

DS #: 5146

APN: 125-07-111-005

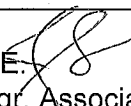
PROJECT: Skye Canyon II- Phase 3A Parcel 2.03

SUBMITTAL: 1st

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		June 27, 2019
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: Skye Canyon II – Phase 3A Parcel 2.03		COPIES TO: Slater Hanifan
Cross Streets:	SEC of Grand Canyon Dr and Skye Park Dr	Ninety-Five Management, LLC
File Number:	F:\Depot\DSMemos\DS5146A.doc	Bart Anderson, P.E., DevCo
Parcel Number:	125-07-111-005	
Zoning Action:		
FEMA Flood Zone	YES NO	
Proposed Storm Drain	YES X NO X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	6/4/2019	6/27/2019	See Comments Below	\$400.00	3441160: \$400
			TOTAL FEES (LDDRS):	\$400.00	----

REMARKS:

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

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

1. Sites with a grade difference of 2 feet above or below existing are required to have approval from the *City Planning and Development Department*. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the *City Planning Department* (229-6301). The engineer must provide Planning approval with the next submittal.
2. Provide a copy of the zoning/planning conditions associated with this site with the next submittal to verify compliance with conditions. Flood Control will not issue conditional approval of the drainage study without the associated zoning/planning conditions (issued by the City Council). Any associated conditions of approval that revise the site drainage parameters will require that the drainage study be revised and resubmitted.
3. Skye Canyon Phase 3A onsite developments are to be flood protected by Detention Basin 2. No occupancy permits within onsite Phase 3A will be issued prior to the substantial completion of Detention Basin 2.
4. Per the Skye Canyon Phase 3A Infrastructure Update #1 (DS4931), provide a manhole within the Parcel 2.03 boundary.
5. There is an existing public drainage easement that is proposed to be vacated. Vacate only a portion of the drainage easement that affect the proposed residential lots specific to this project. The

remaining portion of the public drainage easement along the eastern boundary shall remain in place for the conveyance of offsite flows.

6. Private streets must be public drainage easements. Provide a note on the grading plans "Note: All private streets are P.U.E, Public Sewer Easements, and Public Drainage Easements to be privately maintained by HOA."
7. The engineer must provide a table on the grading plan that shows a quantity estimate of all drainage improvements within Public Drainage Easements. All drainage improvements within Public Drainage Easements must be bonded and inspected.
8. The site entrance does not meet the Manual criteria of being humped 6 inches above the 100-year water surface elevation. Address and revise plans accordingly.
9. Revise the Finish Floor Check Table to include information for Lot Number 49.
10. Complete the information for Lot Number 53 on the Specific Energy Check Table.
11. Revise the Emergency Overflow Finish Floor Check Table to include the 18" of freeboard required for finish floors adjacent to public drainage easements.
12. The proposed wrought iron fence must utilize RTC Uniform Standard Drawing 425.S1.
13. It appears that APN 125-07-111-004 is being rough graded with this project. Provide a means for discharging the flows to the public ROW. Please note that Common Lot Landscape areas are not allowed to drain over the sidewalk. Provide flow lines with grades and sidewalk under drains for landscape areas draining to public ROW.
14. Add note to grading plans: "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 cost to the City.

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

jks

T/R/S: T19S/R60E/07
AREA G-07

TECHNICAL DRAINAGE STUDY

Skye Canyon II – Phase 3A Parcel 2.03

City of Las Vegas, Nevada

Job No.: OLY1817.000

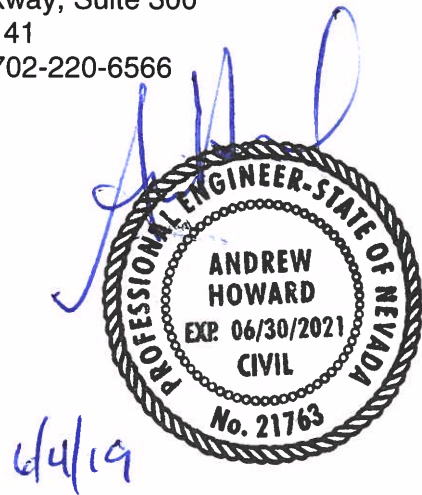
Date: June 2019

Prepared By:

Slater Hanifan Group a Westwood Team
5740 S. Arville Street, Suite 216
Las Vegas, Nevada 89118
Phone: 702-284-5300 • Fax: 702-284-5399

Prepared For:

Ninety-Five Management, LLC
11411 Southern Highlands Parkway, Suite 300
Las Vegas, NV 89141
Phone: 702-220-6565 • Fax: 702-220-6566



Andrew Howard, P.E.
NV Professional Engineer No. 21763

Assisted by: D'Amato Hyche



SLATER
HANIFAN
GROUP

a **Westwood** team
THE BENCHMARK OF OUR PROFESSION

OLY1817-000

June 4, 2019

Albert Sung, P.E.
City of Las Vegas
333 N. Rancho Drive
Las Vegas, NV 89106

Subject: Technical Drainage Study for Skye Canyon II – Phase 3A Parcel 2.03

Mr. Sung:

This letter certifies that all items provided on electronic submittal CD matches 100% of the *Technical Drainage Study for Skye Canyon II – Phase 3A Parcel 2.03* bound paper version.

Respectfully Submitted,
SLATER HANIFAN GROUP, A WESTWOOD TEAM

A handwritten signature in blue ink, appearing to read 'Andrew Howard', is written over the typed name.

Andrew Howard, P.E.
Assistant Project Manager – Flood Control Division

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Skye Canyon II - Phase 3A Parcel 2.03 Date: June 2019
 Location of Development: a) Descriptive (Cross Streets): North/South: Grand Canyon Drive
East/West: Skye Park Drive
 b) Section: 7 Township: 19 South Range: 60 East
 c) APN: 125-07-111-005

Name of Owner: Ninety-Five Management, LLC
 Telephone No.: 702-220-6565 Fax No.: 702-220-6566 E-mail Address: mbolduc@olympiacompanies.com
 Address: 11411 Southern Highlands #300 Las Vegas NV 89141

Contact Person – Name: Andrew Howard, P.E. Telephone No.: (702) 284-5300
 *E-mail Address: ahoward@shg-inc.com Fax No.: (702) 284-5399
 Firm: Slater Hanifan Group
 Address: 5740 S. Arville #216 Las Vegas NV 89118

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 18.95 +/- acre Being Developed/Disturbed: 18.95 +/- acre

2. Is a portion or all of the subject property located in a 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.): Single-Family Residential

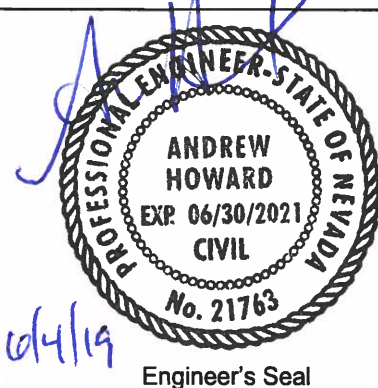
5. Approximate upstream land area which drains to the subject site: 0 acre +/-

6. Has the site drainage been evaluated in the past? ☒ Yes** ☐ No If yes, please identify documentation: _____

Skye Canyon II Phase 3A (SHG, DS 4931); Master Drainage Study for Skye Canyon (SHG, DS4420)

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Proposed Storm drain to existing storm drain in Grand Canyon Drive

8. Briefly describe your proposed schedule for the subject project: ASAP



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

***Newly Required Field**

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

		Revision	Date
Local Entity File No. _____			

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008



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	
X	-	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. _____ by initial here, the engineer on record acknowledges that the electronic copy is an identical replicate of the original hard copy submitted to the City of Las Vegas.

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

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

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

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

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

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

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

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

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Skye Canyon II - Phase 3A Parcel 2.03

Map ID:

Firm Name: Slater Hanifan Group

Engineer: Andrew Howard, P.E.

Address: 5740 S. Arville #216

City: Las Vegas

State: NV

Zip: 89118

Phone Number: (702) 284-5300

Fax Number: (702) 284-5399

Property Owner: Ninety-Five Management, LLC

Address: 11411 Southern Highlands #300

City: Las Vegas

State: NV

Zip: 89141

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 (CCRFCDD) Hydrologic Criteria and Drainage Design Manual (MANUAL).

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

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

I. GENERAL REQUIREMENT

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

II. MAPS AND EXHIBITS

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

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS (Continued)

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

III. DRAINAGE PLAN

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

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
-	N/A	Streets with off-set crowns.
X	-	Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
X	-	Property lines.
X	-	Right-of-way lines and widths, existing and proposed.
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 Q_{100} and V_{100} and D_{100} 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.
X	-	Existing and proposed drainage facilities, appurtenances, and connections (i.e., sidewalk, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, material, shape, and slope with plan and profile and HGL calculations.
X	-	Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
-	N/A	Location and detail of existing, proposed, and future block wall openings. Minimum size is 16" x 48". Wrought iron gate is required for flows > 10 cfs.
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.
-	N/A	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
-	N/A	Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

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

IV. HYDROLOGIC ANALYSIS

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

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

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

REFERENCE:

STANDARD FORM 2

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LIST OF APPENDICES

Appendix A Drainage Exhibits

- Exhibit A – Location Map
- Exhibit B – FEMA FIRM Map
- Exhibit C – MPU Facility Map
- Exhibit D – USDA NRCS Soils Map
- Exhibit E –Ultimate Condition Drainage Map

Appendix B Hydraulic Analysis

- FlowMaster Street Sections
- FlowMaster Drainage Easement Sections
- FlowMaster Easement Emergency Overflow Sections
- Drop Inlet Sizing Computations
- Storm Drain WSPGW Models

Appendix C Finished Floor Analysis

Appendix D Reference Material

Technical Drainage Study and Update for Skye Canyon Phase 3A Infrastructure
(SHG, DS4931)

- Approval Letters (TDS)
- Referenced Hydrologic Data (TDS)
- Referenced Hydraulic Computations (TDS)
- Referenced Drainage Exhibits (TDS)
- Referenced Improvement Plans (TDS)
- Referenced Hydraulic Computations (Update)
- Referenced Drainage Exhibits (Update)
- Referenced Improvement Plans (Update)

Appendix E Reference Material

Technical Drainage Study for Skye Canyon Phase 3A Mass Grading
(SHG, DS DS5090)

- Approval Letters
- Referenced Drainage Maps
- Improvement Plans

Appendix F CLV Approved Entitlements

Appendix G CD of Electronic Files

Improvement Plans Provided Separately (folded)

1 INTRODUCTION

1.1 Project Overview & Study Purpose

Ninety-Five Management, LLC is proposing a single-family residential development, identified as Skye Canyon 2.03 (hereinafter referred to as the project site), within the Phase 3A portion of the Skye Canyon master planned community in Las Vegas, Nevada. The proposed development is approximately 19 acres and is located southeast of the intersection with Grand Canyon Drive and Skye Park Drive. The Phase 3A area has been technically designed with roadway and drainage infrastructure improvements which are intended to support future private developments, inclusive of the project site.

The Skye Canyon property has been master-planned and a *Master Drainage Study for Kyle Canyon* (SHG, DS4420) has been approved by the City of Las Vegas. In addition, four (4) updates to the master drainage study have been processed:

- Skye Canyon Master Drainage Study - Update #1 to Kyle Canyon Master Drainage Study addressed changes in land use plan for the Phase 1, Phase 2 and detention basin areas of the site and was approved by the City of Las Vegas on March 05, 2015.
- Skye Canyon Master Drainage Study - Update #2 addressed downstream drainage impacts resulting from the changes in land use plan for the Phase 1, Phase 2 and detention basin areas and was approved by the City of Las Vegas on November 23, 2015.
- Skye Canyon Master Drainage Study - Update #3 addressed changes in the land use plan, re-alignment of Sheep Mountain Parkway, introduction of the Kyle Canyon Interchange Project, and relocation of the Skye Canyon downstream MPU facility to Log Cabin Way. This study was approved by the City of Las Vegas on August 15, 2016.
- Skye Canyon Master Drainage Study - Update #4 addressed a change in the Skye Canyon downstream MPU facility alignment from Log Cabin Way to Moccasin Road. This study was conditionally approved by the City of Las Vegas on October 10, 2017.

The Phase 3A area has been technically analyzed and designed by the *Technical Drainage Study and Update for Skye Canyon Infrastructure phase 3A* which were proposed within the framework set forth by the aforementioned Master Drainage Study Updates. Therefore, it is the objective of this technical study to show conformance to the drainage patterns and flow rates set forth in the Phase 3A Study and the Phase 3A Update, which will also show conformance to the drainage patterns set forth in the Master Updates, specifically Master Update #4.

1.2 Description of Project

The project site is located within Township 19 South, Range 60 East and Section 7, on APN 125-07-111-005. The project site is bound by: Grand Canyon Drive to the north, Skye Park Drive to the west, a future park site to the south, and an undeveloped future residential development to the east which is separated by a 50-ft pedestrian access easement. A location map identifying the site in relation to the surrounding streets has been prepared as Exhibit A, included in Appendix A.

The project site is comprised of 107 single-family lots averaging less than 6,000-sq-ft in area, and all lots will be constructed in a single phase of development. Since the perimeter roadways are constructed prior to the development of the project site, only onsite roadways and associated infrastructure will be constructed with the development.

The Tentative Map for the subject project site has been approved by the City of Las Vegas Planning Commission on March 6, 2019, and the approved entitlements are included in Appendix H for reference.

1.3 Summary of Prior Relevant Drainage Studies

Various drainage studies for the Skye Canyon master planned property with direct impact to the subject project site and the overall Phase 3A area have been summarized below. Some of the studies have been approved and different stages of reviews are on-going for others.

- *Technical Drainage Study for Skye Canyon Phase 3A Infrastructure*, prepared by Slater Hanifan Group was conditionally approved by the City of Las Vegas on August 16, 2018 and an update to the drainage study was submitted to the City of Las Vegas for review on May 29, 2019. This study addresses the roadway and drainage infrastructure within/surrounding the Phase 3A area.
- *Skye Canyon Master Drainage Study – Update #4*, prepared by Slater Hanifan Group was conditionally approved by the City of Las Vegas on October 10, 2017. This study addresses the developed condition hydrologic analysis of the Phase 3A area based on the most current master land use plan.
- *Technical Drainage Study for Skye Canyon Detention Basin 1 – Update #3*, prepared by Slater Hanifan Group was approved by the City of Las Vegas on January 12, 2017. This study addresses the upstream detention basin facility which provides flood protection to the Skye Canyon Phase 2 area and southern portion of the Phase 3 area. The Detention Basin 1 outfall discharges through the south portion of Phase 3A in the existing condition. Skye Canyon Detention Basin 1 was deemed substantially complete by City of Las Vegas on September 12, 2017. Note that the subject Phase 2 improvements will include a driveway off Grand Teton Drive for accessing the maintenance road for Detention Basin 1.
- *Technical Drainage Study for Skye Canyon Detention Basin 2*, prepared by Slater Hanifan Group was conditionally approved by the City of Las Vegas on January 11, 2018. This study addresses the upstream detention basin facility that provides flood protection to Skye Canyon Phase 3. The Detention Basin 2 outfall discharges down Lone Mountain Road and is intercepted by Phase 3A infrastructure in Skye Village Road.

1.4 FEMA Flood Zone Designation

The project site boundary has been delineated on current FEMA FIRM Panel Maps 32003C1750E and 32003C1735E, both dated September 27, 2002. Per the FIRM Panels, the project site is located within a FEMA designated Zone 'X' (unshaded). Zone 'X' (unshaded) is described by FEMA as *areas determined to be outside the 0.2% annual*

chance floodplain. Exhibit B, identifying the project site on the FEMA FIRM Maps, has been included in Appendix A for reference.

1.5 CCRFCD Facility Information

The project site has been delineated on the current 2018 Clark County Regional Flood Control District (CCRFCD) Las Vegas Valley Flood Control Master Plan Update (2018 MPU, Reference 1) Facility Figures as Exhibit C, included in Appendix A. Per the 2018 MPU, the project site is not adjacent to existing or future CCRFCD facilities.

1.6 Referenced Documents

The following approved studies and associated improvement plans have been reviewed and deemed acceptable for reference by this study. Slater Hanifan Group a Westwood Team concurs with the referenced and adopted hydrologic and hydraulic analyses from the studies and the results established therein.

- *Technical Drainage Study and Update for Skye Canyon Phase 3A Infrastructure*, prepared by Slater Hanifan Group (DS4931; hereinafter referred to as the Phase 3A TDS and the Phase 3A Update, Reference 5), technically designed the roadway and drainage infrastructure improvements within/surrounding the Phase 3A area. The Phase 3A TDS has been utilized to establish existing and ultimate condition drainage patterns and flow rates within the Phase 3A area. The Phase 3A Update has been utilized to establish the downstream water surface elevation in the proposed storm drain system. The Phase 3A TDS and Update were shown to be in conformance of the Skye Canyon Master Drainage Study; therefore, the Phase 3A TDS and Update have also been utilized to show conformance with master planned ultimate condition drainage patterns. Relevant reference material from the Phase 3A TDS and Update have been included in Appendix D.
- *Technical Drainage Study for Skye Canyon Phase 3A Mass Grading*, prepared by Slater Hanifan Group (DS5090; hereinafter referred to as the Mass Grading Study, Reference 6), proposed to mass grade all Phase 3A parcels while maintaining the drainage patterns established by the Phase 3A Study. The Mass Grading Study has been utilized to establish existing and ultimate condition drainage patterns and flow rates within the Phase 3A area. The Phase 3A Study was shown to be in conformance of the Skye Canyon Master Drainage Study; therefore, the Phase 3A Study has also been utilized to show conformance with master planned ultimate condition drainage patterns. Relevant reference material from the Phase 3A Study has been included in Appendix E.

2 METHODOLOGY

2.1 Compliance

The methodologies utilized in the preparation of this study are in compliance with the Clark County Regional Flood Control District's Hydrologic Criteria and Drainage Design Manual (CCRFCD Manual, Reference 2).

2.2 Hydrologic Modeling

No hydrologic basins were analyzed with this study. The proposed development has a land use corresponding to residential lots less than 6,000 square feet which is the same land

use utilized by the Phase 3A TDS. Therefore, the curve number and corresponding flow rate referenced from the Phase 3A TDS are considered valid for use in this study. It should also be noted that the Phase 3A TDS utilized the most recent USDA NRCS soils data for computations. The referenced land use, curve number, and lag time data from the Phase 3A TDS have been provided in Appendix D for reference.

2.3 Hydraulic Modeling & Criteria

Street Flow:

Street flow hydraulic computations have been performed utilizing the FlowMaster Version 8i software by Bentley Systems. In accordance with the CCRFCD Manual, the depth times velocity factor (DxV) for street flow in the 10-year storm event must be less than or equal to 6 with a maximum depth of 1-foot. The DxV for street flow in the 100-year storm event must be less than or equal to 8 with a maximum depth of 2-feet.

Drainage Easements:

Flow thru drainage easements have been analyzed, utilizing the FlowMaster Version 8i software by Bentley Systems, to show that the adjacent finished floors maintain a minimum of 18-inches above the water surface elevation, meeting CCRFCD Manual criteria.

Drop Inlets: Drop inlets have been assessed using an in-house computation spreadsheet that utilizes equations outlined in Section 805 of the CCRFCD Manual, which includes a 50% clogging factor in determining sizes.

Storm Drains: The hydraulic analysis for the proposed storm drains has been performed utilizing the Windows version of the Water Surface and Pressure Gradient (WSPGW) Hydraulic Analysis System software by the Los Angeles County Department of Public Works. As outlined in the CCRFCD Manual, storm drain facilities are designed to maintain its hydraulic gradient line (HGL) at a minimum of 1-ft below finished grade and limit the flow velocities in the facility to remain within the range of 3 ft/s and 25 ft/s.

3 EXISTING DRAINAGE CONDITION

3.1 Definition of Existing Condition

The existing condition considers the Skye Canyon Phase 3A drainage and roadway infrastructure in place and functioning along with upstream Skye Canyon Detention Basin 1 (DB1) and Skye Canyon Detention Basin 2 (DB2). DB1 is already substantially complete and DB2 is currently under review by the Nevada Department of Water Resources (NDWR). It is the intention of the developer to progress the Phase 3A designs so that they can be constructed immediately after construction of DB2.

The existing condition is equivalent to the proposed condition of the Phase 3A Mass Grading Study which referenced flow rates and matched drainage patterns with the Phase 3A TDS. Therefore, the drainage patterns and flow rates for the existing condition have been conservatively referenced from the Phase 3A TDS. Refer to Appendix D for reference material from the Phase 3A TDS and to Appendix E for reference material from the Phase 3A Mass Grading Study.

3.2 Discussion of Existing Condition

The project site is comprised of a single mass-graded drainage basin (Basin 2.03) referenced from the Phase 3A TDS and the Phase 3A Mass Grading Study. Runoff from the project site, along with runoff from the adjacent offsite park Basin 2.04b, is routed in a northeasterly direction toward an existing storm drain interim sump inlet. All perimeter streets and associated storm drain infrastructure are assumed to be in place and functioning. No offsite flows are routed through the project site in the existing condition.

Exhibit E, referenced from the Phase 3A Mass Grading Study, shows the existing mass graded drainage patterns and is included in Appendix E for reference. Exhibits G and I, referenced from the Phase 3A TDS, show detailed illustrations of the existing condition drainage patterns and are included in Appendix D for reference.

4 ULTIMATE DRAINAGE CONDITION

4.1 Definition of Ultimate Condition

The ultimate condition considers the project site and all surrounding parcels and infrastructure to be fully constructed.

4.2 Discussion of Ultimate Condition

Refer to Exhibit E, included in Appendix A, for a detailed illustration of the ultimate condition drainage patterns.

The project site is represented by Basin 2.03 and the adjacent park easement is represented by Basin 2.04b, as referenced from the Phase 3A TDS. Runoff from Basin 2.03 is routed to proposed drop inlets located at the northeast corner of the project site, and runoff from Basin 2.04b is routed toward a proposed area inlet located near Grand Canyon Drive.

A high point exists in Skye Park Drive, just south of the proposed site entrance, so the humped entrance has not been sized for any quantifiable flow within the offsite street; however, the site entrance high points all remain at least 0.5-ft above the offsite cross gutter flow line.

Please note that the ultimate condition of the Phase 3A area has been conceptually analyzed by the Skye Canyon Master Drainage Study based on the current master land plan, and that the Phase 3A TDS included an ultimate condition drainage map (Exhibit H) which referenced basins and flow rates from the ultimate condition of the Master Study. However, it should be noted that all existing drainage facilities have been designed utilizing the flow rates from the proposed condition of the Phase 3A TDS as they are the most accurate and conservative for the Phase 3A area. Therefore, Exhibit H from the Phase 3A TDS has been included in Appendix D to show that the proposed development remains within conformance of the master planned ultimate condition drainage patterns.

4.3 Summary of Ultimate Condition Flows

A summary of all ultimate condition flow rates, as referenced from the Phase 3A TDS, have been provided on the Ultimate Condition Drainage Map (Exhibit E) included in Appendix A. The referenced hydrologic computations have been provided in Appendix D.

4.4 Summary of Ultimate Condition Street Flows

The 100-year street flow summary table has been included on Exhibit E, and the supporting FlowMaster street flow computations have been included in Appendix B for reference.

Review of the street flow summary table shows that the criteria set forth in Section 2.3 of this report are satisfied. Note that the 100-year flows are shown to also satisfy the 10-year criteria; therefore, only the 100-year street flow hydraulic sections have been analyzed.

4.5 Summary of Phase 2 Drainage Facilities

Drop Inlets and Storm Drain:

Two (2) 15-ft Type CM2 drop inlets, identified as DI#1 and DI#2, are proposed at the eastern terminus of Street H to intercept the entire runoff from Basin 2.03. A 30-in RCP storm drain is proposed to convey the onsite runoff to the existing storm drain system in Grand Canyon Drive. The WSPGW model for the proposed storm drain connection is titled "MAIN" and the starting water surface elevation (WSE) for the model has been referenced from the Phase 3A Update.

One (1) 2.5-ft by 2-ft NDOT Type II drop inlet, identified as DI#3, is proposed within the offsite park easement located east of the project site for interception of runoff from Basin 2.04b. An 18-in RCP storm drain lateral is proposed to convey the runoff from DI#3 to the proposed MAIN storm drain. The WSPGW model for the proposed storm drain lateral is titled "LAT" and the starting WSE for the model was obtained from the MAIN model.

Review of the drop inlet and storm drain designs shows that the criteria set forth in Section 2.3 of this report are satisfied. The drop inlet sizing calculations and the WSPGW models have been provided in Appendix B and the referenced WSPGW model for the existing storm drain connection has been provided in Appendix D.

Drainage Easements:

The project site does not propose any onsite drainage easements for conveyance of surface flows. However, an easement is proposed at the eastern terminus of Street H for the emergency overflow from the two onsite sump inlets. The easement has been analyzed with a hydraulic section identified as EO1 on Exhibit E.

The park easement located east of the project site has proposed interim grading which routes runoff within the easement toward DI#3. The offsite easement has been analyzed with a hydraulic section identified as E1 on Exhibit E.

Since the offsite park easement contains a low point, the emergency overflow from the onsite sump inlets will have to weir out of the park easement as well. Hydraulic section EO2 on Exhibit E represents the emergency overflow path for the offsite park easement going into Grand Canyon Drive with the combined runoff from Basins 2.03 and 2.04b.

Normal depth and submerged weir computations have been performed for the drainage easements, and the FlowMaster sections have been provided in Appendix B for reference. For a detailed illustration of the location of the easements, please refer to Exhibit E.

4.6 Finished Floors

A spreadsheet showing the finished floor analysis has been included in Appendix C.

All proposed finish floors have been adequately flood protected above twice the depth of flow in the adjacent streets, up to 18-inches measured at the high side of the lot. Additionally, proposed finished floors have been elevated a minimum vertical distance above the adjacent curb of 6-inches, measured at the high side of the lot.

Lots 37 and 38 have been checked against the maximum weir depth of the emergency overflow conditions from the onsite and offsite sump inlets (Sections EO1 and EO2). Both lots have been shown to be adequately flood protected from the emergency overflow weirs.

5 CONCLUSIONS & RECOMMENDATIONS

1. This project is in compliance with the applicable drainage laws as recognized by the state of Nevada. This project is in compliance with the CCRFCD *“Hydrologic Criteria and Drainage Design Manual”* (Reference 1).
2. The project site is not located within a FEMA designated Special Flood Hazard Area (SFHA). The site and the proposed improvements are located within a FEMA flood Zone “X” (unshaded). Therefore, FEMA notification will not be required.
3. The design of this project and the proposed drainage patterns and flow rates are in conformance with the most current approved Skye Canyon Master Drainage Study Update, as well as the Skye Canyon Phase 3A Technical Drainage Study and subsequent Update. Therefore, there are no adverse impacts to downstream properties or facilities as a result of the proposed improvements.
4. This study assumes that all perimeter roadway and drainage infrastructure improvements associated with Phase 3A are in place and functioning.
5. The proposed street flow and drainage facilities satisfy CLV and CCRFCD criteria.
6. Proposed finished floors are adequately flood protected meeting criteria against design flows and potential overflow conditions.
7. Ongoing maintenance of the drainage systems is required to maintain the designed levels of functionality and integrity summarized herein. Failure to provide adequate maintenance can prevent the drainage systems from performing in accordance with their designed intent. It is the responsibility of the owner of the facilities to provide routine maintenance and to ensure that the drainage systems are functioning as intended.
8. The grading and detail sheets have been included and support the drainage patterns and conclusions detailed in this study.

6 REFERENCES

1. *Las Vegas Valley Flood Control Master Plan Update*, SNC Lavalin / Atkins, in association with Louis Berger Group, February 2019

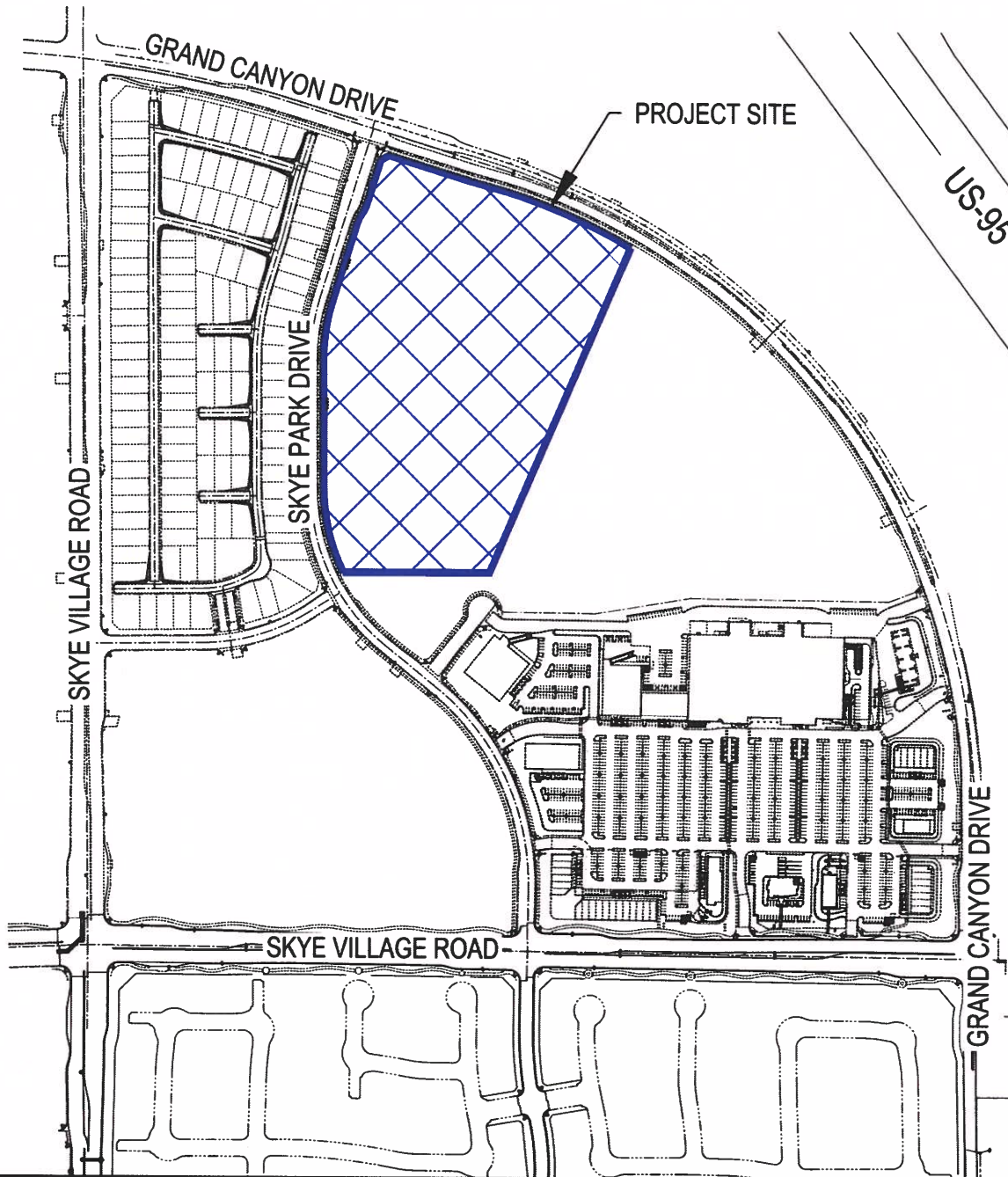
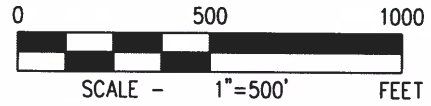
Technical Drainage Study – Skye Canyon II – Phase 3A Parcel 2.03

2. *Hydrologic Criteria and Drainage Design Manual*. Clark County Regional Flood Control District, 1999
3. *Web Soil Survey of Las Vegas Valley Area, Nevada*. U.S. Department of Agriculture, Natural Resources Conservation Service
4. *Technical Drainage Study and Update for Skye Canyon Phase 3A Infrastructure*; SHG, August 2018 and May 2019.
5. *Technical Drainage Study for Skye Canyon Phase 3A Mass Grading*; SHG, February 2019.

APPENDIX A

Drainage Exhibits

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S-16
SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
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NINETY FIVE MANAGEMENT LLC
SKYE CANYON II - PARCEL 2.03
LOCATION MAP

DATE: MAY 2019
DRAFTER: DCH
DESIGNER: DCH
CHECKED: AJH

PROJECT NO.
OLY1817.000
EXHIBIT A
SHEET 1 OF 1

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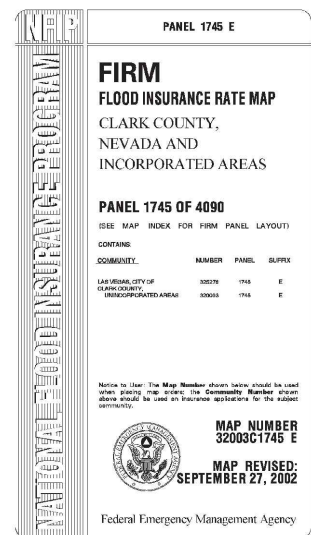
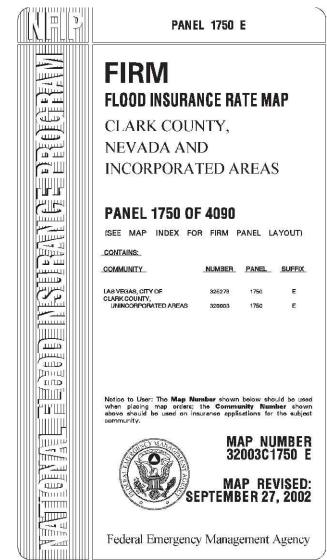
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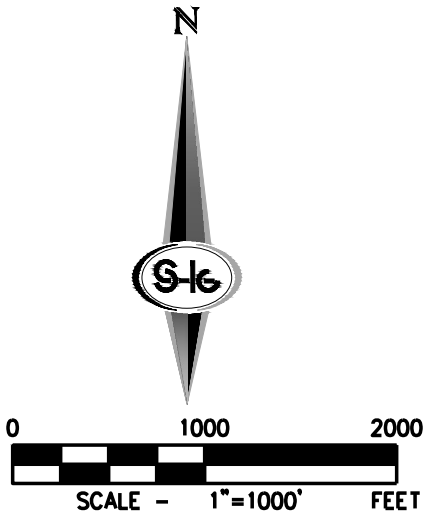
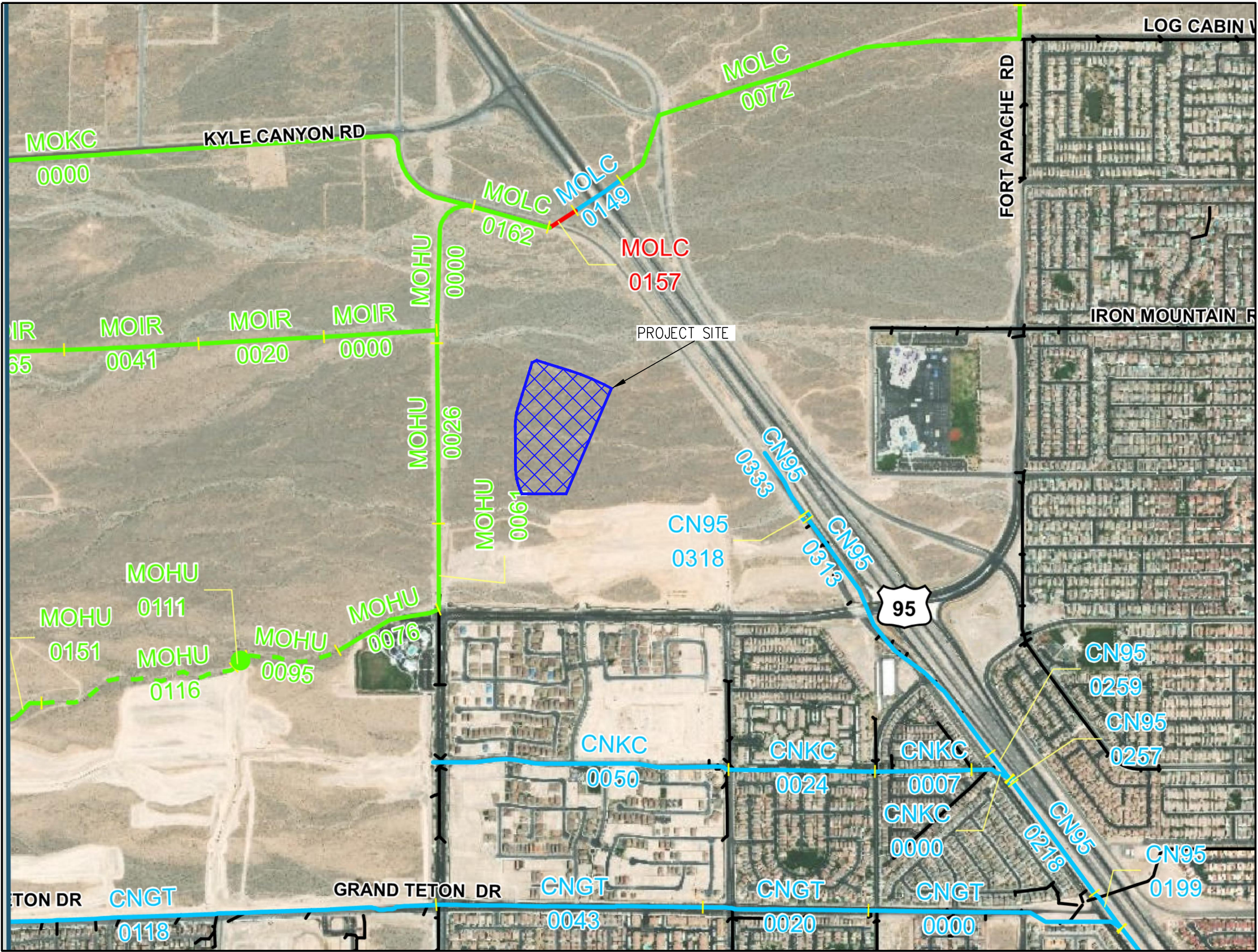
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DATE:	MAY 2019
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DESIGNER:	DCH
CHECKED:	AJH
PROJECT NO.	OLY1817.000
EXHIBIT B	
SHEET 1 OF 1	

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NINETY FIVE MANAGEMENT LLC

SKYE CANYON II - PARCEL 2.03

MPU FACILITY MAP

DATE: MAY 2019

DRAFTER: DCH

DESIGNER: DCH

CHECKED: AJH

PROJECT NO.
OLY1817.000

EXHIBIT C1

SHEET 1 OF 1

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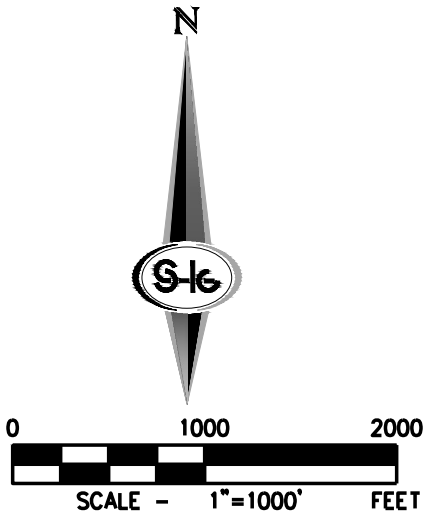
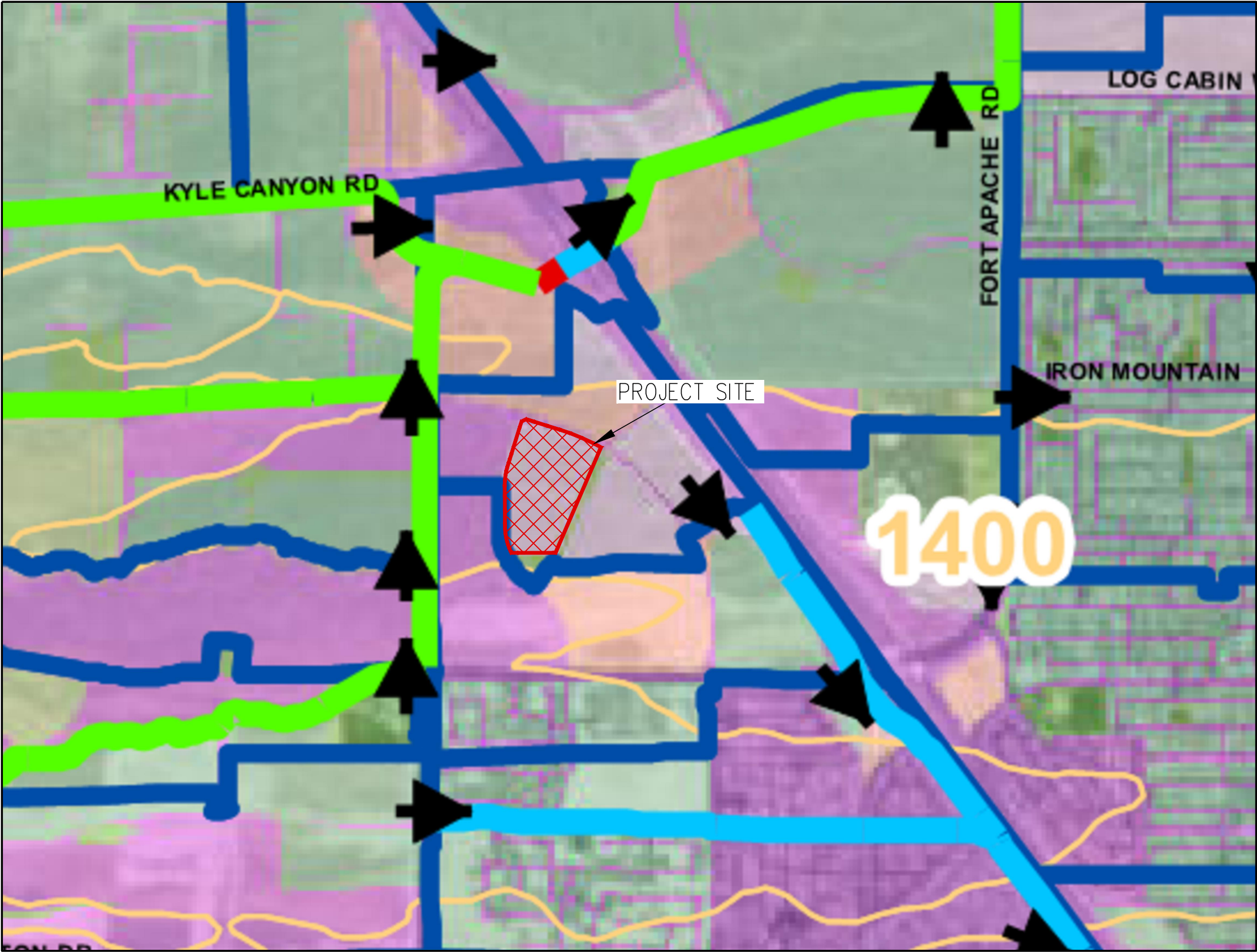
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ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
BCHU								
0000	E	BELTWAY CHANNEL - HUALAPAI						
0017	E	12' X 5' RCP	853	206	DBA3-C	WEST3	0.84	1.11
0040	E	8' X 5' RCP	1216	218	CBA3-C	WEST3	0.84	1.33
0040	E	66" RCP	60	57	DNW26-C	WEST3	0.51	1.04
0042	E	60" RCP	615	57	DNW26-C	WEST3	0.51	1.42
0054	E	54" RCP	615	57	DNW26-C	WEST3	0.51	1.23
BRDB								
0000	E	BRENT DRAINAGE SYSTEM						
0031	E	36" RCP WITH 18" ORIFICE PLATE	2170	36	BRDB	WEST3	2.37	0.40
0032	E	45,080 CFS PMF SPILLWAY		45080	CBRDB	WEST3	2.37	
0032	E	450 AC-FT SOUTH ENVIRONMENTAL ENHANCEMENT AREA		1685	CBRDB	WEST3	2.37	
0033	E	ENERGY DISSIPATOR	100	1052	CNW147W	WEST3	1.75	
0043	E	20' X 7' RCBC	135	1052	CNW147W	WEST3	1.75	0.50
0045	E	CONC CHNL 12'W 7'D 2:1 SS	983	1052	CNW147W	WEST3	1.75	2.00
0058	E	12' X 6' RCB	1686	951	CNW113-C	WEST3	1.47	1.81
0107	P	8' X 6' RCB	2560	951	CNW113-C	WEST3	1.47	2.40
0157	P	12' X 7' RCB	2580	621	CNW56-C	WEST3	0.84	0.25
CN95								
0000	E	CENTENNIAL PKWY CHANNEL WEST / U.S 95 BRANCH						
0068	E	20' X 7' RCB	3335	2778	CNVB83-C	WEST3	3.35	2.00
0102	E	CONC CHNL 20'W 5'D 0:1 SS	2300	2725	CNW103-C	WEST3	3.04	2.10
0104	E	2: 12' X 10' RCB	375	2548	2CNW89-C	WEST3	2.65	1.77
0167	E	16' X 8' RCB	300	2548	2CNW89-C	WEST3	2.65	1.10
0199	E	15' X 9' RCB	3521	2548	2CNW89-C	WEST3	2.65	1.58
0218	E	15' X 9' RCB	407	1457	2CNW72-C	WEST3	1.13	0.41
0257	E	15' X 9' RCB	1227	1457	2CNW72-C	WEST3	1.13	0.82
0259	E	TRANSITION STRUCTURE	59	1457	2CNW72-C	WEST3	1.13	0.77
0313	E	15' X 9' RCB	284	599	CNW74-C	WEST3	0.40	0.77
0318	E	10' X 6' RCB	2680	599	CNW74-C	WEST3	0.40	2.50
0333	E	TRANSITION STRUCTURE	60	599	CNW74-C	WEST3	0.40	1.50
0333	E	5' X 5' RCB	670	259	NW62-S	WEST3	0.16	1.50
CNFR								
0000	P	CENTENNIAL PKWY CHANNEL WEST / FARM ROAD						
0000	P	8' X 6' RCB	8350	776	CNW69-C	WEST3	1.05	2.00
CNGT								
0000	E	CENTENNIAL PKWY CHANNEL WEST / GRAND TETON BRANCH						
0020	E	10' X 5' RCB	2376	543	CNW71-E	WEST3	0.47	2.58
0043	E	10' X 5' RCB	1570	543	CNW71-E	WEST3	0.47	3.50
0043	E	8' X 6' RCB	2470	543	CNW71-E	WEST3	0.47	3.60
0118	E	6' X 5' RCP	5472	349	KYLEDET	KYLED8	58.61	3.72
CNKC								
0000	E	CENTENNIAL PKWY CHANNEL WEST / KYLE CANYON BRANCH						
0007	E	12' X 4' RCB	377	954	CNW72-C	WEST3	0.74	4.58
0024	E	10' X 5' RCB	874	954	CNW72-C	WEST3	0.74	3.28
0050	E	8' X 5' RCB	1385	954	CNW72-C	WEST3	0.74	2.40
0050	E	72" RCP	2757	437	NW45-S	WEST3	0.31	3.60
CNWE								
0195	E	CENTENNIAL PKWY CHANNEL WEST						
0200	E	CONC CHNL 36'W 9'D 0:1 SS	1130	3771	CNW383-C	WEST3	5.64	0.60
0226	E	CONC CHNL 36'W 9'D 0:1 SS	1340	3523	CNW204-C	WEST3	5.14	1.00
0241	E	2: 18' X 8.5' RCBC @ RIO VISTA	100	3523	CNW204-C	WEST3	5.14	0.51
0241	E	CONC CHNL 36'W 9.5'D 0:1 SS	405	3523	CNW204-C	WEST3	5.14	0.51
0251	E	CONC CHNL 36'W 9'D 0:1 SS	575	3234	CNW203-C	WEST3	4.64	0.51
0271	E	CONC CHNL 32'W 10'D 0:1 SS	229	3234	CNW203-C	WEST3	4.64	0.51
0274	E	32' X 10' RCBC @ TENAYA	142	3234	CNW203-C	WEST3	4.64	0.51
0277	E	CONC CHNL 32'W 9'D 0:1 SS	579	3234	CNW203-C	WEST3	4.64	0.64
0287	E	CONC CHNL 32'W 6'D 0:1 SS	865	2992	CNW282-C	WEST3	3.83	1.59
0301	E	2: 15' X 7' RCB	1736	2992	CNW282-C	WEST3	3.83	1.30
0304	E	22' X 7' RCB	3410	2992	CNW282-C	WEST3	3.83	1.85
0314	E	22' X 7' RCB	703	2822	CNVB82-N	WEST3	3.45	1.94
EKBU								
0000	E	ELKHORN SPRINGS AND BUFFALO						
0000	E	60" RCP	1046	255	NW134-C	WEST3	0.46	0.89
EKDB								
0000	E	ELKHORN SPRINGS DETENTION BASIN						
0025	E	GRASS CHNL 15'W 5.8'D 3.5:1 SS	2575	221	CNW150-C	WEST3	1.41	0.39
0025	E	4' X 3' RCB	160	106	ELKBASIN	WEST3	0.84	0.50
0026	E	48" RCP	1270	106	ELKBASIN	WEST3	0.84	1.23
0049	E	60" RCP	1095	106	ELKBASIN	WEST3	0.84	0.13
0070	E	48 AC-FT ELKHORN SPRINGS DETENTION BASIN		456	CNW133-C	WEST3	0.84	

ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
EKHU								
0003	E	ELKHORN AND HUALAPAI						
0020	E	6' X 4' RCP	980	393	CNW26-C	WEST3	0.51	3.61
0023	E	6' X 5' RCP	150	393	CNW26-C	WEST3	0.51	3.61
0023	E	6' X 5' RCP	1200	393	CNW26-C	WEST3	0.51	0.90
GOEC								
0176	P	GOWAN NORTH - EL CAPITAN BRANCH						
0176	P	78" RCP	1320	190	CCPFR-C	GOW3A	0.46	1.15
GONO								
0511	P	GOWAN NORTH SYSTEM						
0511	P	6' X 6' RCB	1320	326	CCPHW-C	GOW3A	0.60	1.14
LVMD								
2507	E	LAS VEGAS WASH - MIDDLE						
2525	E	2: 13' X 9' RCB	2831	1808	CNW168-C	CWEST3	4.43	0.36
2525	E	24' X 6' RCB	1140	1598	CNW159-C	CWEST3	3.92	0.40
2550	E	24' X 8' RCB	1445	1312	CD161-C	CWEST3	3.42	0.40
2574	E	24' X 8' RCB	1430	1312	CD161-C	CWEST3	3.42	0.41
2599	E	CONC CHNL 24'W 7'D 2:1 SS	1577	1258	CNW162-C	CWEST3	3.10	0.51
2632	E	18' X 5' RCB	1443	695	CNW138-C	WEST3	1.16	0.47
2661	E	18' X 5' RCB	3003	695	CNW138-C	WEST3	1.16	0.78
2711	E	10' X 5' RCB	2440	560	CNW139-C	WEST3	0.93	2.00
2737	E	6' X 5' RCB	265	560	CNW139-C	WEST3	0.93	2.25
2763	E	6' X 5' RCB	1565	560	CNW139-C	WEST3	0.93	2.41
2789	E	6' X 5' RCB	910	560	CNW139-C	WEST3	0.93	2.00
MOHU								
0000	P0	MOCCASIN-HUALAPAI BRANCH						
0026	P0	13' X 6' RCB	1476	924	2CNW33-C	LOWER3	2.08	1.80
0061	P0	11' X 6' RCB	1654	560	CNW45-N	LOWER3	1.25	0.50
0061	P0	9' X 6' RCB	779	560	CNW45-N	LOWER3	1.25	0.50
0076	P0	60" RCP	1000	263	CNW45-C	LOWER3	1.03	3.00
0095	P0	NATURAL WASH	865	263	CNW45-C	LOWER3	1.03	3.00
0111	P0	6' X 5' RCBC @ EGAN CREB DR	164	263	CNW45-C	LOWER3	1.03	6.10
0116	P0	NATURAL WASH	1900	263	CNW45-C	LOWER3	1.03	3.00
0151	P0	54" RCP @ SHAUMBER	438	72	MODB1	LOWER3	0.86	2.00
MOIR								
0000	P0	MOCCASIN - IRON MOUNTAIN BRANCH						
0020	P0	60" RCP	1080	410	CNW33-C	LOWER3	0.83	4.50
0041	P0	54" RCP	1161	71	MODB2	LOWER3	0.56	3.20
0041	P0	42" RCP	1236	71	MODB2	LOWER3	0.56	5.00
0065	P0	60" RCP	1099	71	MODB2	LOWER3	0.56	0.40
MOKC								
0000	P0	MOCCASIN AND KYLE CANYON						
0000	P0	9' X 6' RCB	6140	1072	CNW35-C	LOWER3	2.69	3.40
MOLC								
0000	P0	MOCCASIN - LOG CABIN BRANCH						
0072	P0	20' X 10' RCB	2206	2295	2CNW64	LOWER3	6.06	0.65
0149	E	12' X 8' RCB	4493	2295	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
MSNV								
0000	E	MOUNTAIN SPA/VISTA RANCH						
0005	E	6: 12' X 5' RCBC @ GRAND TETON	273	639	CNW163-C	CWEST3	1.69	0.40
0125	E	GRASS CHNL 100'W 4.5'D 10:1 SS	6325	259	CNW155-C	WEST3	4.46	0.40
0125	E	GRASS CHNL 100'W 4.5'D 10:1 SS	1300	66	CNW147E	WEST3	1.55	0.40
RACO								
0000	E	RACEL STREET COLLECTOR						
0001	E	14' X 7' RCB BAFFLED ENERGY DISSIPATOR	87	424	CNW111S	WEST3	0.55	0.29
0001	E	78" RCP	3245	424	CNW111S	WEST3	0.55	2.46
0064	E	78" RCP	2650	347	DNW111S	WEST3	0.44	2.09
RCBC								
0000	E	RANCHO ROAD SYSTEM - BELTWAY CHANNEL						
0002	E	6' X 5' RCB	1062	173	FADB	WEST3	1.54	1.04
0002	E	54" RCP OUTLET WITH 41" ORIFICE	503	173	FADB	WEST3	1.54	2.38
0003	E	2,341 CFS PMF SPILLWAY		2341	FADBIN	WEST3	1.54	
0004	E	76 AC-FT FORT APACHE DETENTION BASIN		658	FADBIN	WEST3	1.54	
0007	E	ENERGY DISSIPATOR	100	658	FADBIN	WEST3	1.54	
0009	E	12' X 6' RCBC @ FORT APACHE DETENTION BASIN	133	658	FADBIN	WEST3	1.54	1.79
0012	E	CONC CHNL 12'W 6'-7'D 0:1 SS	1937	658	FADBIN	WEST3	1.54	3.15
0048	E	12' X 6' RCBC @ GRAND CANYON	140	559	CMNA1	WEST3	1.27	3.15
0051	E	CONC CHNL 12'W 6'-8'D 0:1 SS	2660	559	CMNA1	WEST3	1.27	3.44
0096	E	1: 10' X 6' AND 1: 6' X 6' RCBC @ HUALAPAI WAY	190	559	CMNA1	WEST3	1.27	1.93
0100	E	CONC CHNL 12'W 5.5'D 0:1 SS	2085	475	CDMNA1	WEST3	0.43	2.88

ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
RCBC								
0140	E	RANCHO ROAD SYSTEM - BELTWAY CHANNEL						
	E	CONC CHNL 10'W 5'D 0:1 SS	2155	475	CDMNA1	WEST3	0.43	1.65
RCHB								
0053	E	2: 12' X 8' RCBC @ SOUTH RAMP CONNECTOR	85	1465	CDW1C1-C	WEST3	3.55	1.40
0054	E	CONC CHNL 21'W 8'D 0:1 SS	432	1465	CDW1C1-C	WEST3	3.55	1.51
0062	E	TRANSITION STRUCTURE	130	1465	CDW1C1-C	WEST3	3.55	1.51
0065	E	24' X 7' RCB	480	1465	CDW1C1-C	WEST3	3.55	0.30
0074	E	24' X 6' RCB	50	1414	CNW6C6-C	WEST3	3.41	0.30
0075	E	20' X 6' RCBC @ BELTWAY	428	1414	CNW6C6-C	WEST3	3.41	2.81
0083	P	20' X 4' RCB	950	1414	CNW6C6-C	WEST3	3.41	2.49
0101	P	CONC CHNL 20'W 5'D 0:1 SS	980	1414	CNW6C6-C	WEST3	3.41	2.38
0120	E	20' X 6' RCBC @ GRAND MONTECITO	120	1414	CNW6C6-C	WEST3	3.41	1.00
0122	P	CONC CHNL 16'-20'W 6'D 0:1 SS	350	1414	CNW6C6-C	WEST3	3.41	1.84
0130	P	CONC CHNL 16'W 5.5'D 0:1 SS	1012	1414	CNW6C6-C	WEST3	3.41	2.67
0149	P	CONC CHNL 16'W 5-6.5'D 0:1 SS	87	1115	CNW6C3	WEST3	2.99	2.27
0151	P	CONC CHNL 16'W 5'D 0:1 SS	1255	1115	CNW6C3	WEST3	2.99	2.65
0171	E	16' X 6' RCBC @ EL CAPITAN WAY	234	1115	CNW6C3	WEST3	2.99	1.75
0175	E	CONC CHNL 14'W 7'D 0:1 SS	1220	1115	CNW6C3	WEST3	2.99	2.93
0198	E	CONC CHNL 14'W 7'D 0:1 SS	225	788	CNW9A6-C	WEST3	1.88	2.93
0227	E	12' X 6' RCB	995	788	CNW9A6-C	WEST3	1.88	1.73
0250	E	12' X 6' RCB	4020	788	CNW9A6-C	WEST3	1.88	1.12
0275	E	7' X 6' RCB	2650	535	CNW66-C	WEST3	1.04	3.30
0295	P	7' X 6' RCB	2980	431	CNW53-C	WEST3	0.80	3.60
TSDB								
0000	E	2: 10' X 4' RCBC @ ECHO GRANDE	100	25	TULEDB	WEST3	1.37	1.04
0002	E	36" RCP WITH 22" ORIFICE PLATE	320	25	TULEDB	WEST3	1.37	0.33
0010	E	14,013 CFS PMF SPILLWAY		14013	CTULEDB	WEST3	1.37	
0011	E	117 AC-FT NORTH ENVIRONMENTAL ENHANCEMENT AREA	551		TCTULEDB	WEST3	1.37	
0012	E	ENERGY DISSIPATOR	260	333	CNW148-C	WEST3	0.59	
0023	P	78" RCP	1320	333	CNW148-C	WEST3	0.59	0.80
0059	P	72" RCP	2640	333	CNW148-C	WEST3	0.59	1.03

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NINETY FIVE MANAGEMENT LLC

SKYE CANYON II - PARCEL 2.03

WATERSHED MAP

DATE: MAY 2019

DRAFTER: DCH

DESIGNER: DCH

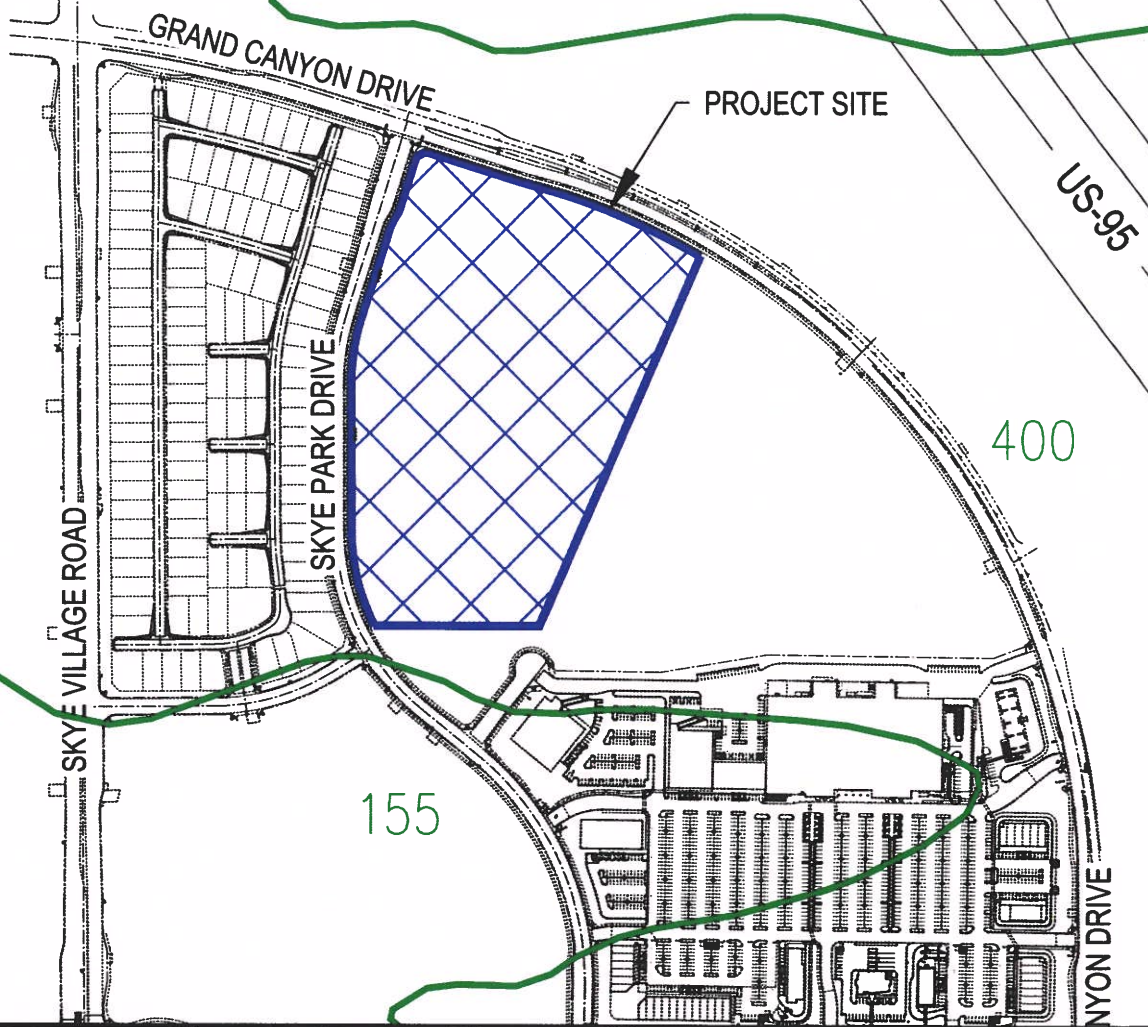
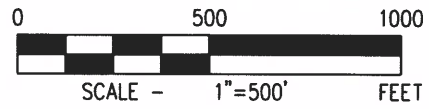
CHECKED: AJH

PROJECT NO.
 OLY1817.000

EXHIBIT C3
 SHEET 1 OF 1

SLATER HANIFAN GROUP
 a Westwood team
 5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
 PHONE (702) 284-5300 FAX (702) 284-5399

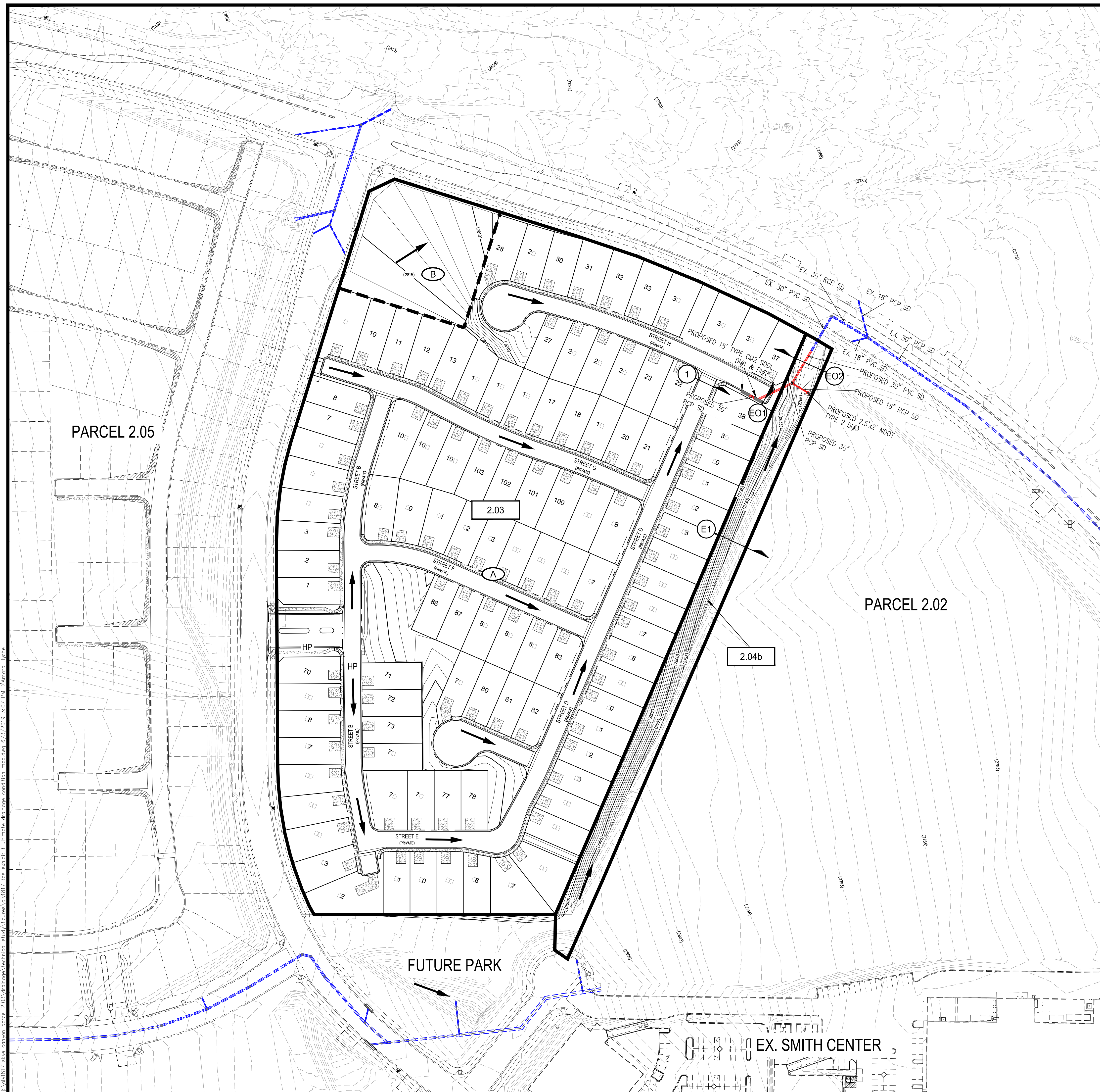
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S-I-G **SLATER HANIFAN GROUP**
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

NINETY FIVE MANAGEMENT LLC
SKYE CANYON II - PARCEL 2.03
SOILS MAP

DATE: MAY 2019	PROJECT NO. OLY1817.000
DRAFTER: DCH	
DESIGNER: DCH	EXHIBIT D
CHECKED: AJH	SHEET 1 OF 1



APPENDIX B

Hydraulic Analyses

FlowMaster Street Sections

Project Description

Input Data

Station (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+15.50	0.38
0+28.50	0.12
0+28.50	0.08
0+29.50	0.00
0+30.62	0.38
0+31.00	0.38

Start Station

Roughness Coefficient

(0+00.00, 0.38)	(0+02.50, 0.08)	0.013
(0+02.50, 0.08)	(0+28.50, 0.08)	0.016
(0+28.50, 0.08)	(0+31.00, 0.38)	0.013

Current Roughness weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Worksheet for Section 1 (min)

Results

Normal Depth	0.61	ft
Elevation Range	0.00 to 0.38 ft	
Flow Area	11.56	ft ²
Wetted Perimeter	31.67	ft
Hydraulic Radius	0.36	ft
Top Width	31.00	ft
Normal Depth	0.61	ft
Critical Depth	0.66	ft
Critical Slope	0.00482	ft/ft
Velocity	4.24	ft/s
Velocity Head	0.28	ft
Specific Energy	0.89	ft
Froude Number	1.22	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.61	ft
Critical Depth	0.66	ft
Channel Slope	0.75	%
Critical Slope	0.00482	ft/ft

Messages

Notes

Note: Flow rate is conservative for the minimum and maximum slope locations, so the depth and velocity are also conservative. This is due to the fact that only a small portion of the total flow (49 cfs) will actually flow through the minimum and maximum slopes.

Cross Section for Section 1 (min)

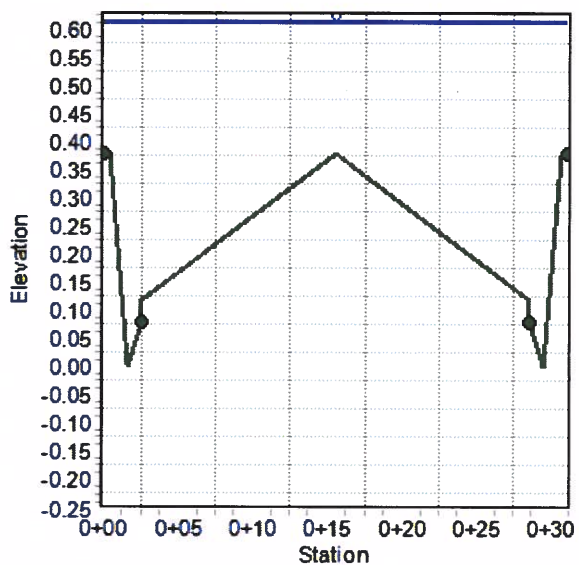
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.75	%
Normal Depth	0.61	ft
Discharge	49.00	ft ³ /s

Cross Section Image



Worksheet for Section 1 (max)

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 5.00 %
Discharge 49.00 ft³/s
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+15.50	0.38
0+28.50	0.12
0+28.50	0.08
0+29.50	0.00
0+30.62	0.38
0+31.00	0.38

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.38)	(0+02.50, 0.08)	0.013
(0+02.50, 0.08)	(0+28.50, 0.08)	0.016
(0+28.50, 0.08)	(0+31.00, 0.38)	0.013

Options

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

Worksheet for Section 1 (max)

Results

Normal Depth	0.45	ft
Elevation Range	0.00 to 0.38	ft
Flow Area	6.52	ft ²
Wetted Perimeter	31.35	ft
Hydraulic Radius	0.21	ft
Top Width	31.00	ft
Normal Depth	0.45	ft
Critical Depth	0.66	ft
Critical Slope	0.00483	ft/ft
Velocity	7.51	ft/s
Velocity Head	0.88	ft
Specific Energy	1.32	ft
Froude Number	2.89	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.45	ft
Critical Depth	0.66	ft
Channel Slope	5.00	%
Critical Slope	0.00483	ft/ft

Messages

Notes

Note: Flow rate is conservative for the minimum and maximum slope locations, so the depth and velocity are also conservative. This is due to the fact that only a small portion of the total flow (49 cfs) will actually flow through the minimum and maximum slopes.

Project Description

Manning Formula

Normal Depth

Channel Slope	5.00	%
Normal Depth	0.45	ft
Discharge	49.00	ft ³ /s

FlowMaster Drainage Easement Sections

Worksheet for Section E1 - Easement (min%)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030
Channel Slope	2.00 %
Left Side Slope	3.00 ft/ft (H:V)
Right Side Slope	3.00 ft/ft (H:V)
Discharge	3.00 ft³/s

Results

Normal Depth	0.58	ft
Flow Area	1.01	ft²
Wetted Perimeter	3.67	ft
Hydraulic Radius	0.28	ft
Top Width	3.48	ft
Critical Depth	0.57	ft
Critical Slope	0.02133	ft/ft
Velocity	2.97	ft/s
Velocity Head	0.14	ft
Specific Energy	0.72	ft
Froude Number	0.97	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.58	ft
Critical Depth	0.57	ft
Channel Slope	2.00	%
Critical Slope	0.02133	ft/ft

Cross Section for Section E1 - Easement (min%)

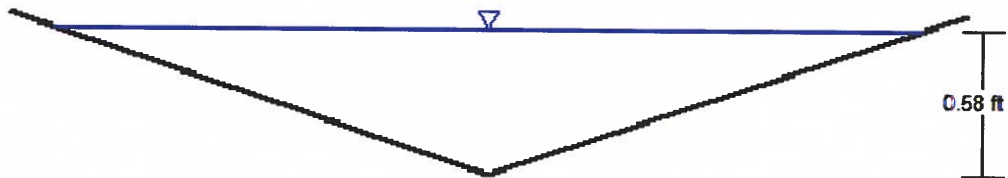
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.030
Channel Slope	2.00 %
Normal Depth	0.58 ft
Left Side Slope	3.00 ft/ft (H:V)
Right Side Slope	3.00 ft/ft (H:V)
Discharge	3.00 ft ³ /s

Cross Section Image



V: 1
H: 1

Worksheet for Section E1 - Easement (max%)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030
Channel Slope	3.25 %
Left Side Slope	3.00 ft/ft (H:V)
Right Side Slope	3.00 ft/ft (H:V)
Discharge	3.00 ft ³ /s

Results

Normal Depth	0.53 ft
Flow Area	0.84 ft ²
Wetted Perimeter	3.35 ft
Hydraulic Radius	0.25 ft
Top Width	3.18 ft
Critical Depth	0.57 ft
Critical Slope	0.02133 ft/ft
Velocity	3.56 ft/s
Velocity Head	0.20 ft
Specific Energy	0.73 ft
Froude Number	1.22
Flow Type	Supercritical

GVF Input Data

Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.53 ft
Critical Depth	0.57 ft
Channel Slope	3.25 %
Critical Slope	0.02133 ft/ft

Cross Section for Section E1 - Easement (max%)

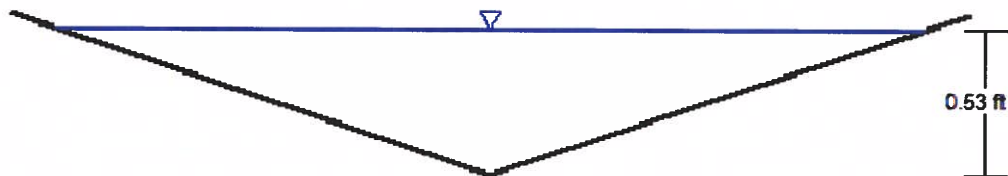
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.030
Channel Slope	3.25 %
Normal Depth	0.53 ft
Left Side Slope	3.00 ft/ft (H:V)
Right Side Slope	3.00 ft/ft (H:V)
Discharge	3.00 ft ³ /s

Cross Section Image



V: 1
H: 1

FlowMaster Easement Emergency Overflow Sections

Worksheet for Section E01 - Emergency Overflow (weir)

Project Description

Solve For Headwater Elevation

Input Data

Discharge		49.00	ft ³ /s
Crest Elevation		0.00	ft
Tailwater Elevation		0.50	ft
Crest Surface Type	Gravel		
Crest Breadth		5.00	ft
Crest Length		55.00	ft

Results

Headwater Elevation	0.54	ft
Headwater Height Above Crest	0.54	ft
Tailwater Height Above Crest	0.50	ft
Weir Coefficient	2.71	US
Submergence Factor	0.82	
Adjusted Weir Coefficient	2.22	US
Flow Area	29.97	ft ²
Velocity	1.64	ft/s
Wetted Perimeter	56.09	ft
Top Width	55.00	ft

Messages

Notes

Note that 0.5' tailwater is conservatively used.

Cross Section for Section E01 - Emergency Overflow (weir)

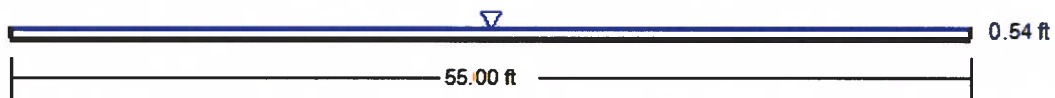
Project Description

Solve For Headwater Elevation

Input Data

Discharge		49.00	ft ³ /s
Headwater Elevation		0.54	ft
Crest Elevation		0.00	ft
Tailwater Elevation		0.50	ft
Crest Surface Type	Gravel		
Crest Breadth		5.00	ft
Crest Length		55.00	ft

Cross Section Image



V: 1
H: 1

Worksheet for Section E02 - Emergency Overflow (weir)

Project Description

Solve For Headwater Elevation

Input Data

Discharge		52.00	ft ³ /s
Crest Elevation		0.00	ft
Tailwater Elevation		0.50	ft
Crest Surface Type	Gravel		
Crest Breadth		5.00	ft
Crest Length		50.00	ft

Results

Headwater Elevation	0.57	ft
Headwater Height Above Crest	0.57	ft
Tailwater Height Above Crest	0.50	ft
Weir Coefficient	2.71	US
Submergence Factor	0.90	
Adjusted Weir Coefficient	2.45	US
Flow Area	28.26	ft ²
Velocity	1.84	ft/s
Wetted Perimeter	51.13	ft
Top Width	50.00	ft

Messages

Notes

Note that tailwater is conservatively assumed to be 0.5'.

Project Description

Headwater Elevation

Discharge	52.00	ft³/s
Headwater Elevation	0.57	ft
Crest Elevation	0.00	ft
Tailwater Elevation	0.50	ft
Crest Surface Type	Gravel	
Crest Breadth	5.00	ft
Crest Length	50.00	ft

Diagram of a beam with a triangular load. The beam has a total length of 50.00 ft. A triangular load is applied, with a peak intensity of 0.57 ft indicated by a vertical arrow at the right end.

V: 1 H: 1

Drop Inlet Sizing Computations

Curb Inlet Sizing Computation

Project Name & Number: Skye Canyon Parcel 2.03
 Date: 5/28/2019
 By: AJH



Notes:

Facility ID: SDDI#1 & SDDI#2
 Drainage Condition: Ultimate
 Source of Flow: Q100 = Basin 2.03(A) / 2
 Design Flow (cfs): 49 / 2 = 25cfs
 Inlet Type: Type CM2 (Sump)
 Inlet Length: 14.5-ft
 Number of Grates: 5

Input:

Depth at Inlet (ft)
 Grate Width (ft)
 Length of Grate (ft)
 Length of Curb Opening (ft)
 Height of Curb Opening (ft)
 Weir Coef. - Curb Opening
 Weir Coef. - Grate
 Orifice Coef.
 Grate Coef.
 Clogging Factor - Grate (%)
 Clogging Factor - Curb (%)

Variable:

D
 W
 L_g
 L_c
 H
 W_c
 W_g
 O_c
 G_c
 CF_g
 CF_c

Input:

0.67
 1.50
 12.50
 14.50
 0.50
 2.3
 3.0
 0.67
 0.60
 50
 50

Output (Grate):

Effective Weir Length (ft)
 Adjusted Effective Weir Length (ft)
 Grate Open Area (sf)
 Adjusted Grate Open Area (sf)
 Controlling Flow Type (weir/orifice)
 Intercepted Flow (cfs)

Equation:

$2*W+L_g$
 $2*(1-CF_g/100)*W+(1-CF_g/100)*L_g$
 $W*L_g$
 Grate Open Area * $G_c*(1-CF_g/100)$
 If $D < 1.792*(\text{Adj. Grate Open Area}/\text{Adj. Eff. Length})$
 use weir, else orifice
 weir: $W_g*(\text{Adj. Eff. Weir Length})*D^{1.5}$
 orifice: $O_c*(\text{Adj. Grate Open Area})*(64.4*D)^{0.5}$

Output (Grate):

15.50
 7.75
 18.75
 5.63
 weir
 12.8

Output (Curb):

Effective Weir Length (ft)
 Adjusted Effective Weir Length (ft)
 Curb Open Area (sf)
 Adjusted Curb Open Area (sf)
 Controlling Flow Type (weir/orifice)
 Intercepted Flow (cfs)

Equation:

$L+1.8*W$
 $L+1.8*(1-CF_c/100)*W$
 $L*H$
 Curb Open Area * $(1-CF_c/100)$
 If $D < H$, weir, else orifice
 weir: $W_c*(\text{Adj. Eff. Weir Length})*D^{1.5}$
 orifice: $O_c*(\text{Adj. Curb Open Area})*(64.4*(D-H/2))^{0.5}$

Output (Curb):

17.20
 15.91
 7.25
 3.63
 orifice
 15.91

Output (Total):

Capacity Intercepted Flow (cfs)

Equation:

Intercepted (Grate) + Intercepted (Curb)

Output (Total):

28.7

Grate Inlet Sizing Computation

Project Name & Number: Skye Canyon Parcel 2.03
Date: 5/28/2019
By: AJH



Notes:

Facility ID: SDDI#3
Drainage Condition: Ultimate
Source of Flow: Q100= Basin 2.04b
Inlet Type: NDOT Type 2
Inlet Size: 4'x4'

Known Information:

Q = Flow (cfs) 3.0
W = Width of Grate (ft) 2.50
L = Length of Grate (ft) 2.00
D = Diameter of Circle (in)
Cf = Clogging Factor (%) 50

Weir Conditions:

$$HW = (Q/(Cw \cdot Pc))^{2/3}$$

Cw = Weir Coefficient 3.00
P = Perimeter of grate (ft) 9.0
Pc = Perimeter (w/clogging) (ft) 4.5
HW = Headwater depth (ft) 0.37

Orifice Conditions:

$$HW = (Q/(Co \cdot Ac))^2 / 2 \cdot g$$

Co = Orifice Coefficient 0.67
Ag = Grate Area (ft²) 5.00
Gf = Grate Opening Factor 0.67
Ac = Grate Open Area (w/ clogging) (ft²) 1.68
g = Gravity (fps) 32.20
HW = Headwater depth (ft) 0.11

Output:

Worst Case Scenario Occurs Under Weir Conditions

Headwater Depth = 0.37 ft with grate

Storm Drain WSPGW Models

WSPGW Summary

ULTIMATE CONDITION STORM DRAIN - MAIN

FROM EX. OFFSITE MANHOLE TO PROPOSED SDDI#1

Starting WSE Referenced from Phase 3A Update at STA. 1946.00 = 2781.69'

WSPG Station		Equivalent IP Profile Station	Plan & Profile Sheet	Storm Drain Diameter (in)	Q ₁₀₀ (cfs)	Invert Elevation (ft)	WSE (ft)	Velocity (ft/s)	FG Elevation	Description	HGL Check ¹
SO	1000.00	11+30.73	SD-1	30	52.0	2779.34	2781.69	10.86	2787.3	Ex. Offsite Manhole	OK
R	1128.23	10+00.00	SD-1	30	52.0	2780.87	2783.80	10.59	2788.6	Proposed Manhole / Junction with DI#3 LAT	OK
JX	1130.73			30	52.0	2780.90	2784.23	9.98			
R	1133.23			30	49.0	2780.94	2784.58	9.98			
R/WE	1192.59	10+32.73	SD-1	30	49.0	2781.97	2786.98	9.98	2790.0	Proposed DI#2	OK
JX/R/WX	1200.59			30	49.0	2782.07	2786.99	4.89			
R/SH	1208.59	14+31.25	SD-1	30	24.0	2782.11	2787.02	4.89	2790.8	Proposed DI#1	OK

¹ - 'HGL Check' reflects the minimum 1-ft below finished grade.

MAIN.WSW

T1 SKYE CANYON PARCEL 2.03

T2 MAIN STORM DRAIN

T3 FROM EX OFFSITE SYSTEM TO SDDI#1

SO	1000.00	2779.34	30	.013		2781.69				
R	1128.23	2780.87	30	.013						
JX	1130.73	2780.90	30 18	.013	3.0	2781.90	90.0			
R	1131.98	2780.92	30	.013				15.0	1	
R	1133.23	2780.94	30	.013				15.0	1	
R	1192.59	2781.97	30	.013						
WE			1	.013						
R	1193.09	2781.98	1	.013				15.0	1	
R	1193.59	2781.99	1	.013				15.0	1	
R	1194.09	2782.00	1	.013				15.0	1	
JX	1200.59	2782.07	1 48	.013	25.0	2782.07	90.0			
R	1200.59	2782.07	1	.013						
WX			30	.013						
R	1208.59	2782.11	30	.013						
SH	1208.59	2782.11	30	.013						
CD	1	3	0	0.000	8.000	15.000	0.000	0.000	0.000	0.000
CD	18	4	1	.000	1.500	.000	.000	.000	.000	.00
CD	24	4	1	.000	2.000	.000	.000	.000	.000	.00
CD	30	4	1	.000	2.500	.000	.000	.000	.000	.00
CD	36	4	1	.000	3.000	.000	.000	.000	.000	.00
CD	42	4	1	.000	3.500	.000	.000	.000	.000	.00
CD	48	4	1	.000	4.000	.000	.000	.000	.000	.00
Q		24.00	.0							

MAIN.EDT

FILE: MAIN.WSW

W S P G W - EDIT LISTING - Version 14.10

Date: 5-30-2019 Time: 4: 0:18

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	3	0	.000	8.000	15.000	.000	.000	.00										
CD	18	4	1		1.500														
CD	24	4	1		2.000														
CD	30	4	1		2.500														
CD	36	4	1		3.000														
CD	42	4	1		3.500														
CD	48	4	1		4.000														

W S P G W

PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SKYE CANYON PARCEL 2.03

HEADING LINE NO 2 IS -

MAIN STORM DRAIN

HEADING LINE NO 3 IS -

FROM EX OFFSITE SYSTEM TO SDDI#1

W S P G W

PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	1 IS A SYSTEM OUTLET	U/S DATA	STATION	INVERT	SECT	W S ELEV								
			1000.000	2779.340	30	2781.690								
ELEMENT NO	2 IS A REACH	U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H				
			1128.230	2780.870	30	.013	.000	.000	.000	0				
ELEMENT NO	3 IS A JUNCTION	U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
			1130.730	2780.900	30	18	0	.013	3.000	.000	2781.900	.000	90.000	.000
											RADIUS	ANGLE		
											.000	.000		
ELEMENT NO	4 IS A REACH	U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H				
			1131.980	2780.920	30	.013	.000	.000	15.000	1				
ELEMENT NO	5 IS A REACH	U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H				
			1133.230	2780.940	30	.013	.000	.000	15.000	1				
ELEMENT NO	6 IS A REACH	U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H				
			1192.590	2781.970	30	.013	.000	.000	.000	0				
ELEMENT NO	7 IS A WALL ENTRANCE	U/S DATA	STATION	INVERT	SECT	FP								
			1192.590	2781.970	1	.013								
ELEMENT NO	8 IS A REACH	U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H				
			1193.090	2781.980	1	.013	.000	.000	15.000	1				

															MAIN.EDT	
ELEMENT NO	9	IS A REACH	*	*	*											
		U/S DATA	STATION	INVERT	SECT	N										
			1193.590	2781.990	1	.013										
ELEMENT NO	10	IS A REACH	*	*	*											
		U/S DATA	STATION	INVERT	SECT	N										
			1194.090	2782.000	1	.013										
ELEMENT NO	11	IS A JUNCTION	*	*	*	*										
		U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4		
			1200.590	2782.070	1	48	0	.013	25.000	.000	2782.070	.000	90.000	.000		
											RADIUS	ANGLE				
											.000	.000				
W S P G W																
WATER SURFACE PROFILE - ELEMENT CARD LISTING																
ELEMENT NO	12	IS A REACH	*	*	*											
		U/S DATA	STATION	INVERT	SECT	N										
			1200.590	2782.070	1	.013										
ELEMENT NO	13	IS A WALL EXIT	*													
		U/S DATA	STATION	INVERT	SECT											
			1200.590	2782.070	30											
ELEMENT NO	14	IS A REACH	*	*	*											
		U/S DATA	STATION	INVERT	SECT	N										
			1208.590	2782.110	30	.013										
ELEMENT NO	15	IS A SYSTEM HEADWORKS	*													
		U/S DATA	STATION	INVERT	SECT											
			1208.590	2782.110	30											
											W S ELEV					
											.000					

PAGE NO 3

SKYE CANYON PARCEL 2.03

MAIN STORM DRAIN

FROM EX OFFSITE SYSTEM TO SDDI#1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	2779.340	2.350	2781.690	52.00	10.86	1.83	2783.52	.00	2.32	1.19	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.430	.0119					.0146	.34	2.35	.95	2.50	.013	.00	.00	PIPE
1023.430	2779.620	2.500	2782.120	52.00	10.59	1.74	2783.86	.00	2.32	.00	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
104.800	.0119					.0156	1.64	2.50	.00	2.50	.013	.00	.00	PIPE
1128.230	2780.870	2.934	2783.804	52.00	10.59	1.74	2785.55	.00	2.32	.00	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	.0119					.0152	.04	2.93	.00		.013	.00	.00	PIPE
1130.730	2780.900	3.333	2784.232	49.00	9.98	1.55	2785.78	.00	2.29	.00	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.250	.0160					.0143	.02	3.33	.00	1.93	.013	.00	.00	PIPE
1131.980	2780.920	3.484	2784.404	49.00	9.98	1.55	2785.95	.00	2.29	.00	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.250	.0160					.0143	.02	3.48	.00	1.93	.013	.00	.00	PIPE
1133.230	2780.940	3.636	2784.576	49.00	9.98	1.55	2786.12	.00	2.29	.00	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59.360	.0174					.0143	.85	3.64	.00	1.87	.013	.00	.00	PIPE
1192.590	2781.970	3.453	2785.423	49.00	9.98	1.55	2786.97	.00	2.29	.00	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WALL ENTRANCE														
1192.590	2781.970	5.014	2786.984	49.00	.65	.01	2786.99	.00	.69	15.00	8.000	15.000	.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.500	.0200					.0000	.00	5.01	.05	.39	.013	.00	.00	BOX
1193.090	2781.980	5.004	2786.984	49.00	.65	.01	2786.99	.00	.69	15.00	8.000	15.000	.00	0 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.500	.0200					.0000	.00	5.00	.05	.39	.013	.00	.00	BOX

MAIN.OUT

SKYE CANYON PARCEL 2.03

MAIN STORM DRAIN

FROM EX OFFSITE SYSTEM TO SDDI#1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip	
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type	Ch

1193.590	2781.990	4.994	2786.984	49.00	.65	.01	2786.99	.00	.69	15.00	8.000	15.000	.00	0	.0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
.500	.0200					.0000	.00	4.99	.05	.39	.013	.00	.00	BOX	
1194.090	2782.000	4.984	2786.984	49.00	.66	.01	2786.99	.00	.69	15.00	8.000	15.000	.00	0	.0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
JUNCT STR	.0108					.0000	.00	4.98	.05		.013	.00	.00	BOX	
1200.590	2782.070	4.924	2786.994	24.00	.32	.00	2787.00	.00	.43	15.00	8.000	15.000	.00	0	.0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
WALL EXIT															
1200.590	2782.070	4.924	2786.994	24.00	4.89	.37	2787.37	.00	1.67	.00	2.500	.000	.00	1	.0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
8.000	.0050					.0034	.03	4.92	.00	1.73	.013	.00	.00	PIPE	
1208.590	2782.110	4.912	2787.022	24.00	4.89	.37	2787.39	.00	1.67	.00	2.500	.000	.00	1	.0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

▲

WSPGW Summary**ULTIMATE CONDITION STORM DRAIN - LAT****FROM "MAIN" SYSTEM TO DI#3****Starting WSE Referenced from MAIN System at STA. 1130.73 = 2784.23'**

WSPG Station		Equivalent IP Profile Station	Plan & Profile Sheet	Storm Drain Diameter (in)	Q ₁₀₀ (cfs)	Invert Elevation (ft)	WSE (ft)	Velocity (ft/s)	FG Elevation	Description	HGL Check ¹
SO	1000.00	10+00.00	SD-1	18	3.0	2781.90	2784.23	1.70	2788.6	Proposed Manhole Junction with MAIN SD	OK
R/SH	1030.72	09+69.28	SD-1	18	3.0	2782.21	2784.30	1.70	2786.7	Proposed DI#3	OK

¹ - 'HGL Check' reflects the minimum 1-ft below finished grade.

LAT.WSW

T1 SKYE CANYON PARCEL 2.03

T2 LAT STORM DRAIN

T3 FROM MAIN SD TO DI#3

SO 1000.00 2781.90 18 .013 2784.23

R 1030.72 2782.21 18 .013

SH 1030.72 2782.21 18 .013

CD 1 3 0 0.000 8.000 15.000 0.000 0.000 0.000

CD 18 4 1 .000 1.500 .000 .000 .000 .00

CD 24 4 1 .000 2.000 .000 .000 .000 .00

CD 30 4 1 .000 2.500 .000 .000 .000 .00

CD 36 4 1 .000 3.000 .000 .000 .000 .00

CD 42 4 1 .000 3.500 .000 .000 .000 .00

CD 48 4 1 .000 4.000 .000 .000 .000 .00

Q 3.00 .0

FILE: LAT.WSW
 LAT.EDT
W S P G W - EDIT LISTING - Version 14.10
Date: 5-30-2019 Time: 4:11:52

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING
 PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
--------------	------------	-------------	-------------------	-------------------	----------------------	---------------	----	----	-------------	------	------	------	------	------	------	------	------	------	-------

CD	1	3	0	.000	8.000	15.000	.000	.000	.00										
CD	18	4	1		1.500														
CD	24	4	1		2.000														
CD	30	4	1		2.500														
CD	36	4	1		3.000														
CD	42	4	1		3.500														
CD	48	4	1		4.000														

W S P G W

PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS - SKYE CANYON PARCEL 2.03

HEADING LINE NO 2 IS - LAT STORM DRAIN

HEADING LINE NO 3 IS - FROM MAIN SD TO DI#3

W S P G W

PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	IS	A	SYSTEM OUTLET	U/S DATA	STATION	INVERT	SECT	W S ELEV											
1					1000.000	2781.900	18	2784.230											
2					1030.720	2782.210	18		N										
									.013										
3					1030.720	2782.210	18												

Date: 5-30-2019 Time: 4:11:53

SKYE CANYON PARCEL 2.03
LAT STORM DRAIN
FROM MAIN SD TO DI#3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	2781.900	2.330	2784.230	3.00	1.70	.04	2784.27	.00	.66	.00	1.500	.000	.00	1 .0
30.720	.0101					.0008	.03	2.33	.00	.55	.013	.00	.00	PIPE
1030.720	2782.210	2.045	2784.255	3.00	1.70	.04	2784.30	.00	.66	.00	1.500	.000	.00	1 .0

APPENDIX C

Finished Floor Analysis

SKYE CANYON PARCEL 2.03 FINISH FLOOR - CITY OF LAS VEGAS JURISDICTION										
INPUT INFORMATION					FINISHED FLOORS					NOTES
Lot Number	Hydraulic Section Utilized	T/C ¹ (ft)	F/L ² (ft)	D ₁₀₀ (ft)	Flowline F.F. _{min} ³ (ft)	T/C + 6" F.F. _{min} ⁴ (ft)	F.F. _{Design} (ft)	Flowline Check	T/C + 6" Check	See References on Last Sheet
1	1	2827.80	2827.42	0.61	2828.64	2828.30	2829.5	OK	OK	
2	1	2826.77	2826.39	0.61	2827.61	2827.27	2828.4	OK	OK	
3	1	2824.90	2824.52	0.61	2825.74	2825.40	2826.4	OK	OK	
4	1	2823.08	2822.70	0.61	2823.92	2823.58	2824.8	OK	OK	
5	1	2821.28	2820.90	0.61	2822.12	2821.78	2823.0	OK	OK	
6	1	2819.53	2819.15	0.61	2820.37	2820.03	2821.3	OK	OK	
7	1	2818.14	2817.76	0.61	2818.98	2818.64	2819.9	OK	OK	
8	1	2817.31	2816.93	0.61	2818.15	2817.81	2819.1	OK	OK	
9	1	2817.95	2817.57	0.61	2818.79	2818.45	2819.7	OK	OK	
10	1	2817.54	2817.16	0.61	2818.38	2818.04	2819.3	OK	OK	
11	1	2817.09	2816.71	0.61	2817.93	2817.59	2818.9	OK	OK	
12	1	2816.65	2816.27	0.61	2817.49	2817.15	2818.4	OK	OK	
13	1	2816.01	2815.63	0.61	2816.85	2816.51	2817.8	OK	OK	
14	1	2814.63	2814.25	0.61	2815.47	2815.13	2816.4	OK	OK	
15	1	2812.59	2812.21	0.61	2813.43	2813.09	2814.1	OK	OK	
16	1	2810.39	2810.01	0.61	2811.23	2810.89	2811.8	OK	OK	
17	1	2808.20	2807.82	0.61	2809.04	2808.70	2809.6	OK	OK	
18	1	2806.00	2805.62	0.61	2806.84	2806.50	2807.5	OK	OK	
19	1	2803.87	2803.49	0.61	2804.71	2804.37	2805.4	OK	OK	
20	1	2801.76	2801.38	0.61	2802.60	2802.26	2803.2	OK	OK	
21	1	2799.68	2799.30	0.61	2800.52	2800.18	2801.4	OK	OK	
22	1	2794.06	2793.68	0.61	2794.90	2794.56	2795.8	OK	OK	
23	1	2795.69	2795.31	0.61	2796.53	2796.19	2797.3	OK	OK	
24	1	2797.67	2797.29	0.61	2798.51	2798.17	2799.2	OK	OK	
25	1	2799.72	2799.34	0.61	2800.56	2800.22	2801.4	OK	OK	
26	1	2801.78	2801.40	0.61	2802.62	2802.28	2803.5	OK	OK	
27	1	2803.85	2803.47	0.61	2804.69	2804.35	2805.5	OK	OK	
28	1	2807.93	2807.55	0.61	2808.77	2808.43	2810.0	OK	OK	
29	1	2806.57	2806.19	0.61	2807.41	2807.07	2808.3	OK	OK	
30	1	2804.81	2804.43	0.61	2805.65	2805.31	2806.5	OK	OK	
31	1	2802.75	2802.37	0.61	2803.59	2803.25	2804.4	OK	OK	
32	1	2800.53	2800.15	0.61	2801.37	2801.03	2802.1	OK	OK	
33	1	2798.32	2797.94	0.61	2799.16	2798.82	2799.9	OK	OK	

SKYE CANYON PARCEL 2.03 FINISH FLOOR - CITY OF LAS VEGAS JURISDICTION										
INPUT INFORMATION					FINISHED FLOORS					NOTES
Lot Number	Hydraulic Section Utilized	T/C ¹ (ft)	F/L ² (ft)	D ₁₀₀ (ft)	Flowline F.F.-min ³ (ft)	T/C + 6" F.F.-min ⁴ (ft)	F.F.-Design (ft)	Flowline Check	T/C + 6" Check	See References on Last Sheet
34	1	2796.11	2795.73	0.61	2796.95	2796.61	2797.9	OK	OK	
35	1	2793.41	2793.03	0.61	2794.25	2793.91	2795.2	OK	OK	
36	1	2792.22	2791.84	0.61	2793.06	2792.72	2794.0	OK	OK	
37	1	2791.52	2791.14	0.61	2792.36	2792.02	2793.3	OK	OK	
38	1	2793.27	2792.89	0.61	2794.11	2793.77	2795.1	OK	OK	
39	1	2794.60	2794.22	0.61	2795.44	2795.10	2796.4	OK	OK	
40	1	2795.93	2795.55	0.61	2796.77	2796.43	2797.7	OK	OK	
41	1	2797.27	2796.89	0.61	2798.11	2797.77	2798.7	OK	OK	
42	1	2798.85	2798.47	0.61	2799.69	2799.35	2800.6	OK	OK	
43	1	2800.74	2800.36	0.61	2801.58	2801.24	2802.2	OK	OK	
44	1	2802.76	2802.38	0.61	2803.60	2803.26	2804.3	OK	OK	
45	1	2804.68	2804.30	0.61	2805.52	2805.18	2806.3	OK	OK	
46	1	2806.21	2805.83	0.61	2807.05	2806.71	2808.0	OK	OK	
47	1	2807.38	2807.00	0.61	2808.22	2807.88	2809.2	OK	OK	
48	1	2808.46	2808.08	0.61	2809.30	2808.96	2810.3	OK	OK	
50	1	2810.02	2809.64	0.61	2810.86	2810.52	2811.8	OK	OK	
51	1	2810.80	2810.42	0.61	2811.64	2811.30	2812.6	OK	OK	
52	1	2811.65	2811.27	0.61	2812.49	2812.15	2813.5	OK	OK	
53	1	2812.69	2812.31	0.61	2813.53	2813.19	2814.5	OK	OK	
54	1	2813.73	2813.35	0.61	2814.57	2814.23	2815.5	OK	OK	
55	1	2814.61	2814.23	0.61	2815.45	2815.11	2816.4	OK	OK	
56	1	2815.49	2815.11	0.61	2816.33	2815.99	2817.3	OK	OK	
57	1	2816.02	2815.64	0.61	2816.86	2816.52	2817.8	OK	OK	
58	1	2816.91	2816.53	0.61	2817.75	2817.41	2818.7	OK	OK	
59	1	2817.93	2817.55	0.61	2818.77	2818.43	2819.7	OK	OK	
60	1	2818.99	2818.61	0.61	2819.83	2819.49	2820.8	OK	OK	
61	1	2819.92	2819.54	0.61	2820.76	2820.42	2821.7	OK	OK	
62	1	2821.13	2820.75	0.61	2821.97	2821.63	2823.8	OK	OK	
63	1	2820.90	2820.52	0.61	2821.74	2821.40	2823.2	OK	OK	
64	1	2821.30	2820.92	0.61	2822.14	2821.80	2823.2	OK	OK	
65	1	2822.39	2822.01	0.61	2823.23	2822.89	2824.1	OK	OK	
66	1	2823.83	2823.45	0.61	2824.67	2824.33	2825.6	OK	OK	
67	1	2825.55	2825.17	0.61	2826.39	2826.05	2827.2	OK	OK	

SKYE CANYON PARCEL 2.03 FINISH FLOOR - CITY OF LAS VEGAS JURISDICTION										
INPUT INFORMATION					FINISHED FLOORS					NOTES
Lot Number	Hydraulic Section Utilized	T/C ¹ (ft)	F/L ² (ft)	D ₁₀₀ (ft)	Flowline F.F. _{min} ³ (ft)	T/C + 6" F.F. _{min} ⁴ (ft)	F.F. _{Design} (ft)	Flowline Check	T/C + 6" Check	See References on Last Sheet
68	1	2827.27	2826.89	0.61	2828.11	2827.77	2829.0	OK	OK	
69	1	2828.33	2827.95	0.61	2829.17	2828.83	2830.1	OK	OK	
70	1	28.46	28.08	0.61	29.30	28.96	2830.2	OK	OK	
71	1	2828.51	2828.13	0.61	2829.35	2829.01	2830.2	OK	OK	
72	1	2828.16	2827.78	0.61	2829.00	2828.66	2829.8	OK	OK	
73	1	2826.88	2826.50	0.61	2827.72	2827.38	2828.4	OK	OK	
74	1	2825.14	2824.76	0.61	2825.98	2825.64	2826.7	OK	OK	
75	1	2820.31	2819.93	0.61	2821.15	2820.81	2822.0	OK	OK	
76	1	2819.09	2818.71	0.61	2819.93	2819.59	2820.8	OK	OK	
77	1	2818.03	2817.65	0.61	2818.87	2818.53	2819.7	OK	OK	
78	1	2816.97	2816.59	0.61	2817.81	2817.47	2818.7	OK	OK	
79	1	2816.88	2816.50	0.61	2817.72	2817.38	2818.9	OK	OK	
80	1	2816.40	2816.02	0.61	2817.24	2816.90	2818.1	OK	OK	
81	1	2814.86	2814.48	0.61	2815.70	2815.36	2816.6	OK	OK	
82	1	2813.41	2813.03	0.61	2814.25	2813.91	2815.2	OK	OK	
83	1	2809.02	2808.64	0.61	2809.86	2809.52	2810.7	OK	OK	
84	1	2810.68	2810.30	0.61	2811.52	2811.18	2812.2	OK	OK	
85	1	2812.69	2812.31	0.61	2813.53	2813.19	2814.1	OK	OK	
86	1	2814.93	2814.55	0.61	2815.77	2815.43	2816.2	OK	OK	
87	1	2817.18	2816.80	0.61	2818.02	2817.68	2818.5	OK	OK	
88	1	2819.43	2819.05	0.61	2820.27	2819.93	2820.7	OK	OK	
89	1	2824.30	2823.92	0.61	2825.14	2824.80	2825.7	OK	OK	
90	1	2823.18	2822.80	0.61	2824.02	2823.68	2824.8	OK	OK	
91	1	2821.47	2821.09	0.61	2822.31	2821.97	2823.0	OK	OK	
92	1	2819.43	2819.05	0.61	2820.27	2819.93	2820.7	OK	OK	
93	1	2817.18	2816.80	0.61	2818.02	2817.68	2818.4	OK	OK	
94	1	2814.93	2814.55	0.61	2815.77	2815.43	2816.2	OK	OK	
95	1	2812.69	2812.31	0.61	2813.53	2813.19	2814.0	OK	OK	
96	1	2810.68	2810.30	0.61	2811.52	2811.18	2812.3	OK	OK	
97	1	2808.95	2808.57	0.61	2809.79	2809.45	2810.7	OK	OK	
98	1	2799.86	2799.48	0.61	2800.70	2800.36	2801.5	OK	OK	
99	1	2802.18	2801.80	0.61	2803.02	2802.68	2803.5	OK	OK	
100	1	2804.56	2804.18	0.61	2805.40	2805.06	2806.0	OK	OK	

SKYE CANYON PARCEL 2.03 FINISH FLOOR - CITY OF LAS VEGAS JURISDICTION										
INPUT INFORMATION					FINISHED FLOORS					NOTES
Lot Number	Hydraulic Section Utilized	T/C ¹ (ft)	F/L ² (ft)	D ₁₀₀ (ft)	Flowline F.F. _{min} ³ (ft)	T/C + 6" F.F. _{min} ⁴ (ft)	F.F. _{Design} (ft)	Flowline Check	T/C + 6" Check	See References on Last Sheet
101	1	2806.91	2806.53	0.61	2807.75	2807.41	2808.4	OK	OK	
102	1	2809.22	2808.84	0.61	2810.06	2809.72	2810.7	OK	OK	
103	1	2811.52	2811.14	0.61	2812.36	2812.02	2812.9	OK	OK	
104	1	2813.82	2813.44	0.61	2814.66	2814.32	2815.2	OK	OK	
105	1	2815.49	2815.11	0.61	2816.33	2815.99	2817.2	OK	OK	
106	1	2816.55	2816.17	0.61	2817.39	2817.05	2818.2	OK	OK	
Where: 1: Top of Curb at High Side of Lot 2: TC-0.38 (For Roll Curb), TC-0.5 (For L Curb) 3: Minimum Allowable Finished Floor Elevation above flowline elevation @ high side of lot = (2 x D ₁₀₀) + F/L 4: City of Las Vegas minimum allowable finished floor elevation = T.C. @ high side of lot + 6-inches 5: These lots have an adjacent solid grouted wall that protects the FF.										
City of Las Vegas Finished Floor Criteria: <i>-The finished floor shall be set a vertical distance above the gutter flowline of at least twice the depth of flow in the gutter flowline up to a maximum of 18 inches above the WSEL in the street.</i> <i>-The finished floor shall be set a vertical distance of at least 6-inches above the highest adjacent top of curb.</i>										

Supplemental Finish Floor Checks

Adjacent/Perimeter Street Check									
Lot Number	Street	High TC ¹	High FL ²	Section	Flow Depth ³	Min FF ⁴	Design FF	Check	Solid Grout
1	Skye Park	2827.28	2826.80	*GC1	0.46	2827.72	2829.5	OK	No
1	Street A	2828.11	2827.73	1	0.61	2828.95	2829.5	OK	No
2	Skye Park	2827.46	2826.98	*GC1	0.46	2827.90	2828.4	OK	No
3	Skye Park	2826.89	2826.41	*GC1	0.46	2827.33	2826.4	CHECK	Yes
4	Skye Park	2826.42	2825.94	*GC1	0.46	2826.86	2824.8	CHECK	Yes
5	Skye Park	2825.53	2825.05	*GC1	0.46	2825.97	2823.0	CHECK	Yes
6	Skye Park	2823.86	2823.38	*GC1	0.46	2824.30	2821.3	CHECK	Yes
7	Skye Park	2821.82	2821.34	*GC1	0.46	2822.26	2819.9	CHECK	Yes
8	Skye Park	2820.80	2820.32	*GC1	0.46	2821.24	2819.1	CHECK	Yes
9	Skye Park	2816.98	2816.50	*GC1	0.46	2817.42	2819.7	OK	No
21	Street D	2797.20	2796.82	1	0.61	2798.04	2801.4	OK	No
22	Street D	2794.53	2794.15	1	0.61	2795.37	2795.8	OK	No
28	Grand Canyon	2807.84	2807.36	*GC1	0.46	2808.28	2810.0	OK	No
29	Grand Canyon	2805.70	2805.22	*GC1	0.46	2806.14	2808.3	OK	No
30	Grand Canyon	2804.27	2803.79	*GC1	0.46	2804.71	2806.5	OK	No
31	Grand Canyon	2802.90	2802.42	*GC1	0.46	2803.34	2804.4	OK	No
32	Grand Canyon	2800.36	2799.88	*GC1	0.46	2800.80	2802.1	OK	No
33	Grand Canyon	2798.46	2797.98	*GC1	0.46	2798.90	2799.9	OK	No
34	Grand Canyon	2795.28	2794.80	*GC1	0.46	2795.72	2797.9	OK	No
35	Grand Canyon	2792.76	2792.28	*GC1	0.46	2793.20	2795.2	OK	No
36	Grand Canyon	2791.26	2790.78	*GC1	0.46	2791.70	2794.0	OK	No
37	Grand Canyon	2789.71	2789.23	*GC1	0.46	2790.15	2793.3	OK	No
62	Skye Park	2826.08	2825.60	*GC1	0.46	2826.52	2823.8	CHECK	Yes
63	Skye Park	2826.56	2826.08	*GC1	0.46	2827.00	2823.2	CHECK	Yes
64	Skye Park	2826.81	2826.33	*GC1	0.46	2827.25	2823.2	CHECK	Yes
65	Skye Park	2827.06	2826.58	*GC1	0.46	2827.50	2824.1	CHECK	Yes
66	Skye Park	2827.35	2826.87	*GC1	0.46	2827.79	2825.6	CHECK	Yes
67	Skye Park	2827.57	2827.09	*GC1	0.46	2828.01	2827.2	CHECK	Yes

68	Skye Park	2827.84	2827.36	*GC1	0.46	2828.28	2829.0	OK	No
69	Skye Park	2828.02	2827.54	*GC1	0.46	2828.46	2830.1	OK	No
70	Skye Park	2828.44	2827.96	*GC1	0.46	2828.88	2830.2	OK	No
70	Street A	2828.17	2827.79	1	0.61	2829.01	2830.2	OK	No
75	Street B	2823.37	2822.99	1	0.61	2824.21	2822.0	CHECK	Yes
82	Street D	2811.38	2811.00	1	0.61	2812.22	2815.2	OK	No
83	Street D	2809.82	2809.44	1	0.61	2810.66	2810.7	OK	No
89	Street B	2823.79	2823.41	1	0.61	2824.63	2825.7	OK	No
97	Street D	2806.82	2806.44	1	0.61	2807.66	2810.7	OK	No
98	Street D	2803.76	2803.38	1	0.61	2804.60	2801.5	CHECK	Yes
106	Street B	2819.81	2819.43	1	0.61	2820.65	2818.2	CHECK	Yes

1: High TC is the elevation at the high side of the adjacent perimeter street

2: 0.48-ft is subtracted from the High TC to obtain the High FL elevation

3: Flow depth is the normal depth in adjacent perimeter street

4: Min FF is the High FL plus twice the depth of flow.

