
LENNAR

AXEL AT SUNSTONE (PHASE 1)

AMELIA HILLS AVE. STA. 1+00.00 TO STA. 3+50.00
PLAN AND PROFILE

DRAWING
P15
?? OF 49 SHTS

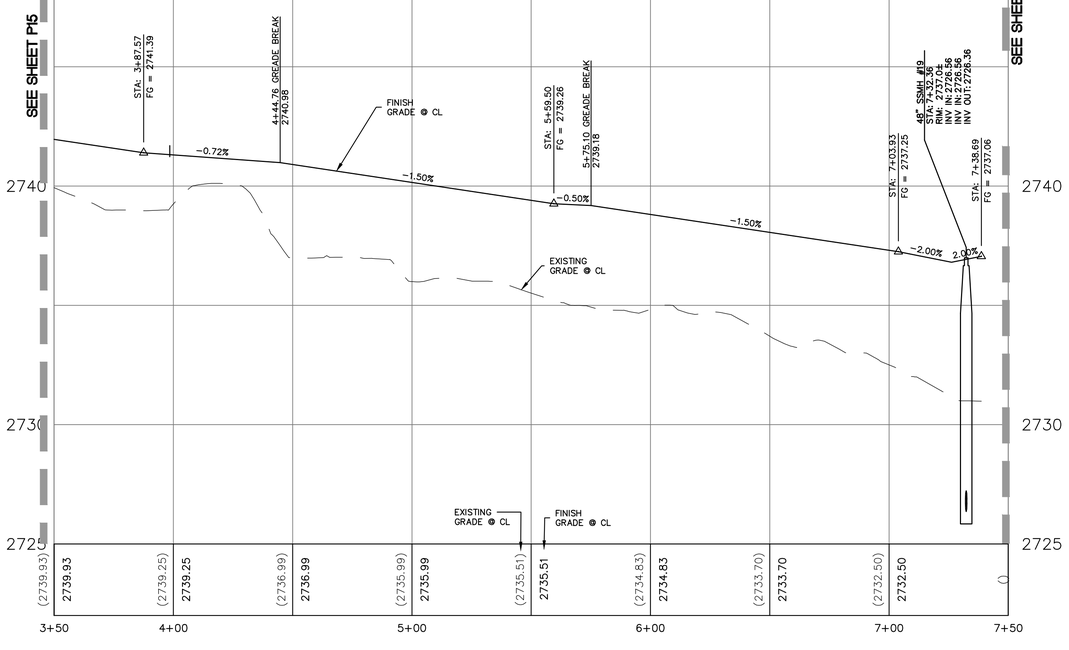
L#: CLV#:



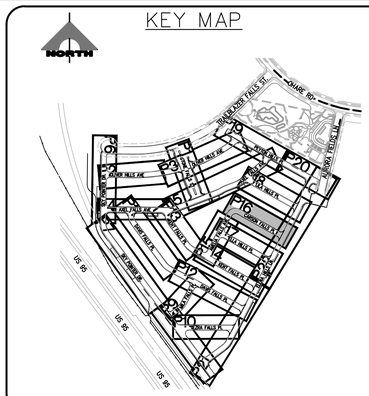
CARSON FALLS PL
(PRIVATE)

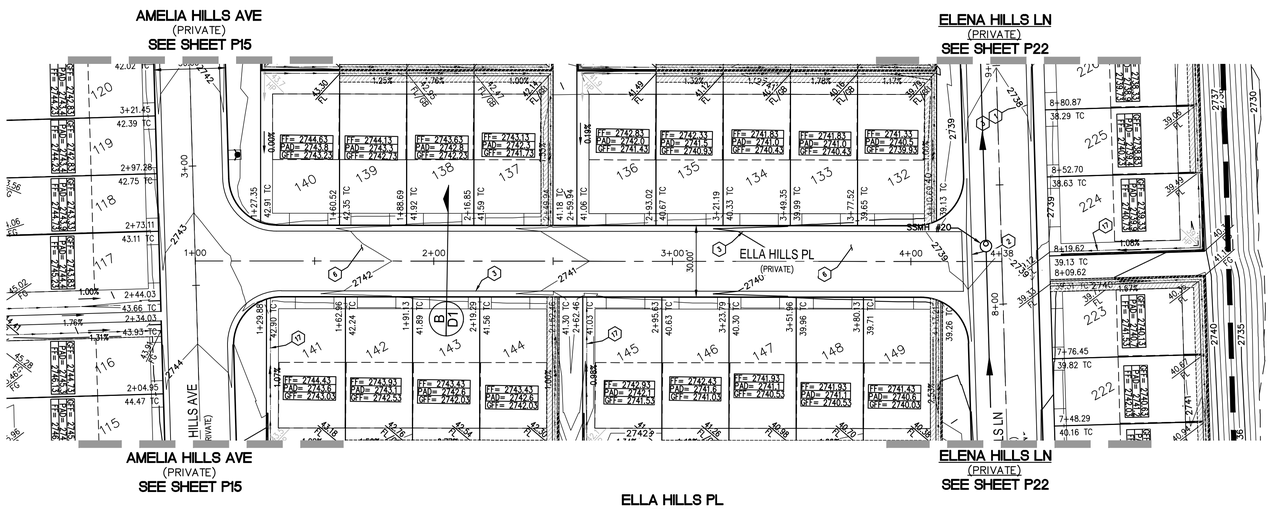
PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



