

DS #: 4683

APN: 125-07-301-001

PROJECT: Skye Canyon Parcel 1.1 - Phase 1 - Update #1

SUBMITTAL: 4th

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		February 18, 2015
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 – Parcel 1.1 – Phase 1 – Update #1	
Cross Streets:	SEC of Hualapai Way & Skye Canyon Parkway	
File Number:	F:\Depot\DSMemos\DS4683D.doc	
Parcel Number:	125-07-301-001	
Zoning Action:	TMP-53897	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES X	NO
		COPIES TO: Slater Hanifan Group K A G Development South, LLC / Ninety-Five Management, LLC Bart Anderson, P.E., DevCo CCRFC

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	6/30/2014	8/11/2014	Not Approved	\$400.00	361818: \$400
2 nd Submittal	9/18/2014	9/30/2014	Not Approved	\$400.00	370817: \$400
3 rd Submittal	10/2/2014	10/9/2014	Approved	\$400.00	372236: \$400
4 th Submittal	2/3/2015	2/18/2015	See Comments Below	\$100.00	384423: \$100
			TOTAL FEES (LDDRS):	\$1,300.00	----

REMARKS:

4th Submittal: Update #1 to revise onsite storm drain connection from *Serpentine Sands Street* to *Eagle Canyon Avenue*

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

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

The following comments are repeated until they are complete:

1. The subject drainage study is based on the condition that the ***Skye Canyon Phase 1 Infrastructure*** and the perimeter streets (*Skye Village Avenue, Hualapai Way, Skye Canyon Parkway* and *Skye Peak Drive*) are fully improved for onsite major storm events protection. The perimeter streets and all the associated storm drain facilities must be completed prior to the issuance of building permits for the subject development.
2. The final approval of this drainage study is for Phase 1 and the overall developments. However, if Phase 2 comes in at a time more than one year from the final approval of the Phase 1 and overall drainage study, an update to address Phase 2 development will be required.
3. All drainage easements must be public drainage easements to be privately maintained and common lots to be labeled on the grading plans and to be dedicated as such in the final map.

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

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

END OF REMARKS
Ays

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

TECHNICAL DRAINAGE STUDY UPDATE

Skye Canyon Parcel 1.1

City of Las Vegas, Nevada

Job No.: OLY1401.002

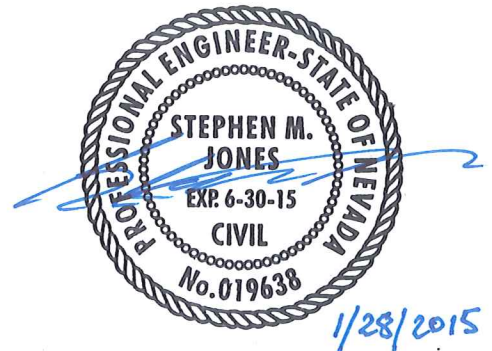
Date: January 2015

Prepared By:

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

Prepared For:

Pulte Homes
8345 W. Sunset Road
Las Vegas, NV 89113
Phone: 702-804-7554 • Fax: 702-914-3100



Steve Jones, P.E.
NV Professional Engineer No. 19638

Assisted by: Erick Mata, E.I.

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Skye Canyon Parcel 1.1 Date: January 2015
 Location of Development: a) Descriptive (Cross Streets): North/South: Hualapai Way
East/West: Horse Drive
 b) Section: 7 Township: 19 South Range: 60 East
 c) APN: 125-07-310-001

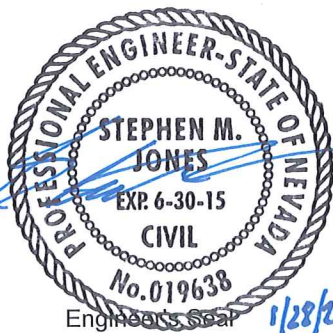
Name of Owner/Developer: P N II INC/ Pulte Homes
 Telephone No.: 702-804-7554 Fax No.: 702-914-3100 E-mail Address: Brenin.anderson@pultegroup.com
 Address: 8345 W. Sunset Road Las Vegas, NV 89113

Contact Person – Name: Steve Jones, P.E. Telephone No.: 702-284-5300
 *E-mail Address: sjones@shg-inc.com Fax No.: 702-284-5399
 Firm: Slater Hanifan Group
 Address: 5740 S. Arville Street, Suite 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: 39.46 Acres Being Developed/Disturbed: 32.55 Acres
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 Acres
6. Has the site drainage been evaluated in the past? ☒ Yes** ☐ No If yes, please identify documentation: Technical Drainage Study for Skye Canyon Parcel 1.1 (SHG, DS4683)
Technical Drainage Study for Skye Canyon – Phase 1 Infrastructure (SHG, DS4661)
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Skye Village Avenue regional facility (CNKC 0050) & Skye Canyon Parkway local storm drain
8. Briefly describe your proposed schedule for the subject project: 2 Phases after completion of Phase 1 Infrastructure (DS4661)



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

REFERENCE: SHG Job No. OLY1401.002

STANDARD FORM 1

Updated 05/01/2008

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Skye Canyon – Parcel 1.1		Map ID:
Firm Name: Slater Hanifan Group (SHG)		
Address: 5740 S. Arville St., Suite 216		
City: Las Vegas	State: Nevada	Zip: 89118
Phone Number: 702-284-5300	Fax Number: 702-284-5399	
Property Owner/Developer: P N II INC/ Pulte Homes		
Address: 8345 W. Sunset Road Las Vegas, NV 89113		
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 (CCRFCD) Hydrologic Criteria and Drainage Design Manual (MANUAL).

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

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

I. GENERAL REQUIREMENT:

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

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS

Yes	No	
☐	☐ N/A	A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.
☐	☐ N/A	A copy of the current CCRFCD Master Plan Update Figure, (F-x), for Flood Control Facilities and Environmental areas with the site delineated.
☐	☐ N/A	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.
☐	☐ N/A	Vicinity Map with local and major cross streets identified and a north arrow.
☐	☐ N/A	Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.

III. DRAINAGE PLAN

Yes	No	
☐	☐	Sheet size: 24" x 36" sealed by a registered engineer in the State of Nevada.
☒	☐	Minimum scale: 1" = 60'.
☒	☐	Project name.
☒	☐	Vicinity Map with local and major cross streets.
☒	☐	Revision box.
☒	☐	North arrow and bar scale.
☒	☐	Engineer's/consultant's address and phone number.
☒	☐	Elevation datum and benchmark.
☒	☐	Legend for symbols and abbreviations.
☒	☐	Cut/fill scarps, where applicable.
☒	☐	Street names, grades, widths.
☒	☐	Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
☒	☐	Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where appropriate.
☒	☐	Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.
☒	☐	Proposed typical street sections.
☐	☐	N/A Streets with off-set crowns.
☒	☐	Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
☒	☐	Property lines.
☒	☐	Right-of-way lines and widths, existing and proposed.
☒	☐	Existing improvements and their elevations.
☐	☐	N/A Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
☐	☐	N/A Concentration points and drainage flow direction with Q_{100} and V_{100} and D_{100} in streets.
☐	☐	N/A Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
☐	☐	N/A Location and cross-section of street capacity calculations.
☐	☐	N/A Cross-sectional detail for channels, including cutoff wall locations.
☒	☐	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.
☐	☐	N/A 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"x48". Wrought iron gate is required for flows > 10 cfs.
☐	☐	N/A Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
X		Perimeter retaining wall locations. All existing and proposed walls (retaining screen and flood) must be shown with adjacent ground elevations. Flood Walls with 8-inch concrete masonry unit.
X		Building and/or lot numbers.
X		Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
	N/A	Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.
	N/A	For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table. Finish floor elevations must be a minimum of 18 inches above BFE.
X		Appropriately elevated "humps" 6 inches above the 100-year water surface elevation at site accesses where the intent is to protect the site from the Q_{100} flows.
X		Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.

IV. HYDROLOGIC ANALYSIS

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

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.
	N/A	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.
	N/A	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.)
	N/A	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.
	N/A	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, which ever 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.
	N/A	Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
	N/A	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.
	N/A	The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.

REFERENCE:

STANDARD FORM 2



CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

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

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

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

I. GENERAL REQUIREMENT		
Yes	No	
-	N/A	A notarized letter from the adjacent property owner(s) allowing off-site grading. (A copy of the letter must be received prior to final acceptance of the drainage study.)
-	N/A	Copies of all conditions of approval for development related to this property. (e.g. zoning, use permit, tentative map, etc.) Verify compliance with conditions.
X	-	An electronic copy of the complete submittal is required to be submitted with one original hard copy of the study. Electronic documents should be on a universal computer-readable digital output device replicating your submittal. An Indexed Portable Document Format (PDF) or Print Ready CAD file formats with a minimum of 300dpi are the desired formats. If figures are in color, they must be scanned in color and saved as a separate file. _____ 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.
X	-	Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
X	-	On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners. (The project must pass flows through the site every 600 feet where the project is blocking flow paths.)
-	N/A	This project uses a solid grouted stem wall (or approved alternate) at the back of sidewalk to provide erosion protection for landscaped areas where the depth of flow in the roadway exceeds the back of walk elevation. A corresponding cross-section detail is included.
X	-	Commercial and Common Lot Landscape areas are not allowed to drain over the sidewalk. The grading plans show flow lines with grades and sidewalk under drains for all landscape areas draining to the public ROW.

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
X	-	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.

OLY1401.002

January 28, 2015

Albert Sung, P.E.
Flood Control Project Engineer
City of Las Vegas Department of Public Works
333 N. Rancho Drive
Las Vegas, Nevada 89106

Subject: Technical Drainage Study Update for Skye Canyon Parcel 1.1

Dear Mr. Sung:

Submitted for you review is this *Technical Drainage Study Update for Skye Canyon Parcel 1.1*. The site had been previously analyzed and designed within a Technical Drainage Study (CLV DS4683), prepared by Slater Hanifan Group (hereinafter referred to as SHG). The study was approved on October 9, 2014 and addressed the development of the 32 acre 165 lot residential site. The approval letter has been included in Appendix A of this submittal.

The site owner has since transitioned from Ninety-Five Management, LLC to P N II INC. The analysis and conclusion from the initial Technical Drainage Study have been accepted and utilized as reference for this submittal.

This submittal addresses a minor adjustment to the storm drain schematic on Eagle Canyon Avenue just west of Skye Park Drive. Due to value engineering, the approved referenced *Technical Drainage Study for the Skye Canyon – Phase 1 Infrastructure* (hereinafter referred to as the Infrastructure Study) elevated the existing manhole (SDMH 24) 4-ft higher than what was previously approved. Therefore, WSPG model (PH1ON2-D.WSW) has been revised to show storm drain criteria is not violated. As a result all storm drain criteria is met within the storm drain alignment and therefore the revision considered acceptable. See Appendix B for reference.

Note flows shown in the storm drain on sheet PP-2 have been adjusted to adequately represent the previously approved flows on the WSPG model. See Exhibit E1 in Appendix A for flows utilized.

The revised improvement plans are provided in Appendix D. If you have any questions or require additional information, please do not hesitate to contact us at 284-5300.

Respectfully Submitted,

SLATER HANIFAN GROUP


Erick T. Mata, E.I.
Flood Control Division

cc: Mark Failla, P.E., CFM – SHG
Steve Jones, P.E. - SHG
Jerry Slater, P.E. - SHG

5740 S. Arville Street #216, Las Vegas, NV 89118 ph (702) 284-5300 fax (702) 284-5399

APPENDIX

Appendix A Technical Drainage Study for Skye Canyon Parcel 1.1

- Approval Letter
- Storm Drain Material

Appendix B Revised WSPG Model

Appendix C Reference Material

Technical Drainage Study for Skye Canyon Phase 1 Infrastructure, by SHG

- Approval Letter
- Storm Drain Material

Appendix D Improvement Plans

APPENDIX A

Technical Drainage Study for Skye Canyon Parcel 1.1

Approval Letter

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		October 9, 2014
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:	
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Cross Streets:	SEC of Hualapai Way & Skye Canyon Parkway	
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Zoning Action:	TMP-53897	
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		COPIES TO: Slater Hanifan Group K A G Development South, LLC / Ninety-Five Management, LLC Bart Anderson, P.E., DevCo CCRFCD

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3 rd Submittal	10/2/2014	10/9/2014	See Comments Below	\$400.00	
TOTAL FEES (LDDRS):				\$1,200.00	****

REMARKS:

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X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
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3. All drainage easements must be public drainage easements to be privately maintained and common lots to be labeled on the grading plans and to be dedicated as such in the final map.

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

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

END OF REMARKS
Ays

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

Storm Drain Material

TECHNICAL DRAINAGE STUDY
ADDENDUM #1

Skye Canyon Parcel 1.1

City of Las Vegas, Nevada

Job No.: OLY1401.002

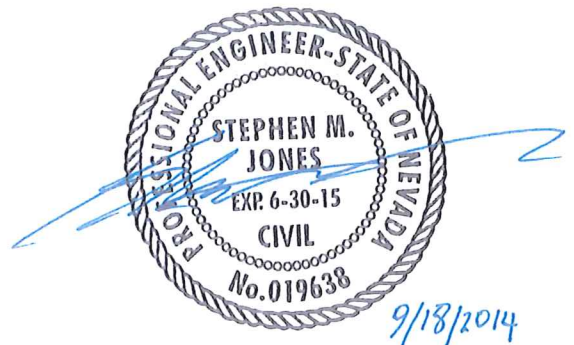
Date: September 2014

Prepared By:

Slater Hanifan Group, Inc.
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



Steve Jones, P.E.
NV Professional Engineer No. 19638

Assisted by: Andrew Howard, P.E.