Specific Energy Check							
Lot Number	High TC ¹	High FL ²	Section	Specific Energy ³	Min FF ⁴	Design FF	Check
11	2817.09	2816.71	1	1.30	2818.01	2818.90	OK
35	2793.41	2793.03	1	1.30	2794.33	2795.20	OK
42	2798.85	2798.47	1	1.30	2799.77	2800.60	OK
47	2807.38	2807.00	1	1.30	2808.30	2809.20	OK
48	2808.46	2808.08	1	1.30	2809.38	2810.30	OK
53	2812.69	2812.31	1	1.30	2813.61		

1: High TC is the elevation at the high side of the adjacent perimeter street

2: 0.38-ft is subtracted from the High TC to obtain the High FL elevation

2: Specific energy depth is taken from FlowMaster calculation for street directing flow toward lot.

3: Min FF is the High FL plus the specific energy depth.

Emergency Overflow Finish Floor Checks

Drainage Easements Check - Emergency Overflow							
Lot Number	High TC/FL ¹	Section	Flow Depth ²	Min FF ³	Design FF	Check	Solid Grout
37	2790.91	EO1	0.54	2791.45	2793.30	OK	No
37	2788.09	EO2	0.57	2788.66	2793.30	OK	No
38	2790.91	EO1	0.54	2791.45	2795.10	OK	No

1: High TC/FL is at the high side of the drainage easement flowline or the highest TC adjacent to the easement if flow is weiring over the curb.

2: Flow depth is either normal depth or weir depth (whichever is higher) of the emergency overflow.

3: Min FF is the High TC/FL plus the emergency overflow depth.

APPENDIX D

Reference Material

**Technical Drainage Study for Skye Canyon Phase 3A
Infrastructure (SHG, DS 4931)**

Approval Letter (TDS)

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: August 16, 2018
TO: Land Development Services Department of Building & Safety			FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT: Drainage Study for: Skye Canyon – Phase 3A Infrastructure			COPIES TO: Slater Hanifan Group
Cross Streets:	Skye Village Road & Grand Canyon Drive		M F Land LLC / Ninety-Five Management LLC
File Number:	F:\Depot\DSMemos\DS4931C.doc		Bart Anderson, P.E., DevCo
Parcel Number:	125-07-201-007 & Portion of 125-07-101-009		CCRFCD
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 #
1 st Submittal	11/6/2017	1/22/2018	Not Approved	\$400.00	491017: \$400
2 nd Submittal	4/18/2018	5/24/2018	Not Approved	\$400.00	495171: \$400
3 rd Submittal	8/2/2018	8/16/2018	See Comments Below	\$400.00	497829: \$400
TOTAL FEES (LDDRS):				\$1,200.00	----

REMARKS: The complex nature of these storm drain infrastructure improvement plans needs to include a complete set of plans with the next submittal.

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

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

- This drainage study is acceptable in concept;** however, *City of Las Vegas* will not formally accept the study until the *Clark County Regional Flood Control District (CCRFCD)* has issued a letter of concurrence. The engineer should contact the CCRFCD to confirm that they have begun their review.
- The subject *Skye Canyon Phase 3A Infrastructure Drainage Study* will not be approved prior to the final approval of the *Skye Canyon Detention Basin 2 Technical Drainage Study*.
- Skye Canyon Phase 3A* onsite developments are to be flood protected by *Detention Basin 2*. No occupancy permits within onsite *Phase 3A* will be issued prior to the substantial completion of *Detention Basin 2*.
- The future MPU facility within Skye Village Road north of the Skye Village/Grand Canyon/Iron Mountain intersection to the proposed MPU facility at the Kyle Canyon interchange area shall be substantially complete before occupancy of residential Units beyond Phase 3A, 3B and 3C. This includes residential development within Phases 4 & 6 and the development of Phase 5 as shown on the Development Phasing Exhibit dated 12/4/2017.

5. **Exhibit I** shows the future abandonment of Phase 3A storm drain improvements (P15 & P33A) once the Ultimate MPU facilities are in place. The City requires that facilities be removed from the roadway if they are no longer needed. These facilities will need included in the Maintenance Bond.
6. Update **Exhibit I**, Facility P31 to show the 7' x 5' RCB .
7. Phase 3A includes interim drainage facilities located outside of roadways that shall require Public Drainage Easements to be Privately Maintained by the Master Developer. The Plans have preliminarily identified these easements. Provide an exhibit that shows the easements limits along with legal descriptions for Flood Control to verify easement limits. Once Flood Control has concurred with the easement limits, the plans shall be revised to reflect the final easement locations. Public drainage easements must be recorded by separate document prior to the final acceptance of the improvement plans unless they are to be recorded by parcel or final map.
8. Revise the easement location along *Grand Canyon Drive* to reflect the HEC-RAS analysis for the earthen channel.
9. The engineer must provide a table on the grading plans that shows a quantity estimate of all drainage improvements within Public Drainage Easements. All drainage improvements within Public Drainage Easements must be bonded and inspected.
10. Flood Control understands that the new *Skye Canyon Master Plan Amendment (MPA)* is being included as a part of the 2018 MPU process. Any changes not incorporated in the 2018 MPU must be approved by *City of Las Vegas* and *Clark County Regional Flood Control District (CCRFCD)* and shall be adopted by the *City of Las Vegas City Council* prior to the final approval of the subject improvement plans.
11. The *Design Report for Moccasin Road CCRFCD Flood Control Facility (US95 / Kyle Canyon Road Interchange to CCRFCD Facility LVUP 1076/1077)* must be conditionally approved (90% submittal) prior to the final approval of the subject improvement plans. The connection to these MPU facilities has been shown on the Grand Canyon Improvement plans.
12. The subject *Phase 3A Infrastructure Drainage Study* addresses the included street improvements of *Skye Village Road, Skye Park Drive, Street "E", Grand Canyon Drive*, culvert crossings and storm drain systems with the streets. Technical drainage studies will be required for the future onsite parcels as they develop.
13. Since the streets network and the associated storm drain facilities will eventually be accepted by the **City of Las Vegas**, the engineer/developer must coordinate with *City of Las Vegas Streets & Sanitation Department* for their review and approval prior to the final approval of the improvement plans.
14. Structural plans for the storm drain improvements must be submitted for review by Flood Control and the Building Department. Provide a soil report, structural calculations and specifications, wet stamped structural sets and a grading plan to the *City of Las Vegas Building Department* for processing (call *Building Department* to confirm their submittal requirements). The engineer must provide a copy of *Building Department* approval of the structures to *City Flood Control Section* prior to the final acceptance of the improvement plans. The structural approval is also required to be submitted to CCRFCD prior to concurrence.
15. The submitted RCA plans generally show the required 5-foot minimum stem wall height before the arch section. Revise the RCA plans to show the 5-foot stem wall on all details and sections.
16. The interim channels adjacent to the infrastructure roadways are the Maintenance responsibility of the Master Developer.

17. The project proposed to build temporary drainage facilities including drainage berms/swales over the *Phase 3A* site and along the west side of *Skye Village Road*. Prior to the final plans approval the developer must complete a ***Maintenance and Liability Agreement*** for the interim drainage improvements and post a minimum maintenance bond of \$50,000 or 50-percent of the construction cost for the improvements, whichever is greater. The engineer must submit an estimate of the quantities for construction the facility and an exhibit that adequately shows the location and limits of the drainage facilities to *City Flood Control* for approval. Once the drainage study is conditionally approved, the engineer/developer should contact the *City's Land Development Section* (702-229-6371) to begin the agreement process.

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

18. **Sheet D-22:** Revise the pipe material of the storm drain lateral between SDMH #16 and the RCA to RCP instead of C900 PVC.
19. Revise the cross section details to show the Drainage Easements.
20. **Sheet S1.14** Revise the detail to reflect a 3-wire Cable Fence.
21. Structural details shall be revised to show the invert slab construction joint to be a minimum of 3-inches above the slab invert at the wall locations.

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

END OF REMARKS
ays

T/R/S: T19S/R60E/07
AREA G-07

Referenced Hydrologic Data (TDS)

Rainfall and Precipitation Computation

Project Name: Skye Canyon Infrastructure Phase 3A

Date: 10/26/2017

File Name: OLY1609 TDS Precipitation Calcs.xls

By: ETM

Data:

Project is located in: Township: 19 S. Range: 60 E. Section: 7

Reference:

APN Map

Site is NOT located in the McCarran Airport Rainfall Area

Figure 513*

Rainfall Depth-Duration-Frequency 10-Year, 6-Hour: 1.30 inches

Figure 503*

Rainfall Depth-Duration-Frequency 100-Year, 6-Hour: 2.10 inches

Figure 506*

Precipitation Adjustment Ratios:

10-Year: 1.24

Table 501*

100-Year: 1.43

Table 501*

Six Hour Depth Area Reduction Factors (DARF):

Area (gross acres): 0.0 = 0.0000 square miles

Table 502*

DARF = 1.00

Calculations:

$P_{10} = 1.61$ 10-Year Precipitation (in)

$P_{100} = 3.00$ 100-Year Precipitation (in)

$P_{10}/P_{100} = 0.54$ HEC-1 Multiple Ratio Value

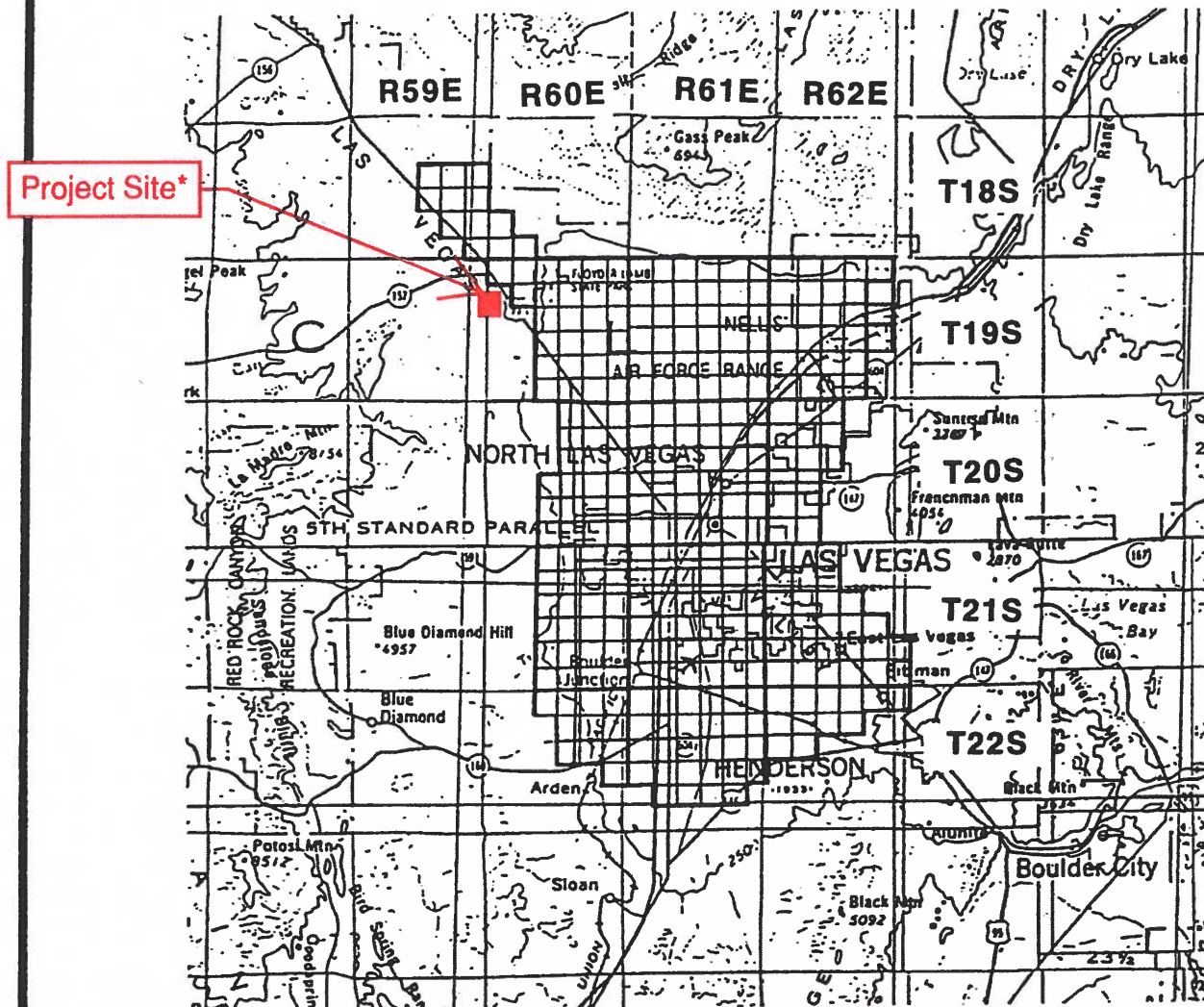
Equations:

$$P = (\text{Rainfall}) * (\text{Precipitation Adjustment Ratio}) * (\text{Depth Area Reduction Factor})$$

* Equations taken from the Clark County Regional Flood Control District - Hydrologic Criteria and Drainage Design

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

McCARRAN AIRPORT RAINFALL AREA



***Project site not located within the McCarran Rainfall area (T19-R60-S7)**

TOWNSHIP	RANGE	SECTIONS	TOWNSHIP	RANGE	SECTIONS
18 South	59 East	13-15,22-26,36	20 South	62 East	4-9,16-20,29-32
18 South	60 East	30-32	21 South	60 East	1-4,9-16,21-28,33-36
19 South	60 East	1-6,8-16,21-28,33-36	21 South	61 East	ALL SECTIONS
19 South	61 East	ALL SECTIONS	21 South	62 East	4-9,15-23, 25-36
19 South	62 East	2-11,14-23,27-34	22 South	60 East	1-4,10-15,24
20 South	60 East	1-3,10-15,21-28,33-36	22 South	61 East	1-24,26-29
20 South	61 East	ALL SECTIONS	22 South	62 East	1-10,17-18

Notes:

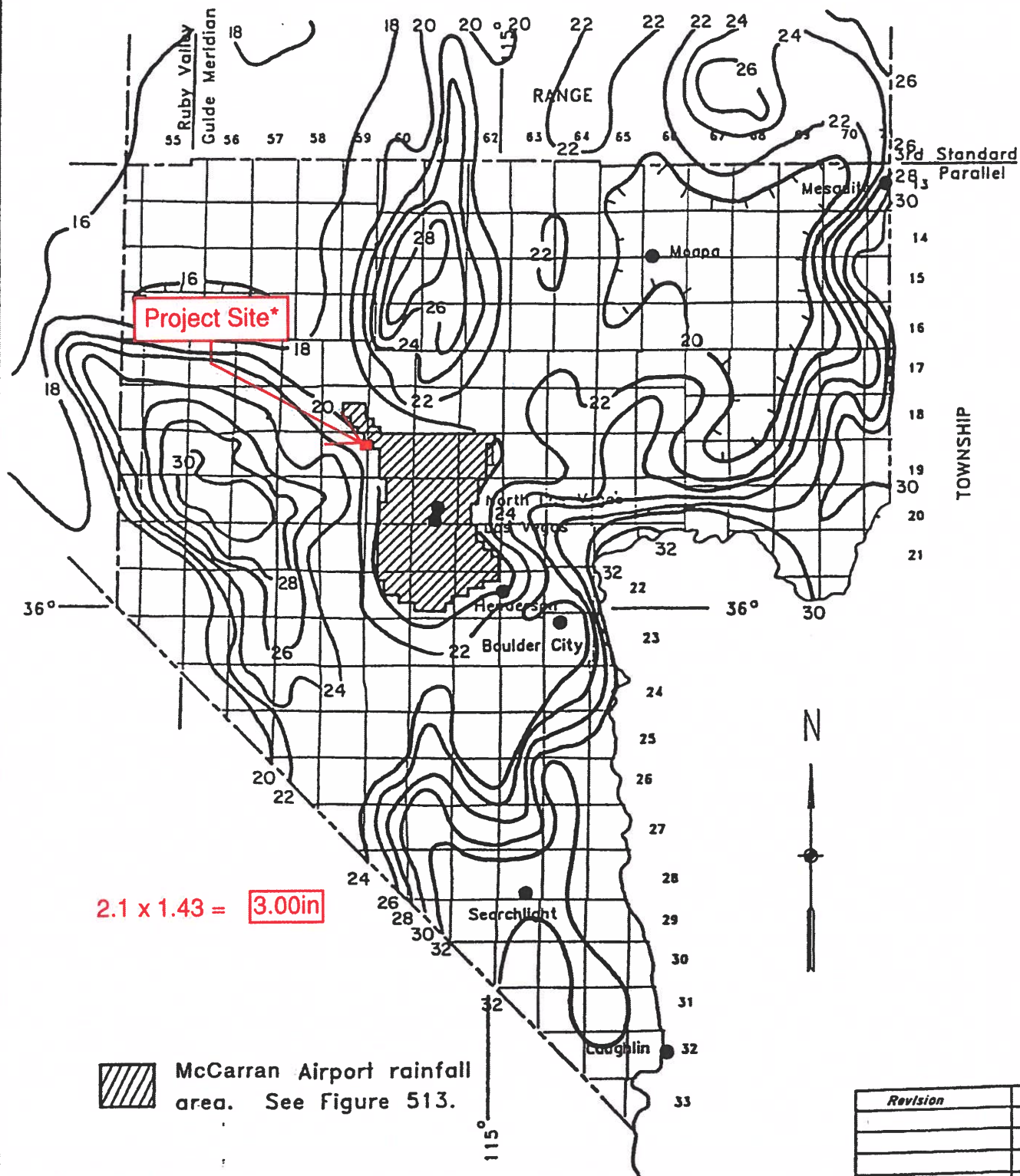
1. Refer to Table 505 and Figure 516 Depth-Duration- Frequency values in the McCarran Airport Rainfall Area.
2. Refer to Table 506 and Figure 517 for Time-Intensity-Frequency values on the McCarran Airport Rainfall Area.

Revision	Date

REFERENCE:

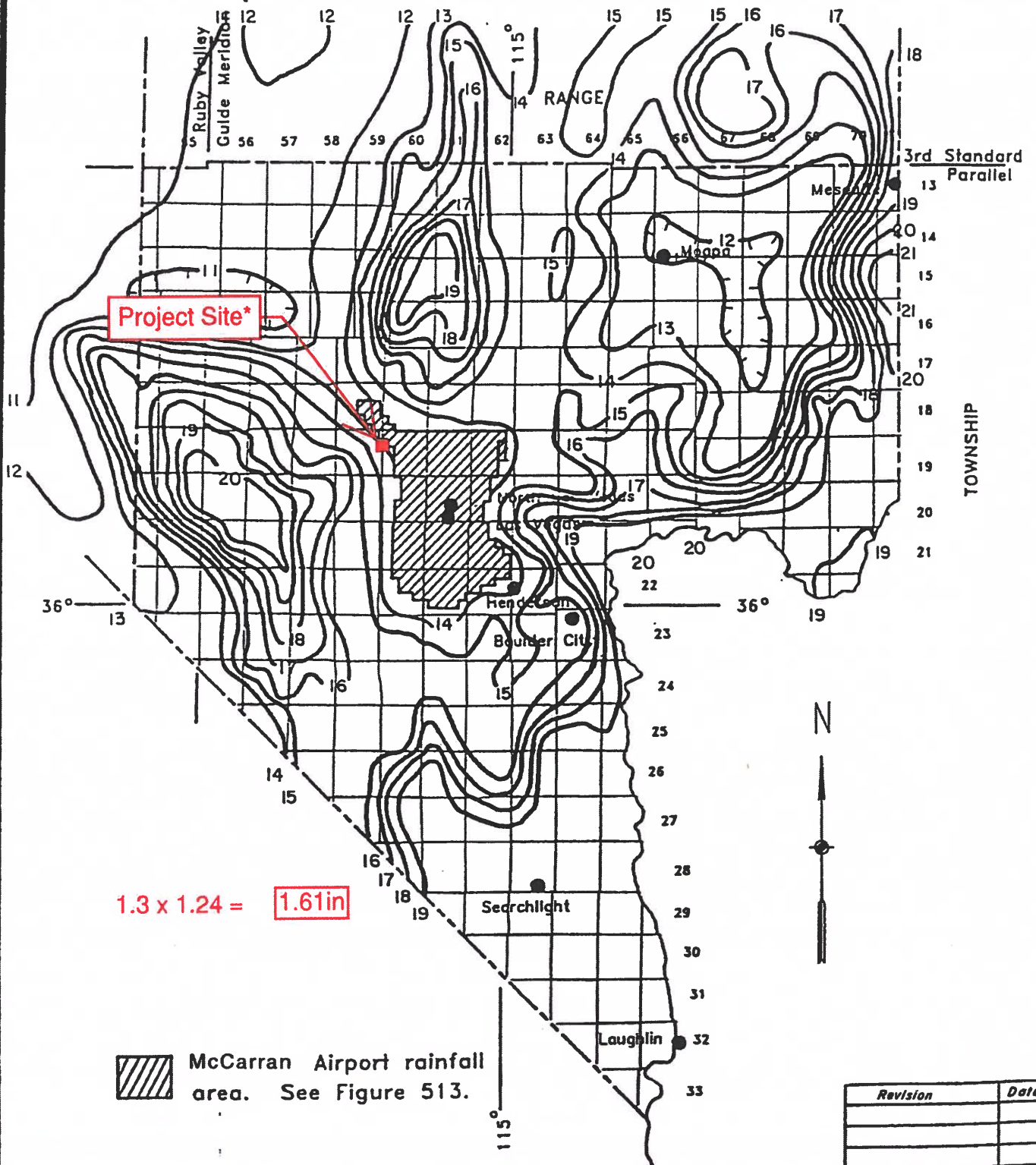
HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

RAINFALL DEPTH-DURATION-FREQUENCY 100-YEAR, 6-HOUR (DEPTHS IN TENTHS OF INCHES)



HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

RAINFALL DEPTH-DURATION-FREQUENCY 10-YEAR, 6-HOUR (DEPTHS IN TENTHS OF INCHES)



HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

PRECIPITATION ADJUSTMENT RATIOS

<u>Recurrence Interval</u>	<u>Ratio to NOAA Atlas 2</u>
2-year	1.00
5-year	1.16
10-year	1.24
25-year	1.33
50-year	1.39
100-year	1.43

- NOTE: 1. Multiply the values obtained from the NOAA Atlas 2 by the above ratios to obtain the adjusted precipitation values.
2. NOAA Atlas 2 values for use with TR-55 shall not be adjusted by the above ratios.
3. Tables 505 and 506 require no adjustments.

<i>Revision</i>	<i>Date</i>

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

SIX HOUR DEPTH-AREA REDUCTION FACTORS

<u>Drainage Area (Square Miles)</u>	<u>Six-Hour Depth-Area Reduction Factor</u>
0.0	1.00
0.5	0.98
1.0	0.97
2.0	0.93
4.0	0.91
6.0	0.90
8.0	0.88
10.0	0.86
20.0	0.79
30.0	0.74
50.0	0.68
100.0	0.60
150.0	0.55
200.0	0.51
300.0	0.46
400.0	0.42
500.0	0.39

- NOTES: 1. A graphical representation of these factors is presented in Figure 514.
2. Consult with the local entity and/or the CCRFCD for guidance in using the Depth-Area Reduction Factors for drainage areas greater than 200 square miles.

<i>Revision</i>	<i>Date</i>

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

SIX-HOUR STORM DISTRIBUTIONS

Percent of Total Storm Depth				Percent of Total Storm Depth			
Storm Time (In Minutes)	SDN3	SDN4	SDN5	Storm Time (In Minutes)	SDN3	SDN4	SDN5
0	0.0	0.0	0.0	185	32.2	37.6	43.0
5	2.0	2.0	2.0	190	35.2	41.5	47.7
10	5.7	5.8	5.9	195	40.9	46.2	51.4
15	7.0	7.5	8.0	200	49.9	53.0	56.1
20	8.7	9.9	11.0	205	59.0	61.0	63.0
25	10.8	12.6	14.4	210	71.0	71.0	71.0
30	12.4	13.7	15.0	215	74.4	73.2	72.0
35	13.0	14.5	16.0	220	78.1	75.6	73.1
40	13.0	14.9	16.8	225	81.2	78.2	75.2
45	13.0	15.1	17.1	230	81.9	79.9	77.9
50	13.0	15.5	18.0	235	83.5	81.3	79.0
55	13.0	15.6	18.2	240	85.1	82.3	79.5
60	13.0	15.9	18.7	245	85.6	83.0	80.4
65	13.3	16.2	19.0	250	86.0	83.5	81.0
70	14.0	16.9	19.7	255	86.8	84.4	82.0
75	14.2	17.2	20.2	260	87.6	85.1	82.6
80	14.8	17.9	21.0	265	88.8	86.4	84.0
85	15.8	18.9	22.0	270	91.0	88.5	85.9
90	17.2	20.1	23.0	275	92.6	90.8	88.9
95	18.1	21.1	24.1	280	93.7	92.4	91.0
100	19.0	22.0	25.0	285	95.0	94.4	93.8
105	19.7	22.8	25.9	290	97.0	96.8	96.6
110	19.9	23.2	26.5	295	97.6	97.3	97.0
115	20.0	24.0	28.0	300	98.2	97.8	97.4
120	20.1	24.6	29.0	305	98.5	98.2	97.9
125	20.4	25.2	30.0	310	98.7	98.4	98.1
130	21.4	26.0	30.5	315	98.9	98.6	98.3
135	22.9	26.9	30.9	320	99.0	98.8	98.5
140	24.1	27.6	31.0	325	99.3	99.1	98.9
145	24.9	28.3	31.7	330	99.3	99.2	99.0
150	25.1	28.6	32.1	335	99.4	99.3	99.2
155	25.6	29.2	32.7	340	99.5	99.4	99.3
160	27.0	30.2	33.3	345	99.8	99.7	99.6
165	27.8	31.2	34.6	350	99.8	99.8	99.7
170	28.1	32.1	36.1	355	99.9	99.9	99.9
175	28.3	33.2	38.1	360	100.0	100.0	100.0
180	29.5	35.2	40.8				

- Notes
1. For drainage areas less than 8 square miles in size, use SDN 3.
 2. For drainage areas greater than or equal to 8 square miles and less than 12 square miles in size, use SDN 4.
 3. For drainage areas greater than or equal to 12 square miles, use SDN 5.
 4. A graphical representation of these values is presented on Figure 515.

Revision	Date

REFERENCE:

TABLE 503



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

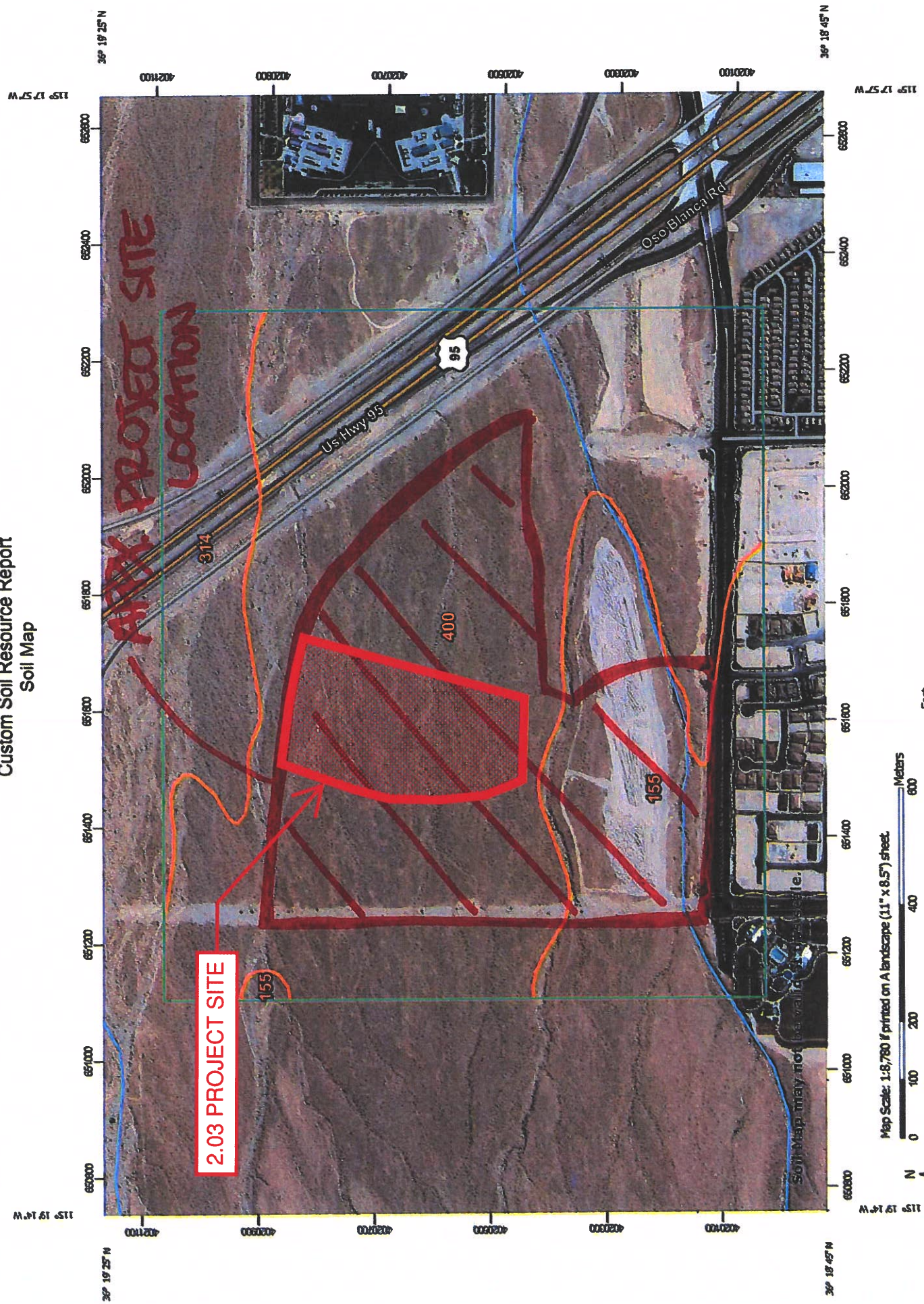
A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Las Vegas Valley Area, Nevada, Part of Clark County



October 26, 2017

Custom Soil Resource Report Soil Map



Data:

Reference:

Exhibit D
NRCS Soil Data

Soil Type - Soil Survey Area & Version, Soil Description				A	B	C	D
LV	155	Las Vegas Valley 2016	Cave gravelly fine sandy loam, 4 to 15 percent slopes	0%	0%	0%	100%
LV	314	Las Vegas Valley 2016	Weiser-Wechech association	80%	5%	0%	15%
LV	400	Las Vegas Valley 2016	Tencee very gravelly fine sandy loam, 2 to 8 percent slopes	0%	0%	0%	100%

Land Use	A	B	C	D
Residential (<6,000 sf)*	89	92	94	95
Commercial	89	92	94	95
Desert Shrub (poor)	63	77	85	88
Roadway	98	98	98	98
Open Space (fair)	49	69	79	84

*Commercial land use per Note 3

HISTORIC CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF1	LV	155	33.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	52.45	29.05
	LV	400	67.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	106.46	58.95
TOTAL PERCENT				100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								158.91	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF2	LV	400	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	19.89	88.00
TOTAL PERCENT				100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								19.89	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF3	LV	155	80.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	83.60	70.40
	LV	400	20.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	20.90	17.60
TOTAL PERCENT				100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								104.50	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF4	LV	155	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	141.94	88.00
TOTAL PERCENT				100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								141.94	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
XON1	LV	314	8.2%	Desert Shrub (poor)	80%	5%	0%	15%	63	77	85	88	3.11	5.56
	LV	400	91.8%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	34.61	80.74
TOTAL PERCENT				100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								37.72	86.3

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
XON2	LV	400	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	48.79	88.00
TOTAL PERCENT				100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								48.79	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
XON3	LV	155	56.9%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	31.87	50.08
	LV	400	43.1%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	24.13	37.92
TOTAL PERCENT				100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								56.00	88.0

EXISTING CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF1	LV	155	34.9%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	49.64	30.68
	LV	400	65.1%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	92.75	57.32
TOTAL PERCENT				100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								142.39	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF3	LV	155	78.4%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	75.85	68.99
	LV	400	21.6%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	20.90	19.01
TOTAL PERCENT				100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								96.75	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF4	LV	155	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	40.14	88.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									40.14	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF5	LV	155	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	88.82	88.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									88.82	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF11	LV	314	16.6%	Desert Shrub (poor)	80%	5%	0%	15%	63	77	85	88	3.11	11.21
	LV	400	83.4%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	15.60	73.37
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									18.71	84.6

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF12	LV	400	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	8.16	88.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									8.16	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
XON1	LV	400	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	19.01	88.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									19.01	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
XON2	LV	400	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	40.63	88.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									40.63	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
XON3	LV	400	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	5.93	88.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									5.93	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
XON4	LV	155	25.1%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	1.41	22.08
	LV	400	74.9%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	4.21	65.92
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									5.62	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
XON5	LV	155	95.7%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	19.51	84.20
	LV	400	4.3%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	0.88	3.80
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									20.39	88.0

PROPOSED CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
2.02	LV	400	100.0%	Commercial	0%	0%	0%	100%	89	92	94	95	17.84	95.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									17.84	95.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
2.03	LV	400	100.0%	Commercial	0%	0%	0%	100%	89	92	94	95	17.45	95.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									17.45	95.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
2.04a	LV	400	100.0%	Open Space (fair)	0%	0%	0%	100%	49	69	79	84	1.43	84.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									1.43	84.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
2.04b	LV	400	100.0%	Open Space (fair)	0%	0%	0%	100%	49	69	79	84	1.26	84.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									1.26	84.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
2.05a	LV	400	100.0%	Residential (<6,000 sf)*	0%	0%	0%	100%	89	92	94	95	13.54	95.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									13.54	95.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
----------	-------------	-----------	-----------------	----------	-----------------------	--	--	--	-------------	--	--	--	---------------	--------------

PRO

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1*****
*****
*
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*
* JUN 1998
*
* VERSION 4.1
*
*
* RUN DATE 30OCT17 TIME 10:27:30
*
*
*****
*****

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*
*
* U.S. ARMY CORPS OF ENGINEERS
*
* HYDROLOGIC ENGINEERING CENTER
*
* 609 SECOND STREET
*
* DAVIS, CALIFORNIA 95616
*
* (916) 756-1104
*

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X X XXXXXXX XXXX X
X X X X X
X X X X X
XXXXXX XXXX X XXXXX
X X X X X
X X X X X
X X XXXXXXX XXXXX XXX

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE, SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1

HEC-1 INPUT

PAGE 1

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LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
*** FREE ***
*DIAGRAM
1 ID SLATER HANIFAN GROUP
2 ID NINETY-FIVE MANAGEMENT, LLC.
3 ID SKYE CANYON INFRASTRUCTURE PHASE 3A
4 ID TECHNICAL DRAINAGE STUDY
5 ID
6 ID DRAINAGE CONDITION -- PROPOSED CONDITION
7 ID RETURN PERIOD ----- 100 & 10-YEAR
8 ID DISTRIBUTION ----- 6-HOUR SDN3
9 ID PROJECT NO. ----- OLY1609.000
10 ID FILENAME ----- PRO.H1
11 ID DATE ----- OCTOBER 2017
12 ID MODELED BY ----- ETM
13 ID
14 ID RETURN PERIOD RATIO
15 ID 100-YR 1.00
16 ID 10-YR 0.54
17 ID
18 ID SIX HOUR DEPTH-AREA REDUCTION FACTORS
19 ID DRAINAGE AREA (MIA2) DARF
20 ID 0.00-0.49 0.990
21 ID 0.50-0.99 0.975
22 ID 1.00-1.99 0.950
23 ID
24 ID
25 ID IT 5 0 0 300
26 ID IO 5 0 0
27 ID IN 5 0 0
28 ID JR PREC 1.00 0.99 0.975 0.95 0.54
29 ID *
30 KK *OFF7
31 KM REFERENCED FROM THE "DB2" STUDY
32 KM DISCHARGES INTO DETENTION BASIN "DB2"
33 PB 3.00
34 PC 0 0.020 0.057 0.070 0.087 0.108 0.124 0.130 0.130 0.130
35 PC 0.130 0.130 0.130 0.133 0.140 0.142 0.148 0.158 0.172 0.181
36 PC 0.190 0.197 0.199 0.200 0.201 0.204 0.214 0.229 0.241 0.249
37 PC 0.251 0.256 0.270 0.278 0.281 0.283 0.295 0.322 0.352 0.409
38 PC 0.499 0.590 0.710 0.744 0.781 0.812 0.819 0.835 0.851 0.856
39 PC 0.860 0.868 0.876 0.888 0.910 0.926 0.937 0.950 0.970 0.976
40 PC 0.982 0.985 0.987 0.989 0.990 0.993 0.993 0.994 0.995 0.998
41 PC 0.998 0.999 1
42 BA .0058
43 LS 0 88.0
44 UD 0.100
45 *
46 KK *OFF8
47 KM REFERENCED FROM THE "DB2" STUDY
48 KM DISCHARGES INTO DETENTION BASIN "DB2"
49 KO 3
50 BA .2122
51 LS 0 88.0

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HEC-1 INPUT

PAGE 2

1

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LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
50 UD 0.299
*
51 KK *CP2
52 KM REFERENCED FROM THE "DB2" STUDY
53 KM COMBINE OFF7, AND OFF8

```

Page 1

PRO

130	DT	DIV2	
131	DI	0	228
132	DQ	0	70
	*		
133	KK	SVR1	
134	KM	ONSITE	STREET BASIN
135	BA	.0043	
136	PB	3.00	
137	LS	0	98.0
138	UD	0.081	
	*		
139	KK	SVR2	
140	KM	ONSITE	STREET BASIN
141	BA	.0100	
142	PB	3.00	
143	LS	0	98.0
144	UD	0.161	
	*		
145	KK	CP1	
146	KM	COMBINES *RDB2, OFF1, OFF2, OFF3, SVR1 AND SVR2	
147	HC	5	
	*		
148	KK	2.05a	
149	KM	ONSITE	BASIN
150	BA	.0212	
151	PB	3.00	
152	LS	0	95.0
153	UD	0.154	
	*		
154	KK	OFF11	
155	KM	OFFSITE	BASIN
156	BA	.0292	
157	PB	3.00	
158	LS	0	88.0
159	UD	0.218	
	*		
160	KK	CP10	
161	KM	COMBINES CP1, 2.05a AND OFF11	
162	HC	3	
	*		

1

HEC-1 INPUT

PAGE 5

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

163	KK	STR2	
164	KM	ONSITE	STREET BASIN
165	BA	.0024	
166	PB	3.00	
167	LS	0	98.0
168	UD	0.068	
	*		
169	KK	STR3	
170	KM	ONSITE	STREET BASIN
171	BA	.0034	
172	PB	3.00	
173	LS	0	98.0
174	UD	0.074	
	*		

175	KK	2.03	
176	KM	ONSITE	BASIN
177	BA	.0273	
178	PB	3.00	
179	LS	0	95.0
180	UD	0.120	
	*		

181	KK	2.04b	
182	KM	ONSITE	BASIN
183	BA	.0020	
184	PB	3.00	
185	LS	0	84.0
186	UD	0.100	
	*		

187	KK	CP4	
188	KM	COMBINES STR2, STR3, 2.03 AND 2.04b	
189	HC	4	
	*		

190	KK	2.02	
191	KM	ONSITE	BASIN
192	BA	.0279	
193	PB	3.00	
194	LS	0	95.0
195	UD	0.121	
	*		

196	KK	STR4	
197	KM	ONSITE	STREET BASIN
198	BA	.0030	
199	PB	3.00	
200	LS	0	98.0
201	UD	0.102	
	*		

1

HEC-1 INPUT

PAGE 6

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

202	KK	CP5	
203	KM	COMBINES CP4, 2.02 AND STR4	
204	HC	3	
	*		

PRO

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356      PB      3.00
357      BA      .0154
358      LS      0      86.0
359      UD      0.089
      *
360      KK      *IOFF4
361      KM      REFERENCED FROM THE "SMITH'S" STUDY
362      PB      3.00
363      BA      .0062
364      LS      0      86.2
365      UD      0.100
      *
366      KK      *PARK
367      KM      REFERENCED FROM THE "SMITH'S" STUDY
368      KM      COMBINES IOFF4, OFF3, D2
369      HC      3
      *
370      KK      DIV1
371      KM      CULVERT CROSSING FLOW INTO PARCEL 2.06
372      DR      DIV1
      *
373      KK      CP3
374      KM      COMBINES CP4, DIV1 AND *PARK
375      HC      3
      *
376      KK      RCP3
377      KM      ROUTE CP3 TO CP3a
378      KM      LENGTH SLOPE n-VALUE      0      SHAPE      WIDTH      S-SLOPE
379      RD      1260      .039      .040      0      TRAP      50      2
      *
380      KK      2.06
381      KM      ONSITE BASIN
382      BA      .0310
383      PB      3.00
384      LS      0      95.0
385      UD      0.108
      *

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1

HEC-1 INPUT

PAGE 11

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

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386      KK      CP3a
387      KM      COMBINES CP3 AND 2.06
388      HC      2
      *
389      KK      2.05b
390      KM      ONSITE BASIN
391      BA      .0115
392      PB      3.00
393      LS      0      95.0
394      UD      0.154
      *
395      KK      STR1
396      KM      ONSITE STREET BASIN
397      BA      .0041
398      PB      3.00
399      LS      0      98.0
400      UD      0.050
      *
401      KK      2.04a
402      KM      ONSITE BASIN
403      BA      .0022
404      PB      3.00
405      LS      0      84.0
406      UD      0.100
      *
407      KK      DIV2
408      KM      CULVERT CROSSING FLOW TO CONCENTRATION POINT CP2a
409      DR      DIV2
      *
410      KK      CP2a
411      KM      COMBINES 2.05b, STR1, DIV2 AND 2.04a
412      HC      4
      *
413      KK      *DBN
414      KM      REFERENCED FROM THE "SMITH'S" STUDY
415      KM      OUTLET = 54" ORIFICE @ INVERT ELEVATION = 2997.3-FT
416      KO      1
417      RS      1      ELEV      2797.3
418      SA      0.00      0.09      0.12      0.15      .37      0.79      0.86
419      SE      2797.3      2798      2799      2800      2805      2812      2813
420      SQ      0.00      54      129      193      241      268
421      SE      2797.3      2802      2804      2807      2810      2812
      *

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1

HEC-1 INPUT

PAGE 12

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

```

422      KK      *WSPD3
423      KM      REFERENCED FROM THE "SMITH'S" STUDY
424      BA      .0022
425      PB      2.93
426      LS      0      92.8
427      UD      0.056
      *
428      KK      *WGC3
429      KM      REFERENCED FROM THE "SMITH'S" STUDY

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				TIME	3.67	PRO 3.67	3.67	3.67	3.67
HYDROGRAPH AT +	SVR1	.00	1	FLOW TIME	10. 3.50	10. 3.50	10. 3.50	9. 3.50	5. 3.50
HYDROGRAPH AT +	SVR2	.01	1	FLOW TIME	20. 3.58	19. 3.58	19. 3.58	19. 3.58	10. 3.58
5 COMBINED AT +	CP1	1.49	1	FLOW TIME	557. 3.67	549. 3.67	539. 3.67	521. 3.67	240. 3.67
HYDROGRAPH AT +	2.05a	.02	1	FLOW TIME	40. 3.58	39. 3.58	38. 3.58	37. 3.58	19. 3.58
HYDROGRAPH AT +	OFF11	.03	1	FLOW TIME	38. 3.67	38. 3.67	37. 3.67	36. 3.67	15. 3.67
3 COMBINED AT +	CP10	1.54	1	FLOW TIME	628. 3.67	620. 3.67	608. 3.67	588. 3.67	271. 3.67
HYDROGRAPH AT +	STR2	.00	1	FLOW TIME	6. 3.50	6. 3.50	6. 3.50	5. 3.50	3. 3.50
HYDROGRAPH AT +	STR3	.00	1	FLOW TIME	8. 3.50	8. 3.50	8. 3.50	8. 3.50	4. 3.50
HYDROGRAPH AT +	2.03	.03	1	FLOW TIME	52. 3.58	52. 3.58	51. 3.58	49. 3.58	26. 3.58
HYDROGRAPH AT +	2.04b	.00	1	FLOW TIME	3. 3.50	3. 3.50	3. 3.50	3. 3.50	1. 3.58
4 COMBINED AT +	CP4	.04	1	FLOW TIME	68. 3.50	67. 3.50	66. 3.50	64. 3.50	33. 3.50
HYDROGRAPH AT +	2.02	.03	1	FLOW TIME	53. 3.58	53. 3.58	52. 3.58	50. 3.58	26. 3.58
HYDROGRAPH AT +	STR4	.00	1	FLOW TIME	6. 3.50	6. 3.50	6. 3.50	6. 3.50	3. 3.50
3 COMBINED AT +	CP5	.07	1	FLOW TIME	127. 3.50	126. 3.50	124. 3.50	120. 3.50	62. 3.50
HYDROGRAPH AT +	OFF12	.01	1	FLOW TIME	21. 3.50	21. 3.50	20. 3.50	19. 3.50	8. 3.50
2 COMBINED AT +	CP11	.08	1	FLOW TIME	148. 3.50	147. 3.50	144. 3.50	140. 3.50	70. 3.50
HYDROGRAPH AT +	*OFF1	.43	1	FLOW TIME	399. 3.83	393. 3.83	385. 3.83	370. 3.83	143. 3.92
HYDROGRAPH AT +	*OFF2	.04	1	FLOW TIME	49. 3.58	48. 3.58	47. 3.58	45. 3.58	14. 3.58
HYDROGRAPH AT +	*OFF3	.03	1	FLOW TIME	41. 3.50	40. 3.50	39. 3.50	38. 3.58	16. 3.58
3 COMBINED AT +	*DUMMY	.50	1	FLOW TIME	441. 3.83	435. 3.83	425. 3.83	409. 3.83	158. 3.83
HYDROGRAPH AT +	*OFF4	.06	1	FLOW TIME	90. 3.58	89. 3.58	87. 3.58	84. 3.58	35. 3.58
HYDROGRAPH AT +	*OFF5	.26	1	FLOW TIME	252. 3.83	248. 3.83	243. 3.83	234. 3.83	94. 3.83
HYDROGRAPH AT +	*OFF6	.04	1	FLOW TIME	62. 3.58	62. 3.58	60. 3.58	58. 3.58	24. 3.58
HYDROGRAPH AT +	*ON1	.03	1	FLOW TIME	49. 3.50	49. 3.50	48. 3.50	46. 3.50	23. 3.58
5 COMBINED AT +	*DB1	.88	1	FLOW TIME	785. 3.75	774. 3.75	757. 3.75	729. 3.75	288. 3.83
ROUTED TO +	*RDB1	.88	1	FLOW TIME	71. 5.58	71. 5.58	71. 5.58	70. 5.58	57. 5.42
			**	PEAK STAGES IN FEET 1 STAGE TIME	3035.28 5.67	** 3035.13 5.58	3034.91 5.58	3034.53 5.58	3028.62 5.42
HYDROGRAPH AT +	*WPF5	.00	1	FLOW	1.	1. Page 51	1.	1.	0.

