DS #: 4984

APN: 126.12.710.002

PROJECT: Skye Canyon Parcel 2.14

SUBMITTAL: 2nd

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS NEVADA

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: June 25, 2018
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 Parcel 2.14**			**COPIES TO:** Slater-Hanifan Group, Inc.
Cross Streets:	NWC of Eagle Canyon & Skye Village			Ninety-Five Management, LLC
File Number:	F:\Depot\DSMemos\DS4984B.doc			Bart Anderson, P.E., DevCo
Parcel Number:	126-12-710-002			CCRFCD
Zoning Action:	TMP-72766			
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	4/26/2018	5/10/2018	See Comments Below	$400.00	495305: $400
2nd Submittal	6/11/2018	6/25/2018		$400.00	496681: $400
			TOTAL FEES (LDDRS):	**$800.00**	**----**

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. **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.
2. All roadway and flood control facilities as proposed and approved in Skye Canyon Phase 2 Infrastructures must be substantially constructed prior to the issuance of occupancy permits.
3. Label the proposed storm drain as private on sheet PP-10.

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/R59E/12
AREA F-12



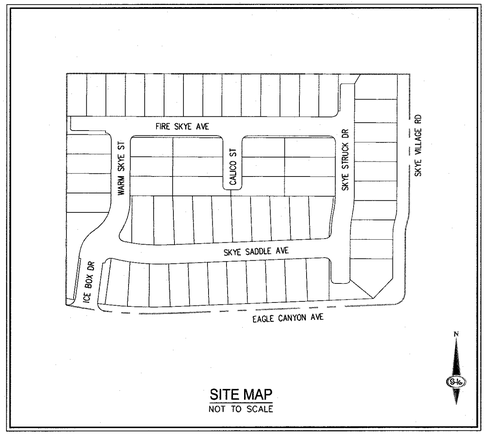
IMPROVEMENT PLANS
FOR
SKYE CANYON II PARCEL 2.14

A SINGLE FAMILY RESIDENTIAL SUBDIVISION OF THE SKYE CANYON
MASTER-PLANNED COMMUNITY WITHIN THE CITY OF LAS VEGAS, NEVADA

APN: 126-12-710-002

CITY OF LAS VEGAS NEVADA

SHEET LIST TABLE		
NO.	SHEET	TITLE
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3	C-3	GENERAL NOTES AND QUANTITIES
4	G-1	GRADING PLAN – I
5	G-2	GRADING PLAN – II
6	G-3	GRADING PLAN – III
7	G-4	GRADING PLAN – IV
8	D-1	STREET SECTIONS AND DETAILS
9	D-2	GRADING SECTIONS AND DETAILS – I
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11	PP-1	PLAN AND PROFILE – I
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13	PP-3	PLAN AND PROFILE – III
14	PP-4	PLAN AND PROFILE – IV
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16	PP-6	PLAN AND PROFILE – VI
17	PP-7	PLAN AND PROFILE – VII
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20	PP-10	PLAN AND PROFILE – X



APPROVALS

CITY ENGINEER–ALLEN PAVELKA PE, #9029 DATE

APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED OF RIGHT-OF-WAY, AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS EXCEPT THOSE SPECIALLY LISTED UNDER DEVIATIONS FORM STANDARDS. THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN DEVIATIONS FROM STANDARDS IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS, CLARK COUNTY AREA, NEVADA.

LAS VEGAS FIRE AND RESCUE DATE

CITY OF LAS VEGAS – PLANNING DEPARTMENT DATE

THIS PLAN MEETS THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

CENTRAL TELEPHONE CO. DBA CENTURYLINK DATE

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

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT No.: _____ FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW _____GPM AT 20 PSI RESIDUAL
SHEETS: _____

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM LAS VEGAS VALLEY WATER DISTRICT.

NV ENERGY DATE

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

SOUTHWEST GAS CORPORATION DATE

COX COMMUNICATIONS LAS VEGAS, INC. DATE

OWNER	DEVELOPER	ENGINEER
K A G DEVELOPMENT WEST, LLC OLYMPIA COMPANIES 11411 SOUTHERN HIGHLANDS #300 LAS VEGAS, NV 89141 PH: 702-220-6565	NINETY FIVE MANAGEMENT, LLC 11411 SOUTHERN HIGHLANDS #300 LAS VEGAS, NV 89141 PH: 702-220-6565	SLATER HANIFAN GROUP, INC. 5740 S. ARVILLE STREET, SUITE 216 LAS VEGAS, NV 89118 PH: (702) 284-5300 FX: (702) 284-5399 CONTACT: STANLEY OKEY AMADI

LEGAL DESCRIPTION

BEING A PORTION OF SECTION 12, TOWNSHIP 19 SOUTH, RANGE 59 EAST M.D.M., CLARK COUNTY, NEVADA.

BENCHMARK

BM 7LV90 7NWS CITY OF LAS VEGAS RIVET AND ROUND PLATE IN CONCRETE CYLINDER, SOUTHEAST CORNER OF HUALAPAI WAY AND IRON MOUNTAIN ROAD.

ELEV: 2840.13 FEET (865.67 METERS) (NAVD 1988)

BASIS OF BEARINGS

SOUTH 00°34'18" EAST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 12, TOWNSHIP 19 SOUTH, RANGE 59 EAST M.D.M., AS PER FILE 151, PAGE 14, OF SURVEYS ON FILE IN THE COUNTY RECORDER'S OFFICE.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (AREA OUTSIDE THE 500 YEAR FLOODPLAIN), PER THE FEMA FIRM PANELS 32003C1750E DATED SEPTEMBER 27, 2002

PROJECT INFORMATION

ACREAGE (GROSS):	= 13.4± AC
ACREAGE (NET):	= 12.3± AC
DENSITY (LOTS/NET ACRE):	= 5.0± DU/NET AC
ZONING:	= T-D (R-1 STANDARDS)
TOTAL NO. OF RESIDENTIAL LOTS	= 61
TOTAL NO. OF COMMON ELEMENTS *	= 11
MINIMUM LOT SIZE	= 5452 SF±
MAXIMUM LOT SIZE	= 8750 SF±
PROVIDED OPEN SPACE	= SF±

EARTHWORK SUMMARY (UNADJUSTED)

CUT	----- CY.
FILL	----- CY.
NET	----- CY.

DEVIATIONS FROM STANDARDS

NONE

SWPPP NOTE

NOTE: ALL LAND SURFACE AREA DISTURBANCES OVER 1 ACRE REQUIRE A STORMWATER DISCHARGE PERMIT ISSUED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP). A PHASED CONSTRUCTION UNIT IN A CONTIGUOUS SUBDIVISION IS CONSIDERED UNDER CONSTRUCTION UNTIL ALL STRIPPED SURFACE AREAS HAVE BEEN COVERED BY PAVING, BUILDING CONSTRUCTION OR PLANTING. A STORMWATER DISCHARGE PERMIT APPLICATION AND ASSOCIATED INFORMATION MAY BE DOWNLOADED FROM THE WEB SITE: HTTP://WWW.STATE.NV.US/BWPC/STORMOI.HTM. PROJECTS THAT DISTURB MORE THAN ONE ACRE OF LAND MUST SUBMIT TO NDEP A "NOTICE OF INTENT" FOR INCLUSION UNDER STORMWATER PERMIT NO. NVR100000 ALONG WITH THE APPROPRIATE FILLING FEE.

GEOTECHNICAL ENGINEER

PREPARED BY: FIRM
ADDRESS: ADDRESS
PHONE: PHONE #
PROJECT No. PROJECT NUMBER
DATED: DATE







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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14
COVER SHEET

S12
T19
R59

DATE: 4/25/18
DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS

PROJECT NO.
OLY1719-000

PROFESSIONAL ENGINEER STATE OF NEVADA
STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
4/26/18

C-1
SHEET 1 OF 20

J:\oly1719.000 skye canyon parcel 2.14\dwg\Vamps\oly1719-000 cvr.dwg 4/25/2018 5:23 PM Dannie Pendleton

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 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, DISCHARGE 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 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.

LEGAL DESCRIPTION

BEING A PORTION OF SECTION 12, TOWNSHIP 19 SOUTH, RANGE 59 EAST M.D.M., CLARK COUNTY, NEVADA.

BENCHMARK

BM 7LV90 7NWS CITY OF LAS VEGAS RIVET AND ROUND PLATE IN CONCRETE CYLINDER, SOUTHEAST CORNER OF HUALAPAI WAY AND IRON MOUNTAIN ROAD.

ELEV: 2840.13 FEET (865.67 METERS) (NAVD 1988)

BASIS OF BEARINGS

SOUTH 00°34'18" EAST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 12, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., AS PER FILE 151, PAGE 14, OF SURVEYS ON FILE IN THE COUNTY RECORDER'S OFFICE.

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

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT #_____ (REVISED 01/09/2017)

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 SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED, AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO CONNECTION TO THE LVVWD DISTRIBUTION SYSTEM.
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 PRE-APPROVED MATERIALS AND MANUFACTURER'S LISTING FOR NEW FACILITIES. LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS.
13. TELEPHONE "CALL BEFORE YOU DIG" AT "811" OR 1-800-227-2600.
14. THE INSTALLATION OF LAS VEGAS VALLEY WATER DISTRICT (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.

15. NO LEAD COMPLIANCE NOTE:
TO COMPLY WITH THE FEDERAL SAFE DRINKING WATER 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 USED.

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 ?????, PROJECT NO. ####.##, DATED ##/##/####.
6. EARTHWORK QUANTITIES (RAW):
   -CUT = ##,### CUBIC YARDS.
   -FILL = ##,### 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 # 6325, FOR HYDRANT SPECIFICATIONS, AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICT'S – APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR ALL INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK [IFC 105.7.12]
4. ON ANT RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. [IFC 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 507.5.7.3]
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. [IFC 106.3]
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. [IFC 507.2.1, NFPA 24]
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. [IFC 507]
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. [IFC 507.5.7.1]
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. [IFC 507]
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: [IFC 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, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. [IFC C102.8]
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FEET OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. [IFC 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. [IFC C102.4]
16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. [IFC C102.7]
17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. [IFC C102.6]
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE ARE 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. SECTIONAL CONTROL 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. [IFC C104]
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. [IFC 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%. [IFC 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. [IFC 503.2.4]
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13 FT 6 INS. [IFC 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. [IFC 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. [IFC 503.1.1]
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 100 OR MORE DWELLING UNITS, ROAD(S) 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. [IFC 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. [IFC 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 WITH 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 OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. [IFC 503.3]
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. SAID SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE IFC 503.6 AND IFC 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 COMPACTION, IN THE AREAS INDICATED:

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

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

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT 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 INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-HALF INCH (½") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY ADD GEO, REPORT #ADD FIELD, ADD FIELD APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.380 & CITY OF LAS VEGAS TITLE 18, APPENDIX D.
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.

WALL NOTES:

16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUB

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	QTY	QUANTITY
APPROX OR ~	APPROXIMATE	FUT	FUTURE	R	RADIUS
AVE	AVENUE	GRD	GRADE OR GROUND	RCA	REINFORCED CONCRETE ARCH
@	AT	GB	GRADE BREAK OR GRADE CHANGE	RCB	REINFORCED CONCRETE BOX
BC	BEGIN CURVE OR BACK OF CURB	GV	GATE VALVE	RCP	REINFORCED CONCRETE PIPE
BCR	BEGINNING OF CURB RETURN	HDPE	HIGH DENSITY POLYETHYLENE	RD	ROAD
BHW	BOTTOM OF HEADWALL	HOA	HOME OWNERS ASSOCIATION	RDWY ESMT	ROADWAY EASEMENT
BLDG	BUILDING	HORZ	HORIZONTAL	REQD	REQUIRED
BLVD	BOULEVARD	HP	HIGH POINT	REV	REVISION
BM	BENCHMARK	HWL	HIGH WATER LEVEL	RG	ROUGH GRADE
BVC	BEGIN VERTICAL CURVE	HDWL OR HW	HEADWALL	RT OR R	RIGHT
BWV	BACK WATER VALVE	HYD	HYDRAULIC OR HYDRANT	R/W, ROW	RIGHT OF WAY
CC	CLARK COUNTY	ID	INSIDE DIAMETER	S	SLOPE
CCAUSD	CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS	IN	INCH	SCH	SCHEDULE
CCPW	CLARK COUNTY PUBLIC WORKS	INT	INTERSECTION	SD	STORM DRAIN
CCRFCD	CLARK COUNTY REGIONAL FLOOD DISTRICT	INV	INVERT ELEVATION	SDDI	STORM DRAIN DROP INLET
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT	IP	IRON PIPE	SDMH	STORM DRAIN MANHOLE
CE	COMMON ELEMENT	IRRG	IRRIGATION	SEC	SECTION
CL,℄/L,C	CENTERLINE	LF	LINEAR FEET	SF	SQUARE FEET
CLR	CLEAR OR CLEARANCE	LP	LOW POINT	SHT	SHEET
CLSM	CONTROLLED LOW STRENGTH MATERIAL	LT OR L	LEFT	SNWA	SOUTHERN NEVADA WATER AUTHORITY
CLV	CITY OF LAS VEGAS	LVVWD	LAS VEGAS VALLEY WATER DISTRICT	SPECS	SPECIFICATIONS
CML&C	CEMENT MORTAR LINED AND COATED	LWL	LOW WATER LEVEL	ST	STREET
CMU	CONCRETE MASONRY UNIT	MAX	MAXIMUM	SSMH	SANITARY SEWER MANHOLE
CNLV	CITY OF NORTH LAS VEGAS	MECH	MECHANICAL	STA	STATION
COH	CITY OF HENDERSON	MH	MANHOLE	STD	STANDARD
CONC	CONCRETE	MIN	MINIMUM	STL	STEEL OR STREET LIGHT
CT	COURT	MISC	MISCELLANEOUS	SW	SIDEWALK
CY OR CU YD	CUBIC YARD	MUE	MUNICIPAL UTILITY EASEMENT	SWG	SOUTHWEST GAS
DCWCS	DESIGN AND CONSTRUCTION FOR WASTEWATER COLLECTION SYSTEMS	NDOT	NEVADA DEPARTMENT OF TRANSPORTATION	SWR OR SS	SANITARY SEWER
		NPC	NEVADA POWER COMPANY	SY	SQUARE YARD
DET	DETAIL	NTS	NOT TO SCALE	TAN	TANGENT
DI	DUCTILE IRON OR DRAIN INLET	NUE	NONEXCLUSIVE UTILITY EASEMENT	TC	TOP OF CURB
DIA, ⌀	DIAMETER	OC	ON CENTER	TF	TOP OF FLOOR OR TOP OF FOOTING
DIP	DUCTILE IRON PIPE	OD	OUTSIDE DIAMETER OR OVERALL DIMENSION	TG	TOP OF GRATE
DR	DRIVE	OFF	OFFSET	THRU	THROUGH
DWG(S)	DRAWING	ORIG	ORIGINAL	THW	TOP OF HEADWALL
DWY	DRIVEWAY	PAE	PUBLIC OR PEDESTRIAN ACCESS EASEMENT	TP	TOP OF PIPE
EA	EACH	PB	PULL BOX	TW	TOP OF WALL
ECR	END CURB RETURN	PC	POINT OF CURVE	TRW	TOP OF RETAINING WALL
EG	EXISTING GROUND	PCC	POINT OF COMPOUND CURVE	TSW	TOP OF SCREEN WALL
EL	ELEVATION	PDE	PUBLIC DRAINAGE EASEMENT	TYP	TYPICAL
ESMT	EASEMENT	℄ OR PL	PROPERTY LINE	UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS
EP	EDGE OF PAVEMENT	POB	POINT OF BEGINNING		
ERU	EQUIVALENT RESIDENTIAL UNIT	POC	POINT OF CURVATURE	VC	VERTICAL CURVE
EVC	END VERTICAL CURVE	POE	POINT OF ENDING	VERT	VERTICAL
EX OR EXIST	EXISTING	PRC	POINT OF REVERSE CURVATURE	VG	VALLEY GUTTER
FC	FACE OF CURB	PRELIM	PRELIMINARY	WI	WROUGHT IRON
FF	FINISHED FLOOR	PROP	PROPOSED	WL	WATER LINE
FG	FINISHED GRADE	PRV	PRESSURE REDUCING VALVE	WPZ	WATER PRESSURE ZONE
FGH	FINISHED GRADE, HIGH SIDE	PUE	PUBLIC UTILITY EASEMENT	WT	WEIGHT
FGL	FINISHED GRADE, LOW SIDE	PT	POINT OF TANGENT OR POINT	WTR	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 CLARK COUNTY 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
(1900)	1900	5' CONTOUR
		1' CONTOUR
		STRIPING
		SEWER MANHOLE
		CURB AND GUTTER
EX 8" PVC SS	8" PVC SS	SANITARY SEWER PIPE AND FLOW ARROW
EX 8" PVC WTR	8" PVC WTR	WATER PIPE
		WATER GATE VALVE
		FIRE HYDRANT
		WATER BLOW-OFF
		WATER LATERAL W/ METER
		SANITARY SEWER LATERAL
		STREETLIGHT
		EDGE OF PAVEMENT
		TRAFFIC SIGN
PAD= XXX.X FF = XXX.X	PAD= XXX.X FF = XXX.X	PAD ELEVATION FINISHED FLOOR ELEVATION
(00.00) TC	00.00 TC	ELEVATION
		RETAINING WALL
		STORM DRAIN W/ MANHOLE

	EXISTING GAS GATE VALVE
@MH	EXISTING UNKNOWN MANHOLE
GAS	EXISTING GAS, SIZE PER PLAN
	EXISTING POWER POLE
	EXISTING TRAFFIC SIGNAL
	EXISTING WALL
	WATER PIPE FITTING
POC	WATER POINT OF CONNECTION
POC	SEWER POINT OF CONNECTION
	DAYLIGHT LINE
	STREET CENTERLINE
	RIGHT-OF-WAY
	MATCHLINE
	BOUNDARY LINE
	PHASE LINE
	PROPERTY LINE
	FLOWLINE
	SAWCUT
FILL / CUT	CUT/FILL TRANSITION LINE
	SIDEWALK
	EX STRIPING TO BE OBLITERATED
	GRADE BREAK LINE
	REFLECTIVE RAISED PAVEMENT MARKERS
BWV	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

	PROPOSED SCARP AREA
	DRIVEWAY
	PROPOSED RIP RAP
	SIGHT VISIBILITY ZONE PER STD DWG NO. 201.2
	HANDICAP RAMP

QUANTITIES

			PRIVATE	PUBLIC
DRAINAGE				
1.	60" TYPE III STORM DRAIN MANHOLE	EA	–	–
2.	5.0' TYPE "CM2" DROP INLET	EA	–	–
3.	10.0' TYPE "CM2" DROP INLET	EA	–	–
4.	12.5' TYPE "CM2" DROP INLET	EA	–	–
5.	15.0' TYPE "CM2" DROP INLET	EA	–	1
6.	18" RCP CLASS IV STORM DRAIN	LF	–	–
7.	24" RCP CLASS III STORM DRAIN	LF	–	72
8.	30" RCP CLASS IV STORM DRAIN	LF	–	–
9.	36" RCP CLASS IV STORM DRAIN	LF	–	–
10.	RIPRAP D50=8", THK=16"	SF	–	–
11.	8' WIDE CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	–	2718
12.	SIDEWALK UNDER DRAIN	SF	–	–
13.				
SEWER SYSTEM				
1.	4" PVC SEWER LATERAL (PRIVATE)	LF	–	–
2.	8" PVC SEWER PIPE (PUBLIC)	LF	–	–
3.	STANDARD 48" SEWER MANHOLE (PUBLIC)	EA	–	–
4.	8" SEWER PIPE CAP	EA	–	–
5.	BACK WATER VALVE	EA	–	–
6.	8" C-900 WATER QUALITY SEWER PIPE (PUBLIC)	EA	–	–
7.				
WATER SYSTEM				
1.	FIRE HYDRANT ASSEMBLY W/6" GATE VALVE PER UDACS PLATE NO. 40	EA	–	–
2.	6" PVC WATER PIPE (CLASS 150)	LF	–	–
3.	8" PVC WATER PIPE (CLASS 150)	LF	–	–
4.	8" DIP WATER PIPE (CLASS 53)	LF	–	–
5.	8" GATE VALVE WITH VALVE BOX PER UDACS PLATE NO. 30 & 39	EA	–	–
6.	8" X 6" TEE PER UDACS PLATE NO. 31	EA	–	–
7.	8" X 8" TEE PER UDACS PLATE NO. 31	EA	–	–
8.	8" 5 DEGREE BEND WITH RESTRAINED JOINTS	EA	–	–
9.	8" 11.25 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
10.	8" 22.5 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
11.	8" 45 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
12.	8" 90 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
13.	CAP AND 2" BLOW-OFF ASSEMBLY W/CAP PER UDACS PLATE NO. 36	EA	–	–
14.	1" COPPER SERVICE W/ 3/4" METER PER UDACS PLATE NO. 2	EA	–	–
15.	1" COPPER SERVICE W/ 1" METER PER UDACS PLATE NO. 4	EA	–	–
16.	1" COPPER SERVICE W/ 3/4" METER & 1" RPPA PER UDACS PLATE NO. 4 & 8	EA	–	–
		EA	–	
STREET IMPROVEMENTS				
1.	2" A.C. PAVEMENT W/ 4" TYPE II OVER 6" TYPE I AGGREGATE BASE	SY	–	–
2.	STANDARD 18" TYPE "L" ISLAND CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
3.	STANDARD 8" TYPE "A" ISLAND CURB W/6" TYPE I AGGREGATE BASE	LF	–	–
4.	STANDARD 30" TYPE "ROLL" CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
5.	4' WIDE CONCRETE SIDEWALK W/4" TYPE II AGGREGATE BASE	SF	–	–
6.				–
7.				
TRAFFIC SIGNALS				
1.	30" STOP SIGN WITH POST (R1-1)	EA	–	–
2.	9" STREET NAME SIGN (D-3, BROWN W/ WHITE LETTERS)(6 POLES x 2 PER POLE=12)	EA	–	–
3.	BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKER	EA	–	–
4.	CROSSWALK MARKINGS	LF	–	–
5.				
6.				
7.				
8.				
DRY UTILITIES				
1.	100W H.P.S. LUMINAIRE STREET LIGHT W/DECORATIVE POLE	EA	–	–
2.	1-1/4" PVC STREET LIGHT CONDUIT WITH (2) #4 AND (1) #8 CONDUCTORS	LF	–	–
3.	NO. 3-1/2 PULL BOX W/METAL COVER	EA	–	–
4.	150 AMP SERVICE PEDESTAL (IRR)	EA	–	–
5.	200 AMP SERVICE PEDESTAL (STLT)	EA	–	–
6.				

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT No. _____ FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW _____ GPM AT 20 PSI RESIDUAL







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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

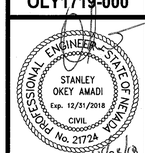
SKYE CANYON II PARCEL 2.14

GENERAL NOTES AND QUANTITIES

S12 T19 R59

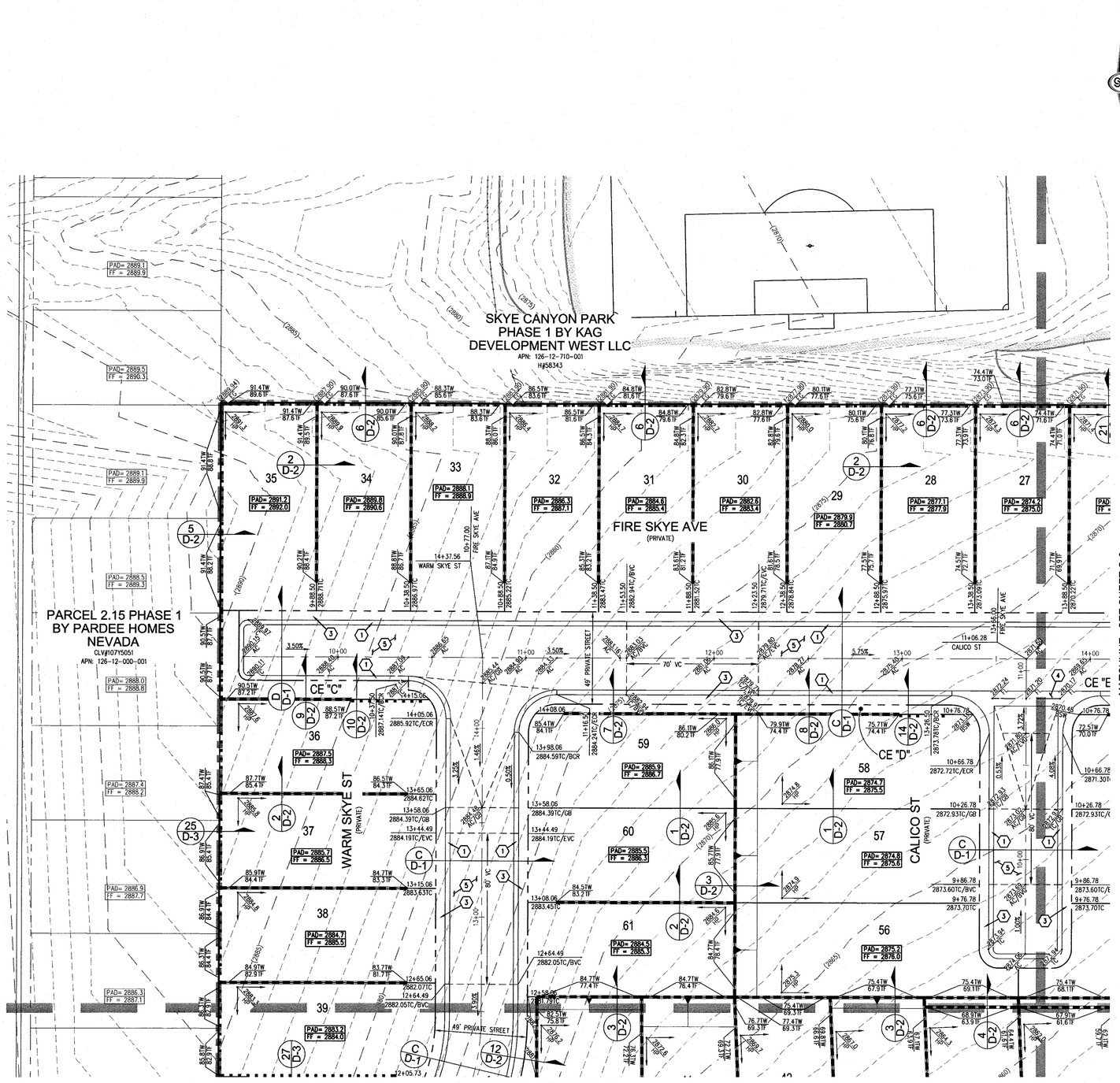
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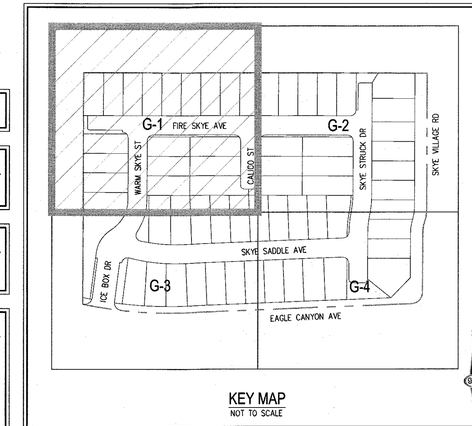
PROJECT NO.
OLY1719-000



C-3
SHEET 3 OF 20

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KEY MAP
NOT TO SCALE

SCALE – 1"=30' FEET

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

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SOILS REPORT BY GEOTEK RESIDENTIAL, LLC
PROJECT NO. 12208-LVR DATED MARCH 30, 2016

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STANLEY OKEY AMADI, P.E. 21724 DATE

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Call 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP.	APP. DATE

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14
GRADING PLAN - I

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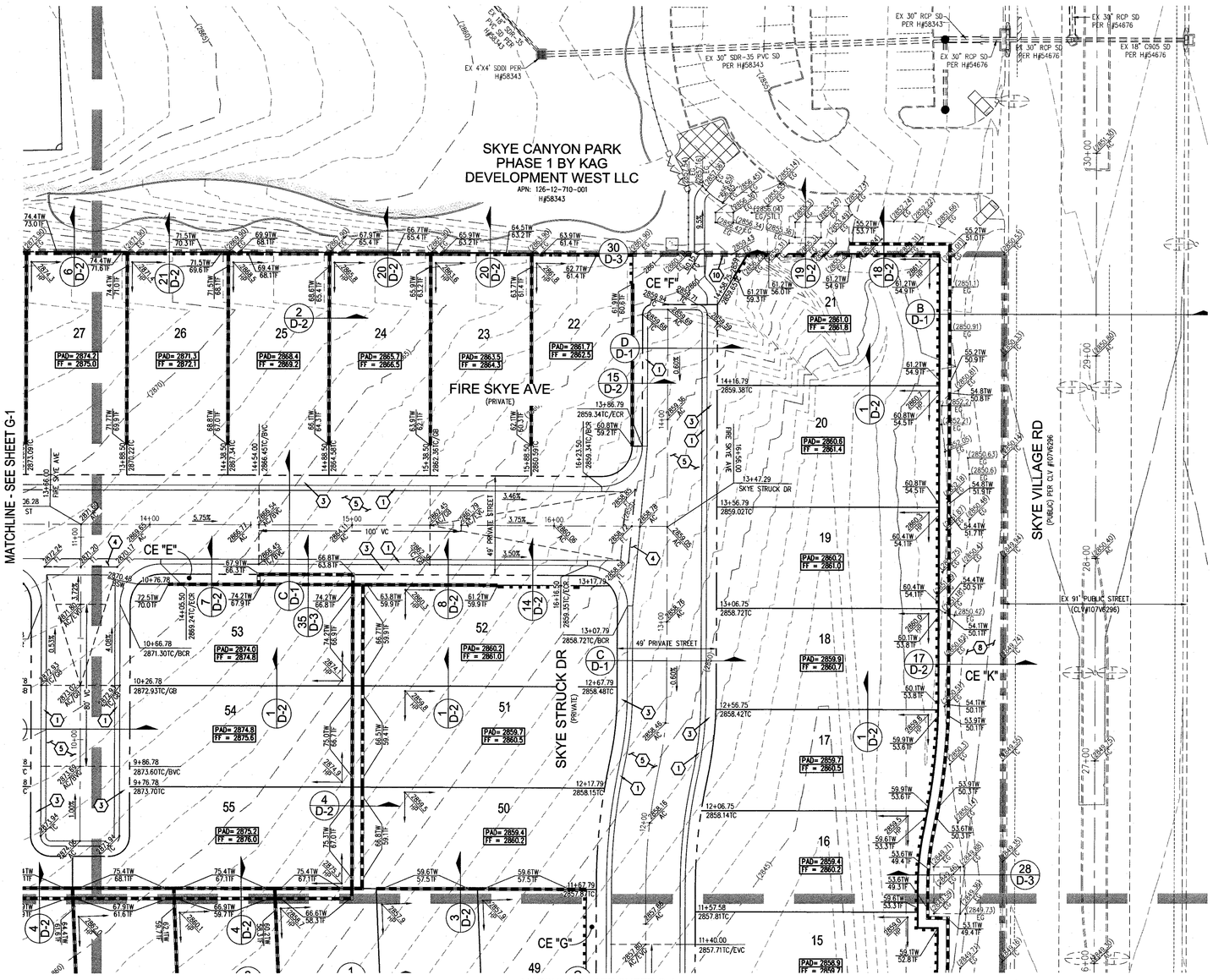
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CHECKED: STS

PROJECT NO.
OLY1719-000

PROFESSIONAL ENGINEER STATE OF NEVADA
STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
4/26/18

G-1
SHEET 4 OF 20

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N

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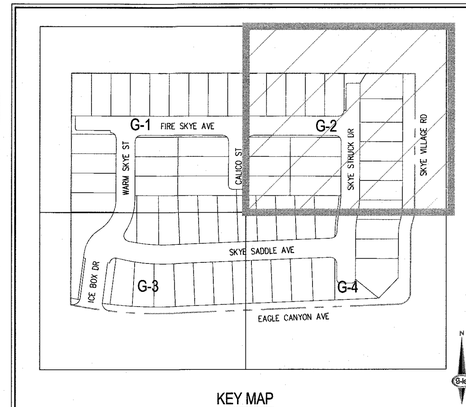
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PHONE (702) 284-5300 FAX (702) 284-5399

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14
GRADING PLAN - II

S12
R59

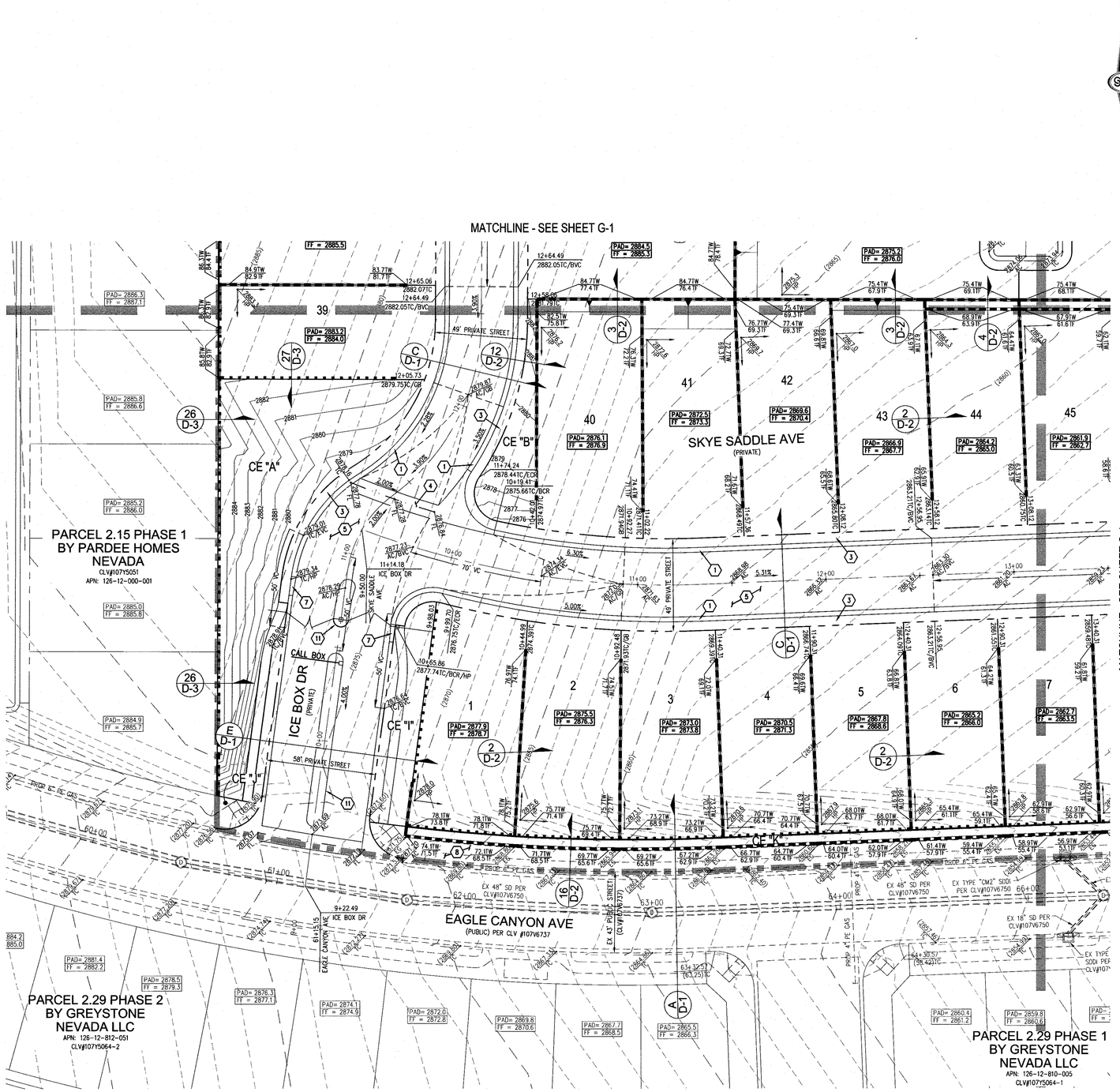
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DESIGNER: DNP
CHECKED: STS

PROJECT NO.
OLY1719-000

PROFESSIONAL ENGINEER STATE OF NEVADA
STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
6/14/18

G-2
SHEET 5 OF 20

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S-16

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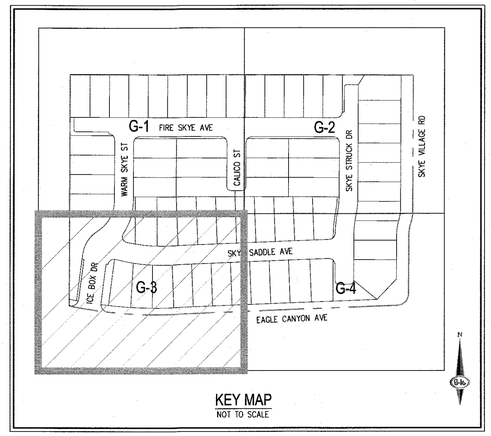
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3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS 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 SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (UNSHADED), AREA OUTSIDE THE 0.2% ANNUAL CHANCE (500 YEAR) FLOODPLAIN, PER THE FEMA FIRM PANELS 32003C1750E DATED SEPTEMBER 27, 2002.

GRADING NOTES

1. CONSTRUCT 30" ROLL CURB AND GUTTER PER CCAUSD NO. 217.S1. 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
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 26 ON SHEET D-3
5. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
6. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT CCAUSD NO. 235, CASE I & 235.1
7. CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL 32 ON SHEET D-3
8. PERIMETER LANDSCAPE TO BE CONSTRUCTED BY MASTER DEVELOPER
9. INSTALL 20' WIDE GATE PER CCAUSED DWG NO. 425.S1
10. INSTALL WROUGHT IRON FENCE WITH PEDESTRIAN ACCESS GATE PER DETAIL 30 ON SHEET D-3
11. INSTALL "A" TYPE ISLAND CURB PER CCAUSD NO. 219
12. INSTALL 15 LF TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
13. INSTALL 24" CLASS III RCP STORM DRAIN

DRAINAGE EASEMENT NOTE

ALL PRIVATE STREETS, DRAINAGE EASEMENTS AND COMMON LOTS ARE PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE HOA

BONDABLE DRAINAGE QUANTITIES (PRIVATE)

8' WIDE CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	2718
24" RCP CLASS III STORM DRAIN	LF	72
15.0' TYPE "CM2" DROP INLET	EA	1

FLOOD CERTIFICATION

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

STANLEY OKEY AMADI, P.E. 21724 DATE

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 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14
GRADING PLAN - III

S12
T19
R59

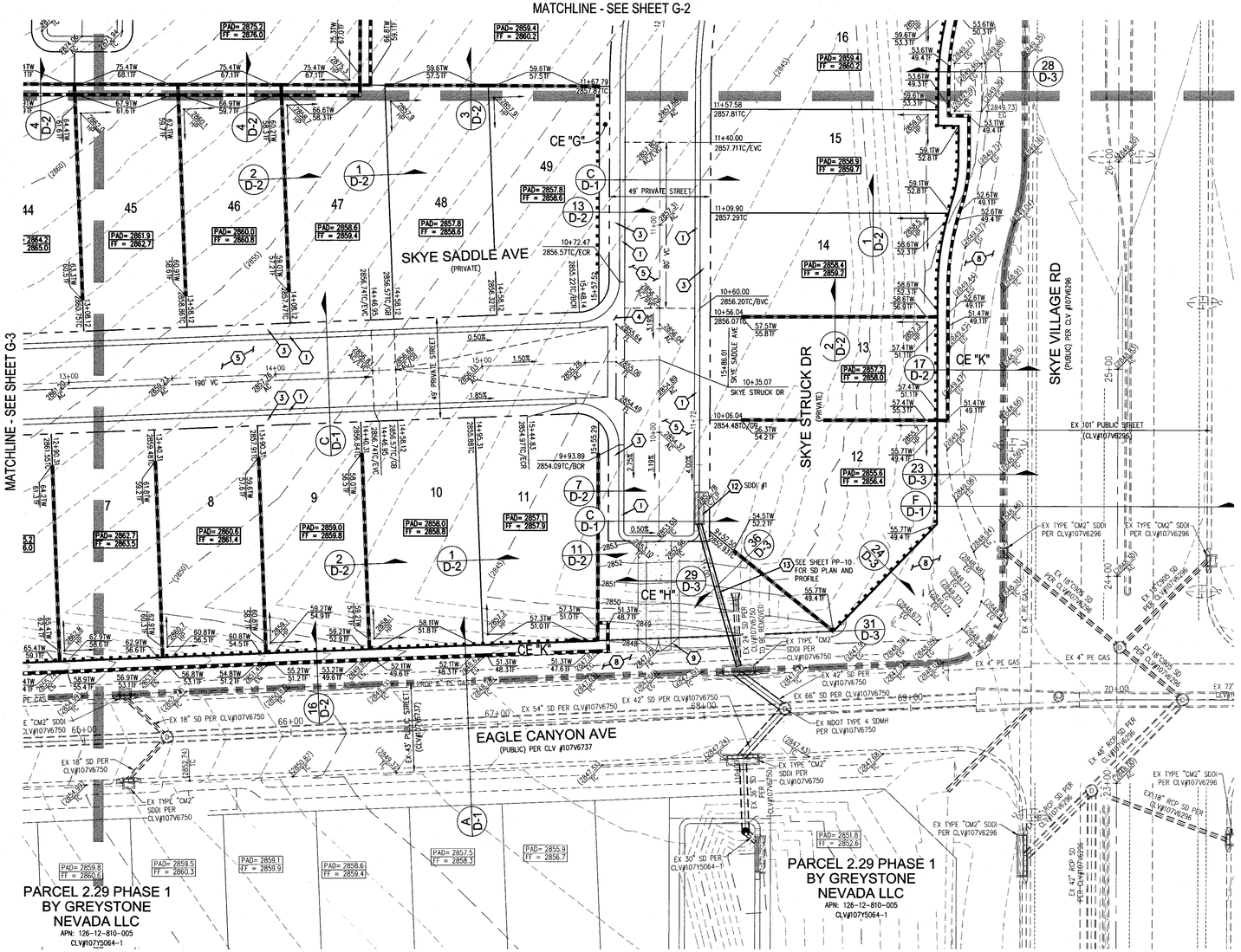
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DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS

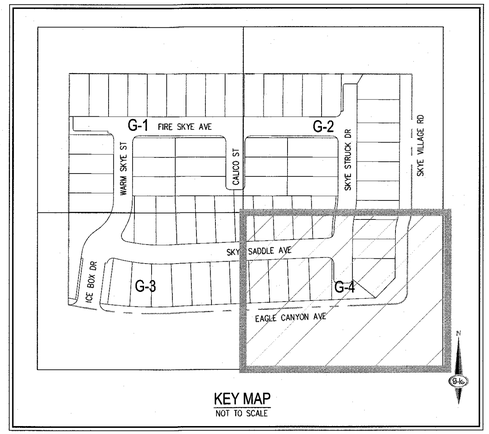
PROJECT NO.
OLY1719-000

STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
STATE OF NEVADA
PROFESSIONAL ENGINEER
4/26/18

G-3
SHEET 6 OF 20

J:\oly1719.000 skye canyon parcel 2.14\dwg\mmrcv\oly1719-000 grd.dwg 4/25/2018 5:25 PM Dominic Prendiqon





SCALE - 1"=30' (0, 30, 60 FEET)

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SURVEY NOTE

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

SOILS REPORT

SOILS REPORT BY GEOTEK RESIDENTIAL, LLC
PROJECT NO. 12208-LVR DATED MARCH 30, 2016

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= #,### CU YDS
FILL= #,### 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.

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/REPLEMING 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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.