REVISED

PH10N2-D.WSW

T1	SKYE CANYON PARCEL 1.1				
T2	BASIN ON2-D STORM DRAIN				
T3	RCP FROM SUMP INLET TO EXISTING TRUNK LINE IN RAGEL - PHASE 1 INTERIM CONDITION				
SO	1000.0002792.220 36	.013			
R	1028.4702795.280 36	.013			
JX	1028.4702795.280 36	.013	5.000		
R	1052.1202795.520 36	.013			
R	1088.3302795.880 36	.013			
SH	1088.3302795.880 36	.013			
CD	36 4 1				
Q					

2793.194

2795.280

90.0

44.000

49.000 1

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

CD 36 4 1 3.000
 WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS - SKYE CANYON PARCEL 1.1
 HEADING LINE NO 2 IS - BASIN ON2-D STORM DRAIN
 HEADING LINE NO 3 IS - RCP FROM SUMP INLET TO EXISTING TRUNK LINE IN RACEL - PHASE 1 INTERIM COND

W S P G W
 WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	1 IS A SYSTEM OUTLET	STATION	INVERT	SECT	W S ELEV	RADIUS	ANGLE	ANG PT	MAN H
	U/S DATA	1000.000	2792.220	36	2793.194	.000	.000	44.000	0
ELEMENT NO 2 IS A REACH	U/S DATA	1028.470	2795.280	36					
ELEMENT NO 3 IS A JUNCTION	U/S DATA	1028.470	2795.280	36					

ELEMENT NO	4 IS A REACH	STATION	INVERT	SECT	Q4	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	U/S DATA	1052.120	2795.520	36				2795.280	.000	90.000	.000
ELEMENT NO 5 IS A REACH	U/S DATA	1088.330	2795.880	36							
ELEMENT NO 6 IS A SYSTEM HEADWORKS	U/S DATA	1088.330	2795.880	36							

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO	4 IS A REACH	STATION	INVERT	SECT	RADIUS	ANGLE	ANG PT	MAN H
	U/S DATA	1052.120	2795.520	36	.000	.000	49.000	1
ELEMENT NO 5 IS A REACH	U/S DATA	1088.330	2795.880	36				
ELEMENT NO 6 IS A SYSTEM HEADWORKS	U/S DATA	1088.330	2795.880	36				

W S ELEV
 .000

SKYE CANYON PARCEL 1.1														
BASIN ON2-D STORM DRAIN														
RCP FROM SUMP INLET TO EXISTING TRUNK LINE IN RACEL - PHASE 1 INTERIM														
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 or I.D.	X-Fall	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"		ZR	Type Ch
1000.000	2792.220	1.247	2793.467	47.00	16.92	4.44	2797.91	.00	2.23	2.96	3.000	.000	.00	1.0
4.333	.1075					.0360	.16	1.25	3.08	.94	.013	.00	.00	PIPE
1004.333	2792.686	1.286	2793.971	47.00	16.24	4.10	2798.07	.00	2.23	2.97	3.000	.000	.00	1.0
4.303	.1075					.0320	.14	1.29	2.90	.94	.013	.00	.00	PIPE
1008.635	2793.148	1.333	2794.481	47.00	15.49	3.72	2798.20	.00	2.23	2.98	3.000	.000	.00	1.0
3.640	.1075					.0281	.10	1.33	2.70	.94	.013	.00	.00	PIPE
1012.275	2793.539	1.383	2794.922	47.00	14.77	3.39	2798.31	.00	2.23	2.99	3.000	.000	.00	1.0
3.091	.1075					.0247	.08	1.38	2.52	.94	.013	.00	.00	PIPE
1015.366	2793.871	1.435	2795.306	47.00	14.08	3.08	2798.38	.00	2.23	3.00	3.000	.000	.00	1.0
2.630	.1075					.0217	.06	1.43	2.35	.94	.013	.00	.00	PIPE
1017.996	2794.154	1.489	2795.643	47.00	13.42	2.80	2798.44	.00	2.23	3.00	3.000	.000	.00	1.0
2.234	.1075					.0191	.04	1.49	2.19	.94	.013	.00	.00	PIPE
1020.230	2794.394	1.546	2795.940	47.00	12.80	2.54	2798.48	.00	2.23	3.00	3.000	.000	.00	1.0
1.892	.1075					.0169	.03	1.55	2.04	.94	.013	.00	.00	PIPE
1022.122	2794.598	1.606	2796.203	47.00	12.20	2.31	2798.52	.00	2.23	2.99	3.000	.000	.00	1.0
1.590	.1075					.0149	.02	1.61	1.90	.94	.013	.00	.00	PIPE
1023.711	2794.769	1.669	2796.437	47.00	11.63	2.10	2798.54	.00	2.23	2.98	3.000	.000	.00	1.0
1.323	.1075					.0131	.02	1.67	1.76	.94	.013	.00	.00	PIPE

SKYE CANYON PARCEL 1.1														
BASIN ON2-D STORM DRAIN														
RCP FROM SUMP INLET TO EXISTING TRUNK LINE IN RACEL - PHASE 1 INTERIM														
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 or I.D.	X-Fall	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"		ZR	Type Ch

PHION2-D-OUT														
L/Elem	Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	X-Fall	ZR	Type Ch
1025.034	2794.911	1.735	2796.646	47.00	11.09	1.91	2798.56	.00	2.23	2.96	3.000	.000	.00	1 .0
1.081	.1075					.0116	.01	1.74	1.63	.94	.013	.00	.00	PIPE
1026.115	2795.027	1.805	2796.832	47.00	10.58	1.74	2798.57	.00	2.23	2.94	3.000	.000	.00	1 .0
.861	.1075					.0103	.01	1.81	1.52	.94	.013	.00	.00	PIPE
1026.976	2795.119	1.879	2796.999	47.00	10.08	1.58	2798.58	.00	2.23	2.90	3.000	.000	.00	1 .0
.656	.1075					.0091	.01	1.88	1.40	.94	.013	.00	.00	PIPE
1027.633	2795.190	1.958	2797.148	47.00	9.62	1.44	2798.58	.00	2.23	2.86	3.000	.000	.00	1 .0
.464	.1075					.0081	.00	1.96	1.30	.94	.013	.00	.00	PIPE
1028.097	2795.240	2.043	2797.282	47.00	9.17	1.31	2798.59	.00	2.23	2.80	3.000	.000	.00	1 .0
.279	.1075					.0072	.00	2.04	1.19	.94	.013	.00	.00	PIPE
1028.375	2795.270	2.134	2797.403	47.00	8.74	1.19	2798.59	.00	2.23	2.72	3.000	.000	.00	1 .0
.095	.1075					.0064	.00	2.13	1.10	.94	.013	.00	.00	PIPE
1028.470	2795.280	2.233	2797.513	47.00	8.33	1.08	2798.59	.00	2.23	2.62	3.000	.000	.00	1 .0
JUNCT STR	.0000					.0048	.00	2.23	1.00		.013	.00	.00	PIPE
1028.470	2795.280	2.920	2798.200	42.00	5.99	.56	2798.76	.00	2.11	.97	3.000	.000	.00	1 .0
23.650	.0101					.0035	.08	2.92	.39	1.72	.013	.00	.00	PIPE
1052.120	2795.520	2.714	2798.234	42.00	6.25	.61	2798.84	.00	2.11	1.76	3.000	.000	.00	1 .0
15.649	.0099					.0036	.06	2.71	.56	1.73	.013	.00	.00	PIPE

W S P G W - CIVILDESIGN Version 14.07
 Program Package Serial Number: 1704
 WATER SURFACE PROFILE LISTING
 Date: 8-20-2014 Time: 10:31:32

SKYE CANYON PARCEL 1.1														
BASIN ON2-D STORM DRAIN														
RCP FROM SUMP INLET TO EXISTING TRUNK LINE IN RACEL - PHASE 1 INTERIM														
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	X-Fall	ZR	No Wth Prs/Pip
1067.769	2795.676	2.554	2798.229	42.00	6.55	.67	2798.90	.00	2.11	2.13	3.000	.000	.00	1 .0
10.881	.0099					.0039	.04	2.55	.67	1.73	.013	.00	.00	PIPE
1078.650	2795.784	2.422	2798.205	42.00	6.87	.73	2798.94	.00	2.11	2.37	3.000	.000	.00	1 .0

PH10N2-D-OUT																					
7.588	.0099	- -	- -	- -	- -	- -	- -	- -	- -	.0043	.03	- -	- -	2.42	.75	- -	1.73	.013	- -	.00	PIPE
1086.238	2795.859	2.305	2798.165	42.00	7.21	.81	2798.97	.00	2.11	- -	2.53	3.000	.00	1	.0						
2.092	.0099	- -	- -	- -	- -	- -	- -	- -	- -	.0046	.01	- -	- -	2.31	.84	- -	1.73	.013	- -	.00	PIPE
1088.330	2795.880	2.265	2798.145	42.00	7.34	.84	2798.98	.00	2.11	- -	2.58	3.000	.00	1	.0						

SKYE CANYON PARCEL 1.1

BASIN ON2-D STORM DRAIN

RCP FROM SUMP INLET TO EXISTING TRUNK LINE IN RACEL - PHASE 1 INTERIM

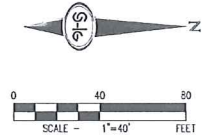
1000.00	.I	W	C	H	E	R
1001.80	.					.
1003.61	.					.
1005.41	.	I	W	C	H	E
1007.21	.					.
1009.01	.	I	W	C	H	E
1010.82	.					.
1012.62	.	I	W	C	H	E
1014.42	.					.
1016.22	.	I	W	C	H	E
1018.03	.	I	W	C	H	E

[illegible]

1088.33	PH10N2-D.OUT I	C W	H E.	R
2792.220	2792.896	2793.572	2794.248	2794.924
		2795.600	2796.276	2796.952
			2797.628	2798.304
				2798.980

N O T E S

1. GLOSSARY
 - I = INVERT ELEVATION
 - C = CRITICAL DEPTH
 - W = WATER SURFACE ELEVATION
 - S = SUPER-ELEVATION
 - H = HEIGHT OF CHANNEL
 - E = ENERGY GRADE LINE
 - X = CURVES CROSSING OVER
 - B = BRIDGE ENTRANCE OR EXIT
 - Y = WALL ENTRANCE OR EXIT
2. STATIONS FOR POINTS AT A JUMP MAY NOT BE PLOTTED EXACTLY



1. SEE PLAN AND PROFILE SHEETS FOR CENTERLINE AND BACK OF CURB CURVE DATA.
2. FINAL GRADES SHOWN ON ALL CONDITIONS SHALL BE IN CONFORMANCE WITH MD 2006, SECTION 20A.01.17.2.
3. THE CONTRACTOR SHALL VERIFY ALL SIZES, SPACING, DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
4. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY STORMWATER DRAINAGE SYSTEMS.
5. MAXIMUM MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
6. SEE DETAIL SHEETS FOR STREET SECTIONS AND DETAILS.
7. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BOUNDED FOR AND INSPECTED.
8. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL.
9. EXISTING UTILITIES LOCATIONS SHOWN HEREON ARE APPROXIMATE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND MANHOLES AND ADJUST AS NECESSARY. ANY UNDETERMINED UTILITIES AND/OR EXISTING FACILITIES PRIOR TO CONSTRUCTION, CONTRACTOR TO PROTECT. IF ANY UNDETERMINED UTILITIES AND/OR EXISTING FACILITIES PRIOR TO CONSTRUCTION, CONTRACTOR WILL BE RESPONSIBLE FOR IDENTIFYING AND PROTECTING THEM. CONTRACTOR IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.
10. NO STRUCTURE, VEGETATION, OR OBJECTS (ANY KIND) SHALL INTERFERE WITH THE VISION DISTANCE REQUIRED (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.
11. ALL ELEVATIONS SHOWN, WITH EXCEPTION TO PAD, FINISH FLOOR, AND CANTOIR ELEVATIONS, ARE THE VALUE SHOWN PLUS 3.00'.