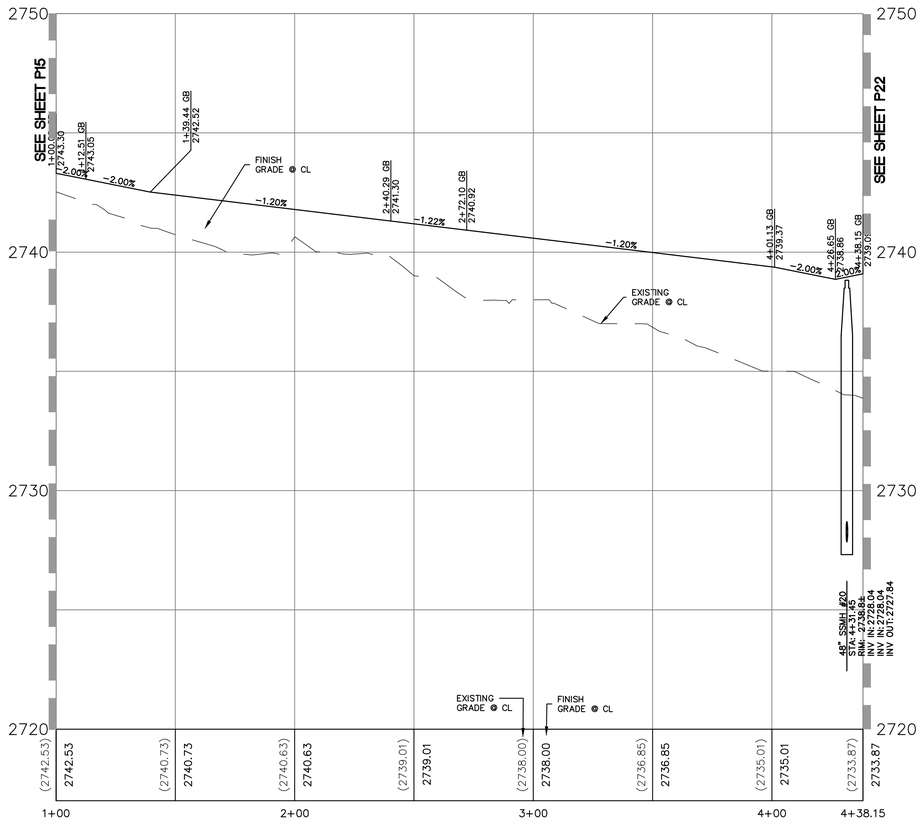
KEY MAP

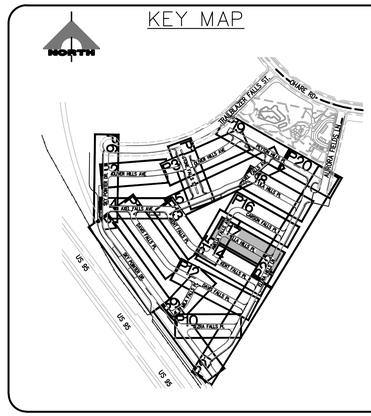

NORTH
SILVER FALLS ST.
SQUARE RD.
SILVER MILLS AVE.
SILVER FALLS AVE.
SILVER MILLS ST.
SILVER FALLS ST

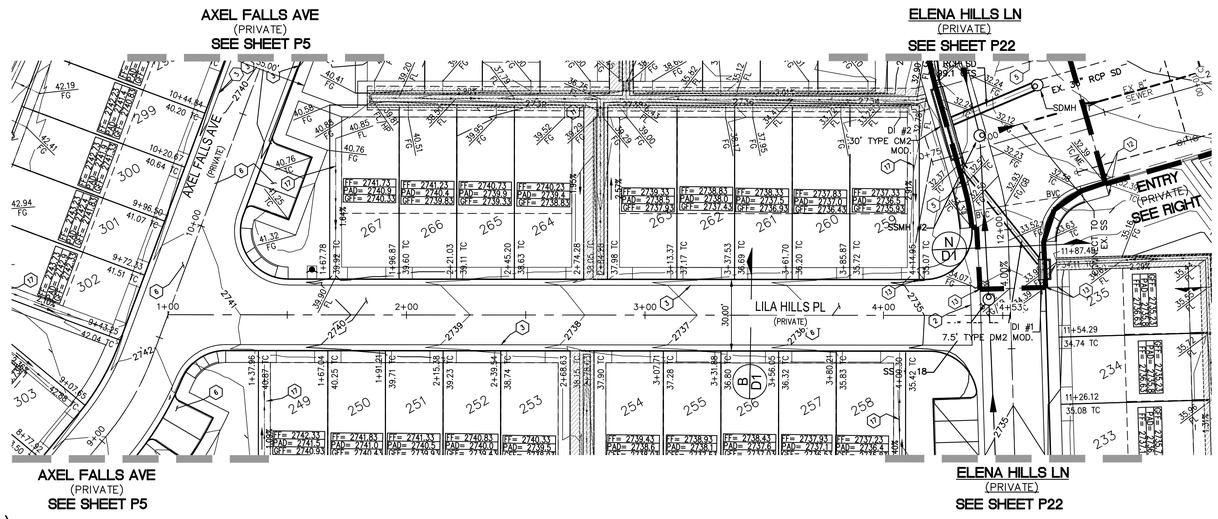


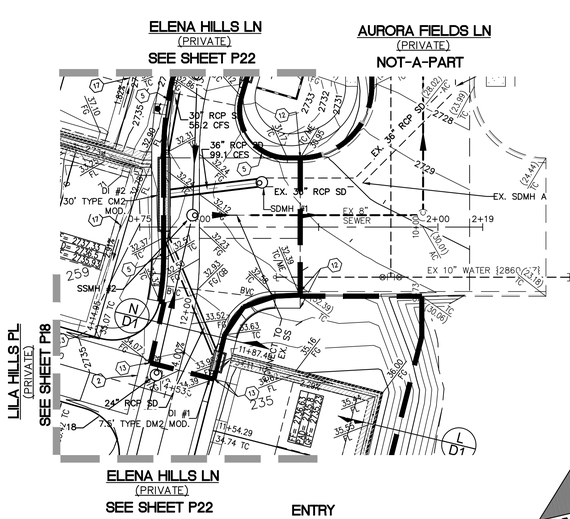
ELLA HILLS PL
(PRIVATE)
PLAN AND PROFILE

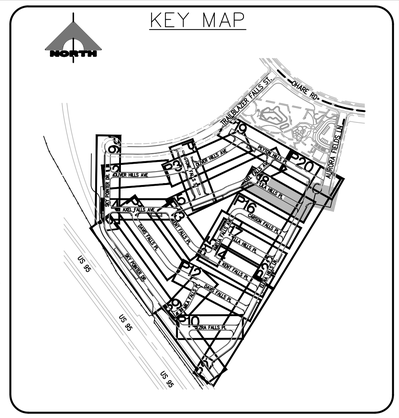
VERT.: 1" = 3'
HOR. : 1" = 30'