GRADING NOTES

1. CONSTRUCT 30" ROLL CURB AND GUTTER PER CCAUSD NO. 217.51. CURB FLOW LINES LESS THAN 0.50% GRADE SHALL BE WATER TESTED. ANY CURB THAT DOES NOT FLOW SHALL BE REMOVED AND REPLACED AT NO COST TO THE CITY
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12. INSTALL 15 LF TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
13. INSTALL 24" CLASS III RCP STORM DRAIN

LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDELINES

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

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STANLEY OKEY AMADI, P.E. 21724 DATE

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

NO.	DESCRIPTION	DATE	BY	APP'D	APP DATE

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14
GRADING PLAN - IV

S12 T19 R59

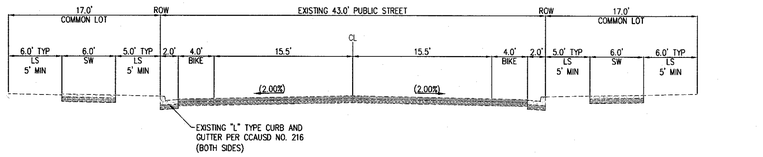
DATE: 4/25/18
DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS

PROJECT NO:
OLV1719-000

PROFESSIONAL ENGINEER STATE OF NEVADA
STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
4/26/18

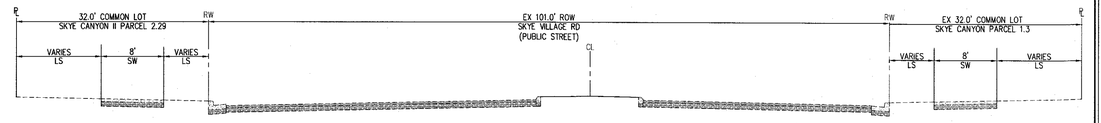
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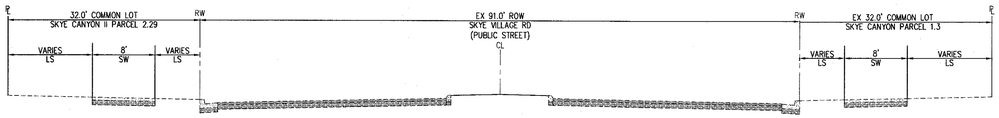
A. EXISTING STREET SECTION (PUBLIC) — EAGLE CANYON AVE

NOT TO SCALE



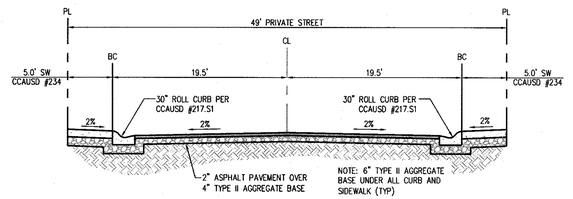
F. EXISTING STREET SECTION (PUBLIC) — SKYE VILLAGE RD

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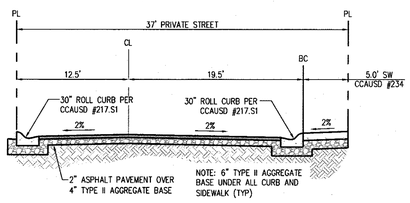
B. EXISTING STREET SECTION (PUBLIC) — SKYE VILLAGE RD

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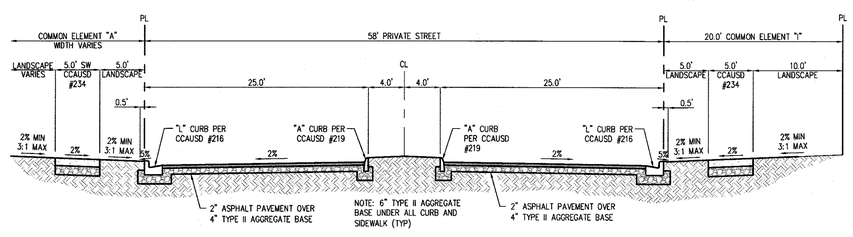
C. 49' INTERIOR STREET SECTION (PRIVATE)

NOT TO SCALE



D. 37' INTERIOR STREET SECTION (PRIVATE)

NOT TO SCALE



E. 58' ENTRY STREET SECTION (PRIVATE)

NOT TO SCALE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14

STREET SECTIONS AND DETAILS

S12
T19
RS9

DATE: 4/25/18

DRAFTER: DNP

DESIGNER: DNP

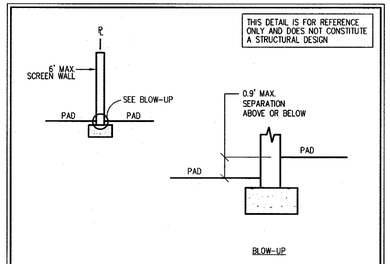
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PROJECT NO.
OLY1719-000

PROFESSIONAL ENGINEER
STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
STATE OF NEVADA
4/26/18

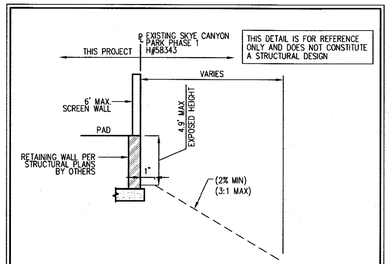
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SHEET 8 OF 20

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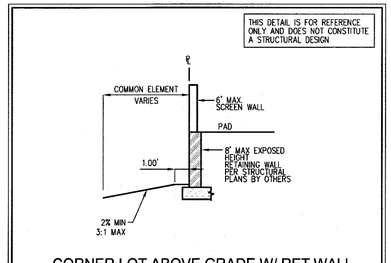
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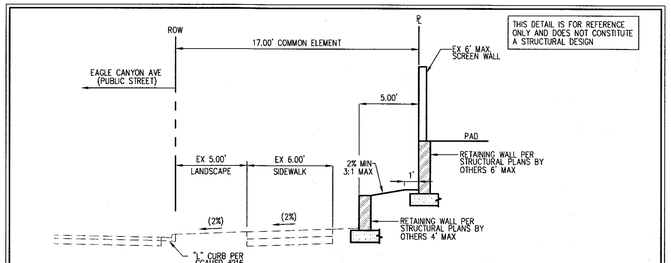
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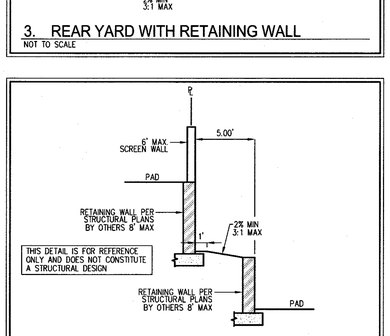
CORNER LOT ABOVE GRADE W/ RET WALL
11. AND ADJACENT COMMON ELEMENT

NOT TO SCALE



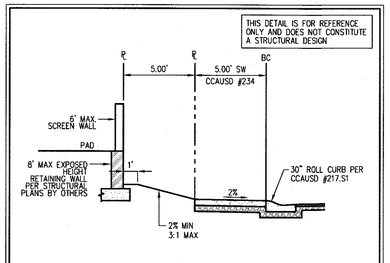
16. PERIMETER STREET SECTION WITH DOUBLE RETAINING WALL

NOT TO SCALE



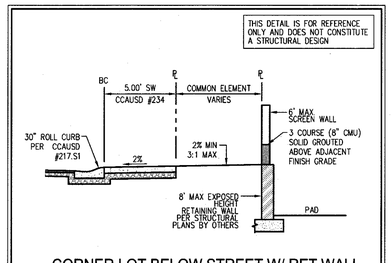
2. SIDEYARD WITH RETAINING WALL

NOT TO SCALE



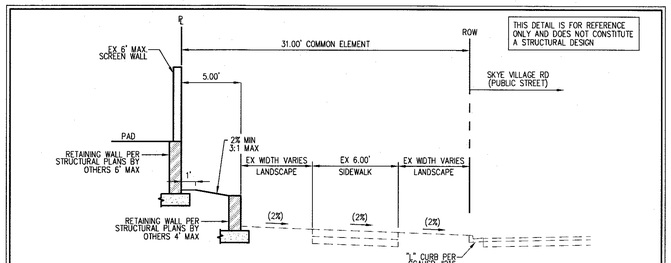
7. CORNER LOT W/ RET WALL ABOVE STREET

NOT TO SCALE



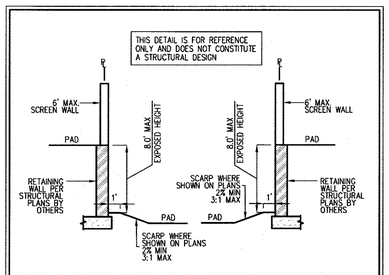
CORNER LOT BELOW STREET W/ RET WALL
12. AND ADJACENT COMMON ELEMENT

NOT TO SCALE



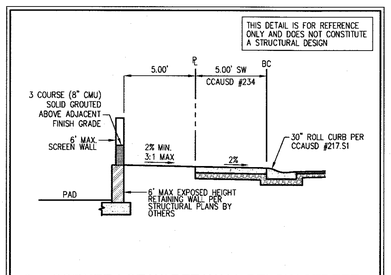
17. PERIMETER STREET SECTION - PAD ABOVE STREET WITH RETAINING WALL

NOT TO SCALE



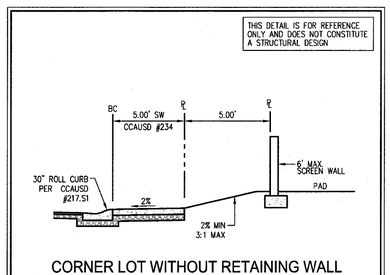
3. REAR YARD WITH RETAINING WALL

NOT TO SCALE



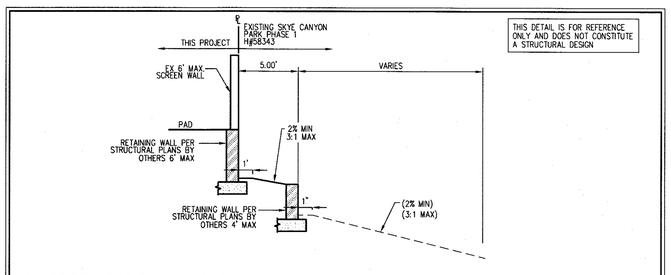
8. CORNER LOT W/ RET WALL BELOW STREET

NOT TO SCALE



CORNER LOT WITHOUT RETAINING WALL
13. ABOVE ADJACENT GRADE

NOT TO SCALE

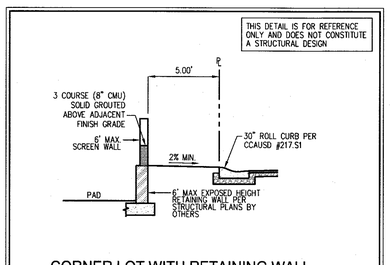


18. PERIMETER STREET SECTION - PAD BELOW STREET WITH RETAINING WALL

NOT TO SCALE

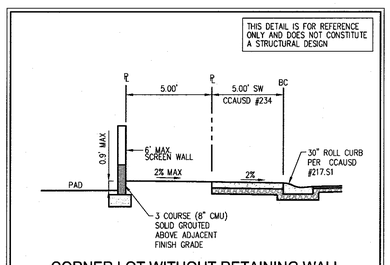
4. REARYARD W/ DOUBLE RETAINING WALL

NOT TO SCALE



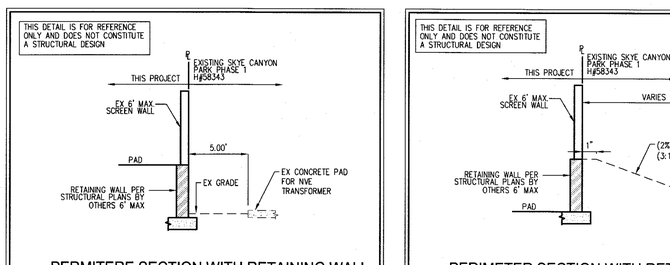
CORNER LOT WITH RETAINING WALL
9. NO SIDEWALK (BELOW ADJACENT GRADE)

NOT TO SCALE



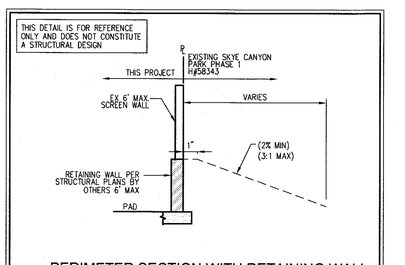
CORNER LOT WITHOUT RETAINING WALL
14. BELOW ADJACENT GRADE

NOT TO SCALE



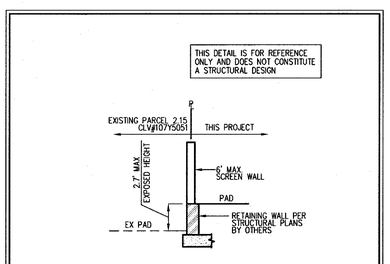
PERMITERE SECTION WITH RETAINING WALL
19. ABOVE ADJACENT GRADE

NOT TO SCALE



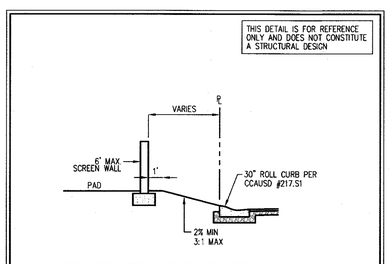
PERIMETER SECTION WITH RETAINING WALL
20. BELOW ADJACENT GRADE

NOT TO SCALE



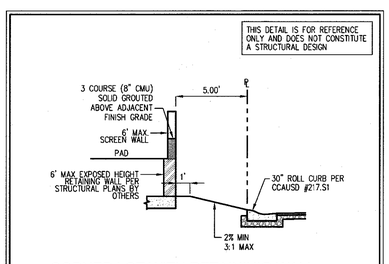
5. SIDEYARD WITH RETAINING WALL

NOT TO SCALE



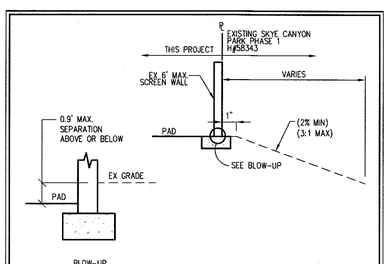
CORNER LOT WITHOUT RETAINING WALL
10. AND NO SIDEWALK

NOT TO SCALE



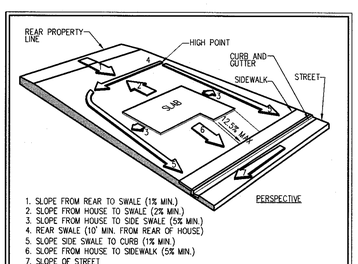
CORNER LOT WITH RETAININIG WALL
15. NO SIDEWALK (ABOVE ADJACENT GRADE)

NOT TO SCALE



21. PERIMETER SECTION WITHOUT RETAINING

NOT TO SCALE



22. TYPE "A" LOT GRADING (TYP.)

NOT TO SCALE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14

GRADING SECTIONS AND DETAILS - I

S12
T19
R59

DATE: 4/25/18

DRAFTER: DNP

DESIGNER: DNP

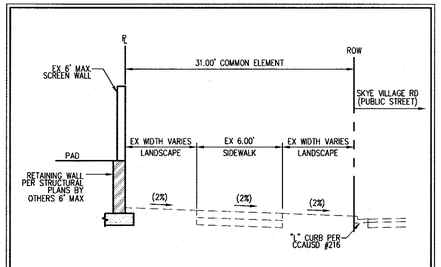
CHECKED: STS

PROJECT NO.
OLY1719-000

PROFESSIONAL ENGINEER STATE OF NEVADA
STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
04/16/18

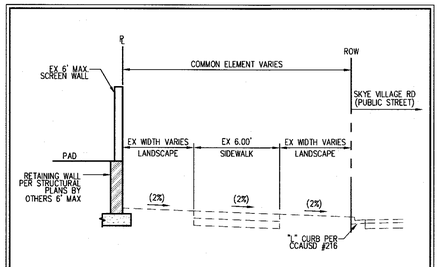
D-2
SHEET 9 OF 20

J:\oly\1719.000 skye canyon parcel 2.14\dwg\Interior\oly1719-000 d12.dwg 4/25/2018 5:26 PM Dominic Pandiscio



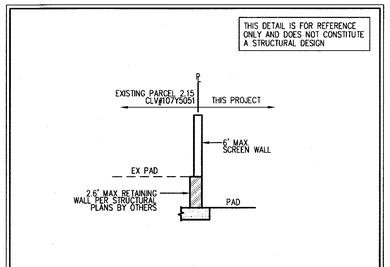
23. PERIMETER SECTION WITH RETAINING WALL

NOT TO SCALE



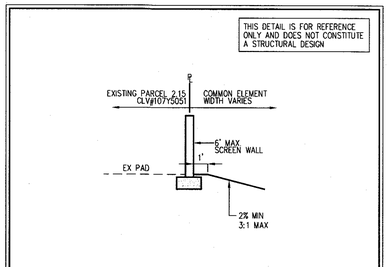
24. PERIMETER SECTION WITH RETAINING WALL

NOT TO SCALE



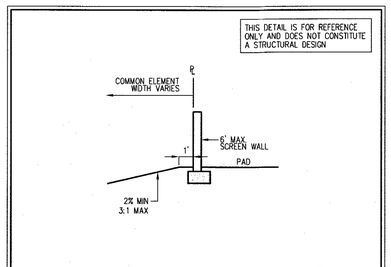
25 REAR YARD WITH RETAINING WALL

NOT TO SCALE



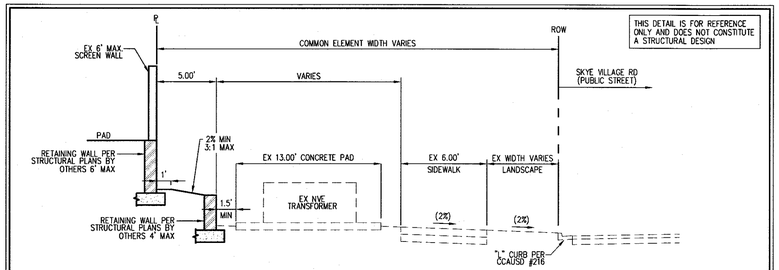
26 PERIMETER SECTION WITHOUT RETAINING

NOT TO SCALE



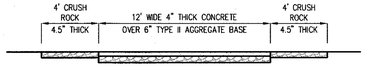
27 SIDE YARD WITHOUT RETAINING

NOT TO SCALE



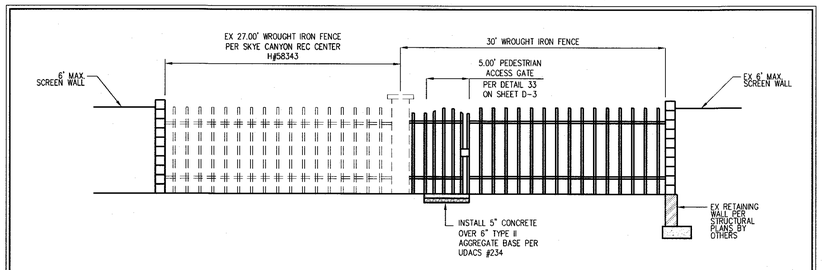
28. PERIMETER STREET SECTION ADJACENT TO EX NVE TRANSFORMER

NOT TO SCALE



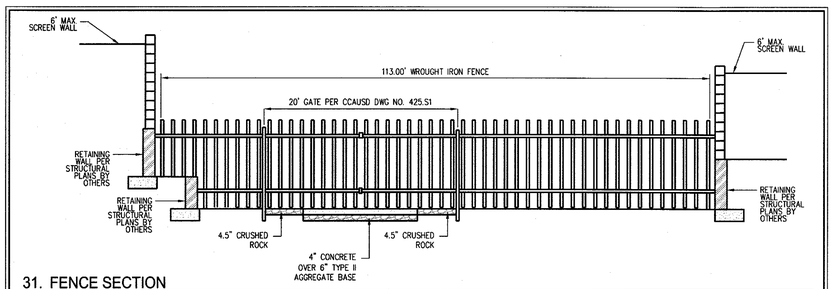
29 ACCESS ROAD SECTION

NOT TO SCALE



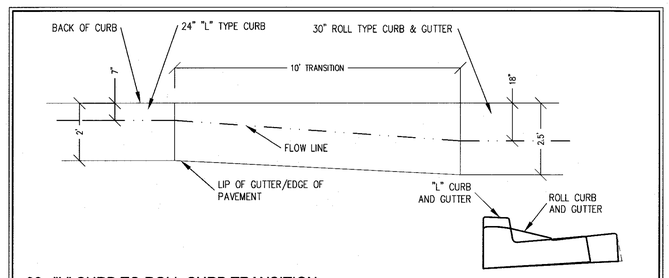
30. FENCE SECTION

NOT TO SCALE



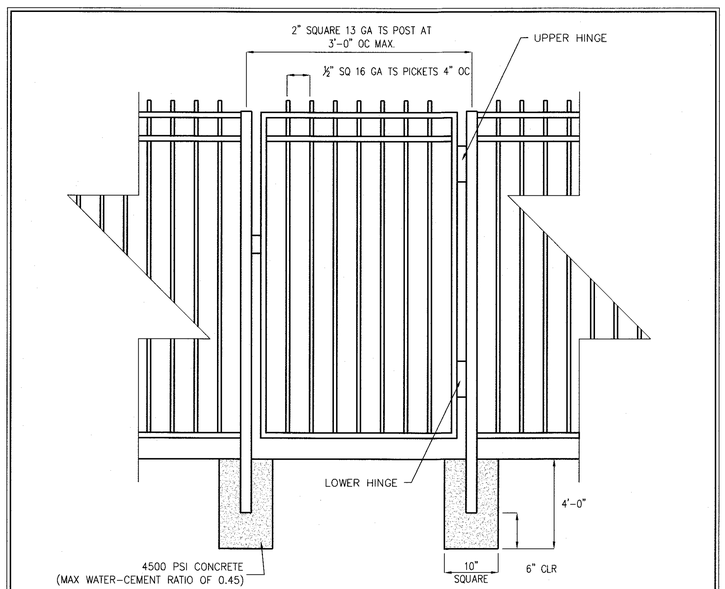
31. FENCE SECTION

NOT TO SCALE



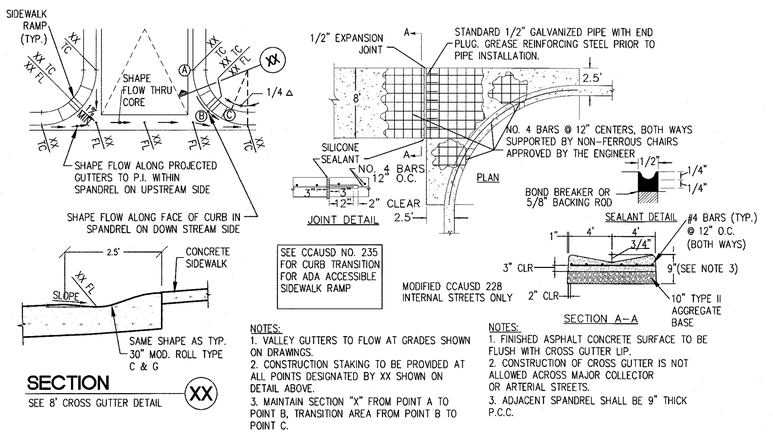
32. "L" CURB TO ROLL CURB TRANSITION

NOT TO SCALE



33. PEDESTRIAN GATE

NOT TO SCALE

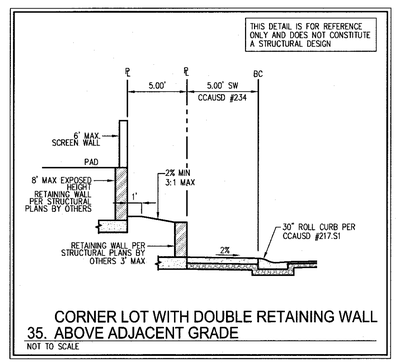


NOTES:
1. VALLEY GUTTERS TO FLOW AT GRADES SHOWN ON DRAWINGS.
2. CONSTRUCTION STAKING TO BE PROVIDED AT ALL POINTS DESIGNATED BY XX SHOWN ON DETAIL ABOVE.
3. MAINTAIN SECTION "X" FROM POINT A TO POINT B. TRANSITION AREA FROM POINT B TO POINT C.

NOTES:
1. FINISHED ASPHALT CONCRETE SURFACE TO BE FLUSH WITH CROSS GUTTER LIP.
2. CONSTRUCTION OF CROSS GUTTER IS NOT ALLOWED ACROSS MAJOR COLLECTOR OR ARTERIAL STREETS.
3. ADJACENT SPANDREL SHALL BE 9" THICK P.C.C.

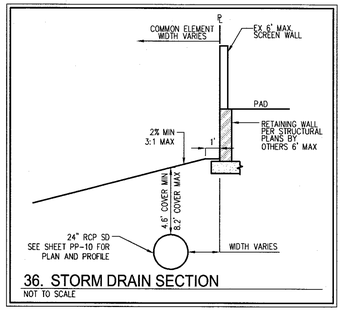
34. MODIFIED 8' WIDE CROSS GUTTER

NOT TO SCALE



CORNER LOT WITH DOUBLE RETAINING WALL
35. ABOVE ADJACENT GRADE

NOT TO SCALE



36. STORM DRAIN SECTION

NOT TO SCALE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14

GRADING SECTIONS AND DETAILS - II

S12 T19 R59

DATE: 4/25/18

DRAFTER: DNP

DESIGNER: DNP

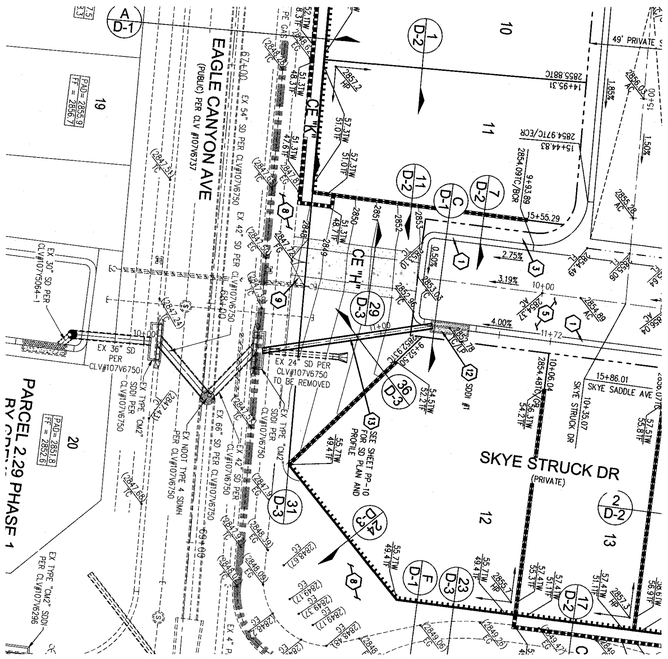
CHECKED: STS

PROJECT NO. OLY1719-000

PROFESSIONAL ENGINEER STATE OF NEVADA
STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
4/26/18

D-3
SHEET 10 OF 20

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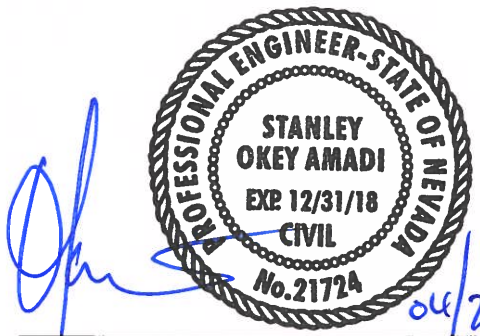

EAGLE CANYON AVE
(PUBLIC) PER CLV #107/67/37
SKYE STRUCK DR
(PRIVATE)
SKYE SADDLE AVE
PARCEL 2.29 PHASE 1
49' PRIVATE
EX 54" SD PER CLV#107/67/50
EX 42" SD PER CLV#107/67/50
EX 66" SD PER CLV#107/67/50
EX 36" SD PER CLV#107/67/50
EX 24" SD PER CLV#107/67/50 TO BE REMOVED
EX 30" SD PER CLV#107/67/50-1
EX TYPE "CM2" SDMH PER CLV#107/67/36
SEE NOTE 4 SDMH
SEE SHEET #P-10 FOR SD PLAN AND PROFILE
SDMH #1
15+55.29
15+86.01
11+72
10+00
2.75%
3.19%
4.00%
10.00%
10.00%
5.47%
5.47%
5.47

TECHNICAL DRAINAGE STUDY
Skye Canyon II Parcel 2.14
City of Las Vegas, Nevada

Job No.: OLY1719.000
Date: April 2018

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



04/26/18

Stanley Okey Amadi, P.E.
NV Professional Engineer No. 21724

Assisted by: Cameron Bencini, P.E.

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Skye Canyon II Parcel 2.14 Date: April 2018

Location of Development: a) Descriptive (Cross Streets): North/South: Skye Village Road

East/West: Eagle Canyon Avenue

b) Section: 12 Township: 19 South Range: 59 East

c) APN: 126-12-710-002

Name of Owner/Developer: KAG Development West, LLC / Ninety-Five Management, LLC

Telephone No.: 702-220-6565 Fax No.: 702-220-6566 E-mail Address: mbolduc@olympiacompanies.com

Address: 11411 Southern Highlands Parkway, Suite 300; Las Vegas, NV 89141

Contact Person – Name: Stanley Okey Amadi, P.E. Telephone No.: 702-284-5300

*E-mail Address: samadi@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	☐	Roadway & Storm Drain Infrastructure

1. Total Owned Land Area: At Site: 12.25 Acres Being Developed/Disturbed: 12.25 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 acre +/-

6. Has the site drainage been evaluated in the past? ☒ Yes** ☐ No If yes, please identify documentation: *Master Drainage Study for Skye Canyon* (SHG, DS4420), *Technical Drainage Study for Skye Canyon Phase 2 Infrastructure* (SHG, DS4739) *& TDS Updates 1 thru 4*

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Drains to local storm drain that discharges to the trunkline in Eagle Canyon Avenue.

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

PROFESSIONAL ENGINEER STATE OF NEVADA
STANLEY OKEY AMADI
EXP 12/31/18
CIVIL
No.21724
04/26/18

Engineer's Seal

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

*Newly Required Field

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

Revision	Date

Local Entity File No.

REFERENCE: ***SHG Job No. OLY1501.001***

STANDARD FORM 1

Updated 05/01/2008

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Skye Canyon II Parcel 2.14	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 KAG Development West, LLC / Ninety-Five Management, LLC		
Address: 11411 Southern Highlands Parkway, Suite 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 (CCRFCD) Hydrologic Criteria and Drainage Design Manual (MANUAL).

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

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

I. GENERAL REQUIREMENT:

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

Reference:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS

Yes	No	
X		A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.
X		A copy of the current CCRFCD Master Plan Update Figure, (F-12), for Flood Control Facilities and Environmental areas with the site delineated.
X		On-site drainage basin maps for existing and proposed conditions showing the existing topography, basin boundaries, concentration points, and on-site and off-site flows in cfs.
X		Vicinity Map with local and major cross streets identified and a north arrow.
X		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	
X		Sheet size: 24" x 36" sealed by a registered engineer in the State of Nevada.
X		Minimum scale: 1" = 60'.
X		Project name.
X		Vicinity Map with local and major cross streets.
X		Revision box.
X		North arrow and bar scale.
X		Engineer's/consultant's address and phone number.
X		Elevation datum and benchmark.
X		Legend for symbols and abbreviations.
X		Cut/fill scarps, where applicable.
X		Street names, grades, widths.
X		Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
X		Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where appropriate.
X		Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.
X		Proposed typical street sections.
	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.
X		Cross-sectional detail for channels, including cutoff wall locations.
X		Existing and proposed drainage facilities, appurtenances, and connections (i.e., sidewalk, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, material, shape, and slope with plan and profile and HGL calculations.
X		Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
	N/A	Location and detail of existing, proposed, and future block wall openings. Minimum size is16"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**

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.
	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.
	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	
X		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.
X		Input and output information for future conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
X		Use of correct precipitation values in and around the McCarran Airport Rainfall Area.
X		A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
X		A summary table of 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**

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 x v ≤ 8. Q_{10} d x v ≤ 6 and 12 foot dry lane for rights-of-way ≥ 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan.
X		A summary table of interior and exterior street capacity calculations showing the street name, 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.
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, 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.
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.

REFERENCE:	**STANDARD FORM 2**

CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA
STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

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

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

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

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

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

II. GRADING PLAN INFORMATION		
Yes	No	
X	-	Proposed on-site and off-site storm drains and other flood control facilities with plan and profile sheets for public storm drains showing the class of pipe, (Class III, IV, V, etc.), design hydraulic grade line, (HGL) and 100 year storm flow. A public drainage easement must be provided over on-site storm drains conveying off-site flows. An overflow path must be provided over all storm drains.
x	-	All existing and "to be constructed" walls with cross-sections showing wall type, (e.g. block wall, retaining wall, flood wall, etc.), with limits clearly defined, adjacent ground elevations. Wall heights must meet current ordinances and in no case exceed 14 feet above the adjacent property.
X	-	Street slopes for both interior and perimeter streets. Note: The minimum slope for a roadway is 0.4 percent, a minimum 18-inch storm drain must be provided where minimum slopes cannot be met.
-	N/A	Back of lot elevations and lot drainage pattern for all lots including common lots.
-	N/A	Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
X	-	On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners. (The project must pass flows through the site every 600 feet where the project is blocking flow paths.)
-	N/A	This project uses a solid grouted stem wall (or approved alternate) at the back of sidewalk to provide erosion protection for landscaped areas where the depth of flow in the roadway exceeds the back of walk elevation. A corresponding cross-section detail is included.
-	N/A	Commercial and Common Lot Landscape areas are not allowed to drain over the sidewalk. The grading plans show flow lines with grades and sidewalk under drains for all landscape areas draining to the public ROW.

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
-	N/A	Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.
-	N/A	Ten-foot wide public drainage easements to be privately maintained are allowed for flow less than 20 cfs. The depth of flow entering the easement must be checked using the submerged weir calculation.
-	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.
-	N/A	Finished floor elevations for buildings adjacent to public drainage easements must be a minimum of 18 inches above the Q100 weir of submerged weir elevation, whichever is greater.

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.

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Appendix F Reference Material
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1 INTRODUCTION

1.1 Project Overview & Study Purpose

Ninety-Five Management, LLC is proposing a single-family residential development, identified as *Skye Canyon II Parcel 2.14,* within the city limits of Las Vegas, Nevada. The proposed development is approximately ±12.5 acres in area and located at the northwest corner of the intersection of Eagle Canyon Avenue and Skye Village Road.

The proposed development is located within the master planned Skye Canyon property and specifically in the Phase 2 area supported by the *Technical Drainage Study for Skye Canyon – Phase 2 Infrastructure* (DS4739). All roadways and perimeter drainage infrastructure required for development of Parcel 2.14 has been technically addressed in the Phase 2 Infrastructure drainage study. Parcel 2.14 proposes utilization of drainage facilities provided by the Phase 2 Infrastructure. It is the objective of this study to show conformance to the drainage patterns established by the Phase 2 Infrastructure drainage study.

Additionally, the 1,662 acre Skye Canyon property has been master planned and the most recent *Update to the Master Drainage Study for Skye Canyon (DS4420)* has been approved by the City of Las Vegas on August 15, 2016. Parcel 2.14 has been proposed within the framework set forth in the Master Drainage Study.

1.2 Description of Improvements

The project is located within Township 19 South, Range 59 East and Section 12, generally within a portion of APN 126-12-710-002. Parcel 2.14 is bound by Eagle Canyon Avenue to the south, Parcel 2.15 to the west, Skye Canyon Park and Clubhouse to the north, and Skye Village Road to the east. A location map identifying the site in relation to major streets in the vicinity has been prepared as Exhibit A, included in Appendix A.

The project consists of construction of single-family residential lots averaging 6,000 ft^2 in area and all associated interior roadways. The typical onsite roadway is to be proposed as a 49-ft wide private street with modified roll curb. The adjacent perimeter roadways are to be installed by separate Phase 2 Infrastructure improvements and Phase 1 Infrastructure and are considered existing for development of Parcel 2.14.

Drainage improvements necessary to control storm runoff and satisfy local drainage criteria onsite have been proposed by Parcel 2.14. The proposed drainage improvements are intended to connect into the existing Phase 2 Infrastructure facilities.

1.3 FEMA Flood Zone Designation

The Parcel 2.14 site boundary has been delineated on current FEMA FIRM Panel Map 32003C1750E, dated September 27, 2002, as Exhibit B included in Appendix A. Per the FIRM Panel, the project site is located within a FEMA designated unshaded Zone 'X', defined as areas outside the 0.2% (500-year) annual chance floodplain. An unshaded Zone 'X' is located outside a FEMA designated Special Flood Hazard Area (SFHA).

1.4 CCRFCD Facility Information

The project site has been delineated on the current 2013 Clark County Regional Flood Control District (CCRFCD) Las Vegas Valley Flood Control Master Plan Update (2013 MPU, Reference 1) facility figure as Exhibit C, included in Appendix A. Per the 2013 MPU, two (2) CCRFCD regional facility alignments are considered pertinent to Parcel 2.14. The following is a summary of the pertinent regional facility alignments, per the 2013 MPU, addressed by this study:

- CNKC 0050 within Eagle Canyon Avenue. This facility is proposed as a part of the Phase 1 Infrastructure improvements as a 72-inch RCP and an 8-ft by 6-ft RCA downstream of the Parcel 2.14 project site. The Phase 2 Infrastructure improvements have established a tie in and acceptable flows to this regional facility. Stubs have been provided by the Phase 2 Infrastructure improvements for adjacent parcels and the Parcel 2.14 site utilizes an existing stub as a discharge location.

1.5 Referenced Documents

The following documents have been utilized as reference materials in the preparation of this drainage study. The referenced documents have been reviewed and determined acceptable for reference. Slater Hanifan Group concurs with all referenced and adopted hydrologic and hydraulic analyses from the studies and the results established therein.

1. *Technical Drainage Study for Skye Canyon – Phase 2 Infrastructure*, prepared by Slater Hanifan Group (hereinafter referred to as the Phase 2 Infrastructure Study, Reference 4), has technically designed the adjacent perimeter roadways and associated drainage infrastructure utilized by Parcel 2.14. The Phase 2 Infrastructure Study has been referenced to show Parcel 2.14 development conformance to the drainage patterns for the perimeter infrastructure in order to prove that development is in accordance with the master plan for the area. The following specific items have been referenced from the Phase 2 Infrastructure Study and included in Appendix E:
    - The Phase 2 Infrastructure interim condition functions as Parcel 2.14's existing drainage condition.
    - Hydraulic modeling of the lateral and Eagle Canyon Avenue storm drain for utilization in the proposed Parcel 2.14 storm drain design
    - Offsite flow impacts from the adjacent perimeter roadways.

2. *Technical Drainage Study for Skye Canyon – Phase 1 Infrastructure*, prepared by Slater Hanifan Group (hereinafter referred to as the Phase 1 Infrastructure Study, Reference 5), has technically designed the adjacent perimeter roadway Skye Village Road. Items referenced from the Phase 1 Infrastructure Study are included in Appendix F:

3. *Master Drainage Study for Skye Canyon*, prepared by Slater Hanifan Group (hereinafter referred to as the SHG Master Study, Reference 6), had conceptually master planned the drainage improvements required for the current land plan on the property. The referenced Phase 2 Infrastructure improvements were shown to be in conformance with the master drainage patterns per the SHG Master Study. Therefore, if this study shows Parcel 2.14 is in conformance with drainage patterns presented in the Phase 2 Infrastructure Study, then it is surmised that it is also in conformance with the SHG

Master Study. As a result, no reference computations from the SHG Master Study is considered necessary in preparation of this Parcel 2.14 technical study since the materials were already adopted by the Phase 2 Infrastructure Study. However, materials from the most recent Update #3 to the SHG Master Study have been provided in Appendix G for informational purposes.

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 and Drainage Design Manual (CCRFCD Manual, Reference 2).

2.2 Hydrologic Modeling

Modeling:

The SCS Unit Hydrograph Method (SCS Method) was utilized to determine peak flow rates. The SCS Method utilizes precipitation, drainage area, curve number and lag time parameters to determine peak flow rates. The SCS Method routine within the U.S. Army Corp of Engineers HEC-1 Flood Hydrograph Package program was utilized to model the drainage basins analyzed by this study.

Precipitation:

The site is located outside of the McCarran Airport Rainfall Area. Per the CCRFCD Manual precipitation exhibits, the precipitation values utilized in this study's HEC-1 models are 3.00 and 1.67 inches for the 100-year and 10-year storm event, respectively. No drainage area exceeds 8 square miles, an SDN 3 design storm distribution referenced from Table 503 of the CCRFCD Manual is used. Relevant tables and figures from the CCRFCD Manual have been included in Appendix B.

Curve Number:

The SCS curve number loss rate methodology was utilized to approximate infiltration for the drainage basins. The soils information within the watershed was obtained from the NRCS Natural Resources Conservation Service of the Las Vegas Valley Area, Nevada, Part of Clark County (Soil Survey, Reference 3). This study's drainage basins lie within the following soil types delineated on Exhibit D, included in Appendix A:

- Soil 155 – Cave gravelly fine sandy loam, 4 to 15 percent slopes. This soil is composed of 100% HSG 'D'.

A composite curve number for land use utilized in this study's hydrologic analysis has been obtained utilizing the percentage identified above, and the computations are included in Appendix B.

Note that this project proposes lots that are an average of 6,000 ft^2 in area which utilizes a "6,000 sq-ft" lot curve number per the CCRFCD Manual Table 602A; therefore, the curve

numbers utilized are in conformance with the SHG Master Study as well as the Phase 2 Infrastructure Study that designed the receiving drainage facilities.

Lag Time:

The lag time is defined as the time measured from the center of mass of excess rainfall to the time to peak of the outflow hydrograph. The lag time is related to the time of concentration as 0.6 times the time of concentration. The time of concentration is defined as the time required for runoff to flow from the hydraulically most distant point of a basin to the outlet point of the basin. Standard Form 4, as outlined in the CCRFCD Manual, was utilized to determine the lag times for basins modeled. The lag time computations have been included in Appendix B.

2.3 Hydraulic Modeling & Criteria

Street Flow:

Street flows have been analyzed utilizing the Flowmaster Version 8i software by Haestad Methods. In accordance with the CCRFCD Manual, the following criteria apply:

- 10-year minor storm event: maximum flow depth of 1-ft from gutter flowline, and depth times velocity factor (DxV) not exceeding 6.
- 100-year major storm event: maximum flow depth of 2-ft from gutter flowline, and depth times velocity factor (DxV) not exceeding 8.

Curb Inlets:

Curb inlets have been assessed using an in-house computation spreadsheet which 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 drain has been performed utilizing the Water Surface and Pressure Gradient (WSPG) 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) minimum 1-ft below above finished grade and limit the flow velocities in the facility to less than 25 ft/s.

Emergency Overflow:

Emergency overflow computations have been provided through utilizing the Flowmaster Version 8i software by Haestad Methods.

3 EXISTING DRAINAGE CONDITION

3.1 Definition/Discussion of Existing Condition

The existing condition considers the Phase 2 infrastructure as existing and the project site mass graded and draining in a south easterly direction per the Phase 2 Infrastructure plans. The site has been assessed by the Phase 2 Infrastructure study and Master Drainage study in the past. Due to the site being surrounded by perimeter streets provided by the Phase 2 Infrastructure study, there are no impacts to the Parcel 2.14 project site that will differ from what has been previously analyzed in the approved studies. As a result, no additional analyses have been performed by this study to demonstrate an existing drainage condition for Parcel 2.14.

4 DEVELOPED DRAINAGE CONDITION

4.1 Definition of Developed Condition

The developed condition considers the Parcel 2.14 area constructed, inclusive of the proposed interior roadway infrastructure. The offsite storm drain improvements in Eagle Canyon Avenue are installed per the Phase 2 Infrastructure Study. Included in this project are the proposed drainage facilities that are designed to collect and convey storm runoff produced by the entire Parcel 2.14 area and conform to the master planned drainage patterns established in the Phase 2 Infrastructure Study.

The upstream offsite drainage areas are assumed to be fully developed and follow the ultimate conditions, as illustrated by the Phase 2 Infrastructure Study.

4.2 Discussion of Developed Condition

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

Parcel 2.14 is defined as Basin DON. Basin DON drains to onsite roadways that convey flow south and east to a 15-ft type CM2 drop inlet. Intercepted flow is conveyed into the trunkline beneath Eagle Canyon Avenue.

4.3 Summary of Developed Condition Flows

A summary of the existing condition flow, as determined by HEC-1 analysis and reference material, has been presented on Exhibit E. Refer to Appendix B for the applicable HEC-1 analysis.

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4.4 Summary of Developed Condition Street Flows

A hydraulic analysis table of the street flows, as determined by Flowmaster, has been presented on Exhibit E. Refer to Appendix C for the applicable Flowmaster analysis.

Section O-1 – This section is representative of the proposed interior private roadways. The section is described as a full street 49' ROW with roll-curb and gutters, analyzed with a minimum/maximum slope, and utilized a flowrate from Basin DON. The maximum slope

utilized the specific energy to evaluate the proposed finished floor elevations. The minimum slope utilized the normal depth to evaluate the proposed finished floor elevations. In addition, these sections were used as the most conservative sections to evaluate the flow conditions within the onsite roadways to ensure all street flow criteria is met.

Section O-1a – This section is representative of the proposed interior private roadways. The section is described as a full street 49' ROW with roll-curb and gutters, analyzed with the maximum slope on Warm Skye Street, and utilized a flowrate from Prorate Basin DON(B). This section was specifically analyzed to ensure the specific energy of the flow conveyed by Warm Skye Street does not overtop the high point at the entryway.

Section P-1 – This section is representative of the existing Skye Village Road. The section is described as a half street 100' ROW with L-curb and gutters, analyzed with the minimum slope, and utilized a flowrate of approximately 6.5 cfs being one-quarter of the flow from basin HUAL ($Q1_{00}$=26 cfs) referenced from the Phase 1 Infrastructure Study. The normal depth generated by this section was used to evaluate the finished floor elevations adjacent to the roadway.

Sections ECA3b, ECA3c & ECA4 – These sections are representative of existing Eagle Canyon Avenue. The sections were referenced from the Phase 2 Infrastructure Study. All sections are provided; however, the section with the highest normal depth was utilized to evaluate finished floor elevations as well as the site entrance hump requirements.

4.5 Summary of Drainage Facilities

Storm Drain

The project site proposes an onsite drainage facility. The main onsite storm drain alignment has been identified by WSPG model "P6-L2". The alignment had been provided by the Phase 2 Study as a lateral stub (Facility L8). Facility L8 has been reset from the existing curb inlet (Facility P6) and realigned/extended to connect with the proposed 15-ft Type CM2 drop inlet located in sump (Facility P1). The proposed inlet (Facility P1) will collect the entire onsite runoff and convey it through a 24" RCP lateral which connects to the Phase 2 Infrastructure study. Note that per the Phase 2 Infrastructure Study, Facility L8 was designed to collect approximately half the onsite flow while the remaining flow was anticipated to spill onto Eagle Canyon Avenue and be collected by the dual 17.5-ft Type CM2 inlets located in sump (Facility P6). The proposed storm drain system was reanalyzed and shown to have the capacity to convey the entire onsite runoff.

The WSPGW model for the proposed storm drain and a facility summary table are provided in Appendices C and A (Exhibit E), respectively.

Emergency Overflow Path

Section E-1 – An emergency overflow path is provided for the proposed storm drain. The emergency overflow path is provided to ensure a flow path for ponded flow in the case that the proposed inlet gets completely clogged.

5 ULTIMATE DRAINAGE CONDITION

5.1 Definition/Discussion of Ultimate Condition

The ultimate condition considers that Skye Canyon is entirely developed, inclusive of the future residential areas bound by the Phase 2 Infrastructure improvements. A conceptual ultimate drainage condition had been defined by the referenced Phase 2 Infrastructure Study, and it has been utilized in the preparation of this study's ultimate condition analysis.

6 PROPOSED FINISHED FLOORS

The proposed finished floor elevations satisfy the CCRFCD as well as the local City of Las Vegas policy and are elevated a minimum of 6-inches above the adjacent top of curb elevation measured at the high side of the lot. In addition, all finished floors are adequately flood protected and elevated above twice the depth of flow in the adjacent street. The hydraulic evaluation of proposed finished floors, utilizing the applicable flow depths established by this study, has been included in Appendix F.

Additionally, an emergency overflow path is provided at the low point proposed in the site to allow for storm flows to exit into Eagle Canyon Avenue in the case that the onsite drop inlet becomes clogged or considered inefficient. After inspection of weir computations included in Appendix C, the adjacent affected lots have been determined to be above the overflow water surface elevation at the exit point; therefore, considered adequately flood protected.

7 CONCLUSIONS & RECOMMENDATIONS

1. The proposed improvements are not located within a FEMA designated SFHA.

2. The proposed drainage patterns are in conformance with the Phase 2 Infrastructure Study as well as the SHG Master Study. It is anticipated that the Phase 2 Infrastructure improvements are in place and functioning prior to start of Parcel 2.14 development.

3. Although, the Phase 2 Infrastructure Study only anticipated a portion of the onsite flows to be captured by the storm drain stub while the remainder will overflow into Eagle Canyon Avenue to be intercepted by the sump inlets. The subject study now proposes to capture and discharge the entire onsite flows to the lateral stub and into its proposed storm drain facilities. Hydraulic analysis and modeling show that the adjustment due to additional surface flows does not adversely impact the Eagle Canyon Avenue facilities as the overall quantity of flow from the site remains the same.

4. The proposed street flow and storm drain facilities satisfy local and CCRFCD criteria.

5. The proposed finished floors are adequately flood protected meeting criteria against design flows and potential overflow conditions.

6. The grading plan, storm drain profile and detail sheets for this project have been included with this study. These plans support the drainage patterns and conclusions detailed in this study.

8 REFERENCES

1. *Las Vegas Valley Flood Control Master Plan Update.* PBS&J, Louis Berger Group and Parsons Brinckerhoff, 2013.

2. *Hydrologic Criteria and Drainage Design Manual.* Clark County Regional Flood Control District, 1999.

3. *Soil Survey of Las Vegas Valley Area, Nevada.* U.S. Department of Agriculture, Natural Resources Conservation Service, August 2016.