- ## GRADING NOTES

- (1) INSTALL 3" RCP R/OFF PER CCAUSD NO. 217.51 OVER 6" TYPE II AGGREGATE BASE
- (2) INSTALL 1" L TYPE CURB AND GUTTER PER CCAUSD #216
- (3) INSTALL 6" WIDE CONCRETE SIDEWALK (4" THICK OVER 5" TYPE II AGGREGATE BASE) PER CCAUSD #234
- (4) INSTALL 8" B/F CROSS GUTTER PER DETAIL 33 ON SHEET D-2
- (5) INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
- (6) CONSTRUCT SIDEWALK RAMP(S) USING APPROX. 1/4" THICKED GAMES OR EQUIVALENT CCAUSD NO. 235, CASE 1 & TRUNCATED
- (7) CONSTRUCT 1/4" TRANSITION FROM 1" CURB TO MOD. ROLL. RAMP PER DETAIL 33 ON SHEET D-2
- (8) INSTALL 6" WIDE CONCRETE SIDEWALK (4" THICK OVER 5" TYPE II AGGREGATE BASE) PER CCAUSD #234
- (9) INSTALL 6" WIDE CONCRETE SIDEWALK (4" THICK OVER 5" TYPE II AGGREGATE BASE) PER CCAUSD #234
- (10) INSTALL 60" TYPE II STORM DRAIN MANHOLE PER CCAUSD #406
- (11) INSTALL 48" TYPE II STORM DRAIN MANHOLE PER CCAUSD #406
- (12) INSTALL CLASS III RCP SD (PRIVATE) PIPE SIZE PER PLAN
- (13) INSTALL 120" TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
- (14) INSTALL 125" TYPE "CM2" DROP INLET PER CCAUSD #412.1
- (15) INSTALL 175" TYPE "CM2" DROP INLET PER CCAUSD #412.1
- (16) INSTALL 160" TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
- (17) REMOVE EXISTING STORM DRAIN PIPE AT PROPOSED STRUCTURE
- (18) REMOVE EXISTING C&G AND INSTALL PROPOSED STORM DRAIN PIPE
- (19) W/ BROUGHT IRON FENCE AND GATE PER DETAIL 35 ON SHEET D-2
- (20) INSTALL SIDEWALK DRAIN PER CCAUSD #235
- (21) INSTALL 5' X 39" RCP R/P D50-B", THICK=16" W/FILTER FABRIC
- (22) INSTALL REMOVABLE BOLLARD PER DETAIL 38 ON SHEET D-2
- (23) PERMITTER LANDSCAPE DESIGN BY MASTER DEVELOPER

DROP INLET NOTES

1. CAST-IN-PLACE MONOLITHIC POUR WITH WATER STOP BETWEEN SLAB AND WALLS.
2. BASE WALLS AND TOP TO BE CONSTRUCTED WITH MECHANICAL WATER STOPS, CENTER BULB, OR FLAT STRIP (VYNLEX, GREENSTREAK PLASTIC PRODUCTS, OR APPROVED EQUAL)

BENCHMARK

USDA BRASS CAP ON AN IRON PIPE, 140' SOUTHWEST OF
TELEPHONE POLE #26994T, SOUTHWEST CORNER OF THE U.
95/KYLE CANYON TURNOFF.

ELEVATION = 2817.62 FEET, 658.813 METERS
N.A.V.D. 88 DATUM
PER THE CLARK COUNTY VERTICAL CONTROL

BASIS OF BEARING

NORTH 89°11'30" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW ¼) OF SECTION 7, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS PER FILE 151, PAGE 14 OF SURVEYS, ON FILE IN THE COUNTY RECORDER'S OFFICE.

LEGAL DESCRIPTION

BEING A PORTION OF THE NORTHWEST QUARTER (NW 1/4) OF THE
SOUTHWEST QUARTER (SW 1/4) OF SECTION 7, TOWNSHIP 19 SOUTH
RANGE 60 EAST M.D.M., CLARK COUNTY, NEVADA.

DISCLAIMER NOTE

EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXCEPT 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.



S-I-G GROUP
SLATER
HANIFAN
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300
FAX (702) 284-5309

NINETY-FIVE MANAGEMENT LLC
CITY OF LAS VEGAS, NEVADA

SKYE CANYON PARCEL 1.1
PLAN AND PROFILE - STORM DRAIN II

S7
T12S
R60E

DATE: 10/1/14

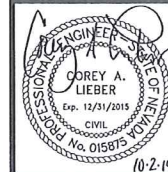
DRAFTER: JM/AC

DESIGNER: MAH

CHECKED: CAL

PROJECT NO.

OLY1401-002



DD-2

SHEET 12 OF 12

\\cny1401-002 skye canyon 1-1\dwg\improv\cny1401-002 p1-1 pnp1.dwg 10/2/2014 10:12 AM Matt Key

APPENDIX B

Revised WSPG Model

T1 SKYE CANYON PARCEL 1.1	T2 BASIN ON2-D STORM DRAIN	T3 RCP FROM SUMP INLET TO EXISTING	TRUNK LINE IN RACEL - PHASE 1	INTERIM CONDITION
SO	1000'.0002794.470	36 .013	2797.914	
R	1027.0002795.280	36 .013		44.000
JX	1027.0002795.280	36 .013	5.000	90.0
R	1050.6502795.520	36 .013	2795.280	49.000
R	1086.8602795.880	36 .013		
SH	1086.8602795.880	36 .013		
CD	36 4	3.000		
Q	42.000			

CARD SECT CHN NO OF AVE PIER HEIGHT 1 BASE ZL ZR INV Y(1) Y(2) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(10) PAGE 1

CD 36 4 1 3.000 WATER SURFACE PROFILE - TITILE CARD LISTING SKYE CANYON PARCEL 1.1 BASIN ON2-D STORM DRAIN RCP FROM SUMP INLET TO EXISTING TRUNK LINE IN RACEL - PHASE 1 INTERIM COND

HEADING LINE NO 1 IS - HEADING LINE NO 2 IS - HEADING LINE NO 3 IS -

ELEMENT NO 1 IS A SYSTEM OUTLET W S P G W

ELEMENT NO 2 IS A REACH U/S DATA STATION INVERT SECT 1000.000 2794.470 36 * W S ELEV 2797.914

ELEMENT NO 3 IS A JUNCTION U/S DATA STATION INVERT SECT 1027.000 2795.280 36 * N .013

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 4 IS A REACH U/S DATA STATION INVERT SECT 1050.650 2795.520 36 * Q3 5.000 Q4 .000 INVERT-3 INVERT-4 PHI 3 PHI 4 .000

ELEMENT NO 5 IS A REACH U/S DATA STATION INVERT SECT 1086.860 2795.880 36 * N .013

ELEMENT NO 6 IS A SYSTEM HEADWORKS U/S DATA STATION INVERT SECT 1086.860 2795.880 36 * W S ELEV .000

SKYE CANYON PARCEL 1.1														
BASIN ON2-D STORM DRAIN														
RCP FROM SUMP INLET TO EXISTING TRUNK LINE IN RACEL - PHASE 1 INTERIM														
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	HF	Super Elev	Critical Depth	Flow Top	Height/ Base Wt	Diag.-FT or I.D.	Prs/Pip
L/Elem	Ch Slope				SF Ave				SE Dpth	Froude N	Norm Dp	"N" X-Fall		Type Ch
1000.000	2794.470	3.444	2797.914	47.00	6.65	.69	2798.60	.00	2.23	.00	3.000	.000	.00	1 .0
21.719	.0300	-	-	-	-	.0049	.11	3.44	.00	1.33	.013	.00	.00	PIPE
1021.719	2795.122	3.000	2798.122	47.00	6.65	.69	2798.81	.00	2.23	.00	3.000	.000	.00	1 .0
5.281	.0300	-	-	-	-	.0046	.02	3.00	.00	1.33	.013	.00	.00	PIPE
1027.000	2795.280	2.834	2798.114	47.00	6.80	.72	2798.83	.00	2.23	1.37	3.000	.000	.00	1 .0
JUNCT STR	.0000	-	-	-	-	.0041	.00	2.83	-.53	-.013	.00	.00	.00	PIPE
1027.000	2795.280	3.145	2798.425	42.00	5.94	.55	2798.97	.00	2.11	.00	3.000	.000	.00	1 .0
23.650	.0101	-	-	-	-	.0040	.09	3.14	.00	1.72	.013	.00	.00	PIPE
1050.650	2795.520	3.114	2798.634	42.00	5.94	.55	2799.18	.00	2.11	.00	3.000	.000	.00	1 .0
19.149	.0099	-	-	-	-	.0039	.08	3.11	.00	1.73	.013	.00	.00	PIPE
1069.799	2795.710	3.000	2798.710	42.00	5.94	.55	2799.26	.00	2.11	.00	3.000	.000	.00	1 .0
17.061	.0099	-	-	-	-	.0037	.06	3.00	.00	1.73	.013	.00	.00	PIPE
1086.860	2795.880	2.877	2798.757	42.00	6.03	.56	2799.32	.00	2.11	1.19	3.000	.000	.00	1 .0

SKYE CANYON PARCEL 1.1

BASIN ON2-D STORM DRAIN

RCP FROM SUMP INLET TO EXISTING TRUNK LINE IN RACEL - PHASE 1 INTERIM

1000.00	.I													
1001.77	.													
1003.55	.													
1005.32	.													
1007.09	.													
1008.86	.													
1010.64	.													
1012.41	.													

[illegible]

N O T E S

1. GLOSSARY
I = INVERT ELEVATION
C = CRITICAL DEPTH
W = WATER SURFACE ELEVATION
S = SUPER-ELEVATION
H = HEIGHT OF CHANNEL
E = ENERGY GRADE LINE
X = CURVES CROSSING OVER
B = BRIDGE ENTRANCE OR EXIT
Y = WALL ENTRANCE OR EXIT

2. STATIONS FOR POINTS AT A JUNCTION

Page 3

APPENDIX C

Reference Material

Technical Drainage Study for Skye Canyon Phase 1 Infrastructure, by SHG

Approval Letter

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM		DATE: January 7, 2015
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 1 Infrastructure - Update	
Cross Streets:	NEC of Grand Teton Blvd. & Hualapai Way	
File Number:	F:\Depot\DSMemos\DS4661E.doc	
Parcel Number:	125-07-301-001 & 125-07-301-002; 125-07-401-001 & 125-07-401-002	
Zoning Action:	TMP-53058	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES X	NO
		COPIES TO: Slater Hanifan Group K A G Development South, LLC / 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	3/19/2014	4/17/2014	Not Approved	\$400.00	351277: \$400
2 nd Submittal	5/14/2014	6/12/2014	Conditionally Approved	\$400.00	356797: \$400
Supplemental	8/25/2014	9/15/2014	Approved	***	***
3 rd Submittal	11/25/2014	12/10/2014	Approved	\$100.00	377769: \$100
4 th Submittal	12/10/2014	1/7/2015	See Comments Below	\$100.00	379537: \$100
			TOTAL FEES (LDDRS):	\$1,000.00	***

REMARKS:

4th Submittal: Update for revision of storm drains alignment in Grand Canyon Drive, Eagle Canyon Avenue, Mountain Landing Street and Hualapai Way

3rd Submittal: Update for Stockpile Permit Only

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

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

The following comments are repeated until they are complete:

1. The Kyle Canyon Master Drainage Study is proposing to revise the hydrology and facilities identified in the Clark County Regional Flood Control District's (CCRFCD) 2008 Las Vegas Valley Flood Control Master Plan Update. A Master Plan Amendment (MPA) must be submitted to the City of Las Vegas for approval. The City of Las Vegas will coordinate the MPA submittal to CCRFCD for approval. The Master Developer will be responsible for preparing all submittals needed for CCRFCD along with any and all presentations. The MPU must be approved by the City of Las Vegas City Council prior to the final approval of the Master Drainage Study.

2. For all culvert entrances or exits located outside of the Public Right-of-Way or dedicated "Public Drainage Easement to be Privately Maintained" 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. Also, show the easement on the grading plan.
3. In an overview perspective for the proposed *Phase 1 Infrastructures, Eagle Canyon Avenue (formerly Racel Street)* with its regional storm drain act as the sole perpetuation pathway for offsite flows during a major storm event in the interim condition (reference Sheets GR-01 & GR-02).

In a worst case scenario that the upstream culvert entrance is completely clogged, ie, the 100-year flow will be conveyed on the *Eagle Canyon Avenue* surface. Provide a hydraulic calculation for the worst case 100-year water surface in *Eagle Canyon Avenue*. The finish floor elevation of future houses in the PODs adjacent to *Eagle Canyon* shall be above the corresponding water surface or flood wall for protection to that effect. This shall serve as a guideline in the future technical drainage studies for the PODs.

4. Provide a detail grading around the culvert entrance at Eagle Canyon Avenue Storm Drain and make sure freeboard requirements are satisfied.
5. All drainage facilities proposed in this *Phase 1 Infrastructure Study* are considered interim facilities and must be maintained by the master developer until the facilities are formally accepted by the *City of Las Vegas*.
6. Structural plans for the storm drain improvements must be submitted for review. 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 *Flood Control* prior to final acceptance of the technical drainage study.
7. The project proposes to build a temporary drainage facility on the west side of *Hualapai Way*. Prior to final plan approval the developer must complete a ***Maintenance and Liability Agreement*** for the interim drainage improvements (off-site berms or channels) and post a minimum maintenance bond of \$50,000 or 50-percent of the construction cost for the improvements, whichever is greater. The engineer must submit an estimate of the quantities for constructing the facility and an exhibit that adequately shows the location and limits of the drainage facility to *Flood Control* for approval. Once the drainage study is conditionally approved, the engineer/developer should contact the *City's Land Development Section* (229-6371) to begin the agreement process.

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

8. **Sheet SD-09:** Review and revise an appeared low point "61.95TC" in *Grand Canyon Drive* at the intersection with *Grand Teton Drive*.
9. Technical drainage studies are required for each of the POD's. The technical drainage studies for the POD's may not be conditional approved until the final approval of the pertinent infrastructure drainage study is obtained.
10. Building permits for the homes within the individual POD's will not be issued until construction of the street and flood control infrastructure around the POD is substantially complete or interim protection is provided per the approved technical drainage study.