KEY MAP
NORTH
SILVER FALLS ST.
SQUARE RD.
SILVER MILE AVE.
SILVER MILE PL.
SILVER MILE WY.
SILVER FALLS PL.
SILVER FALLS WY.
SILVER FALLS ST.
SILVER FALLS AVE.
SILVER FALLS DR.
SILVER FALLS CT.
SILVER FALLS WY.
SILVER FALLS PL.
SILVER FALLS AVE.
SILVER FALLS ST

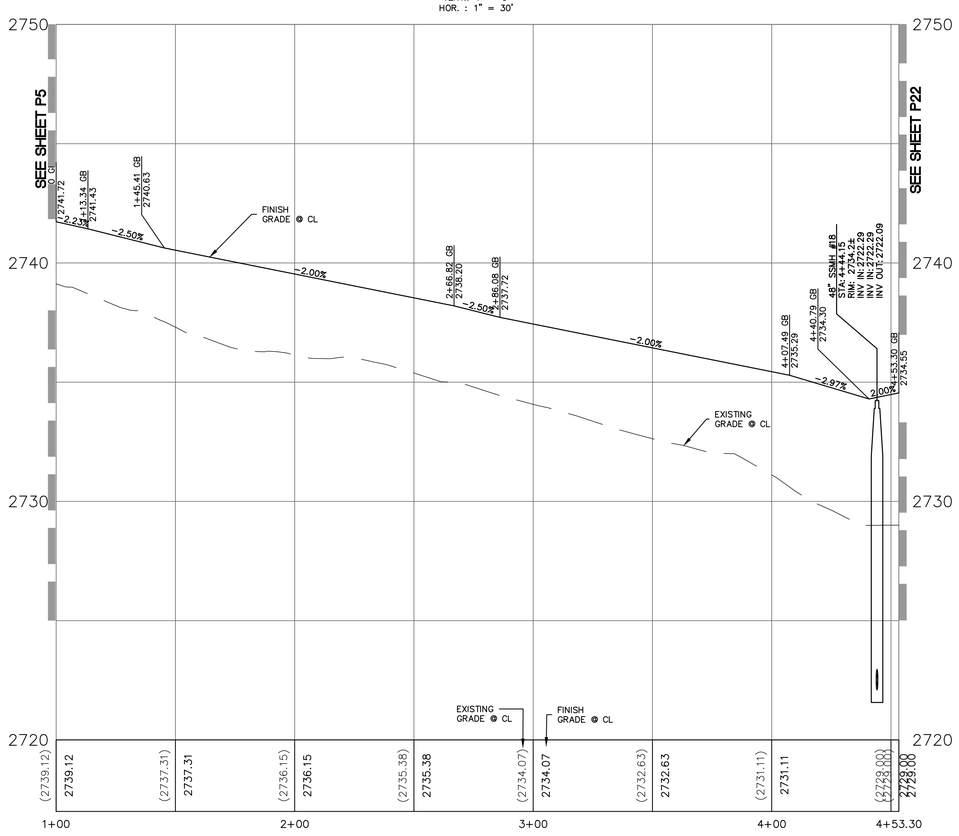




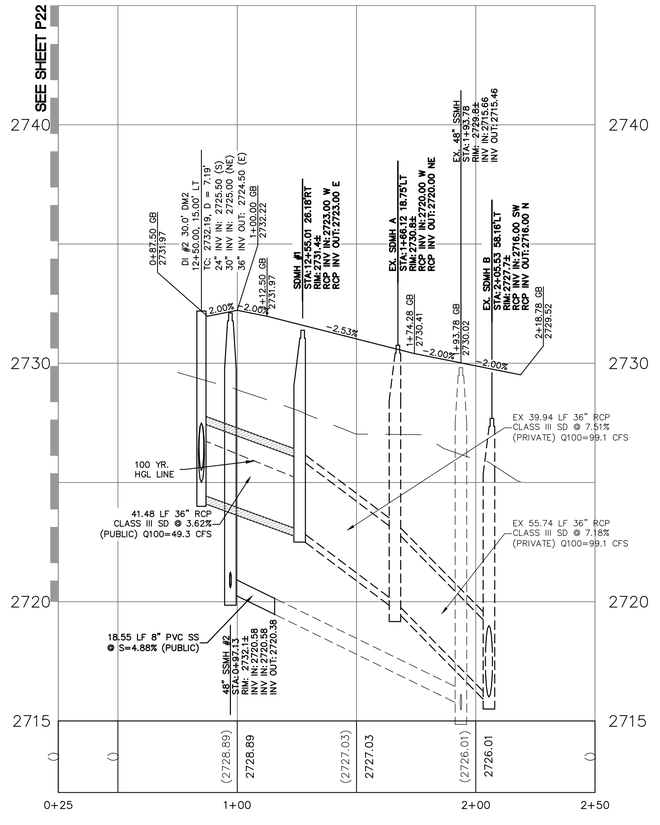


NORTH

LILA HILLS PL
(PRIVATE)
PLAN AND PROFILE
VERT.: 1" = 3'
HOR. : 1" = 30'



ENTRY
(PRIVATE)
PLAN AND PROFILE
VERT.: 1" = 3'
HOR. : 1" = 30'



NORTH

CONSTRUCTION NOTES

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2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

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2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
or
1-800-227-2600

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

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

30' 0' 15' 30' 60'
SCALE: 1" = 30'

BASIS OF BEARING:

NORTH 00° 05'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

L#: CLV#:

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/14/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-14-22
PLOT TIME: 12:10:54
DANIEL LEE