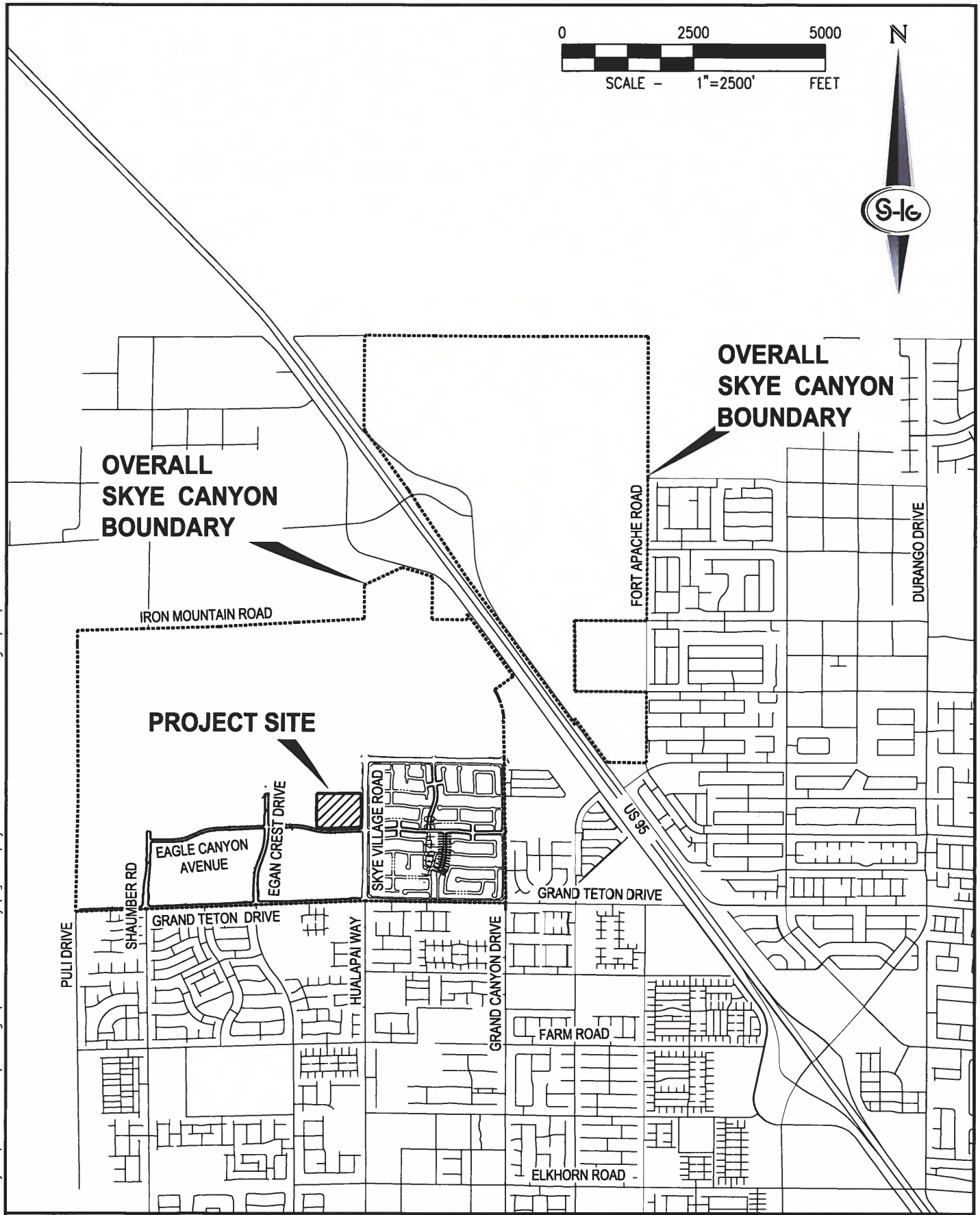
4. *Technical Drainage Study for Skye Canyon – Phase 2 Infrastructure*; by Slater Hanifan Group, October 2017.

5. *Technical Drainage Study for Skye Canyon – Phase 1 Infrastructure*; by Slater Hanifan Group, July 2015.

6. *Master Drainage Study for the Skye Canyon Master Plan – Update #3;* Slater Hanifan Group, August 2016.

APPENDIX A

Drainage Exhibits



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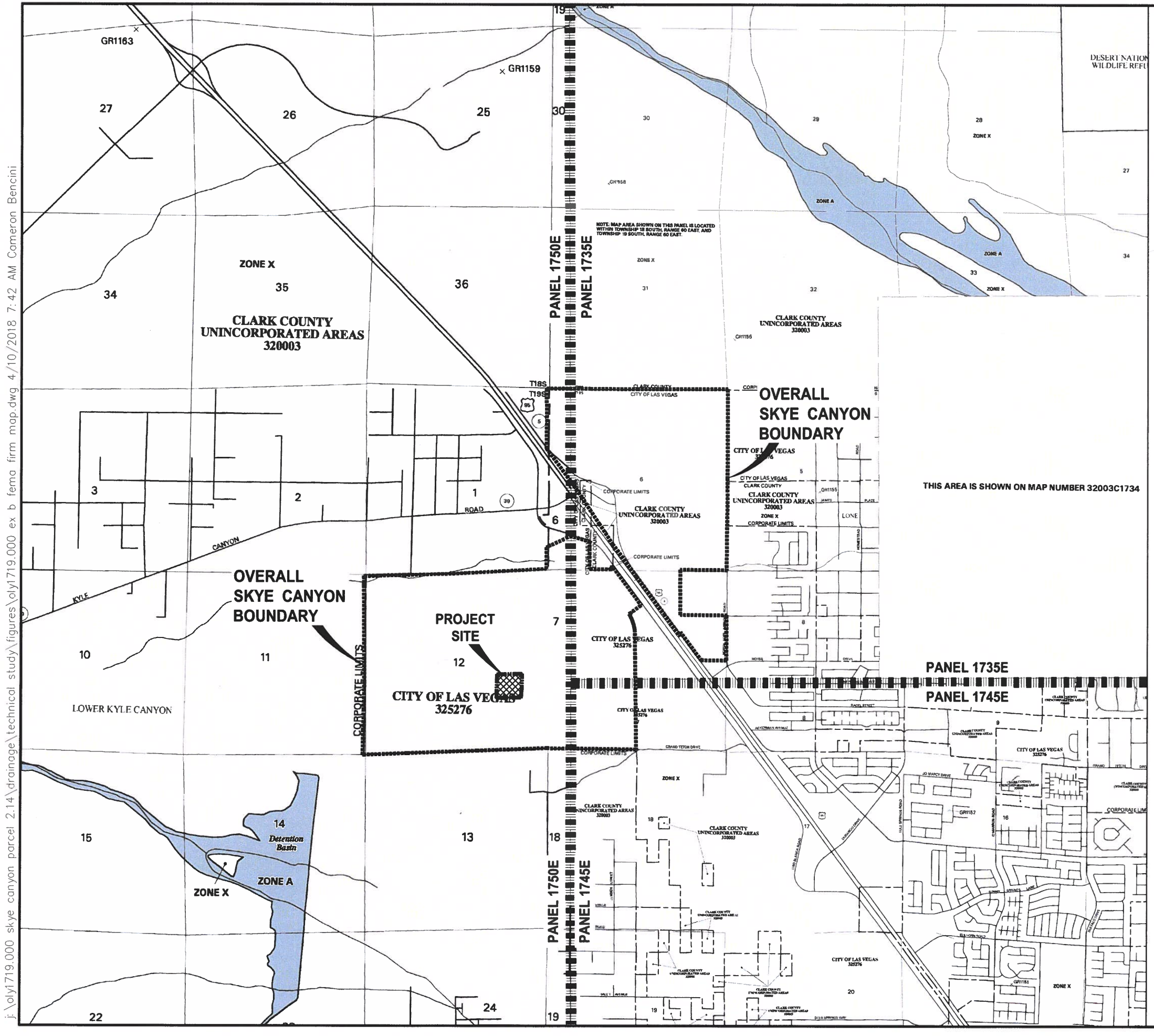
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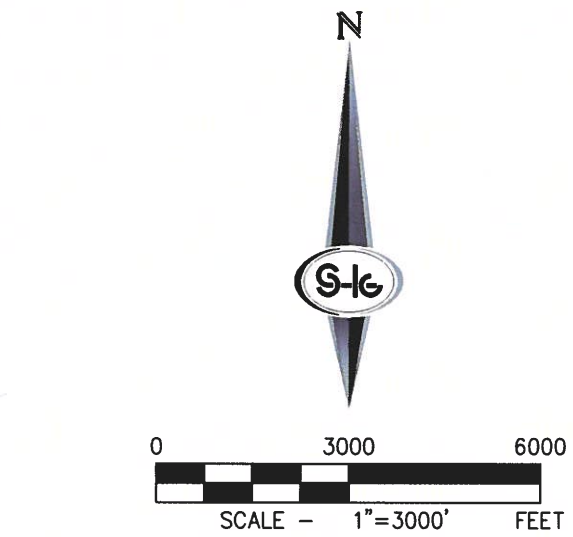
NINETY FIVE MANAGEMENT, LLC

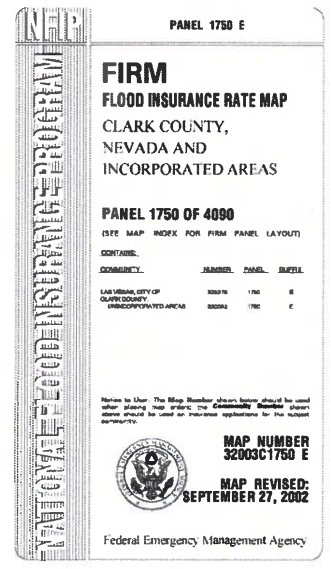
SKYE CANYON II PARCEL 2.14

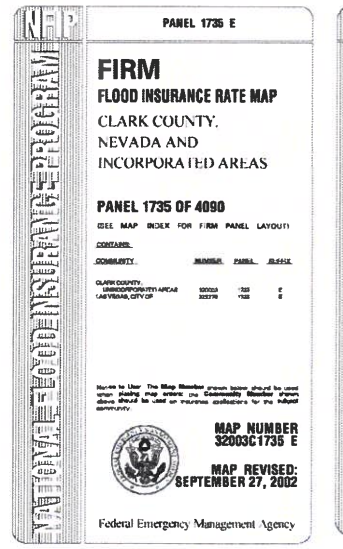
LOCATION MAP

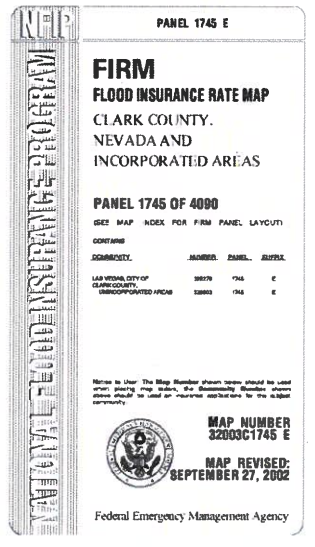
DATE: APRIL 2018	PROJECT NO. OLY1719-000
DRAFTER: CWB	
DESIGNER: CWB	EXHIBIT A
CHECKED: SOA	SHEET 1 OF 1











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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

NINETY FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14

FEMA FIRM MAP

DATE: APRIL 2018
DRAFTER: CWB
DESIGNER: CWB
CHECKED: SOA
PROJECT NO. OLY1719-000

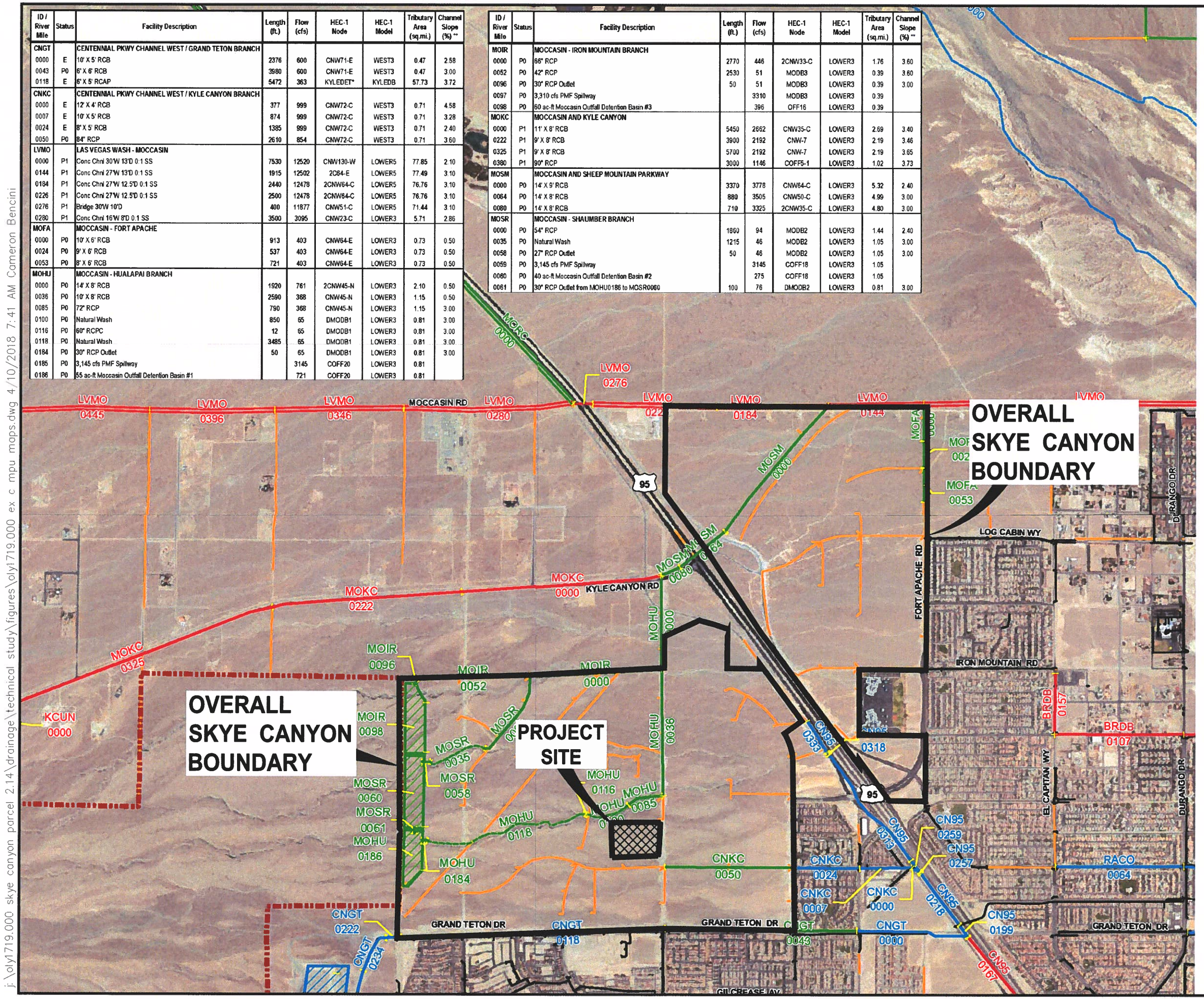
EXHIBIT B

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ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
CNGT		CENTENNIAL PKWY CHANNEL WEST / GRAND TETON BRANCH						
0000	E	10' X 5' RCB	2376	600	CNW71-E	WEST3	0.47	2.58
0043	P0	6' X 6' RCB	3980	600	CNW71-E	WEST3	0.47	3.00
0118	E	6' X 5' RCAP	5472	363	KYLEDET*	KYLEDB	57.73	3.72
CNKC		CENTENNIAL PKWY CHANNEL WEST / KYLE CANYON BRANCH						
0000	E	12' X 4' RCB	377	999	CNW72-C	WEST3	0.71	4.58
0007	E	10' X 5' RCB	874	999	CNW72-C	WEST3	0.71	3.28
0024	E	8' X 5' RCB	1385	999	CNW72-C	WEST3	0.71	2.40
0050	P0	84" RCP	2610	854	CNW72-C	WEST3	0.71	3.60
LVMO		LAS VEGAS WASH - MOCCASIN						
0000	P1	Conc Chnl 30'W 13'D 0:1 SS	7530	12520	CNW130-W	LOWER5	77.85	2.10
0144	P1	Conc Chnl 27'W 13'D 0:1 SS	1915	12502	2C84-E	LOWER5	77.49	3.10
0184	P1	Conc Chnl 27'W 12.5'D 0:1 SS	2440	12478	2CNW64-C	LOWER5	76.76	3.10
0226	P1	Conc Chnl 27'W 12.5'D 0:1 SS	2500	12478	2CNW64-C	LOWER5	76.76	3.10
0276	P1	Bridge 30'W 10'D	400	11877	CNW51-C	LOWER5	71.44	3.10
0280	P1	Conc Chnl 16'W 8'D 0:1 SS	3500	3095	CNW23-C	LOWER3	5.71	2.86
MOFA		MOCCASIN - FORT APACHE						
0000	P0	10' X 6' RCB	913	403	CNW64-E	LOWER3	0.73	0.50
0024	P0	9' X 6' RCB	537	403	CNW64-E	LOWER3	0.73	0.50
0053	P0	8' X 6' RCB	721	403	CNW64-E	LOWER3	0.73	0.50
MOHU		MOCCASIN - HUALAPAI BRANCH						
0000	P0	14' X 8' RCB	1920	761	2CNW45-N	LOWER3	2.10	0.50
0036	P0	10' X 8' RCB	2590	368	CNW45-N	LOWER3	1.15	0.50
0085	P0	72" RCP	790	368	CNW45-N	LOWER3	1.15	3.00
0100	P0	Natural Wash	850	65	DMODB1	LOWER3	0.81	3.00
0116	P0	60" RCPC	12	65	DMODB1	LOWER3	0.81	3.00
0118	P0	Natural Wash	3485	65	DMODB1	LOWER3	0.81	3.00
0184	P0	30" RCP Outlet	50	65	DMODB1	LOWER3	0.81	3.00
0185	P0	3,145 cfs PMF Spillway		3145	COFF20	LOWER3	0.81	
0186	P0	55 ac-ft Moccasin Outfall Detention Basin #1		721	COFF20	LOWER3	0.81	

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
MOIR		MOCCASIN - IRON MOUNTAIN BRANCH						
0000	P0	66" RCP	2770	446	2CNW33-C	LOWER3	1.76	3.60
0052	P0	42" RCP	2530	51	MODB3	LOWER3	0.39	3.60
0096	P0	30" RCP Outlet	50	51	MODB3	LOWER3	0.39	3.00
0097	P0	3,310 cfs PMF Spillway		3310	MODB3	LOWER3	0.39	
0098	P0	60 ac-ft Moccasin Outfall Detention Basin #3		396	OFF16	LOWER3	0.39	
MOKC		MOCCASIN AND KYLE CANYON						
0000	P1	11' X 8' RCB	5450	2662	CNW35-C	LOWER3	2.69	3.40
0222	P1	9' X 8' RCB	3900	2192	CNW-7	LOWER3	2.19	3.46
0325	P1	9' X 8' RCB	5700	2192	CNW-7	LOWER3	2.19	3.65
0380	P1	90" RCP	3000	1146	COFF5-1	LOWER3	1.02	3.73
MOSM		MOCCASIN AND SHEEP MOUNTAIN PARKWAY						
0000	P0	14' X 9' RCB	3370	3778	CNW64-C	LOWER3	5.32	2.40
0084	P0	14' X 8' RCB	880	3505	CNW50-C	LOWER3	4.99	3.00
0080	P0	14' X 8' RCB	710	3325	2CNW35-C	LOWER3	4.80	3.00
MOSR		MOCCASIN - SHAUMBER BRANCH						
0000	P0	54" RCP	1860	94	MODB2	LOWER3	1.44	2.40
0035	P0	Natural Wash	1215	46	MODB2	LOWER3	1.05	3.00
0058	P0	27" RCP Outlet	50	46	MODB2	LOWER3	1.05	3.00
0059	P0	3,145 cfs PMF Spillway		3145	COFF18	LOWER3	1.05	
0060	P0	40 ac-ft Moccasin Outfall Detention Basin #2		275	COFF18	LOWER3	1.05	
0061	P0	30" RCP Outlet from MOHU0186 to MOSR0060	100	76	DMODB2	LOWER3	0.81	3.00



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SCALE – 1"=2000' FEET

REGIONAL FLOOD CONTROL DISTRICT

2013
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F- 7
FIGURE F- 8
FIGURE F- 12
FIGURE F- 13
FLOOD CONTROL FACILITIES

LEGEND

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

Remove & Replace/Parallel Facilities

Category A	Category B
Channel	Channel
Stormdrain	Stormdrain

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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

NINETY FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14
CCRFCD 2013 MPU FACILITIES MAP

DATE:	APRIL 2018
DRAFTER:	CWB
DESIGNER:	CWB
CHECKED:	SOA
PROJECT NO.	OLY1719-000

EXHIBIT C
SHEET 1 OF 1

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SCALE – 1"=500' FEET

LEGEND

- BASIN BOUNDARY
- ID — BASIN ID
- SOIL TYPE BOUNDARY

155

DON

SLATER HANIFAN GROUP
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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

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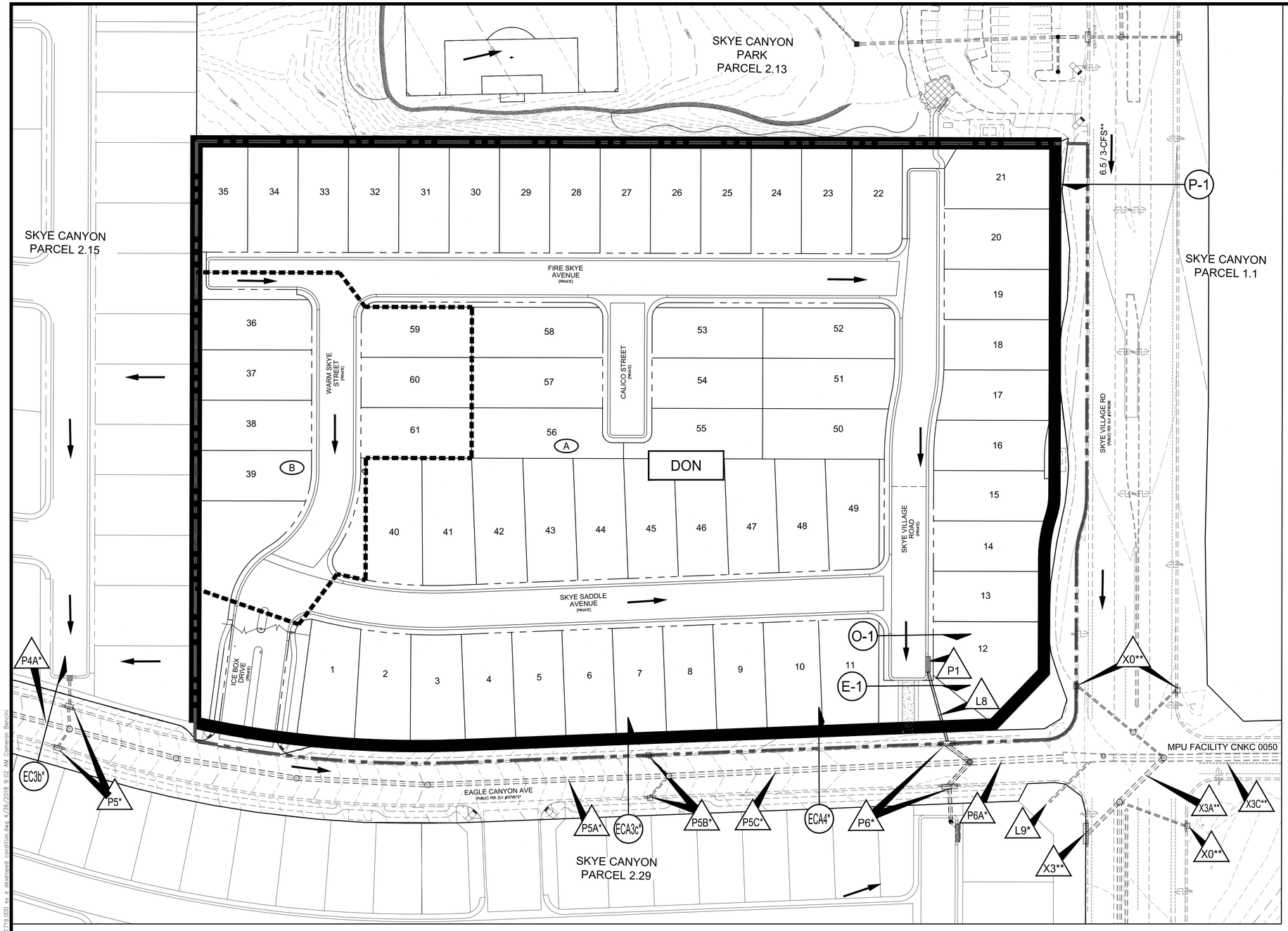
SKYE CANYON II PARCEL 2.14

SOILS MAP

DATE: APRIL 2018
DRAFTER: CWB
DESIGNER: CWB
CHECKED: SOA
PROJECT NO. OLY1719-000

EXHIBIT D
SHEET 1 OF 1

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LEGEND

- BASIN BOUNDARY
- PRO-RATED SUBBASIN BOUNDARY
- ID — BASIN ID
- ID — PRO-RATED SUBBASIN ID
- ID — CONCENTRATION POINT ID
- FLOW DIRECTION
- ID — FLOWMASTER SECTION
- ID — FACILITY ID

NOTES:

* REFERENCED FROM THE PHASE 2 STUDY

** REFERENCED FROM THE PHASE 1 STUDY

Referenced Developed Condition Flow Rate Summary

Basin	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
DON	11.46	34	16

Prorated Flow Summary

Basin ID	Q_{100} (cfs)	Area (acres)	100-yr Unit Flow (cfs/acre)
DON	34	11.46	3.0
Subbasin ID	**Q_{100} (cfs)**	**Area (acres)**	**100-yr Unit Flow (cfs/acre)**
DON(A)	29	9.85	3.0
DON(B)	5	1.61	3.0
TOTAL	***34***	***11.46***	

Developed Condition 100-Year Street Flow Summary

Section ID	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	DxV
O-1 (Q = DON)	34	0.60	0.54	2.9	1.6
		5.75	0.40	6.4	2.6
O-1a (Q = DON(B))	5	3.90	0.24	3.7	0.9
EC3b*	14	4.94	0.36	5.0	1.8
EC3c*	31	4.94	0.45	6.1	2.7
ECA4*	24	0.5	0.58	2.42	1.4
P-1	6.5**	0.5	0.48	2.1	1.0

Developed Condition 100-Year Emergency Overflow Summary

Section ID	Q_{100} (cfs)	Convayanyce Method	Slope (%)	Depth (ft)	Velocity (fps)	DxV
E-1 Q= DON	34	Wier	-	0.37	1.9	0.7
		Normal Depth	10.00	0.14	5.0	0.7

Flood Control Facility Summary

Facility ID	Facility	Design Q_{100} (cfs)	Proposed Q_{100} (cfs)	Comment
X0**	Existing 5-ft Type CM2 DIs	N/A	N/A	Provided for Nuisance Flows Only
X3**	Existing 20-ft Sump Drop Inlet	39	42.5	36" RCP Lateral
X3A**	Existing 48" RCP	102	88.5	
X3C**	Existing 72" RCP	479.5	479.5	
P1	Proposed 15-ft Type CM2 Inlet	34	34	
P4A*	Existing 48" RCP	262	269	
P5*	(2) Existing 7.5-ft Type CM2 DIs	14	8	24" RCP North, 18" RCP South Lateral
P5A*	Existing 48" RCP	292	289	
P5B*	(2) Existing 5-ft Type CM2 Nuisance DIs	Nuisance	10	Q shown is total for both inlets
P5C*	Existing 54" RCP	292	299	
P6*	(2) Existing 17.5-ft Type CM2 Sump DIs	51	41	42" RCP laterals (Q shown is total for both inlets)
P6A*	Existing 66" RCP	387.5	391	
L8	Proposed 24" RCP	17	34	Existing RCP Lateral to be reset and storm drain to be extended to Facility P1
L9*	Existing 36" RCP	27.5	34	

1 - "*" Denotes a Facility Constructed w ith the Phase 1 Infrastructure Study

2 - "*" Denotes a Facility Constructed w ith the Phase 2 Infrastructure Study

N

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SCALE – 1"=50' FEET

SLC ENGINEERING CONSULTING ENGINEERS & PLANNERS

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

NINETY FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14

DEVELOPED CONDITION DRAINAGE MAP

DATE: APRIL 2018

DRAFTER: CWB

DESIGNER: CWB

CHECKED: SOA

PROJECT NO. OLY1719-000

EXHIBIT E

SHEET 1 OF 1

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APPENDIX B

Hydrologic Data

Precipitation

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS

Rainfall and Precipitation Computation

Project Name: Skye Canyon Parcel 2.14
Date: 4/10/2018
File Name: OLY1719.000 TDS Precipitation Calcs.xls
By: CWB

Data:

Reference:

Project is located in: Township: 19 S. Range: 59 E. Section: 12 — APN Map

Site is NOT located in the McCarran Airport Rainfall Area — Figure 513*

Rainfall Depth-Duration-Frequency 10-Year, 6-Hour: 1.35 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): 12.3 = 0.0191 square miles — Table 502*
DARF = 1.00

Calculations:

P_{10} = 1.67 — 10-Year Precipitation (in)
P_{100} = 3.00 — 100-Year Precipitation (in)

P10/P100= 0.56 — HEC-1 Multiple Ratio Value

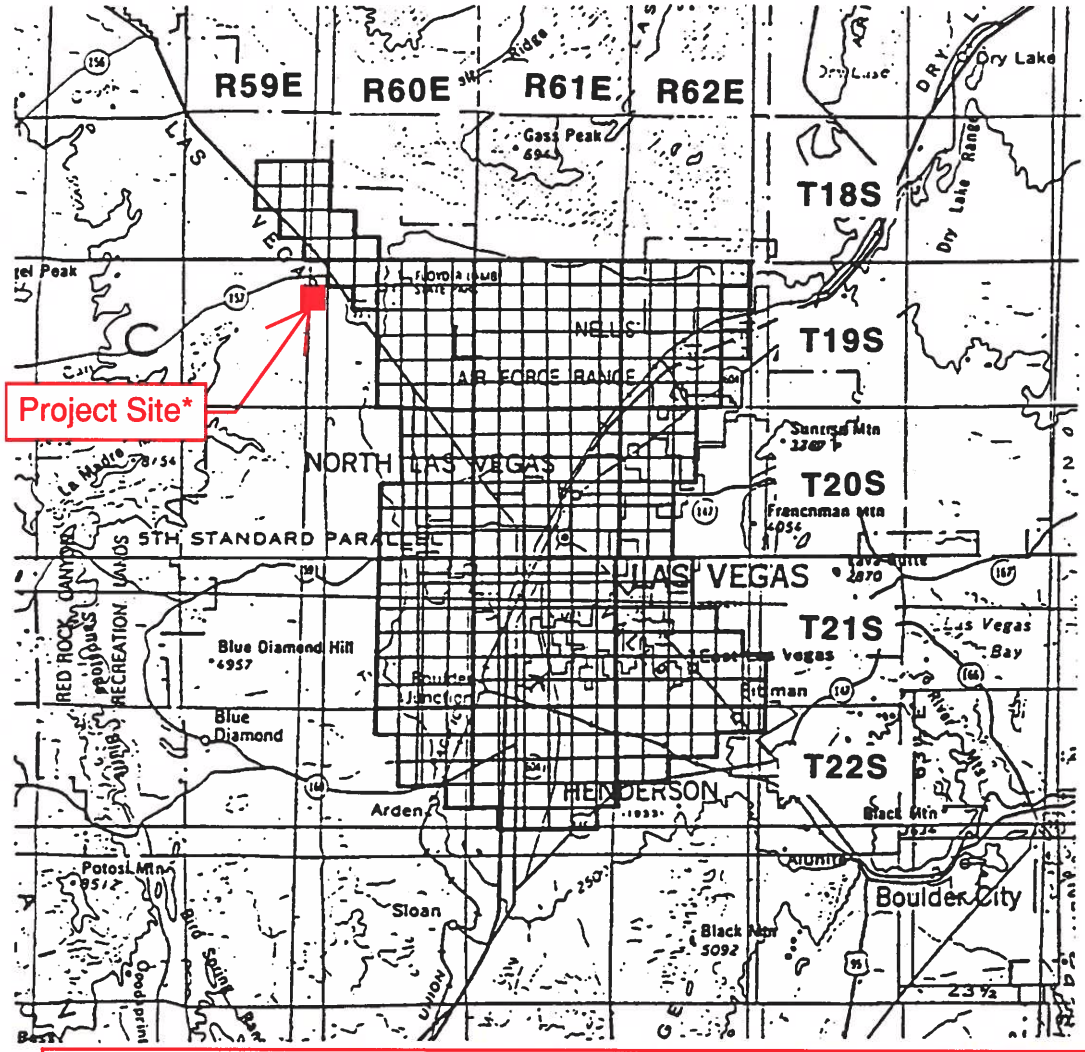
Equations:

P=(Rainfall)*(Precipitation Adjustment Ratio)*(Depth Area Reduction Factor)

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

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Ph. 702-284-5300 - Fx. 702-284-5399

McCARRAN AIRPORT RAINFALL AREA



*Project site not located within the McCarran Rainfall area (T19S-R59E-S12)

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.

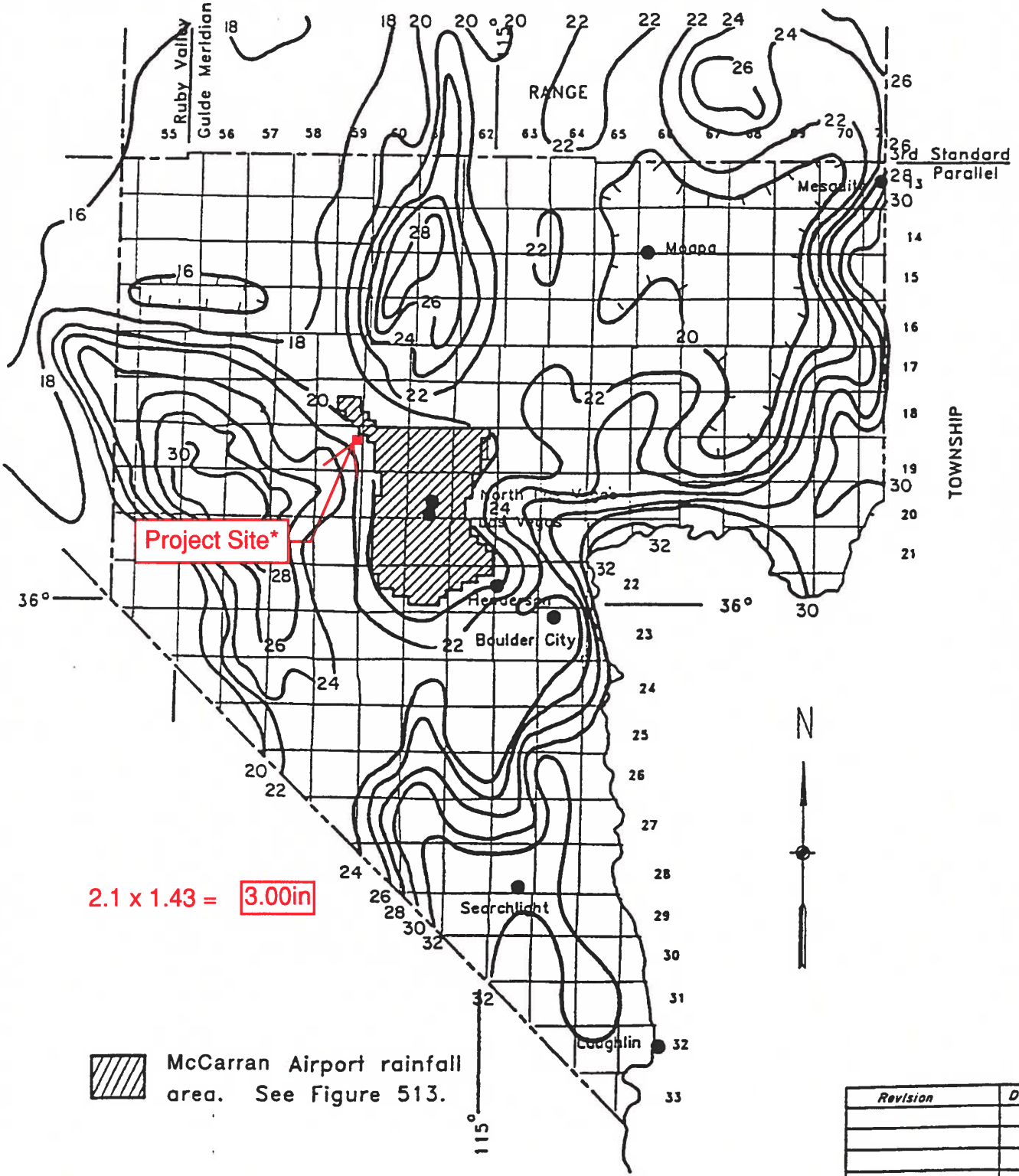
Revision	Date

WRC ENGINEERING

REFERENCE:
USACE, Los Angeles District, 1988

FIGURE 513

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



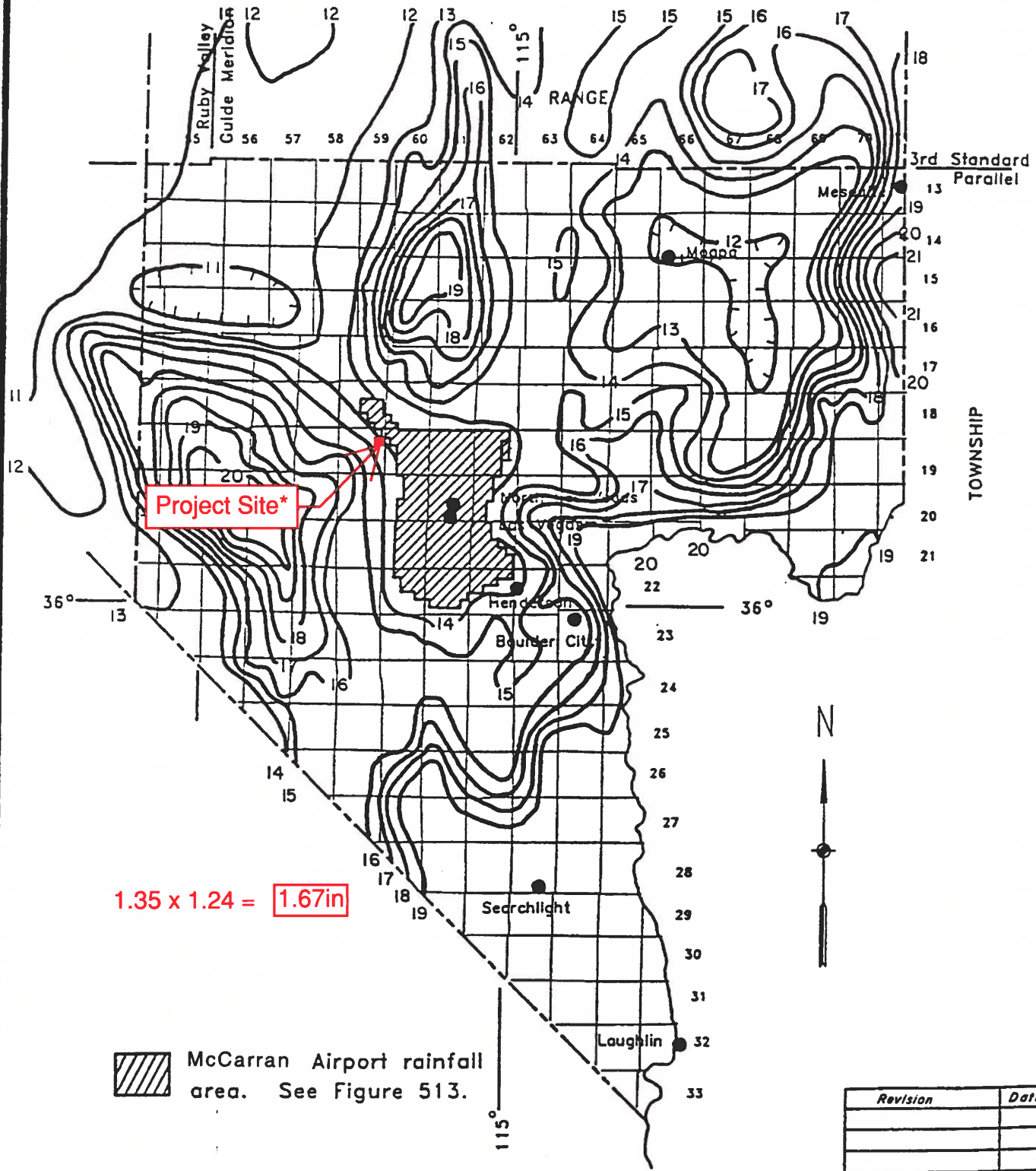
Revision	Date

WRC ENGINEERING

REFERENCE:
NOAA ATLAS 2, VOLUME VII NEVADA, 1973

FIGURE 506

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



Revision	Date

WRC ENGINEERING

REFERENCE:
NOAA ATLAS 2, VOLUME VII NEVADA, 1973

FIGURE 503

PRECIPITATION ADJUSTMENT RATIOS

Recurrence Interval	Ratio to NOAA Atlas 2
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.

Revision	Date

SIX HOUR DEPTH-AREA REDUCTION FACTORS

Drainage Area (Square Miles)	Six-Hour Depth-Area Reduction Factor
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.

Revision	Date

SIX-HOUR STORM DISTRIBUTIONS

Storm Time (In Minutes)	Percent of Total Storm Depth SDN3	SDN4	SDN5	Storm Time (In Minutes)	Percent of Total Storm Depth 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

Curve Number

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS

Soil Data & Curve Number Computation

Project Name: Skye Canyon Parcel 2.14
Date: 4/10/2018
File Name: OLY1719.000 TDS SF4.xls
By: CWB

Data:

Reference: Exhibit D NRCS Soil Data

Soil Type - Soil Survey Area & Version, Soil Description				A	B	C	D
LV	155	Las Vegas Valley 2014	Cave gravelly fine sandy loam, 4 to 15 percent slopes	0%	0%	0%	100%

Land Use	A	B	C	D
Residential (6,000 sf)	80	87	90	92

DEVELOPED CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
DON	LV	155	100.0%	Residential (6,000 sf)	0%	0%	0%	100%	80	87	90	92	11.46	92.00
		TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									11.46	**92.00**

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RUNOFF CURVE NUMBERS
(URBAN AREAS[1])

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved: curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved: open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size: **See Table 602A**					
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system. Impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using Figure 603.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using Figure 603 based on the impervious area percentage (CN #98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using Figure 603 based on the degree of development impervious area percentage) and the CN's for the newly graded pervious areas.

Revision	Date

RUNOFF CURVE NUMBERS - RESIDENTIAL DISTRICTS

Average Lot Size or Usage[1]	Percent Impervious[2]	Curve Number for Hydrologic Soil Groups			
		A	B	C	D
Apartments/Condos	72	81	88	91	93
Townhouses/6,000 sq ft lots or less[3]	69	80	87	90	92
7,000 sq ft lots	63	76	84	89	91
8,000 sq ft lots	58	73	82	88	90
10,000 sq ft lots	38	61	75	83	87
14,000 sq ft lots	30	57	72	81	86
20,000 sq ft lots	25	54	70	80	85
40,000 sq ft lots	20	51	68	79	84
80,000 sq ft lots	12	46	65	77	82

1 Lot size should represent the size of the average lot and not the gross acreage divided by the number of lots.
2 Actual percent impervious value should be compared to selected land use type.
3 In cases where average residential lots are smaller than 6,000 sq ft, commercial/business/industrial land use should be used.