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

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

END OF REMARKS

ays

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

Storm Drain Material

**UPDATE TO THE
TECHNICAL DRAINAGE STUDY
Skye Canyon – Phase 1 Infrastructure**
City of Las Vegas, Nevada

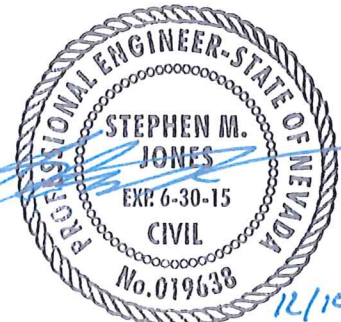
Job No.: OLY1401.001
Date: December 2014

Prepared By:

Slater Hanifan Group, Inc.
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



Steve Jones, P.E.
NV Professional Engineer No. 19638

Assisted By: Erick Mata, E.I.

[illegible]

KLGL
UTILIZED
@ THIS *
LOCATION

R-MainD.WSQ

R-MAIND. OUT

DATE: 11/26/2014
TIME: 11:41

PAGE 1

F0515P

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD	SECT	CHN	NO OF	AVE	PIER	HEIGHT	BASE	ZL	INVERT	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CODE	NO	TYPE	PIERS	WIDTH	WIDTH	DIAMETER	WIDTH		DROP										
CD	1	3	0	0.00	0.00	5.00	8.00	0.00	0.00										
CD	2	3	0	0.00	0.00	6.00	8.00	0.00	0.00										
CD	3	3	0	0.00	0.00	8.00	8.00	0.00	0.00										
CD	4	6	0	0.00	0.00														
CD	5	6	0	0.00	0.00														
CD	6	3	0	0.00	0.00	8.00	10.00	0.00	0.00										
CD	18	4				1.50													
CD	24	4				2.00													
CD	30	4				2.50													
CD	36	4				3.00													
CD	42	4				3.50													
CD	48	4				4.00													
CD	54	4				4.50													
CD	60	4				5.00													
CD	66	4				5.50													
CD	72	4				6.00													

PAGE NO 3

F 0 5 1 5 P

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SKYE CANYON INFRASTRUCTURE - PHASE 1 UPDATE

HEADING LINE NO 2 IS -

EAGLE CANYON AVENUE - TRUNK STORM DRAIN (DEVELOPED CONDITION MODEL)

HEADING LINE NO 3 IS -

PAGE NO 2

F 0 5 1 5 P

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	1 IS A SYSTEM OUTLET	STATION	INVERT	SECT	W.S. ELEV
	U/S DATA	1000.00	2725.86	1	2730.50
ELEMENT NO 2	IS A REACH	STATION	INVERT	SECT	RADIUS
	U/S DATA	1310.00	2736.19	1	0.00
ELEMENT NO 3	IS A TRANSITION	STATION	INVERT	SECT	ANGLE
	U/S DATA	1330.00	2736.86	3	0.00
ELEMENT NO 4	IS A JUNCTION	STATION	INVERT	SECT	PT
	U/S DATA	1380.00	2738.46	3	0.00
ELEMENT NO 5	IS A JUNCTION	STATION	INVERT	SECT	PT
	U/S DATA	1390.00	2738.56	2	0.00
ELEMENT NO 6	IS A REACH	STATION	INVERT	SECT	PT
	U/S DATA	1411.00	2738.75	2	0.00
ELEMENT NO 7	IS A REACH	STATION	INVERT	SECT	PT
	U/S DATA	1426.00	2738.87	2	0.00
ELEMENT NO 8	IS A REACH	STATION	INVERT	SECT	PT
	U/S DATA	1472.00	2739.30	2	0.00
ELEMENT NO 9	IS A REACH	STATION	INVERT	SECT	PT
	U/S DATA	1556.00	2740.10	2	0.00
ELEMENT NO 10	IS A JUNCTION	STATION	INVERT	SECT	PT
	U/S DATA				

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	11 IS A REACH U/S DATA	STATION	INVERT	SECT	N	0.013	11.0	0.0	45.00	0.00#	0.00#	PAGE NO
ELEMENT NO 11	IS A REACH U/S DATA	1862.00	2754.43	72	N	0.013						
ELEMENT NO 12	IS A REACH U/S DATA	2059.00	2764.04	72	N	0.013						
ELEMENT NO 13	IS A REACH U/S DATA	2225.00	2770.23	72	N	0.013						
ELEMENT NO 14	IS A REACH U/S DATA	2285.00	2771.73	72	N	0.013						
ELEMENT NO 15	IS A REACH U/S DATA	2307.00	2776.04	72	N	0.013						
ELEMENT NO 16	IS A JUNCTION U/S DATA	2507.00	2776.04	72	N	0.013						
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING												
ELEMENT NO 17	IS A REACH U/S DATA	2586.00	2778.02	72	N	0.013						
ELEMENT NO 18	IS A REACH U/S DATA	2825.00	2783.26	72	N	0.013						
ELEMENT NO 19	IS A REACH U/S DATA	2988.00	2793.86	72	N	0.013						
ELEMENT NO 20	IS A REACH U/S DATA	3193.00	2805.14	72	N	0.013						
ELEMENT NO 21	IS A REACH U/S DATA	3382.00	2813.65	72	N	0.013						
ELEMENT NO 22	IS A REACH U/S DATA	3469.00	2816.10	72	N	0.013						

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	23 IS A REACH U/S DATA	STATION	INVERT	SECT	N	0.013						
ELEMENT NO 23	IS A REACH U/S DATA	3570.00	2818.50	72	N	0.013						
ELEMENT NO 24	IS A REACH U/S DATA	3751.00	2823.35	72	N	0.013						
ELEMENT NO 25	IS A REACH U/S DATA	4038.00	2830.52	72	N	0.013						
ELEMENT NO 26	IS A REACH U/S DATA	4088.00	2831.58	72	N	0.013						
ELEMENT NO 27	IS A TRANSITION U/S DATA	4138.00	2835.60	6	N	0.013						
ELEMENT NO 28	IS A REACH U/S DATA	4190.00	2840.31	6	N	0.013						

ELEMENT NO 29 IS A SYSTEM HEADWORKS
 U/S DATA STATION INVERT SECT
 4190.00 2840.31 6
 NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING
 ** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HOWKDS, W.S.ELEV = INV + DC
 LICENSEE: SLATER HANIFAN GROUP F0515P
 WATER SURFACE PROFILE LISTING
 SKYE CANYON INFRASTRUCTURE - PHASE 1 UPDATE
 EAGLE CANYON AVENUE - TRUNK STORM DRAIN (DEVELOPED CONDITION MODEL)

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W S ELEV
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PAGE 1

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/DIA	BASE/ID NO.	ZL	NO. AVBPR PIER
L/ELEM	SO					SF AVE	HF					ZR	
1000.00	2725.86	3.273	2729.133	783.0	29.91	13.888	2743.021	0.00	5.000	5.00	8.00	0.00	0 0.00
64.24	0.03332					.031016	1.99					3.197	0.00
1064.24	2728.00	3.292	2731.292	783.0	29.73	13.728	2745.020	0.00	5.000	5.00	8.00	0.00	0 0.00
245.76	0.03332					.028899	7.10					3.197	0.00
1310.00	2736.19	3.452	2739.642	783.0	28.35	12.480	2752.122	0.00	5.000	5.00	8.00	0.00	0 0.00
TRANS STR	0.03350					.026827	0.54					0.00	0.00
1330.00	2736.86	3.471	2740.331	783.0	28.19	12.344	2752.675	0.00	6.677	8.00	8.00	0.00	0 0.00
JUNCT STR	0.03200					.027362	1.37					0.00	0.00
1380.00	2738.46	3.330	2741.790	760.0	28.53	12.640	2754.430	0.00	6.546	8.00	8.00	0.00	0 0.00
JUNCT STR	0.01000					.030146	0.30					0.00	0.00
1390.00	2738.56	3.104	2741.664	739.0	29.76	13.752	2755.416	0.00	6.000	6.00	8.00	0.00	0 0.00
21.00	0.00905					.033120	0.70					4.991	0.00
1411.00	2738.75	3.042	2741.792	739.0	30.37	14.321	2756.113	0.00	6.000	6.00	8.00	0.00	0 0.00
15.00	0.00800					.034783	0.52					5.235	0.00
1426.00	2738.87	2.995	2741.865	739.0	30.84	14.769	2756.634	0.00	6.000	6.00	8.00	0.00	0 0.00
46.00	0.00935					.037994	1.75					4.929	0.00
1472.00	2739.30	2.858	2742.158	739.0	32.32	16.225	2758.383	0.00	6.000	6.00	8.00	0.00	0 0.00
42.44	0.00952					.043221	1.83					4.894	0.00
1514.44	2739.70	2.730	2742.434	739.0	33.84	17.785	2760.219	0.00	6.000	6.00	8.00	0.00	0 0.00
41.56	0.00952					.049260	2.05					4.894	0.00
1556.00	2740.10	2.603	2742.703	739.0	35.49	19.563	2762.266	0.00	6.000	6.00	8.00	0.00	0 0.00
JUNCT STR	0.02000					.048403	0.97					0.00	0.00

WATER SURFACE PROFILE LISTING
 SKYE CANYON INFRASTRUCTURE - PHASE 1 UPDATE
 EAGLE CANYON AVENUE - TRUNK STORM DRAIN (DEVELOPED CONDITION MODEL)

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/DIA	BASE/ID NO.	ZL	NO. AVBPR PIER
L/ELEM	SO					SF AVE	HF					ZR	
1576.00	2740.50	4.123	2744.623	728.0	35.14	19.176	2763.799	0.00	5.922	6.00	0.00	0.00	0 0.00
110.82	0.04871					.043351	4.80					3.982	0.00
1686.82	2745.90	4.189	2750.087	728.0	34.53	18.518	2768.605	0.00	5.922	6.00	0.00	0.00	0 0.00
175.18	0.04871					.040181	7.04					3.982	0.00
1862.00	2754.43	4.379	2758.809	728.0	32.93	16.834	2775.643	0.00	5.922	6.00	0.00	0.00	0 0.00

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD. EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVSPPR
46.54	0.04878													
1908.54	2756.70	4.458	2761.159	728.0	32.31	16.214	2777.373	0.00	5.922	6.00	0.00	0.00	0	0.00
88.13	0.04878													
1996.67	2761.00	4.673	2765.672	728.0	30.81	14.741	2780.413	0.00	5.922	6.00	0.00	0.00	0	0.00
62.33	0.04878													
2059.00	2764.04	4.913	2768.953	728.0	29.38	13.400	2782.353	0.00	5.922	6.00	0.00	0.00	0	0.00
91.15	0.03729													
2150.15	2767.44	5.139	2772.578	728.0	28.24	12.380	2784.958	0.00	5.922	6.00	0.00	0.00	0	0.00
74.85	0.03729													
2225.00	2770.23	5.468	2775.698	728.0	26.92	11.255	2786.953	0.00	5.922	6.00	0.00	0.00	0	0.00
60.00	0.02500													
2285.00	2771.73	5.442	2777.172	728.0	27.01	11.331	2788.503	0.00	5.922	6.00	0.00	0.00	0	0.00
10.44	0.01941													
2295.44	2771.93	5.407	2777.340	728.0	27.13	11.432	2788.772	0.00	5.922	6.00	0.00	0.00	0	0.00
110.11	0.01941													
2405.55	2774.07	5.082	2779.163	728.0	28.46	12.576	2791.739	0.00	5.922	6.00	0.00	0.00	0	0.00
101.45	0.01941													

LICENSEE: SLATER HANIFAN GROUP
 101.45 0.01941
 WATER SURFACE PROFILE LISTING
 SKYE CANYON INFRASTRUCTURE - PHASE 1 UPDATE
 EAGLE CANYON AVENUE - TRUNK STORM DRAIN (DEVELOPED CONDITION MODEL)

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD. EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVSPPR
2507.00	2776.04	4.830	2780.870	728.0	29.85	13.833	2794.703	0.00	5.922	6.00	0.00	0.00	0	0.00
JUNCT STR	0.00000													
2507.00	2776.04	4.467	2780.507	704.0	31.19	15.102	2795.609	0.00	5.911	6.00	0.00	0.00	0	0.00
79.00	0.02506													
2586.00	2778.02	4.344	2782.364	704.0	32.12	16.017	2798.381	0.00	5.911	6.00	0.00	0.00	0	0.00
14.95	0.02192													
2600.95	2778.35	4.312	2782.660	704.0	32.36	16.265	2798.925	0.00	5.911	6.00	0.00	0.00	0	0.00
84.16	0.02192													
2685.11	2780.19	4.127	2784.320	704.0	33.94	17.891	2802.211	0.00	5.911	6.00	0.00	0.00	0	0.00
73.88	0.02192													
2758.99	2781.81	3.956	2785.769	704.0	35.60	19.680	2805.449	0.00	5.911	6.00	0.00	0.00	0	0.00
66.01	0.02192													
2825.00	2783.26	3.796	2787.056	704.0	37.34	21.647	2808.703	0.00	5.911	6.00	0.00	0.00	0	0.00
73.68	0.06503													
2898.68	2788.05	3.887	2791.938	704.0	36.32	20.486	2812.424	0.00	5.911	6.00	0.00	0.00	0	0.00
89.32	0.06503													
2988.00	2793.86	4.054	2797.914	704.0	34.63	18.624	2816.538	0.00	5.911	6.00	0.00	0.00	0	0.00
50.94	0.05502													
3038.94	2796.66	4.126	2800.789	704.0	33.95	17.898	2818.687	0.00	5.911	6.00	0.00	0.00	0	0.00