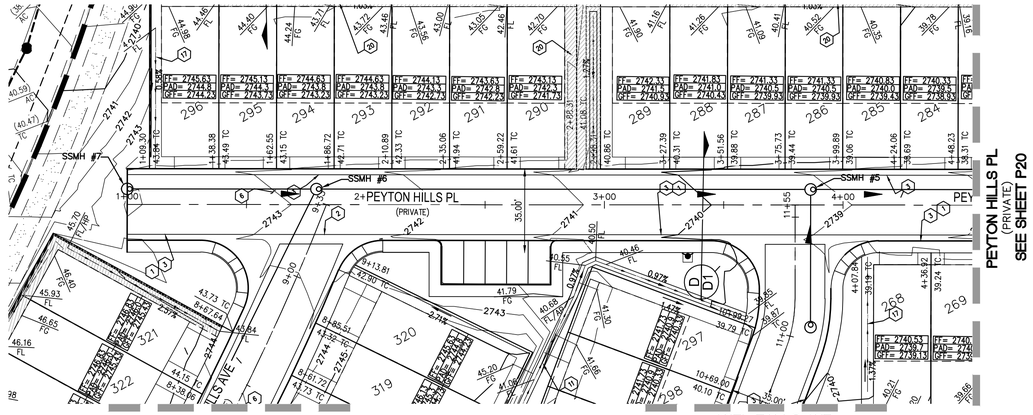
GCW ENGINEERS \ SURVEYORS
1555 S. RAINBOW BLVD.
LAS VEGAS, NV 89146
T: 702.804.2000
F: 702.804.2299
gcwengineering.com
F:\PROJECTS\831-016\DWG\PRODUCTION\PHASE-1\831-016PS17-22.DWG

LENNAR

AXEL AT SUNSTONE (PHASE 1)

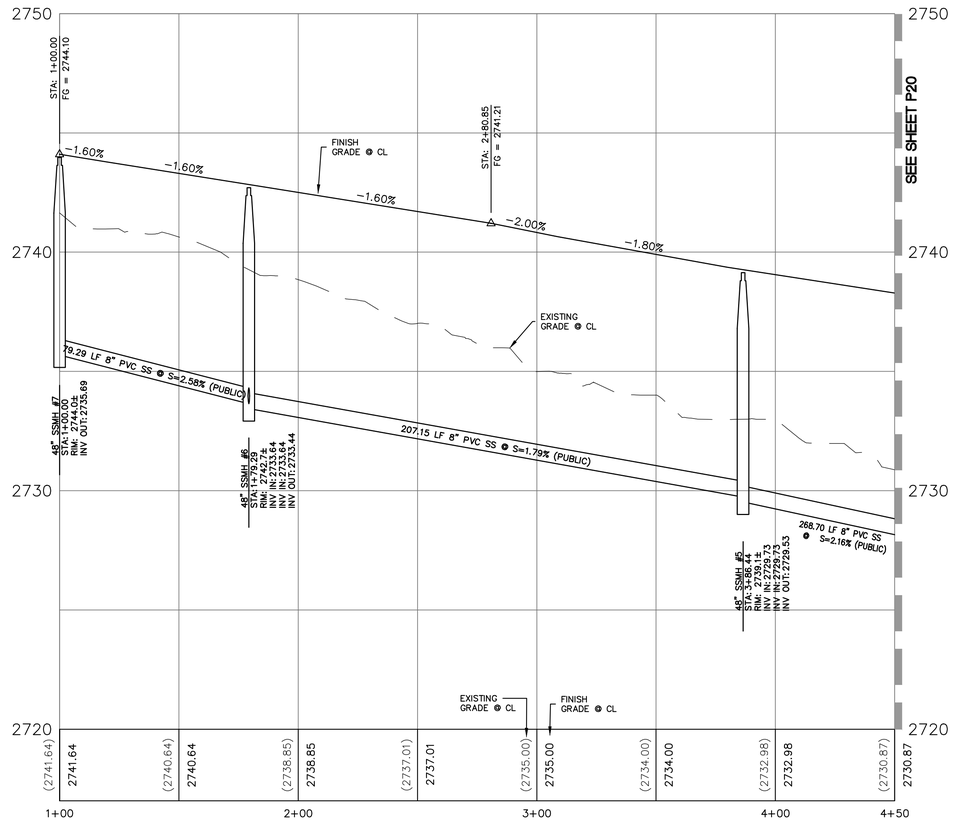
LILA HILLS PL. STA. 1+00.000 TO STA.4+53.90 AND ENTRY PLAN AND PROFILE

DRAWING
P18
?? OF 49 SHTS

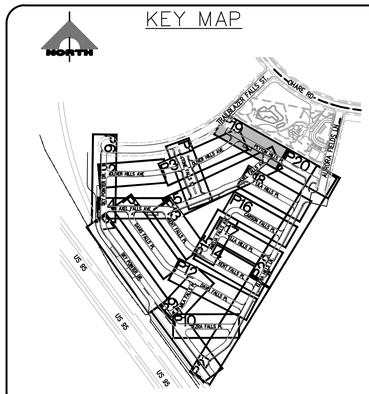


PEYTON HILLS PL
(PRIVATE)
PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



KEY MAP



CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER UDSCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____, DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

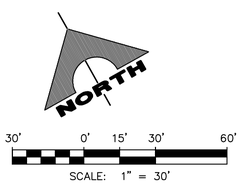
1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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



LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE: _____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

PROFESSIONAL ENGINEER — TODD N. KELLEY — Exp. 6/30/2023 — CIVIL — No. 14711 — STATE OF NEVADA — DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016

DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:46:58

DANIEL LEE

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

F:\PROJECTS\800\A31-016\GCW\PRODUCTION\PHASE-1\A31-016P17-22.DWG

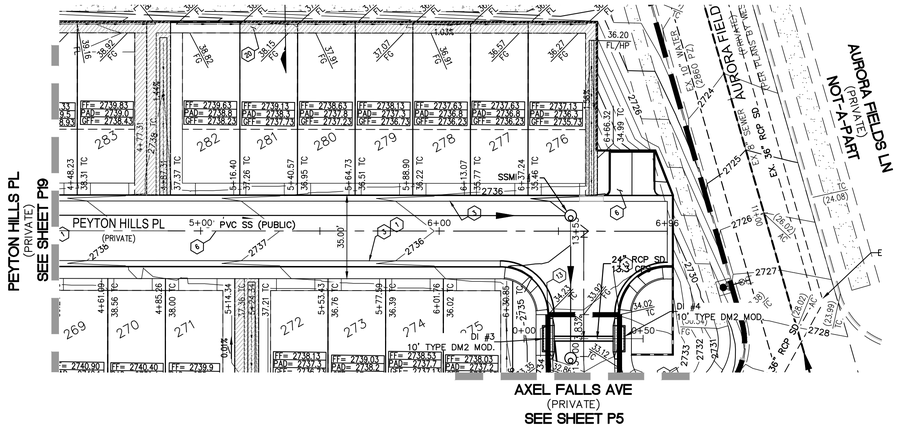
LENNAR

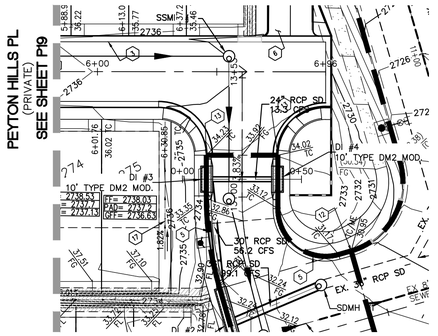
AXEL AT SUNSTONE (PHASE 1)