Revision	Date

REFERENCE:

TABLE 602A

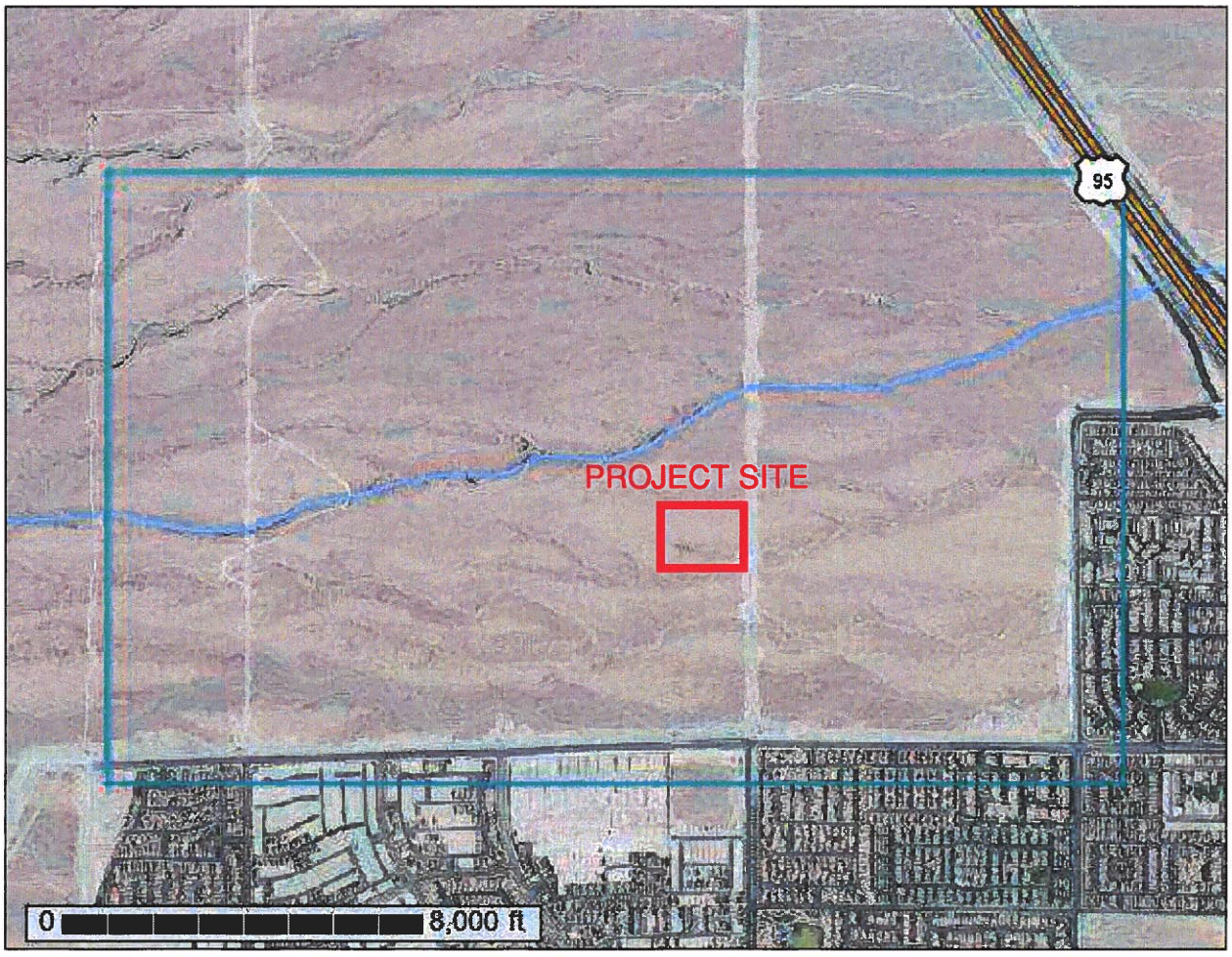
United States Department of Agriculture

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



August 31, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

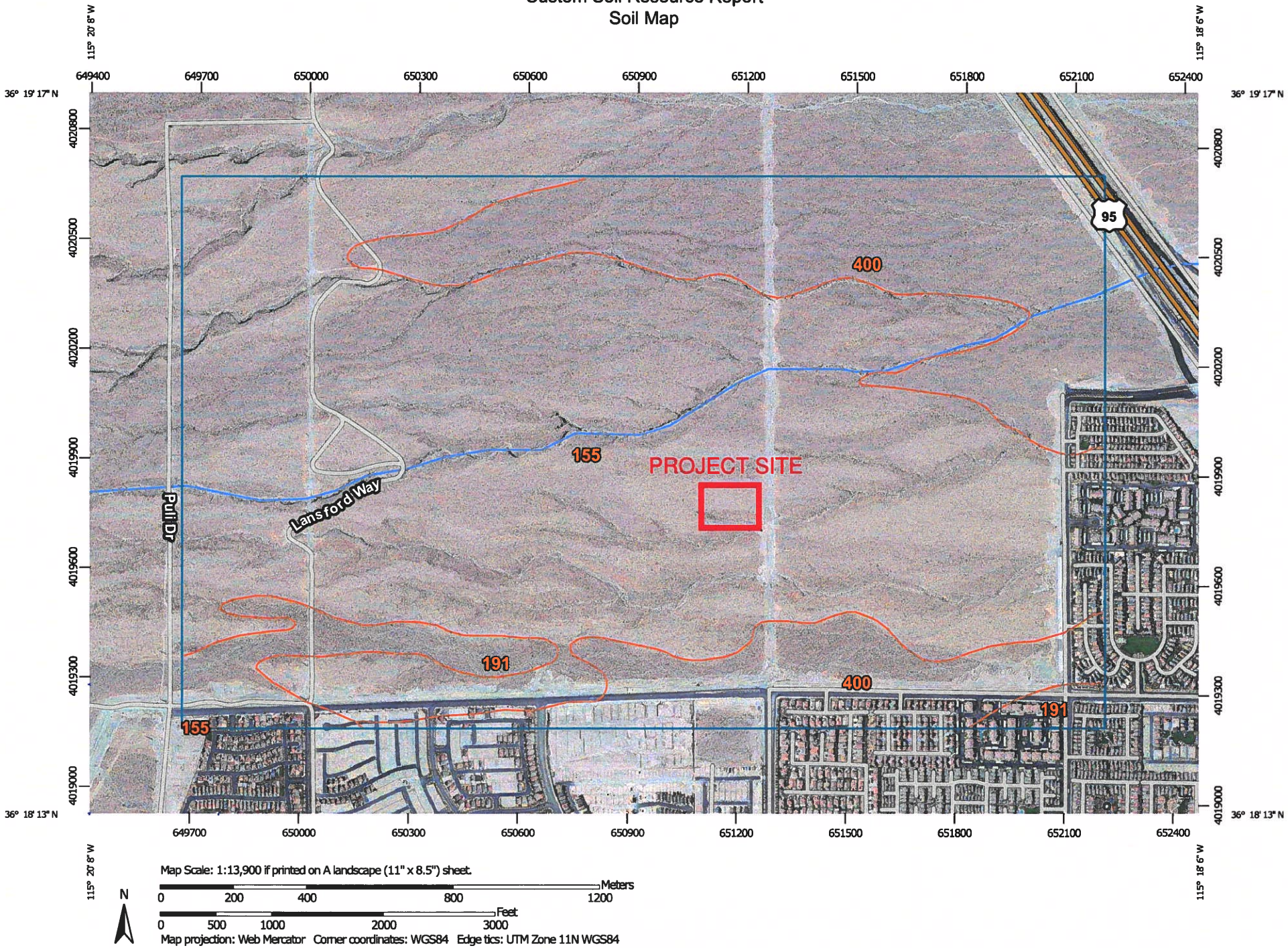
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Las Vegas Valley Area, Nevada, Part of Clark County
Survey Area Data: Version 10, Aug 22, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 7, 2011—Jun 2, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Las Vegas Valley Area, Nevada, Part of Clark County (NV788)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
155	Cave gravelly fine sandy loam, 4 to 15 percent slopes	651.4	68.6%
191	Dalian very cobbly fine sandy loam, 2 to 8 percent slopes	47.1	5.0%
400	Tencee very gravelly fine sandy loam, 2 to 8 percent slopes	251.5	26.5%
Totals for Area of Interest		**950.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments

on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Las Vegas Valley Area, Nevada, Part of Clark County

155—Cave gravelly fine sandy loam, 4 to 15 percent slopes

Map Unit Setting

National map unit symbol: hr9w
Elevation: 2,000 to 4,800 feet
Mean annual precipitation: 4 to 12 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 180 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Cave and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cave

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 15 inches: gravelly fine sandy loam
H2 - 15 to 60 inches: indurated

Properties and qualities

Slope: 4 to 15 percent
Depth to restrictive feature: 4 to 20 inches to petrocalcic
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Other vegetative classification: LIMY 3-5" P.Z. (030XB019NV_3)
Hydric soil rating: No

191—Dalian very cobbly fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: hrb4
Elevation: 2,200 to 3,400 feet
Mean annual precipitation: 4 to 6 inches
Mean annual air temperature: 61 to 66 degrees F
Frost-free period: 210 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Dalian and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dalian

Setting

Landform: Fan skirts
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from limestone and dolostone

Typical profile

H1 - 0 to 5 inches: very cobbly fine sandy loam
H2 - 5 to 60 inches: very gravelly fine sandy loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 60 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

400—Tencee very gravelly fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: hrc1
Elevation: 2,400 to 5,700 feet
Mean annual precipitation: 4 to 10 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Tencee and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tencee

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from limestone and dolomite

Typical profile

H1 - 0 to 9 inches: very gravelly fine sandy loam
H2 - 9 to 15 inches: very gravelly sandy loam
H3 - 15 to 19 inches: indurated

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: 7 to 20 inches to petrocalcic
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Water Features

This folder contains tabular reports that present soil hydrology information. The reports (tables) include all selected map units and components for each map unit. Water Features include ponding frequency, flooding frequency, and depth to water table.

Hydrologic Soil Group and Surface Runoff

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

Report—Hydrologic Soil Group and Surface Runoff

Absence of an entry indicates that the data were not estimated. The dash indicates no documented presence.

Hydrologic Soil Group and Surface Runoff–Las Vegas Valley Area, Nevada, Part of Clark County			
Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
155—Cave gravelly fine sandy loam, 4 to 15 percent slopes			
Cave	100	Very high	D
191—Dalian very cobbly fine sandy loam, 2 to 8 percent slopes			
Dalian	100	Low	A
400—Tencee very gravelly fine sandy loam, 2 to 8 percent slopes			
Tencee	100	Very high	D

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Standard Form 4 Computations

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL
TIME OF CONCENTRATION

Project Name: Skye Canyon Parcel 2.14
Description:
File Name: OLY1719.000 TDS SF4.xls
By: CWB
Date: 4/10/2018

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc Check Urbanized Basins		Tlag
DESIG:	DEV./EX. (D or E)	CN	K [1]	AREA Ac	AREA Mi^2 [2]	INITIAL LENGTH Feet	SLOPE %	Ti Min [3]	TRAVEL LENGTH Feet	SLOPE %	V1 VELOCITY FPS [4]	V2 VELOCITY FPS [5]	Tt Min [6]	Tc Calc. [7]	Total Length Feet [8]	Tc Check [9]	Tlag Hours [10]
DEVELOPED CONDITION																	
DON	D	92.0	0.824	11.46	0.0179	105	1.00	5.08	1150	3.23	3.63	5.50	4.26	9.35	1255	16.972	0.093

[1] K = 0.0132 (CN) - 0.39
[2] A = Area/640
[3] Ti = (1.8 (1.1-K) L^0.5)/S^0.33
[4] For Existing Conditions: V1 = 14.8 * (S/100)^0.5
For Developed Conditions: V1 = 20.2 * (S/100)^0.5
[5] For Existing Conditions: V2 = 29.4 * (S/100)^0.5
For Developed Conditions: V2 = 30.6 * (S/100)^0.5
[6] Tt = L/(60*V)
[7] Tc = Ti + Tt
[8] Total L = Initial L + Travel L
[9] Tc = (L/180) + 10
[10] Tlag = (0.6*Tc)/60
[11] Min Tlag =0.05

Note: For Travel Time Calcs: V1 applies to first 500 feet and V2 applies to remaining distance.

REFERENCE :

STANDARD FORM 4

Developed Condition HEC-1 Analysis

```
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                    *         609 SECOND STREET            *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   09APR18  TIME  09:50:14  *                    *          (916) 756-1104              *
 *                                      *                    *                                      *
 ****************************************                    ****************************************

                                        X     X  XXXXXXX   XXXXX           X
                                        X     X  X        X     X         XX
                                        X     X  X        X               X
                                        XXXXXXX  XXXX     X        XXXXX   X
                                        X     X  X        X                X
                                        X     X  X        X     X          X
                                        X     X  XXXXXXX   XXXXX          XXX


          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 -AMSKK- 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

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

                        *DIAGRAM
            1           ID     SLATER HANIFAN GROUP
            2           ID     SKYE CANYON PARCEL 2.14
            3           ID     DEVELOPED CONDITION
            4           ID
            5           ID     RETURN PERIOD ------- 100-YR & 10-YR
            6           ID     DISTRIBUTION -------- 6-HOUR SDN3
            7           ID     PROJECT NO. ---------- OLY1719.001
            8           ID     FILENAME ------------ DEV.H1
            9           ID     DATE ---------------- 04/09/2017
           10           ID     MODELED BY ---------- CWB
           11           ID
           12           ID        PRECIPITATION STORM EVENT RATIOS
           13           ID        STORM EVENT             RATIO
           14           ID        10-YR                   0.56
           15           ID        100-YR                     1
           16           ID
           17           IT       5       0       0     300
           18           IO       5       0       0
           19           IN       5       0       0
           20           JR    PREC    1.00    0.56
                        *

           21           KK     DON
           22           KM   DEVELOPED ONSITE BASIN
           23           BA  0.0179
           24           PB    3.00
           25           PC       0   0.020   0.057   0.070   0.087   0.108   0.124   0.130   0.130   0.130
           26           PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
           27           PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
           28           PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
           29           PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
           30           PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
           31           PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
           32           PC   0.998   0.999       1
           33           LS       0    92.0
           34           UD   0.093
                        *
           35           ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    21         DON

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                    ****************************************
 *                                      *                    *                                      *
```

```
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN   1998               *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   09APR18  TIME  09:50:14   *
*                                       *
*****************************************
```


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


SLATER HANIFAN GROUP
SKYE CANYON PARCEL 2.14
DEVELOPED CONDITION

RETURN PERIOD ------- 100-YR & 10-YR
DISTRIBUTION -------- 6-HOUR SDN3
PROJECT NO. --------- OLY1719.001
FILENAME ------------ DEV.H1
DATE ---------------- 04/09/2017
MODELED BY ---------- CWB

PRECIPITATION STORM EVENT RATIOS

STORM EVENT	RATIO
10-YR	0.56
100-YR	1

```
  18 IO         OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                      NMIN          5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1   0  STARTING DATE
                     ITIME       0000  STARTING TIME
                        NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      2   0  ENDING DATE
                    NDTIME       0055  ENDING TIME
                     ICENT         19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 HOURS

           ENGLISH UNITS
                DRAINAGE AREA         SQUARE MILES
                PRECIPITATION DEPTH   INCHES
                LENGTH, ELEVATION     FEET
                FLOW                  CUBIC FEET PER SECOND
                STORAGE VOLUME        ACRE-FEET
                SURFACE AREA          ACRES
                TEMPERATURE           DEGREES FAHRENHEIT

     JP           MULTI-PLAN OPTION
                     NPLAN          1  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                    1.00       .56
1

               PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                           FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                        TIME TO PEAK IN HOURS


                                                          RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN            RATIO 1  RATIO 2
                                                        1.00      .56

 HYDROGRAPH AT
+                   DON       .02     1   FLOW          34.      16.
                                          TIME        3.50     3.50


 *** NORMAL END OF HEC-1 ***
```

APPENDIX C

Hydraulic Computations

Street Flow Computations

Worksheet for Section O-1 (Min Slope)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.60	%
Discharge	34.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.48
0+05.00	0.38
0+05.38	0.38
0+06.50	0.00
0+07.50	0.08
0+07.50	0.12
0+24.50	0.46
0+41.50	0.12
0+41.50	0.08
0+42.50	0.00
0+43.62	0.38
0+44.00	0.38
0+49.00	0.48

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.48)	(0+07.50, 0.08)	0.013
(0+07.50, 0.08)	(0+41.50, 0.08)	0.016
(0+41.50, 0.08)	(0+49.00, 0.48)	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 O-1 (Min Slope)

Results

Normal Depth		0.54	ft
Elevation Range	0.00 to 0.48 ft		
Flow Area		11.68	ft²
Wetted Perimeter		49.35	ft
Hydraulic Radius		0.24	ft
Top Width		49.00	ft
Normal Depth		0.54	ft
Critical Depth		0.55	ft
Critical Slope		0.00538	ft/ft
Velocity		2.91	ft/s
Velocity Head		0.13	ft
Specific Energy		0.68	ft
Froude Number		1.05	
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	0.54	ft
Critical Depth	0.55	ft
Channel Slope	0.60	%
Critical Slope	0.00538	ft/ft

Cross Section for Section O-1 (Min Slope)

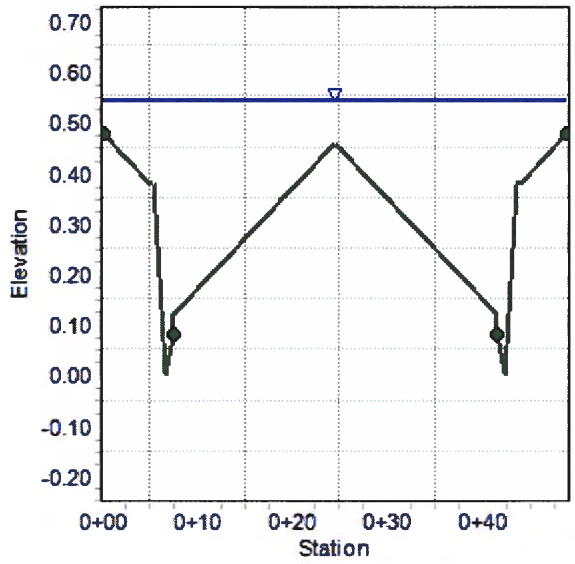
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.60	%
Normal Depth	0.54	ft
Discharge	34.00	ft^3/s

Cross Section Image



Worksheet for Section O-1 (Max Slope)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	5.75	%
Discharge	34.00	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.48
0+05.00	0.38
0+05.38	0.38
0+06.50	0.00
0+07.50	0.08
0+07.50	0.12
0+24.50	0.46
0+41.50	0.12
0+41.50	0.08
0+42.50	0.00
0+43.62	0.38
0+44.00	0.38
0+49.00	0.48

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.48)	(0+07.50, 0.08)	0.013
(0+07.50, 0.08)	(0+41.50, 0.08)	0.016
(0+41.50, 0.08)	(0+49.00, 0.48)	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 O-1 (Max Slope)

Results

Normal Depth		0.40	ft
Elevation Range	0.00 to 0.48 ft		
Flow Area		5.29	ft²
Wetted Perimeter		36.04	ft
Hydraulic Radius		0.15	ft
Top Width		35.83	ft
Normal Depth		0.40	ft
Critical Depth		0.55	ft
Critical Slope		0.00558	ft/ft
Velocity		6.42	ft/s
Velocity Head		0.64	ft
Specific Energy		1.05	ft
Froude Number		2.95	
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	0.40	ft
Critical Depth	0.55	ft
Channel Slope	5.75	%
Critical Slope	0.00558	ft/ft

Cross Section for Section O-1 (Max Slope)

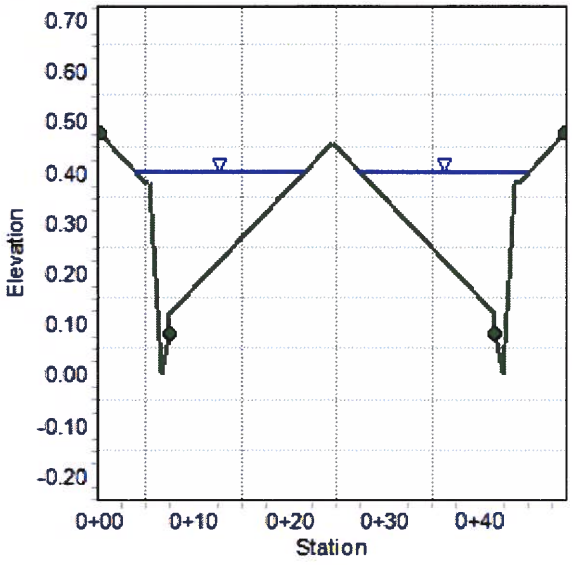
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	5.75	%
Normal Depth	0.40	ft
Discharge	34.00	ft³/s

Cross Section Image



Worksheet for Section O-1a

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	3.90	%
Discharge	5.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.48
0+05.00	0.38
0+05.38	0.38
0+06.50	0.00
0+07.50	0.08
0+07.50	0.12
0+24.50	0.46
0+41.50	0.12
0+41.50	0.08
0+42.50	0.00
0+43.62	0.38
0+44.00	0.38
0+49.00	0.48

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.48)	(0+07.50, 0.08)	0.013
(0+07.50, 0.08)	(0+41.50, 0.08)	0.016
(0+41.50, 0.08)	(0+49.00, 0.48)	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 O-1a

Results

Normal Depth		0.24	ft
Elevation Range	0.00 to 0.48 ft		
Flow Area		1.36	ft²
Wetted Perimeter		16.08	ft
Hydraulic Radius		0.08	ft
Top Width		15.91	ft
Normal Depth		0.24	ft
Critical Depth		0.31	ft
Critical Slope		0.00719	ft/ft
Velocity		3.67	ft/s
Velocity Head		0.21	ft
Specific Energy		0.45	ft
Froude Number		2.21	
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	0.24	ft
Critical Depth	0.31	ft
Channel Slope	3.90	%
Critical Slope	0.00719	ft/ft

Cross Section for Section O-1a

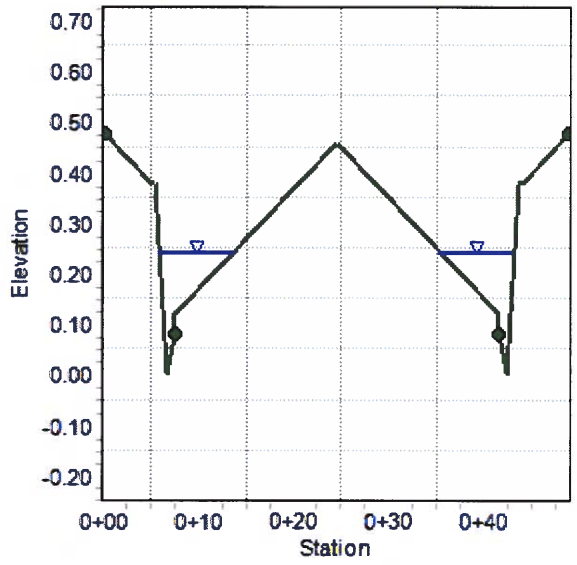
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	3.90	%
Normal Depth	0.24	ft
Discharge	5.00	ft³/s

Cross Section Image



Worksheet for Section P-1 (Min Slope)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50	%
Discharge	6.50	ft³/s

Section Definitions

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+39.00	0.91
0+39.01	0.99
0+39.26	1.30
0+39.68	1.32
0+45.50	1.32
0+50.00	1.32

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.50)	(0+02.00, 0.17)	0.013
(0+02.00, 0.17)	(0+39.00, 0.91)	0.016
(0+39.00, 0.91)	(0+50.00, 1.32)	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 P-1 (Min Slope)

Results

Normal Depth		0.48	ft
Elevation Range	0.00 to 1.32 ft		
Flow Area		3.11	ft²
Wetted Perimeter		17.90	ft
Hydraulic Radius		0.17	ft
Top Width		17.37	ft
Normal Depth		0.48	ft
Critical Depth		0.46	ft
Critical Slope		0.00672	ft/ft
Velocity		2.09	ft/s
Velocity Head		0.07	ft
Specific Energy		0.55	ft
Froude Number		0.87	
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	0.48	ft
Critical Depth	0.46	ft
Channel Slope	0.50	%
Critical Slope	0.00672	ft/ft

Cross Section for Section P-1 (Min Slope)

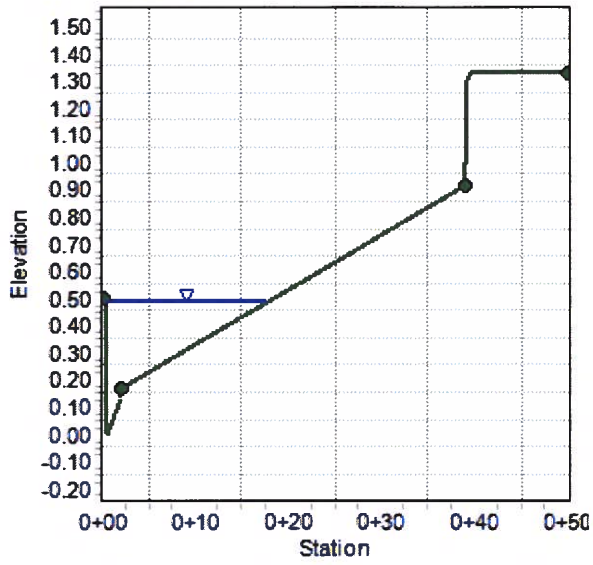
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.50	%
Normal Depth	0.48	ft
Discharge	6.50	ft³/s

Cross Section Image



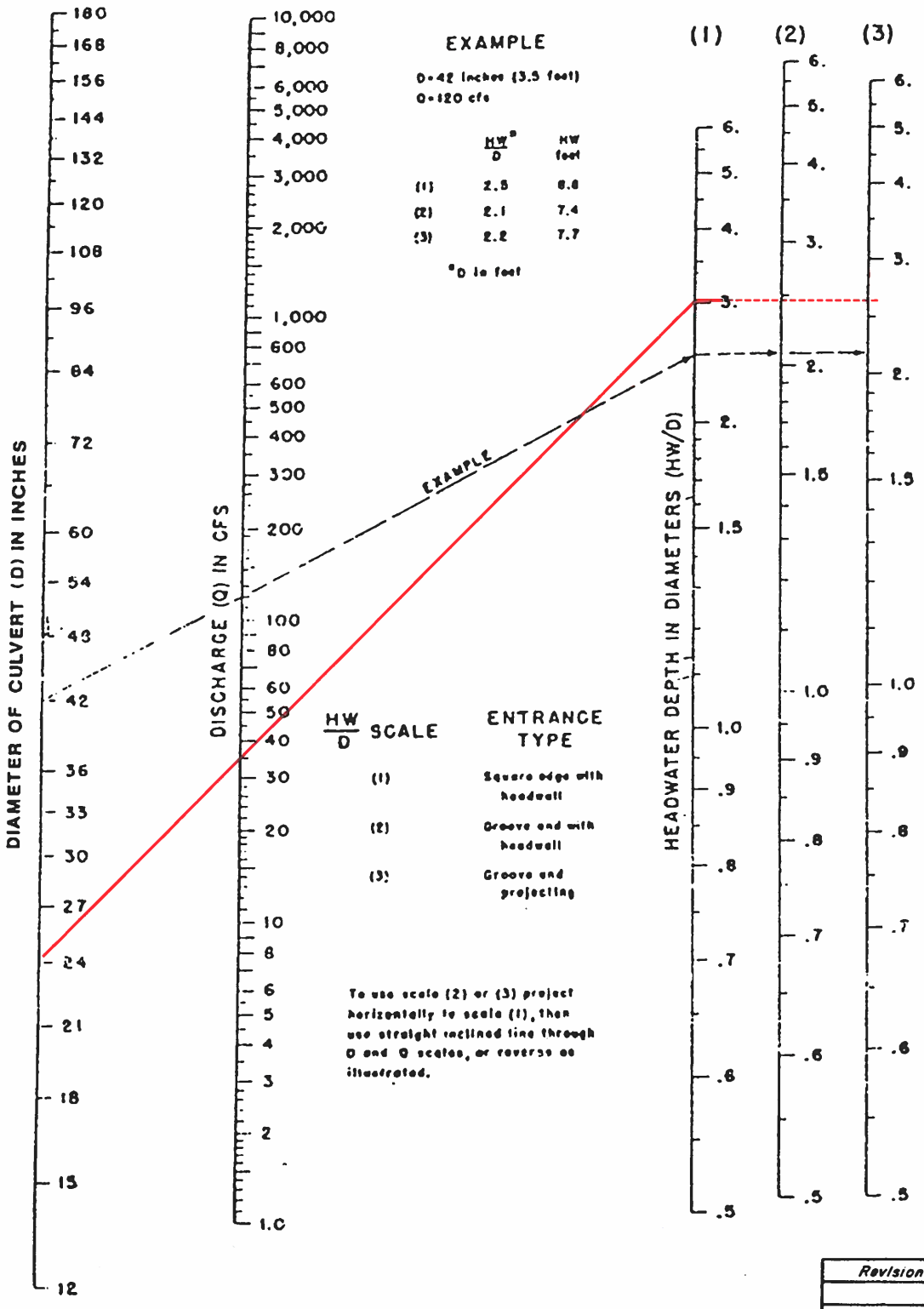
Drop Inlet Computations

Project Name:	**Skye Canyon II Parcel 2.14**	SLATER HANIFAN GROUP CONSULTING ENGINEERS & PLANNERS
By:	**CWB**	
Date:	**4/25/2018**	
Notes:		
Facility ID:	P1	
Drainage Condition	Proposed	
Source of Flow	Q100 = Basin DON	
Design Flow (cfs)	34.0	
Inlet Type:	Type CM2 (Sump)	
Inlet Length:	15.-ft	
Number of Grates:	5	
Input:	**Variable:**	**Input:**
Depth at Inlet (ft)	D	0.79
Grate Width (ft)	W	1.50
Length of Grate (ft)	L_g	12.50
Length of Curb Opening (ft)	L_c	15.00
Height of Curb Opening (ft)	H	0.50
Weir Coef. - Curb Opening	W_c	2.3
Weir Coef. - Grate	W_g	3.0
Orifice Coef.	O_c	0.67
Grate Coef.	G_c	0.60
Clogging Factor - Grate (%)	CF_g	50
Clogging Factor - Curb (%)	CF_c	50
Output (Grate):	**Equation:**	**Output (Grate):**
Effective Weir Length (ft)	$2*W+L_g$	15.50
Adjusted Effective Weir Length (ft)	$2*(1-CF_g/100)*W+(1-CF_g/100)*L_g$	7.75
Grate Open Area (sf)	$W*L_g$	18.75
Adjusted Grate Open Area (sf)	Grate Open Area * $G_c*(1-CF_g/100)$	5.63
Controlling Flow Type (weir/orifice)	If D<1.792*(Adj. Grate Open Area/Adj. Eff. Length)	weir
	use weir, else orifice	
Intercepted Flow (cfs)	weir: $W_g*(\text{Adj. Eff. Weir Length})*D^{1.5}$	16.3
	orifice: $O_c*(\text{Adj. Grate Open Area})*(64.4*D)^{0.5}$	
Output (Curb):	**Equation:**	**Output (Curb):**
Effective Weir Length (ft)	L+1.8*W	17.70
Adjusted Effective Weir Length (ft)	$L+1.8(1-CF_c/100)*W$	16.41
Curb Open Area (sf)	L*H	7.50
Adjusted Curb Open Area (sf)	Curb Open Area * $(1-CF_c/100)$	3.75
Controlling Flow Type (weir/orifice)	If D<H, weir, else orifice	orifice
Intercepted Flow (cfs)	weir: $W_c*(\text{Adj. Eff. Weir Length})*D^{1.5}$	17.88
	orifice: $O_c*(\text{Adj. Curb Open Area})*(64.4*(D-H/2))^{0.5}$	
Output (Total):	**Equation:**	**Output (Total):**
Capacity Intercepted Flow (cfs)	Intercepted (Grate) + Intercepted (Curb)	**34**

WSPGW Model – P6-L2

NOMOGRAPH – INLET CONTROL RCP

FACILITY P1: Q= 34 CFS



Revision	Date

WRC ENGINEERING

REFERENCE: USDOT, FHWA, HDS, No. 5, 1985

FIGURE 1005

```
T1 OLY1719.000 SKYE CANYON PARCEL 2.14
T2 BY NINETY-FIVE MANAGEMENT, LLC
T3 EAGLE CANYON LATERAL P6-L2
SO   1000.0002839.130 42      .013                2843.34
R    1027.7302839.490 42      .013                                    45.0   1
JX   1027.7302840.990 24 24   .013   12.5           2840.990        90.0
R    1099.3402842.780 24      .013                                     0.0   1
SH   1099.3402842.780 24      .013                0.000
CD  24  4   1   0.000   2.000    0.000 0.000 0.000  0.000
CD  42  4   1   0.000   3.500    0.000 0.000 0.000  0.000
Q            34.000   .0
```

FILE: P6-L2.WSW W S P G W - EDIT LISTING - Version 14.10 Date: 4-25-2018 Time:10:12:22

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	24	4	1		2.000														
CD	42	4	1		3.500														

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OLY1719.000 SKYE CANYON PARCEL 2.14

HEADING LINE NO 2 IS -
BY NINETY-FIVE MANAGEMENT, LLC

HEADING LINE NO 3 IS -
EAGLE CANYON LATERAL P6-L2

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	2839.130	42	2843.340

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1027.730	2839.490	42	.013	.000	.000	45.000	1

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
	1027.730	2840.990	24	24	0	.013	12.500	.000	2840.990	.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
	1099.340	2842.780	24	.013	.000	.000	.000	1

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1099.340	2842.780	24	.000

Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING Date: 4-25-2018 Time:10:12:25

OLY1719.000 SKYE CANYON PARCEL 2.14
BY NINETY-FIVE MANAGEMENT, LLC
EAGLE CANYON LATERAL P6-L2

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	2839.130	4.210	2843.340	46.50	4.83	.36	2843.70	.00	2.13	.00	3.500	.000	.00	1 .0
27.730	.0130					.0021	.06	4.21	.00	1.55	.013	.00	.00	PIPE
1027.730	2839.490	3.981	2843.471	46.50	4.83	.36	2843.83	.00	2.13	.00	3.500	.000	.00	1 .0
JUNCT STR	.0000							3.98	.00		.013	.00	.00	PIPE
1027.730	2840.990	1.619	2842.609	34.00	12.48	2.42	2845.03	.00	1.91	1.57	2.000	.000	.00	1 .0
34.885	.0250					.0224	.78	1.62	1.67	1.56	.013	.00	.00	PIPE
1062.615	2841.862	1.675	2843.537	34.00	12.10	2.27	2845.81	.00	1.91	1.48	2.000	.000	.00	1 .0
26.391	.0250					.0209	.55	1.68	1.54	1.56	.013	.00	.00	PIPE
1089.006	2842.522	1.775	2844.297	34.00	11.54	2.07	2846.36	.00	1.91	1.26	2.000	.000	.00	1 .0
10.334	.0250					.0199	.21	1.78	1.33	1.56	.013	.00	.00	PIPE
1099.340	2842.780	1.911	2844.691	34.00	11.00	1.88	2846.57	.00	1.91	.82	2.000	.000	.00	1 .0

♠
♠

OLY1719.000 SKYE CANYON PARCEL 2.14

BY NINETY-FIVE MANAGEMENT, LLC

EAGLE CANYON LATERAL P6-L2

1000.00 .I C H W E . R

1002.03 .

1004.05 .

1006.08 .

1008.11 .

1010.14 .

1012.16 .

1014.19 .

1016.22 .

1018.25 .

1020.27 .

1022.30 .

1024.33 .

1026.36 . .

1028.38 . I C H W E . JX

1030.41 . I W CH E . R

1032.44 . .

1034.46 . .

1036.49 . .

1038.52 . .

1040.55 . .

1042.57 . .

1044.60 . .

1046.63 . .

1048.66 . .

1050.68 . .

1052.71 . .

1054.74 . .

1056.77 . .

1058.79 . .

1060.82 . .

1062.85 . I W CH E . R

1064.88 . .

1066.90 . .

1068.93 . .

1070.96 . .

1072.98 . .

1075.01 . .

1077.04 . .

1079.07 . .

1081.09 . .

1083.12 . .

1085.15 . .

```
   1087.18    .                                                                                                .
   1089.20    .                                          I                    W CH                         E   .    R
   1091.23    .                                                                                                .
   1093.26    .                                                                                                .
   1095.29    .                                                                                                .
   1097.31    .                                                                                                .
   1099.34    .                                             I                      WH                        E.    R

            2839.130  2839.874  2840.618  2841.362  2842.105  2842.849  2843.593  2844.337  2845.081  2845.825  2846.568
```

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

Emergency Overflow Analysis

Worksheet for Section E-1 - Emergency Overflow Section (Weir)

Project Description

Solve For	Headwater Elevation

Input Data

Discharge		34.00	ft³/s
Crest Elevation		53.03	ft
Tailwater Elevation		53.17	ft
Crest Surface Type	Paved		
Crest Breadth		2.00	ft
Crest Length		49.00	ft

Results

Headwater Elevation	53.40	ft
Headwater Height Above Crest	0.37	ft
Tailwater Height Above Crest	0.14	ft
Weir Coefficient	3.06	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.06	US
Flow Area	18.21	ft²
Velocity	1.87	ft/s
Wetted Perimeter	49.74	ft
Top Width	49.00	ft

Worksheet for Section E-1 - Emergency Overflow Section (Weir)

Project Description

Solve For	Headwater Elevation

Input Data

Discharge		34.00	ft³/s
Crest Elevation		53.03	ft
Tailwater Elevation		53.17	ft
Crest Surface Type	Paved		
Crest Breadth		2.00	ft
Crest Length		49.00	ft

Results

Headwater Elevation	53.40	ft
Headwater Height Above Crest	0.37	ft
Tailwater Height Above Crest	0.14	ft
Weir Coefficient	3.06	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.06	US
Flow Area	18.21	ft²
Velocity	1.87	ft/s
Wetted Perimeter	49.74	ft
Top Width	49.00	ft

Cross Section for Section E-1 - Emergency Overflow Section (Weir)

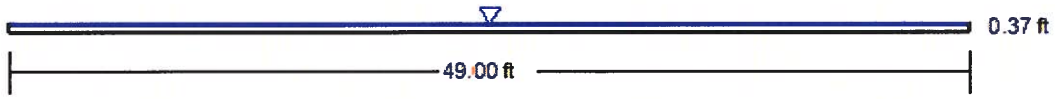
Project Description

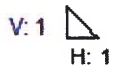
Solve For	Headwater Elevation

Input Data

Discharge		34.00	ft³/s
Headwater Elevation		53.40	ft
Crest Elevation		53.03	ft
Tailwater Elevation		53.17	ft
Crest Surface Type	Paved		
Crest Breadth		2.00	ft
Crest Length		49.00	ft

Cross Section Image





Worksheet for Section E-1 - Emergency Overflow Section

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.025	
Channel Slope	10.00	%
Bottom Width	49.00	ft
Discharge	34.00	ft^3/s

Results

Normal Depth	0.14	ft
Flow Area	6.78	ft^2
Wetted Perimeter	49.28	ft
Hydraulic Radius	0.14	ft
Top Width	49.00	ft
Critical Depth	0.25	ft
Critical Slope	0.01472	ft/ft
Velocity	5.01	ft/s
Velocity Head	0.39	ft
Specific Energy	0.53	ft
Froude Number	2.38	
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	0.14	ft
Critical Depth	0.25	ft
Channel Slope	10.00	%
Critical Slope	0.01472	ft/ft

Cross Section for Section E-1 - Emergency Overflow Section

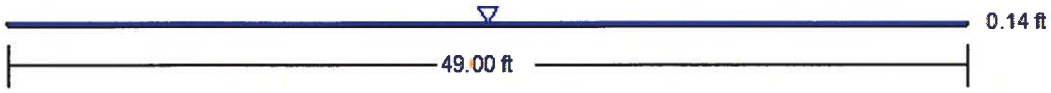
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.025	
Channel Slope	10.00	%
Normal Depth	0.14	ft
Bottom Width	49.00	ft
Discharge	34.00	ft³/s

Cross Section Image



V: 1
H: 1

APPENDIX D

Finished Floor Analysis

SKYE CANYON II PARCEL 2.14
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	O-1	2876.75	2876.37	0.54	2877.45	2877.25	2878.7	OK	OK	
2	O-1	2874.39	2874.01	0.54	2875.09	2874.89	2876.3	OK	OK	
3	O-1	2871.93	2871.55	0.54	2872.63	2872.43	2873.8	OK	OK	
4	O-1	2869.39	2869.01	0.54	2870.09	2869.89	2871.3	OK	OK	
5	O-1	2866.74	2866.36	0.54	2867.44	2867.24	2868.6	OK	OK	
6	O-1	2864.09	2863.71	0.54	2864.79	2864.59	2866.0	OK	OK	
7	O-1	2861.55	2861.17	0.54	2862.25	2862.05	2863.5	OK	OK	
8	O-1	2859.48	2859.10	0.54	2860.18	2859.98	2861.4	OK	OK	
9	O-1	2857.91	2857.53	0.54	2858.61	2858.41	2859.8	OK	OK	
10	O-1	2856.84	2856.46	0.54	2857.54	2857.34	2858.8	OK	OK	
11	O-1	2855.88	2855.50	0.54	2856.58	2856.38	2857.9	OK	OK	
12	O-1	2854.48	2854.10	0.54	2855.18	2854.98	2856.4	OK	OK	
13	O-1	2856.07	2855.69	0.54	2856.77	2856.57	2858.0	OK	OK	
14	O-1	2857.39	2857.01	0.54	2858.09	2857.89	2859.2	OK	OK	
15	O-1	2857.82	2857.44	0.54	2858.52	2858.32	2859.7	OK	OK	
16	O-1	2858.12	2857.74	0.54	2858.82	2858.62	2860.2	OK	OK	
17	O-1	2858.42	2858.04	0.54	2859.12	2858.92	2860.5	OK	OK	
18	O-1	2858.72	2858.34	0.54	2859.42	2859.22	2860.7	OK	OK	
19	O-1	2859.02	2858.64	0.54	2859.72	2859.52	2861.0	OK	OK	
20	O-1	2859.38	2859.00	0.54	2860.08	2859.88	2861.4	OK	OK	
21	O-1	2859.65	2859.27	0.54	2860.35	2860.15	2861.8	OK	OK	
22	O-1	2860.59	2860.21	0.54	2861.29	2861.09	2862.5	OK	OK	
23	O-1	2862.36	2861.98	0.54	2863.06	2862.86	2864.3	OK	OK	
24	O-1	2864.58	2864.20	0.54	2865.28	2865.08	2866.5	OK	OK	
25	O-1	2867.34	2866.96	0.54	2868.04	2867.84	2869.2	OK	OK	
26	O-1	2870.22	2869.84	0.54	2870.92	2870.72	2872.1	OK	OK	
27	O-1	2873.09	2872.71	0.54	2873.79	2873.59	2875.0	OK	OK	
28	O-1	2875.97	2875.59	0.54	2876.67	2876.47	2877.9	OK	OK	
29	O-1	2878.84	2878.46	0.54	2879.54	2879.34	2880.7	OK	OK	
30	O-1	2881.52	2881.14	0.54	2882.22	2882.02	2883.4	OK	OK	
31	O-1	2883.47	2883.09	0.54	2884.17	2883.97	2885.4	OK	OK	
32	O-1	2885.22	2884.84	0.54	2885.92	2885.72	2887.1	OK	OK	
33	O-1	2886.97	2886.59	0.54	2887.67	2887.47	2888.9	OK	OK	

SKYE CANYON II PARCEL 2.14
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	O-1	2888.71	2888.33	0.54	2889.41	2889.21	2890.6	OK	OK	
35	O-1	2888.71	2888.33	0.54	2889.41	2889.21	2892.0	OK	OK	
36	O-1	2885.92	2885.54	0.54	2886.62	2886.42	2888.3	OK	OK	
37	O-1	2884.62	2884.24	0.54	2885.32	2885.12	2886.5	OK	OK	
38	O-1	2883.63	2883.25	0.54	2884.33	2884.13	2885.5	OK	OK	
39	O-1	2882.07	2881.69	0.54	2882.77	2882.57	2884.0	OK	OK	
40	O-1	2874.97	2874.59	0.54	2875.67	2875.47	2876.9	OK	OK	
41	O-1	2871.41	2871.03	0.54	2872.11	2871.91	2873.3	OK	OK	
42	O-1	2868.49	2868.11	0.54	2869.19	2868.99	2870.4	OK	OK	
43	O-1	2865.80	2865.42	0.54	2866.50	2866.30	2867.7	OK	OK	
44	O-1	2863.14	2862.76	0.54	2863.84	2863.64	2865.0	OK	OK	
45	O-1	2860.75	2860.37	0.54	2861.45	2861.25	2862.7	OK	OK	
46	O-1	2858.86	2858.48	0.54	2859.56	2859.36	2860.8	OK	OK	
47	O-1	2857.47	2857.09	0.54	2858.17	2857.97	2859.4	OK	OK	
48	O-1	2856.57	2856.19	0.54	2857.27	2857.07	2858.6	OK	OK	
49	O-1	2856.32	2855.94	0.54	2857.02	2856.82	2858.6	OK	OK	
50	O-1	2858.18	2857.80	0.54	2858.88	2858.68	2860.2	OK	OK	
51	O-1	2858.48	2858.10	0.54	2859.18	2858.98	2860.5	OK	OK	
52	O-1	2858.72	2858.34	0.54	2859.42	2859.22	2861.0	OK	OK	
53	O-1	2872.93	2872.55	0.54	2873.63	2873.43	2874.8	OK	OK	
54	O-1	2873.70	2873.32	0.54	2874.40	2874.20	2875.6	OK	OK	
55	O-1	2873.70	2873.32	0.54	2874.40	2874.20	2876.0	OK	OK	
56	O-1	2873.70	2873.32	0.54	2874.40	2874.20	2876.0	OK	OK	
57	O-1	2873.70	2873.32	0.54	2874.40	2874.20	2875.6	OK	OK	
58	O-1	2872.93	2872.55	0.54	2873.63	2873.43	2875.5	OK	OK	
59	O-1	2884.39	2884.01	0.54	2885.09	2884.89	2886.7	OK	OK	
60	O-1	2884.39	2884.01	0.54	2885.09	2884.89	2886.3	OK	OK	
61	O-1	2883.45	2883.07	0.54	2884.15	2883.95	2885.3	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

SKYE CANYON II PARCEL 2.14
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

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:

-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.

-The finished floor shall be set a vertical distance of at least 6-inches above the highest adjacent top of curb.

Adjacent/Perimeter Street Check									
Lot	Street	High TC[1]	High FL[2]	Section	Flow	Min FF[4]	Design FF	Check	Solid Grout
11	Skye Struck Dr	2854.09	2853.71	O-1	0.54	2854.79	2857.9	OK	No
22	Skye Struck Dr	2859.68	2859.30	O-1	0.54	2860.38	2862.5	OK	No
36	Fire Skye Ave	2890.11	2889.73	O-1	0.54	2890.81	2888.3	CHECK	Yes
40	Warm Skye St	2881.79	2881.41	O-1	0.54	2882.49	2876.9	CHECK	Yes
49	Skye Struck Dr	2857.88	2857.50	O-1	0.54	2858.58	2858.6	OK	No
52	Fire Skye Ave	2864.58	2864.20	O-1	0.54	2865.28	2861.0	CHECK	Yes
53	Fire Skye Ave	2869.24	2868.86	O-1	0.54	2869.94	2874.8	OK	No
58	Fire Skye Ave	2879.71	2879.33	O-1	0.54	2880.41	2875.5	CHECK	Yes
59	Fire Skye Ave	2884.24	2883.86	O-1	0.54	2884.94	2886.7	OK	No
1	Eagle Canyon Ave	2871.57	2871.07	ECA4	0.58	2872.23	2878.7	OK	No
2	Eagle Canyon Ave	2869.80	2869.30	ECA4	0.58	2870.46	2876.3	OK	No
3	Eagle Canyon Ave	2867.33	2866.83	ECA4	0.58	2867.99	2873.8	OK	No
4	Eagle Canyon Ave	2863.25	2862.75	ECA4	0.58	2863.91	2871.3	OK	No
5	Eagle Canyon Ave	2862.40	2861.90	ECA4	0.58	2863.06	2868.6	OK	No
6	Eagle Canyon Ave	2858.42	2857.92	ECA4	0.58	2859.08	2866.0	OK	No
7	Eagle Canyon Ave	2857.42	2856.92	ECA4	0.58	2858.08	2863.5	OK	No
8	Eagle Canyon Ave	2854.99	2854.49	ECA4	0.58	2855.65	2861.4	OK	No
9	Eagle Canyon Ave	2852.74	2852.24	ECA4	0.58	2853.40	2859.8	OK	No
10	Eagle Canyon Ave	2850.87	2850.37	ECA4	0.58	2851.53	2858.8	OK	No
11	Eagle Canyon Ave	2849.37	2848.87	ECA4	0.58	2850.03	2857.9	OK	No
12	Skye Village Road	2848.66	2848.16	P-1	0.48	2849.12	2856.4	OK	No
13	Skye Village Road	2848.91	2848.41	P-1	0.48	2849.37	2858.0	OK	No
14	Skye Village Road	2849.04	2848.54	P-1	0.48	2849.50	2859.2	OK	No
15	Skye Village Road	2849.35	2848.85	P-1	0.48	2849.81	2859.7	OK	No
16	Skye Village Road	2849.55	2849.05	P-1	0.48	2850.01	2860.2	OK	No
17	Skye Village Road	2849.74	2849.24	P-1	0.48	2850.20	2860.5	OK	No
18	Skye Village Road	2849.94	2849.44	P-1	0.48	2850.40	2860.7	OK	No
19	Skye Village Road	2850.14	2849.64	P-1	0.48	2850.60	2861.0	OK	No
20	Skye Village Road	2850.33	2849.83	P-1	0.48	2850.79	2861.4	OK	No
21	Skye Village Road	2850.53	2850.03	P-1	0.48	2850.99	2861.8	OK	No

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 obain 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.

Storm Drain FFE Check							
Lot Number	High FL[1]	Facility Number	Ponding Depth[2]	Min FF[3]	Design FF	Check	Solid Grout
12	2852.78	P1	0.83	2855.11	2856.40	OK	No

1: TC - Curb height at the drainage facility

2: Ponding depth is peak ponding depth above the drainage facility

3: Min FF is the High TC/FL plus the Flow Depth plus 18 inches.

Specific Energy Check							
Lot Number	High TC[1]	High FL[2]	Section	Specific Energy[3]	Min FF[4]	Design FF	Check
12	2854.48	2854.10	O-1(Max)	1.05	2855.15	2856.40	OK
13	2856.07	2855.69	O-1(Max)	1.05	2856.74	2858.00	OK
18	2859.02	2858.64	O-1(Max)	1.05	2859.69	2860.70	OK
19	2858.72	2858.34	O-1(Max)	1.05	2859.39	2861.00	OK
26	2870.22	2869.84	O-1(Max)	1.05	2872.10	2872.10	OK
27	2873.09	2872.71	O-1(Max)	1.05	2875.00	2875.00	OK

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 obain 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 - FFE Check							
Lot Number	High FL[1]	Section	Normal/Headwater Depth	Min FF[3]	Design FF	Check	Solid Grout
11	2853.03	E-1	0.14	2853.17	2857.90	OK	No
11	2853.03	E-1(Weir)	0.38	2853.86	2857.90	OK	No
12	2853.03	E-1	0.14	2853.86	2856.40	OK	No
12	2853.03	E-1(Weir)	0.38	2853.86	2856.40	OK	No

1: TC - Curb height at the Easement

APPENDIX E

Reference Material

Technical Drainage Study for Skye Canyon – Phase 2 Infrastructure, by SHG

Approval Letters

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: October 19, 2017
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 2 Infrastructure Update #5**			**COPIES TO:** Slater Hanifan Group, Inc.
Cross Streets:	NWC of Grand Teton Blvd. & Hualapai Way			Section 12, LLC / Ninety Five Mgmt.
File Number:	F:\Depot\DSMemos\DS4739J.doc			Bart Anderson, P.E., DevCo
Parcel Number:	Portion of 126-12-000-001			CCRFCD
Zoning Action:	TMP-58560			
FEMA Flood Zone	YES	NO X		
Proposed Storm Drain	YES X	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal & Supplemental	6/18/2015, 8/4/2015	8/26/2015	Not Approved	$400.00	402578: $400
2nd Submittal	10/19/2015	11/02/2015	Not Approved	$400.00	419048: $400
3rd Submittal	11/19/2015 & Supplemental	1/7/2016	Conditional Approval	$400.00	423549: $400
4th Submittal	4/4/2016	4/13/2016	Conditional Approval	$100.00	438958: $100
5th Submittal & CCRFCD	5/12/2016 & 5/16/2016	6/8/2016 & 6/21/2016	Conditional Approval	$100.00	443735: $100
6th Submittal	12/15/2016 & 1/17/2017	1/19/2017	Conditional Approval	$100.00	469104: $100
7th Submittal	6/19/2017	7/10/2017	Not Approved	$100.00	488195: $100
8th Submittal	8/2/2017	8/17/2017	Approved	$400.00	489157: $400
9th Submittal	9/28/2017	10/19/2017	See Comments Below	$100.00	490355: $100
			TOTAL FEES (LDDRS):	**$2,100.00**	----

REMARKS:

9th Submittal: Update #5 for minor revision of storm drain connection at the intersection of Grand Teton Boulevard and Egan Crest Drive.