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90.41 0.05502 .039073 3.53 3.729 0.00
 3129.35 2801.64 4.311 2805.949 704.0 32.37 16.271 2822.220 0.00 5.911 6.00 0.00 0 0.00
 63.65 0.05502 .034941 2.22 3.729 0.00
 F0515P
 WATER SURFACE PROFILE LISTING
 SKYE CANYON INFRASTRUCTURE - PHASE 1 UPDATE
 EAGLE CANYON AVENUE - TRUNK STORM DRAIN (DEVELOPED CONDITION MODEL)

LICENSEE: SLATER HANIFAN GROUP

PAGE 4

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF		NORM DEPTH	ZR				
3193.00	2805.14	4.512	2809.652	704.0	30.87	14.793	2824.445	0.00	5.911	6.00	0.00	0.00	0	0.00
12.65	0.04503					.032802	0.41		3.998					
3205.65	2805.71	4.539	2810.249	704.0	30.68	14.613	2824.862	0.00	5.911	6.00	0.00	0.00	0	0.00
78.66	0.04503					.030974	2.44		3.998					
3284.31	2809.25	4.762	2814.014	704.0	29.25	13.284	2827.298	0.00	5.911	6.00	0.00	0.00	0	0.00
56.27	0.04503					.028041	1.58		3.998					
3340.58	2811.78	5.014	2816.799	704.0	27.89	12.078	2828.877	0.00	5.911	6.00	0.00	0.00	0	0.00
41.42	0.04503					.025708	1.06		3.998					
3382.00	2813.65	5.312	2818.962	704.0	26.59	10.979	2829.941	0.00	5.911	6.00	0.00	0.00	0	0.00
87.00	0.02816					.024383	2.12		4.867					
3469.00	2816.10	5.486	2821.586	704.0	25.98	10.478	2832.064	0.00	5.911	6.00	0.00	0.00	0	0.00
101.00	0.02376					.024089	2.43		6.000					
3570.00	2818.50	5.465	2823.965	704.0	26.04	10.532	2834.497	0.00	5.911	6.00	0.00	0.00	0	0.00
181.00	0.02680					.024588	4.45		5.006					
3751.00	2823.35	5.911	2829.261	704.0	24.98	9.686	2838.947	0.00	5.911	6.00	0.00	0.00	0	0.00
287.00	0.02498					.024986	7.17		5.258					
4038.00	2830.52	5.897	2836.417	704.0	24.99	9.700	2846.117	0.00	5.911	6.00	0.00	0.00	0	0.00
4038.00	2830.52	5.911	2836.431	704.0	24.98	9.686	2846.117	0.00	5.911	6.00	0.00	0.00	0	0.00
6.00	0.02120					.026195	0.16		6.000					
4044.00	2830.65	6.000	2836.647	704.0	24.90	9.627	2846.274	0.00	5.911	6.00	0.00	0.00	0	0.00
44.00	0.02120					.027481	1.21		6.000					
4088.00	2831.58	6.283	2837.863	704.0	24.90	9.627	2847.490	0.00	5.911	6.00	0.00	0.00	0	0.00P

WATER SURFACE PROFILE LISTING

SKYE CANYON INFRASTRUCTURE - PHASE 1 UPDATE

EAGLE CANYON AVENUE - TRUNK STORM DRAIN (DEVELOPED CONDITION MODEL)

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF		NORM DEPTH	ZR				
TRANS STR	0.08040					.014849	0.74							
4138.00	2835.60	12.264	2847.864	704.0	8.83	1.210	2849.074	0.00	5.361	8.00	10.00	0.00	0	0.00
48.17	0.09058					.002065	0.10		1.731					
4186.17	2839.96	8.000	2847.963	704.0	8.83	1.210	2849.173	0.00	5.361	8.00	10.00	0.00	0	0.00
2.83	0.09058					.001416	0.00		1.731					

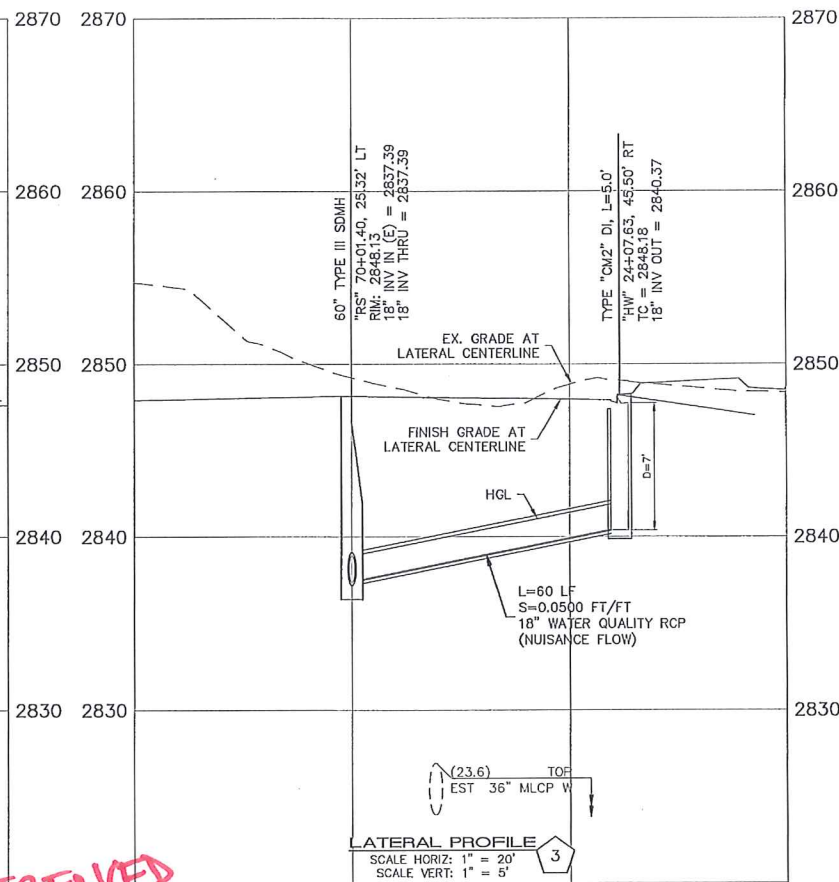
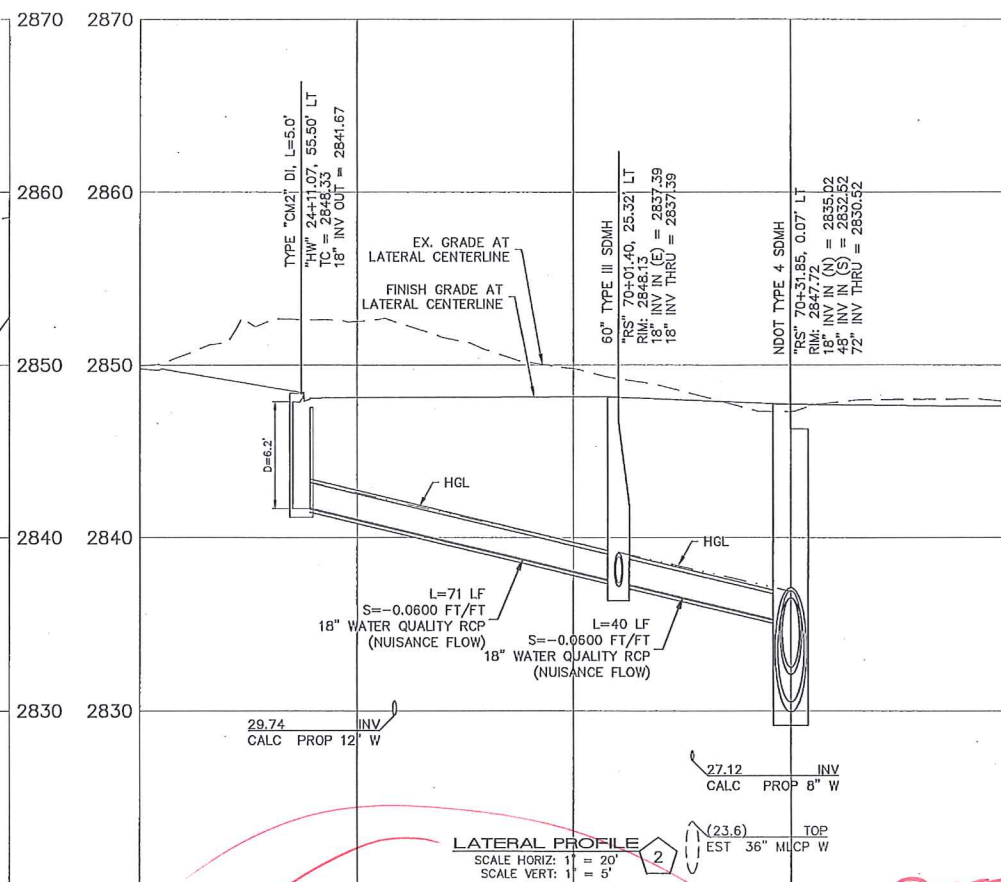
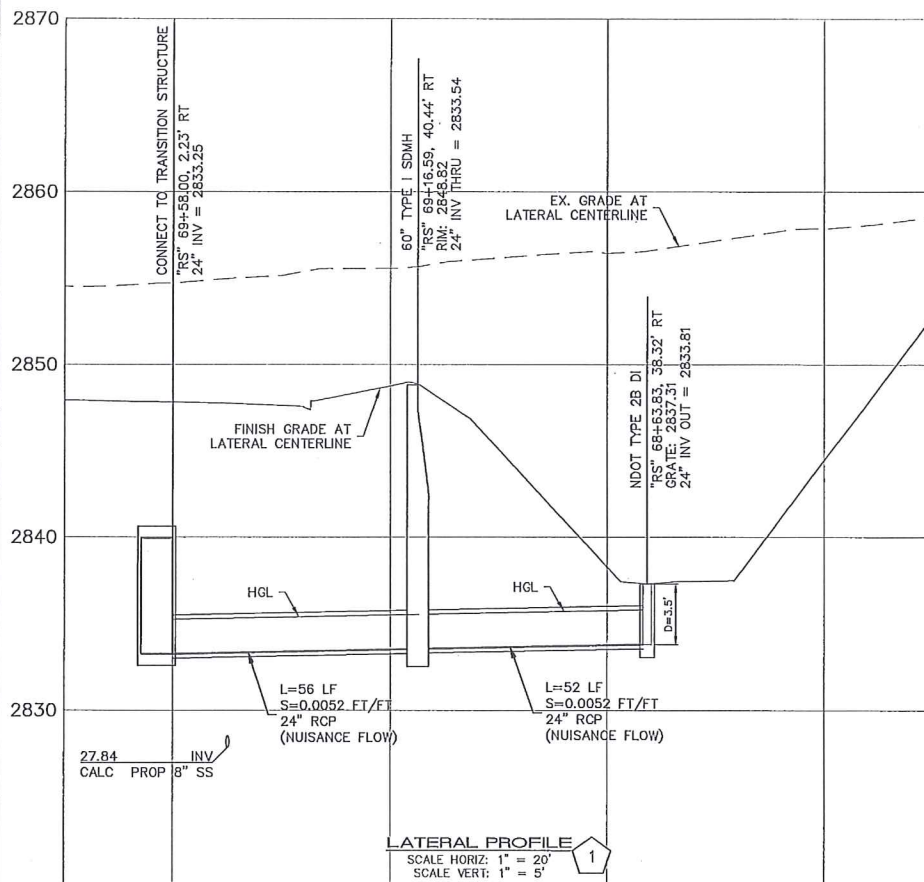
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4189.00	2840.22	7.627	2847.846	704.0	9.23	1.323	2849.169	0.00	5.361	8.00	10.00	0.00	0	0.00
1.00	0.09058					.001530	0.00		1.731			0.00		
4190.00	2840.31	7.488	2847.798	704.0	9.40	1.373	2849.171	0.00	5.361	8.00	10.00	0.00	0	0.00