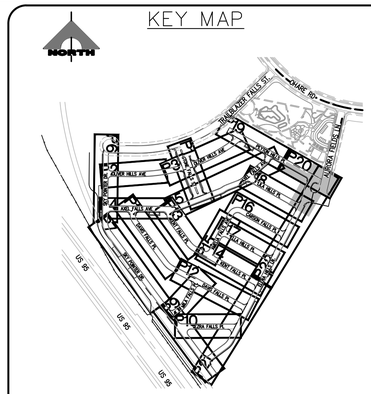
PEYTON HILLS PL. STA. 1+00.000 TO STA. 4+50.00
PLAN AND PROFILE

DRAWING
P19
?? OF 49 SHTS

L#: CLV#:

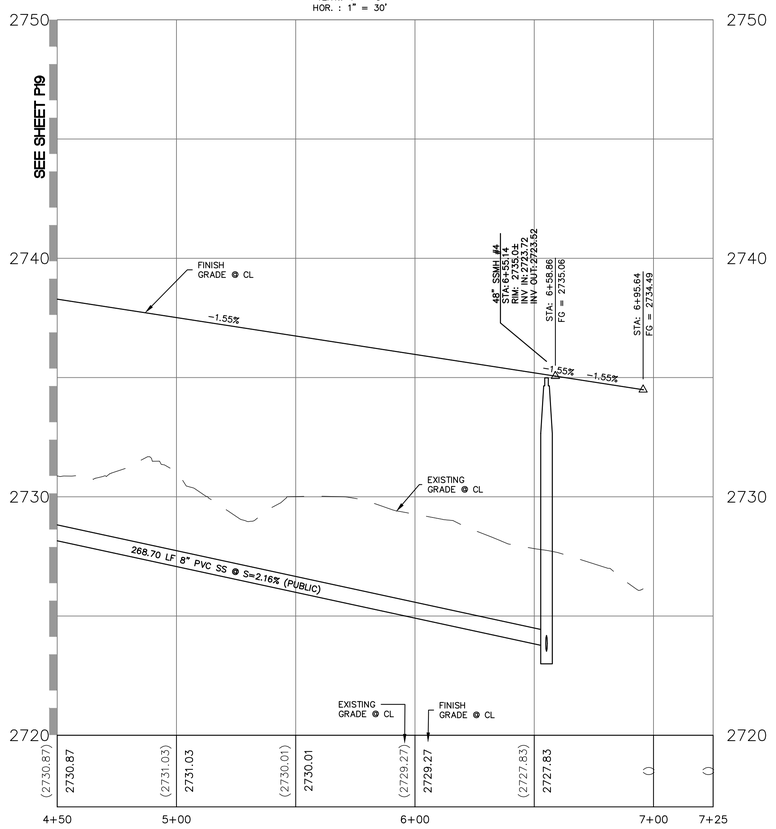






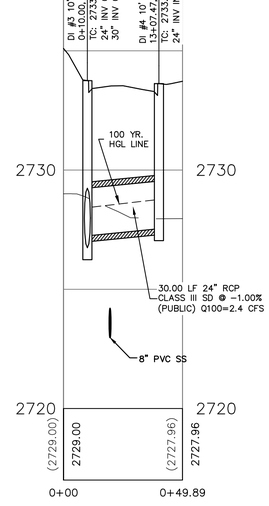
PEYTON HILLS PL (PRIVATE) PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



STORM DRAIN LATERAL (PRIVATE) PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD-1, SD-2, SD-4, SD-5, AND SD-9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD-17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW-OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11-1/4° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22-1/2° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90° BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
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Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
or
1-800-227-2600

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

NORTH

30' 0' 15' 30' 60'
SCALE: 1" = 30'

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS
(NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-
2008 ADJUSTMENT (UPDATED 05/24/2010)

BASIS OF BEARING:

NORTH 00° 50' 50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

L#: CLV#:

PROFESSIONAL ENGINEER STATE OF NEVADA
TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
DATE: 03/14/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-14-22
PLOT TIME: 12:11:59
DANIEL LEE

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

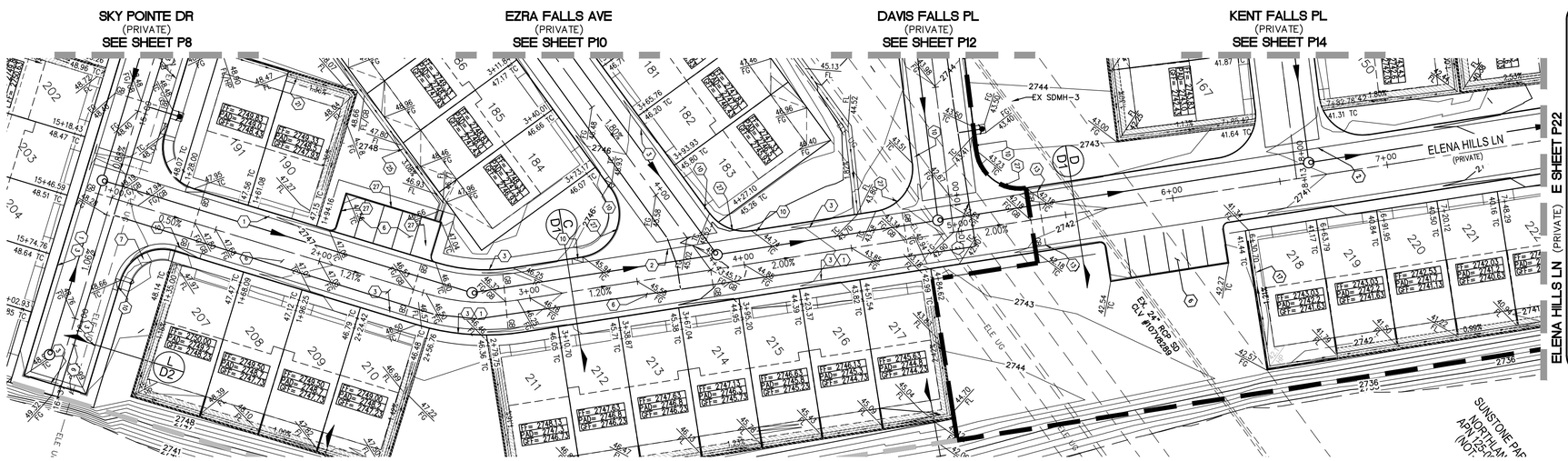
F:\PROJECTS\831-016\DWG\PRODUCTION\PHASE-1\831-016P17-22.DWG