Referenced Hydraulic Computations (TDS)

Section - GC1 (100-Yr) Worksheet for Irregular Channel

Project Description	
Worksheet	Section - GC1 (100-Yr)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Channel Slope	2.73 %
Discharge	14.00 cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.014
Water Surface Elevation	0.46 ft
Elevation Range	0.00 to 1.08
Flow Area	2.7 ft ²
Wetted Perimeter	16.58 ft
Top Width	16.07 ft
Actual Depth	0.46 ft
Critical Elevation	0.59 ft
Critical Slope	0.50 %
Velocity	5.15 ft/s
Velocity Head	0.41 ft
Specific Energy	0.87 ft
Froude Number	2.21
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+02.00	0.013
0+02.00	0+27.00	0.016
0+27.00	0+27.70	0.013

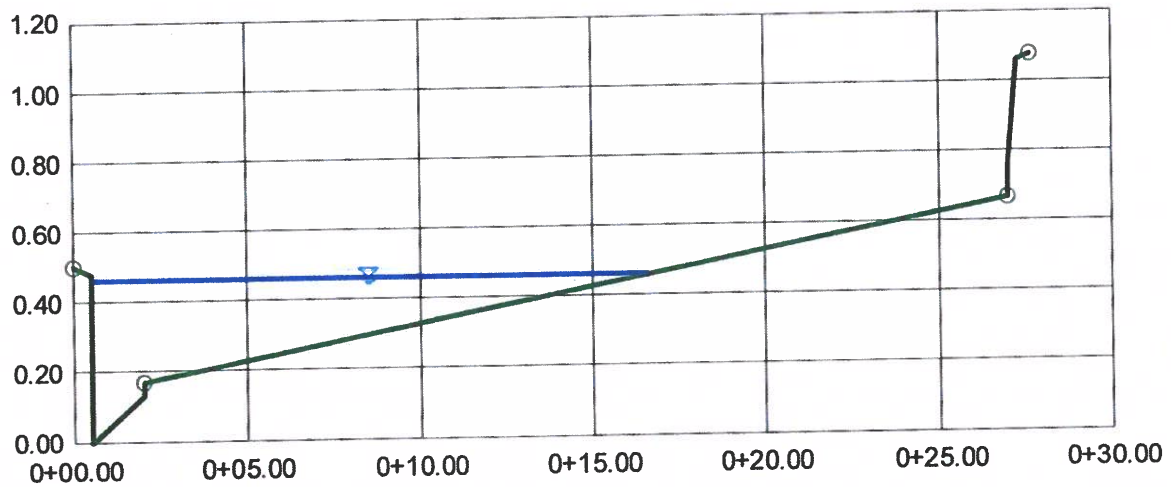
Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.50
0+00.50	0.48
0+00.50	0.00
0+02.00	0.13
0+02.00	0.17
0+27.00	0.67
0+27.00	0.75
0+27.30	1.06
0+27.70	1.08

Notes: Q = STR2 + STR3

Section - GC1 (100-Yr) Cross Section for Irregular Channel

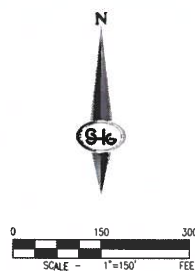
Project Description	
Worksheet	Section - GC1 (100-Yr)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.014
Channel Slope	2.73 %
Water Surface Elevation	0.46 ft
Elevation Range	0.00 to 1.08
Discharge	14.00 cfs



V:10.0
H:1
NTS

Referenced Drainage Exhibits (TDS)



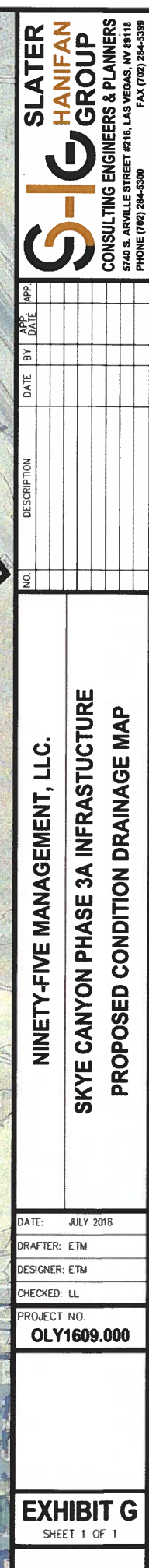
Proposed Condition Flow Rate Summary				
Concentration Points				
Basin/Concentration Point ID	Area (mi ²)	Q (cfs)	Q (cfs)	Q (cfs)
CP1				
Q = $PICB2 + QP1 + QP2 + QP3 + DV2 + QP4 + DV1 + SVR1 + SVR2$	1.5	521		240
CP2a				
Q = $2.05 + STR1 + 2.04a + DV2$	<0.1	95		38
CP3				
Q = $QF6 + WGRK + DV1$	1.1	422		211
CP3a				
Q = $CP3 + 2.06$	1.2	458		226
CP4				
Q = $STR2 + STR3 + 2.03 + 2.04b$	<0.1	68		33
CP5				
Q = $CP4 + 2.02 + STR1$	<0.1	127		62
CP6				
Q = $REB1 + WGR2 + WGR3 + WGR4 + WGR5 + WGR6$	0.9	156		100
CP7				
Q = $QF5 + WGR4 + WGR5 + WGR6$	1.0	206		122
CP8				
Q = $CP7 + QF5$	1.1	368		189
DBN				
Q = OUTFLOW	<0.1	87		34
WGR3a				
Q = $CP3a + 2.01 + WGR3C1 + WGR3C2 + WGR3C3$	1.2	588		285
CP10				
Q = $CP9 + 2.05a + QFT11$	1.5	558		271
CP11				
Q = $QF12 + QF5$	<0.1	148		70
CP12				
Q = $WGR3 + WGR7 + WGR3C1A$	1.3	697		330

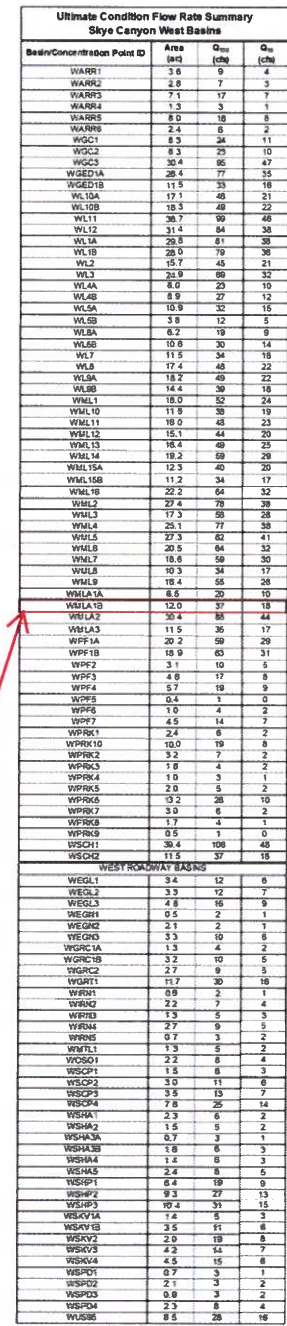
Proposed Condition 100-Year Street Flow Summary						
Section ID	Q _{sec} (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	Dx V	
(Q = 1/2 (SVR1))	5	0.58	0.35	1.96	0.1	
2 (Q = 1/2 (SVR1) + Facility P18 Bypass)	7	0.58	0.38	2.14	0.8	
3 (Q = 1/2 (SVR2) + Facility P20 Bypass)	13	0.58	0.46	2.38	1.1	
4 (Q = 1/2 (SVR2) + Facility P23 Bypass)	17	0.58	0.51	2.43	1.2	
5 (Q = STR2)	5	3.24	0.3	4.01	1.2	
		1.56	0.33	2.94	1.0	
6 (Q = 2.05x + STR1-Half Street Capacity)	9	2.3	0.42	4.44	1.9	
7 (Half Street Capacity)	22	2.3	0.56	4.78	2.7	
*GC1 (Q = STR2 + STR3)	14	2.73	0.46	5.15	2.4	
*GC2 (Q = STR2 + STR3 + 1/3 (STR4))	16	1.48	0.53	4.03	2.1	
*GC3 (Q = Facility P5 Bypass + 2/3 (STR4))	15	1.48	0.52	4.0	2.1	

Section ID	Q ₂₅ (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	Dx/V	Dry Lane (ft)
10YR (Q + SVR1 + SVR2)	15	0.58	0.48	2.4	1.2	21.5

Conservative flow utilized to represent the Edge Slope/Velocities Based on lowest

SEE EXHIBIT F FOR EXTENTS OF OFFSITE BASINS





PHASE 3A STUDY FLOW RATES
AND AREAS ARE SLIGHTLY
LESS DUE TO LANDSCAPE
COMMON AREAS
SURROUNDING EACH PARCEL
NOT ACCOUNTED FOR.

LEGEND

 BASIN BOUNDARY

 BASIN ID

 MPA BASIN ID

 CONCENTRATION POINT ID

 FLOW DIRECTION

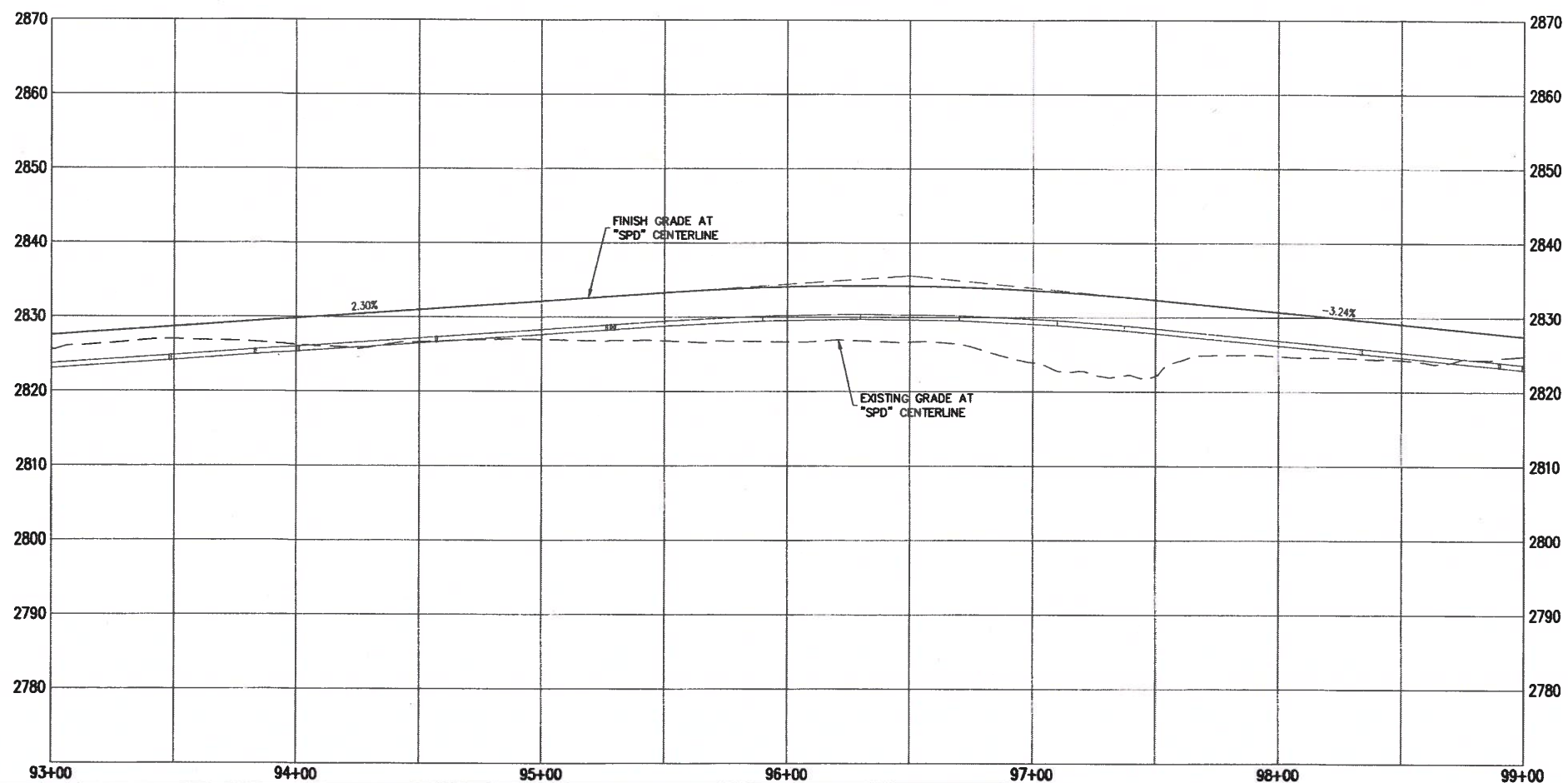
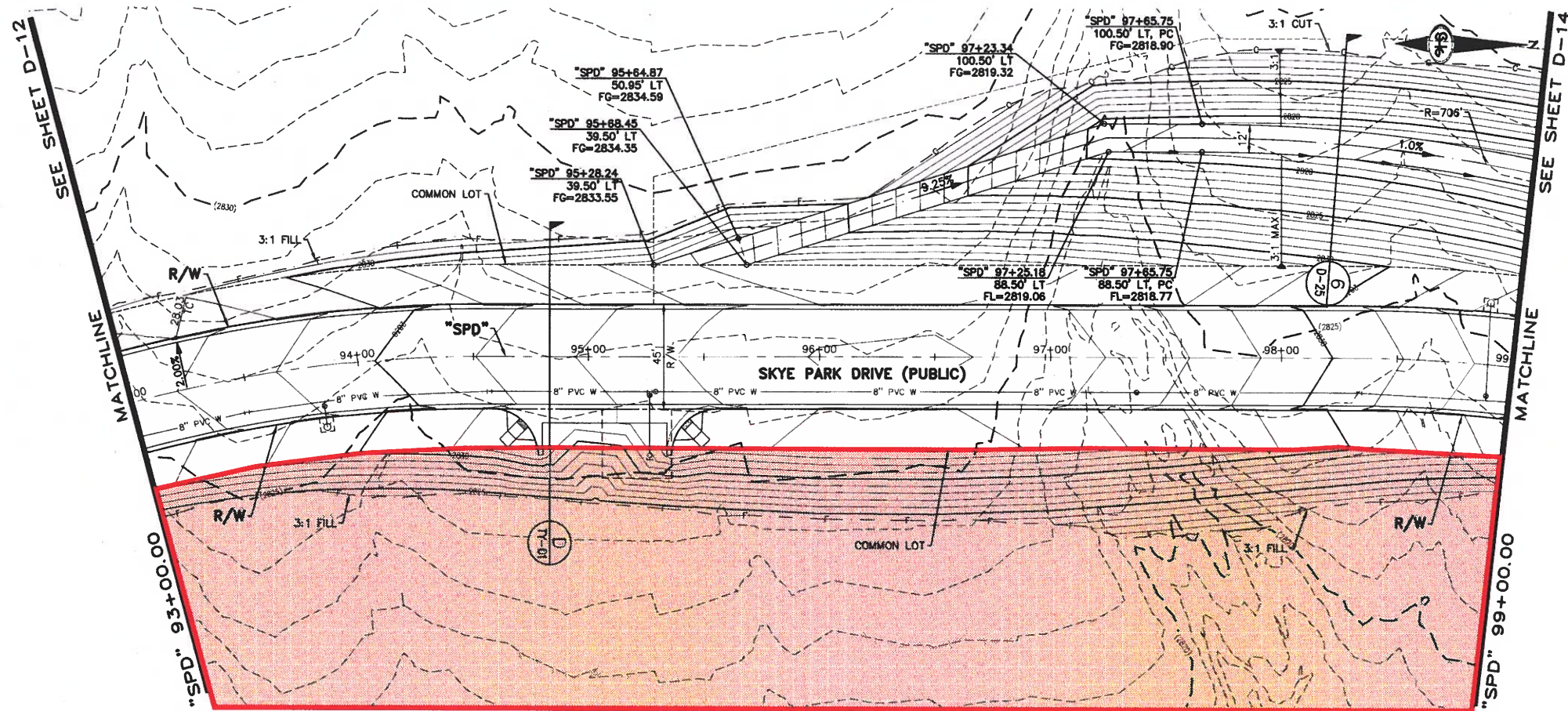
Ultimate Condition Flow Rate Summary				
Skye Canyon West Basins				
Basin/Conduit/Inflow Point ID	Area (ac)	Q _{max} (cfs)	Q ₁₀ (cfs)	Q ₅ (cfs)
WARR01	3.6	9	7	4
WARR02	2.9	7	3	3
WARR03	1.1	1	7	7
WARR04	1.5	3	3	1
WARR05	8.0	10	8	8
WARR06	2.4	6	6	1
WARR07	8.3	3	3	2
WGSC02	8.3	25	10	10
WGSC03	30.4	85	47	47
WGSC04	26.4	14	13	22
WGSC05	11.5	33	18	18
WGSC06	17.1	48	25	25
WGSC07	26.4	14	13	22
WL11	36.7	90	48	48
WL12	31.4	84	38	38
WL13	29.5	81	38	38
WL19	28.0	79	46	46
WL20	15.7	46	21	21
WL31	24.9	80	32	32
WL4A	8.0	25	10	10
WL4B	8.9	27	12	12
WL5A	10.9	32	15	15
WL5B	3.8	12	5	5
WL6A	6.2	22	9	9
WL6B	10.8	30	14	14
WL7	11.5	34	19	19
WL8	17.4	48	22	22
WL9A	18.2	49	22	22
WML0	14.4	39	18	18
WML1	18.0	52	24	24
WML10	11.9	38	19	19
WML11	18.0	48	23	23
WML12	15.1	41	20	20
WML13	16.4	49	25	25
WML14	19.2	58	29	29
WML15A	12.1	33	17	17
WML16B	11.2	34	17	17
WML19	22.2	64	32	32
WML20	22.4	78	38	38
WML3	17.3	58	28	28
WML4	25.1	77	38	38
WML5	27.3	62	41	41
WML6	25.5	64	32	32
WML7	36.0	58	30	30
WML8	10.3	34	17	17
WML9	18.4	55	28	28
WML10A	6.5	15	10	10
WML10B	12.0	37	17	17
WML1A2	30.4	88	44	44
WML1B	11.5	36	17	17
WMP1A	20.2	59	29	29
WMP1B	15.9	63	31	31
WMP2	3.3	10	5	5
WMP3	4.9	17	8	8
WMP4	5.7	19	9	9
WMP5	0.4	0	0	0
WMP6	1.0	4	2	2
WMP7	4.5	14	7	7
WMP8	2.4	6	4	4
WMPR10	10.0	19	8	8
WMPR12	3.2	7	2	2
WMPR13	1.8	6	2	2
WMPR14	1.0	3	1	1
WMPR15	2.0	5	2	2
WMPR16	13.2	28	10	10
WMPR17	3.0	6	2	2
WMPR18	1.7	4	1	1
WMPR19	0.3	1	0	0
UTSCH1	36.4	108	48	48
WYSC02	11.6	37	18	18
WEST ROADWAY BASINS				
WEG1L1	3.4	12	6	6
WEG1L2	3.9	12	7	7
WEG1L3	4.1	16	9	9
WEG1H1	0.5	2	1	1
WEG1H2	2.1	2	1	1
WEG1H3	2.3	10	6	6
WGRIC1A	1.3	4	2	2
WGRIC1B	3.3	10	6	6
WGRIC2	1.7	9	5	5
WGR1T1	11.7	30	18	18
WGR1T2	0.8	2	1	1
WGR1T3	2.2	7	4	4
WGR1T4	1.3	5	3	3
WGR1T5	2.2	9	5	5
WGR1T6	3.3	3	2	2
WGR1T7	1.3	5	2	2
WGR1T8	2.2	6	4	4
WSC0P1	1.5	6	3	3
WSC0P2	3.0	11	6	6
WSC0P3	13.3	19	10	10
WSC0P4	7.6	25	14	14
WSC0P5	2.7	6	3	3
WSC				
WSC1A	1.5	9	2	2
WSC1A2	0.7	3	1	1
WSC1B	1.8	6	3	3
WSC1C	1.4	6	3	3
WSC1D	2.4	8	5	5
WSC1E	6.4	18	9	9
WSC1F	9.3	27	13	13
WSC1G	10.4	31	15	15
WSC1H	1.4	4	3	3
WSC1I	3.5	11	6	6
WSC1J	2.9	10	5	5
WSC1K	4.2	14	7	7
WSC1L	4.5	15	8	8
WSC1M	0.7	3	1	1
WSC1N	2.5	3	2	2
WSC1O	0.8	3	2	2
WSC1P	2.8	9	4	4
WSC1Q	5.5	28	18	18

Ultimate Condition Flow Rate Summary Skye Canyon West Concentration Points			
Basin	Concentration Point ID	Area (sq. ft)	Q _u (cfs)
WC1	Q = WB1A.1 + WB2D1	0.02	43
	WC2	0.03	73
	Q = WC1 + WB1A.1 + WB2A.1A	0.05	109
	WC3	0.05	109
	Q = WC2 + WB1D.1 + WB2B.1	0.08	135
	WC4	0.08	135
	WC5	0.09	170
	Q = WC4 + WB1A.1A	0.04	68
	WC6	0.04	68
	Q = WB1A.1 + WB2D1	0.10	186
	WC7	0.10	186
	Q = WC6 + WB1A.1 + WB2B.1 + WB2C.1A	0.02	37
	WC8	0.17	322
	Q = WC7 + WC3 + WC6C.1A + WC6	0.03	60
	WC10A	0.03	60
	Q = WC7 + WB1D.1 + WB2D1	0.05	99
	WC10B	0.05	99
	Q = WC10A + WB1A.1 + WB2D1	0.07	127
	WC11	0.07	127
	Q = WB1D.1 + WB2D1	0.11	226
	WC12	0.11	226
	Q = WC11 + WB1B.1 + WB1D.1 + WB1D.1A	0.17	352
	WC14	0.17	352
	Q = WC14 + WB1A.1 + WB1D.1 + WB1D.1A + WB2D1	0.24	485
	WC15	0.24	485
	Q = WB1B.1 + WB2D1A	0.09	106
	WC16	0.09	106
	Q = WB1A.1 + WB1D.1 + WB2D1 + WB2D1A	0.37	685
	WC17	0.37	685
	WC18	0.42	787
	Q = WC17 + WB1C.1 + WB2C1B.1	0.90	94
	WC19	0.90	94
	Q = WB1D.1 + WB2D1 + WB2D1A	0.05	89
	WC20	0.05	89
	Q = WC19 + WB2D.1 + WB2D1A + WB2D1A.1	0.98	201
	WC21	0.98	201
WC22A	0.05	67	
Q = WB1A.1 + WB1A.1A + WB2D1	1.01	282	
WC22	1.01	282	
Q = WC21 + WB1D.1 + WB1D.1A + WB1D.1A.1	1.03	322	
WC23	1.03	322	
Q = WC22 + WB1D.1 + WB1D.1A + WB1D.1A.1	1.05	359	
WC24	1.05	359	
Q = WC23 + WB1D.1 + WB1D.1A + WB1D.1A.1	0.01	16	
WC25	0.01	16	
Q = WB2D1 + WB1D.1 + WB1D.1A + WB1D.1A.1	1.09	412	
WC26	1.09	412	
WC27	1.12	487	
Q = WB1B.1 + WB1D.1 + WB2D1	0.08	113	
WC28	0.08	113	
Q = WB1B.1 + WB1D.1 + WB2D1	0.01	19	
WC29	0.01	19	
Q = WC28 + WB1D.1 + WB1D.1A + WB1D.1A.1	0.04	68	
WC30	0.04	68	
Q = WC29 + WB2D1	0.07	124	
WC31	0.07	124	
Q = WC31 + WB1D.1 + WB1D.1A + WB1D.1A.1	0.14	244	
WC32	0.14	244	
Q = WC32 + WB1D.1 + WB1D.1A + WB1D.1A.1	0.23	404	
WC34	0.23	404	
Q = WC34 + WB1A.1 + WB1D.1 + WB1D.1A	1.34	878	
WC35	1.34	878	
WC36	0.03	51	
Q = WC35 + WB1D.1 + WB1D.1A + WB1D.1A.1	1.41	1000	
WC37	1.41	1000	
Q = WC37 + WB1D.1 + WB1D.1A + WB1D.1A.1	0.62	139	
WC38	0.62	139	
Q = WB2D1 + WB1D.1 + WB1D.1A + WB1D.1A.1	0.83	157	
WC39	0.83	157	
WC40	0.07	112	
Q = WB2D1 + WB1D.1 + WB1D.1A + WB1D.1A.1	0.72	321	
WC41	0.72	321	
Q = WC41 + WB1D.1 + WB1D.1A + WB1D.1A.1	2.18	1325	
WC42	2.18	1325	
Q = WC42 + WB1D.1 + WB1D.1A + WB1D.1A.1	2.19	1330	
WC43	2.19	1330	
Q = WC43 + WB2D1 + WB2D1A	4.85	2110	
WC44	4.85	2110	
Q = WB2D1 + WB2D1A + WB2D1A.1 + WB2D1A.1A	1.18	250	
WC45	1.18	250	

NOTE:

- THE MAP VIEWPORT HAS ONLY INCLUDED THE MOST PERTINENT BASINS TO THE PROJECT SITE.
- BOLD CONCENTRATION POINTS ALONG SKYE VILLAGE ROAD HAVE BEEN UTILIZED FOR ULTIMATE CONDITION WSPGH MODEL AND SIZING OF STORM DRAIN.
- BOLD CONCENTRATION POINT LOCATED AT THE EAST SIDE OF THE PROJECT SITE HAVE BEEN UTILIZED AS COMPARISON POINTS TO THE PROPOSED CONDITION FLOW PATTERNS.
- NOTE THAT ALL PARCELS WITHIN THE PROJECT SITE HATCH HAVE BEEN RE-ASSESSED AS DEVELOPED IN THE PROPOSED CONDITION TO ADEQUATELY SIZE STORM DRAIN FACILITIES ALONG GRAND CANYON DRIVE.
- SEE REFERENCED ULTIMATE CONDITION EXHIBIT E FROM THE MASTER DRAINAGE STUDY UPDATE FOR THE FULL EXTENTS OF THE ULTIMATE CONDITION WATERSHED.

Referenced Improvement Plans (TDS)



STORM DRAIN NOTES

1. CONSTRUCT TYPE "CM2" DROP INLET (USDCCA STD. DWG. NO. 412.1 & 421)
2. CONSTRUCT 60" TYPE III MANHOLE (USDCCA STD. DWG. NO. 406.1)
3. CONSTRUCT 60" TYPE II MANHOLE WITH TYPE IA RISER (USDCCA STD. DWG. NO. 404.1 AND 406.1)
4. CONSTRUCT NDOT TYPE 4 MANHOLE (NDOT STD. PLAN R-4.3.2)
5. CONSTRUCT RCA ACCESS MANHOLE PER STRUCTURAL DETAIL
6. INSTALL 18" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDCCA STD. DWG. NO. 503.2)
7. INSTALL 30" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDCCA STD. DWG. NO. 503.2)
8. INSTALL 36" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDCCA STD. DWG. NO. 503.2)
9. INSTALL 42" RCP (USDCCA STD. DWG. NO. 503.2)
10. INSTALL 60" RCP (USDCCA STD. DWG. NO. 503.2)
11. INSTALL 72" RCP (USDCCA STD. DWG. NO. 503.2)
12. CONSTRUCT 48" TYPE II MANHOLE WITH TYPE IA RISER (USDCCA STD. DWG. NO. 404.1 AND 406.1)
13. CONSTRUCT 6' X 6' RCB (NDOT STD. PLAN B-20.1.2)
14. CONSTRUCT 7' X 5' RCB (NDOT STD. PLAN B-20.1.2)
15. CONSTRUCT 8' X 7' RCA (PER STRUCTURAL DETAIL)
16. CONSTRUCT 10' X 9' RCA (PER STRUCTURAL DETAIL)
17. INSTALL 30" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
18. INSTALL 36" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
19. INSTALL 42" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
20. CONSTRUCT BRICK AND MORTAR PLUG (SEE DETAIL 3, DRAWING D-25)
21. CONSTRUCT INTERIM PLUG PER STRUCTURAL DETAIL
22. INSTALL 54" RCP (USDCCA STD. DWG. NO. 503.2)
23. 12" WIDE X 6" THICK TYPE II MAINTENANCE ACCESS PATH
24. CONSTRUCT CULVERT HEADWALL (NDOT STD. PLAN R-2.5.2 & R-2.5.2.1)
25. CONSTRUCT CONCRETE COLLAR (SEE DETAIL 1, DRAWING D-25)
26. INSTALL 24" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDCCA STD. DWG. NO. 503.2)
27. INSTALL 18" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
28. CONSTRUCT DROP INLET PER STRUCTURAL DETAIL
29. CONSTRUCT HEADWALL PER STRUCTURAL DETAIL
30. INSTALL CHAIN LINK FENCE (USDCCA STD. DWG. NO. 252)
31. INSTALL CHAIN LINK GATES (USDCCA STD. DWG. NO. 253)
32. CONSTRUCT CONCRETE PAD WITH 3' CUTOFF WALL (SEE DETAIL 14, DRAWING D-25)
33. CONSTRUCT 3' CUTOFF WALL (SEE DETAIL 15, DRAWING D-25)

NOTES

1. ALL RCP SHALL BE CLASS III UNLESS OTHERWISE SHOWN.
2. ALL PIPE LENGTHS ARE MEASURED ALONG PIPE CENTERLINE TO CENTER OF MANHOLE OR INSIDE EDGE OF DI OR RCB/RCA.
3. ALL DROP INLETS SHALL INCLUDE STORM WATER MANAGEMENT STAMP AND DETAIL PER USDCCA STD. DWG. NO. 421.
4. SEE STRUCTURAL PLANS FOR ADDITIONAL STRUCTURAL DETAILS AND CONNECTIONS.
5. ALL PIPES ARE PUBLICLY MAINTAINED.
6. ADD SPECIAL INSPECTION REQUIRED FOR PIPE SEGMENTS WITH SACRIFICIAL CONCRETE.

DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE, CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS. BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BUILT, OR FLAT STOP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL).

LEGEND

- 1 STORM DRAIN LATERAL # (SEE SHEETS D-19 THRU D-24)

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY DS-1000 ON FILE AT THE CITY OF LAS VEGAS FOR THE SUBJECT PROJECT.

JERRY SLATER, P.E. 14167 DATE

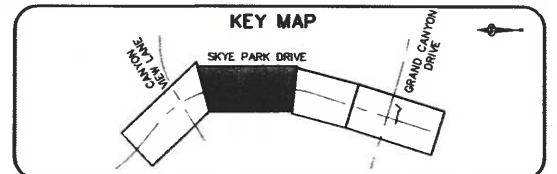
FLOOD ZONE

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (OUTSIDE THE 500-YEAR FLOOD PLAIN) ON THE FLOOD INSURANCE RATE MAP (FIRM) PANEL: 3200301735E, DATED SEPTEMBER 27, 2002.

NOTE:

PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES, SUCH AS BUT NOT LIMITED TO, THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF VEGETATION.

KEY MAP



SCALE 30 0 30 60 FEET



SLATER HANFAN GROUP
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5740 S. ARVILLE STREET #210, LAS VEGAS, NV 89116
PHONE (702) 284-5300 FAX (702) 284-5309

NINETY-FIVE MANAGEMENT LLC

SKYE CANYON II PHASE 3A
SKYE PARK DRIVE

STORM DRAIN PLAN AND PROFILE - "SPD" 93+00.00 TO "SPD" 99+00.00

DATE: 4/5/18

DRAFTER: AM

DESIGNER: DAM

CHECKED: JSR

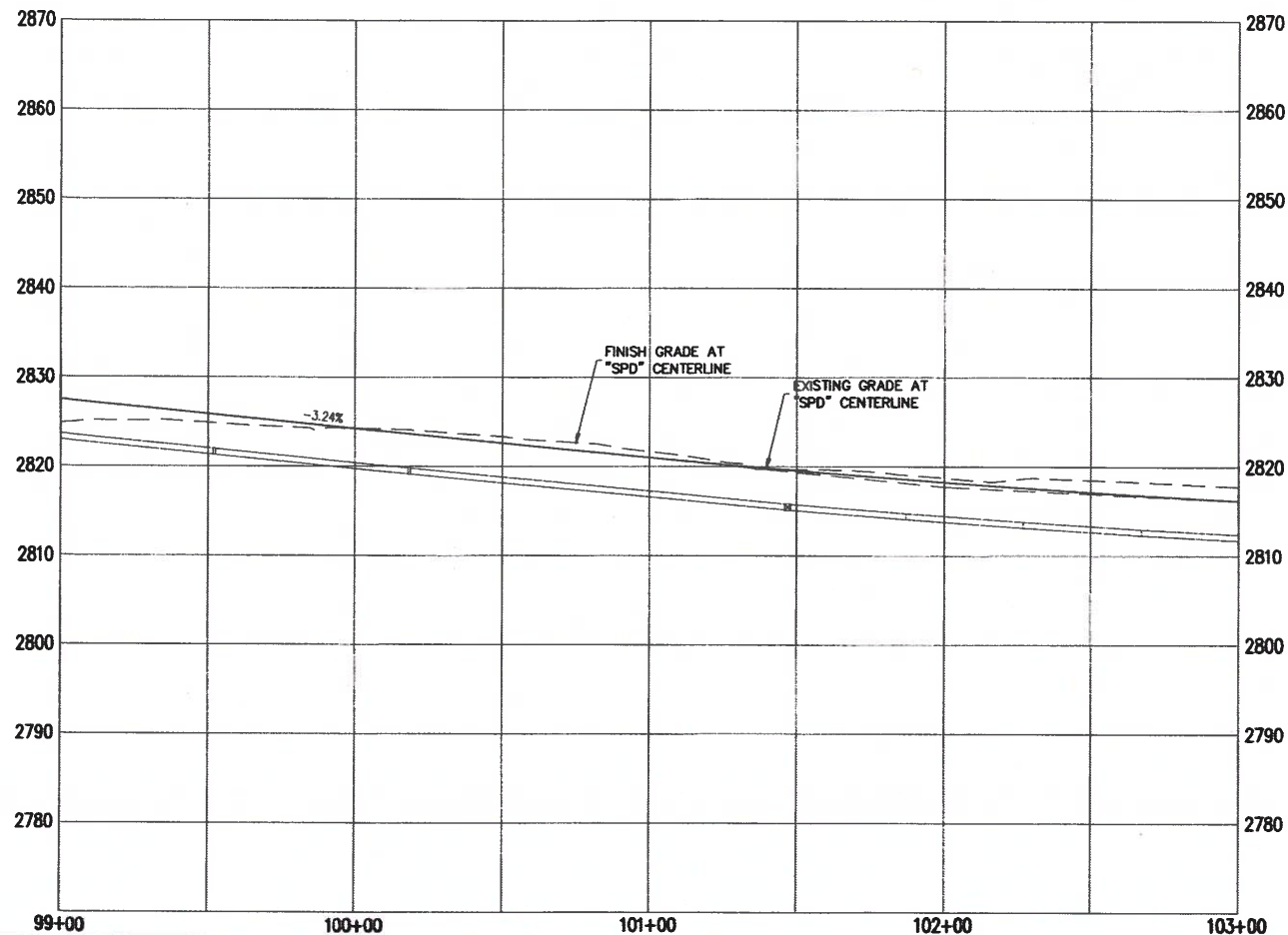
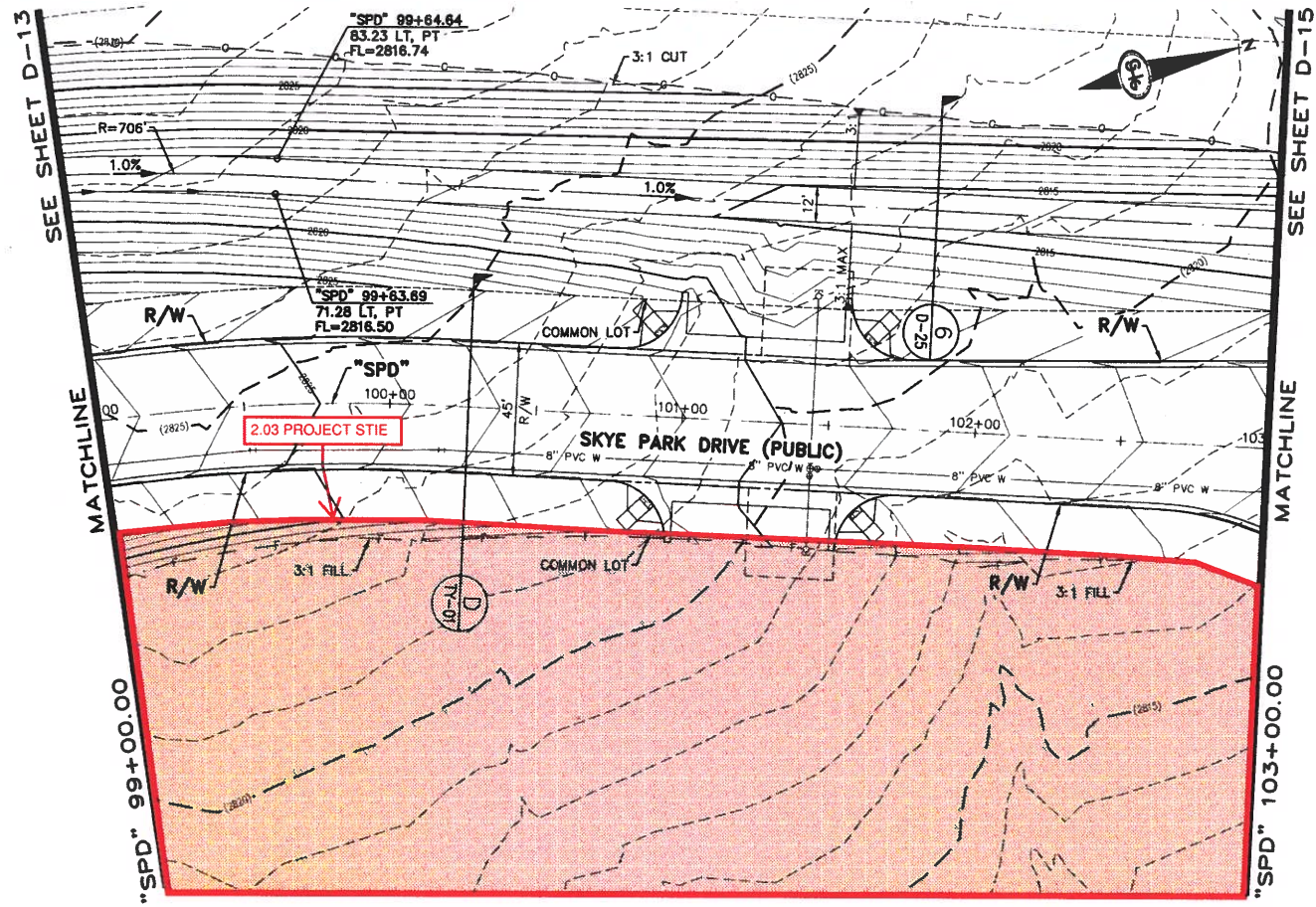
PROJECT NO.

OLY1609-000



D-13

SHEET 17 OF 31



- ### STORM DRAIN NOTES
1. CONSTRUCT TYPE "CM2" DROP INLET (USDCCA STD. DWG. NO. 412.1 & 421)
 2. CONSTRUCT 60" TYPE II MANHOLE (USDCCA STD. DWG. NO. 406.1)
 3. CONSTRUCT 60" TYPE II MANHOLE WITH TYPE IA RISER (USDCCA STD. DWG. NO. 404.1 AND 406.1)
 4. CONSTRUCT NDOT TYPE 4 MANHOLE (NDOT STD. PLAN R-4.3.2)
 5. CONSTRUCT RCA ACCESS MANHOLE PER STRUCTURAL DETAIL
 6. INSTALL 18" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDCCA STD. DWG. NO. 503.2)
 7. INSTALL 30" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDCCA STD. DWG. NO. 503.2)
 8. INSTALL 36" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDCCA STD. DWG. NO. 503.2)
 9. INSTALL 42" RCP (USDCCA STD. DWG. NO. 503.2)
 10. INSTALL 60" RCP (USDCCA STD. DWG. NO. 503.2)
 11. INSTALL 72" RCP (USDCCA STD. DWG. NO. 503.2)
 12. CONSTRUCT 48" TYPE II MANHOLE WITH TYPE IA RISER (USDCCA STD. DWG. NO. 404.1 AND 406.1)
 13. CONSTRUCT 6' X 6' RCB (NDOT STD. PLAN B-20.1.2)
 14. CONSTRUCT 7' X 5' RCB (NDOT STD. PLAN B-20.1.2)
 15. CONSTRUCT 8' X 7' RCB (PER STRUCTURAL DETAIL)
 16. CONSTRUCT 10' X 9' RCB (PER STRUCTURAL DETAIL)
 17. INSTALL 30" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
 18. INSTALL 36" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
 19. INSTALL 42" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
 20. CONSTRUCT BRICK AND MORTAR PLUG (SEE DETAIL 3, DRAWING D-25)
 21. CONSTRUCT INTERIM PLUG PER STRUCTURAL DETAIL
 22. INSTALL 54" RCP (USDCCA STD. DWG. NO. 503.2)
 23. 12' WIDE X 6" THICK TYPE II MAINTENANCE ACCESS PATH
 24. CONSTRUCT CULVERT HEADWALL (NDOT STD. PLAN R-2.5.2 & R-2.5.2.1)
 25. CONSTRUCT CONCRETE COLLAR (SEE DETAIL 1, DRAWING D-25)
 26. INSTALL 24" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDCCA STD. DWG. NO. 503.2)
 27. INSTALL 18" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
 28. CONSTRUCT DROP INLET PER STRUCTURAL DETAIL
 29. CONSTRUCT HEADWALL PER STRUCTURAL DETAIL
 30. INSTALL CHAIN LINK FENCE (USDCCA STD. DWG. NO. 252)
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- ### NOTES
1. ALL RCP SHALL BE CLASS III UNLESS OTHERWISE SHOWN.
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LEGEND

1 STORM DRAIN LATERAL # (SEE SHEETS D-19 THRU D-24)

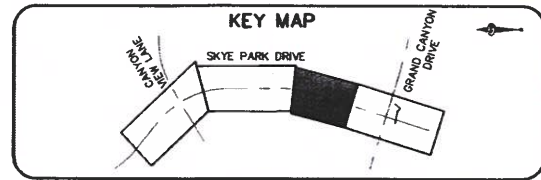
FLOOD ZONE

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY 05-1000 ON FILE AT THE CITY OF LAS VEGAS FOR THE SUBJECT PROJECT.

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (OUTSIDE THE 500-YEAR FLOOD PLAIN) ON THE FLOOD INSURANCE RATE MAP (FIRM) PANEL: 33003C7735E, DATED SEPTEMBER 27, 2002.

NOTE:

PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES, SUCH AS BUT NOT LIMITED TO, THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF VEGETATION.

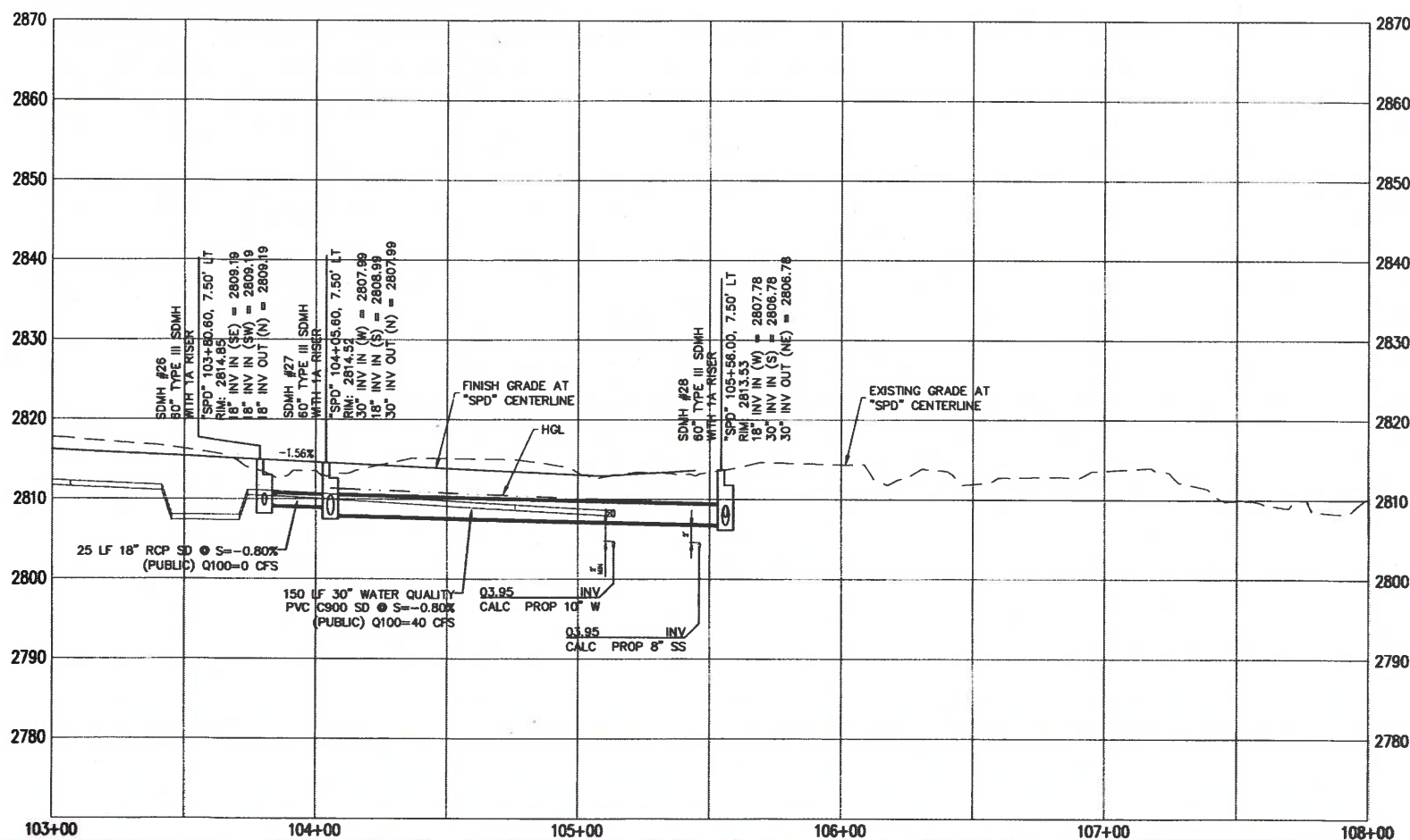


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NINETY-FIVE MANAGEMENT LLC
SKYE CANYON II PHASE 3A
SKYE PARK DRIVE
STORM DRAIN PLAN AND PROFILE - "SPD" 99+00.00 TO "SPD" 103+00.00

DATE: 4/5/18
DRAFTER: AM
DESIGNER: DAM
CHECKED: JSR
PROJECT NO. OLY1609-000

D-14
SHEET 18 OF 31



1. CONSTRUCT TYPE "CM2" DROP INLET (USDOCCA STD. DWG. NO. 412.1 & 421.1)
2. CONSTRUCT 60" TYPE III MANHOLE (USDOCCA STD. DWG. NO. 406.1)
3. CONSTRUCT 60" TYPE III MANHOLE WITH TYPE IA RISER (USDOCCA STD. DWG. NO. 404.1 AND 406.1)
4. CONSTRUCT NDOT TYPE 4 MANHOLE (NDOT STD. PLAN R-4.3.2)
5. CONSTRUCT RCA ACCESS MANHOLE PER STRUCTURAL DETAIL
6. INSTALL 18" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDOCCA STD. DWG. NO. 503.2)
7. INSTALL 30" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDOCCA STD. DWG. NO. 503.2)
8. INSTALL 36" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDOCCA STD. DWG. NO. 503.2)
9. INSTALL 42" RCP (USDOCCA STD. DWG. NO. 503.2)
10. INSTALL 60" RCP (USDOCCA STD. DWG. NO. 503.2)
11. INSTALL 72" RCP (USDOCCA STD. DWG. NO. 503.2)
12. CONSTRUCT 48" TYPE II MANHOLE WITH TYPE IA RISER (USDOCCA STD. DWG. NO. 404.1 AND 406.1)
13. CONSTRUCT 6' x 6' RCJ (NDOT STD. PLAN R-20.1.2)
14. CONSTRUCT 7' x 5' RCJ (NDOT STD. PLAN R-20.1.2)
15. CONSTRUCT 8' x 7' RCA (PER STRUCTURAL DETAIL)
16. CONSTRUCT 10' x 9' RCA (PER STRUCTURAL DETAIL)
17. INSTALL 30" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
18. INSTALL 36" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
19. INSTALL 42" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
20. CONSTRUCT BRICK AND MORTAR PLUG (SEE DETAIL 3, DRAWING D-25)
21. CONSTRUCT INTERIM PLUG PER STRUCTURAL DETAIL
22. INSTALL 54" RCP (USDOCCA STD. DWG. NO. 503.2)
23. 12" WIDE X 6" THICK TYPE II MAINTENANCE ACCESS PATH
24. CONSTRUCT CULVERT HEADWALL (NDOT STD. PLAN R-2.5.2 & R-2.5.2.1)
25. CONSTRUCT CONCRETE COLLAR (SEE DETAIL 1, DRAWING D-25)
26. INSTALL 24" RCP OR WATER QUALITY C900 AS SHOWN ON PROFILES (USDOCCA STD. DWG. NO. 503.2)
27. INSTALL 18" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
28. CONSTRUCT DROP INLET PER STRUCTURAL DETAIL
29. CONSTRUCT HEADWALL PER STRUCTURAL DETAIL
30. INSTALL CHAIN LINK FENCE (USDOCCA STD. DWG. NO. 252)
31. INSTALL CHAIN LINK GATES (USDOCCA STD. DWG. NO. 253)
32. CONSTRUCT CONCRETE PAD WITH 3' CUTOFF WALL (SEE DETAIL 14, DRAWING D-25)
33. CONSTRUCT 3' CUTOFF WALL (SEE DETAIL 15, DRAWING D-25)

1. ALL RCP SHALL BE CLASS II UNLESS OTHERWISE SHOWN.
2. ALL PIPE LENGTHS ARE MEASURED ALONG PIPE CENTERLINE TO CENTER OF MANHOLE OR INSIDE EDGE OF DI OR RCB/RCA.
3. PER DROP INLETS SHALL INCLUDE STORM WATER MANAGEMENT STAMP AND DETAIL PER USDOCA STD. DWG. NO. 421.
4. SEE STRUCTURAL PLANS FOR ADDITIONAL STRUCTURAL DETAILS AND CONNECTIONS
5. ALL PIPES ARE PUBLICLY MAINTAINED.
6. ADD SPECIAL INSPECTION REQUIRED FOR PIPE SEGMENTS WITH SACRIFICIAL CONCRETE.