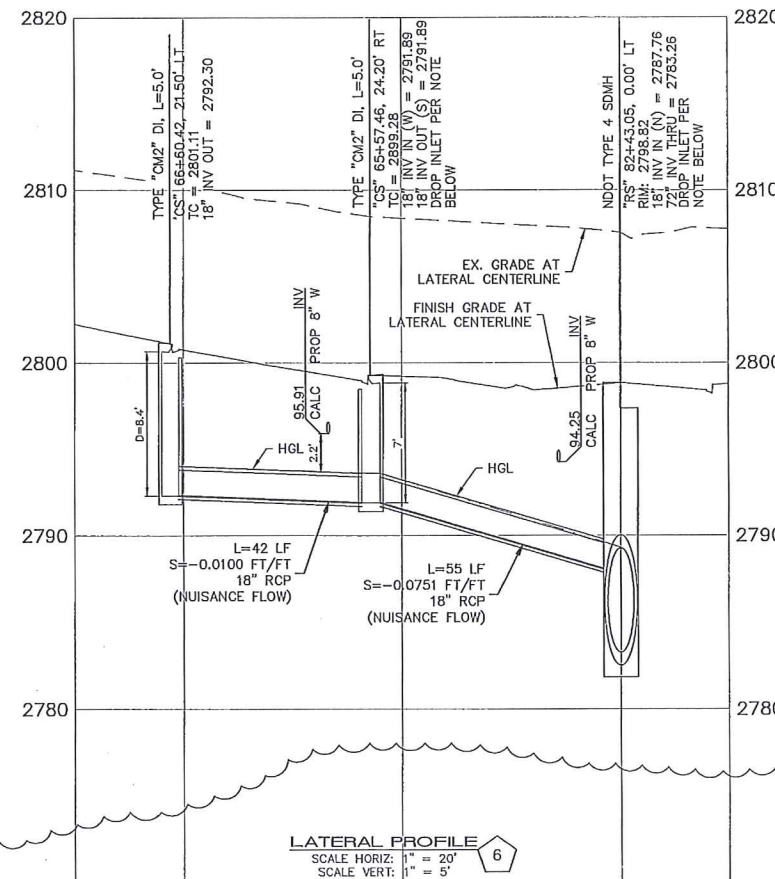
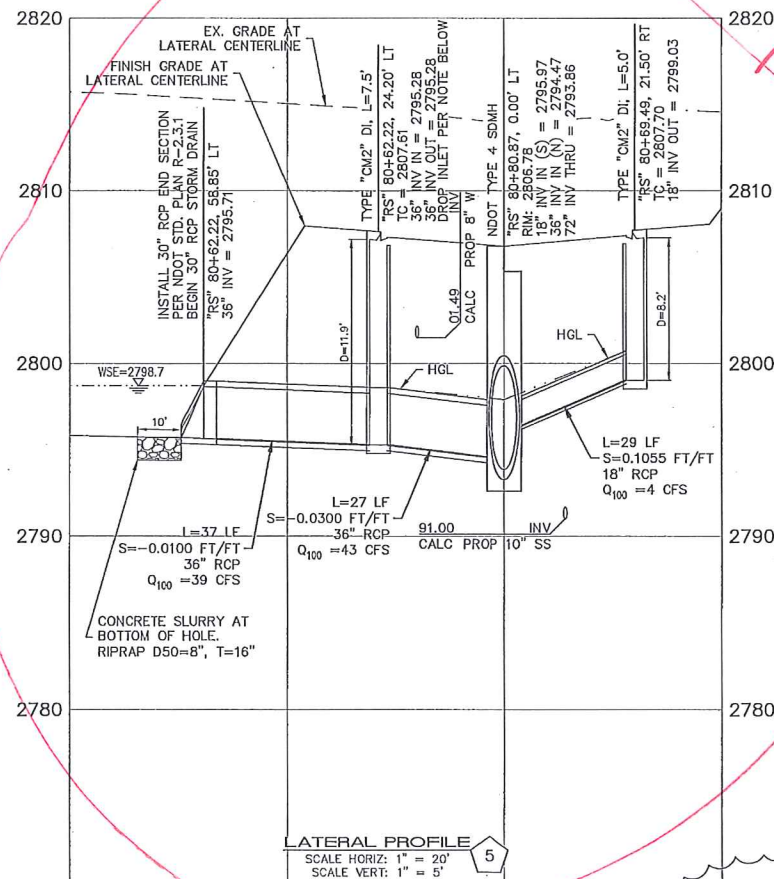
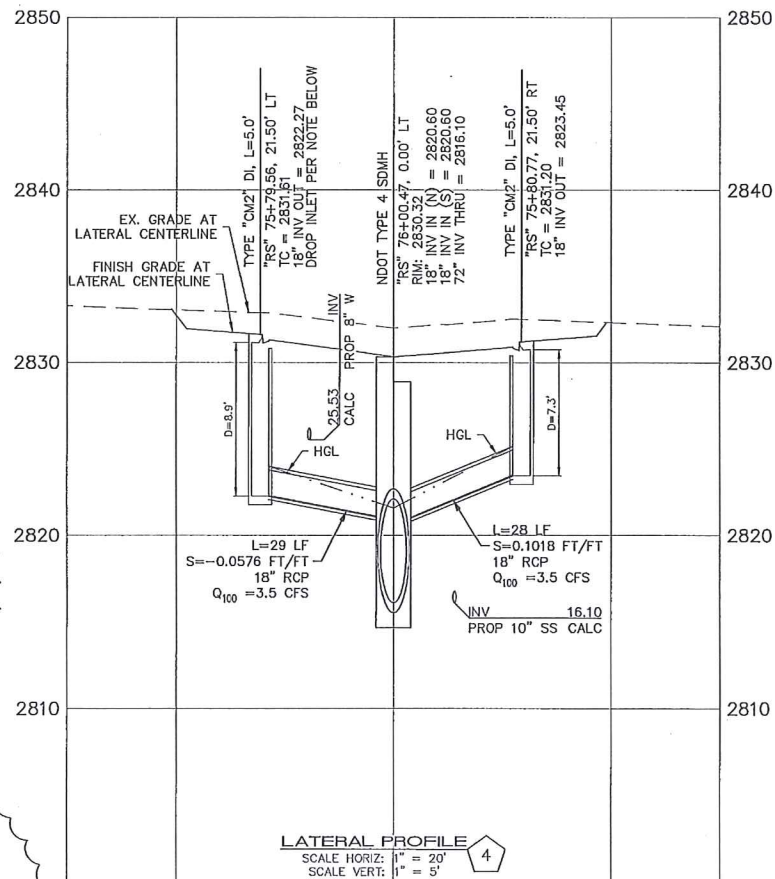
SKYE CANYON INFRASTRUCTURE - PHASE 1 UPDATE
EAGLE CANYON AVENUE - TRUNK STORM DRAIN (DEVELOPED CONDITION MODEL)

1000.00	I W X	E												R
1032.89	I W X	E												R
1065.77														
1098.66														
1131.55														
1164.43														
1197.32														
1230.21														
1263.09														
1295.98														
1328.87	I W X	CH												TX
1361.75	I W X	CH												JX
1394.64	I W X	CH												JX
1427.53	I W X	CH												R
1460.41	I W X	CH												R
1493.30	I W X	CH												R
1526.19	I W X	CH												R
1559.07	I W X	CH												R
1591.96	I W X	CH												JX
1624.85	I W X	CH												R
1657.73	I W X	CH												R
1690.62	I W X	CH												
1723.51	I W X	CH												
1756.39	I W X	CH												
1789.28	I W X	CH												
1822.16	I W X	CH												
1855.05	I W X	CH												
1887.94	I W X	CH												
1920.82	I W X	CH												
1953.71	I W X	CH												
1986.60	I W X	CH												
2019.48	I W X	CH												
2052.37	I W X	CH												
2085.26	I W X	CH												
2118.14	I W X	CH												
2151.03	I W X	CH												
2183.92	I W X	CH												
2216.80	I W X	CH												
2249.69	I W X	CH												
2282.58	I W X	CH												
2315.46	I W X	CH												
2348.35	I W X	CH												
2381.24	I W X	CH												
2414.12	I W X	CH												
2447.01	I W X	CH												
2479.90	I W X	CH												JX
2512.78	I W X	CH												R
2545.67	I W X	CH												R
2578.56	I W X	CH												R
2611.44	I W X	CH												R
2644.33	I W X	CH												R
2677.22	I W X	CH												R
2710.10	I W X	CH												R
2742.99	I W X	CH												R
2775.88	I W X	CH												R
2808.76	I W X	CH												R
2841.65	I W X	CH												R
2874.54	I W X	CH												R
2907.42	I W X	CH												R
2940.31	I W X	CH												R
2973.20	I W X	CH												R
3006.08	I W X	CH												R
3038.97	I W X	CH												R
3071.86	I W X	CH												R
3104.74	I W X	CH												R
3137.63	I W X	CH												R
3170.52	I W X	CH												R
3203.40	I W X	CH												R
3236.29	I W X	CH												R

J:\2014\100 Sky Canyon\Drawings\SD-07-12.dwg, 12/19/14, 12:58 PM, snc



REFERENCED



DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE:
CAST-IN-PLACE MONOLITHIC FOUR WITH WATERSTOP BETWEEN SLAB AND WALLS, BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER DRAIN, OR FLAT STRIP (WHILE, GREENSTREAK PLASING PRODUCTS OR APPROVED EQUAL).

APPROVED FOR CONSTRUCTION

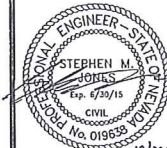
LWVD ENGINEERING SERVICES MANAGER
PROJECT NO. 122933

DATE

NINETY-FIVE MANAGEMENT LLC

SKYE CANYON PHASE 1
EAGLE CANYON AVENUE, SKYE PARK DRIVE & MOUNTAIN LANDING STREET
STORM DRAIN LATERAL PROFILES

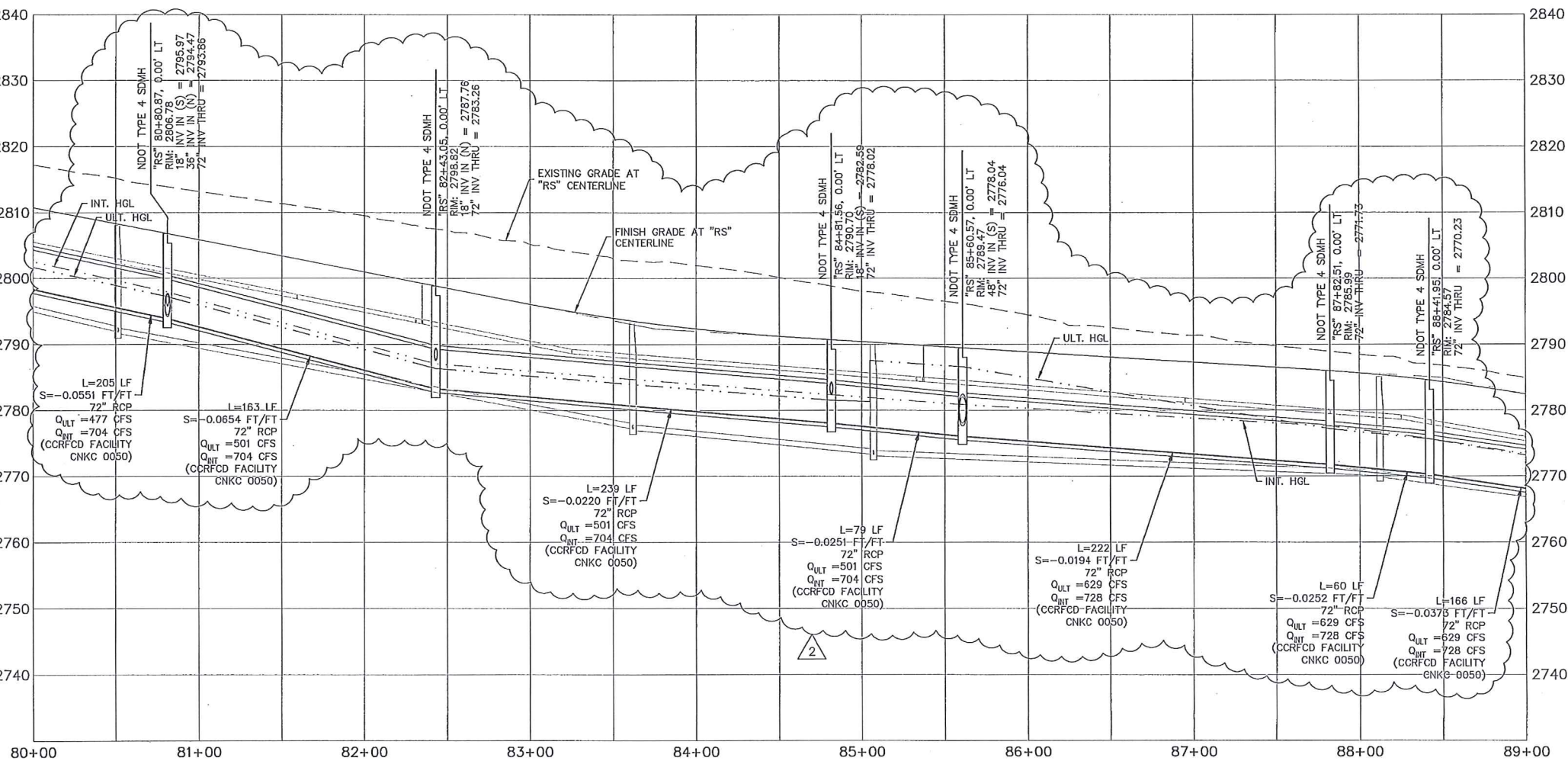
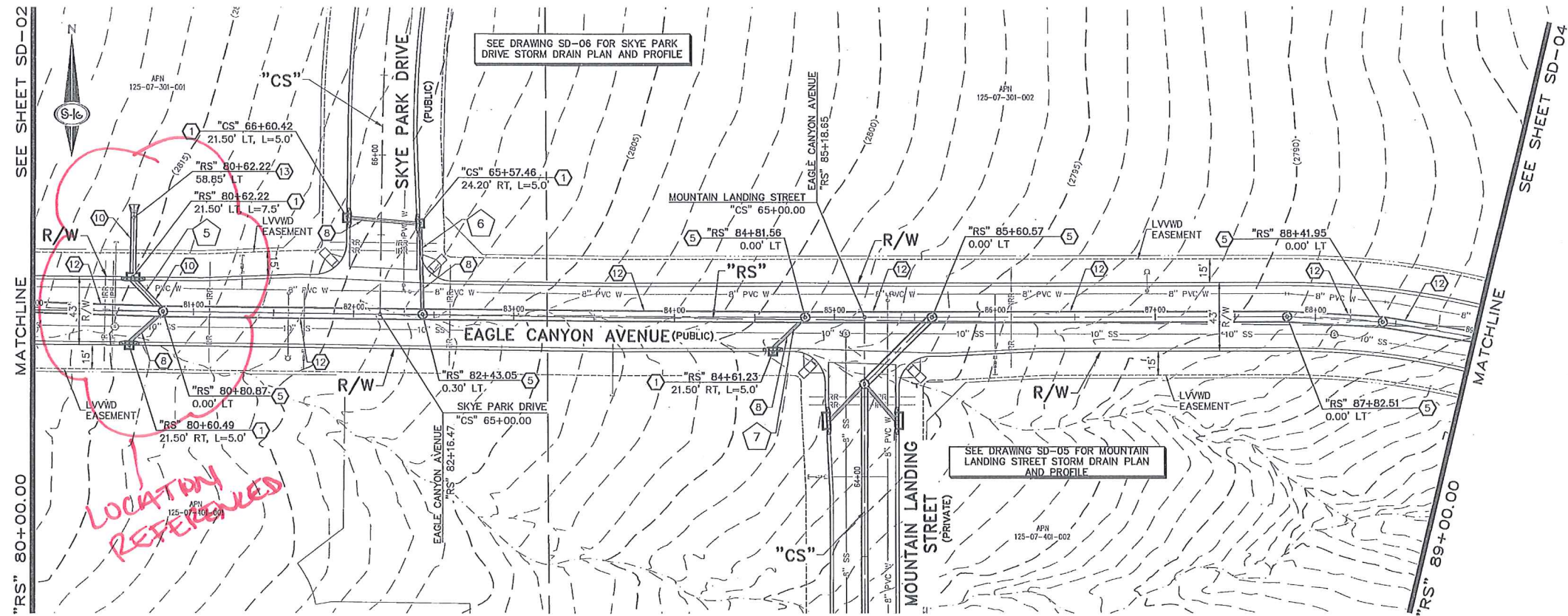
DATE: 9/17/14
DRAFTER: SPC
DESIGNER: DAM
CHECKED: JSR
PROJECT NO.
OLY1401-001