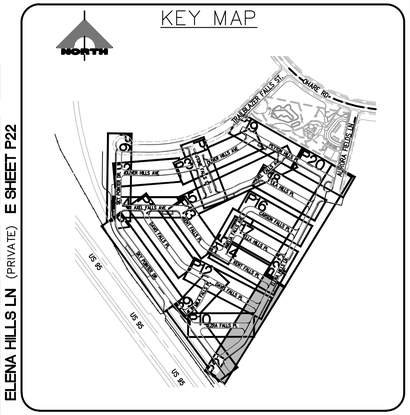
LENNAR

AXEL AT SUNSTONE (PHASE 1)

PEYTON HILLS PL STA. 4+50.00 TO STA. 7+06.67
PLAN AND PROFILE

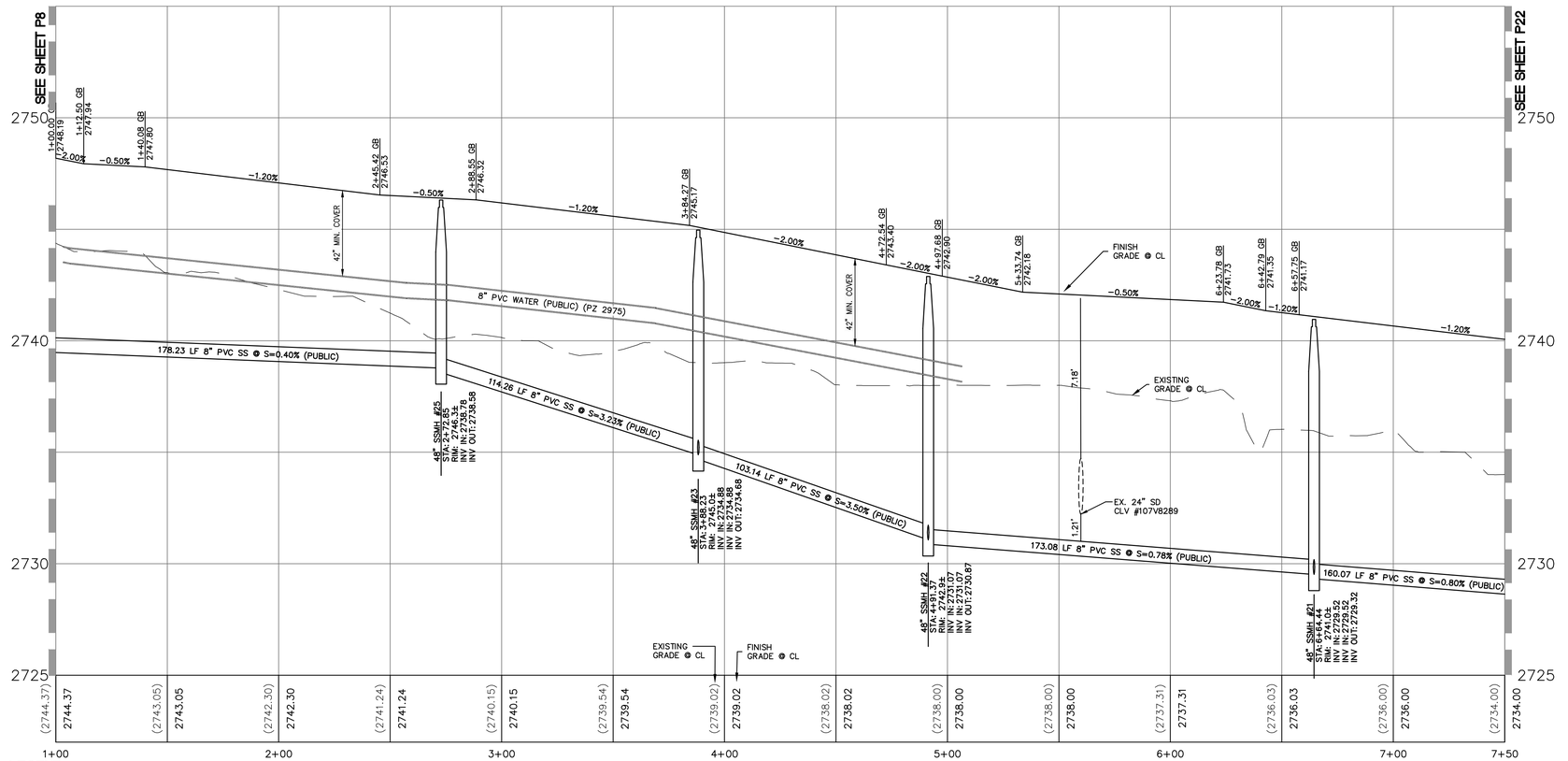
DRAWING
P20
?? OF 49 SHTS





ELENA HILLS LN
(PRIVATE)
PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



CONSTRUCTION NOTES

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11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
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13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
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15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

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WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20-500027

NOTES TO CONTRACTOR

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

BENCHMARK:

MONUMENT ID: USDA (1934) 19

U.S.DEPARTMENT OF AGRICULTURE BRASS DISC AT SOUTHWEST CORNER OF U.S. 95 AND KYLE CANYON ROAD.