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE.

CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS. BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOP, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL).

1 STORM DRAIN LATERAL # (SEE SHEETS D-19 THRU D-24)

FLOOD ZONE
PROJECT SITE IS LOCATED WITHIN A FLOOD ZONE 'X' (OUTSIDE THE 500-YEAR FLOOD PLAIN) ON THE FLOOD INSURANCE RATE MAP (FIRM) PANEL: 32003C1735E, DATED JANUARY 27, 2002

PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN THE BEST MANAGEMENT PRACTICES, SUCH AS BUT NOT LIMITED TO, THE REMOVAL OF ACCUMULATED SEDIMENT AND DEBRIS AND CARE OF VEGETATION.

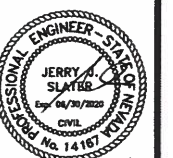


S-I-G
SLATER
HANIFAN
GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 264-5300
FAX (702) 264-5399

**SKYE CANYON II PHASE 3A
SKYE PARK DRIVE
AN AND PROFILE - "SPD" 103+00.00 TO**

STORM DR

DATE: 4/5/18
RAFTER: AM
DESIGNER: DAM
CHECKED: JSR
PROJECT NO.
OLY1609-000



D-15
SHEET 19 OF 31

Referenced Hydraulic Computations (Update)

Ultimate Condition WSPG Summary Grand Canyon Drive - U203 Model								
WSPG Station	Plan Station	Storm Drain Dimension	Invert Elevation (ft)	Q ₁₀₀ (cfs)	WSE (ft)	Velocity (ft/s)	FG Elevation	HGL Check ¹
1000.00	52+97.92	42" RCP	2760.19	118	2763.69	12.26	N/A	N/A
1076.00	53+20.33	42" RCP	2760.57	118	2765.38	12.26	2768.41	OK
1076.00	53+20.33	36" RCP	2761.07	65	2767.07	9.20	2768.41	OK
1276.00	55+21.83	36" RCP	2764.07	65	2769.06	9.20	2771.39	OK
1276.00	55+21.83	30" RCP	2764.57	55	2768.86	11.20	2771.39	OK
1476.00	57+23.33	30" RCP	2767.58	55	2772.60	11.20	2774.60	OK
1676.00	59+24.82	30" RCP	2772.58	55	2776.33	11.20	2779.54	OK
1876.00	61+26.32	30" RCP	2777.59	55	2779.49	13.76	2785.04	OK
1946.00	61+96.73	30" RCP	2779.34	55	2781.69	11.47	2786.96	OK
2022.00	61+97.42	30" RCP	2779.96	55	2783.23	11.20	N/A	N/A
2022.00	61+97.42	30" RCP	2779.96	55	2783.23	11.20	N/A	N/A

1 - 'HGL Check' reflects the minimum 1-ft below finished grade.

BEGIN "MAIN" MODEL

T1 SKYE CANYON INFRASTRUCTURE - PHASE 3A
T2 BY OLYMPIA COMPANIES

T3 PARCEL 2.03 TO BASIN OFF12 - STORM DRAIN ULT COND

SO	1000.0002760.190	42	.013		2763.69				
R	1076.0002760.570	42	.013			69.00	1		
JX	1076.0002761.070	36 36	.013	53.0	2761.07				
R	1276.0002764.070	36	.013			6.00	1		
JX	1276.0002764.570	30 18 18	.013	5.0	5.0 2765.57 2765.57	48.0	48.0		
R	1476.0002767.580	30	.013			6.00	1		
R	1676.0002772.580	30	.013			6.00	1		
R	1876.0002777.590	30	.013			4.00	1		
R	1946.0002779.340	30	.013			90.00	1		
R	2022.0002779.960	30	.013				1		
SH	2022.0002779.960	30	.013						
CD	1 2 0	.000	4.000	10.000	.000	.000	.00		
CD	18 4 1	.000	1.500	.000	.000	.000	.00		
CD	24 4 1	.000	2.000	.000	.000	.000	.00		
CD	30 4 1	.000	2.500	.000	.000	.000	.00		
CD	36 4 1	.000	3.000	.000	.000	.000	.00		
CD	42 4 1	.000	3.500	.000	.000	.000	.00		
CD	48 4 1	.000	4.000	.000	.000	.000	.00		
CD	54 4 1	.000	4.500	.000	.000	.000	.00		
CD	60 4 1	.000	5.000	.000	.000	.000	.00		
Q		55.000	.0						

Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 5-29-2019 Time: 7:43:25

SKYE CANYON INFRASTRUCTURE - PHASE 3A

BY OLYMPIA COMPANIES

PARCEL 2.03 TO BASIN OFF12 - STORM DRAIN ULT COND

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	2760.190	3.500	2763.690	118.00	12.26	2.34	2766.03	.00	3.24	.00	3.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
76.000	.0050					.0138	1.05	3.50	.00	3.50	.013	.00	.00	PIPE
1076.000	2760.570	4.814	2765.384	118.00	12.26	2.34	2767.72	.00	3.24	.00	3.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	.0000					.0116	.00	4.81	.00		.013	.00	.00	PIPE
1076.000	2761.070	5.997	2767.067	65.00	9.20	1.31	2768.38	.00	2.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200.000	.0150					.0095	1.90	6.00	.00	2.02	.013	.00	.00	PIPE
1276.000	2764.070	4.988	2769.058	65.00	9.20	1.31	2770.37	.00	2.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	.0000					.0137	.00	4.99	.00		.013	.00	.00	PIPE
1276.000	2764.570	4.293	2768.864	55.00	11.20	1.95	2770.81	.00	2.35	.00	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200.000	.0151					.0180	3.60	4.29	.00	2.50	.013	.00	.00	PIPE
1476.000	2767.580	5.016	2772.596	55.00	11.20	1.95	2774.54	.00	2.35	.00	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200.000	.0250					.0180	3.60	5.02	.00	1.77	.013	.00	.00	PIPE
1676.000	2772.580	3.748	2776.328	55.00	11.20	1.95	2778.28	.00	2.35	.00	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
115.055	.0251					.0180	2.07	3.75	.00	1.77	.013	.00	.00	PIPE
1791.055	2775.462	3.005	2778.468	55.00	11.20	1.95	2780.42	.00	2.35	.00	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDRAULIC JUMP														
1791.055	2775.462	1.812	2777.274	55.00	14.43	3.23	2780.51	.00	2.35	2.23	2.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.141	.0251					.0235	.24	1.81	1.95	1.77	.013	.00	.00	PIPE

Date: 5-29-2019 Time: 7:43:25

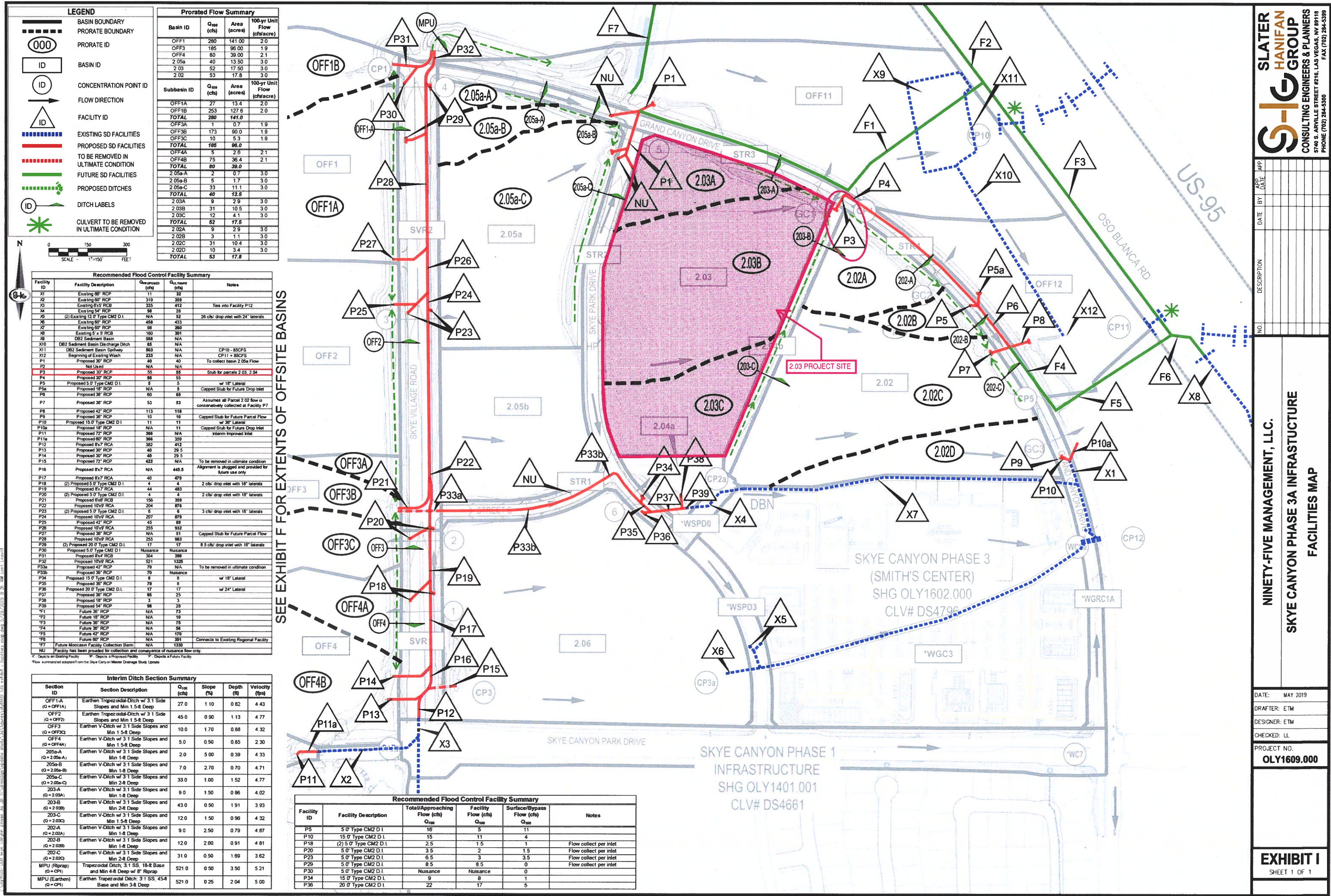
SKYE CANYON INFRASTRUCTURE - PHASE 3A

BY OLYMPIA COMPANIES

PARCEL 2.03 TO BASIN OFF12 - STORM DRAIN ULT COND

[illegible]

Referenced Drainage Exhibits (Update)



Prorated Flow Summary			
Basin ID	Q _{pr} (cfs)	Area (acres)	100-yr Unit Flow (cfs/acre)
OFF1	280	141.00	2.0
OFF3	185	96.00	1.9
OFF4	80	39.00	2.1
2.05a	40	13.50	3.0
2.03	52	17.50	3.0
2.02	53	17.8	3.0
Subbasin ID			
Q _{pr} (cfs)	Area (acres)	100-yr Unit Flow (cfs/acre)	
OFF1A	27	13.4	2.0
OFF1B	253	127.6	2.0
TOTAL	280	141.0	
OFF3A	1	0.7	1.9
OFF3B	173	90.0	1.9
OFF3C	10	5.3	1.9
TOTAL	185	96.0	
OFF4A	5	2.5	2.1
OFF4B	75	36.4	2.1
TOTAL	80	39.0	
2.05a-A	2	0.7	3.0
2.05a-B	5	1.7	3.0
2.05a-C	33	11.1	3.0
TOTAL	40	13.5	
2.03A	9	2.9	3.0
2.03B	31	10.5	3.0
2.03C	12	4.1	3.0
TOTAL	52	17.5	
2.02A	9	2.9	3.0
2.02B	3	1.1	3.0
2.02C	31	10.4	3.0
2.02D	10	3.4	3.0
TOTAL	53	17.8	

Recommended Flood Control Facility Summary			
Facility ID	Facility Description	Q _{pr} (cfs)	Notes
X1	Existing 66" RCP	32	
X2	Existing 60" RCP	319	
X3	Existing 6x5' RCB	412	Ties into Facility P12
X4	Existing 54" RCP	88	
X5	(2) Existing 12.5' Type CM2 D.I.	N/A	26 cfs/drop inlet with 24" laterals
X6	Existing 60" RCP	458	
X7	Existing 60" RCP	98	
X8	Existing 5 x 5' RCB	391	
X9	DB2 Sediment Basin	588	
X10	DB2 Sediment Basin Discharge Ditch	85	
X11	DB2 Sediment Basin Spillway	583	CP10 - 85CFS
X12	Beginning of Existing Wash	333	CP11 - 85CFS
P1	Proposed 30" RCP	40	To collect basin 2.05a Flow
P2	Net Used	N/A	
P3	Proposed 30" RCP	55	Stub for parcels 2.03, 2.04
P4	Proposed 30" RCP	55	
P5	Proposed 5.0' Type CM2 D.I.	5	w/ 18" Lateral
P5a	Proposed 18" RCP	N/A	Capped Stub for Future Drop Inlet
P6	Proposed 36" RCP	60	
P7	Proposed 36" RCP	53	Assumes all Parcel 2.02 flow is conservatively collected at Facility P7
P8	Proposed 42" RCP	113	
P9	Proposed 36" RCP	10	Capped Stub for Future Parcel Flow
P10	Proposed 15.0' Type CM2 D.I.	11	w/ 36" Lateral
P10a	Proposed 18" RCP	N/A	Capped Stub for Future Drop Inlet
P11	Proposed 72" RCP	386	
P11a	Proposed 60" RCP	386	Interim Improved Inlet
P12	Proposed 6x7' RCB	382	
P13	Proposed 30" RCP	40	20.5
P14	Proposed 30" RCP	40	29.5
P15	Proposed 72" RCP	422	To be removed in ultimate condition
P16	Proposed 6x7' RCB	N/A	Alignment is plugged and provided for future use only
P17	Proposed 6x7' RCB	40	479
P18	(2) Proposed 5.0' Type CM2 D.I.	4	2 cfs/drop inlet with 18" laterals
P19	Proposed 6x7' RCB	44	483
P20	(2) Proposed 5.0' Type CM2 D.I.	4	2 cfs/drop inlet with 18" laterals
P21	Proposed 6x8' RCB	156	358
P22	Proposed 10x9' RCB	204	876
P23	(2) Proposed 5.0' Type CM2 D.I.	6	3 cfs/drop inlet with 18" laterals
P24	Proposed 10x9' RCB	207	879
P25	Proposed 42" RCP	45	89
P26	Proposed 10x9' RCB	255	932
P27	Proposed 36" RCP	N/A	Capped Stub for Future Parcel Flow
P28	Proposed 10x9' RCB	255	983
P29	(2) Proposed 5.0' Type CM2 D.I.	17	8.5 cfs/drop inlet with 18" laterals
P30	Proposed 5.0' Type CM2 D.I.	Nuisance	Nuisance
P31	Proposed 6x4' RCB	364	398
P32	Proposed 10x9' RCB	521	1325
P33a	Proposed 42" RCP	70	N/A
P33b	Proposed 36" RCP	70	Nuisance
P34	Proposed 15.0' Type CM2 D.I.	8	w/ 18" Lateral
P35	Proposed 36" RCP	78	8
P36	Proposed 20' Type CM2 D.I.	17	17
P37	Proposed 36" RCP	85	25
P38	Proposed 18" RCP	3	3
P39	Proposed 54" RCP	88	28
*F1	Future 36" RCP	N/A	73
*F2	Future 18" RCP	N/A	10
*F3	Future 36" RCP	N/A	78
*F4	Future 36" RCP	N/A	56
*F5	Future 42" RCP	N/A	178
*F6	Future 60" RCP	N/A	391
*F7	Future Moroccan Facility Collection Berm	N/A	1330
MPU	Facility has been provided for collection and conveyance of nuisance flow only		
CP1	Depicts an Existing Facility		
CP2	Depicts a Proposed Facility		
CP3	Depicts a Future Facility		

Interim Ditch Section Summary					
Section ID	Section Description	Q _{pr} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)
OFF1-A (Q = OFF1A)	Earthen Trapezoidal-Ditch w/ 3:1 Side Slopes and Min 1.5-ft Deep	27.0	1.10	0.82	4.43
OFF2 (Q = OFF2)	Earthen Trapezoidal-Ditch w/ 3:1 Side Slopes and Min 1.5-ft Deep	45.0	0.90	1.13	4.77
OFF3 (Q = OFF3)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 1.5-ft Deep	10.0	1.70	0.88	4.32
OFF4 (Q = OFF4)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 1.5-ft Deep	5.0	0.50	0.85	2.30
2.05a-A (Q = 2.05a-A)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 1-ft Deep	2.0	5.00	0.39	4.33
2.05a-B (Q = 2.05a-B)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 1-ft Deep	7.0	2.70	0.70	4.71
2.05a-C (Q = 2.05a-C)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 2-ft Deep	33.0	1.00	1.52	4.77
2.03-A (Q = 2.03A)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 1-ft Deep	9.0	1.50	0.86	4.02
2.03-B (Q = 2.03B)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 2-ft Deep	43.0	0.50	1.91	3.93
2.03-C (Q = 2.03C)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 1.5-ft Deep	12.0	1.50	0.96	4.32
2.02-A (Q = 2.02A)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 1-ft Deep	9.0	2.50	0.79	4.87
2.02-B (Q = 2.02B)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 1-ft Deep	12.0	2.00	0.91	4.81
2.02-C (Q = 2.02C)	Earthen V-Ditch w/ 3:1 Side Slopes and Min 2-ft Deep	31.0	0.50	1.89	3.62
MPU (Riprap) (Q = CP1)	Trapezoidal Ditch, 3:1 SS, 18-ft Base and Min 4-ft Deep w/ 8" Riprap	521.0	0.50	3.50	5.21
MPU (Earthen) (Q = CP1)	Earthen Trapezoidal Ditch, 3:1 SS, 45-ft Base and Min 3-ft Deep	521.0	0.25	2.04	5.00

SEE EXHIBIT F FOR EXTENTS OF OFFSITE BASINS

Recommended Flood Control Facility Summary				
Facility ID	Facility Description	Total/Approaching Flow (cfs) Q _{pr}	Facility Flow (cfs) Q _{pr}	Surface/Bypass Flow (cfs) Q _{pr}
P5	5.0' Type CM2 D.I.	16	5	11
P10	15.0' Type CM2 D.I.	15	11	4
P18	(2) 5.0' Type CM2 D.I.	2.5	1.5	1
P20	5.0' Type CM2 D.I.	3.5	2	1.5
P23	5.0' Type CM2 D.I.	6.5	3	3.5
P29	5.0' Type CM2 D.I.	8.5	8.5	0
P30	5.0' Type CM2 D.I.	Nuisance	Nuisance	0
P34	15.0' Type CM2 D.I.	9	8	1
P36	20.0' Type CM2 D.I.	22	17	5

SLATER HANIFAN GROUP

CONSULTING ENGINEERS & PLANNERS

5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118

PHONE (702) 284-5300

DATE: MAY 2019

DRAFTER: ETM

DESIGNER: ETM

CHECKED: LL

PROJECT NO. OLY1609.000

EXHIBIT I

SHEET 1 OF 1

NINETY-FIVE MANAGEMENT, LLC.

SKYE CANYON PHASE 3A INFRASTRUCTURE

FACILITIES MAP

Referenced Improvement Plans (Update)

APPENDIX E

Reference Material

Technical Drainage Study for Skye Canyon Phase 3A Mass Grading (SHG, DS 5090)

Approval Letter

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		February 6, 2019
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:	
	Skye Canyon Phase 3A Mass Grade	
Cross Streets:	Skye Village Road and Grand Canyon Drive	
File Number:	F:\Depot\DSMemos\DS5090A.doc	
Parcel Number:	125-07-111-001	
Zoning Action:	TMP-75323	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X
		COPIES TO: Slater Hanifan Group Ninety-Five Management, LLC Bart Anderson, P.E., DevCo CCRFCD

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	1/23/2019	2/6/2019	See Comments Below	\$400.00	502616: \$400
			TOTAL FEES (LDDRS):	\$400.00	----

REMARKS:

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

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

1. The site is adjacent to or crosses an existing or proposed *Clark County Regional Flood Control District* (CCRFCD) master planned facility. Therefore, CCRFCD concurrence is required prior to final approval of the drainage study.
2. Revise the FEMA Flood Zone Information on the plans to also reference panel 1750.
3. The subject drainage study addresses the Mass Grading of Skye Canyon Phase 3A. Technical drainage studies will be required for the future onsite parcels as they develop.

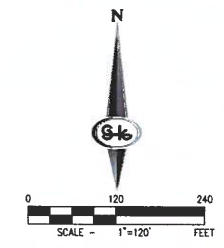
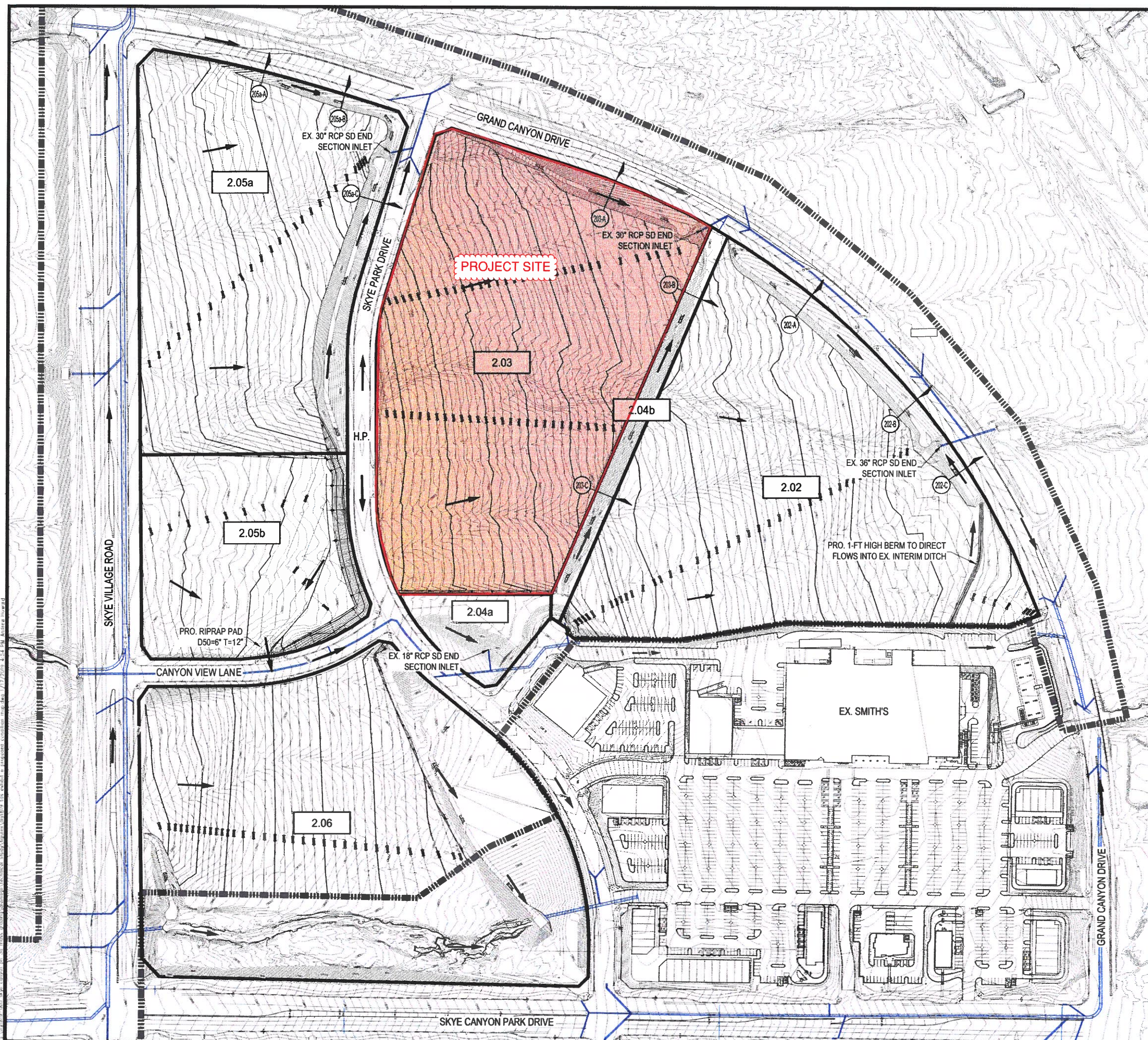
NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas Flood Control Section*. Additionally, conditional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

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

END OF REMARKS
JKS

T/R/S: T19S/R60E/07
AREA G-07

Referenced Drainage Maps



LEGEND

-  BASIN BOUNDARY
-  PHASE 3A BOUNDARY
-  EX. STORM DRAIN
-  BASIN ID
-  FLOW DIRECTION
-  FLOWMASTER SECTION

- NOTES:**
1. EXISTING GRADING ON PARCELS 2.04a AND 2.04b IS TO REMAIN UNCHANGED FROM THE PHASE 3A INFRASTRUCTURE STUDY.
 2. FOR PARCELS 2.02, 2.03, 2.05a, AND 2.06, PROPOSED GRADING GENERALLY MATCHES EXISTING DRAINAGE PATTERNS. HOWEVER, ALL EXISTING GRADING IS TO REMAIN UNCHANGED FROM THE PHASE 3A INFRASTRUCTURE STUDY.
 3. PROPOSED GRADING ON PARCEL 2.05b IS INTENDED TO ROUTE AS MUCH ONSITE RUNOFF THROUGH THE EXISTING SITE ENTRANCE AS POSSIBLE IN ORDER TO REDUCE INTERIM RUNOFF THROUGH PERIMETER LANDSCAPE EASEMENTS.

Basin ID	Area (ac)	Q₁₀₀ (cfs)	Q₁₀ (cfs)
*2.02	17.8	53	26
*2.03	17.5	52	26
*2.04a	1.4	3	1
*2.04b	1.3	3	1
*2.05a	13.5	40	19
*2.05b	7.4	21	10
*2.06	19.9	61	30

*Referenced from Phase 3A Infrastructure Study

Section ID	Q _{max} (cfs)	Slope (%)	Depth (ft)	Velocity (fps)
*205a-A	2	5	0.39	4.33
*205a-B	7	2.7	0.7	4.71
*205a-C	33	1	1.52	4.77
*203-A	9	1.5	0.86	4.02
*203-B	43	0.5	1.91	3.93
*203-C	12	1.5	0.96	4.32
*202-A	9	2.5	0.78	4.87
*202-B	12	2	0.91	4.81
*202-C	31	0.5	1.69	3.62

*Referenced from Stage Canyon Phase 3A Infrastructure Study

2022C	31	0.5
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*Referenced from Sky Canyon Phase 3A Infrastructure Study

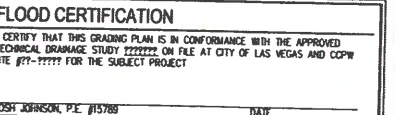
S-G **SLATER**
HANIFAN
GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

NINETY FIVE MANAGEMENT LLC
SKYE CANYON PHASE 3A MASS GRADING
PROPOSED CONDITION DRAINAGE MAP

DATE:	JAN 2019
AFTER:	DCH
SIGNER:	DCH
CHECKED:	AJH
PROJECT NO.	OLY1819.000

EXHIBIT E
SHEET 1 OF 1

Referenced Improvement Plans



DATE:	1/18/19
DRAFTER:	BKS
DESIGNER:	BKS
CHECKED:	JJ
PROJECT NO.	OLY1819-000



1/18/19

G-1

SHEET 3 OF 8

FLOOD ZONE

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANEL 1735, DATED NOVEMBER 16, 2011. A ZONE X (UNSHADED) IS DESCRIBED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

- 1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.
- 2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LINE OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

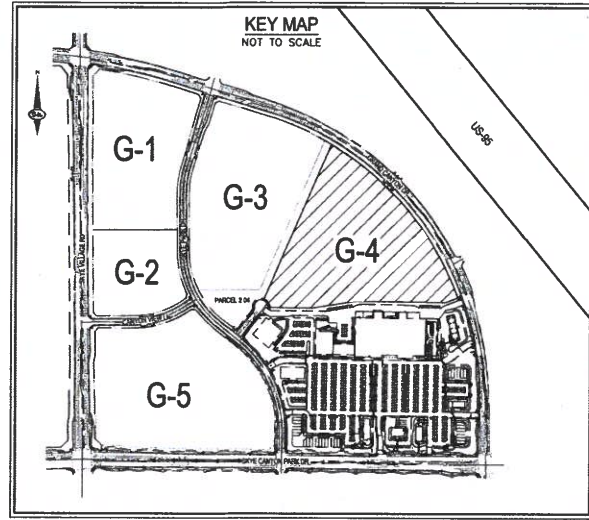
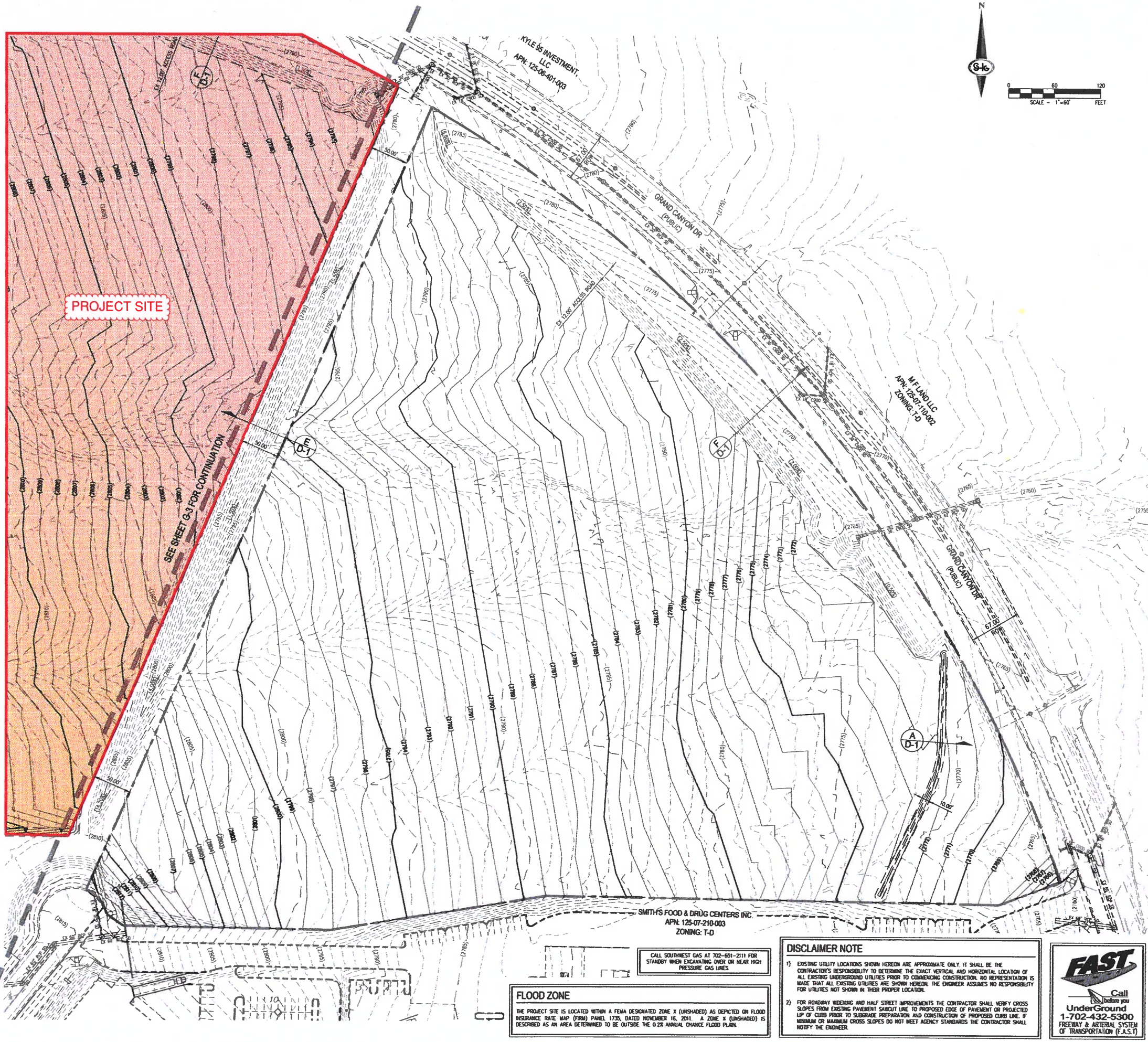
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OR
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SURVEY NOTE
OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, RESTORED, OR OBSOLETE DURING CONSTRUCTION.

ELEVATION NOTE
ADD 2800 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 01 00 REPRESENTS 1801 00)

- GRADING NOTES**
1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2012, SECTION 2304.11.2.2.
 2. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
 3. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
 4. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
 5. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
 6. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
 7. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CITY OF LAS VEGAS BUILDING DEPARTMENT.
 8. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLEVING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.
 9. NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

- LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDELINES**
(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))
1. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATED IN, THE PUBLIC RIGHTS OF WAY OF CLARK COUNTY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
 2. ADDITIONAL CONSTRUCTION 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 CLARK COUNTY TITLE 24.40 AND IN THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
 3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE, AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY, REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NWR100000, SECTION 8.A.5.
 4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED 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 A 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 THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NWR100000, SECTION 8.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, WHOEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

FLOOD CERTIFICATION
I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY 1222222 ON FILE AT CITY OF LAS VEGAS AND CCP# HTE #12-122222 FOR THE SUBJECT PROJECT.
JOSH JOHNSON, P.E. #15789 DATE: _____

FLOOD ZONE
THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANEL 1735, DATED NOVEMBER 18, 2011. A ZONE X (UNSHADED) IS DESCRIBED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

DISCLAIMER NOTE

1. EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.
2. FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SHOTGUN LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED TOP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

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SLATER HANIFAN GROUP
a Westwood team
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-4300 FAX (702) 284-5588

G-16

CITY OF LAS VEGAS, NEVADA

NINETY FIVE MANAGEMENT, LLC

SKYE CANYON PH 3A MASS GRADING

GRADING SHEET IV - PARCEL 2.02

PROJECT NO. OLY1819-000

DATE: _____

DRAFTER: BKS

DESIGNER: BKS

CHECKED: JJ

PROJECT NO. OLY1819-000

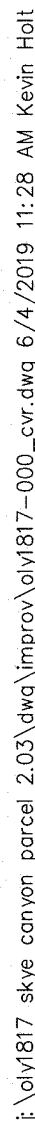
ENGINEER: JOSHUA L. JOHNSON, P.E. #15789

G-4

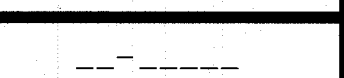
SHEET 6 OF 8

APPENDIX F

CD of Electronic Files



APN: 125-07-111-002



STORMWATER RUNOFF MANAGEMENT

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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 CLARK COUNTY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION 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 TITLE 24.40 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 NVRI00000, SECTION II.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED 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 ACTUAL 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 NVRI00000, 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.

LEGAL DESCRIPTION

BEING A SUBDIVISION OF PORTIONS OF GOVERNMENT LOTS 1 AND 8 OF SECTION 12, TOWNSHIP 19 SOUTH, RANGE 39 EAST, TOGETHER WITH PORTIONS OF GOVERNMENT LOTS 9, 10, 11, AND 12 OF SECTION 7, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA

BENCHMARK

USDA BRASS CAP ON AN IRON PIPE, 140' SOUTHWEST OF TELEPHONE POLE #269947, SOUTHWEST CORNER OF THE U.S. 95/KYLE CANYON TURNOFF. ELEVATION = 2817.62 FEET, 858.813 METERS. I.R.A.V.D. 88 PER THE CLARK COUNTY VERTICAL CONTROL LAST REVISED 2003

BASIS OF BEARINGS

SOUTH 00°22'12" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) 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

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 ELECTRICAL SHALL BE AT LEAST 12-INCHES OR GREATER AS DICTATED BY LOCAL CODES AND STANDARDS.
A) ANY DEVIATION FROM SPECIFIED MINIMUM CLEARANCES MUST BE APPROVED BY ALL AFFECTED UTILITIES AND/OR MUNICIPALITIES
3. FOR VALVE ADJUSTMENT CONTACT 702-668-6107 48 HOURS PRIOR TO CONSTRUCTION.
4. IN THE EVENT OF NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND STRUCTURES CONTACT 702-365-2099
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

SOUTHWEST GAS APPROVAL

SOUTHWEST GAS CORPORATION DATE

2.2 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 "T" 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 RE-ADJUSTED 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.

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT #_ADD FIELD (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 AS 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 FACILITIES WILL INCLUDE THE PLACEMENT OF AN APPROPRIATELY SIZED ASPHALT REPAIR PATCH ON THE STREET SURFACE.

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

NO LEAD COMPLIANCE NOTE
TO COMPLY WITH THE FEDERAL LEAD-CONTAINING PAINT ACT, ALL WATER WORKS BRASS PRODUCTS PROPOSED TO BE RELOCATED, OR INSTALLED AS NEW MUST BE INSTALLED WITH THE LEAD FREE APPROVED PRODUCT. THE OLD LEADED PRODUCT MAY NOT BE REUSED.

GRADING NOTES

1. INDICATED GRADES OTHER THAN T.C., F.G. & GUTTER F.L. ARE ROUGH GRADES.
2. THE ROUGH GRADING PLANS SHALL BE ON THE JOB SITE AT ALL TIMES. THE ROUGH GRADING SHALL BE FINISHED IN CONFORMANCE WITH THE LINES AND GRADES SHOWN ON THE PLANS. THE GRADING QUANTITIES ARE BASED ON THE ELEVATION AND DETAILS SHOWN ON THE PLANS. ANY DEVIATIONS FROM THE PLANS WILL RESULT IN QUANTITY CHANGES.
3. CARE SHALL BE EXERCISED IN GRADING CORNER LOTS.
4. ROUGH PAD ELEVATIONS SHALL BE GRADED TO WITHIN 0.1' OF THE PAD ELEVATIONS SHOWN ON THE PLANS. WHEN GRADING IS COMPLETE PER THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE LOTS CAN BE INSPECTED. AT THAT TIME THE ENGINEER SHALL ALSO DECIDE IF ANY ADDITIONAL DITCHES OR BERMS ARE REQUIRED. THE CONTRACTOR IS REQUESTED NOT TO REMOVE ANY OF HIS ROUGH GRADING EQUIPMENT UNTIL HE RECEIVES GRADING APPROVAL FROM THE ENGINEER.
5. SOILS REPORT PREPARED BY SOUTHWEST GEOTECHNICAL, PROJECT NO. 175337, DATED 10/25/17.
6. EARTHWORK QUANTITIES (RAW):
- CUT = 15,815 CUBIC YARDS
- FILL = 61,969 CUBIC YARDS
A) THE ABOVE QUANTITIES DO NOT REFLECT LOSSES DUE TO SUBSIDENCE OR SHRINKAGE.
B) THE ABOVE QUANTITIES DO REFLECT USING NATIVE MATERIAL IN LIEU OF TYPE I GRAVEL BASE MATERIAL FOR STREET SECTIONS.
C) THE ABOVE QUANTITIES DO NOT REFLECT ANY EARTHWORK WHICH MAY BE REQUIRED BY THE ENGINEER TO CONSTRUCT ADDITIONAL PROTECTIVE DITCHES OR BERMS NOT SHOWN ON THESE DRAWINGS.

CITY OF LAS VEGAS FIRE AND RESCUE GENERAL NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE # 6331, FOR HYDRANT SPECIFICATIONS, AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICTS - 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 [FC 105.7.12]
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. [FC 3310, 3312]
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. [FC 5075.7.3]
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. [FC 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. [FC 507.2.1, NFA 241]
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. [FC 507]
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. [FC 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. [FC 507]
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: [FC C102]
• RESIDENTIAL - 500 FT UNSPRINKLERED, 600 FT SPRINKLERED.
• COMMERCIAL - 300 FT UNSPRINKLERED, 400 FT SPRINKLERED.
12. WHERE NEW 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, FIRE HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. [FC C102.8]
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FEET OF THE PERMETER 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. [FC C102.12]
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. [FC 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. [FC C102.7]
17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. [FC C102.6]
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE ARE 4 OR MORE FIRE HYDRANTS/SPRINKLER LEADS ARE INSTALLED ON A SINGLE SYSTEM. SECTIONAL CLOSURE VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS CAN BE OUT OF SERVICE DUE TO A BREAK IN A WATER MAIN. [FC 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. [FC 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 FEET PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%. [FC 503.2.7, 503.2.8]
21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FEET OUTSIDE AND 28 FEET INSIDE TURNING RADIUS. [FC 503.2.4]
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL BE NOT LESS THAN 13 FT 6 INS. [FC 503.2.1]
23. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 40 FT, FLOW LINE TO FLOW LINE WITH PARALLEL PARKING PERMITTED ON BOTH SIDES, NOT LESS THAN 32 FT WIDE, FLOW LINE TO FLOW LINE, WHERE PARKING IS PERMITTED ONLY ON ONE SIDE OF THE FIRE APPARATUS ACCESS ROAD, NOT LESS THAN 24 FT WIDE, FLOW LINE TO FLOW LINE, WHERE NO PARKING IS PERMITTED ON EITHER SIDE. FIRE LANES THROUGH PARKING LOTS SHALL BE NOT LESS THAN 24 FT. [FC 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. THE DISTANCE COULD BE INCREASED TO 250 FT IF THE BUILDING IS SPRINKLERED. [FC 503.1.1]
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 100 OR MORE DWELLING UNITS, ROADS WITH DEAD-ENDS OR WITH A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. COMMERCIAL AND INDUSTRIAL DEVELOPMENTS WHERE BUILDINGS EXCEED 2 STORIES OR 30 FEET IN HEIGHT, OR EXCEEDING 62,000 SQUARE FEET IN AREA. [FC 503.1.2]
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. [FC 503.2.5]
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 SIGNS AT INTERVALS OF 100 FEET 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, LESS THAN 6 FT FROM THE ROADWAY, AND NO HIGHER THAN 6 FT FROM THE CURB OR ON THE PAYMENT OR CURB IF CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. [FC 503.3]
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. SAE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE FC 503.6 AND FC APPENDIX M.

2.5 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 LEFTOVER 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 CONTRACTION, IN THE AREAS INDICATED:

	HORIZONTAL	VERTICAL CONTRACTION	
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
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 HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

UTILITY LOCATION NOTE TO CONTRACTOR

EXISTING UTILITY LOCATIONS SHOWN HEREIN 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 LOCATIONS. CALL BEFORE YOU DIG: 1 (800) 227-2600, SOUTHWEST GAS CORPORATION: 702-400-1789 (STANDBY) CONTACT NUMBER

2.1 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 INTERFERENCES 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 SATISFACTORILY 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.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-HALF INCH (1/2") ABOVE UP OF ALL GUTTERS AFTER COMPLETION, EXCEPT AT SIDEWALK RAMP AND CROSS GUTTERS.
9. CURBS AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 215.
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 STRUCTURES 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 ADD GEO. REPORT #ADD FIELD. [ADD FIELD APPROVED] BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SANITARY 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 DRIVEWAY, DRIVEWAY APRONS, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.
16. WALL NOTES:
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 FURNISH GRADING 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 DOT 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. SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION. THE MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF THE PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND 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 MAP(S) MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIONAL CERTAINITIES OF ± 0.09 METERS (± 0.3 FEET) HORIZONTALLY AND VERTICALLY. A SEPARATION 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 ADDITION.
23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

2.3 CITY OF LAS VEGAS TRAFFIC NOTES

1. ALL CONSTRUCTION SIGNING, BARRICADES, AND TRAFFIC DELINEATION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES', LATEST EDITION.
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.
3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
4. WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCLOSED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD", THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL BE FABRICATED WITH DIAMOND GRADE VIP CLASS 6 REFLECTIVE SHEETING OR APPROVED EQUAL. ALL NEW TRAFFIC SIGNS, EXCEPT STREET NAME AND SCHOOL SPEED LIMIT SIGNS, SHALL HAVE 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. SCHOOL ZONE SIGNS SHALL HAVE 3M SERIES 1150 ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THESE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.
7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.
8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
9. STREET SIGNS AND STOP SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO COMPLY WITH THE PURPOSE OF THE PROJECT AND TO PROTECT THE PUBLIC. THE CONTRACTOR SHALL HAVE A CERTIFIED ATSSA TRAFFIC CONTROL TECHNICIAN OR IMSA WORK ZONE SAFETY SPECIALIST SET UP, MAINTAIN AND/OR REMOVE ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.
11. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CITIZENS AREA TRANSIT (C.A.T.) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.
13. GUARDS SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 828-3442) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.
14. ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS OTHERWISE DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.
15. THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAVEMENT TRANSITIONS, MARKINGS AND SIGNING THAT ARE REQUIRED TO MATCH ADJACENT ROADWAY SEGMENTS. THE CONTRACTOR SHALL PROVIDE A DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPENDING ANY ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SUCH THAT ADEQUATE TRANSITIONS AND LANE TERMINATIONS BETWEEN ADJACENT ROADWAY SEGMENTS ARE MAINTAINED.

2.4 CITY OF LAS VEGAS STREETLIGHT NOTES

1. ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION (USS), AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA" (USD), LATEST REVISION.
2. DESIGN PROFESSIONAL AND CONTRACTOR SHALL VERIFY CITY'S LATEST LED FIXTURE SPECIFICATIONS AND APPROVED FIXTURES PER CLV WEBSITE, UNDER BUILDING AND SAFETY FORMS, PRIOR TO ORDERING MATERIALS.
3. NO DEVIATION OF STREET LIGHT, PULL BOX, CONDUITS ETC., LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF TRAFFIC AND CITY ENGINEER. ANY DEVIATION FROM THE PLAN LOCATION WILL REQUIRE COMPLIANCE WITH SECTION 623 OF THE USS.
4. ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION IN ACCORDANCE WITH SECTION 623 G.03.01 OF THE USS.
5. ALL EMPTY CONDUIT SHALL HAVE AT LEAST ONE GREEN NO. #8 AWG WIRE INSTALLED AS TRACER WIRE IN ACCORDANCE WITH SECTION 623 G.02.01 OF THE USS PRIOR TO BACKFILLING AND FINAL INSPECTION.
6. ANY STRUCTURE, SUCH AS BLOCK WALLS, CHAIN LINK FENCES, RETAINING WALLS, ETC., SHALL LEAVE A MINIMUM 12" CLEARANCE FROM THE STREET. SERVICE POINTS SHALL BE SHOWN ON THE PLANS, SIDEWALK, AND SHALL AT NO TIME COMPLETELY ENCLOSE THE STREET LIGHTING POLE.
7. AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TRAFFIC ENGINEERING DIVISION, PRIOR TO ANY PRE-FINAL INSPECTION. THE AS-BUILT DRAWING NEEDS TO BE STAMPED AS-BUILT AND SIGNED BY THE PREPARER.
8. SERVICE POINT SHALL BE COORDINATED WITH NV ENERGY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICE POINTS SHALL BE SHOWN ON THE PLANS.
9. WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREET LIGHTING CIRCUITS AND/OR POLES, THESE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED BEFORE STREETLIGHT BASES ARE INSTALLED, AT NO EXPENSE TO THE CITY OF LAS VEGAS.
10. THE CONTRACTOR SHALL FURNISH COMPLETE CONDUIT, WIRE, ETC. FROM SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON THE PLANS.

DEVIATIONS FROM STANDARDS

NONE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. ##### FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW _____ GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW _____ GPM



SLATER
HANIFAN
GROUP
a Westwood team
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 294-5300 FAX (702) 284-5389

DATE BY APP. DATE

DESCRIPTION

NO

CITY OF LAS VEGAS, NEVADA

SEVEN FIVE MANAGEMENT LLC
NINETY FIVE MANAGEMENT LLC
SKYE CANYON II - PHASE 3A PARCEL 2.03
GENERAL NOTES

DATE: 05/14/19
DRAFTER: KDH
DESIGNER: KDH
CHECKED: MAK
PROJECT NO. OLY1817-000
APPROVED FOR CONSTRUCTION
TIMOTHY M. MUL

ABBREVIATIONS

AC	ASPHALTIC CONCRETE OR ACRE	FH	FIRE HYDRANT	PVC	POLYVINYL CHLORIDE
AGG	AGGREGATE BASE	FL	FLOWLINE	PVI	POINT OF VERTICAL INTERSECTION
APN	ASSESSORS PARCEL NUMBER	FT	FEET OR FOOT	PQA	QUANTITY
APPROX OR ~	APPROXIMATE	FUT	FUTURE	R	RADIUS
AVENUE	AVENUE	GRD	GRADE OR GROUND	RCA	REINFORCED CONCRETE ARCH
Ø	AT	GB	GRADE BREAK OR GAGE CHANGE	RCB	REINFORCED CONCRETE BOX
Ø	BEGIN CURVE OR BACK OF CURB	GV	GATE VALVE	RCO	REINFORCED CONCRETE PIPE
B	BEGINNING OF CURB RETURN	HDPE	HIGH DENSITY POLYETHYLENE	RCW	ROADWAY FACSIMILE
BHW	BOTTOM OF HEADWALL	HOA	HOME OWNERS ASSOCIATION	REQD	REQUIRED
BLDG	BUILDING	HORZ	HORIZONTAL	REV	REVISION
BLVD	BOULEVARD	HP	HIGH POINT	RG	ROUGH GRADE
BM	BENCHMARK	HWL	HIGH WATER LEVEL	RT OR R	
BVC	BEGIN VERTICAL CURVE	HWML OR HW	HEADWALL	R/W, ROW	RIGHT OF WAY
BWV	BACK WATER VALVE	HYD	HYDRAULIC OR HYDRANT	S	SLOPE
CLARK COUNTY	CLARK COUNTY AREA UNIFORM STANDARD DRAININGS	ID	INCH DIAMETER	SD	SCHEDULE
CAUSED		IN	INCH	SDH	STORM DRAIN
CCPW	CLARK COUNTY PUBLIC WORKS	INT	INTERSECTION	SDDI	STORM DRAIN DROP INLET
COTFCD	CLARK COUNTY REGIONAL FLOOD DISTRICT	INTV	INVERT ELEVATION	SDMH	STORM DRAIN MANHOLE
CWRD	CLARK COUNTY WATER RECLAMATION DISTRICT	IRC	IRON CURB	SECT	SECTION
CE	COMMON ELEMENT	IRRG	IRRIGATION	SFT	SQUARE FEET
CL, C/L, C	CENTERLINE	LF	LINEAR FEET	SH	SHEET
CLM	CLEARANCE	LMC	LANDSCAPE MAINTENANCE CORPORATION	SHTR	SHIELD & TRAFFIC CONTROL ESM
CLSM	CONTROLLED LOW STRENGTH MATERIAL	LP	LOW POINT	SNWA	SOUTHERN NEVADA WATER AGENCY
CLV	CITY OF LAS VEGAS	LT OR L	LEFT	SPECS	SPECIFICATIONS
CLML&C	CEMENT MORTAR LINED AND COATED	LVWMD	LAS VEGAS VALLEY WATER DISTRICT	SSM	STREET
CONC	CONCRETE MASONRY UNIT	LWL	LOW WATER LEVEL	SSMH	SANITARY SEWER MANHOLE
CNVL	CITY OF NORTH LAS VEGAS	MAX	MAXIMUM	STA	STATION
COH	CITY OF HENDERSON	MECH	MECHANICAL	STD	STANDARD
CONC	CONCRETE	MH	MANHOLE	STEL	STEEL
CT	COURT	MIN	MINIMUM	STL	STREET LIGHT
CY OR CY D	CUBIC YARD	MISC	MISCELLANEOUS	SW	SIDEWALK
DCWS	DESIGN AND CONSTRUCTION FOR WASTEWATER	NUOT	NORTH UTILITY EASEMENT	SWG	SOUTHWEST GAS
	COLLECTION SYSTEMS	NEAD	NEVADA DEPARTMENT OF TRANSPORTATION	SWR OR SS	SANITARY SEWER
DEC	DECORATIVE	NTE	NOT TO SCALE	SY	SQUARE YARD
DET	DETAIL	NUS	NONEXCLUSIVE UTILITY EASEMENT	TAN	TANGENT
DI	DUCTILE IRON OR DRAIN INLET	NVE	NV ENERGY	TOP	TOP OF CURB
DIA, Ø	DIAMETER	OC	ON CENTER	TF	TOP OF FLOOR OR TOP OF FOOTING
DI	DUCTILE IRON PIPE	OO	OUTSIDE DIAMETER OR OVERALL DIMENSION	TH	TOP OF GRATE
DR	DRIVE	OFF	OFFSET	THRU	THROUGH
DWG(S)	DRAWING	ORIG	ORIGINAL	THW	TOP OF HEADWALL
DWY(S)	DRIVEWAY	PAE	PUBLIC OR PEDESTRIAN ACCESS EASEMENT	THP	TOP OF PIPE
EA	EACH	PB	PULL BOX	THW	TOP OF WALL
ECR	END CURB RETURN	PCC	POINT OF CURVE	TR	TOP OF RETAINING WALL
ELEV	EXISTING GROUND	PC	POINT OF COMPOUND CURVE	TSW	TOP OF SCREEN WALL
ELEV	ELEVATION	PDE	PUBLIC DRAINAGE EASEMENT	TYD	TYPICAL
ESMT	EASEMENT	OE OR PL	PROPERTY LINE	UDACS	UNIFORM DESIGN AND CONSTRUCTION
EP	EDGE OF PAYEMENT	PBG	POINT OF BEGINNING	STANDARDS	STANDARDS
ERU	EQUVALENT RESIDENTIAL UNIT	PCE	POINT OF CURVATURE	VERT	VERTICAL
EVC	END VERTICAL CURVE	PCE	POINT OF ENDING	VC	VERTICAL
EX OR EXIST	EXISTING	PRC	POINT OF REVERSE CURVATURE	VCLV	VALLEY CUTTER
FC	FACE OF CURB	PRELIM	PRELIMINARY	W	WROUGHT IRON
FF	FINISHED FLOOR	PROP	PROPOSED	WL	WATER LINE
FG	FINISHED GRADE	PRV	PRESSURE REDUCING VALVE	WFR	WATER PRESSURE ZONE
FGL	FINISHED GRADE, HIGH SIDE	PUE	PUBLIC UTILITY EASEMENT	WGT	WEIGHT
	FINISHED GRADE, LOW SIDE	PT	POINT OF TANGENT OR POINT	WL	WATER LINE

SPECIAL NOTE

IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED WHICH IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY OF LAS VEGAS DEPT. OF PUBLIC WORKS. TEMPORARY CONSTRUCTION ITEMS INCLUDE: PAVEMENT TRANSITIONS, PROTECTIVE DITCHES AND BERMS, ROAD SIGNS AND BARRICADES, ETC.