SD-07

SHEET 25 OF 50
DWG NO. 10716296-RC
HANSEN NO. 54673

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



- ### STORM DRAIN NOTES
1. CONSTRUCT TYPE "CM2" DROP INLET (USDCCA STD. DWG. NO. 412.1)
 2. CONSTRUCT NDOT TYPE 2B DROP INLET (NDOT STD. PLAN R-4.2.2)
 3. CONSTRUCT 60" TYPE I MANHOLE (USDCCA STD. DWG. NO. 403.1)
 4. CONSTRUCT 60" TYPE III MANHOLE (USDCCA STD. DWG. NO. 406.1)
 5. CONSTRUCT NDOT TYPE 4 MANHOLE (NDOT STD. PLAN R-4.3.2)
 6. CONSTRUCT RCB ACCESS MANHOLE (TYPE I OR IA MANHOLE ASSEMBLY PER USDCCA STD. DWG. NO. 403 OR 404. USE OF TYPE I OR IA SHALL BE DETERMINED BASED ON FINAL COVER REQUIRED)
 7. INSTALL 48" RCP (USDCCA STD. DWG. NO. 503.2)
 8. INSTALL 18" RCP (USDCCA STD. DWG. NO. 503.2)
 9. INSTALL 24" RCP (USDCCA STD. DWG. NO. 503.2)
 10. INSTALL 36" RCP (USDCCA STD. DWG. NO. 503.2)
 11. INSTALL 42" RCP (USDCCA STD. DWG. NO. 503.2)
 12. INSTALL 72" RCP (USDCCA STD. DWG. NO. 503.2) WITH 1" SACRIFICIAL CONCRETE (INSIDE DIAMETER 2" CONCRETE OVER STEEL)
 13. INSTALL 36" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
 14. INSTALL 42" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
 15. CONSTRUCT PRECAST 8' X 6' RCB (NDOT STD. PLAN B-20.1.8) WITH 1" SACRIFICIAL CONCRETE
 16. CONSTRUCT PRECAST 10' X 8' RCB (NDOT STD. PLAN B-20.1.2) WITH 1" SACRIFICIAL CONCRETE
 17. CONSTRUCT JUNCTION STRUCTURE (SEE STRUCTURAL DETAILS)
 18. CONSTRUCT TRANSITION STRUCTURE (SEE STRUCTURAL DETAILS)
 19. CONSTRUCT NDOT TYPE II HEADWALL (NDOT STD. PLAN B-20.1.5 & B-20.1.5.1)

- ### 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.

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 BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

LEGEND

1 STORM DRAIN LATERAL # (SEE SHEETS SD-07 THRU SD-09)

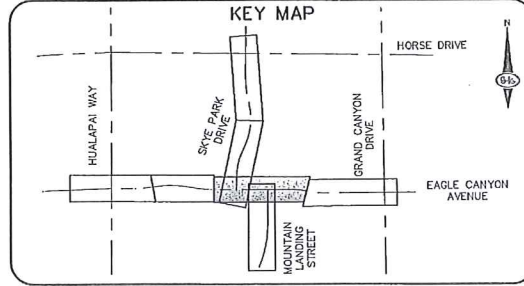
FLOOD ZONE

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (OUTSIDE THE 500-YEAR FLOOD PLAIN) ON THE FLOOD INSURANCE RATE MAP (FIRM) PANELS: 32003C1735E, 32003C1745E, 32003C1752E, ALL DATED SEPTEMBER 27, 2002

APPROVED FOR CONSTRUCTION

LWVD ENGINEERING SERVICES MANAGER DATE

PROJECT NO. 122933



40 0 40 80
SCALE FEET

Call before you Dig
1-800-227-2929

FAST
Call before you Dig
Underground
1-702-422-5300

Call before you Dig
1-800-227-2929

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #16, LAS VEGAS, NV 89149
PHONE (702) 284-5300 FAX (702) 284-5339

NINETY-FIVE MANAGEMENT LLC

SKYE CANYON PHASE 1
EAGLE CANYON AVENUE, SKYE PARK DRIVE & MOUNTAIN LANDING STREET
STORM DRAIN PLAN AND PROFILE - "RS" 80+00.00 TO "RS" 89+00.00

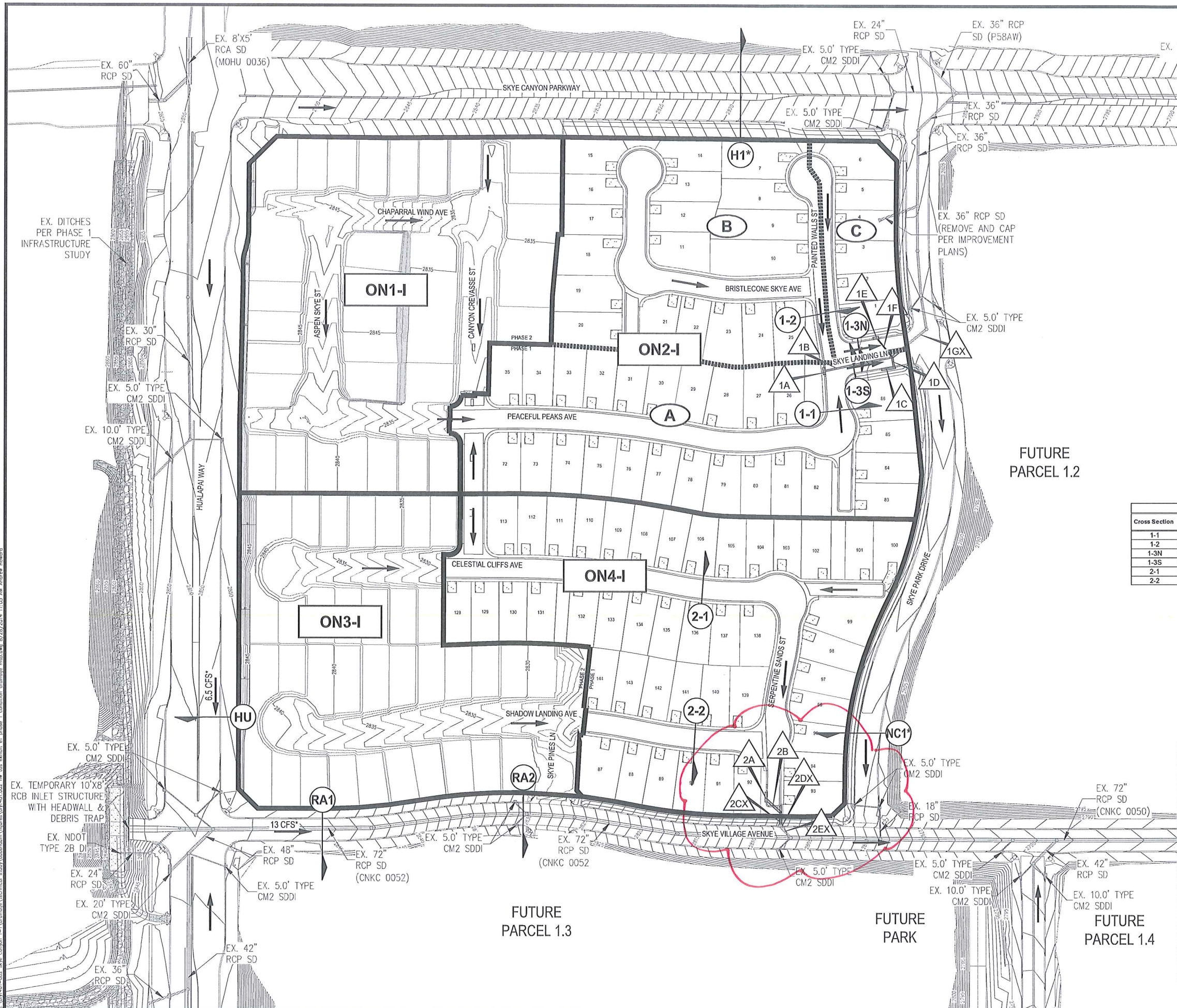
DATE: 9/17/14
DRAFTER: SPC
DESIGNER: DAM
CHECKED: JSR
PROJECT NO. OLY1401-001

SD-03
SHEET 21 OF 50
DWG NO. 107V6296-PC
HANSEN NO. 54673

APPENDIX D

Improvement Plans

1:\projects\401-002 Sky Canyon\1-1\drainage\technical\skc\skc_001.dwg 8/28/2014 11:05 AM Andrew Howard





MATCHLINE - SEE SHEET G-2

WALLS ADJACENT TO COMMON LOTS

SCREEN WALLS ADJACENT TO COMMON LOTS SHALL END NO CLOSER THAN 20' TO BACK OF CURB. RETAINING WALLS SHALL END NO CLOSER THAN 5' TO BACK OF CURB.

STORM DRAIN NOTE

ALL ONSITE STORM DRAIN AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY THE HOMEOWNERS ASSOCIATION

DRAINAGE EASEMENT NOTE

ALL DRAINAGE EASEMENTS AND COMMON LOTS ARE PUBLIC DRAIN
EASEMENTS PRIVATELY MAINTAINED BY THE HOA

STORMWATER RUNOFF MANAGEMENT

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

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THE AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATE AT, OR BE EXPOSED TO, OR BE AVAILABLE FOR CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT CONSTRUCTION PROJECT. SUCH MATERIALS SHALL 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 SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CITY OF NORTH LAS VEGAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.

GENERAL NOTES

1. SET PLAN AND PROFILE SHEETS FOR CENTERLINE AND BACK OF CURB CURVE DATA.
2. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2006, SECTION 2304.11.2.2.
3. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
4. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SHIPPI.
5. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS SHALL EXCEED THAT SHOWN ON GEOTECH REPORT.
6. SET DETAIL SHEETS FOR STREET SECTIONS AND DETAILS.
7. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE DONORDED FOR AND INSPECTED.
8. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL.
9. EXISTING UTILITY LOCATIONS SHOWN HEREON ARE TO BE MAINTAINED TO REMAIN TO EXISTING UTILITY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND ARE NOT TO BE MOVED OR DELETED. THE CONTRACTOR PRIOR TO CONSTRUCTION, CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITY STRUCTURES TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITY STRUCTURES. IF NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.
10. NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER THE TOP OF 24" INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONES.
11. ALL ELEVATIONS SHOWN, WITH EXCEPTION TO FAD, SHALL BE FLOOR, AND CURB CURVE ELEVATIONS, ARE THE VALUE SHOWN PLUS 2800'.