ELEVATION: 2817.61 FEET, 858.870 METERS (NAVD 88)

PER THE CITY OF LAS VEGAS BENCHMARK BOOK-2008 ADJUSTMENT (UPDATED 05/24/2010)

30' 0' 15' 30' 60'
SCALE: 1" = 30'

BASIS OF BEARING:

NORTH 00°01'50" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS, IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 or 1-800-227-2600

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

TODD N. KELLEY
Exp. 6/30/2023
CIVIL
No. 14711
PROFESSIONAL ENGINEER
STATE OF NEVADA
DATE: 03/11/2022

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 831-016
DESIGN: GCW
DRAWN: GCW
CHECK: TNK
PLOT DATE: 03-11-22
PLOT TIME: 11:47:38

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

F:\PROJECTS\831\831-016\LDWG\PRODUCTION\PHASE-1\831-016P17-22.DWG
DANIEL LEE

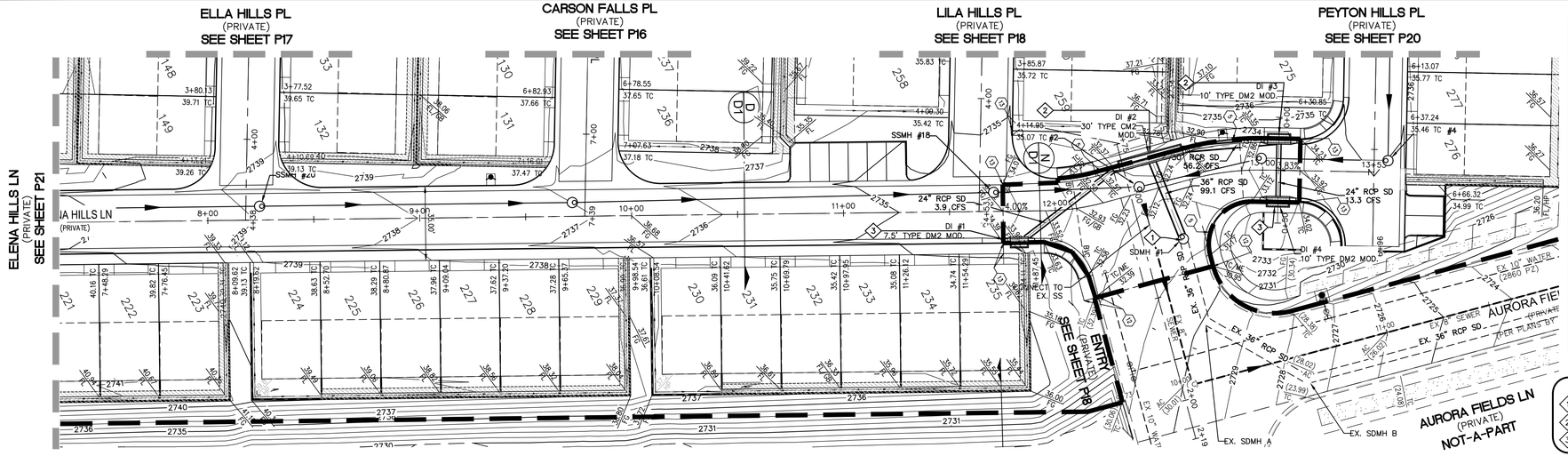
LENNAR

AXEL AT SUNSTONE (PHASE 1)

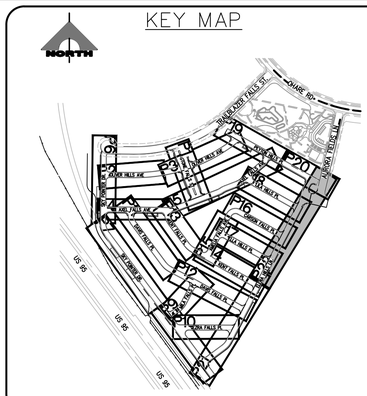
ELENA HILLS LN. STA. 1+00.00 TO STA. 7+50.00
PLAN AND PROFILE

DRAWING
P21
?? OF 49 SHTS

L#: CLV#:



KEY MAP

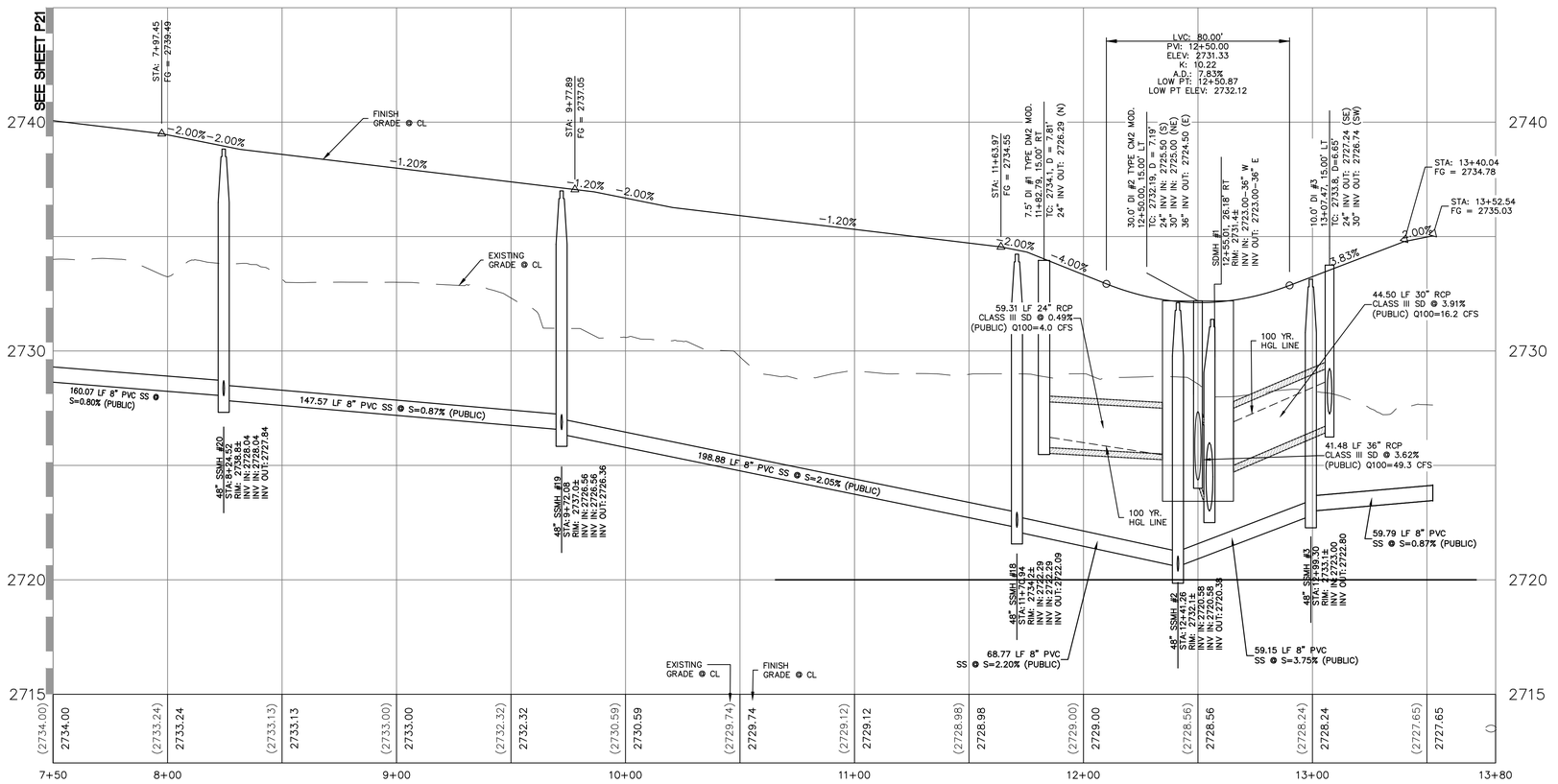


STORM DRAIN CONSTRUCTION NOTES

1. CONSTRUCT 48" TYPE II STORM DRAIN MANHOLE PER STD. DWG 405.
2. CONSTRUCT MODIFIED TYPE "CM2" PER DETAILS C SHEET D4, AND STD DWG. 412.1 & 421.
3. CONSTRUCT MODIFIED TYPE "DM2" PER STD DWG. 412.1 & 421.

ELENA HILLS LN
(PRIVATE)
PLAN AND PROFILE

VERT.: 1" = 3'
HOR. : 1" = 30'



LEGEND:

ACCESS EASEMENT/PRIVATE DRAINAGE EASEMENT PER NFM# 20–500027

30' 0' 15' 30' 60'
SCALE: 1" = 30'

NOTES TO CONTRACTOR

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING & ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

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

MAXIMUM AVAILABLE FIRE SPRINKLER FLOW ___30___ GPM

CONSTRUCTION NOTES

1. CONSTRUCT CONCRETE SIDEWALK PER USDCCA NO. 234.
2. CONSTRUCT 8' WIDE VALLEY GUTTER PER USDCCA NO. 228.
3. CONSTRUCT RESIDENTIAL "R" CURB AND GUTTER PER USDCCA NO. 217.2.S1.
4. CONSTRUCT MEDIAN "A" TYPE PER USDCCA NO. 218 & 219.
5. CONSTRUCT "L" CURB PER USDCCA NO. 216.
6. CONSTRUCT 2" AC OVER 4" TYPE II BASE. SEE GEOTECHNICAL REPORT PREPARED BY _____ PROJ. #_____ DATED _____ FOR MORE DETAIL.
7. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 1 & NO. 235.1. SEE PLAN FOR "A" & "B" DIMENSION.
8. CONSTRUCT HANDICAP RAMP PER USDCCA NO. 235 CASE 2. SEE PLAN FOR "A" & "B" DIMENSION.
9. SAWCUT & MATCH TO EXISTING CURB & SIDEWALK. CONTRACTOR SHALL VERIFY EX. LOCATION & PAVEMENT PRIOR TO CONSTRUCTION.
10. CONSTRUCT 5' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "C" SHEET D3.
11. CONSTRUCT SIDEWALK UNDERDRAIN PER USDCCA NO. 236.
12. CONSTRUCT 10' TRANSITION FROM "L" CURB TO "R" CURB PER DETAIL "B" SHEET D3.
13. STOP PHASE I AC IMPROVEMENTS AT THIS POINT. PHASE II AC TO MATCH PHASE I FINISH GRADE FOR CONTINUATION.
14. 8' WIDE VALLEY GUTTER TO BE CONSTRUCTED BY OTHERS.
15. HANDICAP RAMP TO BE CONSTRUCTED BY OTHERS.
16. C.E./PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED DEDICATED PER FINAL MAP.
17. NOT USED.
18. NOT USED.
19. 4" PVC UTILIZED FOR NUISANCE FLOW.

NO DEEP ROOTED TREES SHALL BE PLACED WITHIN 10 FEET OF THE OUTSIDE EDGE OF THE STORM DRAIN PIPE.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIA. SEWER MANHOLE WITH DUAL LIDS PER DCSWCS SD–1, SD–2, SD–4, SD–5, AND SD–9 WITH PRECAST BASE.
2. INSTALL 8" SANITARY SEWER PER SD–17.

WATER CONSTRUCTION NOTES

1. REMOVE 2" BLOW–OFF & CAP AND CONNECT TO EXISTING WATER MAIN.
2. INSTALL FIRE HYDRANT, VALVES, TEE, & 6" WATER LINE PER UDACS PLATE NO. 39, 40.
3. INSTALL GATE VALVE. SEE UDACS PLT. NO. 30 & 39. SAME SIZE AS LINE.
4. INSTALL 8"X6" TEE. PER UDACS PLT. NO. 31.
5. INSTALL 8"X8" TEE. PER UDACS PLT. NO. 31.
6. INSTALL 5' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
7. INSTALL 11–1/4' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
8. INSTALL 22–1/2' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
9. INSTALL 45' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.
10. INSTALL 90' BEND PER UDACS PLT. NO. 31. SAME SIZE AS LINE.

WATER MAIN JOINT DEFLECTION, PER UDACS 2.07.01 AND 2.07.03.

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

L#: CLV#:

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