NOTICE TO CONTRACTOR

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

- EXISTING UTILITY LOCATIONS SHOWN HEREIN 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 LOCATIONS. CALL BEFORE YOU DIG.
(800) 227-2600

LEGEND

EXISTING	PROPOSED		DESCRIPTION
			5' CONTOUR
			1' CONTOUR
			STRIPING
			SEWER MANHOLE
			CURB AND GUTTER
			SANITARY SEWER PIPE AND FLOW ARROW
			WATER PIPE
			WATER GATE VALVE
			FIRE HYDRANT
			WATER BLOW-OFF
			WATER LATERAL W/ METER
			SANITARY SEWER LATERAL
			STREETLIGHT
			EDGE OF PAVEMENT
			TRAFFIC SIGN
			PAD ELEVATION FINISHED FLOOR ELEVATION
			ELEVATION
			RETAINING WALL
			STORM DRAIN W/ MANHOLE
			EXISTING GAS GATE VALVE PROPOSED SCARP AREA
			EXISTING UNKNOWN MANHOLE DRIVEWAY
			EXISTING GAS, SIZE PER PLAN PROPOSED RIP RAP
			EXISTING POWER POLE SIGHT VISIBILITY ZONE PER STD DWG NO. 201.2
			EXISTING TRAFFIC SIGNAL HANDICAP RAMP
			EXISTING WALL
			WATER PIPE FITTING
			WATER POINT OF CONNECTION
			SEWER POINT OF CONNECTION
			DAYLIGHT LINE
			STREET CENTERLINE
			RIGHT-OF-WAY
			MATCHLINE
			BOUNDARY LINE
			PHASE LINE
			PROPERTY LINE
			FLOWLINE
			SAWCUT
			CUT/FILL TRANSITION LINE
			SIDEWALK
			EX STRIPING TO BE OBLITERATED
			GRADE BREAK LINE
			REFLECTIVE RAISED PAVEMENT MARKERS
			BACK WATER VALVE
			WROUGHT IRON FENCE
			PONY WALL
			DECORATIVE PERIMETER WALL
			DECORATIVE PERIMETER RETAINING WALL
			PROPOSED CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
			EXISTING CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
			FUTURE CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB

QUANTITIES

DRAINAGE				
1.	48" TYPE III STORM DRAIN MANHOLE	EA	1	--
2.	15" TYPE "CM2" DROP INLET	EA	2	--
3.	18" RCP CLASS IV STORM DRAIN	LF	15	--
4.	30" RCP CLASS IV STORM DRAIN	LF	159	--
5.				
6.				
STREET IMPROVEMENTS				
1.	2" A.C. PAVEMENT	SY	11,661	--
2.	TYPE II AGGREGATE BASE	CY	1,424	--
3.	STANDARD 24" TYPE "L" CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	201	--
4.	STANDARD 8" TYPE "A" ISLAND CURB W/6" TYPE I AGGREGATE BASE	LF	166	--
5.	STANDARD 30" TYPE "ROLL" CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	6,675	--
6.	5' WIDE CONCRETE SIDEWALK W/4" TYPE II AGGREGATE BASE	SF	19,055	--
7.				

CITY OF LAS VEGAS, NEVADA

NINETY FIVE MANAGEMENT LLC

SKYE CANYON II - PHASE 3A PARCEL 2.03

S7
T19S
R60E

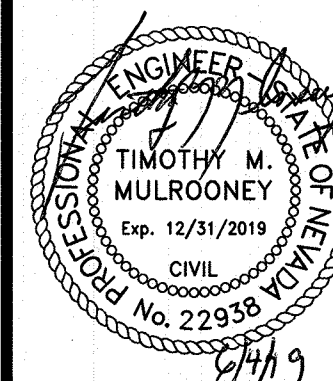
DATE: 05/14/19

DRAFTER: KDH

DESIGNER: KDH

CHECKED: MAH

PROJECT NO.
OLY1817-000

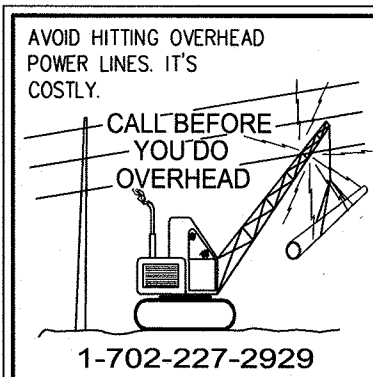


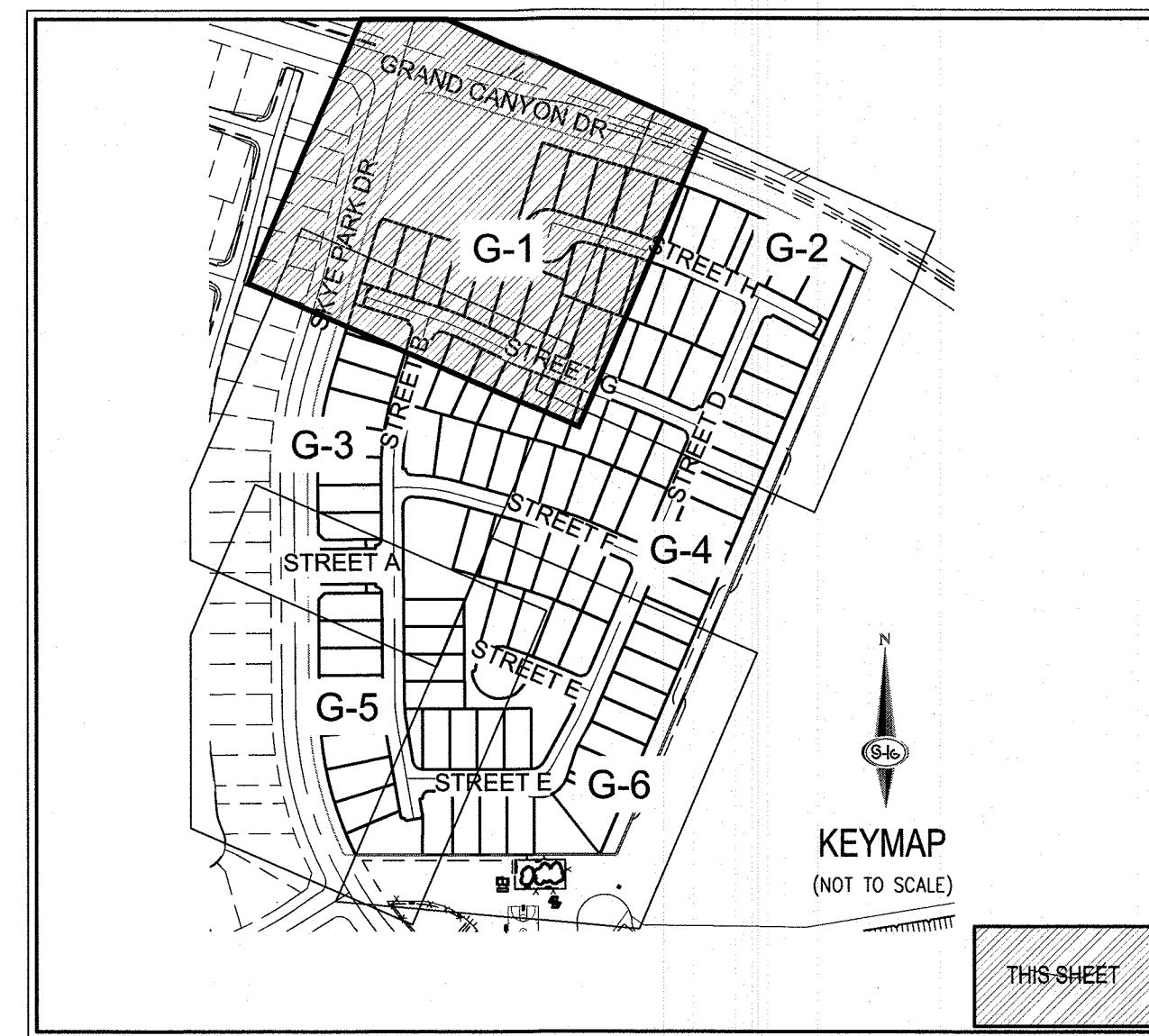
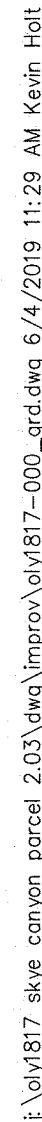
C-3

SHEET 3 OF 12

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. FIRST APPROVED DATE:
LVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 20 GPM





OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

ADD 2800 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 01.00 REPRESENTS 2801.00)

SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 175337 DATED 10/25/17

UPDATED SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 175337 DATED 10/17/18

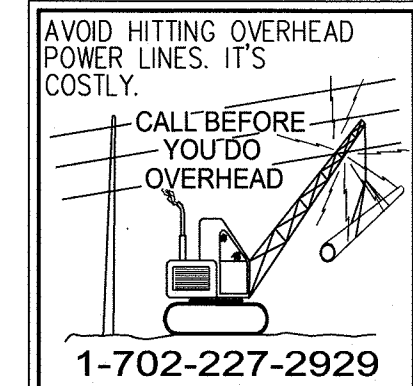
EARTHWORK QUANTITIES (RAW):
CUT= 15.815 CU YDS
FILL= 61.969 CU YDS

- 1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.
- 2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FOR EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED EDGE OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

- THE PROJECT IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANELS 32003C1735E AND 32003C1750E, DATED SEPTEMBER 27, 2002. A ZONE X (UNSHADED) IS DEFINED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% (500 YEAR) ANNUAL CHANCE FLOOD PLAIN.

		PRIVATE	PUBLIC
48" TYPE III STORM DRAIN MANHOLE	EA	1	--
15" TYPE "CM2" DROP INLET	EA	2	--
18" RCP CLASS IV STORM DRAIN	LF	15	--
30" RCP CLASS IV STORM DRAIN	LF	159	--



S-I-G
SLATER
HANIFAN
GROUP
a Westwood team
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-4300 FAX (702) 284-5399

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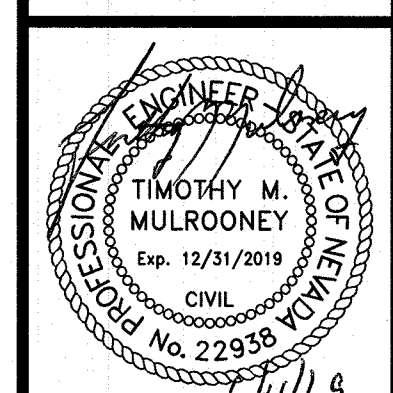
CITY OF LAS VEGAS, NEVADA

NINETY FIVE MANAGEMENT LLC
SKYE CANYON II - PHASE 3A PARCEE
GRADING PLAN I

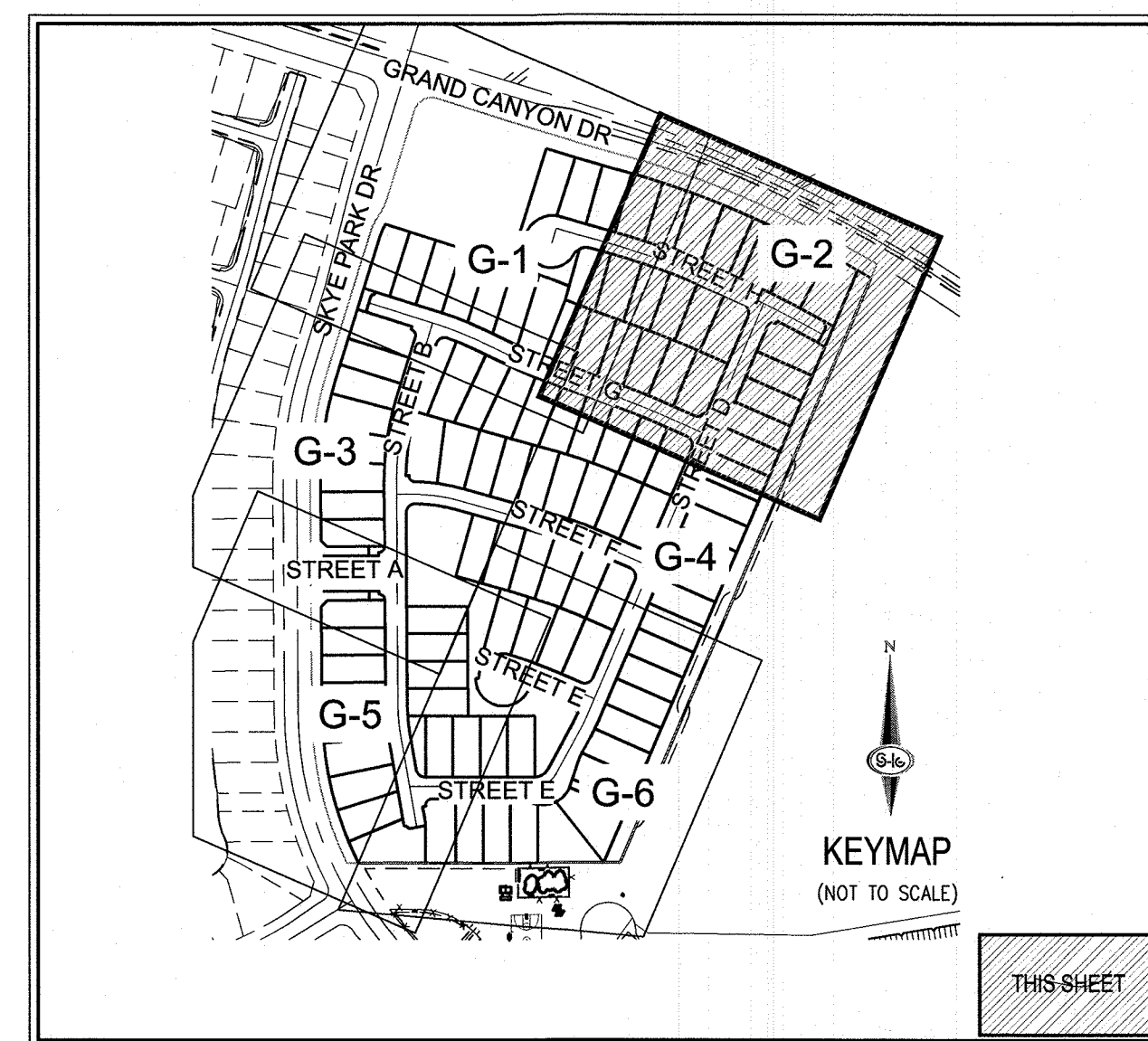
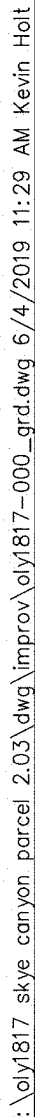
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R60E

DATE:	05/14/19
DRAFTER:	KDH
DESIGNER:	KDH

CHECKED: MAK
PROJECT NO.
OLY1817-000



G-1
SHEET 4 OF 12



OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

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SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 175337 DATED 10/25/17

UPDATED SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 175337 DATED 10/17/18

EARTHWORK QUANTITIES (RAW):
CUT= 15.815 CU YDS
FILL= 61.969 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED
LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED
AND ACTIVE GRADING PERMIT

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- 2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SURFACE LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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

2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED BY THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN CLARK COUNTY TITLE 24.40 AND IN THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.

3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY; REQUEST THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00010, SECTION 3.1.4.5.

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 A 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 THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI000000, SECTION III.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.

THE PROJECT IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANELS 32003C1735E AND 32003C1750E, DATED SEPTEMBER 27, 2002. A ZONE X (UNSHADED) IS DEFINED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% (500 YEAR) ANNUAL CHANCE FLOOD PLAIN.

- 1) CONSTRUCT 30" ROLL CURB AND GUTTER PER CAUSD NO. 217.S1. CURB FLOW LINE IS LESS THAN 0.60% GRADE SHALL BE WATER TESTED. ANY CURB THAT DOES NOT FLOW SHALL BE REMOVED AND REPLACED AT NO COST TO THE CITY.
- 2) CONSTRUCT "A" TYPE ISLAND CURB PER CAUSD NO. 219
- 3) INSTALL L TYPE CURB PER CAUSD NO. 216
- 4) INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
- 5) CONSTRUCT 8' WIDE CROSS GUTTER PER DETAIL 25 ON SHEET D-2
- 6) INSTALL 5' WIDE SIDEWALK PER CAUSD NO. 234
- 7) CONSTRUCT SIDEWALK RAMP USING ARMOR LITE TRUNCATED DUMES OR EQUIVALENT PER CAUSD NO. 235. CAUSEWAY 1.1
- 8) CONSTRUCT 10' ROLL CURB TO L CURB TRANSITION
PER DETAIL 28 ON SHEET D-2
- 9) SAWCUT & MATCH EXISTING CURB, ACCESS GUTTER AND/OR SIDEWALK
- 10) INSTALL WROUGHT IRON FENCE W/ACCESS GATES, DESIGN BY OTHERS
- 11) INSTALL WROUGHT IRON FENCE, DESIGN BY OTHERS
- 12) INSTALL 15" DROP INLET TYPE "CM2" PER CAUSD NO. 412.1 AND 421
- 13) INSTALL 2.5"X 2" N1 NOTET TYPE DROP INLET AND NOTET CONCRETE APRON PER DETAIL DWGR-4-21.1 & R-4-2.7 PER DETAIL ON SHEET D-3 AND CAUSD #421
- 14) CONSTRUCT #4" TYPE II STORM DRAIN MANHOLE PER CAUSD NO. 406

1. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
2. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
3. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
4. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
5. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
6. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CITY OF LAS VEGAS BUILDING DEPARTMENT.
7. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPAIRING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.
8. NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXIST) WITHIN THE SIGHT VISIBILITY ZONES.

USDA BRASS CAP ON AN IRON PIPE, 140' SOUTHWEST OF TELEPHONE POLE
#26994T, SOUTHWEST CORNER OF THE U.S. 95/KYLE CANYON TURNOFF.
ELEVATION = 2817.62 FEET, 858.813 METERS
N.A.V.D. 88
PER THE CLARK COUNTY VERTICAL CONTROL LAST REVISED 2003

SOUTH 00°22'12" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) 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

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
TECHNICAL DRAINAGE STUDY ??????? ON FILE AT CITY OF LAS VEGAS AND FOR THE
SUBJECT PROJECT.

TIMOTHY M. MULROONEY, P.E. 22938 DATE

 **Call**
before you
UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM
OF TRANSPORTATION (F.A.S.)



CALL BEFORE
YOU DO
OVERHEAD

1-702-227-2929

Call
811
OR
1-800-227-2600

[illegible][illegible]

2.03

**NINETY FIVE MANAGEMENT LLC
E CANYON II - PHASE 3A PARCEL
GRADING PLAN II**

SKYB

719S
60E

DATE:	05/14/19
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DRAFTER: KDH

DESIGNER: KDH

CHECKED: MAK

PROJECT NO.
OL Y1817-000

1



TIMOTHY M.
MURDOCK

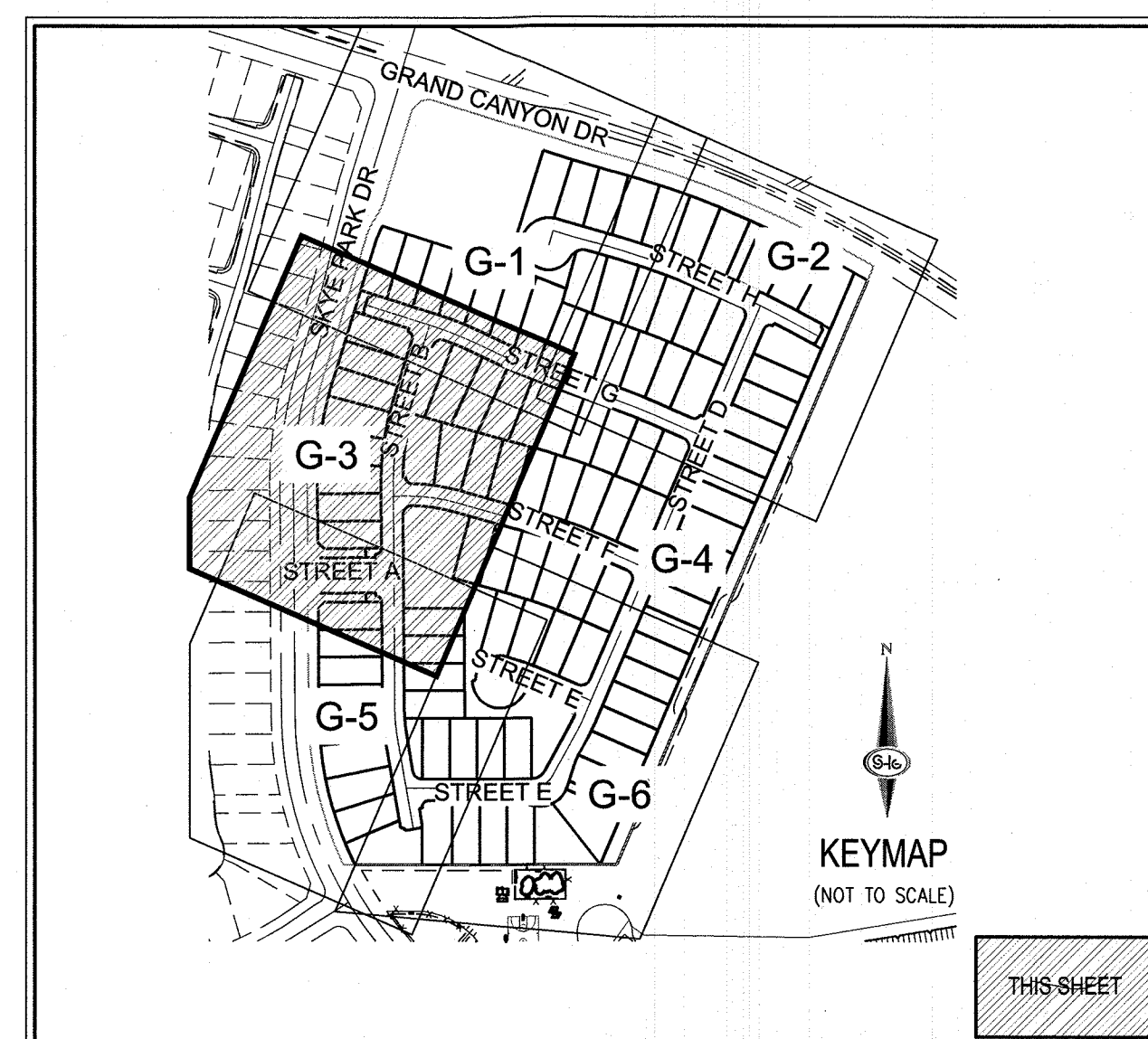
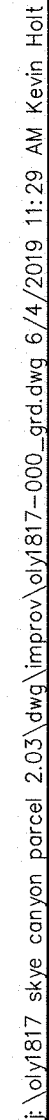
Exp. 12/31/2019

DA No. 22938

6/4/19

G-2

SHEET 5 OF 12



OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

ADD 2800 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 01.00 REPRESENTS 2801.00)

SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 175337 DATED 10/25/17

UPDATED SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 175337 DATED 10/17/18

EARTHWORK QUANTITIES (RAW):
CUT= 15,815 CU YDS
FILL= 61.969 CU YDS

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(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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- 1) CONSTRUCT 30" ROLL CURB AND GUTTER PER CAUSD NO. 217.51. CROWN FLOW LINE SHALL BE 0.80% TO THE SHOULDER. WATER SHALL NOT ANY CURB THAT DOES NOT FLOW SHALL BE REMOVED AND REPLACED AT NO COST TO THE CITY.
- 2) CONSTRUCT "A" TYPE ISLAND CURB PER CAUSD NO. 219
- 3) INSTALL L TYPE CURB PER CAUSD NO. 216
- 4) INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
- 5) CONSTRUCT 8" WIDE CROSS GUTTER PER DETAL 25 ON SHEET D-2
- 6) INSTALL 5" WIDE SIDEWALK PER CAUSD NO. 234
- 7) CONSTRUCT SIDEWALK RAMP USING ARMOR LITE TRUNCATED DOMES OR EQUIVALENT PER CAUSD NO. 235, CASE 1 & 2.51
- 8) CONSTRUCT 10" ROLL CURB PER CAUSD NO. 217.51. CURB TRANSITION PER DETAL 28 ON SHEET D-2
- 9) SAWCUT & MATCH EXISTING CURB, WATER AND/OR SIDEWALK
- 10) INSTALL WROUGHT IRON FENCE W/ACCESS GATES, DESIGN BY OTHERS
- 11) INSTALL WROUGHT IRON FENCE, DESIGN BY OTHERS
- 12) INSTALL 15'x6" DRIP INLET TYPE "CM2" PER CAUSD NO. 412.1 AND 421
- 13) INSTALL 2.5" W 2" INDOT TYPE "DR" INDOT INLET AND INDOT CONNECTION APRON PER DETAL 402 DWHGHT -4.21 & R-4.21 PER DETAL ON SHEET D-3 AND CAUSD #421
- 14) INSTALL 45" TYPE III STORM DRAIN MANHOLE PER CAUSD NO. 406

1. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
2. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
3. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEDTECH REPORT.
4. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
5. ALL PUBLIC AND PRIVATE DAMAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
6. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CITY OF LAS VEGAS BUILDING DEPARTMENT.
7. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPAIRING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.
8. NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXIST) WITHIN THE SIGHT VISIBILITY ZONES.

USDA BRASS CAP ON AN IRON PIPE, 140' SOUTHWEST OF TELEPHONE POLE
#26994T, SOUTHWEST CORNER OF THE U.S. 95/KYLE CANYON TURNOFF.
ELEVATION = 2817.62 FEET, 858.813 METERS
N.A.V.D. 88
PER THE CLARK COUNTY VERTICAL CONTROL LAST REVISED 2003

SOUTH 00°22'12" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) 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

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
TECHNICAL DRAINAGE STUDY ??????? ON FILE AT CITY OF LAS VEGAS AND FOR THE
SUBJECT PROJECT.

[illegible]

CITY OF LAS VEGAS, NEVADA

CITY OF NINETY FIVE MANAGEMENT LLC

SKYE CANYON II - PHASE 3A PARCEL 2.03

GRADING PLAN III

S7
T19S
R60E

DATE: 05/14/19

DRAFTER: KDH

DESIGNER: KDH

CHECKED: MAM

CHECKED: MAY 1998

PROJECT NO. **OLY181**

OLY 18



NOVA TIMOTHY

Exp. 12/3

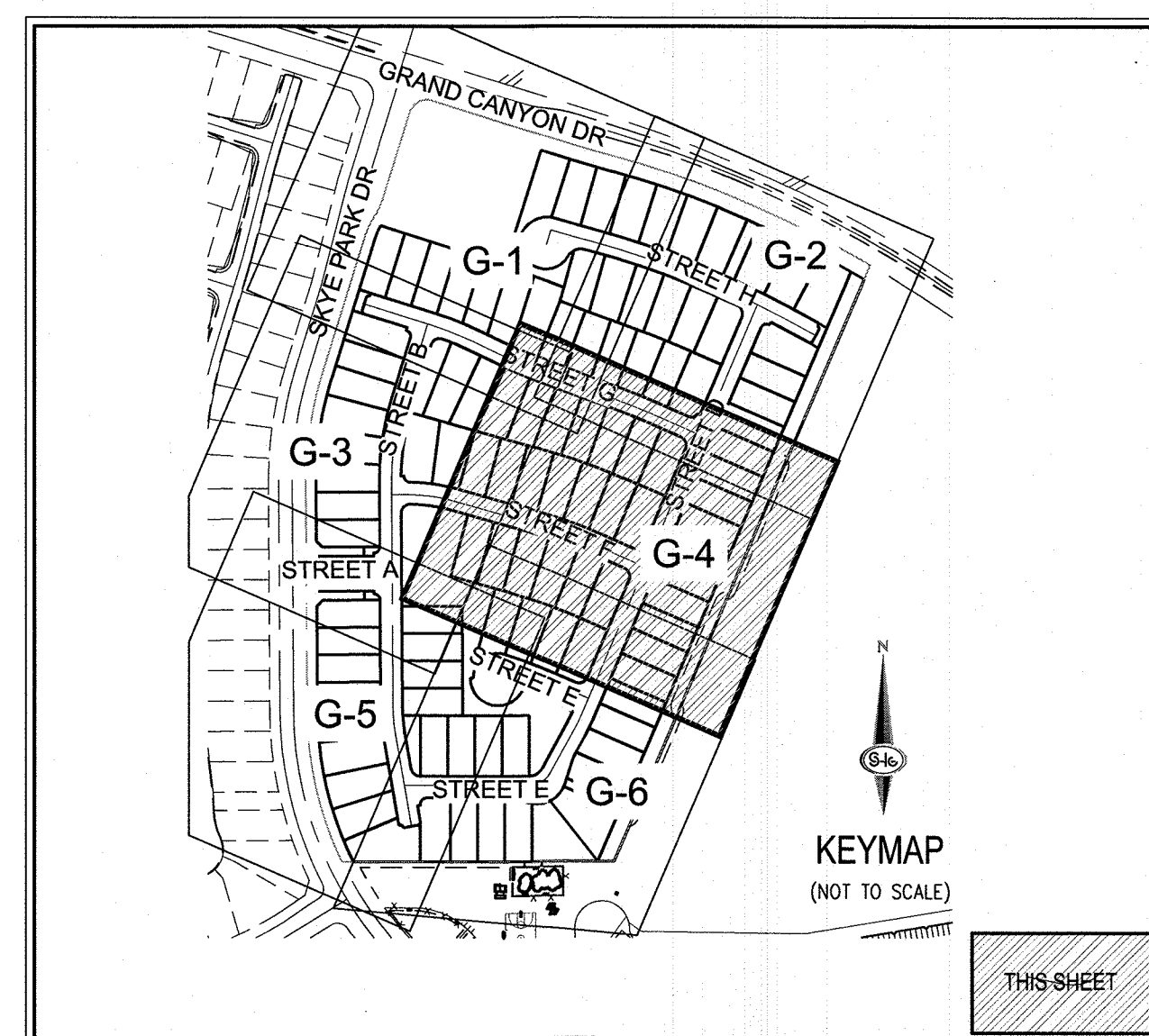
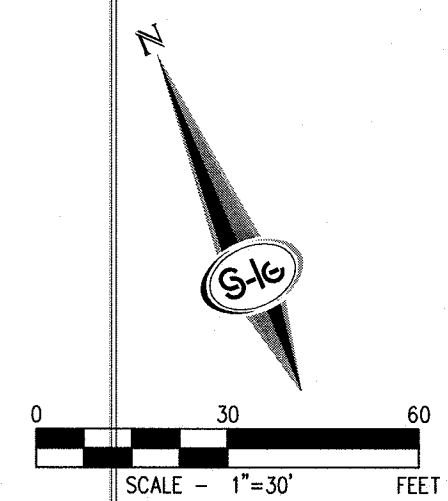
PROF. CIVIL

No. 22

G-

SHEET 6

[illegible]



OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

ADD 2800 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 01.00 REPRESENTS 2801.00)

SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 175337 DATED 10/25/17

UPDATED SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 175337 DATED 10/17/18

EARTHWORK QUANTITIES (RAW):
CUT= 15,815 CU YDS
FILL= 61,969 CU YDS

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

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED TOP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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

THE PROJECT IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANELS 32003C1735E AND 32003C1750E, DATED SEPTEMBER 27, 2002. A ZONE X (UNSHADED) IS DEFINED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% (500 YEAR) ANNUAL CHANCE FLOOD PLAIN.

- 1) CONSTRUCT 30" ROLL RADIUS AND GUTTER PER CAUSD NO. 217-S1. CURB FLOW LINE SHALL BE AT LEAST 0.60% SLOPE TO THE WATER. ROLL AND CURB THAT DOES NOT FLOW SHALL BE REMOVED AND REPLACED AT NO COST TO THE CITY.
- 2) CONSTRUCT "A" TYPE ISLAND CURB PER CAUSD NO. 219
- 3) INSTALL L TYPE CURB PER CAUSD NO. 216
- 4) INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
- 5) CONSTRUCT 8" WIDE CROSS GUTTER PER DETAIL 25 ON SHEET D-2
- 6) INSTALL 5" WIDE SIDEWALK PER CAUSD NO. 234
- 7) CONSTRUCT SIDEWALK RAMP USING ARMOR LITE TRUNCATED DOMES OR EQUIVALENT PER CAUSD NO. 235, CASE 1 & 235
- 8) CONSTRUCT 10" ROLL CURB PER CAUSD NO. 235 PER DETAIL 28 ON SHEET D-2
- 9) SAWCUT & MATCH EXISTING CURB, GUTTER AND/OR SIDEWALK
- 10) INSTALL WROUGHT IRON FENCE W/ACCESS GATES, DESIGN BY OTHERS
- 11) INSTALL WROUGHT IRON FENCE, DESIGN BY OTHERS
- 12) INSTALL 15.0' DROP INLET TYPE "CM2" PER CAUSD NO. 412.1 AND 421
- 13) INSTALL 2'-5" X 21" INLET TYPE II DROP INLET AND NDOT CONCRETE APRON PER DETAIL 421 W/DRWG -4.2.1 & R-4.2.2 PER DETAIL ON SHEET D-3 AND CAUSD #421
- 14) INSTALL 45" TYPE III STORM DRAIN MANHOLE PER CAUSD NO. 406

1. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
2. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
3. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
4. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
5. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
6. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CITY OF LAS VEGAS BUILDING DEPARTMENT.
7. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OVERSEER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLENISH FACILITIES IF ENGINEER/OVERSEER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION.
8. NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXIST) WITHIN THE SIGHT VISIBILITY ZONES.

USDA BRASS CAP ON AN IRON PIPE, 140' SOUTHWEST OF TELEPHONE POLE
#26994T, SOUTHWEST CORNER OF THE U.S. 95/KYLE CANYON TURNOFF.
ELEVATION = 2817.62 FEET, 858.813 METERS
N.A.V.D. 88
PER THE CLARK COUNTY VERTICAL CONTROL LAST REVISED 2003

SOUTH 00°22'12" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) 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

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY ???????? ON FILE AT CITY OF LAS VEGAS AND FOR THE SUBJECT PROJECT.

TIMOTHY M. MULROONEY, P.E. 22938 _____ DATE _____

[illegible]

NINETY FIVE MANAGEMENT LLC

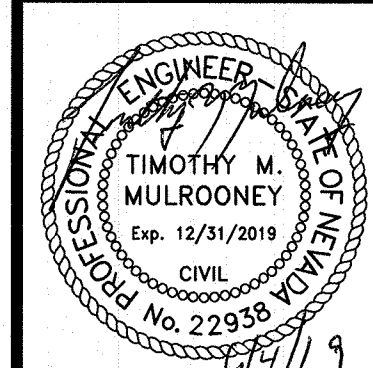
SKYE CANYON II - PHASE 3A PARCEL 2.03

GRADING PLAN IV

S7 T19S R60E	
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DRAFTER: KDH
DESIGNER: KDH
CHECKED: MAK

PROJECT NO.
OLY1817-000



G-4
SHEET 7 OF 11

\\plv1817\skve\canvon\parcel\2.03\dwa\improv\plv1817-000 ard.dwa 6/4/2019 11:30 AM Kevin Holt

FAST

Call before you
UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM
OF TRANSPORTATION (F.A.S.T.)

AVOID HITTING OVERHEAD
POWER LINES. IT'S
COSTLY.

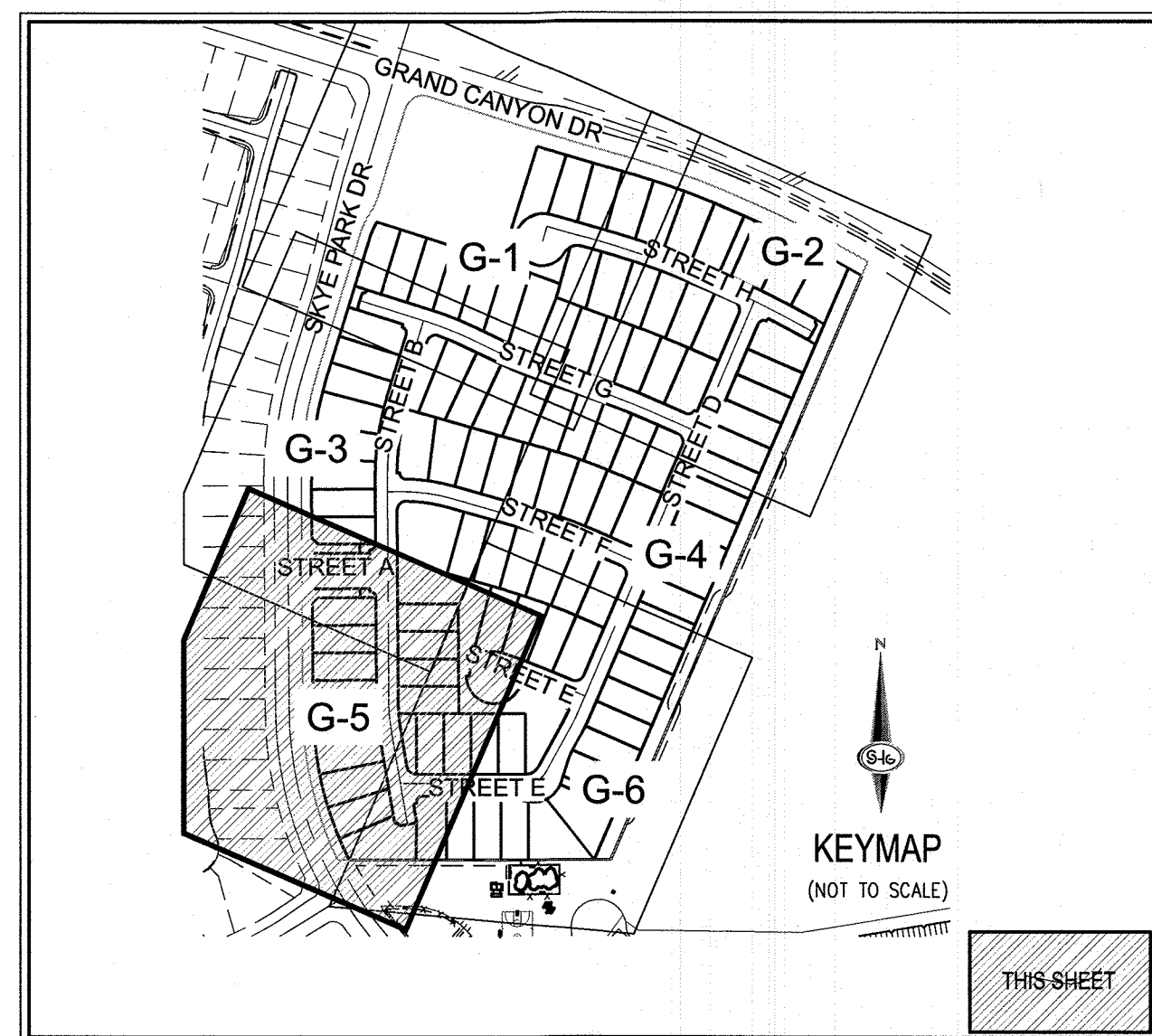
CALL BEFORE
YOU DO
OVERHEAD

1-702-227-2929

Call before you Dig
 AVOID CUTTING UNDERGROUND
 UTILITY LINES. IT'S COSTLY.
Call

 OR
1-800-227-2600

M F LAND, LLC
SKYE CANYON PARCEL 2.04
APN: 125-07-211-001



EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED
LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED
AND ACTIVE GRADING PERMIT.

- 1) CONSTRUCT 3" ROLL CURB, CURB AND GUTTER PER CAUSA NO. 21753. CURB FLOW LINE UNDER LESS THAN 0.002 GRADE. SHAPE THE WATER TESTED. ANY CURB THAT DOES NOT FLOW SHALL BE REMOVED AND REPLACED AT NO COST TO THE CITY.
- 2) CONSTRUCT "A" TYPE ISLAND CURB PER CAUSA NO. 219
- 3) INSTALL L TYPE CURB PER CAUSA NO. 216
- 4) INSTALL 2" ASPHALT PAVEMENT OVER "A" TYPE II AGGREGATE BASE
- 5) CONSTRUCT 8" WIDE CROSS GUTTER PER DETAIL 25 ON SHEET D-2
- 6) INSTALL 5" WIDE SIDEWALK PER CAUSA NO. 234
- 7) CONSTRUCT SIDEWALK RAMP USING ARMOR LITE TRUNCATED DOWNS OR EQUIVALENT PER CAUSA NO. 235, CASE 1 & 2.51
- 8) CONSTRUCT 10" ROLL CURBS TO 1" CURB TRANSITION PER DETAIL 28 ON SHEET D-2
- 9) SAWCUT & MATCH EXISTING CURB, GUTTER AND/OR SIDEWALK
- 10) INSTALL WROUGHT IRON FENCE W/ACCESS GATES, DESIGN BY OTHERS
- 11) INSTALL WROUGHT IRON FENCE, DESIGN BY OTHERS
- 12) INSTALL 15.0" x 15.0" INLET TYPE "CM2" PER CAUSA NO. 4121 AND 421
- 13) INSTALL 2.5'W x 21" INDOT TYPE B INLET AND NDOT CONCRETE APRON PER DETAIL DWG# 4-2.1 & R-4-2.7. PER DETAIL ON SHEET D-3
- 14) CONSTRUCT #421
- 15) INSTALL 48" TYPE III STORM DRAIN MANHOLE PER CAUSA NO. 406

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

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWTOOTH LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED U/L CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF THERE ARE MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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 BE EXPOSED TO THE PUBLIC OR BE A SOURCE OF EROSION OR RUNOFF BY THE USE OF CLEARCUTS 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 BY THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EXPOSURE PROBLEMS. IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN CLARK COUNTY TITLE 24.40 AND IN THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT DISTURBED AREA OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NV100000, SECTION II.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 TRAFFIC, AND/OR EXCESSIVE WIND. INSPECTIONS SHALL BE CONDUCTED AFTER EACH RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE TO MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NV100000, SECTION II.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

THE PROJECT IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANELS 32003C1735E AND 32003C1750E, DATED SEPTEMBER 27, 2002. A ZONE X (UNSHADED) IS DEFINED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% (500 YEAR) ANNUAL CHANCE FLOOD PLAIN.

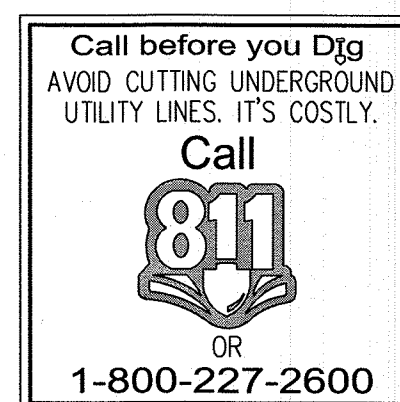
1. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
2. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
3. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GTECH REPORT.
4. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
5. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
6. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CITY OF LAS VEGAS BUILDING DEPARTMENT.
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8. NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

USDA BRASS CAP ON AN IRON PIPE, 140' SOUTHWEST OF TELEPHONE POLE
#26994T, SOUTHWEST CORNER OF THE U.S. 95/KYLE CANYON TURNOFF.
ELEVATION = 2817.62 FEET, 858.813 METERS
N.A.V.D. 88
PER THE CLARK COUNTY VERTICAL CONTROL LAST REVISED 2003

SOUTH 00°22'12" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) 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

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED
TECHNICAL DRAINAGE STUDY 2222222 ON FILE AT CITY OF LAS VEGAS AND FOR THE
SUBJECT PROJECT

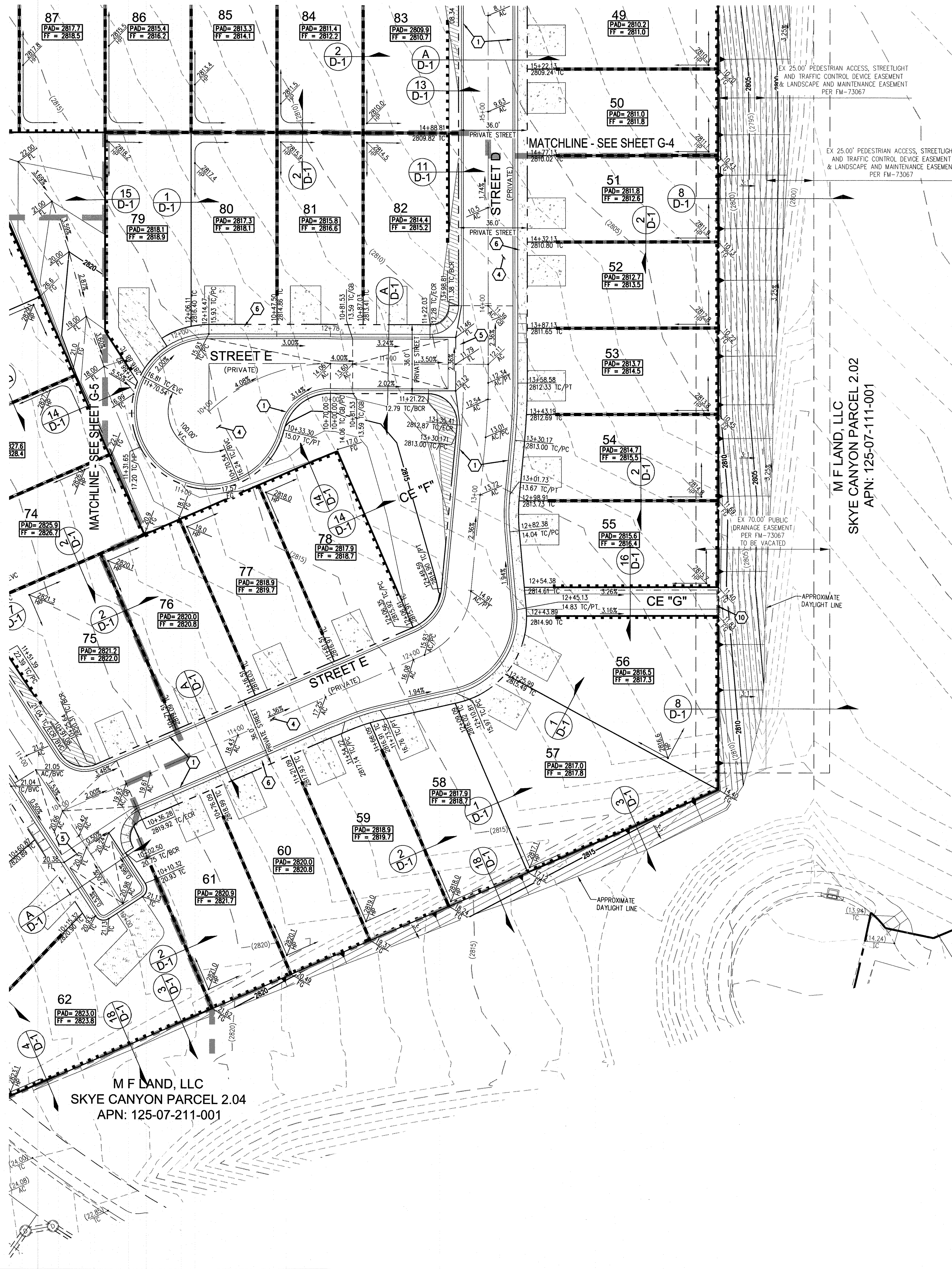
TIMOTHY M. MULROONEY, P.E. 22938 DATE



G-5

SHEET 8 OF 12

\\nv1817 skye canyon parcel 2.03.dwg\\improvements\\1817-000_grad.dwg 5/4/2019 11:30 AM Kevin Hall



SURVEY NOTE
OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBLISCURED DURING CONSTRUCTION.

ELEVATION NOTE
ADD 2800 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 01.00 REPRESENTS 2801.00)

SOILS REPORT
SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 175337 DATED 10/25/17
UPDATED SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 175337 DATED 10/17/18

EARTHWORKS
EARTHWORK QUANTITIES (RAW):
CUT = 15,815 CU YDS
FILL = 61,969 CU YDS
EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

DISCLAIMER NOTE

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

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDELINES
(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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

2. ADDITIONAL CONSTRUCTION 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 CLARK COUNTY TITLE 24.40 AND IN THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.

3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.5.

4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPs WEEKLY, AND WITHIN 24 HOURS AFTER A 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 THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.12.

5. ACCUMULATED SEDIMENT IN BMPs SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT, WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

FLOOD ZONE
THE PROJECT IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANELS 32003C1735E AND 32003C1750E, DATED SEPTEMBER 27, 2002. A ZONE X (UNSHADED) IS DEFINED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% (500 YEAR) ANNUAL CHANCE FLOOD PLAIN.

CONSTRUCTION NOTES

1) CONSTRUCT 30" ROLL CURB AND GUTTER PER CCAUSD NO. 217.51. CURB FLOW LINES LESS THAN 10" OR GRADE SHALL BE WATER TESTED. ANY CURB THAT DOES NOT FLOW SHALL BE REMOVED AND REPLACED AT NO COST TO THE CITY.

2) CONSTRUCT "A" TYPE ISLAND CURB PER CCAUSD NO. 219

3) INSTALL L TYPE CURB PER CCAUSD NO. 216

4) INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE

5) CONSTRUCT 8" WIDE CROSS GUTTER PER DETAIL 25 ON SHEET D-2

6) INSTALL 5" WIDE SIDEWALK PER CCAUSD NO. 234

7) CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I & 235.1

8) CONSTRUCT 10" ROLL CURB TO L CURB TRANSITION PER DETAIL 28 ON SHEET D-3

9) SAWCUT & MATCH EXISTING CURB, GUTTER AND/OR SIDEWALK

10) INSTALL WROUGHT IRON FENCE W/ACCESS GATES, DESIGN BY OTHERS

11) INSTALL WROUGHT IRON FENCE, DESIGN BY OTHERS

12) INSTALL 15.0" DROP INLET TYPE "CM2" PER CCAUSD NO. 412.1 AND 421

13) PER NDOT STD DWG#R-4.2.1 & R-4.2.2 PER DETAIL ON SHEET D-5 AND CCAUSD #421

14) INSTALL 48" TYPE III STORM DRAIN MANHOLE PER CCAUSD NO. 406

GRADING NOTES

1. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.

2. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.

3. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.

4. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.

5. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.

6. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CITY OF LAS VEGAS BUILDING DEPARTMENT.

7. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLENISH FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.

8. NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.

BENCHMARK
USDA BRASS CAP ON AN IRON PIPE, 140" SOUTHWEST OF TELEPHONE POLE #26994T, SOUTHWEST CORNER OF THE U.S. 95/RYLE CANYON TURNOFF.
ELEVATION = 2817.62 FEET, 858.813 METERS
N.A.I.D. 88
PER THE CLARK COUNTY VERTICAL CONTROL LAST REVISED 2003

BASIS OF BEARINGS
SOUTH 00°22'12" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 90 EAST, M.D.M. CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS

FLOOD CERTIFICATION
I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY 2222222 ON FILE AT CITY OF LAS VEGAS AND FOR THE SUBJECT PROJECT.
TIMOTHY M. MULROONEY, P.E. 22938 DATE

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1-702-432-5300
FREEMAN & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

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AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

SLATER HANIFAN GROUP
a Westwood team

5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

CITY OF LAS VEGAS, NEVADA

NINETY FIVE MANAGEMENT LLC

SKYE CANYON II - PHASE 3A PARCEL 2.03

GRADING PLAN VI

DATE: 05/14/19

DRAWN: KDH

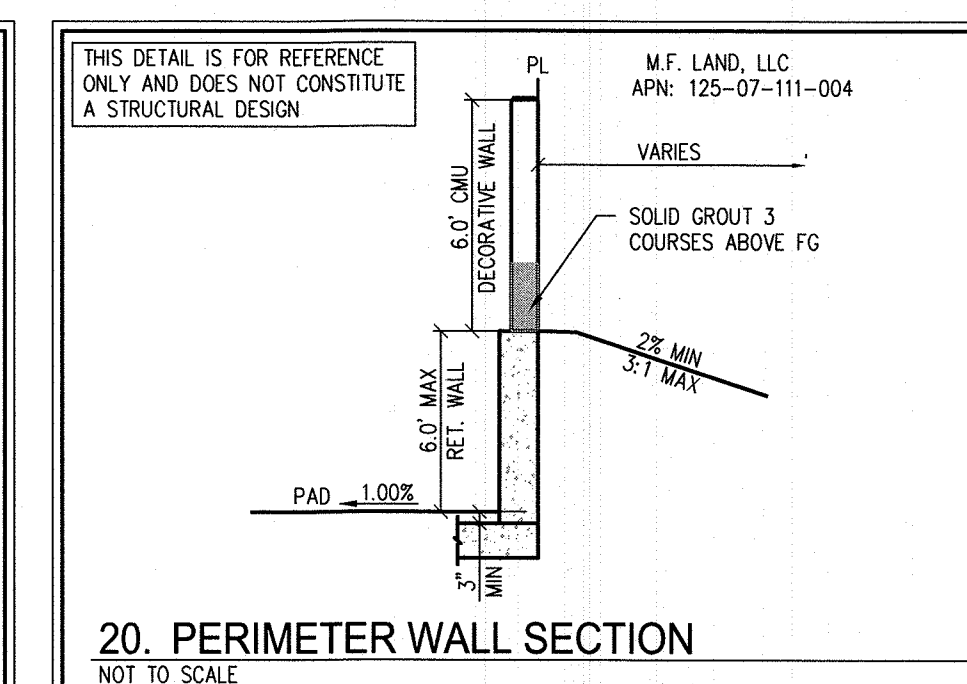
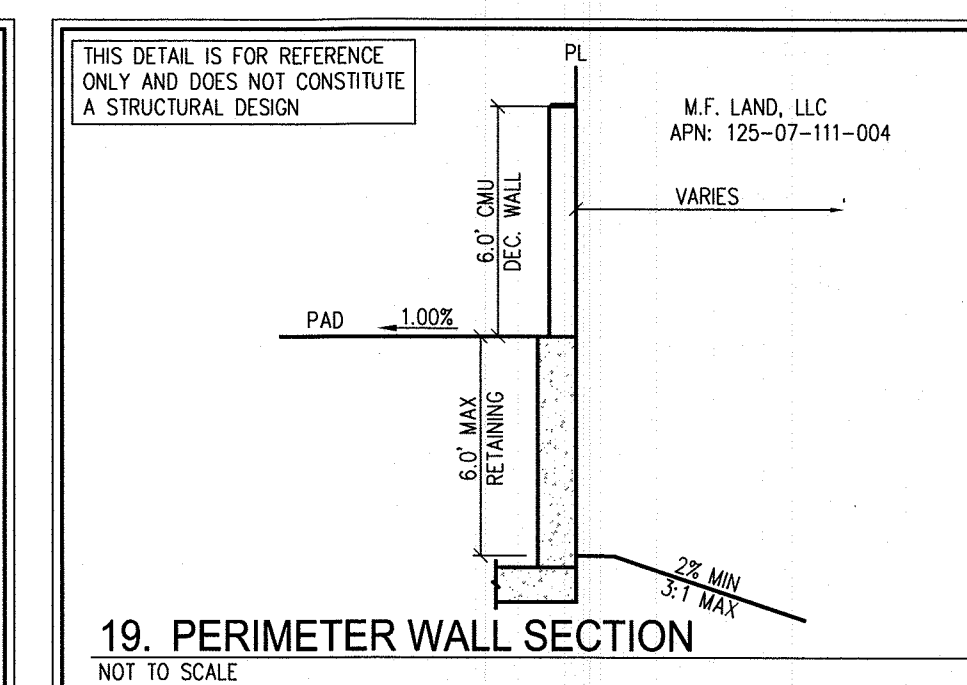
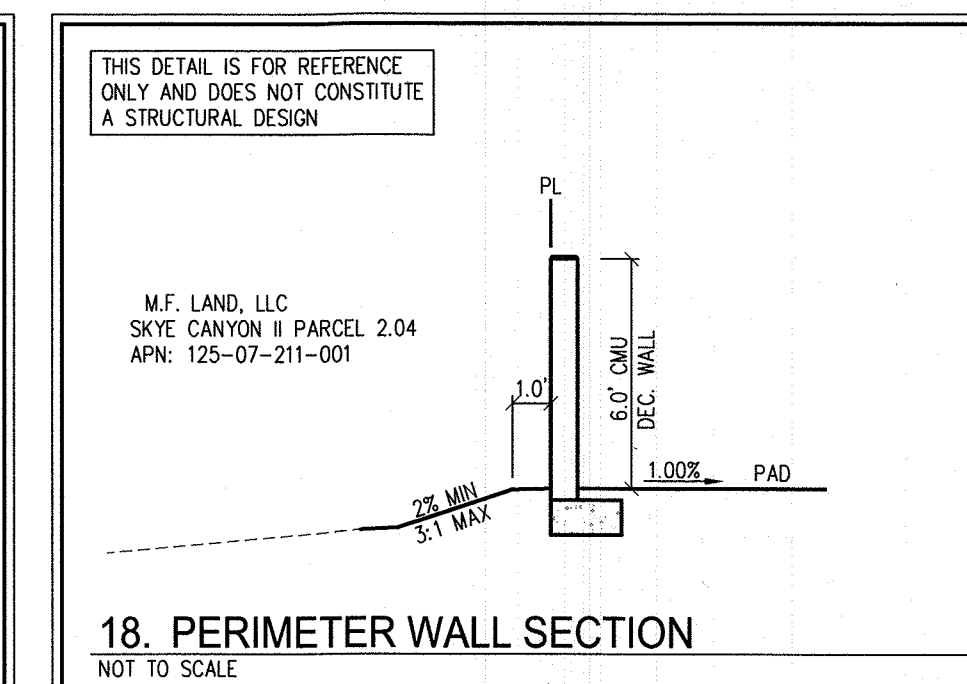
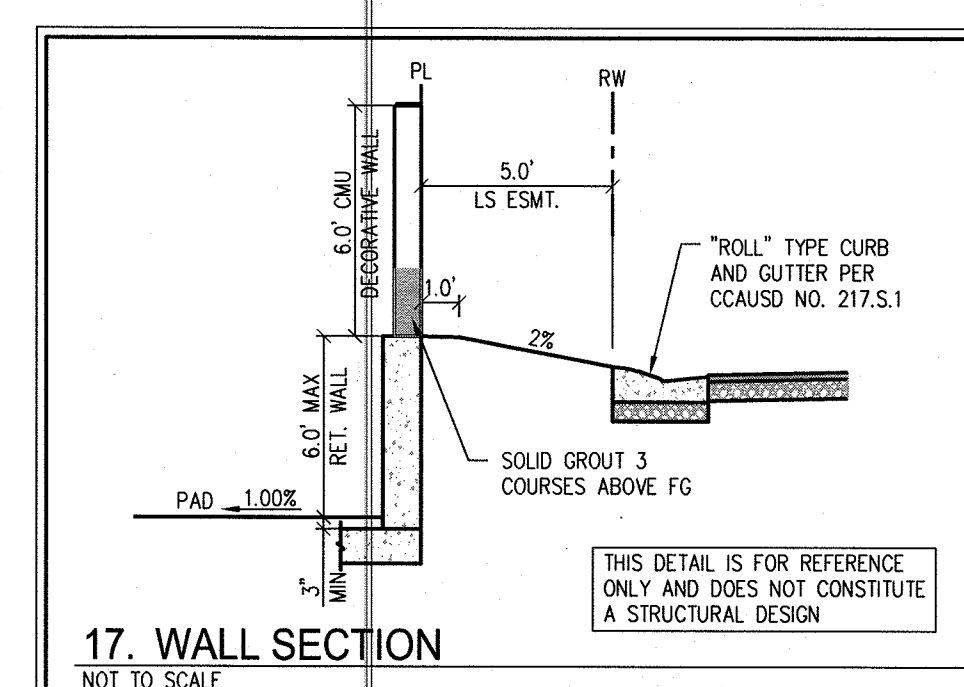
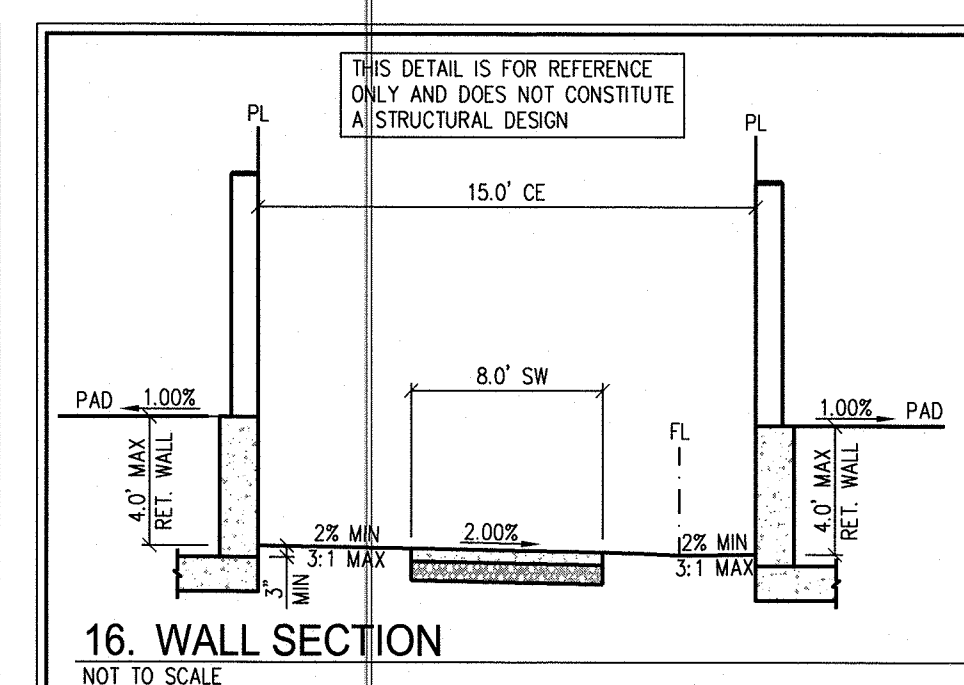
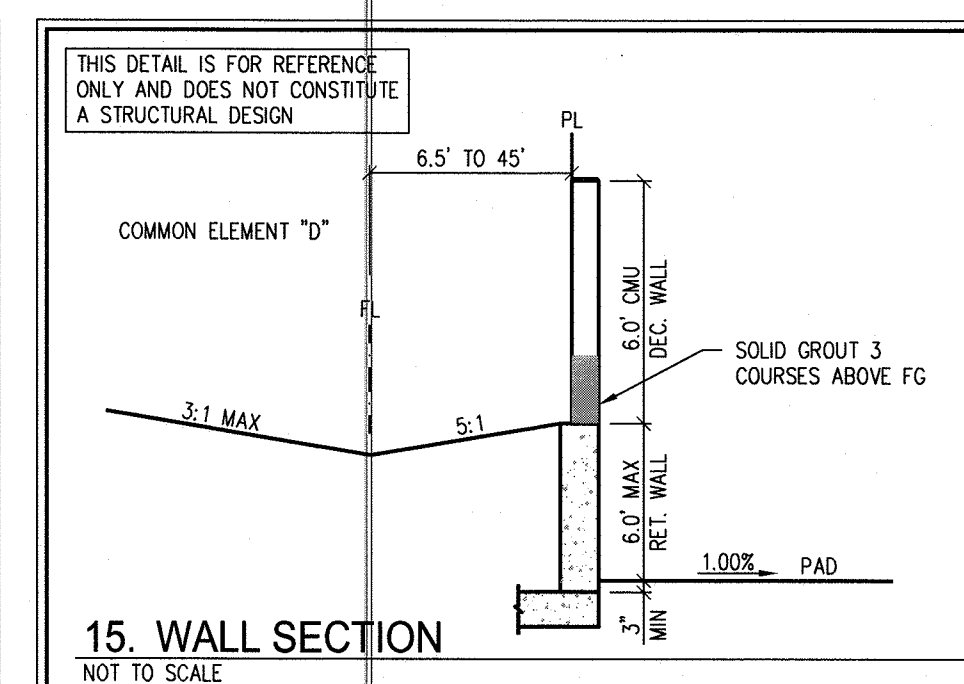
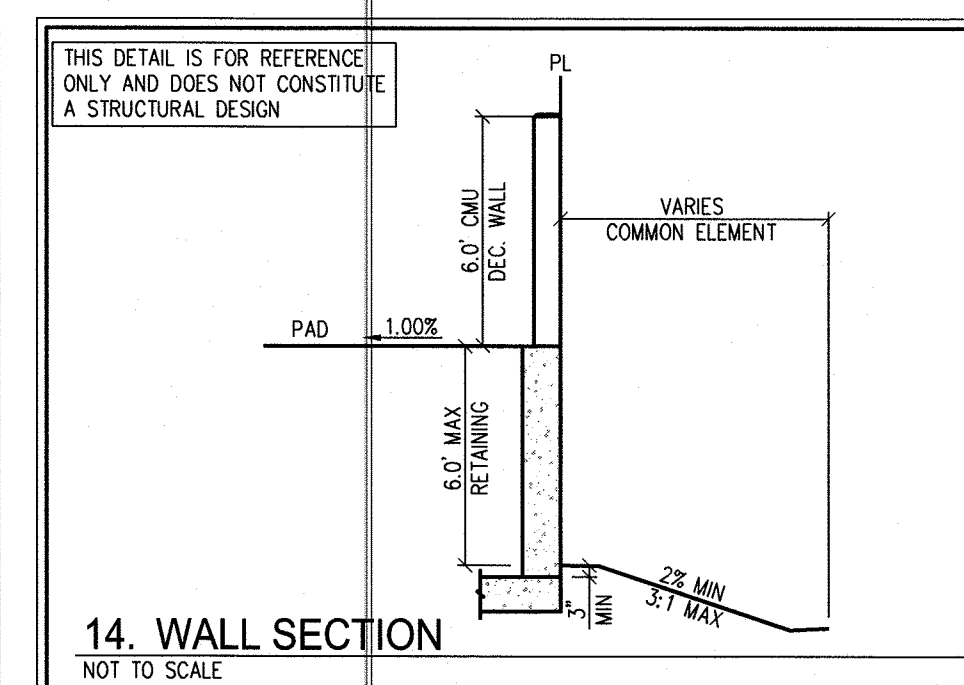
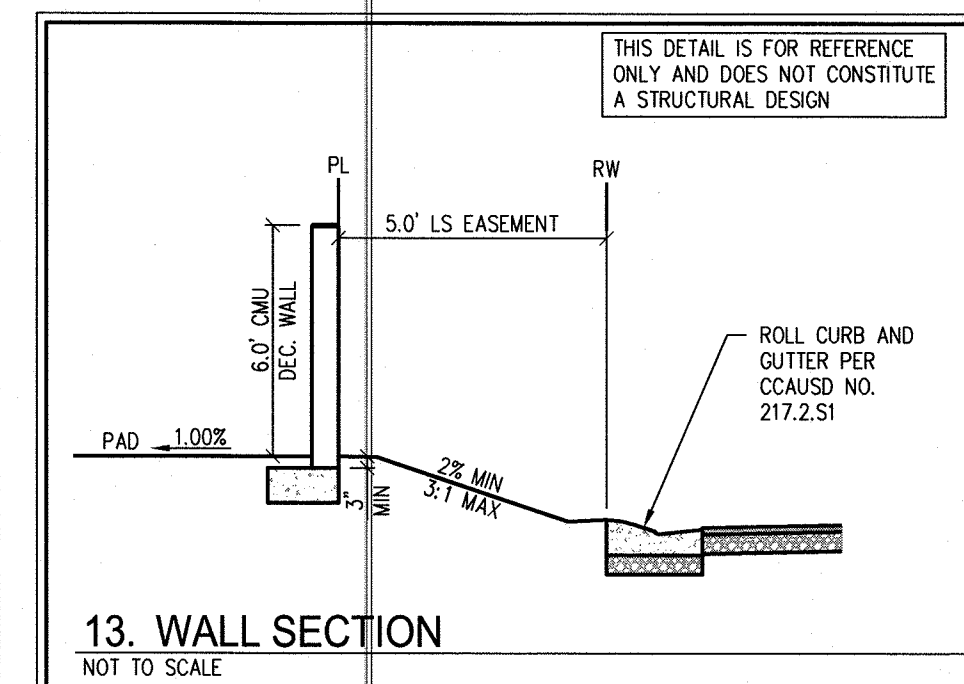
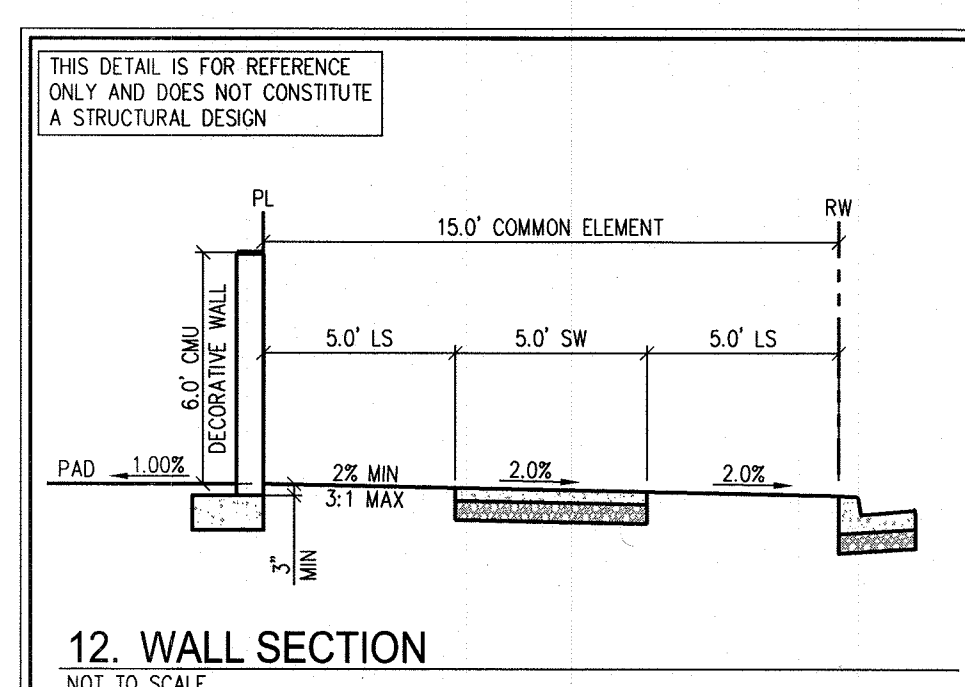
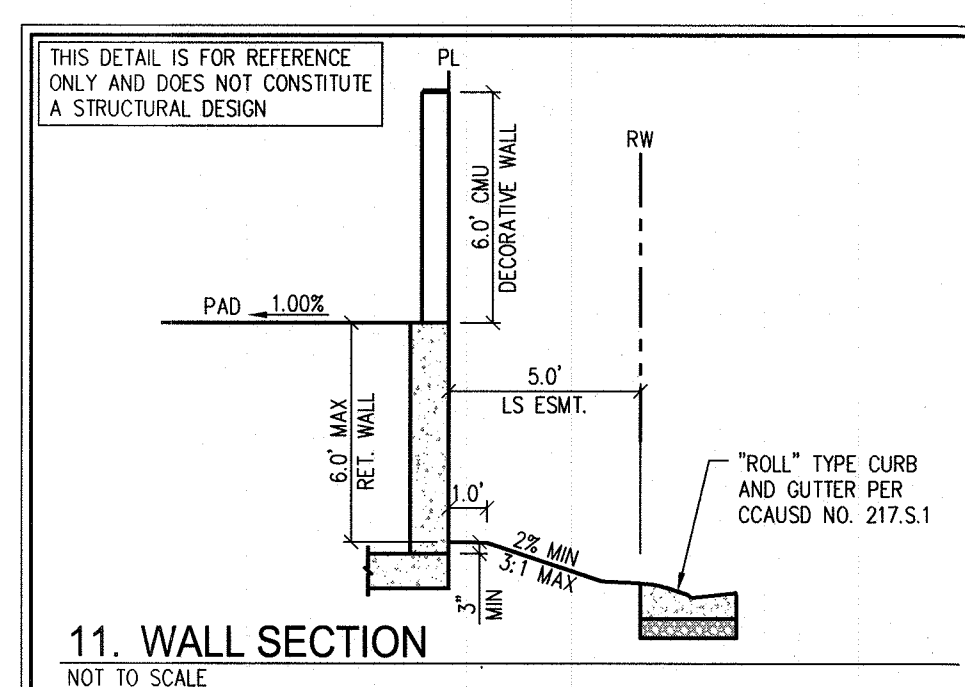
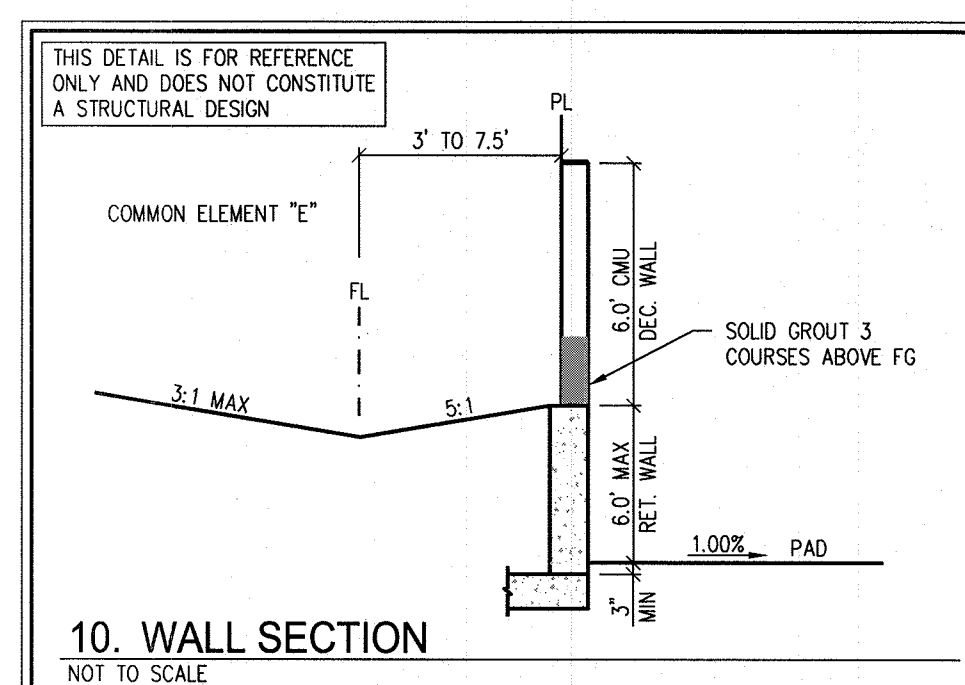
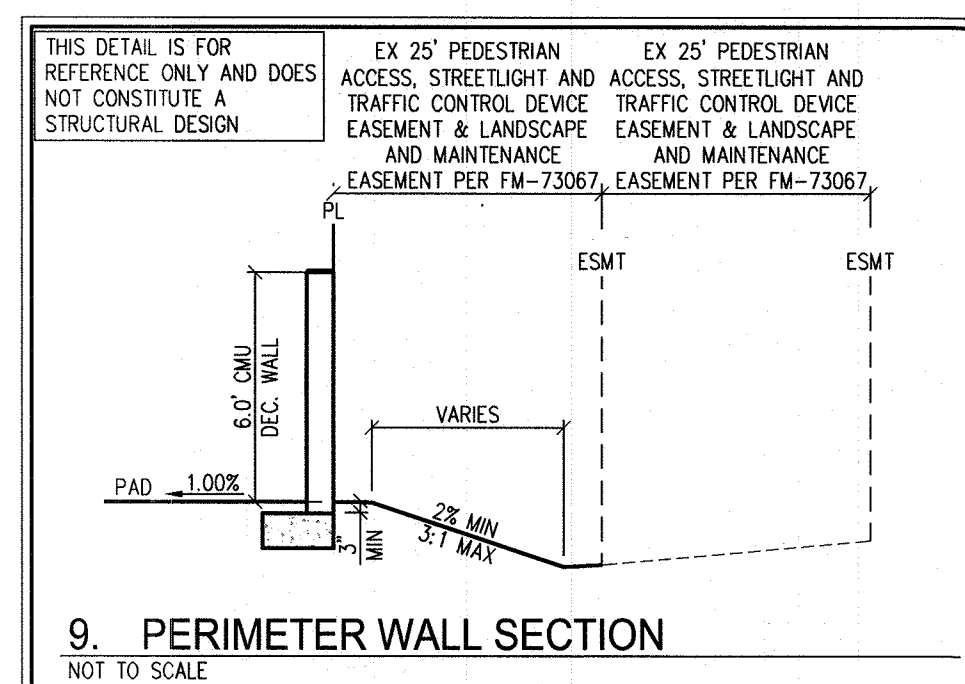
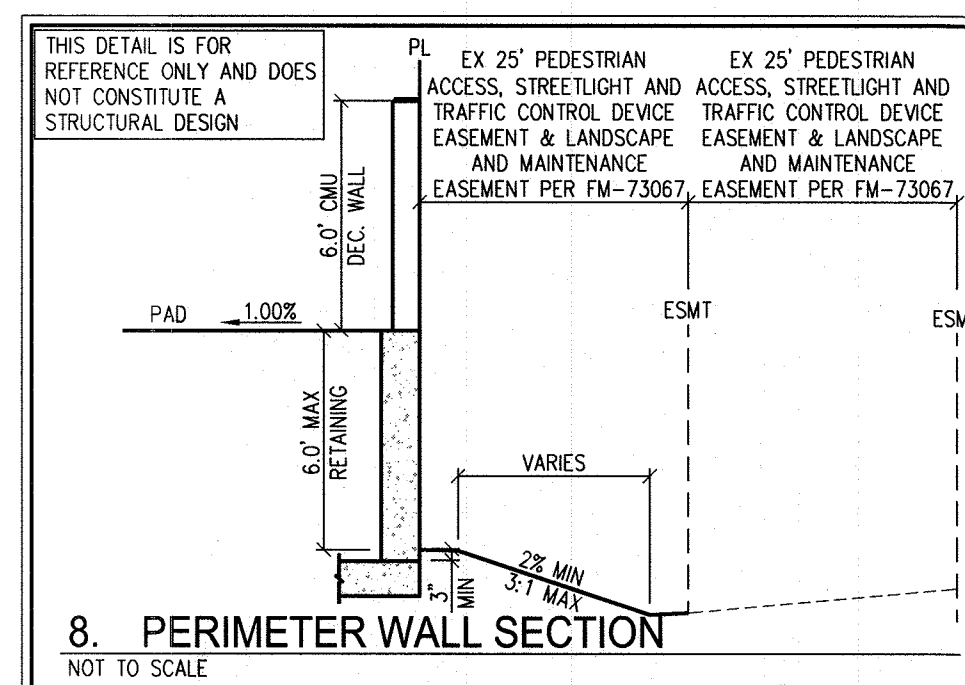
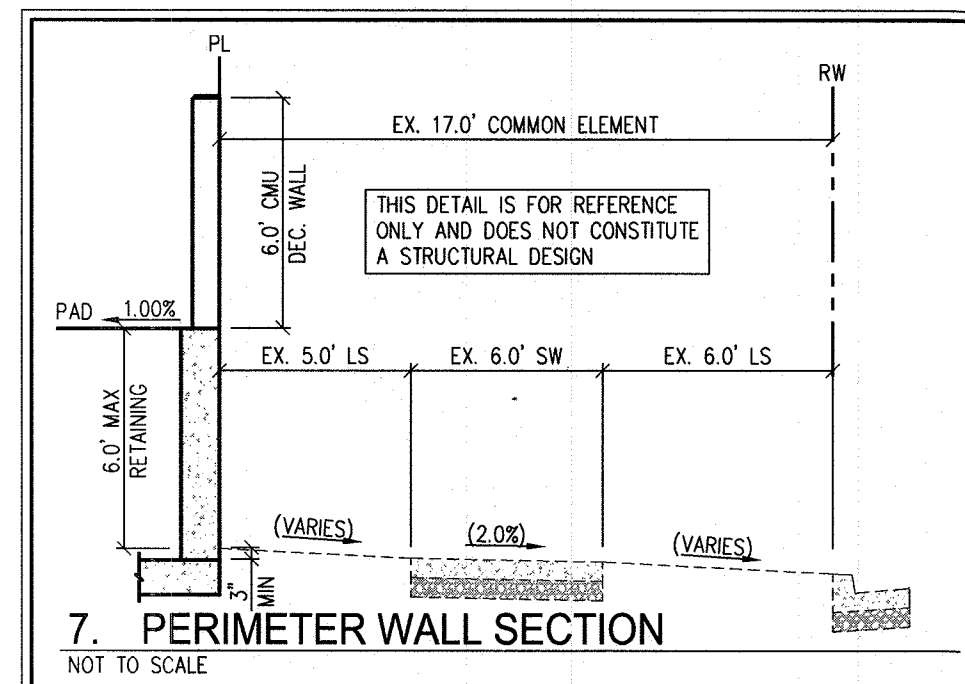
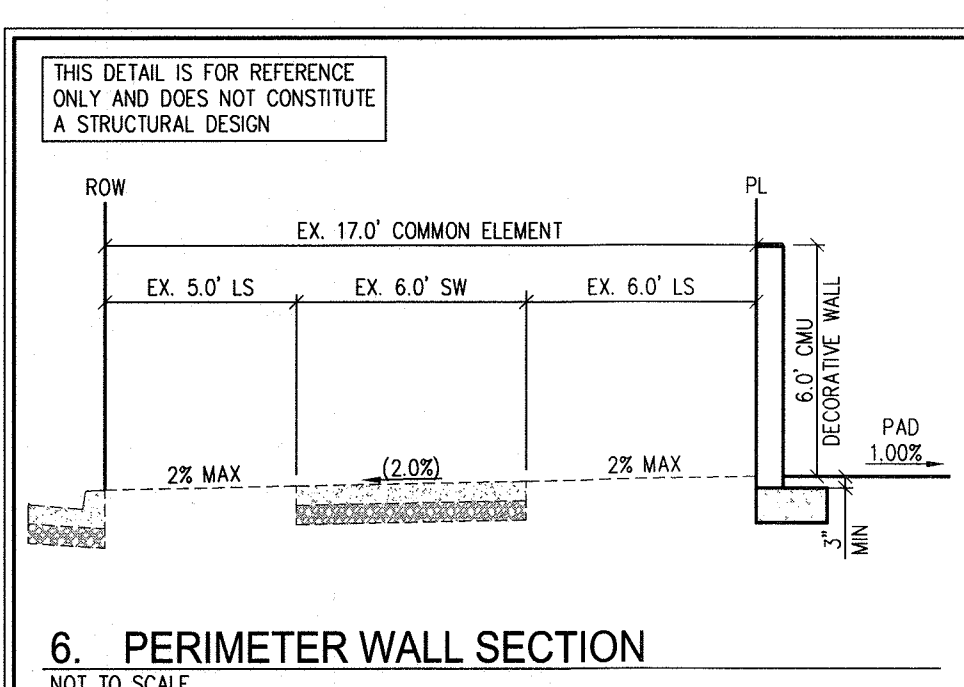
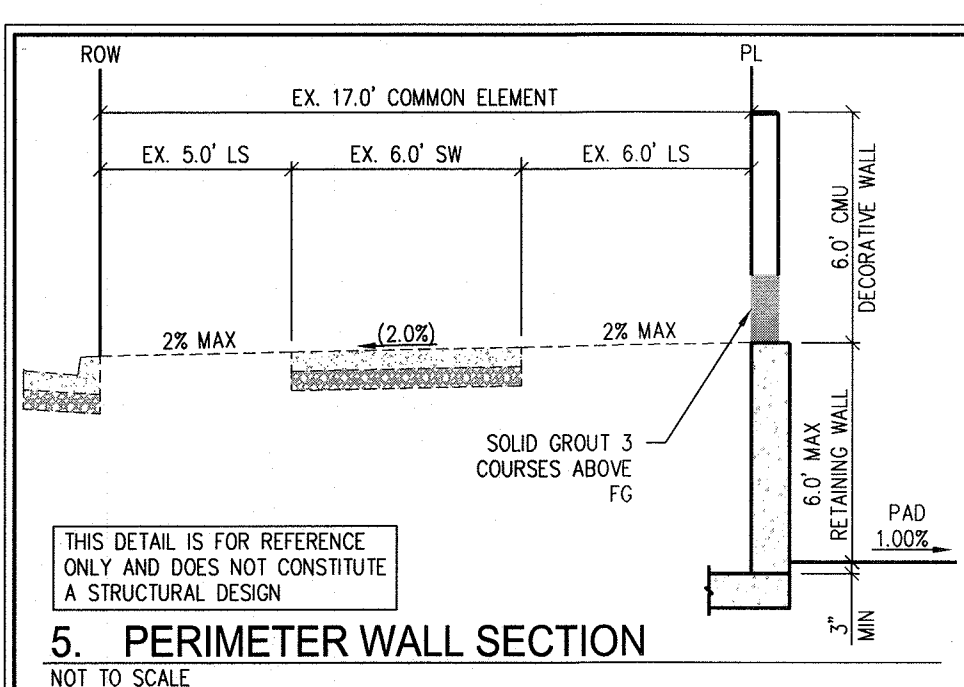
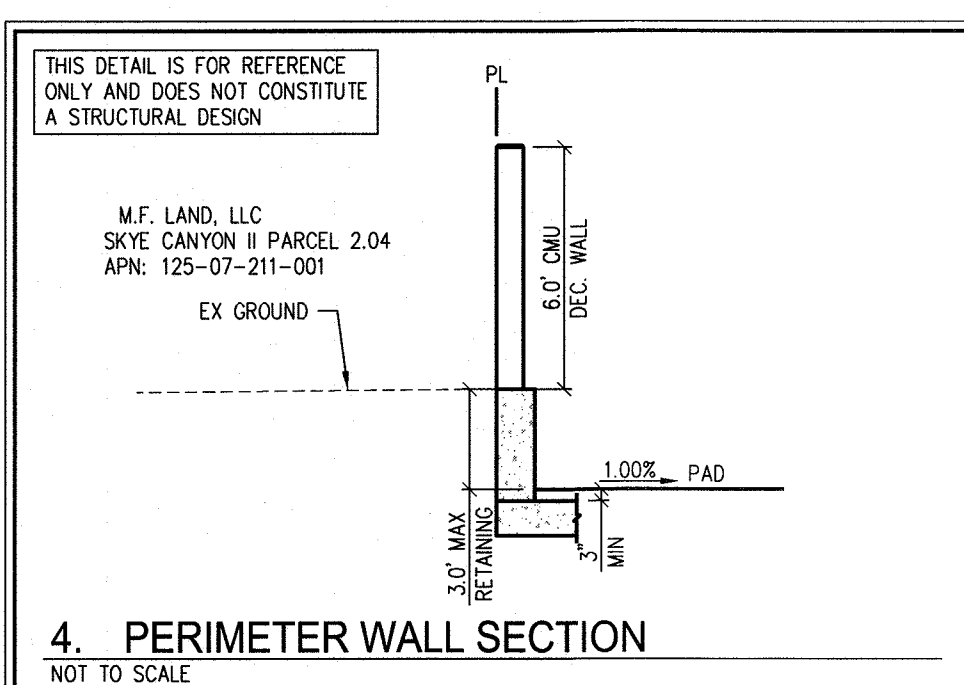
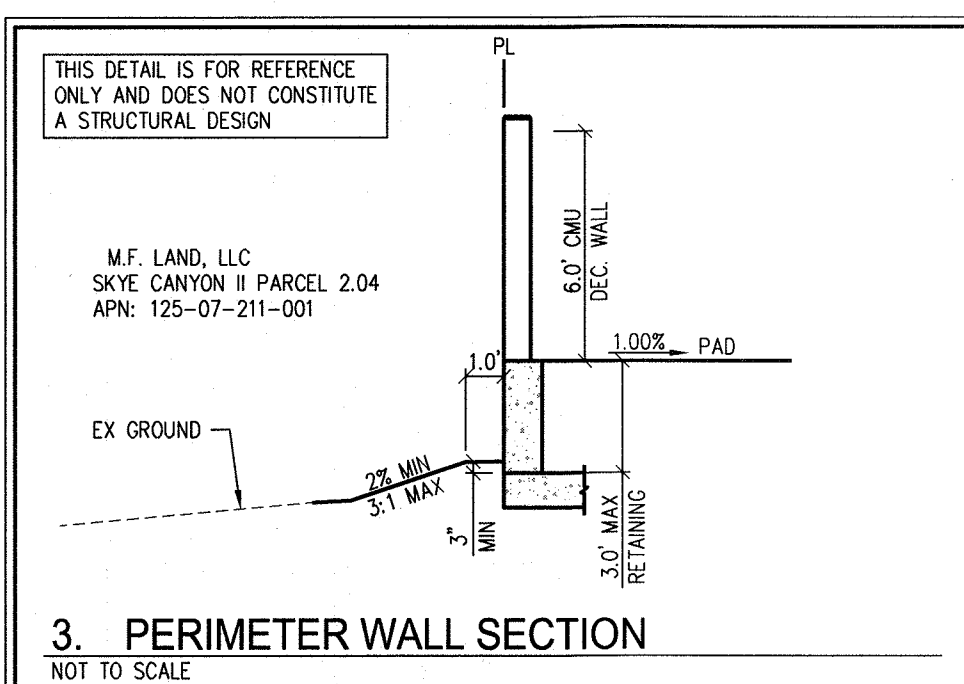
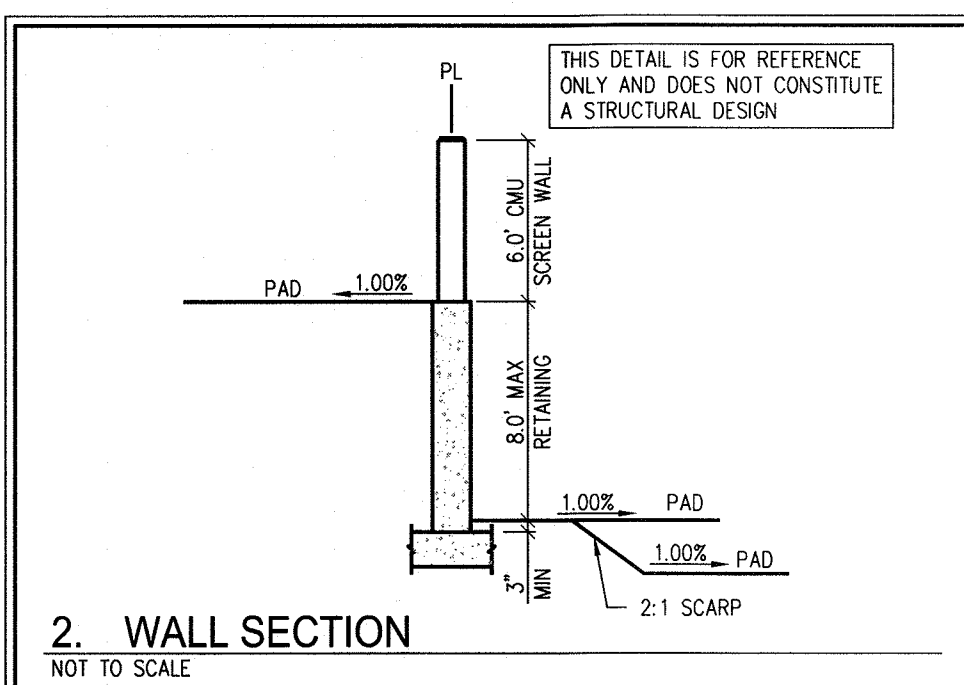
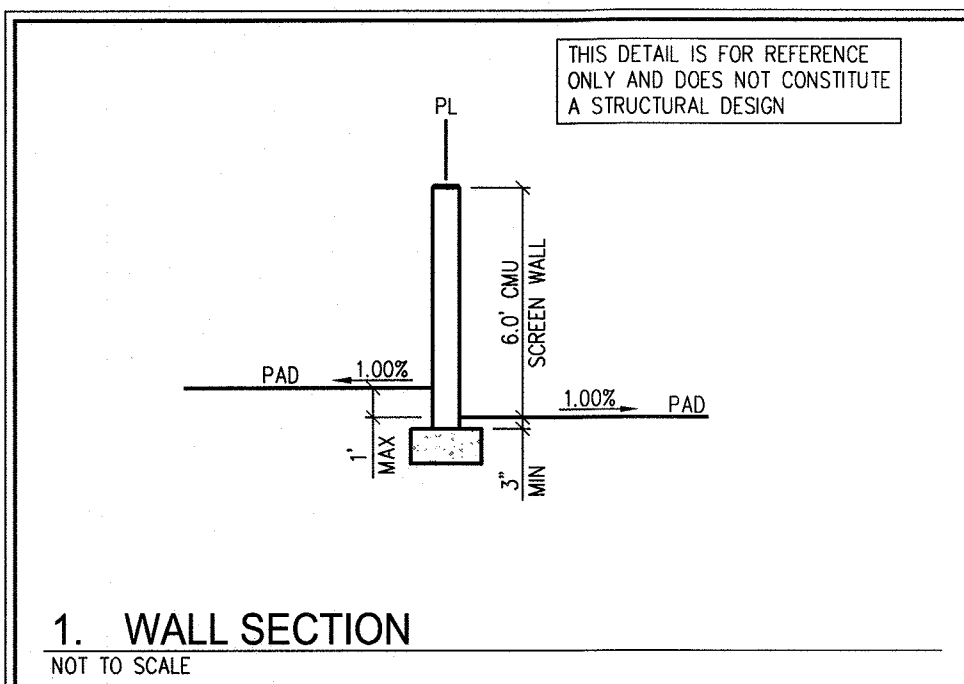
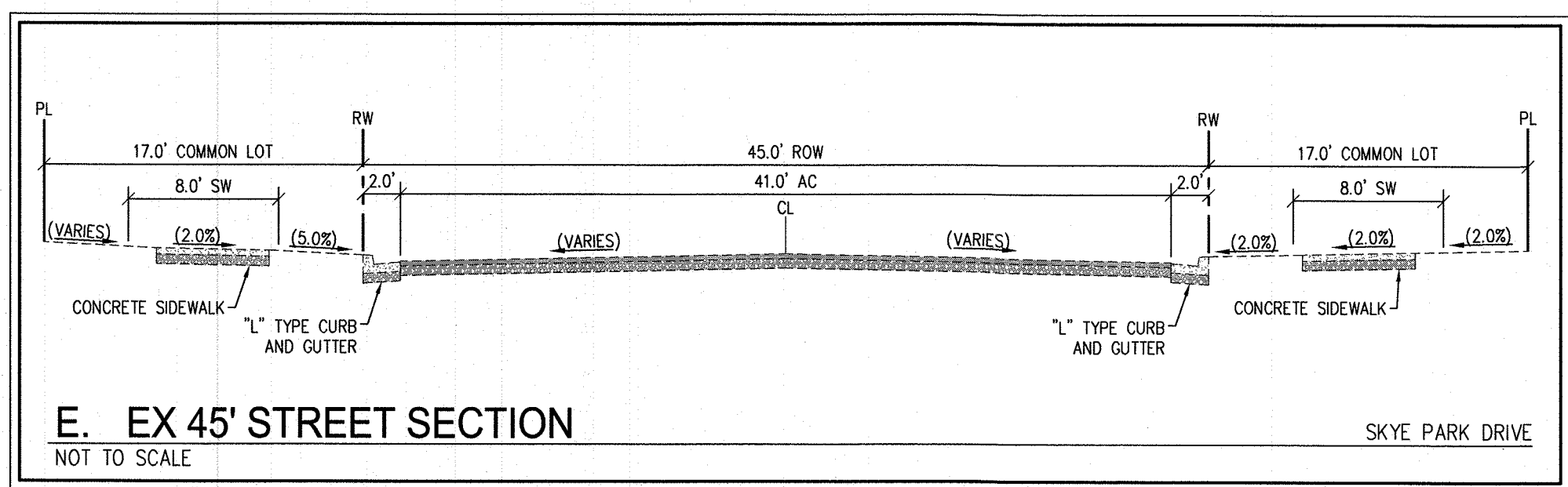
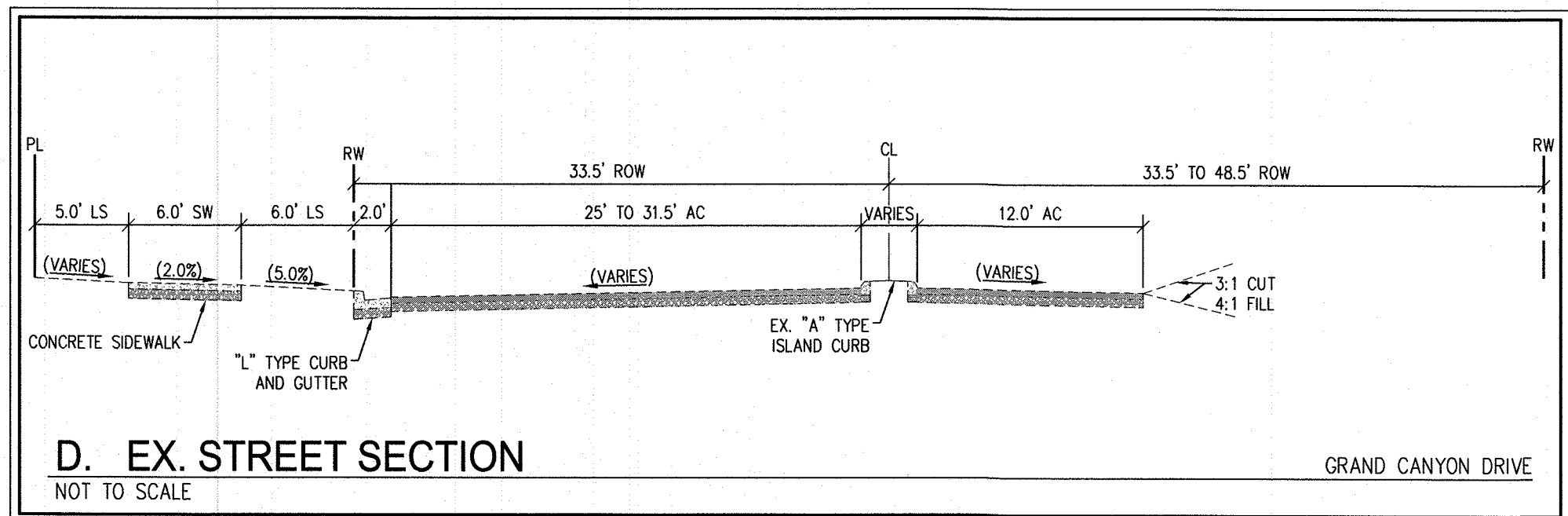
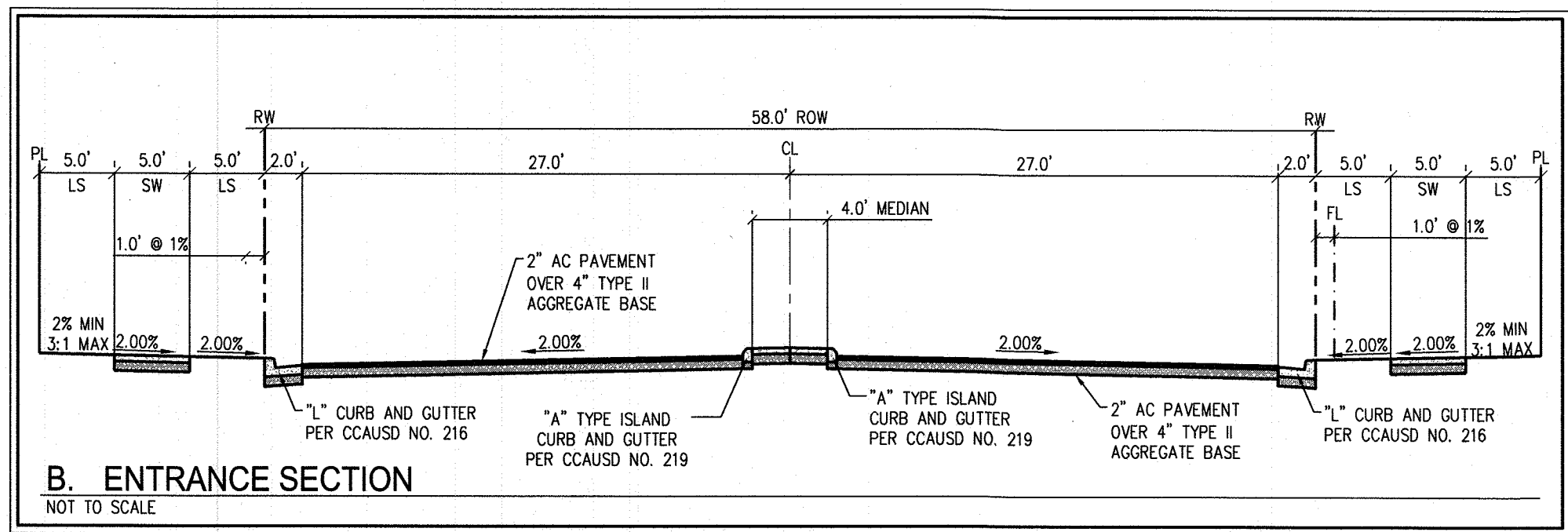
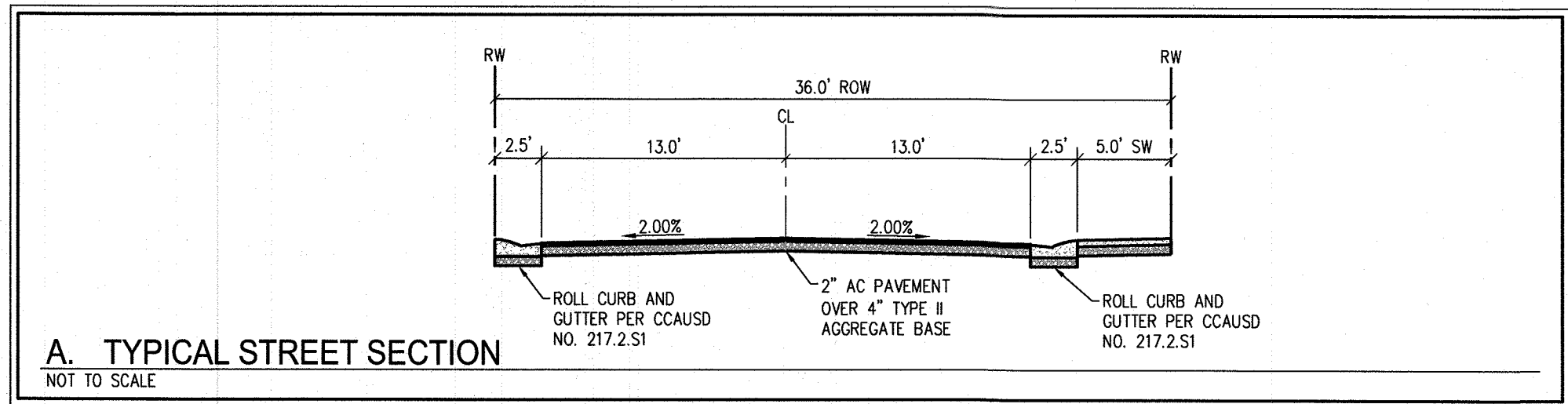
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CHECKED: MAK

PROJECT NO. OLY1817-000

G-6
SHEET 9 OF 12

P:\1817 skye canyon parcel 2.03.dwg (project)\011817-000.dwg 6/4/2019 11:30 AM Kevin Holt



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OR
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5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

APR 19 2019

DATE

BY

DATE

DESCRIPTION

NO.