7th & 8th Submittals: Update #4 & Addendum for minor relocations of drop inlets and the discharge stub of Parcel 2.27

6th Submittal: Update #3 Revise storm drain system capture and collection points based upon Parcel development.

5th Submittal: Update #2 and CCRFCD concurrence received. Revised Memo on 6/21/2016, Approved "At Risk".

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 **approved "At Risk"** subject to the final approval of the Revised Master Drainage Study.

The following conditions are repeated until they are complete:

A Flood Control Master Plan Amendment (MPA) shall be updated to reflect the latest Master Plan for the Skye Canyon Development and approved by the City prior to submitting residential development plans outside of the shadow of protection from Detention Basin #1 and outside of the limits of the Phase 2 pods.

Detention Basin #1 and the Phase 2 Infrastructure are required to be substantially complete prior to the final inspection of the first Unit in Phase 2. No Certificate of Occupancy on the houses will be issued until after the detention basin has been accepted for Substantial Completion by the City.

1. Note that the ***Skye Canyon Master Drainage Study*** has not been approved in the current stage. The subject *Skye Canyon Infrastructure Phase 2* drainage study is approved **"At Risk"** until the final approval of the Master Drainage Study. Any changes required by the Master Drainage Study to the Phase 2 area shall require a drainage study update to the ***Phase 2 Infrastructure Study*** and any required facility changes to the Phase 2 Infrastructure shall be provided at the developers' cost.
2. The ***Skye Canyon Phase 2 Development*** is based on the sole protection of a planned ***Skye Canyon Detention Basin #1*** from major storm flood events. The Detention Basin #1 drainage study has been approved.
3. Building Permits for onsite developments within Phase 2 will be issued subject to the construction and substantial completion of the ***Skye Canyon Detention Basin #1.*** The notice of Substantial Completion from the City of Las Vegas, Department of Public Works is required for the release of Occupancy Permits for any development within Phase 2.
4. The site is adjacent to or crosses an existing or proposed *Clark County Regional Flood Control District* (CCRFCD) master planned facility. CCRFCD concurrence has been provided for the Phase 2 Infrastructure.
5. The impacts to existing downstream neighborhoods of the long term discharge from the detention basin(s) and the Phase 2 developments without the associated regional outfall facilities is a major concern of both the City and the Clark County Regional Flood Control District. Flood Control understands that these interim impacts are addressed with Skye Canyon Detention Basin #1. The proposed interim impact solution was included as a part of the Skye Canyon Detention Basin #1 improvements until the overall Skye Canyon MPU facilities are completed.
6. The drainage study for Phase 2 Infrastructure assumes that the project will be constructed in one phase. It was noted within this Addendum response that the developer desires to phase the construction of the improvements. If improvement plans are submitted to break the Phase 2 Infrastructure into separate phases, a drainage study update will be required for each phase addressing the interim condition.
7. The development of Parcel 2.23B, identified as Parcel WML9 on Exhibit E2, drains through the future park and onto Eagle Canyon (WC10A) near Station 41+00 on Sheet C-03. The roadway plans shall incorporate the proposed drainage facilities as the 60 cfs will impact the 17-foot sidewalk & amenity zone. Provide concrete low flow channel connection through the17-foot sidewalk & amenity zone.

8. The provided Phase 2 Infrastructure plans only show the proposed drainage facilities. The complete improvement plans will require additional review for impacts with other needed infrastructure; i.e. sanitary sewer, water, gas, etc. Any changes to the proposed storm drain system shall require a drainage study update.

9. The Storm Drain Plans have been revised to accommodate the proposed cross fall street sections and include added nuisance inlets at low points within the intersections.

10. The plans show preliminary mass grading with collection facilities within the parcels to intercept the flows prior to entering the infrastructure roadway improvements. It was noted that the inlet collection system needs to incorporate stormwater quality (SWQ) features and Best Management Practices (BMP's) at these interim collection points. This information will be provided and shown on the SWPPP, a copy of which shall be provided to Flood Control prior to permits. Additionally, the mass grading plan (Sheet GR-03) shows sheet flow from Basin ON2-IB discharging directly onto Hualapai Way without any interim collection. Revise to incorporate interim collection.

11. All drainage facilities proposed in this ***Phase 2 Infrastructure Study*** are considered interim facilities and must be maintained by the Master Developer until the facilities are dedicated to and formally accepted by the *City of Las Vegas.*

12. Since the streets network and the associated storm drain facilities will eventually be accepted by the City, the engineer must coordinate with *City of Las Vegas Streets & Sanitation Department* for their review and approval prior to the final approval of the subject drainage study.

13. The provided WSPG Model shows that the storm drain in *Eagle Canyon Avenue* exceeds the maximum allowed velocity (25 fps) per the *CCRFCD Hydrologic & Hydraulic Design Manual.* A *Special Construction Note* has been added to the plan & profile sheets that call out the special construction requirement and the required special inspection for the additional sacrificial concrete.

14. 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 *City Flood Control Section* prior to the final acceptance of the technical drainage study.

15. The project proposes to build temporary drainage berms/swales over the *Phase 2* site. Prior to final plan 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 facility 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.

16. Technical drainage studies are required for each of the future PODs. Final approval for the infrastructure study must be obtained prior to final approval of the impacted POD drainage studies.

17. A note on the Grading Plans has been provided that "*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 the vegetation.*"

18. A numbering system for the manholes and inlets has been provided. It was noted in the response that the project may be divided into additional phases.

19. Show the size of all the proposed riprap areas. The rip-rap pads are shown on the GR-Sheets and some of the SD-Sheets include the pad size. Add the pad size to the grading plans and revise all pertinent plans and callouts accordingly.

20. Revise the pipe penetration detail to include a concrete collar with dowelled rebar connections. The detail has not been provided at this time and was noted that it will be a part of the Structural Details.

21. Provide details for the transition structure modifications to accommodate the 66"-RCP connection and the removal of the existing facilities to allow construction of the proposed improvements. The detail has not been provided at this time and was noted that it will be a part of the Structural Details.

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/PBJ

T/R/S: T19S/R59E/12
AREA F-12

Drainage Exhibits

100-Year Street Flow Summary
Ultimate Condition

Cross Section	Slope (%)	Q_{100} (cfs)	Depth (ft)	Velocity (fps)	DxV
ECA1	4.90	33	0.46	6.1	2.8
ECA2	4.90	99	0.62	8.5	5.2
ECA2b	2.00	47	0.58	4.7	2.7
ECA3a	4.94	17	0.38	5.3	2.0
ECA3b	4.94	13	0.36	4.9	1.8
ECA3c	4.94	32	0.46	6.1	2.8
ECA4	0.50	25	0.58	2.5	1.4
EGN1a	2.46	4	0.29	2.9	0.8
*EGN1b	0.50	2.5	0.38	1.6	0.6
EGN2	0.50	4	0.35	1.6	0.5
*SHA	2.75	4	0.33	3.3	1.1
*SHA (West Half)	2.75	4	0.28	2.5	0.7
SHA1	2.75	3	0.26	2.9	0.7
*HU2	0.57	59	0.92	3.8	3.5
*HU2B	0.57	41	0.82	3.5	2.9

* Modeled as Half Streets

Referenced Ultimate Condition Flow Rate Summary
Concentration Points

Basin/Concentration Point ID	Area (sq. mi)	Q_{100} (cfs)	Q_{10} (cfs)
WC10A Q = WML9 + WPRK5	0.03	60	30
WC10B Q = WC10A + WL4B + WEGL1	0.05	99	48
WC11 Q = WML10 + WEGN3	0.07	127	61
WC12 Q = WC10B + WC11	0.11	226	109
WC13 Q = WC12 + WL6B + WL7 + WML13 + WEGL2	0.17	352	170
WC14 Q = WML14 + WL8 + WSKV3 + WSKV4	0.24	485	236
WC20 Q = WPF5 + WML2 + WSHA5	0.05	86	42
WC22A Q = WL4A + WL5A + WL5B	0.05	67	43

Ultimate Condition Prorated Flow Summary

Basin	Q_{100} (cfs)	Area (acres)	Unit Flow (cfs/acre)
WSHA4	6	1.4	4.2
WSHA5	8	2.4	3.4
WEGN2	6	2.1	3.0
WEGN3	10	3.3	3.0
Subbasin	**Q_{100} (cfs)**	**Area (acres)**	**Unit Flow (cfs/acre)**
WSHA4-A	5	1.1	4.2
WSHA4-B	1	0.3	4.2
TOTAL	***6***	***1.4***	
WSHA5-A	4	1.3	3.4
WSHA5-B	4	1.1	3.4
TOTAL	***8***	***2.4***	
WEGN2-A	2	0.6	3.0
WEGN2-B	4	1.5	3.0
TOTAL	***6***	***2.1***	
WEGN3-A	8	2.5	3.0
WEGN3-B	2	0.8	3.0
TOTAL	***10***	***3.3***	

Referenced Ultimate Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
WL4A	8.0	23	10
WL4B	8.9	27	12
WL5A	10.9	32	15
WL5B	3.8	12	5
WL6B	10.6	30	14
WL7	11.5	34	16
WL8	17.4	48	22
WML10	11.6	38	19
WML11	16.0	48	23
WML13	16.4	49	25
WML14	19.2	59	29
WML2	27.4	78	38
WML9	16.4	55	28
WPF4	5.7	19	9
WPF5	0.4	1	0
WPRK5	2.0	5	2
WEST ROADWAY BASINS			
WEGL1	3.4	12	6
WEGL2	3.3	12	7
WEGN2	2.1	2	1
WEGN3	3.3	10	6
WSHA4	1.4	6	3
WSHA5	2.4	8	5
WSKV3	4.2	14	7
WSKV4	4.5	15	8

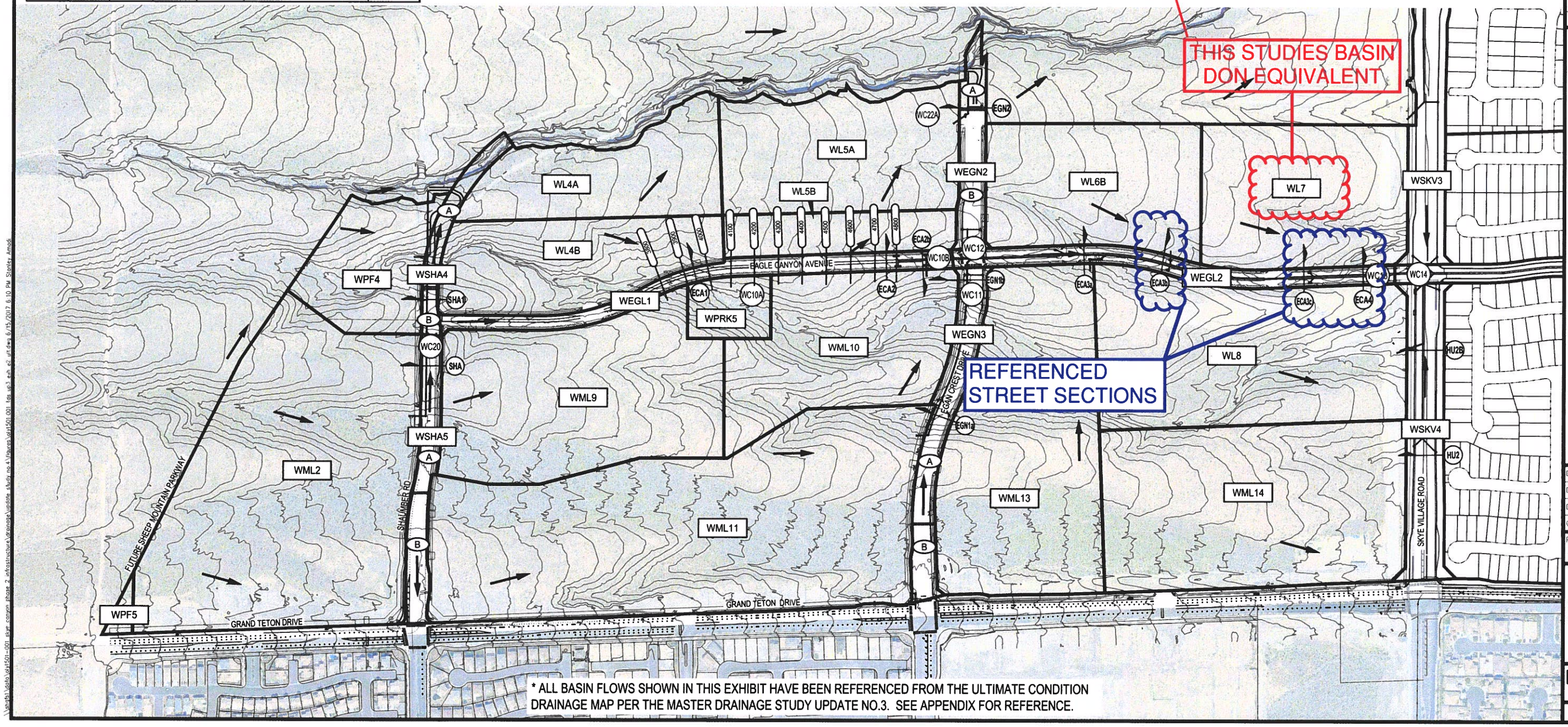
HEC-RAS Summary Table

River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Overbank Left/Right Velocity (ft/sec)	Top Width (ft)
-3800	99	2974.12	2974.74	8.43	2.13/2.13	54.61
-3900	99	2969.22	2969.84	8.43	2.13/2.13	54.61
-4000	99	2964.32	2964.94	8.43	2.13/2.13	54.61
-4100	99	2959.42	2960.04	8.43	2.13/2.13	54.61
-4200	99	2954.52	2955.14	8.43	2.13/2.13	54.61
-4300	99	2949.62	2950.24	8.43	2.13/2.13	54.61
-4400	99	2944.72	2945.34	8.44	2.13/2.13	54.59
-4500	99	2939.82	2940.44	8.43	2.13/2.13	54.61
-4600	99	2934.92	2935.54	8.44	2.13/2.13	54.59
-4700	99	2930.02	2930.64	8.43	2.13/2.13	54.61
-4800	99	2925.12	2925.74	8.43	2.13/2.13	54.61

10-Year Street Flow Summary
Ultimate Condition

Cross Section	Slope (%)	Q_{100} (cfs)	Depth (ft)	Velocity (fps)	DxV	Dry Lane (ft)
EGN1a	2.46	2	0.24	2.6	0.6	21
*EGN1b	0.50	1	0.30	1.3	0.4	18
EGN2	0.50	2	0.30	1.3	0.4	18
SHA1	2.75	1	0.18	2.8	0.5	24
*HU2[1]	0.57	29	0.73	3.2	2.4	9
*HU2B	0.57	22	0.67	3.0	2.0	12

* Modeled as Half Streets
1 Existing Drop Inlets Capture Flows to mitigate Dry Lane



* ALL BASIN FLOWS SHOWN IN THIS EXHIBIT HAVE BEEN REFERENCED FROM THE ULTIMATE CONDITION DRAINAGE MAP PER THE MASTER DRAINAGE STUDY UPDATE NO.3. SEE APPENDIX FOR REFERENCE.

N

SCALE - 1"=200' FEET (0, 200, 400)

LEGEND

- BASIN BOUNDARY
- PRO-RATED SUBBASIN BOUNDARY
- ID — BASIN ID
- ID — PRO-RATED SUBBASIN ID
- ID — CONCENTRATION POINT ID
- FLOW DIRECTION
- ID — FLOWMASTER SECTION

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

NO	DESCRIPTION	DATE	BY	APP'D DATE	APP

OLYMPIA COMPANIES

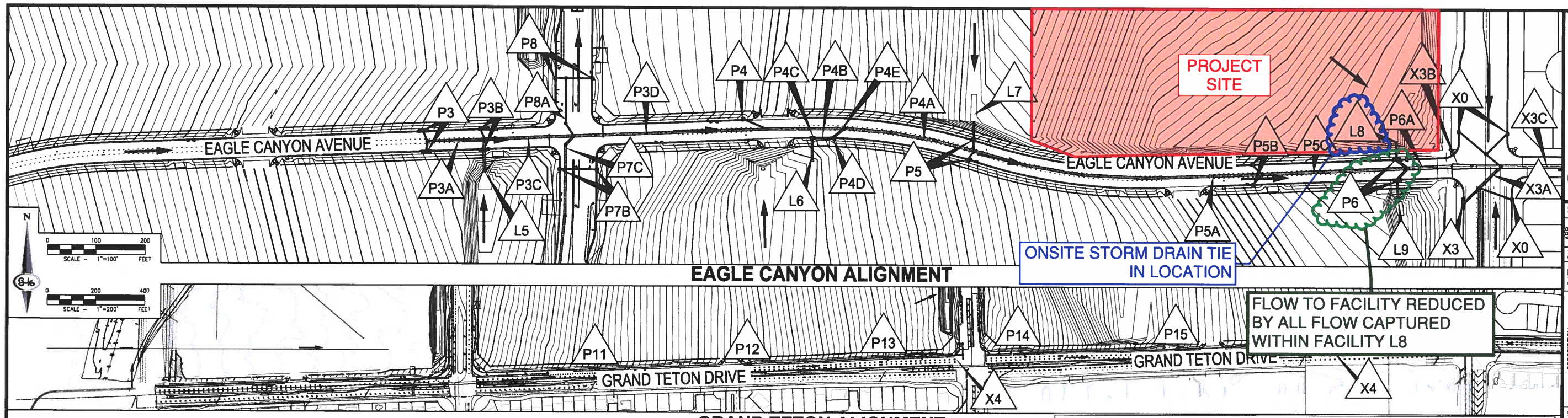
SKYE CANYON - PHASE 2 INFRASTRUCTURE UPDATE NO.4

ULTIMATE CONDITION DRAINAGE MAP

DATE: JUNE 2016
DRAFTER: ETM
DESIGNER: ETM
CHECKED: SMJ
PROJECT NO. OLY1501.001

EXHIBIT E2
SHEET 1 OF 1

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Flood Control Facility Summary

Facility ID	Facility	Interim Q_{100} (cfs)	Ultimate Q_{100} (cfs)	Comment
X0	Existing 5-ft Type CM2 DIs	N/A	N/A	Provided for 10-yr Flows
X1	Existing 7.5-ft Type CM2 DI	**16**	16	18" RCP lateral
X1A	Existing 24" RCP	**16**	16	
X2	Existing 7.5-ft Type CM2 DI	**13**	13	36" RCP Lateral
X2A	Existing 36" RCP	**56.5**	46	
X3	Existing 20-ft Sump Drop Inlet	39	**42.5**	36" RCP Lateral
X3A	Existing 48" RCP	**102**	88.5	
X3B	Existing Transition Structure	**387.5**	**391**	
X3C	Existing 72" RCP	460	**479.5**	
X4	Existing 6' X 5' RCB	N/A	N/A	Grand Teton Alignment
P1	Proposed 5-ft Type CM2 DI	**2**	2	18" RCP lateral
P1A	Proposed 36" RCP	54	**79**	
P1B	Proposed 36" RCP	56	**81**	
P1C	Proposed 36" RCP	59	**84**	
P1D	Proposed 36" RCP	91	**103**	
P2	(2) Proposed 5-ft Type CM2 Sump DIs	**6**	6	18" RCP lateral (Q shown is total for both inlets)
P3	(2) Proposed 20-ft Type CM2 DIs	30	**52**	18" RCP North, 36" RCP South Lateral (Q shown is total for both inlets)
P3A	Proposed 36" RCP	30	**52**	18" RCP North, 48" RCP South Lateral
P3B	(2) Proposed 20-ft Type CM2 DIs	26	**36**	Q shown is total for both inlets
P3C	Proposed 48" RCP	**128**	124	
P3D	Proposed 48" RCP	**218**	210	
P4	(2) Proposed 5-ft Type CM2 DIs	**8**	6	18" RCP North, 30" RCP South Lateral (Q shown is total for both inlets)
P4A	Proposed 48" RCP	262	**269**	
P4B	Proposed 36" RCP	**60**	53	
P4C	Proposed 5-ft Type CM2 DI	**Nuisance**	Nuisance	
P4D	Proposed 36" RCP	**56**	56	
P4E	Proposed 7.5-ft Type CM2 DI	**3**	3	Inlet Grates to be Replaced with Solid Plates
P5	(2) Proposed 7.5-ft Type CM2 DIs	**14**	8	24" RCP North, 18" RCP South Lateral
P5A	Proposed 48" RCP	**292**	289	
P5B	(2) Proposed 5-ft Type CM2 Nuisance DIs	Nuisance	**10**	Q shown is total for both inlets
P5C	Proposed 54" RCP	292	289	
P6	(2) Proposed 17.5-ft Type CM2 Sump DIs	**51**	41	2" RCP laterals (Q shown is total for both inlets)
P6A	Proposed 66" RCP	387.5	**391**	
P7	(2) Proposed 5-ft Type CM2 DIs	**3**	3	18" RCP laterals (Q shown is total for both inlets)
P7A	Proposed 36" to 42" RCP Transition	**88**	84	
P7B	(2) Proposed 5-ft Type CM2 DIs	**2**	2	18" RCP laterals (West Inlet Provided as Nuisance)
P7C	Proposed 42" RCP	**90**	86	
P8	(2) Proposed 5-ft Type CM2 Nuisance DIs	Nuisance	Nuisance	18" RCP laterals
P8A	Proposed 18" RCP	Nuisance	Nuisance	
P9	Proposed 7.5-ft Type CM2 DIs	**2**	2	18" RCP Lateral
P9A	Proposed 36" RCP	62	**71**	
P9B	Proposed 10-ft Type CM2 DIs	**2**	2	36" RCP Lateral
P9C	Proposed 36" RCP	62	**71**	
P11 thru P14	(4) Proposed 15-ft Type CM2 DIs	Varies	Varies	Tie into Facility X4
P15	Proposed 7.5-ft Type CM2 DI	**2.0**	2.0	Tie into Facility X4
P16	Proposed 10-ft Type CM2 DI	**2.0**	2.0	Tie into Facility X4
P17	Proposed 12.5-ft Type CM2 DI	**2.0**	2.0	Tie into Facility X4
L2	Proposed 36" RCP	54	**79**	
L3	Proposed 30" RCP	**32**	19	
L5	Proposed 48" RCP	**85**	36	
L6	Proposed 36" RCP	40	**53**	
L7	Proposed 24" RCP	**19**	12	
L8	Proposed 24" RCP	**17**	17	
L9	Proposed 36" RCP	27.5	**34**	
L10	Proposed 36" RCP	**85**	81	
L12	Proposed 36" RCP	59	**67**	
L13	Proposed 36" RCP	**27.5**	17.0	

1 - 'L' denotes proposed lateral stub
2 - 'P' denotes a proposed facility
3 - 'X' denotes an existing facility
4 - 'Q' in Bold denotes design flow rate

FLOW TO FACILITY REDUCED BY PROPOSED DESIGN

FLOW TO SD FACILITY INCREASED BY PROPOSED DESIGN

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 384-5300 FAX (702) 384-5399

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

NINETY-FIVE MANAGEMENT, LLC.

SKYE CANYON - PHASE 2 INFRASTRUCTURE UPDATE NO.4

STORM DRAIN SCHEMATIC MAP

DATE: JUNE 2017
DRAFTER: ETM
DESIGNER: ETM
CHECKED: SOA
PROJECT NO.
OLY1501.001

EXHIBIT F
SHEET 1 OF 1

\\vegfs1\data\oly\1501-001 skye canyon phase 2 infrastructure\drawings\graphics\storm study\4.1\Layouts\oly1501-001 sds exh 1 sd dwg 6/15/2017 8:01 PM Shirley Ramos

Drop Inlets

Project:	**Skye Canyon Infrastructure - Phase 2 Update No.4**
Title:	**Type CM2 Drop Inlet (SUMP)**
Subtitle:	**17.5-ft Drop Inlet at Section ECA4**
By:	**ETM**
Date:	**6/14/2017**

Input:	**Variable:**	**Input:**
Depth at Inlet (ft)	D	0.44
Grate Width (ft)	W	1.50
Length of Grate (ft)	L_g	15.00
Length of Curb Opening (ft)	L_c	17.50
Height of Curb Opening (ft)	H	0.500
Weir Coef. - Curb Opening	W_c	2.3
Weir Coef. - Grate	W_g	3.0
Orifice Coef.	O_c	0.67
Grate Coef.	G_c	0.60
Clogging Factor - Grate (%)	CF_g	50
Clogging Factor - Curb (%)	CF_c	50

Output (Grate):	**Equation:**	**Output (Grate):**
Effective Weir Length (ft)	$2*W+L_g$	18.00
Adjusted Effective Weir Length (ft)	$2*(1-CF_g/100)*W+(1-CF_g/100)*L_g$	9.00
Grate Open Area (sf)	$W*L_g$	22.50
Adjusted Grate Open Area (sf)	Grate Open Area * $G_c*(1-CF_g/100)$	6.75
Controlling Flow Type (weir/orifice)	If D<1.792*(Adj. Grate Open Area/Adj. Eff. Length) use weir, else orifice	weir
Intercepted Flow (cfs)	weir: $W_g*(\text{Adj. Eff. Weir Length})*D^{1.5}$	7.9
	orifice: $O_c*(\text{Adj. Grate Open Area})*(64.4*D)^{0.5}$	

Output (Curb):	**Equation:**	**Output (Curb):**
Effective Weir Length (ft)	L+1.8*W	20.20
Adjusted Effective Weir Length (ft)	$L+1.8(1-CF_c/100)*W$	18.91
Curb Open Area (sf)	L*H	8.75
Adjusted Curb Open Area (sf)	Curb Open Area * $(1-CF_c/100)$	4.38
Controlling Flow Type (weir/orifice)	If D<H, weir, else orifice	weir
Intercepted Flow (cfs)	weir: $W_c*(\text{Adj. Eff. Weir Length})*D^{1.5}$	12.65
	orifice: $O_c*(\text{Adj. Curb Open Area})*(64.4*(D-H/2))^{0.5}$	

Output (Combination):		**Output (Combination):**
Total Intercepted Flow (cfs)	Intercepted (Grate) + Intercepted (Curb)	**20.5**

FLOW REDUCED BY
17-CFS BY ALL ONSITE
FLOW BEING COLLECTED
BY PROPOSED INLET
42-CFS - 17-CFS = 25-CFS
25/2 = 12.5-CFS PER INLET

Total Capacity for Two Inlets = **68 cfs**
Actual Flow Collected = **42 cfs**

Street Flow Computations

Section - ECA3b (Ultimate Condition)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section - ECA3b (Ultimate Condition)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	4.94	%
Discharge	14.00	cfs

STREET SECTION ADJACENT TO THE PROJECT SITE. NOT USED FOR ANY COMPUTATION, PROIVDED FOR REFERENCE ONLY

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	0.016	
Water Surface Elevation	0.36	ft
Elevation Range	0.00 to 0.56	
Flow Area	2.8	ft²
Wetted Perimeter	23.27	ft
Top Width	22.45	ft
Actual Depth	0.36	ft
Critical Elevation	0.48	ft
Critical Slope	0.69	%
Velocity	5.02	ft/s
Velocity Head	0.39	ft
Specific Energy	0.76	ft
Froude Number	2.51	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+43.00	0.016

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+21.50	0.56
0+41.00	0.17
0+41.00	0.13
0+42.50	0.00
0+42.50	0.48
0+43.00	0.50

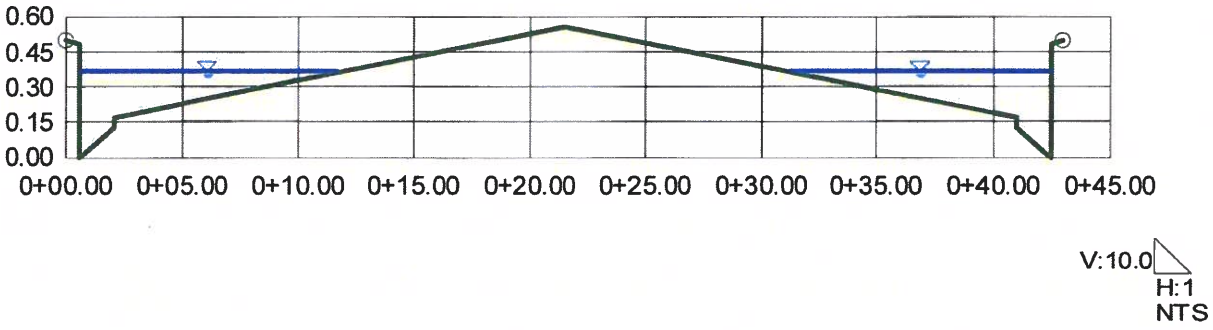
Section - ECA3b (Ultimate Condition)
Worksheet for Irregular Channel

Notes: Q = WML13 (0 CFS) + EC3a BYPASS (11 CFS) + WEGL2/4 (3 CFS) = 14 CFS

Section - ECA3b (Ultimate Condition)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section - ECA3b (Ultimate Condition)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.016	
Channel Slope	4.94	%
Water Surface Elevation	0.36	ft
Elevation Range	0.00 to 0.56	
Discharge	14.00	cfs



Section - ECA3c (Ultimate Condition)
Worksheet for Irregular Channel

Project Description	
Worksheet	Section - ECA3c (Ultimate Condition)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	4.94	%
Discharge	31.00	cfs

STREET SECTION ADJACENT TO THE PROJECT SITE. NOT USED FOR ANY COMPUTATION, PROVIDED FOR REFERENCE ONLY

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	0.016	
Water Surface Elevation	0.45	ft
Elevation Range	0.00 to 0.56	
Flow Area	5.1	ft²
Wetted Perimeter	32.12	ft
Top Width	31.12	ft
Actual Depth	0.45	ft
Critical Elevation	0.60	ft
Critical Slope	0.61	%
Velocity	6.06	ft/s
Velocity Head	0.57	ft
Specific Energy	1.02	ft
Froude Number	2.64	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+43.00	0.016

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+21.50	0.56
0+41.00	0.17
0+41.00	0.13
0+42.50	0.00
0+42.50	0.48
0+43.00	0.50

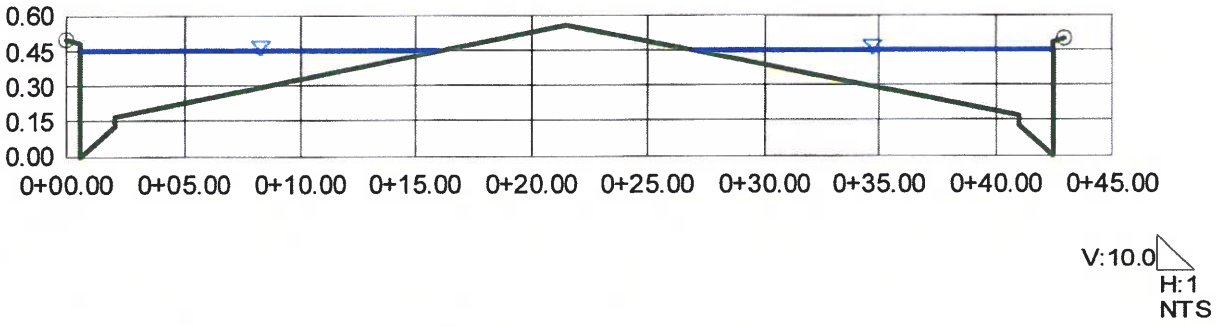
Section - ECA3c (Ultimate Condition)
Worksheet for Irregular Channel

Notes: Q = Parcel 2.15 Basin ON2{WL6B OVERFLOW (22 CFS)} + EC3b BYPASS (6 CFS) + WEGL2/4 (3 CFS) = 31 CFS

Section - ECA3c (Ultimate Condition)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section - ECA3c (Ultimate Condition)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.016	
Channel Slope	4.94	%
Water Surface Elevation	0.45	ft
Elevation Range	0.00 to 0.56	
Discharge	31.00	cfs



Section - ECA4 (Ultimate Condition)
Worksheet for Irregular Channel

REFERENCED STREET SECTION TO ANALYZE FINISHED FLOOR ELEVATIONS OF LOTS ADJACENT TO EAGLE CANYON AVENUE

Project Description	
Worksheet	Section - ECA4 (Ultimate Condition)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	0.50	%
Discharge	24.00	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	0.016	
Water Surface Elevation	0.58	ft
Elevation Range	0.00 to 0.56	
Flow Area	9.9	ft²
Wetted Perimeter	44.21	ft
Top Width	43.00	ft
Actual Depth	0.58	ft
Critical Elevation	0.56	ft
Critical Slope	0.65	%
Velocity	2.42	ft/s
Velocity Head	0.09	ft
Specific Energy	0.67	ft
Froude Number	0.89	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.77367849e-1 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+43.00	0.016

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+21.50	0.56
0+41.00	0.17
0+41.00	0.13
0+42.50	0.00
0+42.50	0.48
0+43.00	0.50

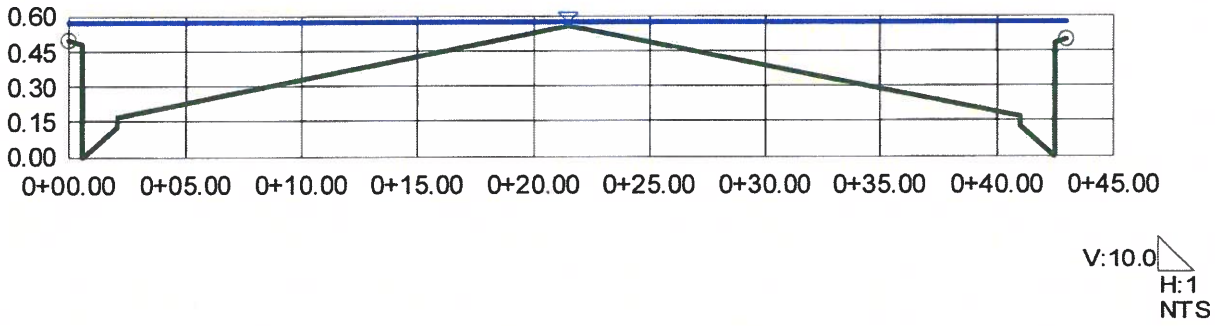
Section - ECA4 (Ultimate Condition)
Worksheet for Irregular Channel

Notes: Q = WEGL2/4 (3 CFS) + ECA3c BYPASS (21 CFS) = 24CFS

Section - ECA4 (Ultimate Condition)
Cross Section for Irregular Channel

Project Description	
Worksheet	Section - ECA4 (Ultimate Condition)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.016	
Channel Slope	0.50	%
Water Surface Elevation	0.58	ft
Elevation Range	0.00 to 0.56	
Discharge	24.00	cfs



WSPG Storm Drain Models

```
0
T1 SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)
T2 BY OLYMPIA COMPANIES
T3 EAGLE CANYON - TRUNK STORM DRAIN
SO   0613.002823.35 72                              2829.26                                    1
R    0900.002830.52 72       .013                                                            1
JX   0900.002830.52 72 48    .013    88.5          2832.52         45.00
R    0950.002831.58 72       .013                                                            1
WE   0950.002831.58 72       .013
TS   1000.002835.61 66       .013                                                            1
WX   1000.002835.61 66       .013
R    1093.002837.13 66       .013                                                            1
JX   1093.002838.13 54 42 42.013    54.5     37.52839.132839.13 45.00 45.00
R    1389.502839.63 54       .013                                                            1
JX   1394.502840.13 48 18 18.013     5.0      5.02842.632842.63 45.00 45.00
R    1632.002854.48 48       .013                                                 5.         1
R    1762.002862.62 48       .013                                                 5.         1
R    1883.002868.57 48       .013                                                 5.         1
R    1992.002873.94 48       .013                                                 5.         1
JX   1992.002873.94 48 18 24.013     4.0     16.02876.442875.94 75.00 75.00
R    2072.002877.87 48       .013                                                 5.         1
R    2167.002882.51 48       .013                                                 5.         1
R    2262.002885.16 48       .013                                                 5.         1
JX   2262.002885.16 48 36    .013    56.0          2886.16         38.00
R    2422.002888.80 48       .013                                                            1
JX   2422.002888.80 48 18    .013     3.0          2891.30         45.00
R    2820.002903.13 48       .013                                                            1
JX   2820.002903.13 48 42    .013    86.0          2903.63         45.00
R    3004.002908.81 48       .013                                                60.         1
JX   3004.002908.81 48 36 18.013    52.0     18.02909.812911.31 60.00 45.00
R    3024.002910.72 48       .013                                                            1
JX   3024.002910.72 48 48    .013    18.0          2912.12         90.00
R    3060.002912.43 48       .013                                                            1
SH   3060.002912.43 48
CD  18  4              1.5
CD  24  4              2.
CD  30  4              2.5
CD  36  4              3.
CD  42  4              3.5
CD  48  4              4.
CD  54  4              4.5
CD  60  4              5.
CD  66  4              5.5
CD  72  4              6.
CD  78  4              6.5
→
```

STATION WHERE ONSITE LATERAL COMES INTO SYSTEM

0
Q 36.0
↔

DATE: 6/15/2017
TIME: 16: 5

F0515P
WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	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	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														
CD	78	4			6.50														

F 0 5 1 5 P PAGE NO 3

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)

HEADING LINE NO 2 IS -

BY OLYMPIA COMPANIES

HEADING LINE NO 3 IS -

EAGLE CANYON - TRUNK STORM DRAIN

F 0 5 1 5 P 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
	613.00	2823.35	72	2829.26

ELEMENT NO 2 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	900.00	2830.52	72	0.013	0.00	0.00	0.00	1

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
	900.00	2830.52	72	48	0	0.013	88.5	0.0	2832.52	0.00	45.00	0.00

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

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	950.00	2831.58	72	0.013	0.00	0.00	0.00	1

ELEMENT NO 5 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	950.00	2831.58	72	0.013

ELEMENT NO 6 IS A TRANSITION

U/S DATA	STATION	INVERT	SECT	N
	1000.00	2835.61	66	0.013

ELEMENT NO 7 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1000.00	2835.61	66

ELEMENT NO 8 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1093.00	2837.13	66	0.013	0.00	0.00	0.00	1

ELEMENT NO 9 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1093.00	2838.13	54	42	42	0.013	54.5	37.5	2839.13	2839.13	45.00	45.00

ELEMENT NO 10 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1389.50	2839.63	54	0.013	0.00	0.00	0.00	1

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
	1394.50	2840.13	48	18	18	0.013	5.0	5.0	2842.63	2842.63	45.00	45.00

F 0 5 1 5 P PAGE NO 3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1632.00	2854.48	48	0.013	0.00	0.00	5.00	1

ELEMENT NO 13 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1762.00	2862.62	48	0.013	0.00	0.00	5.00	1

ELEMENT NO 14 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1883.00	2868.57	48	0.013	0.00	0.00	5.00	1

ELEMENT NO 15 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1992.00	2873.94	48	0.013	0.00	0.00	5.00	1

ELEMENT NO 16 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1992.00	2873.94	48	18	24	0.013	4.0	16.0	2876.44	2875.94	75.00	75.00

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	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2072.00	2877.87	48	0.013	0.00	0.00	5.00	1