GRADING NOTES

- 1) INSTALL 30" ROLL CURB CURB PER CAUSAD NO. 217.51 OVER 6" TYPE II AGGREGATE BASE
- 2) INSTALL "L" TYPE CURB AND GUTTER PER CAUSAD #216
- 3) INSTALL 5" WIDE CONCRETE SIDEWALK (5" THICK OVER 6" AGGREGATE BASE) PER CAUSAD #234
- 4) INSTALL 8"-FT CROSS GUTTER PER DETAIL 29 ON SHEET D
- 5) INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
- 6) CONSTRUCT SIDEWALK RAMPUS USING ARMOR TILE TRUNKING FOR EDWARDS/BLACKS BOUNDARY CANS 16 ON SHEET D
- 7) CONSTRUCT 10' TRANSITION FROM "L" CURB TO MOD. ROLL CURB PER DETAIL 30 ON SHEET D-2
- 8) INSTALL 60" TYPE III STORM DRAIN MANHOLE PER CAUSAD #412
- 9) INSTALL 48" TYPE III STORM DRAIN MANHOLE PER CAUSAD #412
- 10) INSTALL CLASS III RCP 30" (PRIVATE) PIPE SIZE PER PLAN
- 11) INSTALL 10.0" TYPE "CM2" DROP INLET PER CAUSAD #412
- 12) INSTALL 12.5" TYPE "CM2" DROP INLET PER CAUSAD #412 AND #421
- 13) AND #421
- 14) AND #421
- 15) AND #421
- 16) INSTALL 25.0" TYPE "CM2" DROP INLET PER CAUSAD #412
- 17) AND #421
- 18) REMOVE EXISTING STORM DRAIN PIPE AT PROPOSED STRUT CURB 5 FEET BEHIND BACK OF CURB AND INSTALL CAP
- 19) REMOVE EXISTING STORM DRAIN AND INSTALL PROPOSED 30" TYPE III
- 20) INSTALL WROUGHT IRON FENCE W/PED. ACCESS AND GATE DETAIL 31 ON SHEET D-2
- 21) INSTALL SIDEWALK SIDEWALK PER CAUSAD #236
- 22) INSTALL RIPRAP D50=8", THK=16" W/ FILTER FABRIC
- 23) INSTALL REMOVABLE BOLLARD PER DETAIL 32 ON SHEET D
- 24) PERIMETER LANDSCAPE TO BE CONSTRUCTED BY MASTER LANDSCAPER
- 25) INSTALL WROUGHT IRON FENCE W/PED. ACCESS
- 26) INSTALL "A" TYPE ISLAND CURB PER CAUSAD NO. 219

SEE SHEET C-2 FOR ABBREVIATIONS AND QUANTITIES

PERIMETER SIDEWALKS

PERIMETER SIDEWALK DISPLAYED FOR CONCEPTUAL PURPOSES
MASTER DEVELOPER TO PROVIDE DESIGN AND CONNECTIONS FOR
ON-SITE PERIMETER ACCESS

PRIVATE STREETS NOTE

PRIVATE STREETS NOTE
ALL PRIVATE STREETS ARE P.U.E, PUBLIC SEWER EASEMENTS
AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED
BY THE HOA

DISCLAIMER NOTE

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

FLOOD ZONE

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C1735E, 32003C1745E & 32003C1750E DATED SEPTEMBER 27, 2002. A ZONE X (UNSHADED) IS DESCRIBED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD.

FLOOD CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH
APPROVED DRAINAGE STUDY DS4653 ON FILE AT CITY OF
VEGAS FOR THE SUBJECT PROJECT.

CORRY A. JEBER, P.E. 015875 DATE 12-3-14

BASIS OF BEARING

NORTH 89°11'30" WEST, BEING THE BEARING OF THE SOUTHWEST CORNER OF THE SOUTHWEST QUARTER (SW ¼) OF SECTION 15, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS PER PAGE 14 OF SURVEYS, ON FILE IN THE COUNTY RECORDER'S OFFICE.

BENCHMARK

USDA BRASS CAP ON AN IRON PIPE, 140' SOUTHWEST
TELEPHONE POLE #26994T, SOUTHWEST CORNER OF THE
95/KYLE CANYON TURNOFF.
ELEVATION = 2817.62 FEET, 858.813 METERS
N.A.V.D. 88
PER THE CLARK COUNTY VERTICAL CONTROL LAST REVISED 20

LEGAL DESCRIPTION

BEING A PORTION OF THE NORTHWEST QUARTER (NW 1/4) OF
SOUTHWEST QUARTER (SW 1/4) OF SECTION 7, TOWNSHIP 19 :
RANGE 60 EAST M.D.M., CLARK COUNTY, NEVADA.

AVOID HITTING OVERHEAD
POWER LINES. IT'S COSTLY.

CALL BEFORE
YOU DO
OVERHEAD

1-702-227-2929

AVOID HITTING UNDERGROUND TRAFFIC
SIGNAL SYSTEMS AND STREET LIGHT
SYSTEM CONDUITS. IT'S COSTLY.



**Call before you
do UnderGround**
1-702-455-6000
CLARK COUNTY TRAFFIC OPERATIONS
AND
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

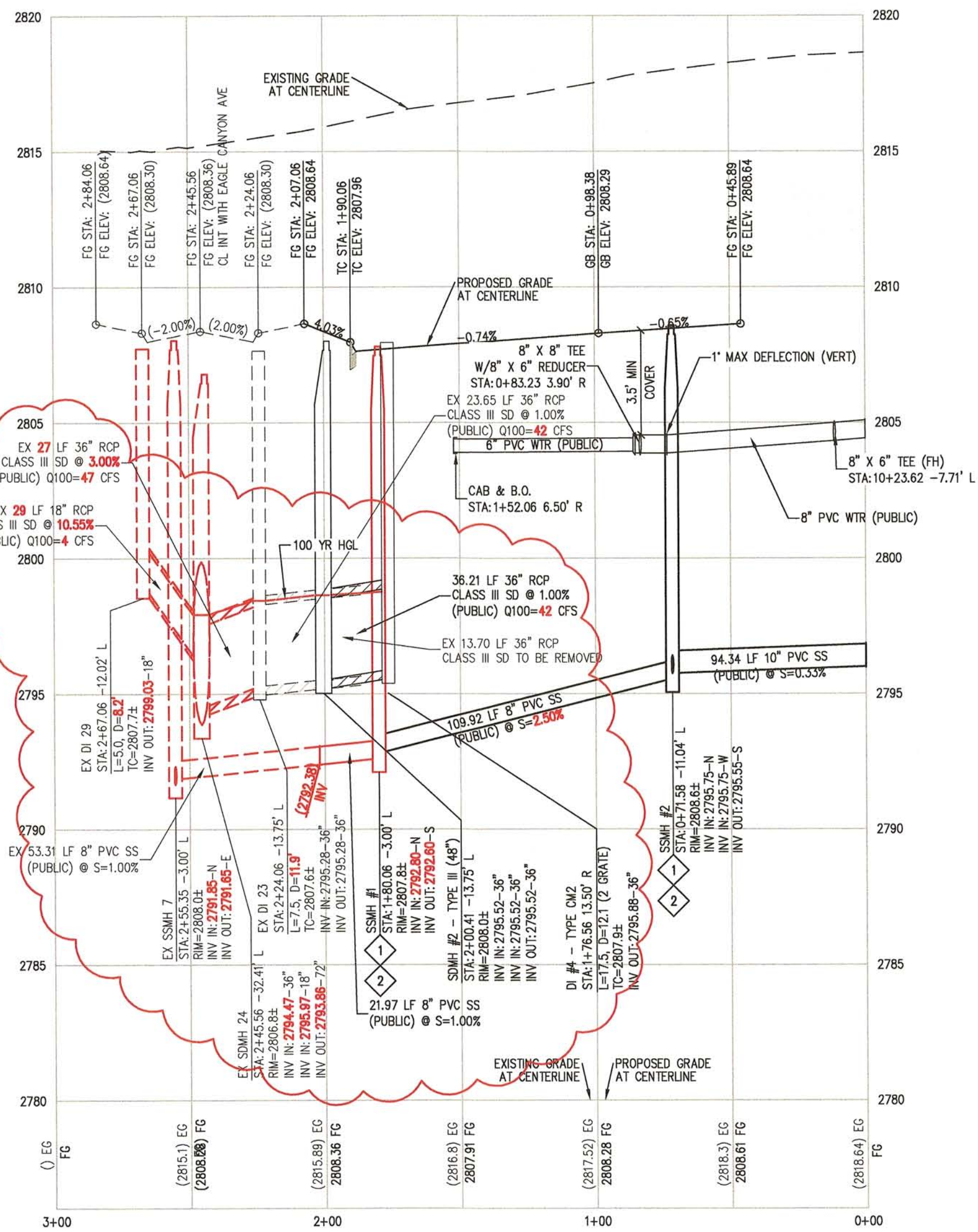
Call before you Dig
Avoid cutting underground
utility lines. It's costly.

Call
811

OR
1-800-227-2600

AND
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-6000

\\s04\401-002\skye canyon 1-1\dwg\improvements\1-1 phase 1\pnp2-1.dwg 1/29/2015 1:53 PM Jason Wada



PROFILE
HOR. : 1"=40'
VERT. : 1"=4'

SEWER NOTES

1. INSTALL 48" DIAMETER SANITARY SEWER MANHOLE WITH PRECAST BASE PER DCSWCS SD-1A, SD-1B
2. MANHOLE SHALL BE CORROSION PROTECTED WITH AGENCY APPROVED FACTORY INSTALLED PVC LINER OR FIELD APPLIED COATING PER DCSWCS SECTION 3.16.8 (A AND B)

CURVE DATA TABLE

SEE SHEET P-1 THRU P-7 OF THIS PLAN SET

BASIS OF BEARING

NORTH 89°11'30" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 7, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS PER FILE 151, PAGE 14 OF SURVEYS, ON FILE IN THE COUNTY RECORDER'S OFFICE.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123121 DATE _____

RAMP TRANSITION LENGTHS

RAMP NO.	GRADE %	"A" (FT) MIN.	"B" (FT) MIN.
1	-6 TO -5.01	4.5'	21.5'
2	-5 TO -4.01	4.5'	15.0'
3	-4 TO -3.01	4.5'	12.0'
4	-3 TO -2.01	4.5'	9.5'
5	-2 TO 2	8.0'	8.0'
6	2.01 TO 3	9.5'	4.5'
7	3.01 TO 4	12.0'	4.5'
8	4.01 TO 5	15.0'	4.5'
9	5.01 TO 6	21.5'	4.5'

SEWER CONNECTION NOTE

ONE OR MORE SEGMENTS OF THE DOWNSIDE SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND/OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND/OR ACCEPTANCE OF THE DOWNSIDE SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSIDE SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE, OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER NOTES

MINIMUM 24" COVER PER UDACS SEC. 2.08.04 GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION

DROP INLET NOTES

- WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE:
1. CAST-IN-PLACE MONOLITHIC POUR WITH WATER STOP BETWEEN SLAB AND WALLS.
 2. BASE, WALLS AND TOP TO BE CONSTRUCTED WITH MECHANICAL WATER STOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS, OR APPROVED EQUAL)

LEGAL DESCRIPTION

BEING A PORTION OF THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 7, TOWNSHIP 19 SOUTH, RANGE 60 EAST M.D.M., CLARK COUNTY, NEVADA.



DISCLAIMER NOTE

EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXCEPT 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.

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
N.A.V.D. 88
PER THE CLARK COUNTY VERTICAL CONTROL LAST REVISED 2003

GRADING NOTES

1. INSTALL 30" ROLL CURB PER CCAUSD NO. 217.51 OVER 6" TYPE II AGGREGATE BASE
2. INSTALL "L" TYPE CURB AND GUTTER PER CCAUSD #216
3. INSTALL 5" WIDE CONCRETE SIDEWALK (5" THICK OVER 6" TYPE II AGGREGATE BASE) PER CCAUSD #234
4. INSTALL 8-FT CROSS GUTTER PER DETAIL 29 ON SHEET D-2
5. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
6. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOWNS OR EQUIVALENT CCAUSD NO. 235, CASE 1 & 23.51
7. CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL 30 ON SHEET D-2
8. INSTALL 60" TYPE III STORM DRAIN MANHOLE PER CCAUSD #406
9. INSTALL 48" TYPE III STORM DRAIN MANHOLE PER CCAUSD #406
10. INSTALL CLASS III RCP SD (PRIVATE) PIPE SIZE PER PLAN
11. INSTALL 10.0' TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
12. INSTALL 12.5' TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
13. INSTALL 17.5' TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
14. INSTALL 25.0' TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
15. REMOVE EXISTING STORM DRAIN PIPE AT PROPOSED STRUCTURE OR 5 FEET BEHIND BACK OF CURB AND INSTALL CAP
16. REMOVE EXISTING STORM DRAIN AND INSTALL PROPOSED STORM DRAIN PIPE
17. INSTALL WROUGHT IRON FENCE W/PED. ACCESS AND GATE PER DETAIL 31 ON SHEET D-2
18. INSTALL SIDEWALK DRAIN PER CCAUSD #236
19. INSTALL RIPRAP DRAIN PER CCAUSD #236
20. INSTALL REMOVABLE BOLLARD PER DETAIL 32 ON SHEET D-2
21. PERIMETER LANDSCAPE TO BE CONSTRUCTED BY MASTER DEVELOPER
22. INSTALL WROUGHT IRON FENCE W/PED. ACCESS
23. INSTALL "A" TYPE ISLAND CURB PER CCAUSD NO. 219

SEE SHEET C-2 FOR ABBREVIATIONS AND QUANTITIES

GENERAL NOTES

1. SEE PLAN AND PROFILE SHEETS FOR CENTERLINE AND BACK OF CURB CURVE DATA.
2. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH IBC 2006, SECTION 2304.11.2.2.
3. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
4. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
5. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
6. SEE DETAIL SHEETS FOR STREET SECTIONS AND DETAILS.
7. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
8. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL.
9. EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. 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/REPLACING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.
10. 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.
11. ALL ELEVATIONS SHOWN, WITH EXCEPTION TO PAD, FINISHED FLOOR, AND CONTOUR ELEVATIONS, ARE THE VALUE SHOWN PLUS 2800'.