CITY OF LAS VEGAS, NEVADA

NINETY FIVE MANAGEMENT LLC

SKYE CANYON II - PHASE 3A PARCEL 2.03

STREET SECTIONS AND GRADING DETAILS I

DATE: 05/14/19

DRAFTER: KDH

DESIGNER: KDH

CHECKED: MAK

PROJECT NO. OLY1817-000

ENGINEER
TIMOTHY M. MULROONEY
Exp. 12/31/2019
CIVIL
No. 22938

6/4/19

D-1

SHEET 10 OF 12

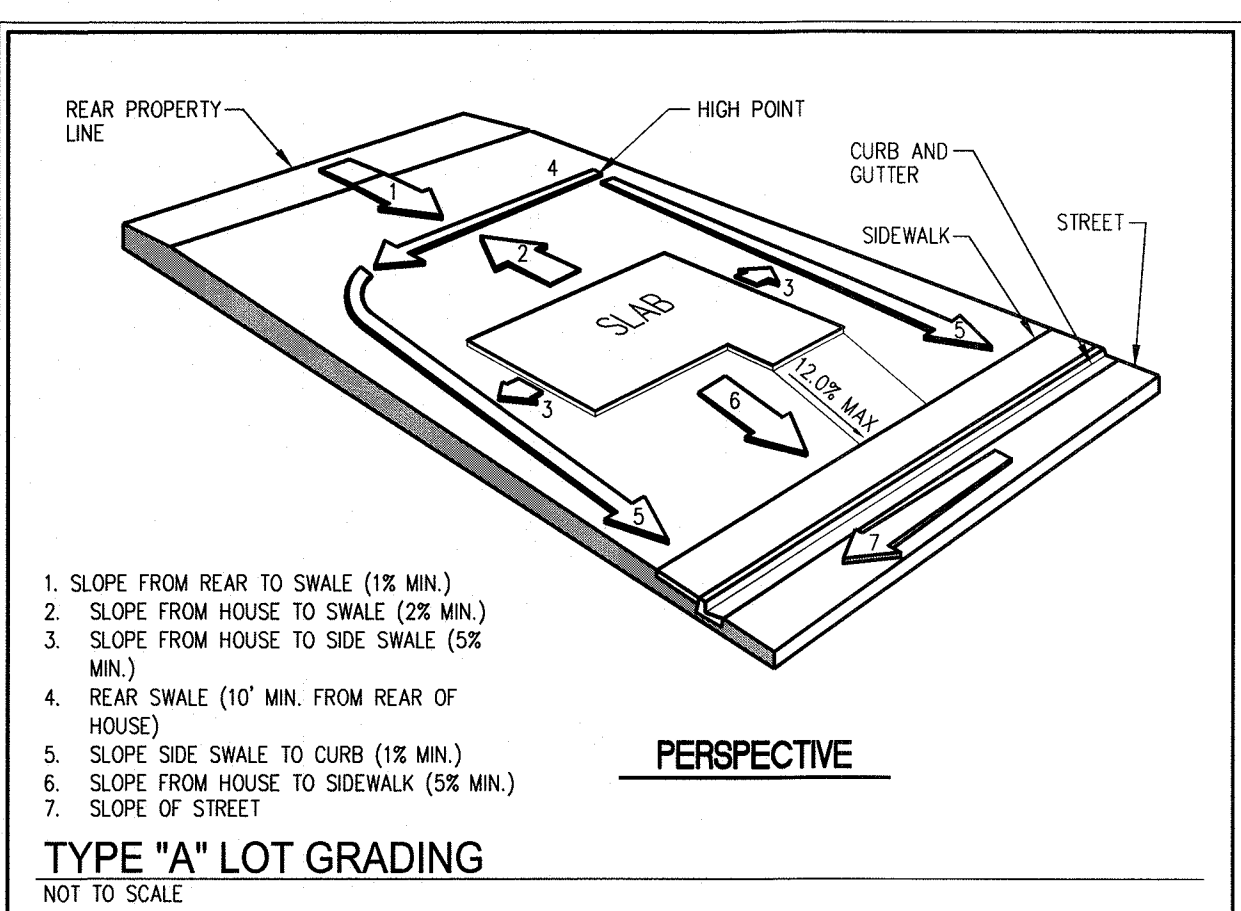
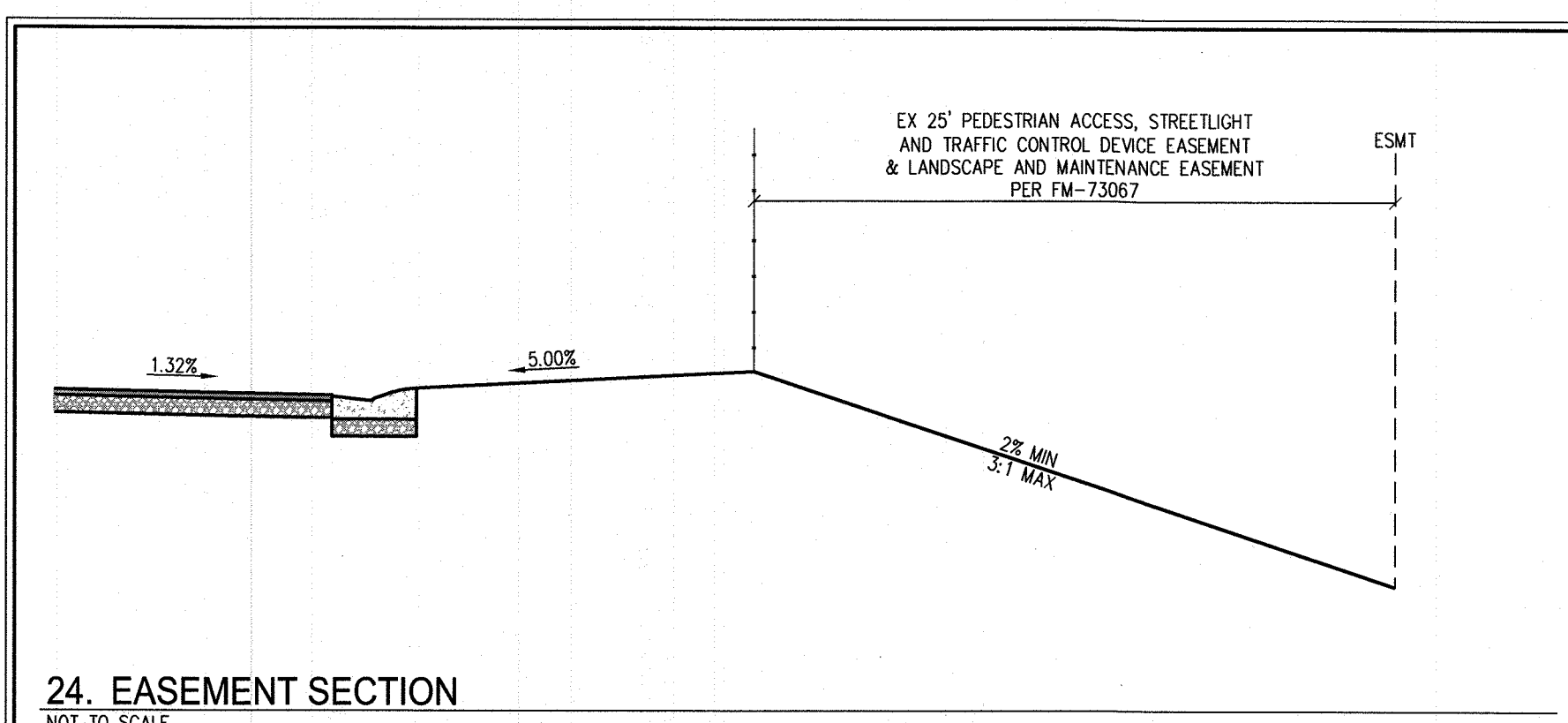
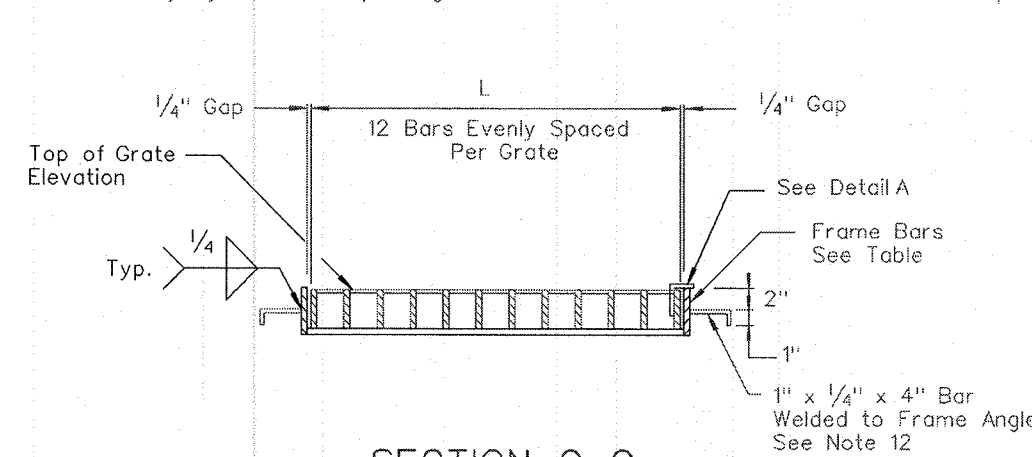


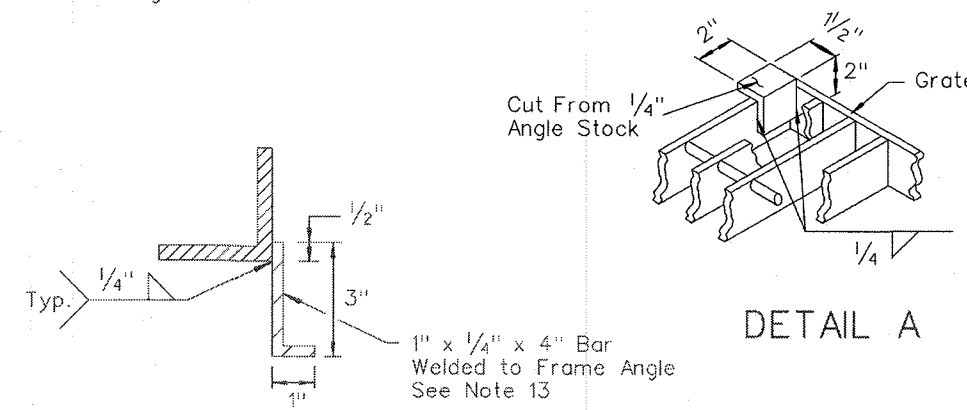
TABLE OF DIMENSIONS
(RCP HDPE CMP)

PIE SIZE (INCH)	SINGLE (ONE GRADE)						DOUBLE (TWO GRADES)						TRIPLE (THREE GRADES)					
	* CONCRETE (CY)			* REINF. (L.B.)			* CONCRETE (CY)			* REINF. (L.B.)			* CONCRETE (CY)			* REINF. (L.B.)		
	BASE QUAN. (H. MIN.)	ADD. RATE (CY/IN.)	BASE QUAN. (H. MIN.)	ADD. RATE (CY/IN.)	STR. STEEL (L.B.)	BASE QUAN. (H. MIN.)	ADD. RATE (CY/IN.)	BASE QUAN. (H. MIN.)	ADD. RATE (CY/IN.)	STR. STEEL (L.B.)	BASE QUAN. (H. MIN.)	ADD. RATE (CY/IN.)	BASE QUAN. (H. MIN.)	ADD. RATE (CY/IN.)	STR. STEEL (L.B.)			
15	0.71	0.19	36	10	211	1.06	0.28	50	13	397	1.41	0.33	70	17	583			
18	0.89	0.20	40	10	306	1.31	0.28	56	13	574	1.72	0.35	77	18	842			
24	1.08	0.22	58	12	349	1.56	0.30	80	15	652	2.04	0.37	105	20	956			
30	1.28	0.24	63	12	390	1.83	0.31	86	16	729	2.38	0.39	113	20	1068			
36	1.50	0.25	67	13	424	2.11	0.33	92	16	809	2.73	0.41	120	21	1181			
42	1.71	0.28	90	15	575	2.39	0.35	107	18	1073	3.07	0.43	134	23	1295			
48	1.94	0.30	95	15	577	2.68	0.37	127	18	1379	3.42	0.44	163	23	1591			

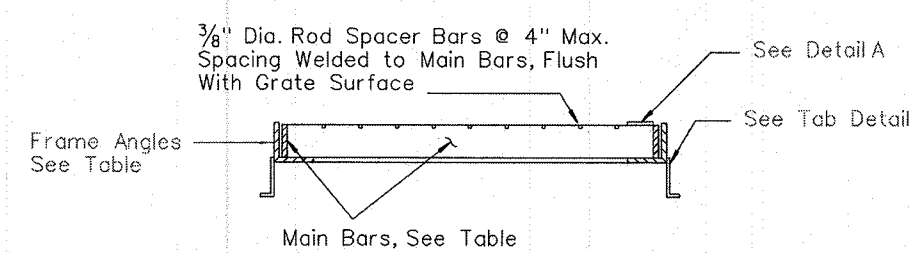
PIPE SIZE (INCH)	A	H MM (FT)	MAIN BARS (INCH)	FRAME ANGLES (INCH)	FRAME BARS (INCH)	D (FT)		
						SINGLE GRATE	DOUBLE GRATE	TRIPL GRATE
15	2	2.50	3/4" X 3/4"	4 X 3 X 3/4"	4 X 3/4"	2	4	6
18	2" 6"	3.00	4/2" X 3/4"	5 X 3 X 3/4"	5 X 3/4"	2	4	6
24	3"	3.50	4/2" X 3/4"	5 X 3 X 3/4"	5 X 3/4"	2	4	6
30	4"	4.00	4/2" X 3/4"	5 X 3 X 3/4"	5 X 3/4"	2	4	6
36	4"	4.50	5/2" X 3/4"	6 X 3 1/2" X 3/4"	6 X 3/4"	2	4	6
42	5"	5.00	5/2" X 3/4"	6 X 3 1/2" X 3/4"	6 X 3/4"	2	4	6
48	5"	5.50	5/2" X 3/4"	6 X 3 1/2" X 3/4"	6 X 3/4"	2	4	6



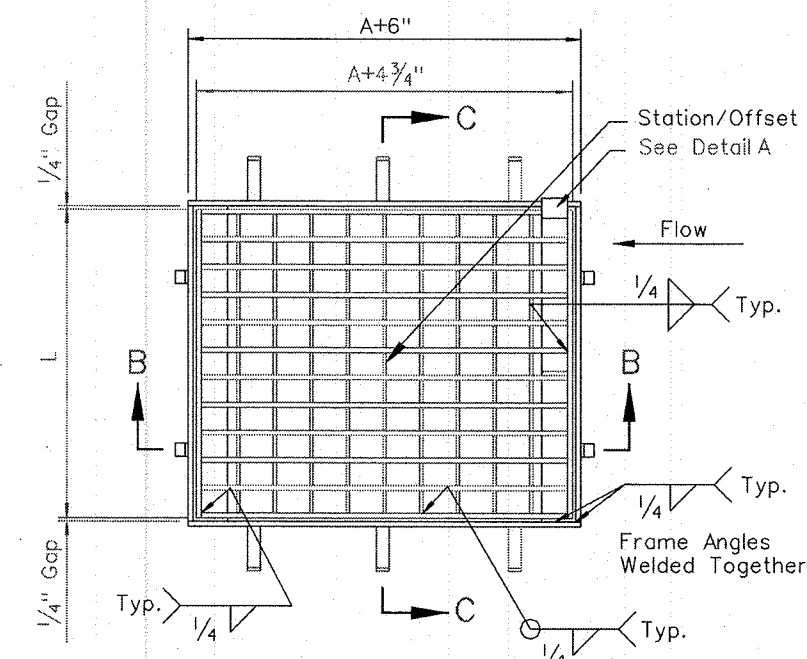
SECTION C-C



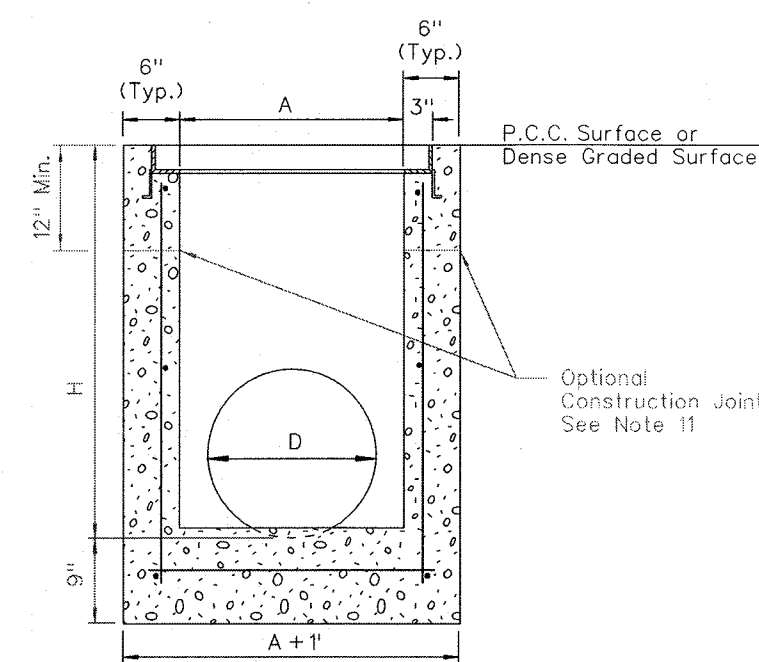
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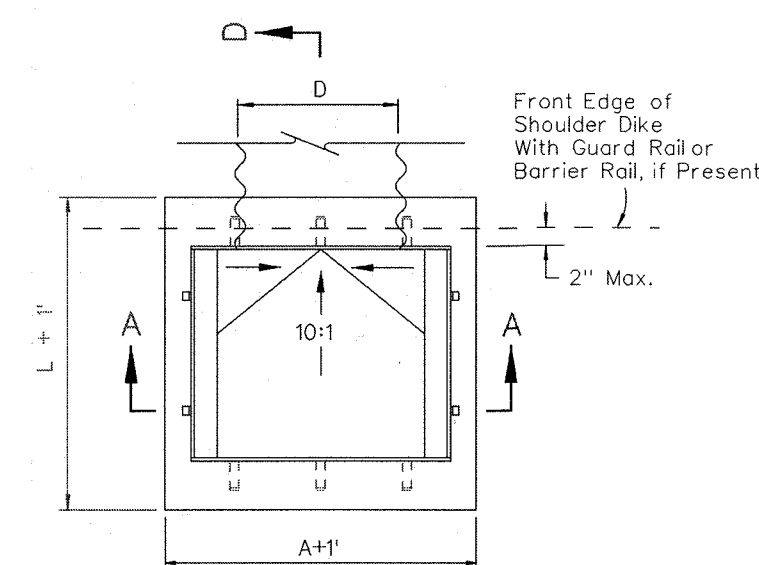
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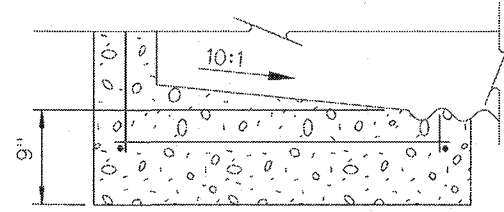
GRATE AND FRAME



SECTION A-A



PLAN



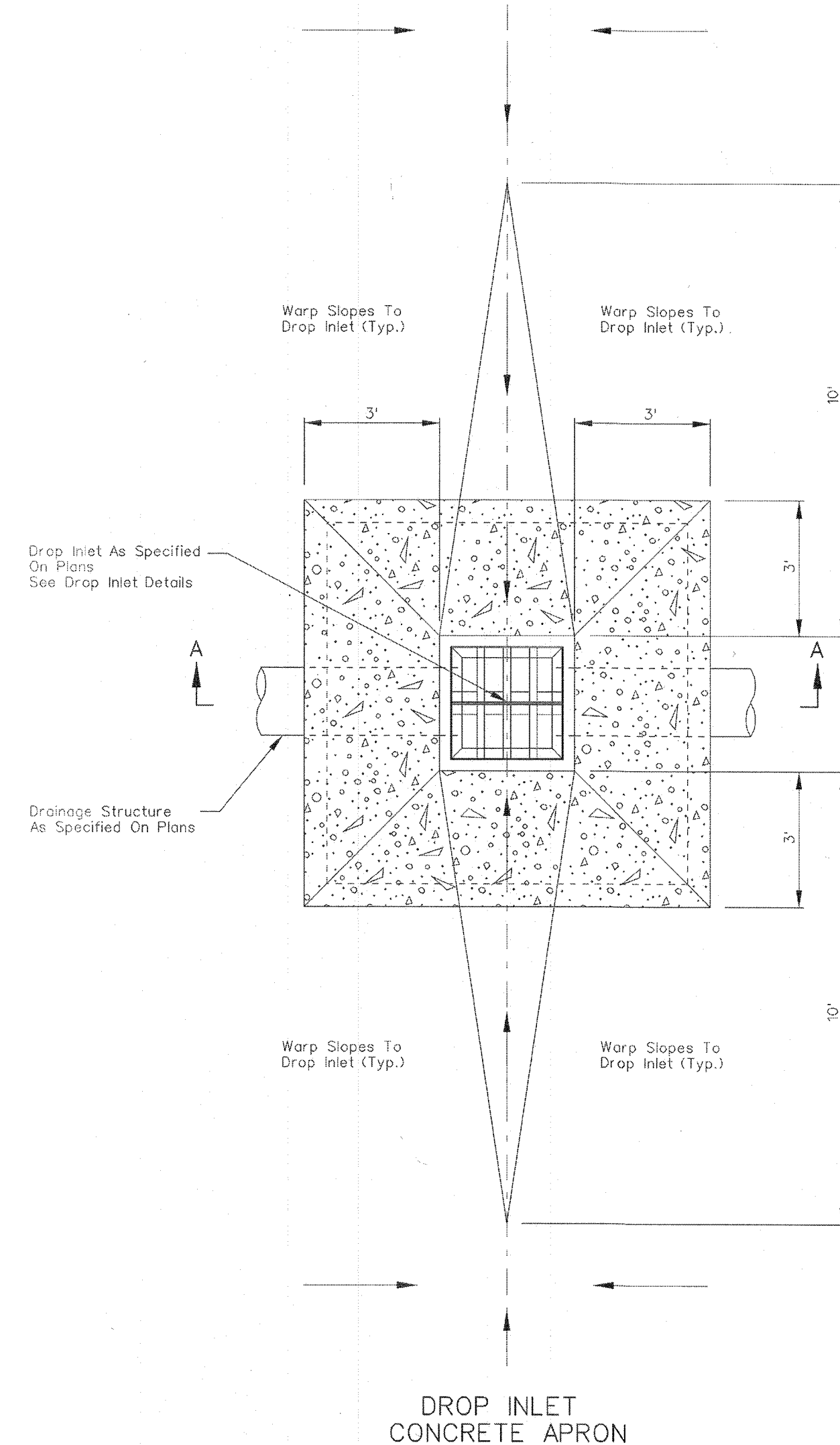
SECTION D-D

1. ALL CONCRETE SHALL BE CLASS A OR AA.
2. REINFORCING STEEL SHALL BE NO.4 BARS WITH MAXIMUM SPACING AT 18" CENTERS, WIRED TIGHTLY AT ALL INTERSECTIONS AND EMBEDDED 2" CLEAR OF ALL CONCRETE SURFACES.
3. EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1".
4. DIMENSIONS MAY BE VARIED TO FIT LOCAL CONDITIONS IF ORDERED BY THE ENGINEER.
5. COMMERCIAL PREFABRICATED GRATINGS APPROVED BY THE BRIDGE DIVISION MAY BE USED IN LIEU OF THE FIELD-WELDED GRATING SHOWN ABOVE.
6. EXTREME LOW COVER SITUATIONS TO BE REVIEWED BY HYDRAULICS ENGINEER.
7. SLOPE CATCH BASIN FLOORS 10:1 FROM ALL DIRECTIONS TOWARD OUTLET PIPE IF BASIN IS USED AS A JUNCTION SHAFT FLOW LINE(S) TO OUTLET PIPE AND PROVIDE A 10:1 SLOPE TO FLOW LINE(S).
8. SEE SHEET R-2.9.1 FOR DETAILS IF CONNECTING HDPE PIPE.
9. A SINGLE TYPE 2 DROP IS REQUIRED IF CONNECTING UNLESS A DOUBLE OR TRIPLE IS SPECIFIED.
10. SINGLE GRATE CONFIGURATION SHOWN FOR CLARITY, OUTSIDE DIMENSIONS OF EACH GRATE SHALL MEASURE 2' BY 4'-3/4".
11. RUN REBAR CONTINUOUS THRU CONSTRUCTION JOINT, JOINT MUST BE A MINIMUM OF 3' FROM HORIZONTAL BARS.
12. WELD ONE TAB ON @ OF INLET AND REMAINING TWO TABS 6" FROM EDGE OF FRAME, SIX TABS PER INLET, THREE TABS ON EACH SIDE.
13. WELD TABS 6" FROM EDGE OF FRAME, FOUR TABS PER GRATE, TWO ON EACH SIDE.

D1. ADDITIONAL PIPE PENETRATIONS MAY BE PLACED IN ANY WALL.

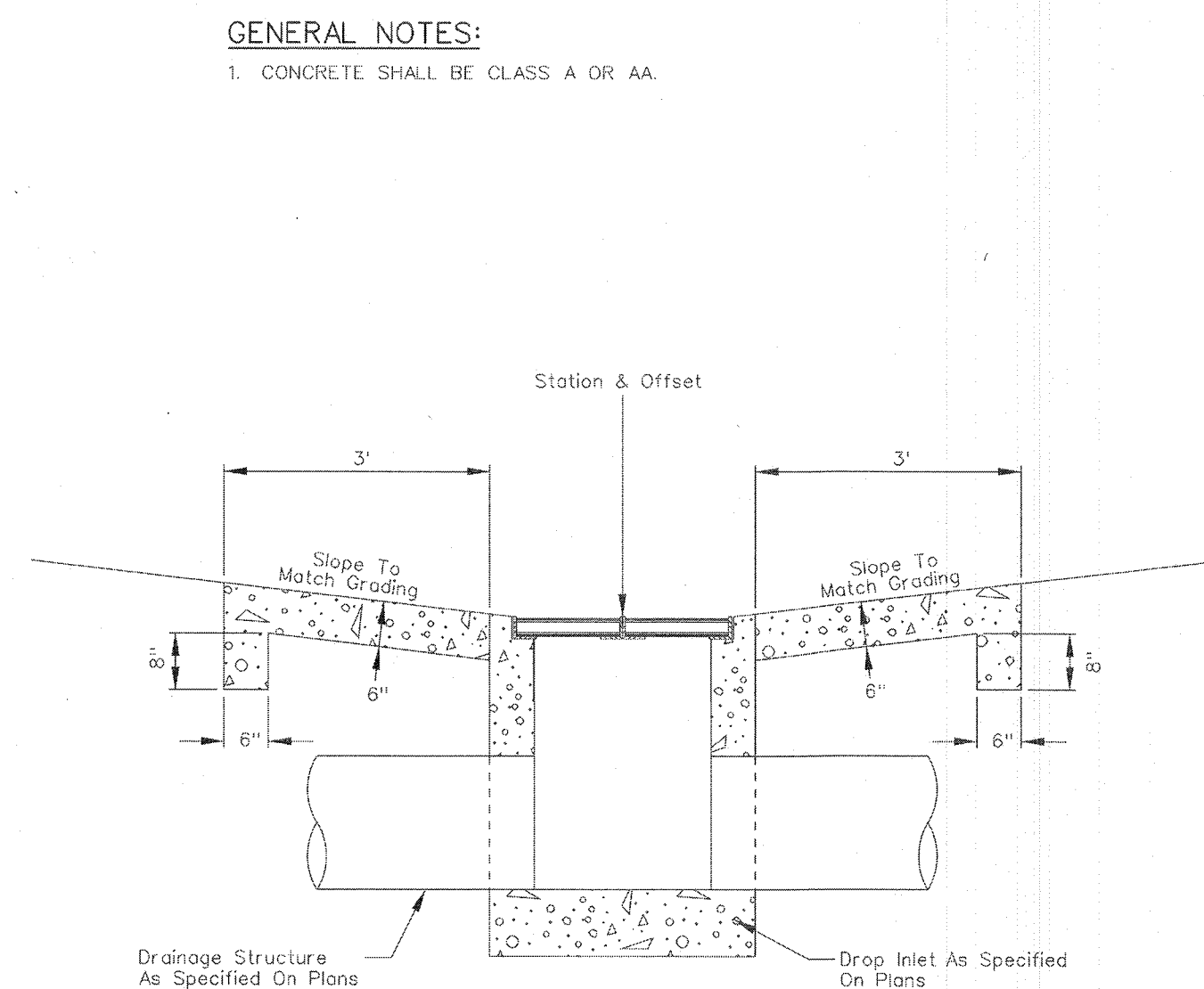
TYPE II DROP INLET
NOT TO SCALE

PER NDOT R-4.2.1



DROP INLET & CONCRETE APRON

NOT TO SCALE



SECTION A-A

GENERAL NOTES:

1. CONCRETE SHALL BE CLASS A OR AA.

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[illegible]

CITY OF LAS VEGAS, NEVADA

NINETY FIVE MANAGEMENT LLC

SKYE CANYON II - PHASE 3A PARCEL 2.03

GRADING DETAILS III

**S7
T19S
R60E**

DATE: 05/14/19

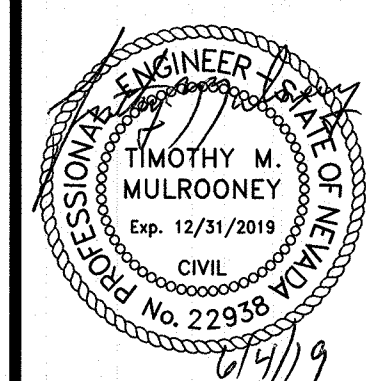
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DESIGNER: KDH

CHECKED: MAK

PROJECT NO.

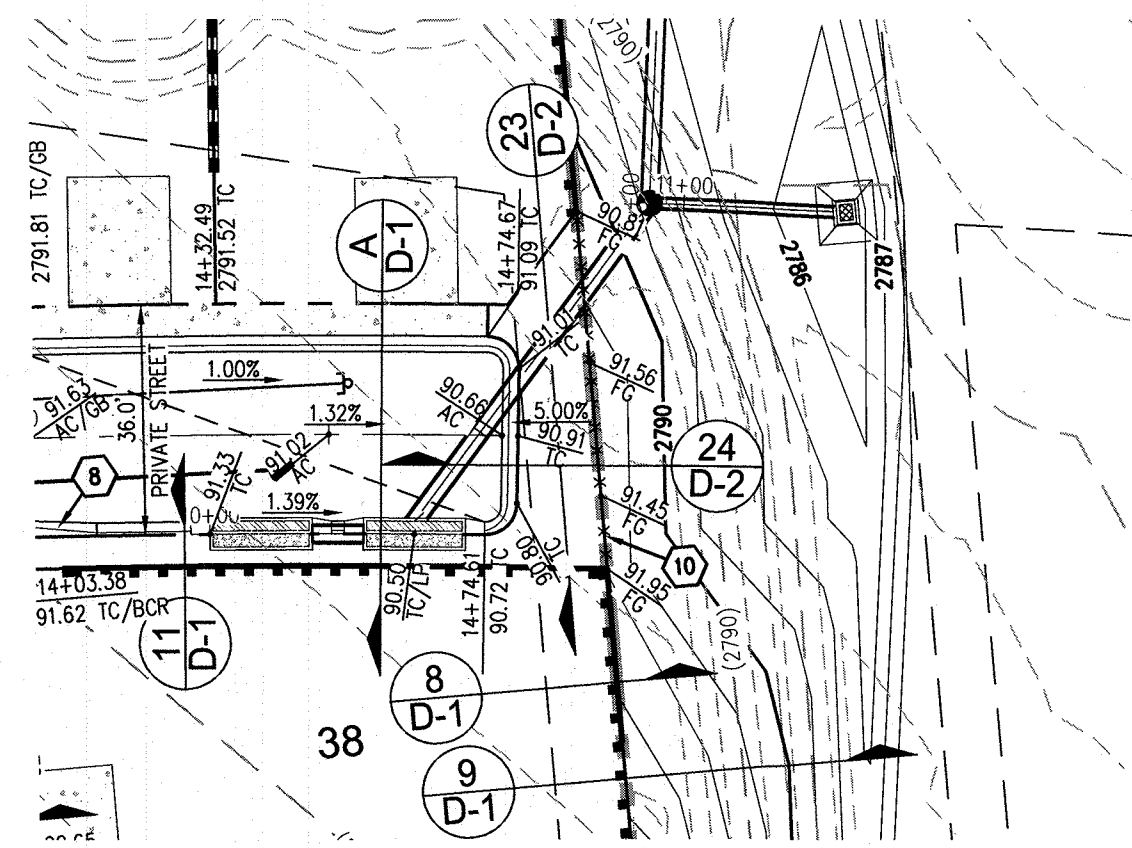
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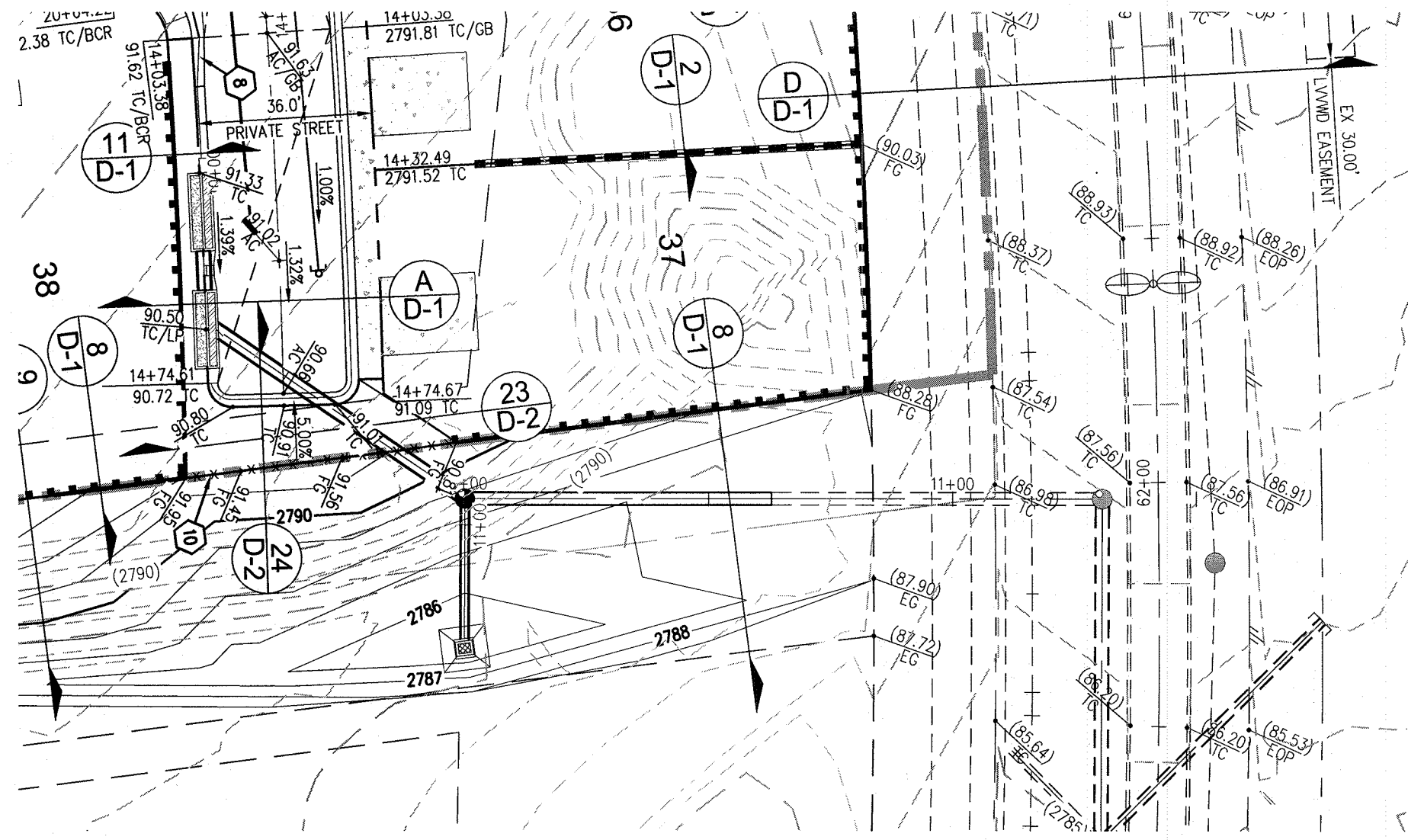
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SHEET 12 OF 12

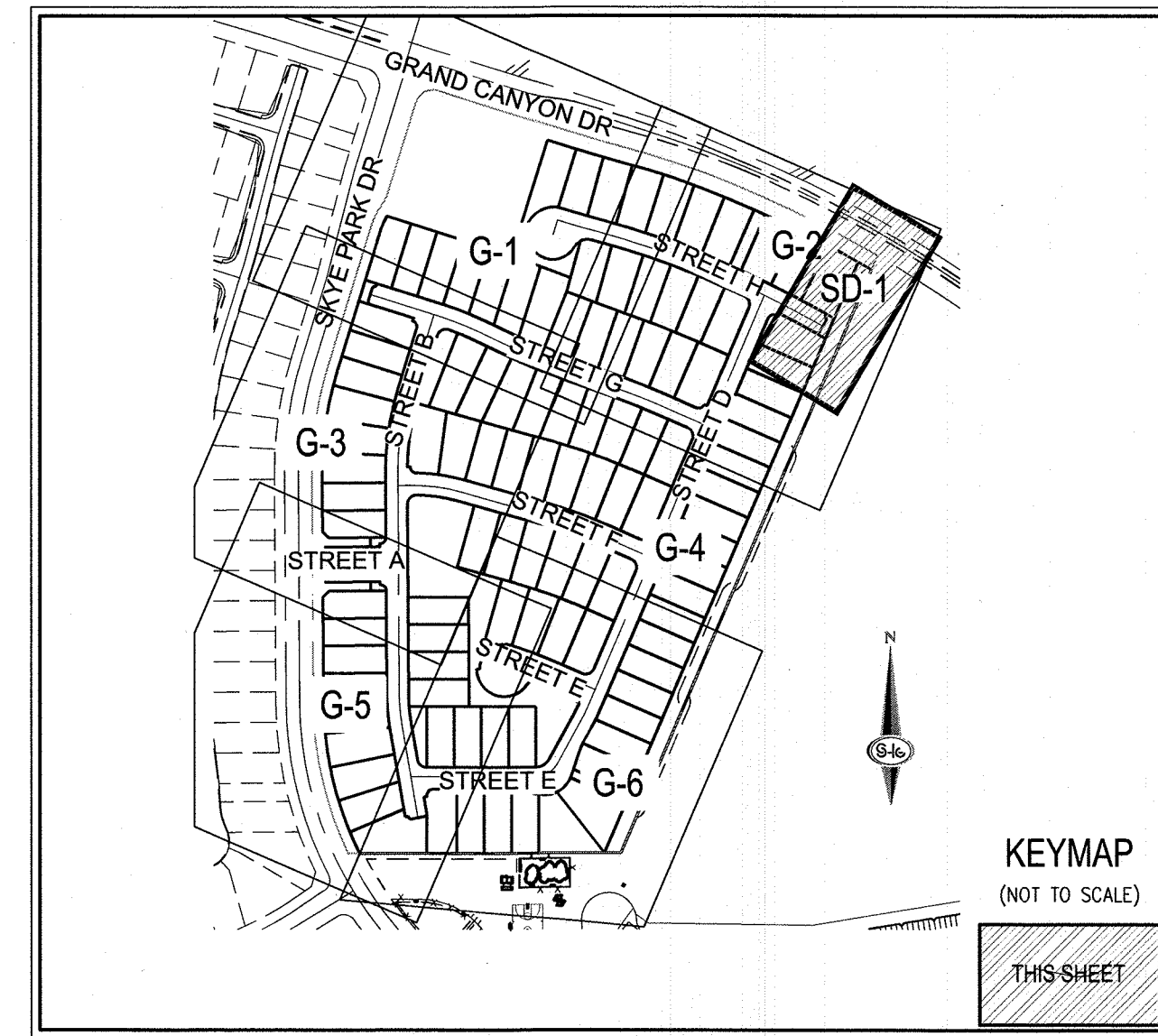
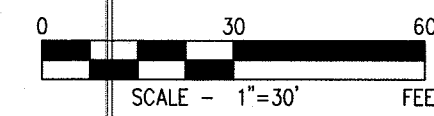




STORM DRAIN LATERAL 1 - PLAN VIEW
(PUBLIC)



STORM DRAIN LATERAL 2 - PLAN VIEW
(PUBLIC)



KEYMAP
(NOT TO SCALE)

CONSTRUCTION NOTES

- CONSTRUCT 30" ROLL CURB AND GUTTER PER CCAUSD NO. 217.51. 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 COST TO THE CITY.
- CONSTRUCT "A" TYPE ISLAND CURB PER CCAUSD NO. 219.
- INSTALL L TYPE CURB PER CCAUSD NO. 216.
- INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE.
- CONSTRUCT 8" WIDE CROSS GUTTER PER DETAIL 27 ON SHEET D-2.
- INSTALL 5' WIDE SIDEWALK PER CCAUSD NO. 234.
- CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE 1 & 2.35.1.
- CONSTRUCT 10' ROLL CURB TO L CURB TRANSITION PER DETAIL 28 ON SHEET D-2.
- FIELD VERIFY AND CONNECT TO EXISTING CURB, GUTTER AND/OR SIDEWALK.
- INSTALL WROUGHT IRON FENCE W/ACCESS GATES, DESIGN BY OTHERS.
- INSTALL WROUGHT IRON FENCE, DESIGN BY OTHERS.
- INSTALL 15.0' DROP INLET TYPE "CM2" PER CCAUSD NO. 412.1 AND 421.
- INSTALL 4'x4' DROP INLET NDOT TYPE 2 PER CCAUSD NO.
- INSTALL 48" TYPE III STORM DRAIN MANHOLE PER CCAUSD NO. 406.

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBLISCURED DURING CONSTRUCTION.

ELEVATION NOTE

ADD 2800 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 01.00 REPRESENTS 2801.00).

SOILS REPORT

SOILS REPORT BY ADD FIELD
ADD FIELD DATED ADD FIELD
PROJECT NO. ADD FIELD
ADD FIELD DATED ADD FIELD
PROJECT NO. ADD FIELD

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 15,815 CU YDS
FILL= 61,969 CU YDS
EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

DISCLAIMER NOTE

- EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.
- FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

FLOOD ZONE

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (AREA OUTSIDE THE 500 YEAR FLOODPLAIN), PER THE FEMA FIRM PANELS 1750E AND 1735E DATED SEPTEMBER 27, 2002.

GRADING NOTES

- THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
- ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
- MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
- SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
- ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
- CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CITY OF LAS VEGAS BUILDING DEPARTMENT.
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N.A.V.D. 88
PER THE CLARK COUNTY VERTICAL CONTROL LAST REVISED 2003

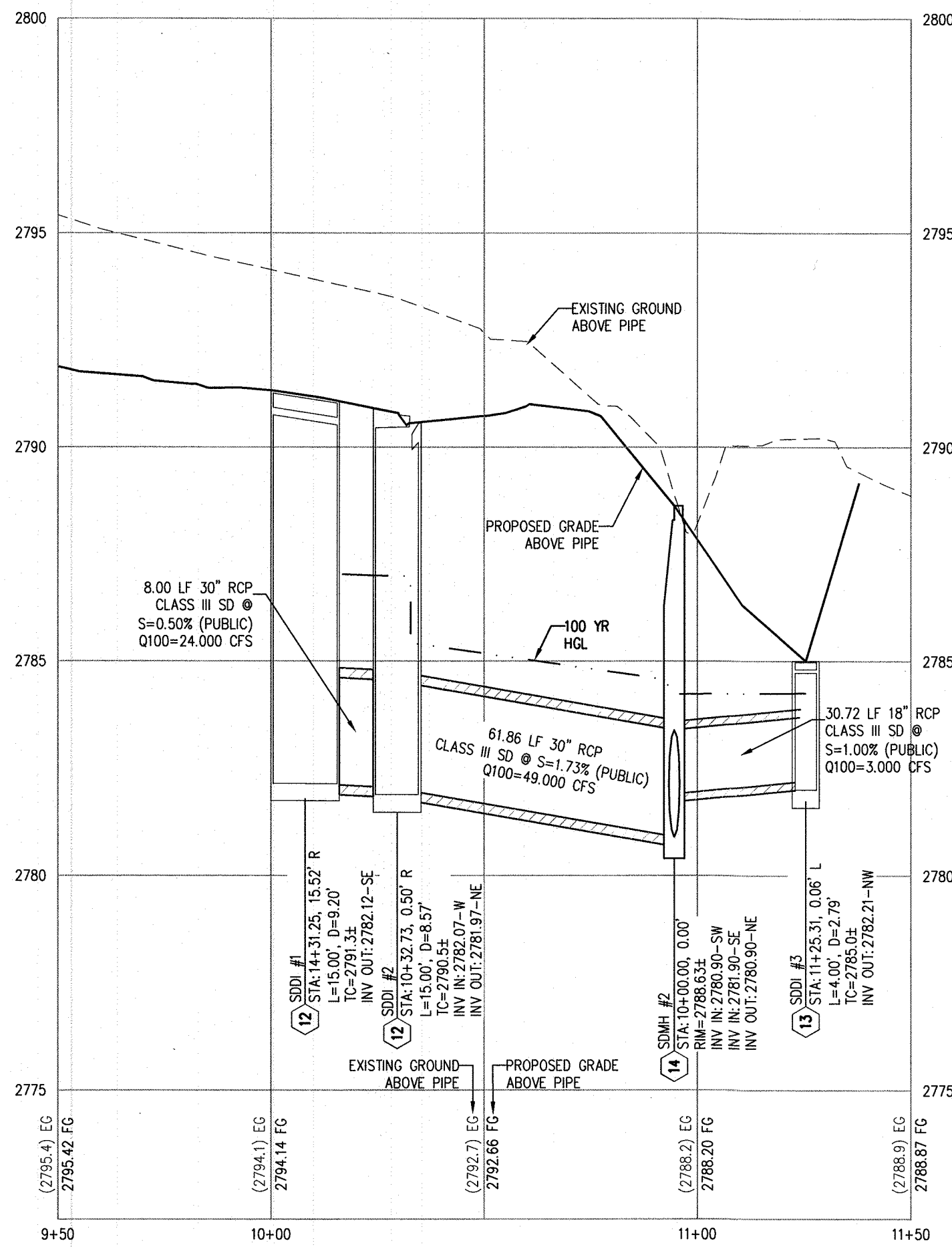
BASIS OF BEARINGS

SOUTH 00°22'12" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 6, TOWNSHIP 19 SOUTH, RANGE 50 EAST, M.D.M. CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, AS SHOWN BY MAP THEREOF IN FILE 151, PAGE 14 OF SURVEYS.

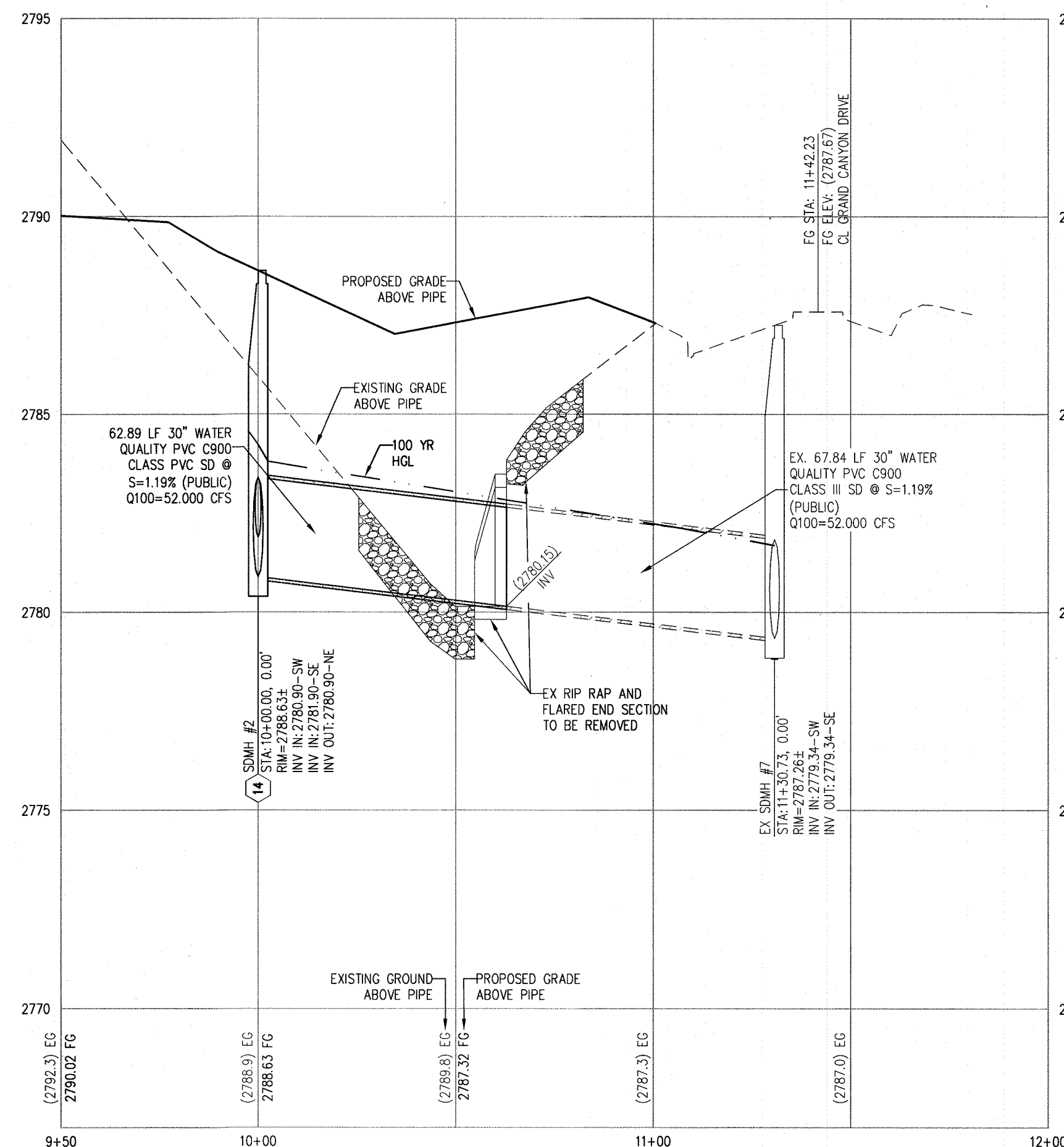
FLOOD CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY 00222222 ON FILE AT CITY OF LAS VEGAS AND CCPW FILE #111111 FOR THE SUBJECT PROJECT.

TIMOTHY M. MULROONEY, P.E. 22938 DATE



STORM DRAIN LATERAL 1 - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'



STORM DRAIN LATERAL 2 - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

DATE	BY	APP.
DESCRIPTION	NO.	

DATE: 05/14/19
DRAFTER: KDH
DESIGNER: KDH
CHECKED: MAK
PROJECT NO.
OLY1817-000