ELEMENT NO 18 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2167.00	2882.51	48	0.013	0.00	0.00	5.00	1

```
 ELEMENT NO  19 IS A REACH              *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN_H
                               2262.00 2885.16   48              0.013                                     0.00   0.00    5.00      1

 ELEMENT NO  20 IS A JUNCTION           *         *     *     *                 *                 *                 *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               2262.00 2885.16   48    36     0  0.013     56.0      0.0  2886.16     0.00  38.00    0.00
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  21 IS A REACH              *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN_H
                               2422.00 2888.80   48              0.013                                     0.00   0.00    0.00      1

 ELEMENT NO  22 IS A JUNCTION           *         *     *     *                 *                 *                 *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               2422.00 2888.80   48    18     0  0.013      3.0      0.0  2891.30     0.00  45.00    0.00
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 ♀
                                        F 0 5 1 5 P                                                                PAGE NO   4

                        WATER SURFACE PROFILE - ELEMENT CARD LISTING

 ELEMENT NO  23 IS A REACH              *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN_H
                               2820.00 2903.13   48              0.013                                     0.00   0.00    0.00      1

 ELEMENT NO  24 IS A JUNCTION           *         *     *     *                 *                 *                 *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               2820.00 2903.13   48    42     0  0.013     86.0      0.0  2903.63     0.00  45.00    0.00
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  25 IS A REACH              *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN_H
                               3004.00 2908.81   48              0.013                                     0.00   0.00   60.00      1

 ELEMENT NO  26 IS A JUNCTION           *         *     *     *                 *                 *                 *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               3004.00 2908.81   48    36    18  0.013     52.0     18.0  2909.81  2911.31  60.00   45.00
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  27 IS A REACH              *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN_H
                               3024.00 2910.72   48              0.013                                     0.00   0.00    0.00      1

 ELEMENT NO  28 IS A JUNCTION           *         *     *     *                 *                 *                 *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3       Q4    INVERT-3 INVERT-4  PHI 3   PHI 4
                               3024.00 2910.72   48    48     0  0.013     18.0      0.0  2912.12     0.00  90.00    0.00
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  29 IS A REACH              *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                                    RADIUS  ANGLE  ANG PT  MAN_H
                               3060.00 2912.43   48              0.013                                     0.00   0.00    0.00      1

 ELEMENT NO  30 IS A SYSTEM HEADWORKS                 *                 *
                  U/S DATA   STATION    INVERT  SECT                                        W S ELEV
                               3060.00 2912.43   48                                            0.00
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING
** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC ♀
LICENSEE: SLATER HANIFAN GROUP                          F0515P                                                     PAGE    1
                                                WATER SURFACE PROFILE LISTING
                        SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)
                        BY OLYMPIA COMPANIES
                        EAGLE CANYON - TRUNK STORM DRAIN

 STATION     INVERT   DEPTH     W.S.          Q       VEL      VEL      ENERGY   SUPER  CRITICAL          HGT/   BASE/     ZL   NO  AVBPR
              ELEV   OF FLOW    ELEV                          HEAD     GRD.EL.  ELEV    DEPTH            DIA    ID NO.          PIER
 L/ELEM       SO                                          SF AVE      HF                      NORM DEPTH                ZR
*****************************************************************************************************************************************
   613.00  2823.35    4.010  2827.360     479.5   23.88    8.853   2836.213   0.00    5.621          6.00    0.00   0.00    0   0.00
    70.92  0.02498                                        .020090      1.42                3.757                  0.00
   683.92  2825.12    4.102  2829.224     479.5   23.28    8.414   2837.638   0.00    5.621          6.00    0.00   0.00    0   0.00
    88.77  0.02498                                        .018416      1.63                3.757                  0.00
   772.69  2827.34    4.284  2831.623     479.5   22.19    7.649   2839.272   0.00    5.621          6.00    0.00   0.00    0   0.00
    58.23  0.02498                                        .016459      0.96                3.757                  0.00
   830.92  2828.79    4.483  2833.277     479.5   21.16    6.954   2840.231   0.00    5.621          6.00    0.00   0.00    0   0.00
    40.67  0.02498                                        .014774      0.60                3.757                  0.00
   871.59  2829.81    4.700  2834.510     479.5   20.18    6.321   2840.831   0.00    5.621          6.00    0.00   0.00    0   0.00
    28.41  0.02498                                        .013347      0.38                3.757                  0.00
   900.00  2830.52    4.944  2835.464     479.5   19.24    5.747   2841.211   0.00    5.621          6.00    0.00   0.00    0   0.00
JUNCT STR  0.00000                                        .018387      0.00                                       0.00
   900.00  2830.52    3.332  2833.852     391.0   24.25    9.128   2842.980   0.00    5.292          6.00    0.00   0.00    0   0.00
    50.00  0.02120                                        .024400      1.22                3.468                  0.00
   950.00  2831.58    3.305  2834.885     391.0   24.49    9.314   2844.199   0.00    5.292          6.00    0.00   0.00    0   0.00
TRANS STR  0.08060                                        .019055      0.95                                       0.00
  1000.00  2835.61    4.540  2840.150     391.0   18.64    5.395   2845.545   0.00    5.168          5.50    0.00   0.00    0   0.00
 WALL  EXIT                                                                                                       0.00
  1000.00  2835.61    4.539  2840.149     391.0   18.65    5.398   2845.547   0.00    5.168          5.50    0.00   0.00    0   0.00
     8.18  0.01634                                        .013339      0.11                4.120                  0.00
  1008.18  2835.74    4.560  2840.304     391.0   18.56    5.351   2845.655   0.00    5.168          5.50    0.00   0.00    0   0.00
    61.83  0.01634                                        .012762      0.79                4.120                  0.00                ♀
LICENSEE: SLATER HANIFAN GROUP                          F0515P                                                     PAGE    2
                                                        Page 2
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STATION USED FOR STARTING HGL

U-ECA.OUT
WATER SURFACE PROFILE LISTING
SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)
BY OLYMPIA COMPANIES
EAGLE CANYON - TRUNK STORM DRAIN

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		
1070.01	2836.75	4.825	2841.579	391.0	17.70	4.865	2846.444	0.00	5.168		5.50	0.00	0.00	0	0.00
22.99	0.01634					.011978	0.28			4.120			0.00		
1093.00	2837.13	5.168	2842.298	391.0	16.87	4.422	2846.720	0.00	5.168		5.50	0.00	0.00	0	0.00
JUNCT STR	0.00000					.017417	0.00						0.00		
1093.00	2838.13	5.209	2843.339	299.0	18.80	5.488	2848.827	0.00	4.385		4.50	0.00	0.00	0	0.00
296.50	0.00306					.023118	6.85			4.500			0.00		
1389.50	2839.63	10.838	2850.468	299.0	18.80	5.488	2855.956	0.00	4.385		4.50	0.00	0.00	0	0.00
JUNCT STR	0.10000												0.00		
1394.50	2840.13	2.787	2842.917	289.0	30.92	14.841	2857.758	0.00	3.963		4.00	0.00	0.00	0	0.00
237.50	0.06042					.055460	13.17			2.752			0.00		
1632.00	2854.48	2.908	2857.388	289.0	29.54	13.545	2870.933	0.00	3.963		4.00	0.00	0.00	0	0.00
70.99	0.06262					.050304	3.57			2.716			0.00		
1702.99	2858.93	3.014	2861.939	289.0	28.45	12.566	2874.505	0.00	3.963		4.00	0.00	0.00	0	0.00
59.01	0.06262					.045764	2.70			2.716			0.00		
1762.00	2862.62	3.162	2865.782	289.0	27.12	11.424	2877.206	0.00	3.963		4.00	0.00	0.00	0	0.00
15.82	0.04917					.043162	0.68			2.986			0.00		
1777.82	2863.40	3.178	2866.576	289.0	26.99	11.311	2877.887	0.00	3.963		4.00	0.00	0.00	0	0.00
105.18	0.04917					.041003	4.31			2.986			0.00		
1883.00	2868.57	3.347	2871.917	289.0	25.73	10.284	2882.201	0.00	3.963		4.00	0.00	0.00	0	0.00
7.31	0.04927					.038901	0.28			2.984			0.00		
1890.31	2868.93	3.364	2872.294	289.0	25.62	10.189	2882.483	0.00	3.963		4.00	0.00	0.00	0	0.00
60.57	0.04927					.037325	2.26			2.984			0.00		

WATER SURFACE PROFILE LISTING
SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)
BY OLYMPIA COMPANIES
EAGLE CANYON - TRUNK STORM DRAIN

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		
1950.88	2871.91	3.567	2875.481	289.0	24.42	9.262	2884.743	0.00	3.963		4.00	0.00	0.00	0	0.00
41.12	0.04927					.035621	1.46			2.984			0.00		
1992.00	2873.94	3.848	2877.788	289.0	23.29	8.421	2886.209	0.00	3.963		4.00	0.00	0.00	0	0.00
JUNCT STR	0.00000					.037623	0.00						0.00		
1992.00	2873.94	3.074	2877.014	269.0	25.96	10.465	2887.479	0.00	3.951		4.00	0.00	0.00	0	0.00
13.53	0.04913					.039592	0.54			2.820			0.00		
2005.53	2874.61	3.096	2877.701	269.0	25.77	10.311	2888.012	0.00	3.951		4.00	0.00	0.00	0	0.00
66.47	0.04913					.037405	2.49			2.820			0.00		
2072.00	2877.87	3.254	2881.124	269.0	24.57	9.373	2890.497	0.00	3.951		4.00	0.00	0.00	0	0.00
39.34	0.04884					.034253	1.35			2.826			0.00		
2111.34	2879.79	3.404	2883.196	269.0	23.60	8.650	2891.846	0.00	3.951		4.00	0.00	0.00	0	0.00
33.77	0.04884					.031859	1.08			2.826			0.00		
2145.11	2881.44	3.617	2885.058	269.0	22.50	7.864	2892.922	0.00	3.951		4.00	0.00	0.00	0	0.00
21.89	0.04884					.031405	0.69			2.826			0.00		
2167.00	2882.51	3.951	2886.461	269.0	21.45	7.148	2893.609	0.00	3.951		4.00	0.00	0.00	0	0.00
2.99	0.02789					.033326	0.10			4.000			0.00		
2169.99	2882.59	4.000	2886.594	269.0	21.41	7.116	2893.710	0.00	3.951		4.00	0.00	0.00	0	0.00
92.01	0.02789					.034835	3.21			4.000			0.00		
2262.00	2885.16	5.005	2890.165	269.0	21.41	7.116	2897.281	0.00	3.951		4.00	0.00	0.00	0	0.00
JUNCT STR	0.00000					.028529	0.00						0.00		
2262.00	2885.16	9.449	2894.609	213.0	16.95	4.461	2899.070	0.00	3.879		4.00	0.00	0.00	0	0.00
160.00	0.02275					.021988	3.52			3.220			0.00		

WATER SURFACE PROFILE LISTING
SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)
BY OLYMPIA COMPANIES
EAGLE CANYON - TRUNK STORM DRAIN

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

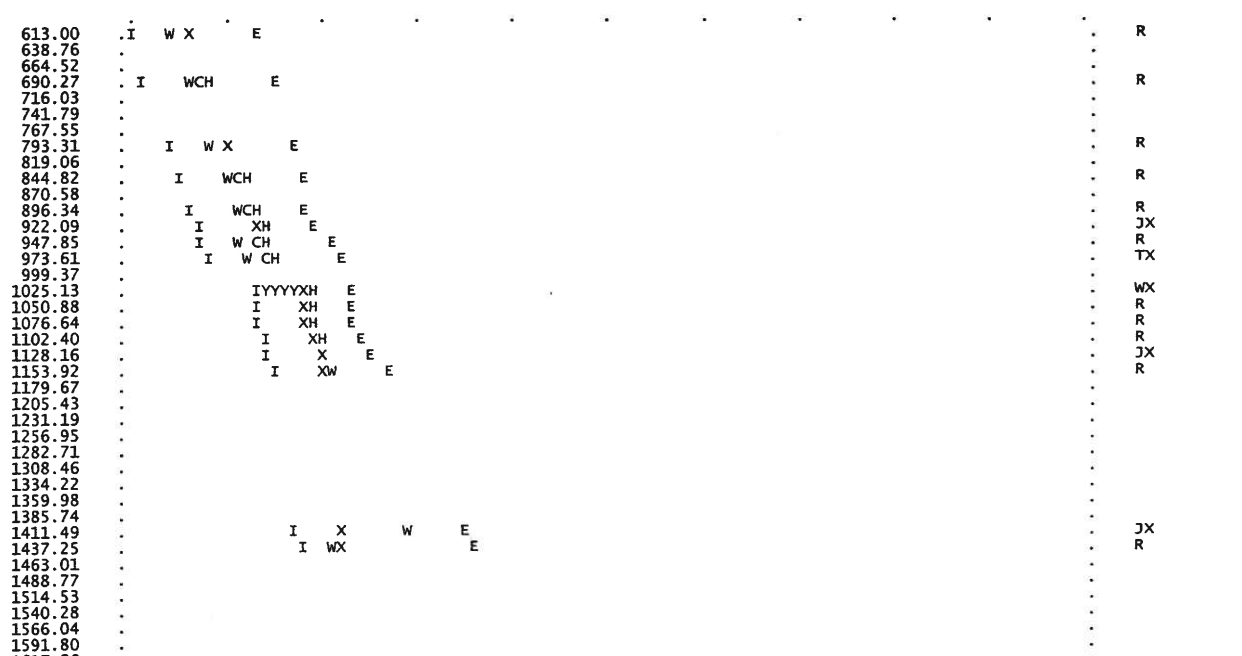
STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
2422.00	2888.80	9.550	2898.350	213.0	16.95	4.461	2902.811	0.00	3.879		4.00	0.00	0.00	0	0.00
JUNCT STR	0.00000					.021680	0.00						0.00		
2422.00	2888.80	9.791	2898.591	210.0	16.71	4.337	2902.928	0.00	3.872		4.00	0.00	0.00	0	0.00
398.00	0.03601					.021373	8.51			2.633			0.00		
2820.00	2903.13	4.184	2907.314	210.0	16.71	4.337	2911.651	0.00	3.872		4.00	0.00	0.00	0	0.00
JUNCT STR	0.00000					.014412	0.00						0.00		
2820.00	2903.13	8.490	2911.620	124.0	9.87	1.512	2913.132	0.00	3.345		4.00	0.00	0.00	0	0.00
184.00	0.03087					.007452	1.37			1.980			0.00		
3004.00	2908.81	4.556	2913.366	124.0	9.87	1.512	2914.878	0.00	3.345		4.00	0.00	0.00	0	0.00
JUNCT STR	0.00000					.004432	0.00						0.00		
3004.00	2908.81	6.213	2915.023	54.0	4.30	0.287	2915.310	0.00	2.209		4.00	0.00	0.00	0	0.00
20.00	0.09550					.001413	0.03			0.941			0.00		
3024.00	2910.72	4.346	2915.066	54.0	4.30	0.287	2915.353	0.00	2.209		4.00	0.00	0.00	0	0.00
JUNCT STR	0.00000					.001020	0.00						0.00		
3024.00	2910.72	4.665	2915.385	36.0	2.86	0.127	2915.512	0.00	1.787		4.00	0.00	0.00	0	0.00
14.23	0.04750					.000624	0.01			0.915			0.00		
3038.23	2911.40	4.000	2915.396	36.0	2.86	0.127	2915.523	0.00	1.787		4.00	0.00	0.00	0	0.00
7.61	0.04750					.000585	0.00			0.915			0.00		
3045.84	2911.76	3.629	2915.387	36.0	3.00	0.140	2915.527	0.00	1.787		4.00	0.00	0.00	0	0.00
4.31	0.04750					.000569	0.00			0.915			0.00		
3050.15	2911.96	3.413	2915.375	36.0	3.15	0.154	2915.529	0.00	1.787		4.00	0.00	0.00	0	0.00
3.44	0.04750					.000615	0.00			0.915			0.00		

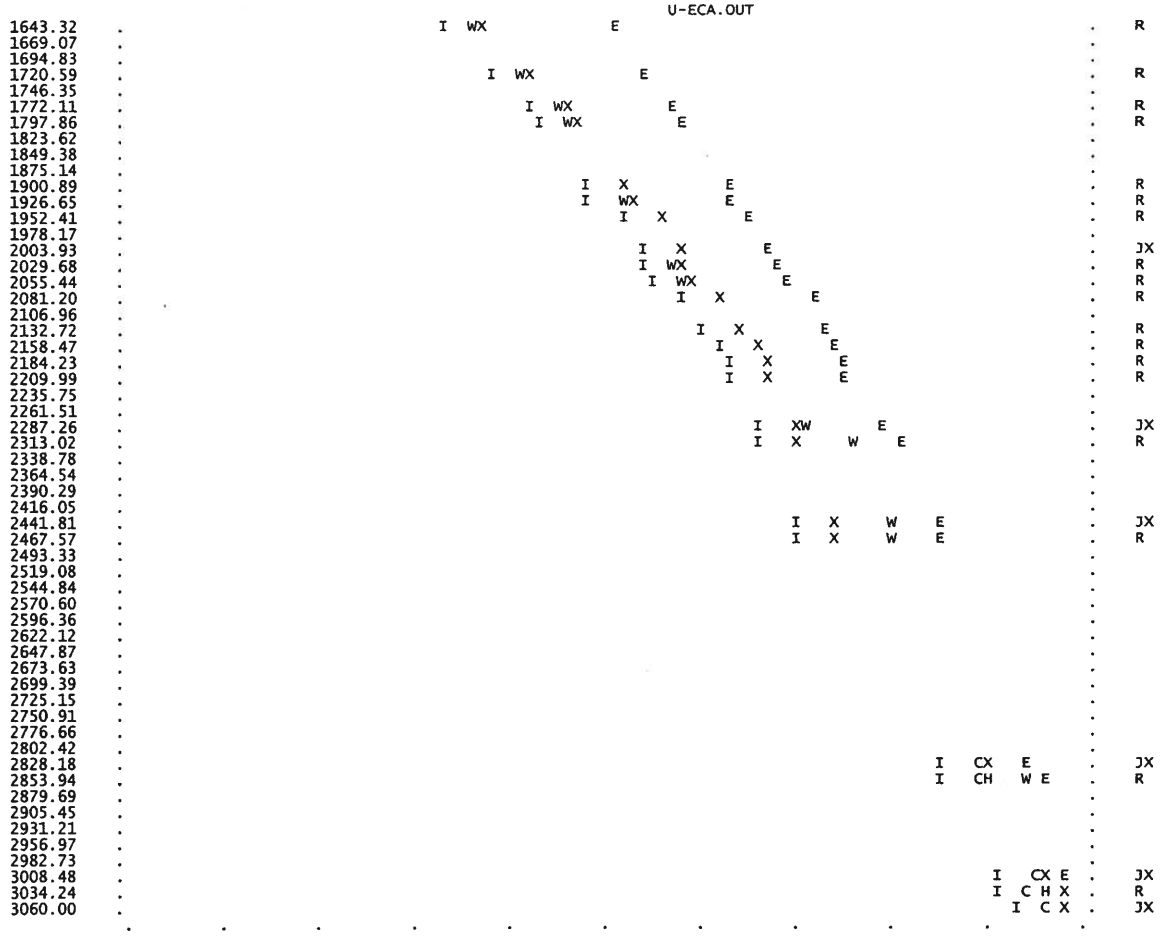
WATER SURFACE PROFILE LISTING

SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)
BY OLYMPIA COMPANIES
EAGLE CANYON - TRUNK STORM DRAIN

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		
3053.59	2912.13	3.236	2915.362	36.0	3.31	0.170	2915.532	0.00	1.787		4.00	0.00	0.00	0	0.00
2.97	0.04750					.000677	0.00			0.915			0.00		
3056.56	2912.27	3.080	2915.347	36.0	3.47	0.187	2915.534	0.00	1.787		4.00	0.00	0.00	0	0.00
2.60	0.04750					.000751	0.00			0.915			0.00		
3059.16	2912.39	2.940	2915.330	36.0	3.64	0.205	2915.535	0.00	1.787		4.00	0.00	0.00	0	0.00
0.84	0.04750					.000808	0.00			0.915			0.00		
3060.00	2912.43	2.894	2915.324	36.0	3.70	0.212	2915.536	0.00	1.787		4.00	0.00	0.00	0	0.00

SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)
BY OLYMPIA COMPANIES
EAGLE CANYON - TRUNK STORM DRAIN





N O T E S
1. GLOSSARY
   I = INVERT ELEVATION
   C = CRITICAL DEPTH
   W = WATER SURFACE 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?

P6-L2.WSP

PREVIOUSLY APPROVED WSPG MODEL FOR ONSITE LATERAL

```
0
T1 SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)
T2 BY OLYMPIA COMPANIES
T3 EAGLE CANYON LATERAL P6-L1
SO    1000.002839.13 42                                  2843.34
R     1028.002839.49 42        .013                                    45.    1
JX    1028.002840.99 24 24     .013      20.5          2840.99         90.00
R     1058.002841.44 24        .013                                             1
SH    1058.002841.44 24

CD   18   4                 1.5
CD   24   4                 2.
CD   30   4                 2.5
CD   36   4                 3.
CD   42   4                 3.5
CD   48   4                 4.
CD   54   4                 4.5
CD   60   4                 5.
CD   66   4                 5.5
CD   72   4                 6.
CD   78   4                 6.5
```

ADOPTED STARTING WSEL FOR ONSITE LATERAL

17.0

DATE: 6/14/2017
TIME: 16: 9

F0515P
WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	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	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														
CD	78	4			6.50														

F 0 5 1 5 P PAGE NO 3

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)

HEADING LINE NO 2 IS -

BY OLYMPIA COMPANIES

HEADING LINE NO 3 IS -

EAGLE CANYON LATERAL P6-L1

F 0 5 1 5 P 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
	1000.00	2839.13	42	2843.34

ELEMENT NO 2 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.00	2839.49	42	0.013	0.00	0.00	45.00	1

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
	1028.00	2840.99	24	24	0	0.013	20.5	0.0	2840.99	0.00	90.00	0.00

ELEMENT NO 4 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1058.00	2841.44	24	0.013	0.00	0.00	0.00	1

ELEMENT NO 5 IS A SYSTEM HEADWORKS

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1058.00	2841.44	24	0.00

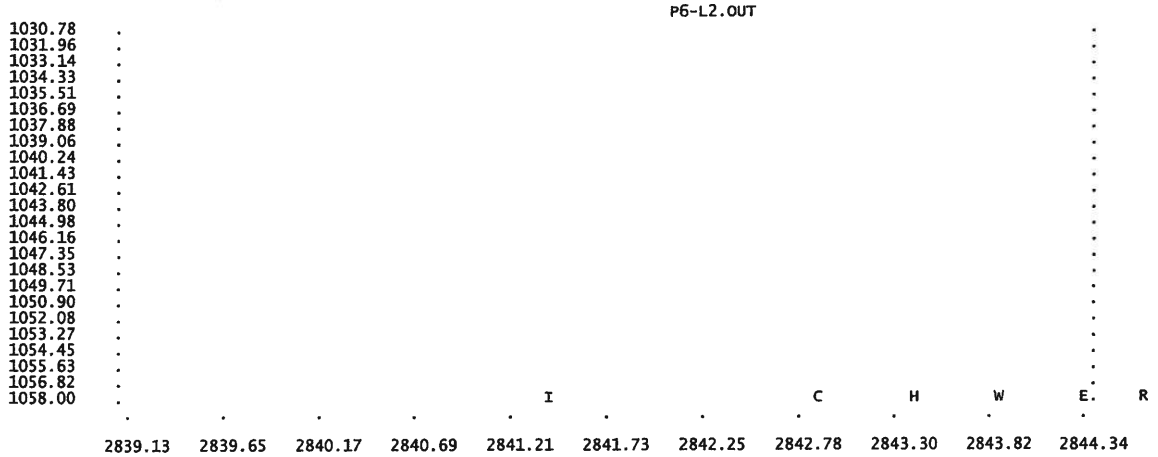
NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING
** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
LICENSEE: SLATER HANIFAN GROUP F0515P PAGE 1

WATER SURFACE PROFILE LISTING
SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)
BY OLYMPIA COMPANIES
EAGLE CANYON LATERAL P6-L1

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		
1000.00	2839.13	4.210	2843.340	37.5	3.90	0.236	2843.576	0.00	1.902		3.50	0.00	0.00	0	0.00
28.00	0.01286					.001389	0.04			1.380			0.00		
1028.00	2839.49	3.936	2843.426	37.5	3.90	0.236	2843.662	0.00	1.902		3.50	0.00	0.00	0	0.00
JUNCT STR	0.00000					.003518	0.00						0.00		
1028.00	2840.99	2.699	2843.689	17.0	5.41	0.455	2844.144	0.00	1.486		2.00	0.00	0.00	0	0.00
30.00	0.01500					.005647	0.17			1.130			0.00		
1058.00	2841.44	2.442	2843.882	17.0	5.41	0.455	2844.337	0.00	1.486		2.00	0.00	0.00	0	0.00

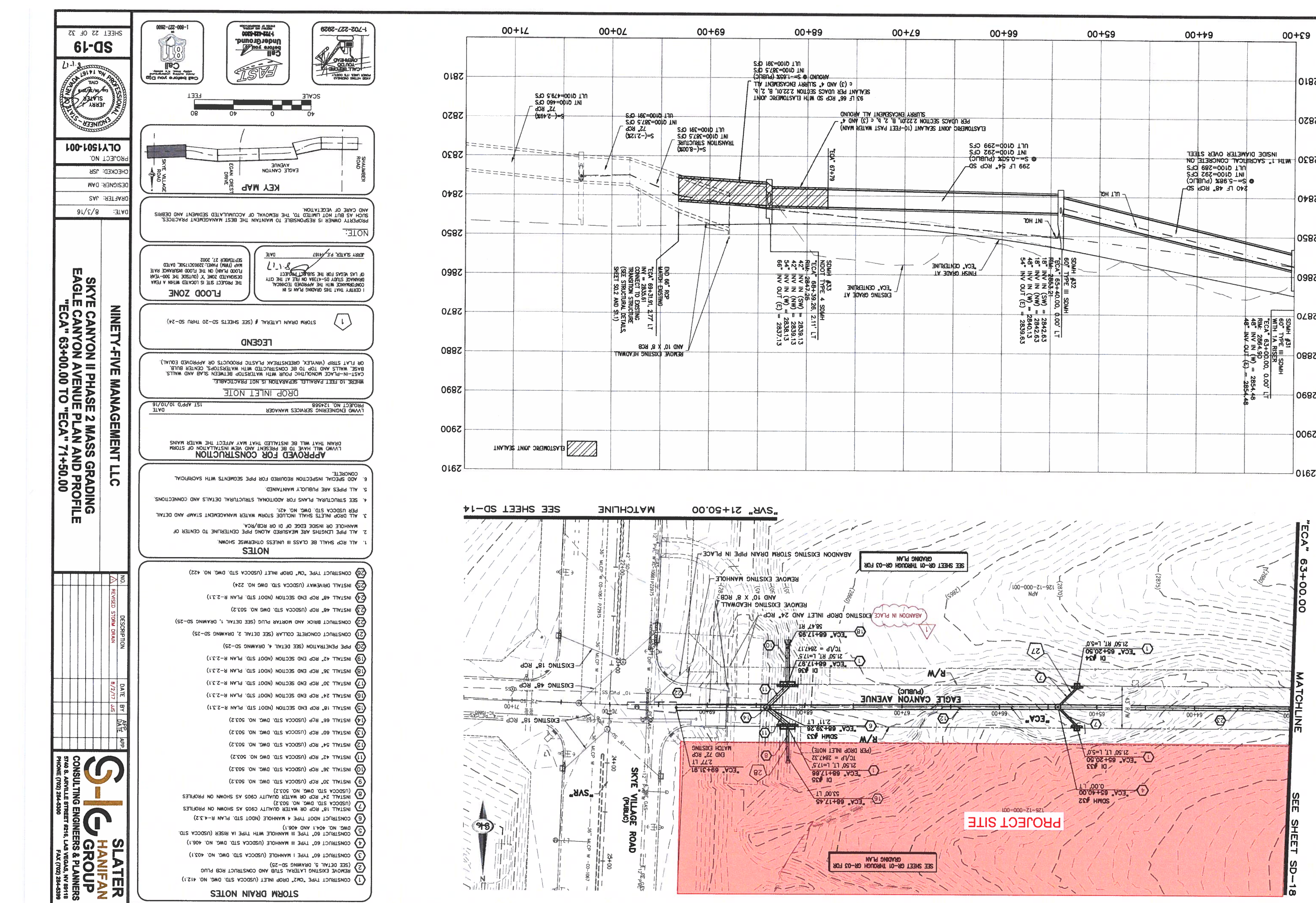
SKYE CANYON INFRASTRUCTURE - PHASE 2 (UPDATE NO.4)
BY OLYMPIA COMPANIES
EAGLE CANYON LATERAL P6-L1

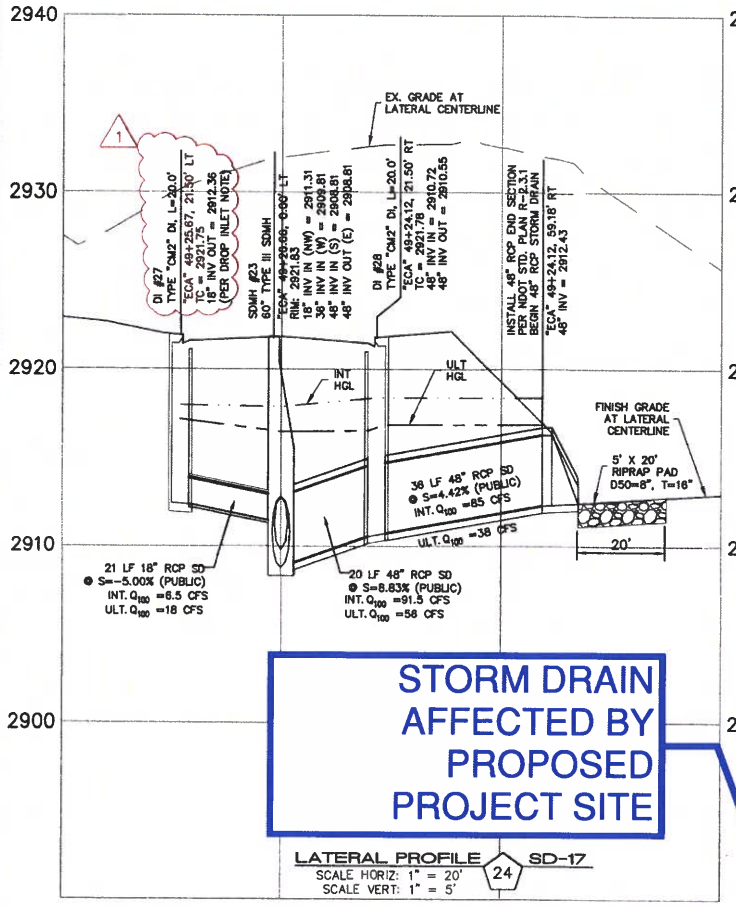
```
1000.00  .I                    C                    H         W   E              .   R
1001.18  .                                                                       .
1002.37  .                                                                       .
1003.55  .                                                                       .
1004.73  .                                                                       .
1005.92  .                                                                       .
1007.10  .                                                                       .
1008.29  .                                                                       .
1009.47  .                                                                       .
1010.65  .                                                                       .
1011.84  .                                                                       .
1013.02  .                                                                       .
1014.20  .                                                                       .
1015.39  .                                                                       .
1016.57  .                                                                       .
1017.76  .                                                                       .
1018.94  .                                                                       .
1020.12  .                                                                       .
1021.31  .                                                                       .
1022.49  .                                                                       .
1023.67  .                                                                       .
1024.86  .                                                                       .
1026.04  .                                                                       .
1027.22  .                                                                       .
1028.41  .     I                C                   H       W   E              .   JX
1029.59  .                  I                  C    H           W       E      .   R
```



N O T E S
1. GLOSSARY
   I = INVERT ELEVATION
   C = CRITICAL DEPTH
   W = WATER SURFACE 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?

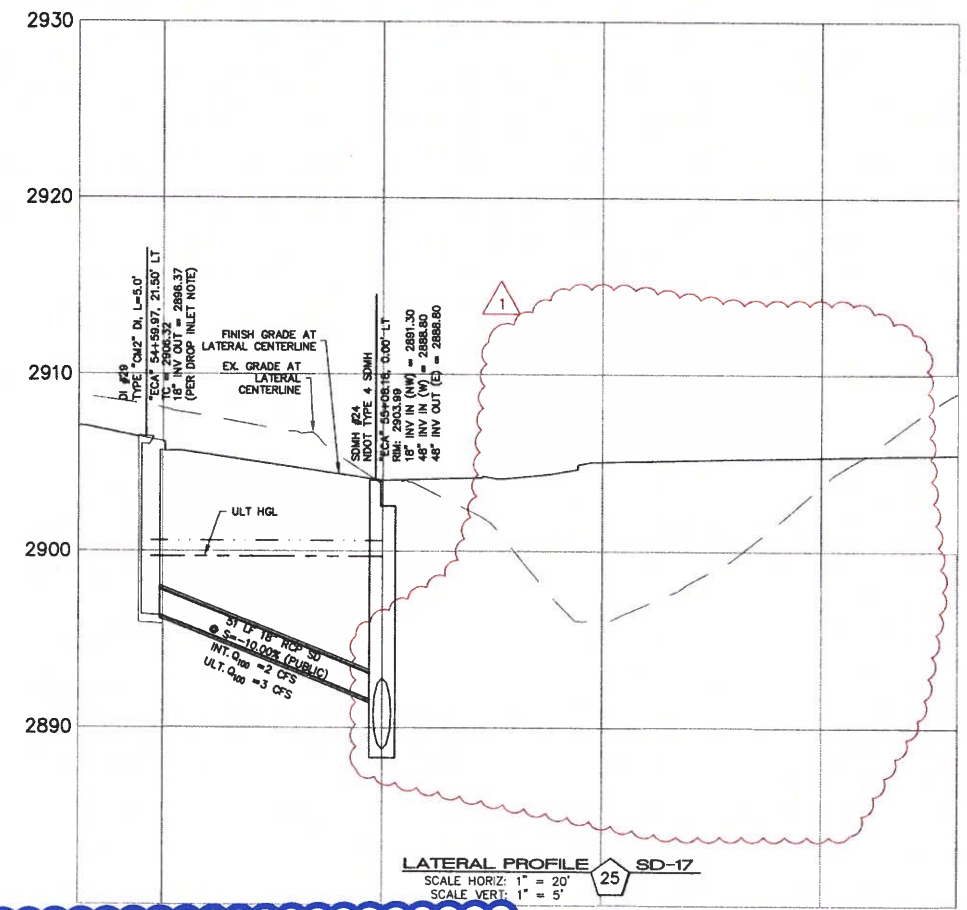
Pertinent Improvement Plan Sheets


"ECA" 63+00.00 MATCHLINE SEE SHEET SD-18
"SVR" 21+50.00 MATCHLINE SEE SHEET SD-14
PROJECT SITE
EAGLE CANYON AVENUE (PUBLIC)
SKYE VILLAGE ROAD (PUBLIC)
APN 126-12-000-001
SDMH #32 60" TYPE III SDMH "ECA" 65+40.00, 0.00' LT RIM= 2863.21' 18" INV IN (SW) = 2842.63 18" INV IN (NW) = 2842.63 54" INV OUT (E) = 2839.83
SDMH #31 60" TYPE III SDMH WITH RISER "ECA" 64+90.00, 0.00' LT RIM= 2859.48' 48" INV IN (W) = 2854.48 48" INV OUT (E) = 2854.48
SDMH #33 NDOT TYPE 4 SDMH "ECA" 68+39.26, 2.11' LT RIM= 2847.26' 42" INV IN (SW) = 2839.13 42" INV IN (NW) = 2839.13 54" INV IN (W) = 2838.13 66" INV OUT (E) = 2837.13
60" TYPE III SDMH "ECA" 68+39.26, 2.11' LT
SDMH #33
"ECA" 68+17.45
"ECA" 68+17.85
"ECA" 68+17.97
"ECA" 68+20.50
"ECA" 69+31.91, 2.77' LT
"ECA" 69+31.91, 2.77' LT
"ECA" 65+40.00
"ECA" 63+90.00
"ECA" 64+90.00
"ECA" 65+20.50
"ECA" 68+31.91
"ECA" 68+17.66
"ECA" 68+17.45
"ECA" 68+20.50
"ECA" 68+17.97
"ECA" 68+17.85
"ECA" 68+39.26
"ECA" 68+38.26
"ECA" 69+31.91
"ECA" 68+39.26
"ECA" 68+38.26
"ECA" 68+31.91
"ECA" 68+17.66
"ECA" 68+17.45
"ECA" 68+20.50
"ECA" 68+17.97
"ECA" 68+17.85

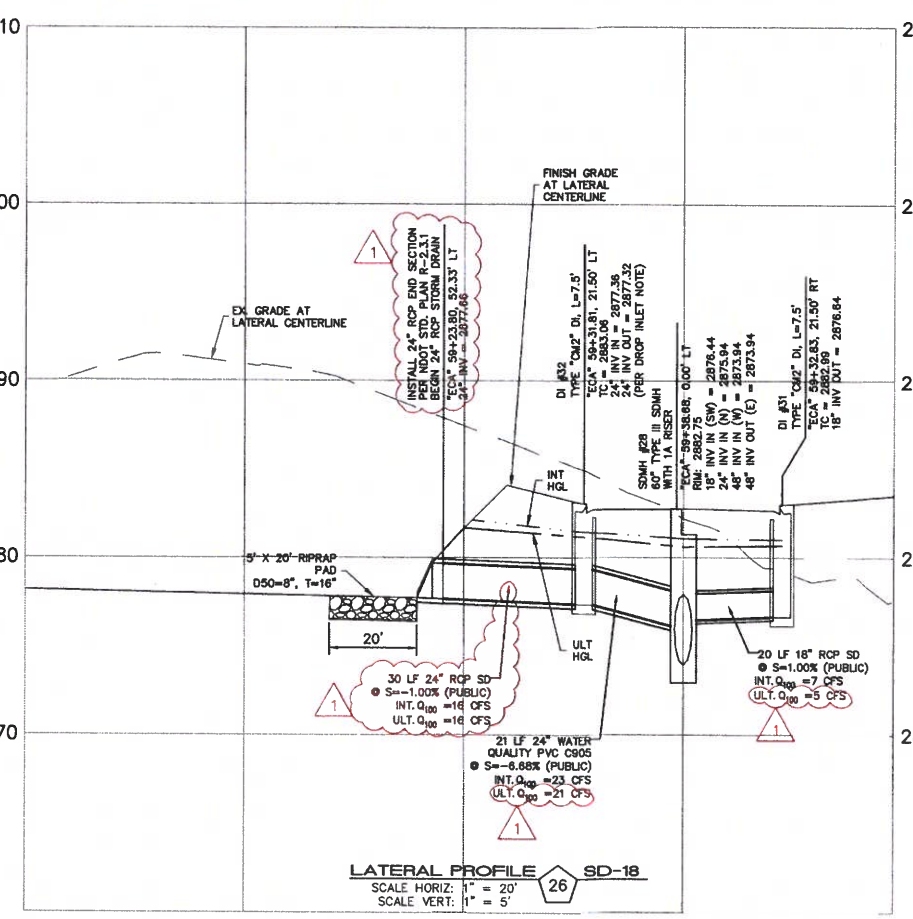


LATERAL PROFILE 24 SD-17
SCALE HORIZ: 1" = 20'
SCALE VERT: 1" = 5'

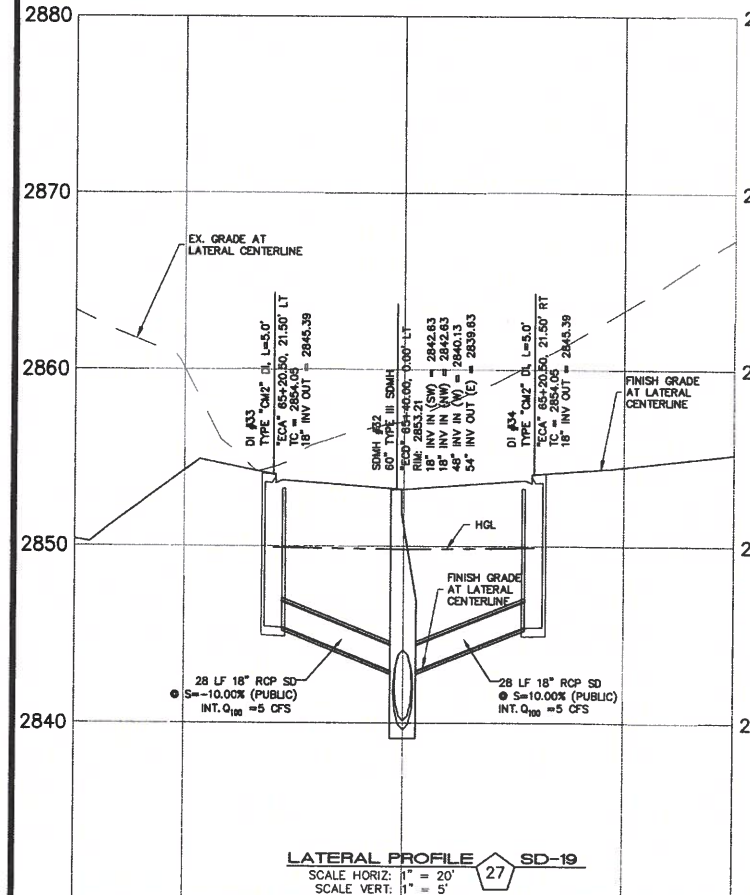
STORM DRAIN AFFECTED BY PROPOSED PROJECT SITE



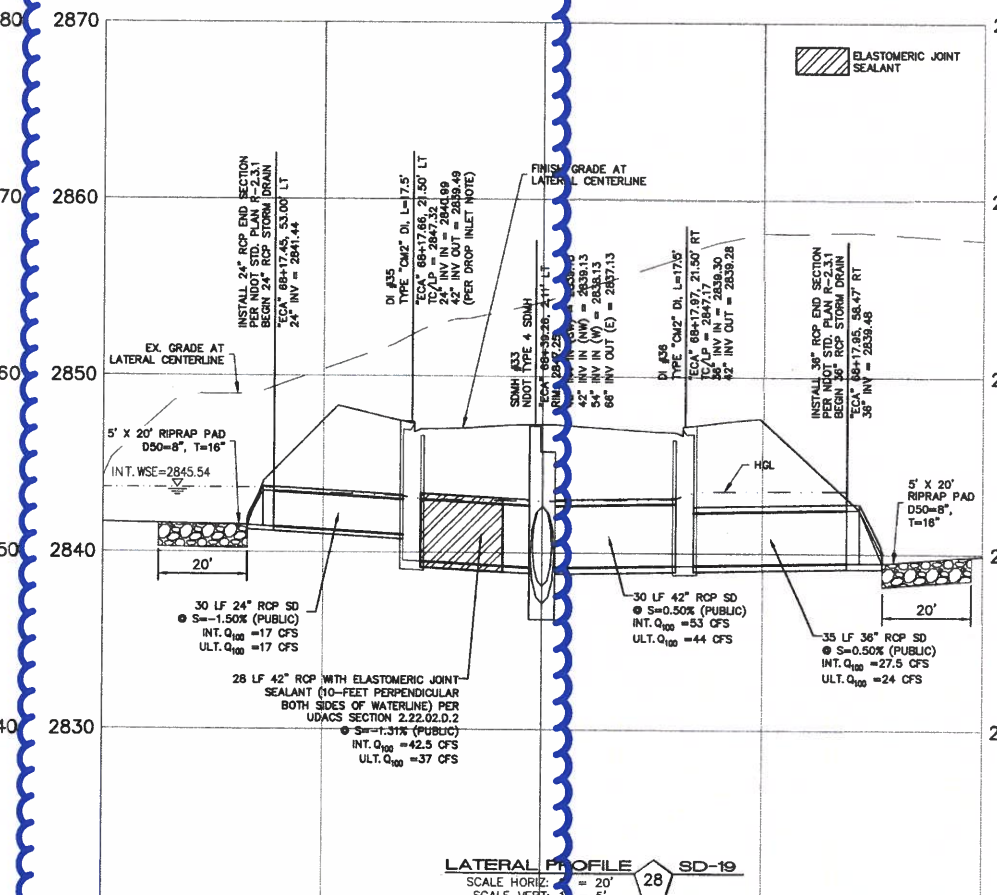
LATERAL PROFILE 25 SD-17
SCALE HORIZ: 1" = 20'
SCALE VERT: 1" = 5'



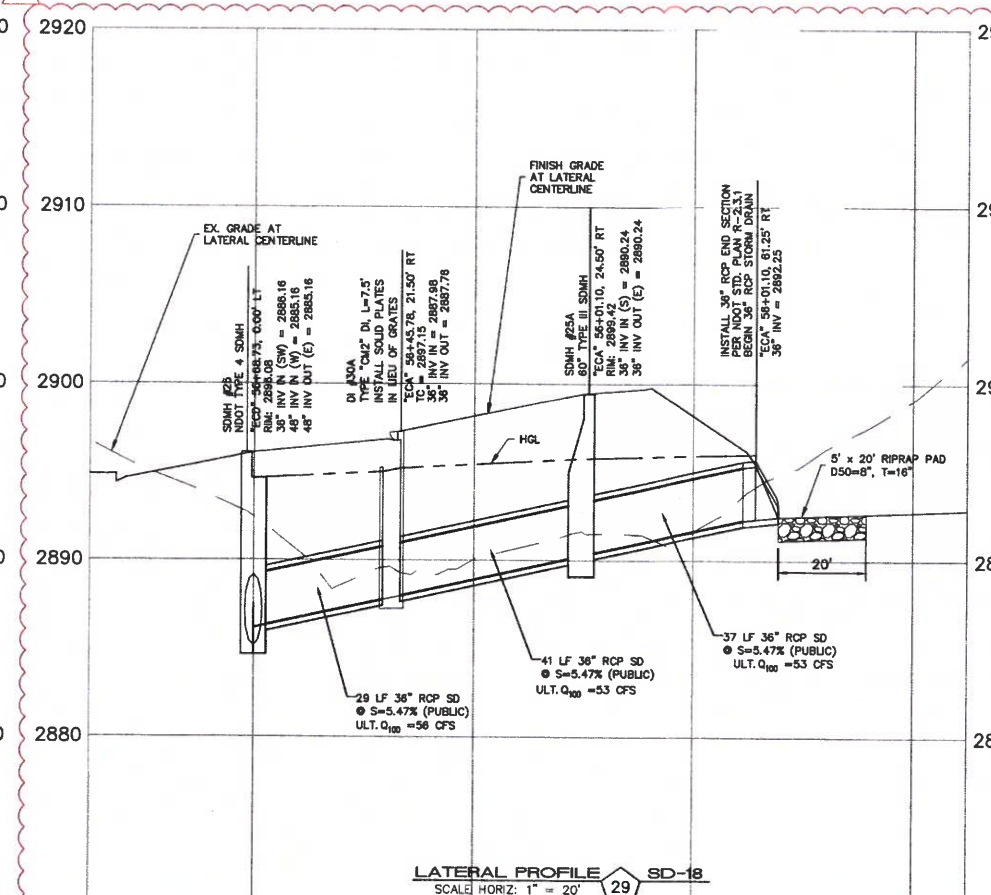
LATERAL PROFILE 26 SD-18
SCALE HORIZ: 1" = 20'
SCALE VERT: 1" = 5'



LATERAL PROFILE 27 SD-19
SCALE HORIZ: 1" = 20'
SCALE VERT: 1" = 5'



LATERAL PROFILE 28 SD-19
SCALE HORIZ: = 20'
SCALE VERT: = 5'



LATERAL PROFILE 29 SD-18
SCALE HORIZ: 1" = 20'
SCALE VERT: 1" = 5'

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)

APPROVED FOR CONSTRUCTION

LVVWD WILL HAVE TO BE PRESENT AND VIEW INSTALLATION OF STORM DRAIN THAT WILL BE INSTALLED THAT MAY AFFECT THE WATER MAINS

LVVWD ENGINEERING SERVICES MANAGER — DATE

PROJECT NO. 124588 — 1ST APP'D 10/10/16

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 294-5300 FAX (702) 294-5399

NO.	DESCRIPTION	DATE	BY	APP. DATE
1	REVISED STORM DRAIN	8/2/17	JJS	

NINETY-FIVE MANAGEMENT LLC

SKYE CANYON II PHASE 2 MASS GRADING

STORM DRAIN LATERAL PROFILES

DATE: 8/3/16
DRAFTER: JAS
DESIGNER: DAM
CHECKED: JSR
PROJECT NO. OLY1501-001

PROFESSIONAL ENGINEER — STATE OF NEVADA — JERRY J. SLATER — Exp. 06/30/2018 — CIVIL — No. 14167

SD-24
SHEET 27 OF 32

APPENDIX F

Reference Material

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

Approval Letter

CITY OF LAS VEGAS
INTER-OFFICE MEMORANDUM

DATE: July 11, 2016

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 #6

COPIES TO:
Slater Hanifan Group
K A G Development South, LLC / Ninety-Five Management, LLC
Bart Anderson, P.E., DevCo
CCRFCD

Cross Streets:	NEC of Grand Teton Blvd. & Hualapai Way
File Number:	F:\Depot\DSMemos\DS4661K.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

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	3/19/2014	4/17/2014	Not Approved	$400.00	351277: $400
2nd Submittal	5/14/2014	6/12/2014	Conditionally Approved	$400.00	356797: $400
Supplemental	8/25/2014	9/15/2014	Approved	----	----
3rd Submittal	11/25/2014	12/10/2014	See Comments Below	$100.00	377769: $100
4th Submittal	12/10/2014	1/7/2015	Approved	$100.00	379537: $100
5th Submittal	12/18/2014	1/8/2015	Approved	$100.00	380446: $100
6th Submittal	3/5/2015	3/9/2015	Approved	$100.00	388162: $100
7th Submittal	5/18/2015	6/2/2015	Approved	$100.00	397877: $100
8th Submittal	6/8/2015	6/22/2015	Approved	$100.00	400871: $100
9th Submittal	7/5/2016	7/11/2016	See Comments Below	$100.00	449985: $100
			TOTAL FEES (LDDRS):	**$1,500.00**	**----**

REMARKS:

9th Submittal: Update #6 for As-Built Final Location of Storm Drain System in Horse Drive

8th Submittal: Update #5 for Phasing a Stockpile Permit

7th Submittal: Update #4 for minor lateral profile revision in *Skye Canyon Parkway* at Sta. 95+28

6th Submittal: Update #3 for minor storm drain profile revision in *Skye Park Drive* at *Skye Canyon Drive* (aka Horse Drive)

5th Submittal: Update #2 for Stockpile Permit at additional locations

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.

The following comments are repeated until they are complete:

1. The *Kyle Canyon Master Drainage Study* is proposing to revise the hydrology and facilities indentified 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*, *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 *Racel Street* surface. Provide a hydraulic calculation for the worst case 100-year water surface in *Racel Street*. The finish floor elevation of future houses in the PODs adjacent to *Racel* 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 Racel Street 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.

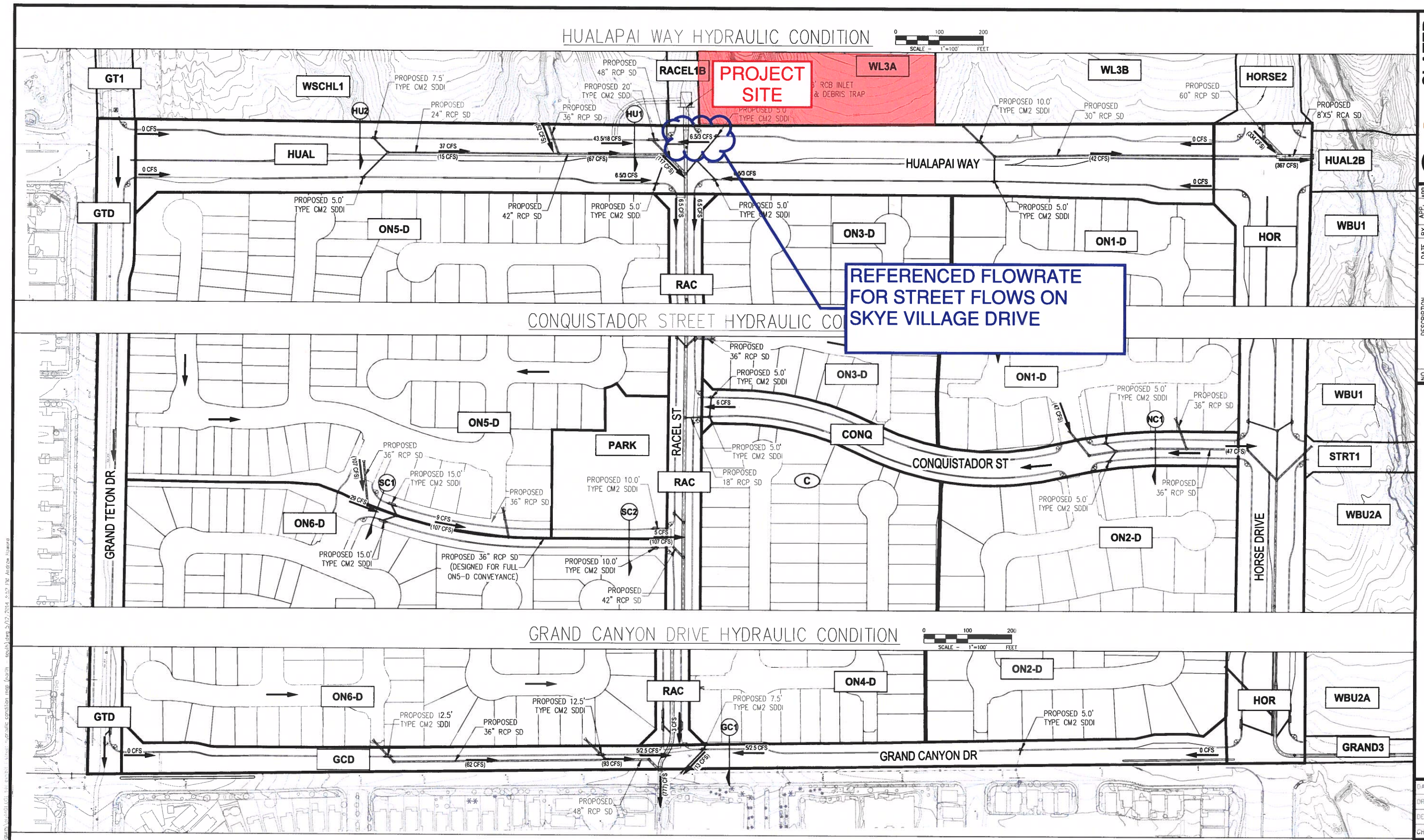
NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained 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.

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.

END OF REMARKS
ays

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

Drainage Exhibits



10-Year & 100-Year Street Flow Summary
Hualapai Way

Cross Section	Slope (%)	Q_{10} (cfs)	Depth (ft)	Velocity (fps)	DxV	Dry Lane (ft)
HU1 (100-YR)	0.57	43.5	0.83	3.6	2.9	N/A
HU1 (10-YR)	0.57	18	0.63	2.9	1.8	14.0
HU2 (100-YR)	0.57	52	0.88	3.7	3.3	N/A
HU2 (10-YR)	0.57	24	0.69	3.1	2.1	11.0

*MODELED AS HALF STREET

100-Year Street Flow Summary
Conquistador Street

Cross Section	Slope (%)	Q_{100} (cfs)	Depth (ft)	Velocity (fps)	DxV
NC1	0.61	6	0.36	2.1	0.8
SC1	1.59	29	0.51	4.1	2.1
SC2	1.59	13	0.40	3.6	1.4

10-Year & 100-Year Street Flow Summary
Grand Canyon Drive

Cross Section	Slope (%)	Q_{10} (cfs)	Depth (ft)	Velocity (fps)	DxV	Dry Lane (ft)
GC1 (100-YR)	0.50	10	0.54	2.4	1.3	N/A
GC1 (10-YR)	0.50	5	0.44	2.1	0.9	19.5

*MODELED AS HALF STREET

LEGEND
- BASIN BOUNDARY
- ID — BASIN ID
- FLOW DIRECTION
- (ID) — FLOWMASTER SECTION
- XX CFS — 100-YR STREET FLOW
- (XX CFS) — 100-YR STORM DRAIN FLOW

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
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PHONE (702) 284-5300 FAX (702) 284-5399

NO. | DESCRIPTION | DATE | BY | APP. DATE | APP.

NINETY-FIVE MANAGEMENT, LLC.

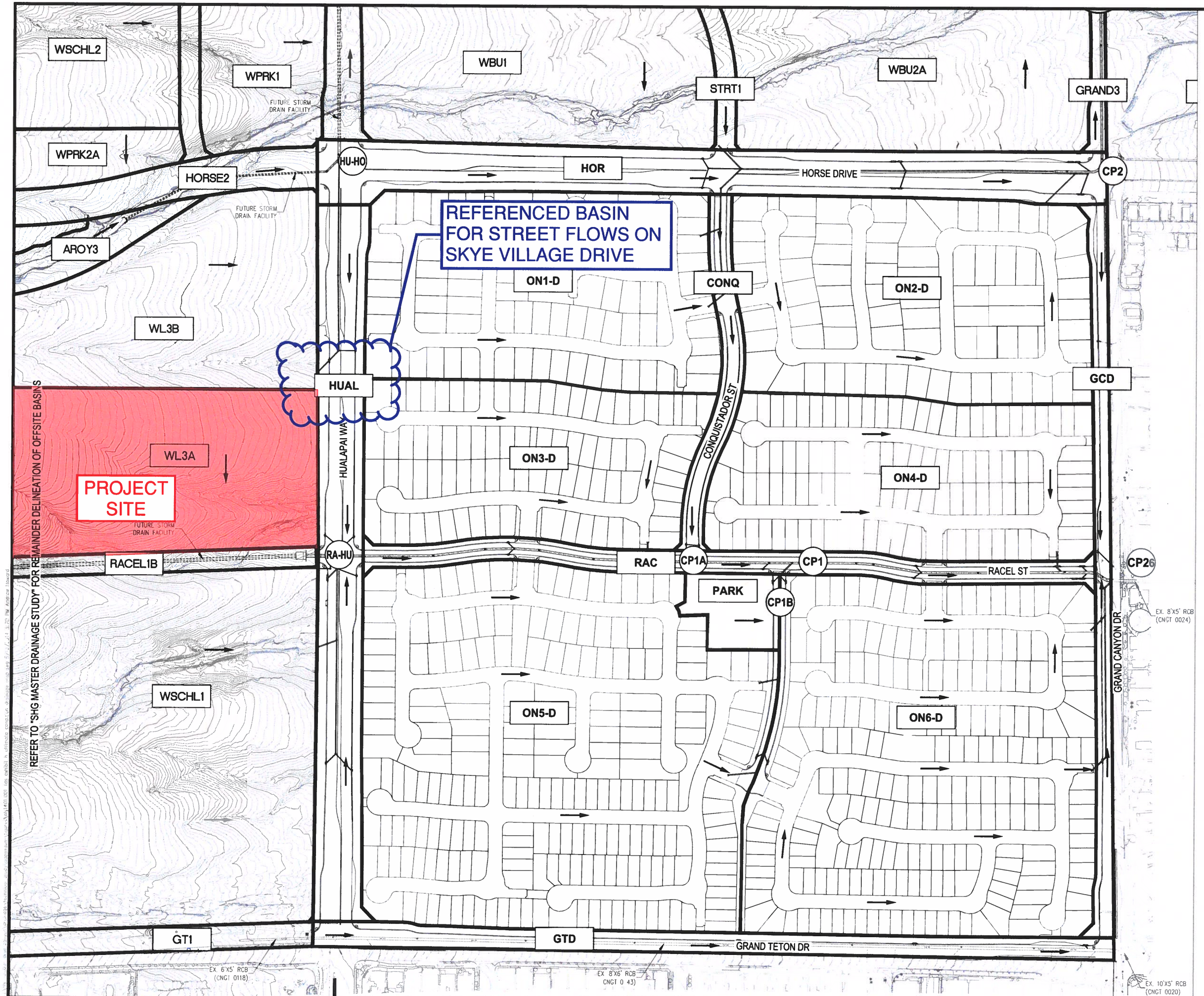
SKYE CANYON - PHASE 1 INFRASTRUCTURE
STREET HYDRAULIC CONDITION MAP
(NORTH/SOUTH STREETS)

DATE: MAY 2014
DRAFTER: AJH
DESIGNER: AJH
CHECKED: SMJ

PROJECT NO.
OLY1401.001

EXHIBIT I
SHEET 2 OF 2

\\slater\h01 skye canyon\Technical Study\Addendum\Figures\Exhibit I\Exhibit I - hydraulic condition map (north - south).dwg 2/12/2014 8:57:21 PM Andrew Wagner



Basin Flow Rate Summary (Ultimate Condition)

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
ON1-D	17.8	47	21
ON2-D	19.3	45	18
ON3-D	14.8	39	17
ON4-D	16.1	49	24
ON5-D	37.3	107	52
ON6-D	32.3	93	46
CONQ	2.2	6	3
RAC	4.6	13	6
PARK	1.8	4	1
HOR	10.4	30	14
GCD	3.4	10	5
GTD	4.7	14	7
HUAL	9.2	26	11
*WBU1	22.9	70	35
*STRT1	3.1	10	6

*REFERENCED FROM SHG MASTER DRAINAGE STUDY

Concentration Points Summary (Ultimate Condition)

Basin/Concentration Point ID	Area (sq-mi)	Q_{100} (cfs)	Q_{10} (cfs)
RA-HU *(Refer to SHG Master Drainage Study for contributing basins)*	0.26	477	228
HU-HO *(Refer to SHG Master Drainage Study for contributing basins)*	1.12	367	172
CP1 *(CP1A + CP1B + RAC + CONQ)*	0.35	629	303
CP2 *(ON1-D + ON2-D + HOR + WBU1 + STRT1)*	0.11	197	90
CP1A *(RA-HU + ON3-D)*	0.28	501	241
CP1B *(ON5-D + PARK)*	0.06	110	53
CP26 *(CP1 + ON4-D + ON6-D + GCD)*	0.43	777	376

NOTE: SHG MASTER DRAINAGE STUDY WATERSHEDS CONTRIBUTING TO CONCENTRATION POINTS RA-HU HAVE BEEN MODIFIED BY THIS STUDY. REFER TO "SKYE CANYON HYDROLOGY EVALUATION" HEC-1 MODEL FOR FURTHER DETAIL.

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-4300 FAX (702) 284-4399

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

NINETY-FIVE MANAGEMENT, LLC.

SKYE CANYON - PHASE 1 INFRASTRUCTURE
ULTIMATE CONDITION DRAINAGE MAP

DATE: MAY 2014
DRAFTER: AJH
DESIGNER: AJH
CHECKED: SMJ
PROJECT NO.
OLY1401.001

EXHIBIT H
SHEET 1 OF 1

HEC-1 Model

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998                *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   13MAR14  TIME  11:35:06   *
*                                       *
*****************************************
```

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

```
X     X  XXXXXXX   XXXXX          X
X     X  X       X     X        XX
X     X  X       X              X
XXXXXXX  XXXX    X        XXXXX X
X     X  X       X              X
X     X  X       X     X        X
X     X  XXXXXXX  XXXXX          XXX
```

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 -AMSKK- 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

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
              *DIAGRAM
    1         ID     SLATER HANIFAN GROUP
    2         ID     OLYMPIA COMPANIES
    3         ID     SKYE CANYON - PHASE 1 INFRASTRUCTURE
    4         ID     DEVELOPED CONDITION (100-YR STORM)
    5         ID
    6         ID     RETURN PERIOD ------- 100-YEAR
    7         ID     DISTRIBUTION -------- 6-HOUR SDN3
    8         ID     PROJECT NO. --------- OLY1401.001
    9         ID     FILENAME ------------ DEV-100.H1
   10         ID     DATE ---------------- 03/10/14
   11         ID     MODELED BY ---------- AJH/SMJ
   12         ID
   13         ID        SIX HOUR DEPTH-AREA REDUCTION FACTORS
   14         ID        DRAINAGE AREA (MI^2)    DARF
   15         ID        0.0-0.49                1.00
   16         ID        0.5-0.99                0.98
   17         ID        1.0-1.99                0.97
   18         ID
   19         IT       5       0       0     300
   20         IO       5       0       0
   21         IN       5       0       0
   22         JR    PREC    1.00    0.98    0.97
              *
   23         KK    HUAL
   24         KM    OFFSITE STREET BASIN FOR HUALAPAI WAY
   25         PB     2.93
   26         PC        0   0.020   0.057   0.070   0.087   0.108   0.124   0.130   0.130   0.130
   27         PC    0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
   28         PC    0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
   29         PC    0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
   30         PC    0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
   31         PC    0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
   32         PC    0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
   33         PC    0.998   0.999       1
   34         BA    .0144
   35         LS        0    93.2
   36         UD    0.136
              *
   37         KK   OFF20
   38         KM   REFERENCED FROM GCW MASTER DRAINAGE STUDY
   39         BA    .0656
   40         PB     3.01
   41         LS        0    86.2
   42         UD    0.190
              *
   43         KK   ROFF20
   44         KM    ROUTE OFF20 TO PT2
   45         RD     6020   0.034   0.035       0    TRAP      15       1
              *
```

REFERENCED FLOW WITHIN SKYE VILLAGE ROAD

1 HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   46         KK   OFF2-E
   47         KM    LOCAL OFFSITE BASIN
   48         BA    .1355
   49         PB     3.00
   50         LS        0    86.2
   51         UD    0.243
              *
   52         KK      PT2
   53         KM    COMBINES OFF20 AND OFF2-E
```

```
 54          HC       2
             *

 55          KK   OFF21
 56          KM   REFERENCED FROM GCW MASTER DRAINAGE STUDY
 57          BA   .5280
 58          PB    3.10
 59          LS       0    85.7
 60          UD   0.446
             *

 61          KK  ROFF21
 62          KM   ROUTE OFF21 TO PT3
 63          RD    5655   0.037   0.035       0    TRAP       0     100
             *

 64          KK  OFF3-E
 65          KM   LOCAL OFFSITE BASIN
 66          BA   .1581
 67          PB    3.00
 68          LS       0    82.8
 69          UD   0.302
             *

 70          KK     PT3
 71          KM   COMBINES OFF21 AND OFF3-E
 72          HC       2
             *

 73          KK     CP0
 74          HC       2
             *

 75          KK  OFF1-E
 76          KM   LOCAL OFFSITE BASIN
 77          PB    3.00
 78          BA   .0917
 79          LS       0    86.2
 80          UD   0.202
             *
```



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

 81          KK   RA-HU
 82          KM   COMBINES OFF20, OFF21, OFF1-E, OFF2-E, OFF3-E, HUAL
 83          HC       3
             *

 84          KK  RRA-HU
 85          KM   ROUTE RA-HU TO CP26
 86          RK    2700   0.040   0.013       0    CIRC       6
             *

 87          KK   ON3-D
 88          KM   ONSITE BASIN NORTH OF RACEL AND WEST OF CONQUISTADOR
 89          PB    2.93
 90          BA   .0232
 91          LS       0    91.2
 92          UD   0.116
             *

 93          KK    CP1A
 94          KM   COMBINES RA-HU, ON3-D
 95          HC       2
             *

 96          KK   ON5-D
 97          KM   SOUTHWEST QUAD ONSITE BASIN
 98          PB    2.93
 99          BA   .0583
100          LS       0    94.6
101          UD   0.139
             *

102          KK    PARK
103          KM   ONSITE BASIN FOR COMMUNITY PARK
104          PB    2.93
105          BA   .0028
106          LS       0    81.5
107          UD   0.082
             *

108          KK    CP1B
109          KM   COMBINES ON5-D, PARK
110          HC       2
             *

111          KK     RAC
112          KM   STREET BASIN FOR RACEL ST
113          PB    2.93
114          BA   .0071
115          LS       0    92.5
116          UD   0.097
             *
```



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

117          KK    CONQ
118          KM   STREET BASIN FOR CONQUISTADOR ST
119          PB    2.93
120          BA   .0035
121          LS       0    92.5
```

```
 122          UD   0.133
              *

 123          KK     CP1
 124          KM   COMBINES RA-HU, ON3-D, ON5-D, RAC, CONQ AND PARK
 125          HC      4
              *

 126          KK   ON4-D
 127          KM   ONSITE BASIN NORTH OF RACEL AND EAST OF CONQUISTADOR ST
 128          PB    2.93
 129          BA   .0252
 130          LS      0    94.6
 131          UD   0.105
              *

 132          KK   ON6-D
 133          KM   SOUTHEAST QUAD ONSITE BASIN
 134          PB    2.93
 135          BA   .0505
 136          LS      0    94.6
 137          UD   0.128
              *

 138          KK     GCD
 139          KM   OFFSITE (HALF) STREET BASIN FOR GRAD CANYON DR
 140          PB    2.93
 141          BA   .0053
 142          LS      0    93.8
 143          UD   0.137
              *

 144          KK    CP26
 145          KM   COMBINES CP1, ON4-D, ON6-D AND GCD
 146          HC      4
              *

 147          KK   ON1-D
 148          KM   NORTHWEST QUAD ONSITE BASIN
 149          PB    2.93
 150          BA   .0278
 151          LS      0    91.2
 152          UD   0.114
              *
1                                        HEC-1 INPUT                                        PAGE  5

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

 153          KK   ON2-D
 154          KM   NORTHEAST QUAD ONSITE BASIN
 155          PB    2.93
 156          BA   .0301
 157          LS      0    88.8
 158          UD   0.152
              *

 159          KK     HOR
 160          KM   OFFSITE STREET BASIN FOR HORSE DR
 161          PB    2.93
 162          BA   .0163
 163          LS      0    93.3
 164          UD   0.108
              *

 165          KK     CP2
 166          KM   COMBINES ON1-D, ON2-D AND HOR
 167          HC      3
              *

 168          KK   OFF18
 169          KM   REFERENCED FROM GCW MASTER DRAINAGE STUDY
 170          BA   .5491
 171          PB    3.05
 172          LS      0    86.3
 173          UD   0.445
              *

 174          KK  ROFF18
 175          KM   ROUTE OFF18 THRU EX-W5
 176          RM      2   0.171    0.15
              *

 177          KK   EX-W5
 178          KM   REFERENCED FROM GCW MASTER DRAINAGE STUDY
 179          BA   .4460
 180          PB    2.86
 181          LS      0    86.3
 182          UD    .308
              *

 183          KK    CP12
 184          KM   COMBINES OFF18 AND EX-W5
 185          HC      2
              *

 186          KK     CP3
 187          KM   COMBINES CP2 AND CP12
 188          HC      2
              *
1                                        HEC-1 INPUT                                        PAGE  6

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

 189          KK     GTD
```

```
190          KM   OFFSITE (HALF) STREET BASIN FOR GRAD TETON DR
191          PB    2.93
192          BA   .0073
193          LS      0    93.9
194          UD   0.105
             *
195          ZZ
```

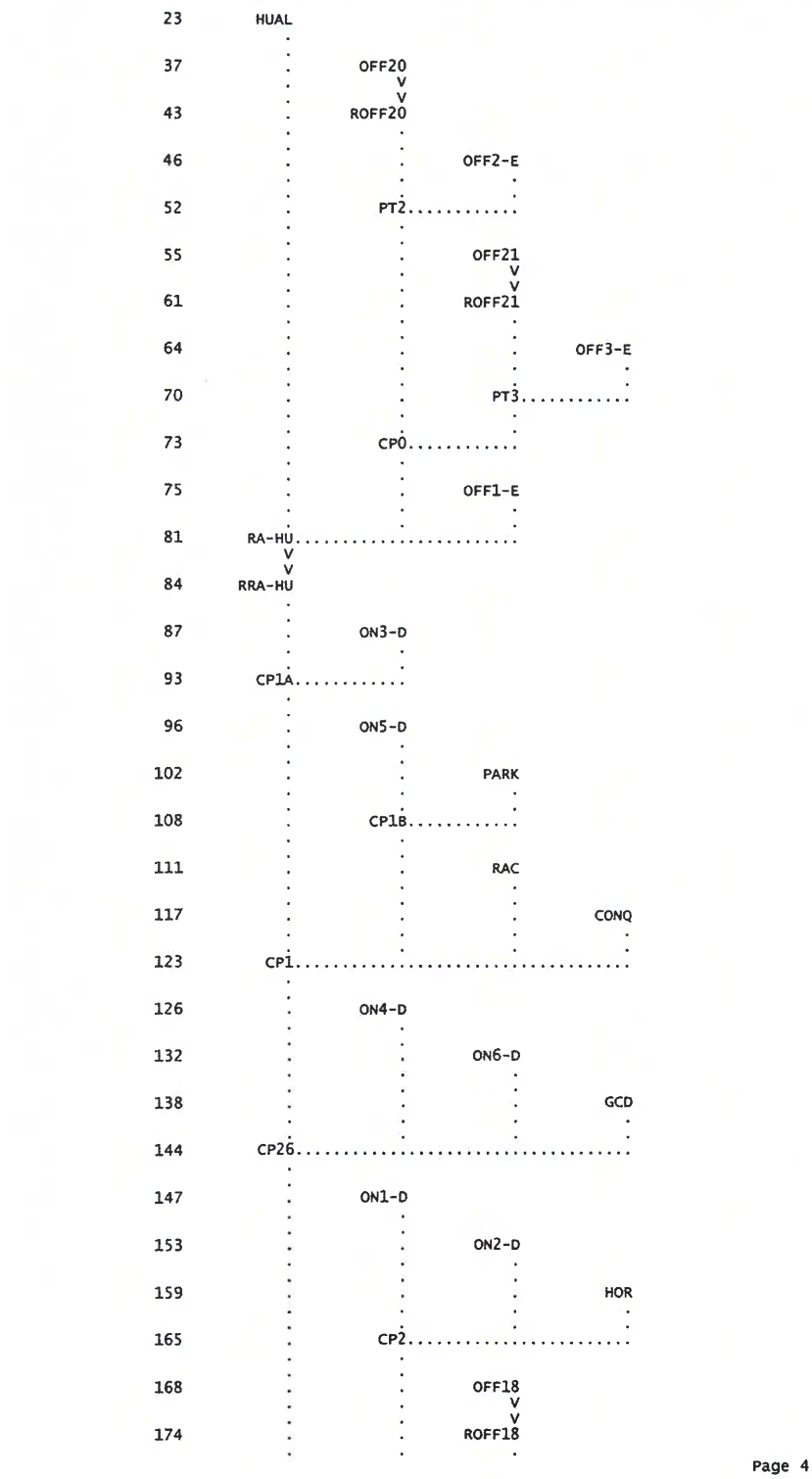
1

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE NO.

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW



```
  177          .           .           .       EX-W5
               .           .           .         .
               .           .           .         .
  183          .           .        CP12.........
               .           .           .
               .           .           .
  186          .        CP3.........
               .           .
               .           .
  189          .           .        GTD

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             JUN  1998                 *
 *          VERSION 4.1                  *
 *                                       *
 *  RUN DATE   13MAR14  TIME  11:35:06   *
 *                                       *
 *****************************************

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

                        SLATER HANIFAN GROUP
                        OLYMPIA COMPANIES
                        SKYE CANYON - PHASE 1 INFRASTRUCTURE
                        DEVELOPED CONDITION (100-YR STORM)

                        RETURN PERIOD ------- 100-YEAR
                        DISTRIBUTION -------- 6-HOUR SDN3
                        PROJECT NO. --------- OLY1401.001
                        FILENAME ------------ DEV-100.H1
                        DATE ---------------- 03/10/14
                        MODELED BY ---------- AJH/SMJ

                           SIX HOUR DEPTH-AREA REDUCTION FACTORS
                           DRAINAGE AREA (MI^2)    DARF
                           0.0-0.49                1.00
                           0.5-0.99                0.98
                           1.0-1.99                0.97

 20 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN           5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      2    0  ENDING DATE
                     NDTIME        0055  ENDING TIME
                     ICENT          19  CENTURY MARK

                   COMPUTATION INTERVAL     .08 HOURS
                        TOTAL TIME BASE   24.92 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT

    JP            MULTI-PLAN OPTION
                       NPLAN          1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                   RATIOS OF PRECIPITATION
                  1.00       .98       .97

        *** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT


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1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1	RATIO 2	RATIO 3
					1.00	.98	.97
HYDROGRAPH AT							
+	HUAL	.01	1	FLOW	26.	25.	25.
				TIME	3.58	3.58	3.58
HYDROGRAPH AT							
+	OFF20	.07	1	FLOW	85.	82.	81.
				TIME	3.58	3.58	3.58
ROUTED TO							
+	ROFF20	.07	1	FLOW	85.	83.	82.
				TIME	3.83	3.83	3.83
HYDROGRAPH AT							
+	OFF2-E	.14	1	FLOW	160.	155.	153.
				TIME	3.67	3.67	3.67
2 COMBINED AT							
+	PT2	.20	1	FLOW	232.	225.	222.
				TIME	3.75	3.75	3.75
HYDROGRAPH AT							
+	OFF21	.53	1	FLOW	475.	461.	454.
				TIME	3.92	3.92	3.92
ROUTED TO							
+	ROFF21	.53	1	FLOW	477.	462.	455.
				TIME	4.08	4.08	4.08
HYDROGRAPH AT							
+	OFF3-E	.16	1	FLOW	146.	142.	139.
				TIME	3.75	3.75	3.75
2 COMBINED AT							
+	PT3	.69	1	FLOW	557.	540.	531.
				TIME	4.08	4.08	4.08
2 COMBINED AT							
+	CP0	.89	1	FLOW	676.	655.	644.
				TIME	4.00	4.00	4.00
HYDROGRAPH AT							
+	OFF1-E	.09	1	FLOW	114.	111.	109.
				TIME	3.58	3.58	3.58
3 COMBINED AT							
+	RA-HU	.99	1	FLOW	727.	704.	693.
				TIME	4.00	4.00	4.00
ROUTED TO							
+	RRA-HU	.99	1	FLOW	726.	703.	692.
				TIME	4.00	4.00	4.00
HYDROGRAPH AT							
+	ON3-D	.02	1	FLOW	39.	38.	38.
				TIME	3.58	3.58	3.58
2 COMBINED AT							
+	CP1A	1.02	1	FLOW	734.	711.	700.
				TIME	4.00	4.00	4.00
HYDROGRAPH AT							
+	ON5-D	.06	1	FLOW	107.	104.	103.
				TIME	3.58	3.58	3.58
HYDROGRAPH AT							
+	PARK	.00	1	FLOW	4.	3.	3.
				TIME	3.50	3.50	3.50
2 COMBINED AT							
+	CP1B	.06	1	FLOW	110.	107.	106.
				TIME	3.58	3.58	3.58

REFERENCED FLOW WITHIN SKYE VILLAGE ROAD

```
 HYDROGRAPH AT
+                    RAC        .01     1   FLOW          13.      13.      13.
                                            TIME        3.50     3.50     3.50

 HYDROGRAPH AT
+                    CONQ       .00     1   FLOW           6.       6.       6.
                                            TIME        3.58     3.58     3.58

   4 COMBINED AT
+                    CP1       1.09     1   FLOW         763.     740.     728.
                                            TIME        4.00     4.00     4.00

 HYDROGRAPH AT
+                    ON4-D      .03     1   FLOW          49.      47.      47.
                                            TIME        3.50     3.50     3.50

 HYDROGRAPH AT
+                    ON6-D      .05     1   FLOW          93.      91.      90.
                                            TIME        3.58     3.58     3.58

 HYDROGRAPH AT
+                    GCD        .01     1   FLOW          10.       9.       9.
                                            TIME        3.58     3.58     3.58

   4 COMBINED AT
+                    CP26      1.17     1   FLOW         799.     773.     760.
                                            TIME        3.92     3.92     3.92

 HYDROGRAPH AT
+                    ON1-D      .03     1   FLOW          47.      46.      45.
                                            TIME        3.58     3.58     3.58

 HYDROGRAPH AT
+                    ON2-D      .03     1   FLOW          45.      44.      44.
                                            TIME        3.58     3.58     3.58

 HYDROGRAPH AT
+                    HOR        .02     1   FLOW          30.      29.      29.
                                            TIME        3.50     3.50     3.50

   3 COMBINED AT
+                    CP2        .07     1   FLOW         121.     118.     116.
                                            TIME        3.58     3.58     3.58

 HYDROGRAPH AT
+                    OFF18      .55     1   FLOW         495.     480.     473.
                                            TIME        3.92     3.92     3.92

 ROUTED TO
+                    ROFF18     .55     1   FLOW         473.     459.     452.
                                            TIME        4.08     4.08     4.08

 HYDROGRAPH AT
+                    EX-W5      .45     1   FLOW         443.     429.     423.
                                            TIME        3.75     3.75     3.75

   2 COMBINED AT
+                    CP12      1.00     1   FLOW         792.     768.     756.
                                            TIME        3.92     3.92     3.92

   2 COMBINED AT
+                    CP3       1.07     1   FLOW         833.     808.     795.
                                            TIME        3.83     3.83     3.83

 HYDROGRAPH AT
+                    GTD        .01     1   FLOW          14.      13.      13.
                                            TIME        3.50     3.50     3.50
1
                          SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                              (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                  INTERPOLATED TO
                                                                  COMPUTATION INTERVAL
          ISTAQ    ELEMENT      DT       PEAK     TIME TO      VOLUME      DT       PEAK     TIME TO      VOLUME
                                                     PEAK                                      PEAK

                                (MIN)     (CFS)     (MIN)       (IN)     (MIN)     (CFS)     (MIN)       (IN)

        FOR PLAN = 1  RATIO=  .00
          ROFF20  MANE         5.00     85.42    230.00       1.69      5.00     85.42    230.00       1.69

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5899E+01 EXCESS= .0000E+00 OUTFLOW= .5917E+01 BASIN STORAGE= .6045E-02 PERCENT ERROR=   -.4

        FOR PLAN = 1  RATIO=  .00
          ROFF20  MANE         5.00     83.10    230.00       1.64      5.00     83.10    230.00       1.64

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5719E+01 EXCESS= .0000E+00 OUTFLOW= .5736E+01 BASIN STORAGE= .5980E-02 PERCENT ERROR=   -.4

        FOR PLAN = 1  RATIO=  .00
          ROFF20  MANE         5.00     81.93    230.00       1.61      5.00     81.93    230.00       1.61

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5628E+01 EXCESS= .0000E+00 OUTFLOW= .5646E+01 BASIN STORAGE= .5764E-02 PERCENT ERROR=   -.4

        FOR PLAN = 1  RATIO=  .00
          ROFF21  MANE         5.00    476.60    245.00       1.73      5.00    476.60    245.00       1.73

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4859E+02 EXCESS= .0000E+00 OUTFLOW= .4862E+02 BASIN STORAGE= .5083E-02 PERCENT ERROR=   -.1
```

```
          FOR PLAN = 1  RATIO=  .00
            ROFF21  MANE          5.00    461.93    245.00      1.67      5.00    461.93    245.00      1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4709E+02 EXCESS= .0000E+00 OUTFLOW= .4713E+02 BASIN STORAGE= .5011E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
            ROFF21  MANE          5.00    454.60    245.00      1.65      5.00    454.60    245.00      1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4635E+02 EXCESS= .0000E+00 OUTFLOW= .4638E+02 BASIN STORAGE= .4975E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO= 1.00
            RRA-HU  MANE           .43    726.67    240.46      1.67      5.00    726.02    240.00      1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8864E+02 EXCESS= .0000E+00 OUTFLOW= .8864E+02 BASIN STORAGE= .1383E-10 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .98
            RRA-HU  MANE           .45    703.76    240.73      1.62      5.00    703.06    240.00      1.62

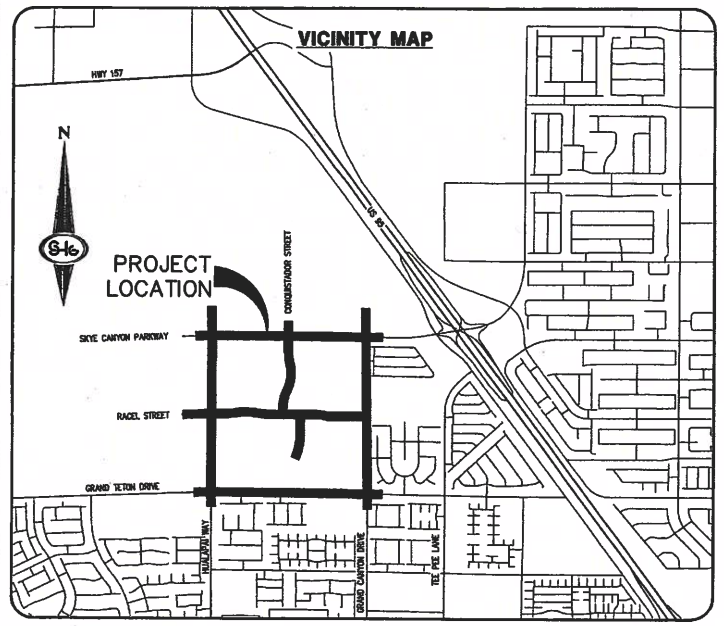
CONTINUITY SUMMARY (AC-FT) - INFLOW= .8590E+02 EXCESS= .0000E+00 OUTFLOW= .8589E+02 BASIN STORAGE= .1354E-10 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .97
            RRA-HU  MANE           .41    692.62    240.66      1.60      5.00    691.63    240.00      1.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8453E+02 EXCESS= .0000E+00 OUTFLOW= .8453E+02 BASIN STORAGE= .1380E-10 PERCENT ERROR=    .0


*** NORMAL END OF HEC-1 ***
```

Pertinent Improvement Plan Sheets



IMPROVEMENT PLANS
FOR
SKYE CANYON PHASE 1

BENCHMARK

BENCHMARK NUMBER: 2C906W6

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

ELEVATION = 2817.62 FEET, 858.813 METERS
N.A.V.D. 88 DATUM

PER THE CLARK COUNTY VERTICAL CONTROL BOOK V.2003 (REVISED 04/03/2003)

BASIS OF BEARING

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 IN THE CLARK COUNTY RECORDER'S OFFICE, NEVADA.

OWNER

K A G DEVELOPMENT SOUTH LLC
% OLYMPIA COMPANIES LLC
11411 SOUTHERN HIGHLANDS
PARKWAY, SUITE 300
LAS VEGAS, NV 89141

DEVELOPER

NINETY-FIVE MANAGEMENT LLC
% OLYMPIA COMPANIES LLC
11411 SOUTHERN HIGHLANDS
PARKWAY, SUITE 300
LAS VEGAS, NV 89141
PH (702) 220-6565
FX (702) 220-6566

ENGINEER

SLATER HANIFAN GROUP
5740 S. ARVILLE STREET #216
LAS VEGAS, NV 89118
(702) 284-5300

NOTE: A PRE-DEVELOPMENT MEETING WITH THE DEPARTMENT OF PUBLIC WORKS DEVELOPMENT REVIEW DIVISION, OFF-SITE INSPECTOR IS REQUIRED. PLEASE CONTACT THE INSPECTOR AT 455-4610.

APPROVALS

CITY ENGINEER-DAVID BOWER PE, PTOE #16736 DATE

APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED OF RIGHT-OF-WAY, AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS EXCEPT THOSE SPECIALLY LISTED UNDER DEVIATIONS FORM STANDARDS. THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN DEVIATIONS FROM STANDARDS IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS, CLARK COUNTY AREA, NEVADA.

LAS VEGAS FIRE AND RESCUE DATE

CHRIS KNIGHT DATE
DIRECTOR, BUILDING AND SAFETY

THIS PLAN MEETS THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. XXXXX DATE:
SHEETS: X

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM THE LAS VEGAS VALLEY WATER DISTRICT.

LAS VEGAS FIRE AND RESCUE DATE

NV ENERGY DATE

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

CENTRAL TELEPHONE CO, DBA CENTURYLINK DATE

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

SOUTHWEST GAS DATE

COX COMMUNICATIONS LAS VEGAS, INC. DATE

INDEX OF DRAWINGS

SHT. NO.	DWG. NO.	DESCRIPTION
1	G-1	COVER SHEET
2	G-2	GENERAL NOTES
3	G-3	ABBREVIATIONS, KEY MAP, LEGEND AND QUANTITIES
4	SD-01	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "GTD" 66+00.00 TO "GTD" 75+00.00
5	SD-02	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "GTD" 75+00.00 TO "GTD" 84+50.00
6	SD-03	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "GTD" 84+50.00 TO "GTD" 94+00.00
7	SD-04	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "GTD" 94+00.00 TO "GTD" 101+00.00
8	SD-05	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "HW" 7+00.00 TO "HW" 16+50.00
9	SD-06	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "HW" 16+50.00 TO "HW" 26+00.00
10	SD-07	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "HW" 26+00.00 TO "HW" 33+00.00
11	SD-08	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "HW" 33+00.00 TO "HW" 42+50.00
12	SD-09	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "GCD" 7+00.00 TO "GTD" 16+50.00
13	SD-10	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "GCD" 16+50.00 TO "GTD" 26+00.00
14	SD-11	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "GCD" 26+00.00 TO "GTD" 33+00.00
15	SD-12	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "GCD" 33+00.00 TO "GTD" 42+50.00
16	SD-13	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "GCD" 42+50.00 TO "GTD" 45+50.00
17	SD-14	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "RS" 66+00.00 TO "RS" 74+00.00
18	SD-15	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "RS" 74+00.00 TO "RS" 80+00.00
19	SD-16	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "RS" 80+00.00 TO "RS" 89+00.00
20	SD-17	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "RS" 89+00.00 TO "RS" 96+63.00
21	SD-18	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "HD" 64+00.00 TO "HD" 73+50.00
22	SD-19	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "HD" 73+50.00 TO "HD" 79+50.00
23	SD-20	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "HD" 79+50.00 TO "HD" 89+00.00
24	SD-21	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "HD" 89+00.00 TO "HD" 98+50.00
25	SD-22	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "CS" 57+00.00 TO "CS" 65+00.00
26	SD-23	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "CS" 65+00.00 TO "CS" 72+00.00
27	SD-24	GRAND TETON DRIVE STORM DRAIN PLAN AND PROFILE "CS" 72+00.00 TO "CS" 80+00.00
28	SD-25	STORM DRAIN LATERAL PROFILES
29	SD-26	STORM DRAIN LATERAL PROFILES
30	SD-27	STORM DRAIN LATERAL PROFILES
31	SD-28	STORM DRAIN LATERAL PROFILES
32	SD-29	STORM DRAIN LATERAL PROFILES
33	SD-30	STORM DRAIN LATERAL PROFILES
34	SD-31	STORM DRAIN LATERAL PROFILES
35	SD-32	ROADWAY SECTIONS
36	SD-33	STORM DRAIN DETAILS
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39	GR-01	GRADING PLAN - 1
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41	GR-03	GRADING PLAN - 3
42	GR-04	GRADING DETAILS

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

NINETY-FIVE MANAGEMENT LLC

SKYE CANYON PHASE 1
COVER SHEET

DATE: 5/13/14
DRAFTER: JAS
DESIGNER: DAM
CHECKED: JSR

PROJECT NO.
OLY1401-001

PROFESSIONAL ENGINEER - STATE OF NEVADA - STEPHEN M. STONE - Exp. 6/30/15 - CIVIL - No. 019638
5/13/2014

G-01
SHEET 1 OF 42

AUTOCAD 2011 Skye Canyon\Dwg\Sheets\G001 Drawings Body\G-01.dwg, 5/13/2014 11:22:14 AM, user

NINETY-FIVE MANAGEMENT LLC

SKYE CANYON PHASE 1
HUALAPAI WAY STORM DRAIN PLAN AND PROFILE
"HW" 16+50.00 TO "HW" 26+00.00

DATE:	5/13/14
DRAFTER:	DAM
DESIGNER:	DAM
CHECKED:	JLS
PROJECT NO.	OLY1401-001

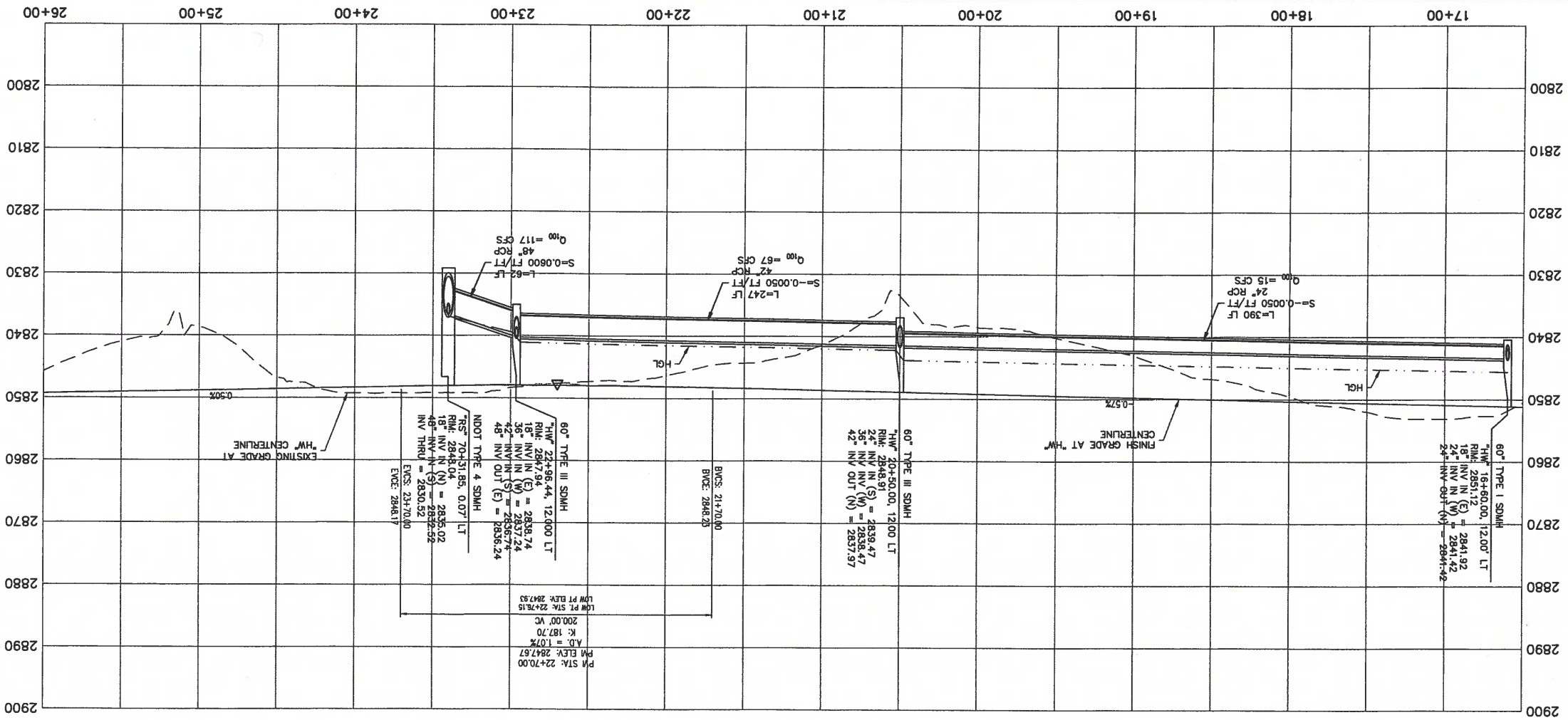
SD-06

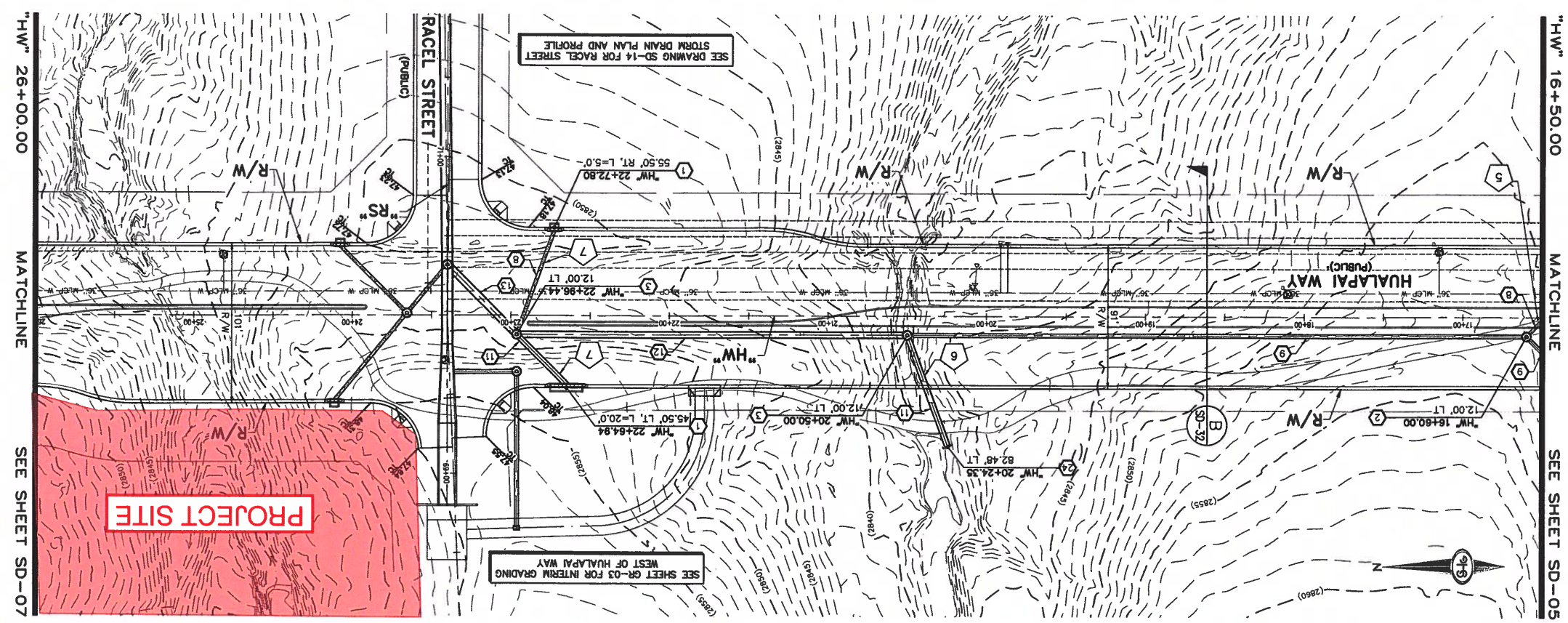
SHEET 9 OF 42

ENGINEER - STATE OF NEVADA - NO. 019538 - PROFESSIONAL - STEPHEN M. JONES - CIVIL - 5/13/14

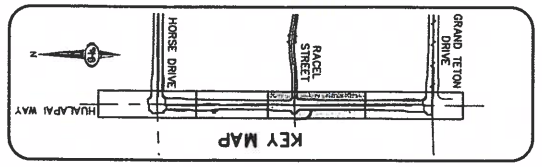
SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-4300 FAX (702) 284-4399

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.





KEY MAP



SCALE: 0 40 80 FEET

1-702-227-2829

FAST! Call before you Dig Under Ground. 702-435-2600

811 Call Before you Dig 1-800-227-2600

LEGEND

(1) STORM DRAIN LATERAL # (SEE SHEETS SD-25 THRU SD-31)

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 32003C1752E, 32003C1754E AND 32003C1756E. ALL DATED SEPTEMBER 27, 2002

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

STEPHEN JONES, P.E. 019538 DATE

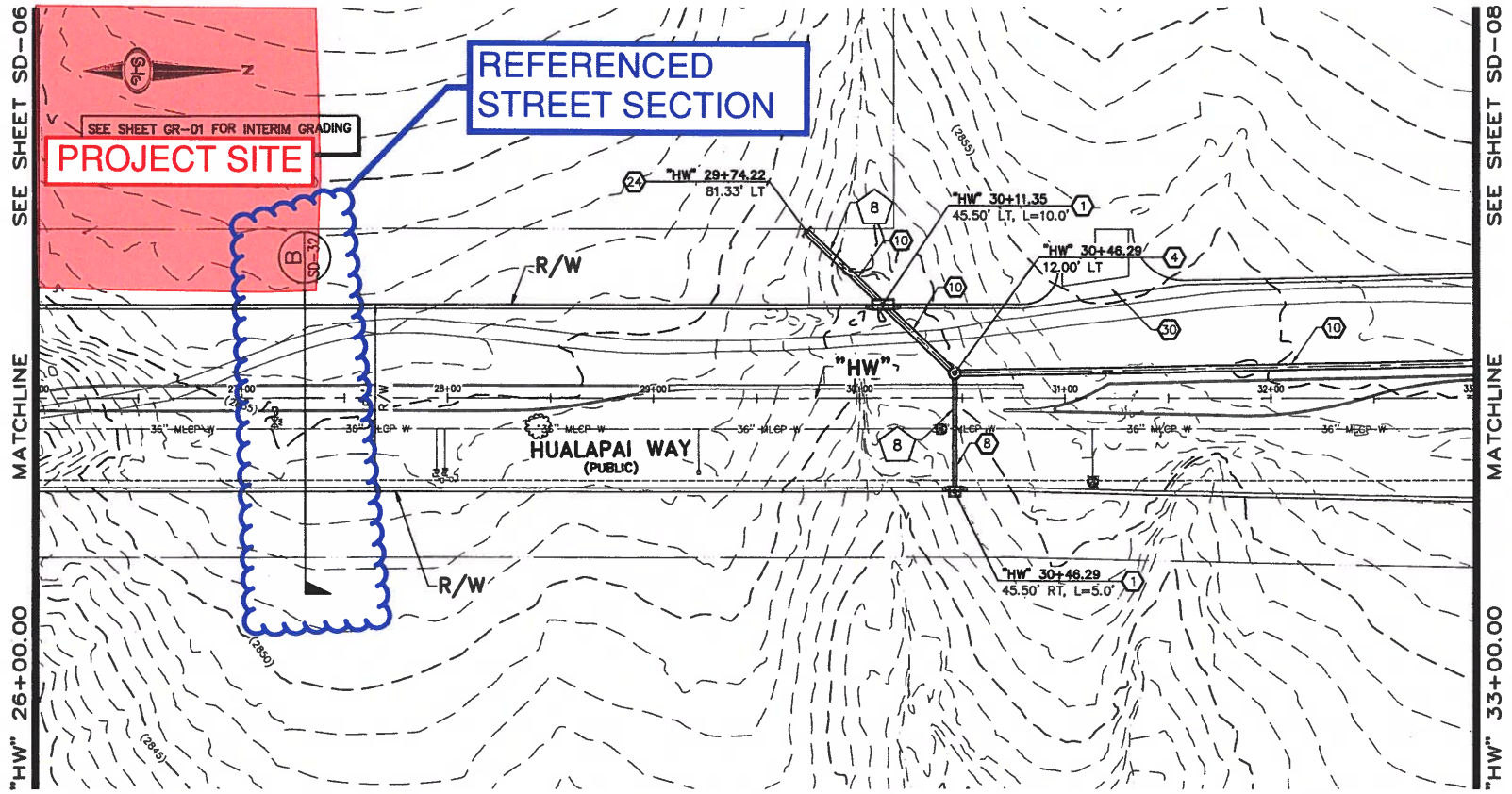
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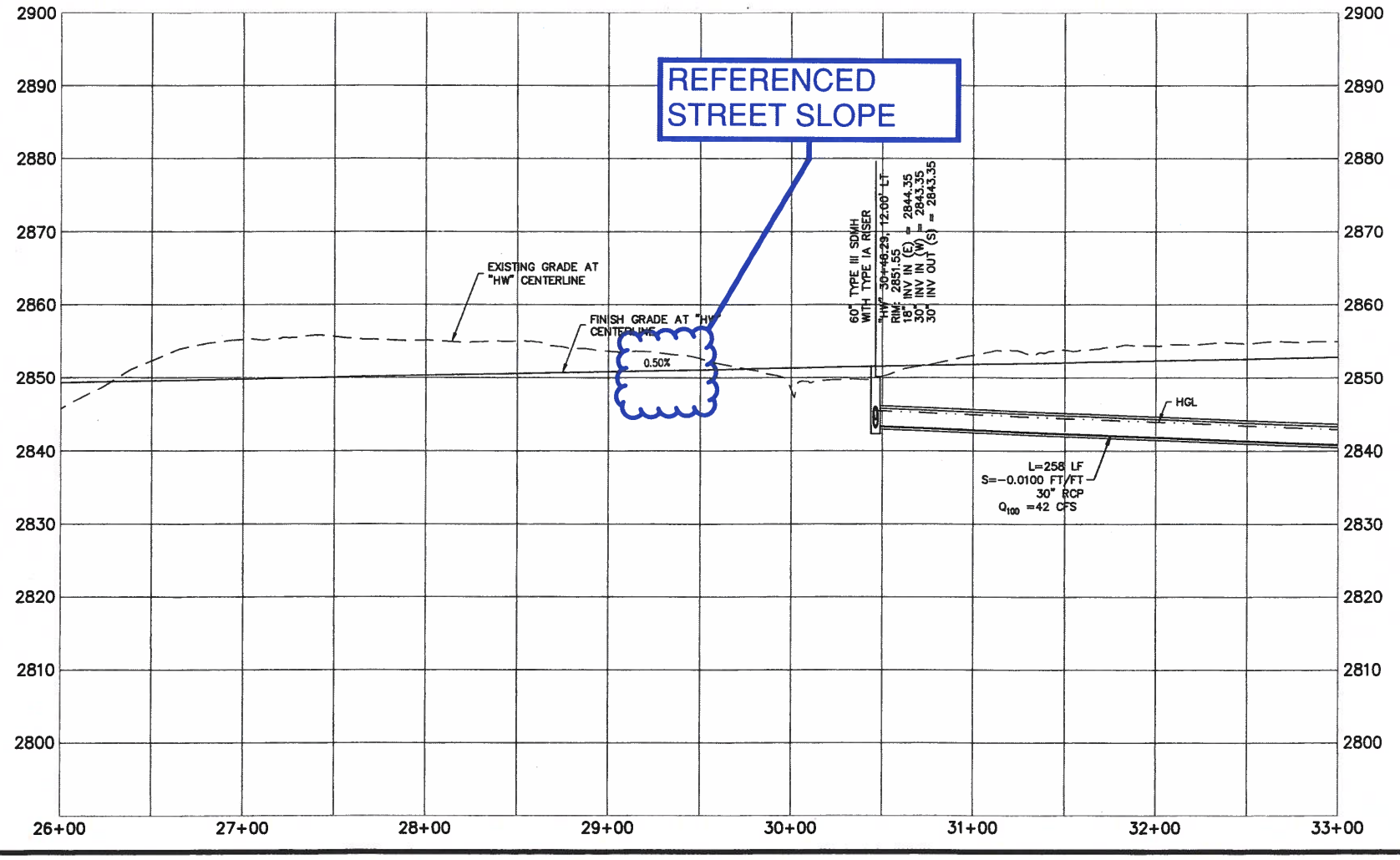
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3. ALL DROP INLETS SHALL INCLUDE STORM WATER MANAGEMENT STAMP AND DETAIL PER USDCCA STD. DWG. NO. 421.
4. SEE STRUCTURAL PLANS FOR ADDITIONAL STRUCTURAL DETAILS AND CONNECTIONS.
5. ALL PIPES ARE PUBLICLY MAINTAINED.

STORM DRAIN NOTES

(1) CONSTRUCT TYPE "CM2" DROP INLET (USDCCA STD. DWG. NO. 412.1)
(2) CONSTRUCT 60" TYPE III MANHOLE (USDCCA STD. DWG. NO. 403.1)
(3) CONSTRUCT 60" TYPE III MANHOLE (USDCCA STD. DWG. NO. 406.1)
(4) CONSTRUCT 60" TYPE III MANHOLE WITH TYPE IA RSRR (USDCCA STD. DWG. NO. 404.1 AND 406.1)
(5) CONSTRUCT NDOT TYPE 4 MANHOLE (NDOT STD. PLAN R-4.3.2)
(6) CONSTRUCT RCA ACCESS MANHOLE
(7) CONSTRUCT 48" ACCESS MANHOLE
(8) INSTALL 18" RCP (USDCCA STD. DWG. NO. 503.2)
(9) INSTALL 24" RCP (USDCCA STD. DWG. NO. 503.2)
(10) INSTALL 30" RCP (USDCCA STD. DWG. NO. 503.2)
(11) INSTALL 36" RCP (USDCCA STD. DWG. NO. 503.2)
(12) INSTALL 42" RCP (USDCCA STD. DWG. NO. 503.2)
(13) INSTALL 48" RCP (USDCCA STD. DWG. NO. 503.2)
(14) INSTALL 60" RCP (USDCCA STD. DWG. NO. 503.2)
(15) INSTALL 72" RCP (USDCCA STD. DWG. NO. 503.2) W/ 1' SACRIFICIAL CONCRETE
(16) INSTALL 30" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
(17) INSTALL 36" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
(18) INSTALL 42" RCP END SECTION (NDOT STD. PLAN R-2.3.1)
(19) CONSTRUCT 6' X 4' RCA (SEE STRUCTURAL DETAILS BY OTHERS)
(20) CONSTRUCT 6' X 5' RCA (SEE STRUCTURAL DETAILS BY OTHERS)
(21) CONSTRUCT 6' X 6' RCA (SEE STRUCTURAL DETAILS BY OTHERS) W/ 1' SACRIFICIAL CONCRETE
(22) CONSTRUCT 10' X 8' PRECAST RCB (NDOT R-20.1.2) W/ 1' SACRIFICIAL CONCRETE
(23) CONSTRUCT NDOT TYPE II HEADWALL (NDOT STD. PLAN B-20.1.5 AND B-20.1.5.1)
(24) CONSTRUCT BRICK AND MORTAR PLUG (SEE DETAIL 1, DRAWING SD-34)
(25) CONSTRUCT CONCRETE COLLAR (SEE DETAIL 2, DRAWING SD-34)
(26) INSTALL NDOT TYPE 2 DROP INLET WITH 3' CONCRETE APRON (NDOT STD. PLAN R-4.2.1)
(27) CONSTRUCT JUNCTION STRUCTURE (SEE STRUCTURAL DETAILS BY OTHERS)
(28) CONSTRUCT TRANSITION STRUCTURE (SEE STRUCTURAL DETAILS BY OTHERS)
(29) CONSTRUCT NDOT TYPE 2B DROP INLET (NDOT STD. PLAN R-4.2.2)
(30) CONSTRUCT CONCRETE CROSS GUTTER (USDCCA STD. DWG. NO. 228)
(31) CONSTRUCT TYPE "C" DROP INLET (USDCCA STD. DWG. NO. 413)

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LEGEND

(1) STORM DRAIN LATERAL # (SEE SHEETS SD-25 THRU SD-31)

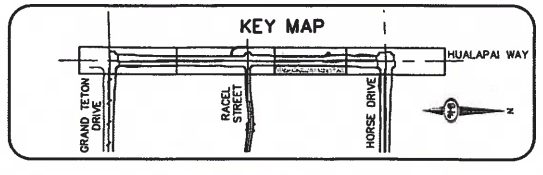
I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY DS-4661 ON FILE AT THE CITY OF LAS VEGAS FOR THE SUBJECT PROJECT

STEPHEN JONES, P.E. 019638 DATE

FLOOD ZONE

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KEY MAP



SCALE 40 0 40 80 FEET

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

FAST Call Before you Dig Underground. 1-702-432-6300

Call before you Dig Call 811 or 1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

NINETY-FIVE MANAGEMENT LLC

SKYE CANYON PHASE 1
HUALAPAI WAY STORM DRAIN PLAN AND PROFILE
"HW" 26+00.00 TO "HW" 33+00.00

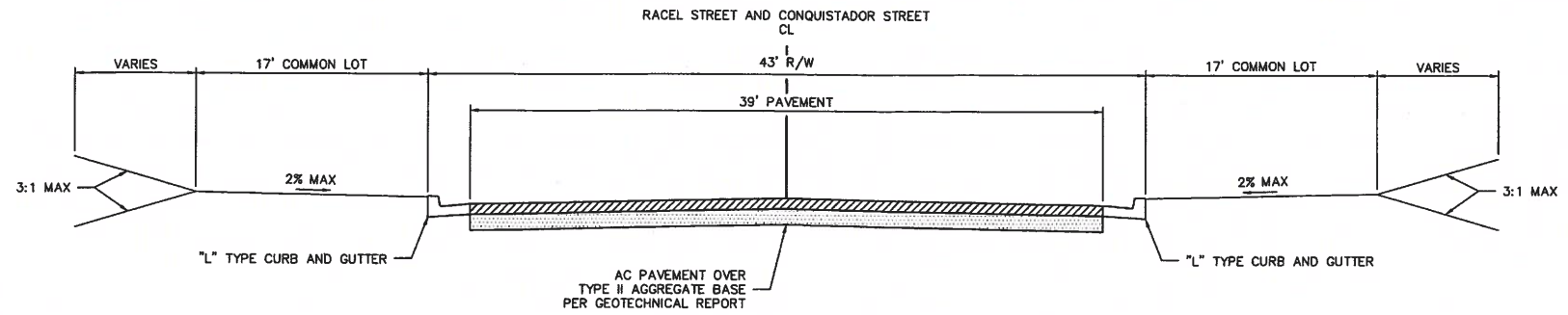
DATE: 5/13/14
DRAFTER: DAM
DESIGNER: DAM
CHECKED: JJS

PROJECT NO.
OLY1401-001

STEPHEN M. JONES — PROFESSIONAL ENGINEER — STATE OF NEVADA — No. 019638 — CIVIL — Exp. 6/30/15 — 5/13/2014

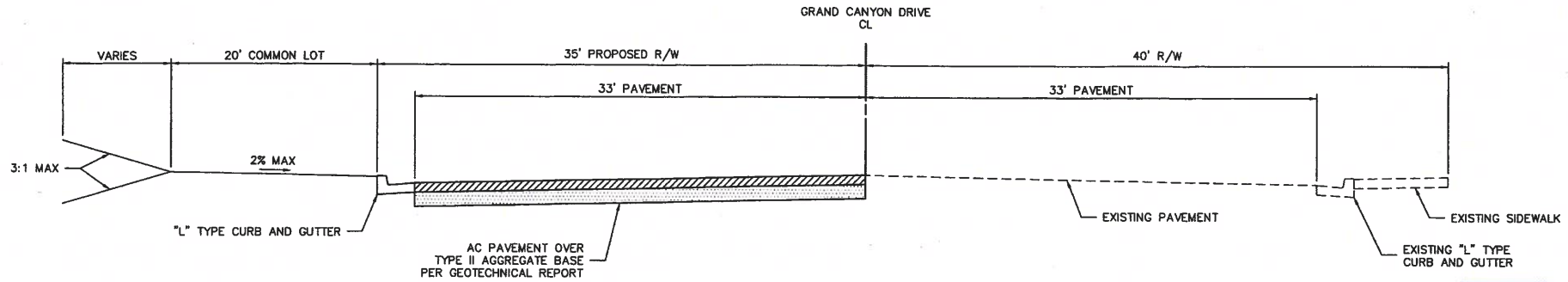
SD-07
SHEET 10 OF 42

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RACEL AND CONQUISTADOR (ULTIMATE) — D

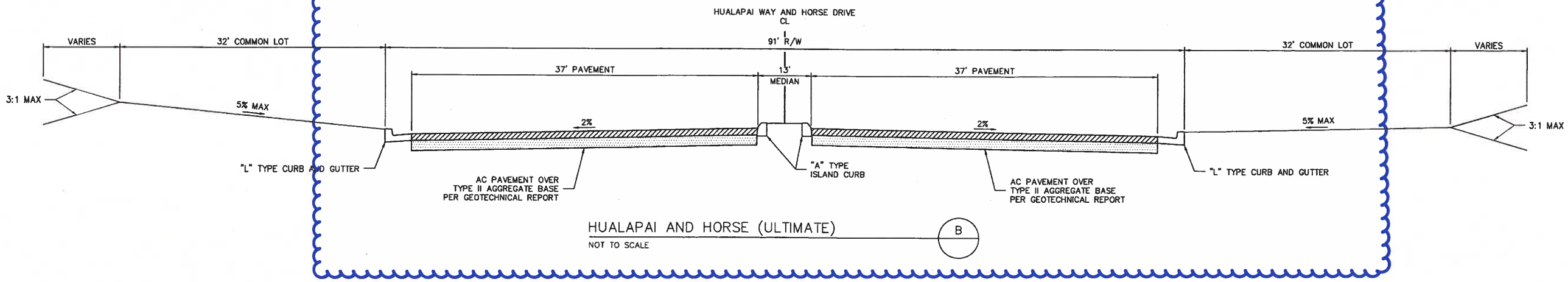
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GRAND CANYON (ULTIMATE) — C

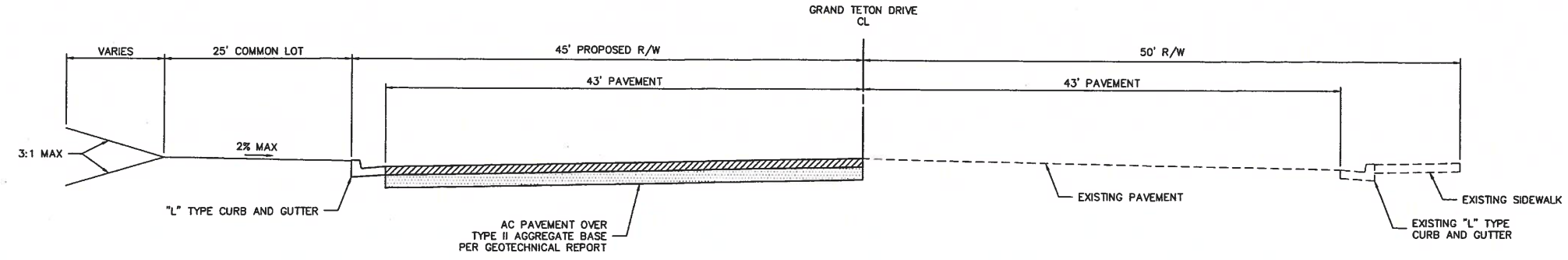
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REFERENCED STREET SECTION



HUALAPAI AND HORSE (ULTIMATE) — B

NOT TO SCALE



GRAND TETON (ULTIMATE) — A

NOT TO SCALE

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS
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PHONE (702) 284-5300 FAX (702) 284-5399

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

NINETY-FIVE MANAGEMENT LLC

SKYE CANYON PHASE 1

ROADWAY SECTIONS

DATE: 5/13/14
DRAFTER: DAM
DESIGNER: DAM
CHECKED: JJS

PROJECT NO.
OLY1401-001

PROFESSIONAL ENGINEER - STATE OF NEVADA
STEPHEN M. JONES
Exp. 6/30/15
CIVIL
No. 019638
5/13/2014

SD-32

SHEET 35 OF 42

J:\OLY\1401-001 Skye Canyon\Dwg\Engineer\1401001 Drainage Study\SD-32.dwg, 5/13/2014 11:08:10 AM, xerox

APPENDIX G

Reference Material

Technical Drainage Study for Skye Canyon Master Drainage Study, by SHG

Approval Letter

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: August 15, 2016
TO: Land Development Services Department of Public Works				FROM: Oh Sang Kwon, P.E. Flood Control Section Department of Public Works
SUBJECT:	Drainage Study for:			COPIES TO:
Skye Canyon Master Drainage Study – Update #3				Slater Hanifan Group
Cross Streets:	Fort Apache Road & Moccasin Road			KAG Development South, LLC
File Number:	F:\Depot\DSMemos\DS4420N.doc			Bart Anderson, P.E., DevCo
Parcel Number:	125-06-001-001			CCRFCD
Zoning Action:				CCPW
FEMA Flood Zone	YES	NO X		NDOT; NV Energy
Proposed Storm Drain	YES X	NO		PB America, Inc.

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	6/22/2010	7/13/2010	Not Approved	$1,000.00	147216: $1000
2nd Submittal	9/17/2010	10/4/2010	Not Approved	$400.00	153788: $400
3rd Submittal	10/15/2011	11/14/2011	Not Approved	$400.00	153788: $400
4th Submittal	2/13/2012	3/1/2012	Conditional Approval	$400.00	274196: $400
CCRFCD	5/23/2012	5/24/2012	Concurrence Recv'd	N/C	N/C
5th Submittal NDOT Comments	9/10/2012	9/19/2012	Conditional Approval	N/C	N/C
6th Submittal	12/4/2014	12/30/2014	Conditional Approval	$400.00	378889: $400
7th Submittal	2/17/2015	3/3/2015	Conditional Approval	$400.00	385987: $400
8th Submittal	3/16/2015	4/6/2015	See Comments Below	$400.00	388961: $400
CCRFCD	4/2/2015	4/6/2015	Concurrence Recv'd	N/C	N/C
9th Submittal	6/23/2015	7/21/2015	See Comments Below	$400.00	403025: $400
Revised Memo	8/12/2015	8/12/2015	See Comments Below	N/A	N/A
10th Submittal	10/19/2015	11/23/2015	Conditional Approval	$400.00	N/A
11th Submittal	4/19/2016	5/16/2016 & 8/15/2016	See Comments Below	$400.00	440941: $400
			TOTAL FEES (LDDRS):	$4,600.00	----

REMARKS: 11th Submittal: Update # 3 – Overall Master Plan Revision of Skye Canyon development. The proposed size and location of MPU facilities are being changed with the concept of allowing development without impacting the National Monument.

Skye Canyon Master Drainage Study Update #3 **proposes substancial changes to amend the previously approved Master Plan Amendment (MPA). A new MPA must be submitted to *City of Las Vegas* and *CCRFCD* for approval and shall be adopted by the *City of Las Vegas City Council* prior to the final approval of the subject Master Study Update #3.**

The City of Las Vegas will not allow further residential development outside of the limits of Phase 2 at this time until the New Master Plan is approved.

10th Submittal - Phase 2 interim impacts.

Revised Memo – National Monument Drainage Impacts

The Master 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.
X	is conditionally approved subject to Clark County Department of Public Works concurrence.
X	is conditionally approved subject to Nevada Department of Transportation concurrence.
X	is conditionally approved subject to BLM concurrence/approval.

1. The overall concept presented in the Master Plan Update #3 for Skye Canyon appears to satisfy the intent of providing regional connectivity of proposed Master Planned facilities without impacting the National Monument. Specific Technical Drainage Studies shall be required to address the specific impacts of each proposed Master Planned facility and the interaction with proposed facilities needed for each phase of development.
2. The Regional Flood Control District has requested that engineering consultants utilize the latest NRCS soils data as a part of the drainage study parameters. The Master Plan Update shall discuss the soil data used in the analysis and discuss the impacts on the overall hydraulic analysis. Provide an updated HEC-1 analysis and address local and MPU facility size modifications, if necessary based upon the revised Soil Survey data. Update the NRCS soils data in the References (Section 7). Review and revise Exhibit & Figures accordingly. This needs to be addressed as supplemental information prior to the MPA approval.
3. The Master Plan shall clearly define when the proposed interim facilities will be taken out of service and the construction of the required MPU facilities. A complete Phasing Plan shall be updated and approved by the City of Las Vegas and Regional Flood Control prior to the approval of the MPA.
4. This Update proposes to construct the *Log Cabin Detention Basin #3* with flows that will increase the runoff volume routed towards the *Tule Springs North Environmental Detention Basin* (TSNEDB). The engineer proposes to modify the TSNEDB by removing the orifice plate at the detention basin outfall pipe to increase the outflow. Detention basin design uses the orifice plate to insure that the basin outfall remains under inlet control parameters per the HCDDM, Section 1200. Discuss the impact of removing the orifice plate and provide calculations verifying that the existing outfall will convey the proposed 78 cfs under inlet control conditions. Discuss the drain time impacts to the TSNEDB and the impacts to the downstream development. Alternatively, the TSNEDB may need modifications to meet the HCDDM requirements. This could include the expansion of the TSNEDB basin to increase the storage volume accordingly or replacement of the TSNEDB outfall. These or other modifications need to be conceptually addressed as supplemental information prior to the MPA approval.
5. The premise of the Master Plan Update #3 for Skye Canyon is to add two (2) new CCRFCD Master Plan Detention Basins that are located outside of the Skye Canyon development. The City of Las Vegas is in the process of applying for BLM grants for these detention basin sites. These ultimate facilities shall be included in the MPA as CCRFCD facilities. The intent of the Detention Basin (157DB) is to reduce developed flows to maintain the existing condition flow rate in the ultimate condition and reduce the size of the downstream regional facilities. The intent of the Log Cabin Detention Basin (DB3) is to reduce developed flows to reduce the size of the downstream regional facilities that impact the TSNEDB. The concept for the addition of these two detention basins to the CCRFCD Master Plan is acceptable and will require the submittal of technical studies to refine the facility parameters. The construction of DB3 shall be the responsibility of the Skye Canyon

development and will be of sufficient size to reduce the flow impacts to development downstream and ultimately the TSNEDB.

6. This Master Study notes that drainage study updates for both Phase 1 and Phase 2 to accommodate the increased system flows impacting these Phases are necessary. A detailed analysis & review of the required updates will determine the system impacts and if any needed system upgrades are necessary to maintain HCDDM criteria.

7. ***Exhibit 1***: The developed condition Exhibit 1 shall be updated to include the coordinated Kyle Canyon Interchange drainage improvements. The size of the downstream facilities shall be reviewed based upon the interchange improvements.

8. ***Exhibit 1***: The developed condition Exhibit 1 shows that a portion of the developed flows will drain north of Moccasin into the BLM land and the National Monument to mimic existing drainage patterns. Concentrated flow discharges to the north shall require BLM and National Park Service concurrence.

9. ***Exhibit J***: The proposed facility 14 that drains from EC18 easterly to the proposed DB3 shall be a permanent facility meeting the requirements of Title 20 and shall be constructed as a permanent MPU facility with this development.

10. ***Exhibit J***: The proposed onsite DB1 & DB2 facilities shall include the collection facilities as a part of the detention basins areas.

11. ***Exhibit J***: The proposed changes to DB1 will impact the alignment and size of the ultimate collection facility that drains to DB1. The proposed facility shall remain an open channel to allow flow interception from the west in this undeveloped drainage.

12. The ***Master Land Use Plan*** has been provided however, any further changes to the adopted Master Land Use Plan shall require a complete update to the Master Drainage Study.

13. A copy of the approved 404 Permit from the Army Corps of Engineers has been provided.

14. The Phasing Plan for Phase 1 & 2 have addressed the interim condition and associated downstream impacts to address the impact of the long term discharge from the outfall of the Detention Basin #1. This includes upgrading the existing storm drain system near the intersection of Brent Lane and Fort Apache. These improvements have been included in the Detention Basin #1 improvements.

15. Flood Control requires an interim condition drainage analysis in support of the Phasing Plan that clearly shows the impacts to each Phase, existing washes, upstream concentration points and the downstream concentration points. Flood Control needs to make sure that each Phase of Development is protected during the interim and full build-out of this overall project. The current Phasing Plan does not adequately address these issues beyond Phase 2.

16. The interim conditions of the Phasing Plan need to address the impact of the long term discharge from the outfall of any future detention basins. It is noted that Only Detention Basin #1 has been reviewed. The technical review of Detention Basin #2 will determine the impacts downstream along the Iron Mountain Road alignment and/or other needed facilities to mitigate that impact. The provided Basin Attenuated Outfall Exhibit is only conceptual in nature and is subject to further review as a part of the technical reviews. Existing flow conditions do not have a drawn out discharge from a detention basin. This discharge impact must be accounted for in the interim condition without negatively impacting the existing downstream neighborhoods.

17. CCRFCD concurrence has previously been provided. A new concurrence for Update #3 shall be provided from CCRFCD after Conditional Approval by the City of Las Vegas.

18. CCPW concurrence has previously been provided. A new concurrence for Update #3 shall be provided from CCPW after Conditional Approval by the City of Las Vegas.
19. NDOT concurrence has previously been provided. A new concurrence for Update #3 shall be provided from NDOT after Conditional Approval by the City of Las Vegas.

The following comments are repeated until they are complete:

1. Please note that the Traffic Study must be approved prior to final approval of the Master Drainage Study. If the street layout does not match the Master Drainage Study, an update to the Master Drainage Study must be submitted to address the changes.
2. Per a meeting held in August 18, 2011 between the developer and the *City of Las Vegas*, it was agreed that NV Energy's approval of any proposed drainage facilities within their access easements (such as the proposed detention basins) must be obtained prior to the final approval of the Master Drainage Study. Please provide documentation for such approval or acknowledgment.
3. Please note that any future technical drainage study submittals that differ from the Master Drainage Study (ie. Changes in pods, infrastructure, flows etc.) will require an update to the Master Drainage Study and this update must be approved by the *City of Las Vegas Flood Control Section* prior to final approval of technical drainage study.
4. The proposed detention basins will require coordination with the State of Nevada, Division of Water Resources Dam Safety and will require the State's approval prior to permitting.
5. Please note that the proposed 100-year flood protection facilities identified on Exhibit J must be constructed by the Master Developer as a part of the master planned infrastructure. Technical drainage studies are required for each phase of the master planned infrastructure improvements. The technical drainage studies for the infrastructure improvements may be submitted with conditional approval of this Master Drainage Study. However, final approval for the Master Drainage Study must be obtained prior to conditional approval of the infrastructure drainage studies.
6. Technical drainage studies are required for each of the Pod's. The technical drainage studies for the Pod's may not be submitted until the conditional approval of the pertinent infrastructure drainage study is obtained. Final approval for the infrastructure drainage study must be obtained prior to conditional approval of the impacted Pod drainage studies.
7. 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.
8. The design of debris basins at all major culvert entrances to limit the amount of sediment and debris entering the storm drain facilities will be required in a future infrastructure study.
9. Please note that all detention basins must be designed per CCRFCD criteria including a low flow facility around the detention basin.
10. Please note that all proposed interim facilities must be maintained by the master developer.
11. Provide a legal description of the proposed detention basins prior to recordation of the parent final map.
12. Coordinate the proposed drainage facilities with *Sheep Mountain Parkway* project. Please contact Greg McDermott, P.E., at 702-229-2143 to coordinate the proposed drainage facilities.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved master drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Amendment 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)

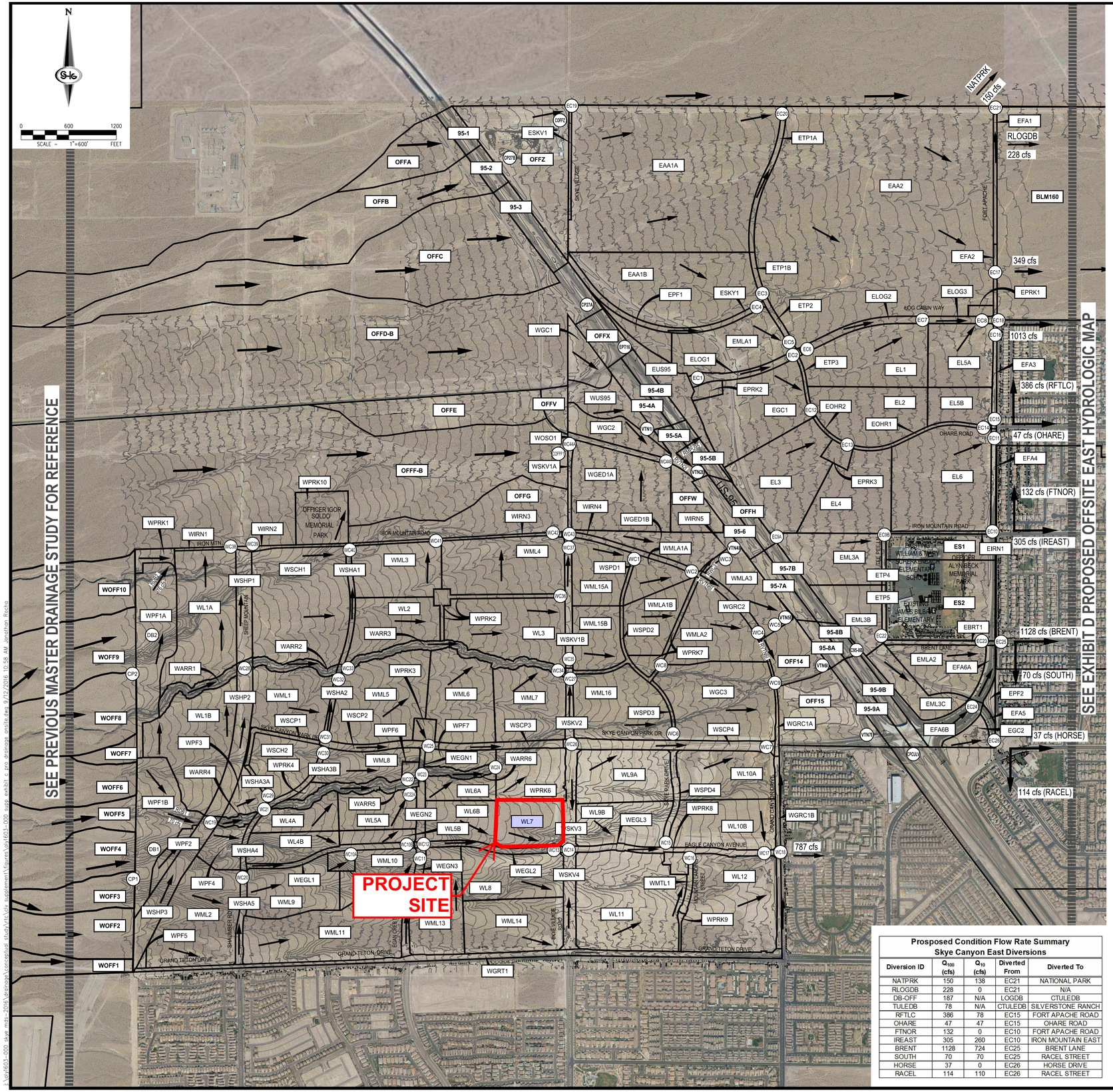
year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

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
Osk/pbj

T/R/S: T19S/R60E/6 & 7
AREA G-6, 7, & F-12

Drainage Exhibits



Proposed Condition Flow Rate Summary
Skye Canyon West Concentration Points

Basin/Concentration Point ID	Area (sq. mi)	Q_{100} (cfs)	Q_{10} (cfs)
WC1 Q = WML15A + WSPD1	0.02	43	21
WC2 Q = WC43 + WC1 + WWB4 + WWL41A	2.67	1343	639
RVTN99 DIVERT FROM WC2	2.67	250	250
RWC3 DIVERT FROM WC2	2.67	1093	454
WC3 Q = RWC3 + OFF9 + WGED1B + WWB5	2.70	1131	405
WC4 Q = WRK4 + WWL41B + WWL42 + WGRC2	0.08	135	67
WC5 Q = WC4 + WWL43	0.09	170	83
WC6 Q = WML16 + WSPD5	0.04	68	33
WC7 Q = WC6 + WL9A + WL10A + WSCP4	0.10	186	89
WC8 Q = WML10B + WSP22	0.02	37	19
WC9 Q = WC7 + WGC3 + WGRC1A + WC8 + RVTN9	5.47	538	387
WC10A Q = WML8 + WPRK5	0.05	60	30
WC10B Q = WC10A + WEGL1 + WL4B	0.06	99	48
WC11 Q = WML10 + WSD03 + WML11	0.05	127	61
WC12 Q = WC10B + WC11	0.11	226	109
WC13 Q = WC12 + WL6B + WL7 + WWL13 + WSL2	0.17	352	170
WC14 Q = WC13 + WML14 + WL8 + WSKV3 + WSKV4	0.24	485	236
WC15 Q = WL9B + WSP04	0.03	46	21
WC16 Q = WL11 + WPRK9 + WPRK8 + WWTL1	0.06	106	48
WC17 Q = WC14 + WC15 + WC16 + WEGL5 + WL10B	0.37	695	331
WC18 Q = WC17 + WL12 + WGRC1B	0.42	787	372
WC19 Q = RDB1 + WSHP3 + WPF2	0.93	87	64
WC20 Q = WPF5 + WML2 + WSHA5	0.05	86	42
WC21 Q = WC19 + WC20 + WARR4 + WPF4 + WSHA4	0.96	193	116
WC22A Q = WL4A + WL5A + WL5B	0.05	67	30
WC22 Q = WC21 + WC22A + WPRK4 + WARR5	1.01	275	152
WC23 Q = WC22 + WML6 + WPF6 + WSCP1 + WEGN2	1.04	314	171
WC24 Q = WC23 + WARR6 + WPF7 + WL6A	1.06	352	189
WC25 Q = WSCP5 + WPRK3	0.01	16	8
WC26 Q = WC24 + WC25 + WPRK6 + WSCP3	1.10	404	211
WC27 Q = WC26 + WML7 + WSKV2	1.14	479	247
WC28 Q = WL5B + WARR1 + WSHP2	0.06	108	48
WC29 Q = WPF3 + WSHA3A	0.01	19	10
WC30 Q = WC29 + WSCH2 + WSHA3B	0.04	62	29
WC31 Q = WC30 + WSCP1	0.04	68	33
WC32 Q = WC31 + WML1 + WSHA2	0.06	124	58
WC33 Q = WC28 + WC32 + WARR2	0.13	239	108
WC34 Q = WC33 + WWB3 + WML5 + WML6	0.23	398	186
WC35 Q = WC27 + WC34	1.35	863	425
WC36 Q = WL2 + WPRK2	0.03	51	23
WC37 Q = WC35 + WC36 + WSKV1B + WL3	1.43	987	481
WC38 Q = RDB2 + WPK1 + WWR1 + WL1A	1.07	109	47
WC39 Q = WC38 + WSHP1	1.08	124	50
WC40 Q = WSO01 + WSHA1	0.07	112	50
WC41 Q = WC39 + WWB2 + WC40 + WML3	1.18	286	126
WC42 Q = WC41 + WWR3 + WML4	1.22	362	165
WC43 Q = WL37 + WC42	2.63	1275	605
WC44A Q = COFFF1 + WPRK10 + WSKV1A + OFF0	2.32	1322	406
WC44B Q = WGC2 + WOSO1 + WGED1A	0.06	105	48

Proposed Condition Flow Rate Summary
Skye Canyon East Concentration Points

Basin/Concentration Point ID	Area (sq. mi)	Q_{100} (cfs)	Q_{10} (cfs)
EC1 Q = EPT16 + R&RDB5 + RETC1C + 95-4B + EUS95	3.50	639	307
EC2 Q = EC1 + ELOG1 + EPR2	3.51	640	308
EC3 Q = EAA1B + ETP1B	0.09	157	71
EC4 Q = ESK1 + EPF1	0.01	19	9
EC5 Q = EC3 + EC4 + ETP2 + EMLA1	0.14	225	104
EC6 Q = EC2 + EC5	3.65	659	326
EC7 Q = EC6 + EL1 + ELOG2	3.69	666	333
EC8 Q = EC7 + EL5A + ELOG3 + EPRK1	3.72	699	343
EC8A Q = RETC7C + RETC6C + OFFH	5.12	374	203
EC9 Q = EC8A + EML3A + 95-5B + ETN	5.13	389	230
EC10 Q = EC8B + ERR1 + ES1	5.15	416	244
EC11 Q = FTNOR + EL6 + EFA4	5.21	175	24
EC12 Q = EOC1 + ETP3	0.05	80	37
EC13 Q = EC12 + EL3 + ECHR2 + EPRK3	0.10	134	58
EC14 Q = EC13 + EL4 + EL2 + EOHR1	0.17	228	96
EC15 Q = EC11 + EC14	5.37	374	125
EC16 Q = RFTLC + EFA3 + EL5B	5.39	347	67
EC17 Q = EFA2 + EMA2	0.28	349	161
EC18 Q = EC16 + EC8	6.77	1013	446
EC19 Q = CGFFZ + ESKV1	0.36	208	58
EC20 Q = EAA1A + ETP1A	0.14	199	93
EC21 Q = EC19 + EC20 + EFA1	0.50	378	138
EC22 Q = CB5-8B + EML3B + ETP5	5.67	1018	651
EC23 Q = EMLA2 + EFA6A	0.08	1145	768
EC24 Q = EML3C + EFA6B + 95-9B	5.42	58	28
EC25 Q = SOUTH + EPF2 + EFA5 + EGC2	0.11	1198	794
EC26 Q = SOUTH + EC24 + EPF2 EFA5 + EGC2	0.16	151	110

Prosposed Condition Flow Rate Summary
Skye Canyon East Diversions

Diversion ID	Q_{100} (cfs)	Q_{10} (cfs)	Diverted From	Diverted To
NATPRK	150	138	EC21	NATIONAL PARK
RLOGDB	228	0	EC21	N/A
DB-OFF	187	N/A	LOGDB	CTULEDB
TULEDB	78	N/A	CTULEDB	SILVERSTONE RANCH
RFTLC	386	78	EC15	FORT APACHE ROAD
OHARE	47	47	EC15	OHARE ROAD
FTNOR	132	0	EC10	FORT APACHE ROAD
IREAST	305	260	EC10	IRON MOUNTAIN EAST
BRENT	1128	724	EC25	BRENT LANE
SOUTH	70	70	EC25	RACEL STREET
HORSE	37	0	EC26	HORSE DRIVE
RACEL	114	110	EC26	RACEL STREET

Proposed Condition Flow Rate Summary
Skye Canyon West Basins

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
WL1A	29.8	81	39
WARR1	3.6	9	4
WARR2	2.8	7	3
WARR3	7.1	17	7
WARR4	1.3	3	1
WARR5	8.0	18	8
WARR6	2.4	6	2
WGC1	8.3	24	11
WGC2	8.3	23	10
WGC3	30.4	95	47
WGED1A	28.4	77	35
WGED1B	11.5	33	16
WL10A	17.1	46	21
WL10B	18.3	49	22
WL11	36.7	99	45
WL12	31.4	84	38
WL1B	28.0	79	36
WL2	15.7	45	21
WL3	24.9	69	32
WL4A	8.0	23	10
WL4B	8.9	27	12
WL5A	10.9	32	15
WL5B	3.8	12	5
WL6A	6.2	19	9
WL6B	10.6	30	14
WL7	11.5	34	16
WL8	17.4	48	22
WL9A	18.2	49	22
WL9B	14.4	39	18
WML1	18.0	52	24
WML10	11.6	38	19
WML11	16.0	48	23
WML12	15.1	44	20
WML13	16.4	49	25
WML14	19.2	59	29
WML15A	12.3	40	20
WML15B	11.2	34	17
WML16	22.2	64	32
WML2	27.4	78	38
WML3	17.3	56	28
WML4	25.1	77	38
WML5	27.3	82	41
WML6	20.5	64	32
WML7	18.6	59	30
WML8	10.3	34	17
WML9	19.4	65	33
WMLA1A	6.5	20	18
WMLA1B	12.0	37	18
WMLA2	30.4	88	44
WMLA3	11.5	35	17
WPF1A	20.2	69	29
WPF1B	18.9	63	31
WPF2	3.1	10	5
WPF3	4.6	17	8
WPF4	5.7	19	9
WPF5	0.4	1	0
WPF6	1.0	4	2
WPF7	4.5	14	7
WPRK1	2.4	6	2
WPRK10	10.0	19	8
WPRK2	3.2	7	2
WPRK3	1.8	4	2
WPRK4	1.0	3	1
WPRK5	2.0	5	2
WPRK6	13.2	28	10
WPRK7	3.0	6	2
WPRK8	1.7	4	1
WPRK9	0.5	1	<1
WSCH1	39.4	106	48
WSCH2	15.1	37	16
WEST ROADWAY BASINS			
WIRN1	0.6	2	1
WEGL1	3.4	12	6
WEGL2	3.3	12	7
WEGL3	4.8	16	9
WEGN1	0.5	2	1
WEGN2	2.1	2	1
WEGN3	3.3	10	6
WGRC1A	1.3	4	2
WGRC1B	3.2	10	5
WGRC2	2.7	9	5
WGRT1	11.7	30	16
WIRN2	2.2	7	4
WIRN3	1.3	5	3
WIRN4	2.7	9	5
WIRN5	0.7	3	2
WMTL1	1.3	5	2
WOSO1	0.2	8	4
WSCP1	1.5	6	3
WSCP2	3.0	11	6
WSCP3	3.5	13	7
WSCP4	7.8	25	14
WSHA1	2.3	6	2
WSHA2	1.5	5	2
WSHA3A	0.7	3	1
WSHA3B	1.6	6	3
WSHA4	1.4	6	3
WSHA5	2.4	8	5
WSHP1	6.4	15	6
WSHP2	9.3	22	9
WSHP3	10.4	26	10
WSKV1A	1.4	5	3
WSKV1B	3.5	11	6
WSKV2	2.0	19	8
WSKV3	4.2	14	6
WSKV4	4.5	15	8
WSP01	0.7	3	1
WSP02	2.1	3	2
WSP03	0.9	3	2
WSP04	2.3	8	4
WUS95	8.5	28	16

Proposed Condition Flow Rate Summary
Skye Canyon East Basins

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
EAA1A	103.1	191	88
EAA1B	40.0	154	70
EAA2	177.6	347	160
EGC1	26.4	65	30
EGC2	3.2	11	5
EL1	25.0	51	20
EL2	21.7	46	18
EL3	26.4	51	20
EL4	21.4	44	18
EL5A	18.1	32	13
EL5B	8.5	18	7
EL6	36.3	68	26
EML3A	17.5	50	25
EML3B	11.5	34	17
EML3C	9.1	27	13
EMLA1	18.9	49	23
EMLA2	16.7	53	26
EPF1	4.3	9	3
EPF2	1.0	2	1
EPRK1	1.0	1	<1
EPRK2	1.6	1	<1
EPRK3	2.0	2	<1
EAST ROADWAY BASINS			
ESKV1	3.4	10	5
ELOG1	3.4	11	6
ELOG2	3.5	12	6
ELOG3	1.7	6	3
EOHR1	1.8	6	4
EOHR2	0.6	2	1
EIRN1	1.1	4	2
EBRT1	1.8	7	4
ESKV1	1.1	3	2
ETP1A	2.9	9	5
ETP1B	0.9	3	2
ETP2	1.2	4	2
ETP3	0.8	16	7
ETP4	0.8	3	2
ETP5	0.9	3	2
EFA1	1.8	5	3
EFA2	1.1	3	2
EFA3	1.6	5	3
EFA4	1.9	6	3
EFA5	1.1	4	2
EFA6A	2.5	9	5
EFA6B	4.5	17	9
EUS95	8.9	31	17

Proposed Condition Flow Rate Summary
Skye Canyon Offsite Basins

Basin/Concentration Point ID	Area (sq. mi)	Q_{100} (cfs)	Q_{10} (cfs)
WEST BASINS			
ES1	0.02	29	14
ES2	0.05	84	43
OFF10	0.67	591	182
OFF14	0.01	20	8
OFF15	0.03	47	19
OFFA	0.02	17	4
OFFB	0.13	73	21
OFFC	0.13	80	23
OFFDA	0.64	343	84
OFFDB	0.49	235	65
OFFE	0.04	26	8
OFFFA	0.99	843	258
OFFFB	0.60	414	150
OFFG	0.04	47	20
OFFV	0.01	4	1
OFFW	0.01	9	2
OFFX	0.01	8	2
OFFZ	0.05	35	8
WOFF1	0.43	387	134
WOFF10	0.65	467	175
WOFF2	0.04	54	17
WOFF3	0.03	38	14
WOFF4	0.06	84	30
WOFF5	0.26	236	30
WOFF6	0.04	59	83
WOFF7	0.01	10	4
WOFF8	0.21	230	85
WOFF9	0.12	144	55
EAST BASINS			
BLM160	0.28	157	38
NW129-C	0.14	126	44
NW116-C	0.13	100	30
NW128	0.45	236	54
NW130-C	0.25	196	70
NW148-C	0.13	76	20
NW157	0.25	178	56
US95 BASINS			
95-1	0.01	7	3
95-2	0.01	7	3
95-3	0.01	15	6
95-4A	0.01	14	7
95-4B	0.01	13	6
95-5A	0.01	12	6
95-5B	0.01	11	5
95-6	0.01	17	7
95-7A	0.01	13	6
95-7B	0.01	15	7
95-8A	0.01	10	5
95-8B	0.01	6	5
95-9A	0.01	19	9
95-9B	0.01	22	10
OFFH	0.01	12	5

Proposed Condition Flow Rate Summary
Skye Canyon Offsite Concentration Points

Basin/Concentration Point ID	Area (sq. mi)	Q_{100} (cfs)	Q_{10} (cfs)
WEST CONCENTRATION POINTS			
COFFF1 Q = ROFF10 + ROFF9A + OFFFB	2.26	1310	401
COFFZ Q = CFDTB + OFFZ	0.36	206	57
CP1 Q = WOFF1 + WOFF2 + WOFF3	0.50	417	142
CP2 Q = WOFF7 + WOFF8	0.22	235	89
CP27A Q = ROFF0A + OFFDB	1.14	463	112
CP27B Q = OFFC + B5-3 + OFF-B +95-2 + OFFA + 95-1	0.31	173	50
DB1 Q = CP1 + WOFF4 + WOFF5 + WOFF6 + WOFF10	0.88	730	253
RDB1 (FROM DB1)	0.88	70	56
DB2 Q = CP2 + WOFF9 + WOFF10 + WPF1A	1.02	708	262
RDB2 (FROM DB2)	1.02	76	43
EPT16 Q = CP27A + WOFF3 + OFFE	1.16	466	113
EAST CONCENTRATION POINTS			
CNW128 Q = CNW130 + WWR116 + WSKV1B + WL3	8.04	331	N/A
CNW129 Q = DB-OFF + WWR129-C	7.44	188	54
CNW148 Q = WWR148 + WWT4B-C	0.38	270	89
CTULEDB Q = RDW5-B + CNW128 + NW157	8.81	635	N/A
LOGDB Q = EC18 + EC17 + WLM160	7.30	1385	526
US95 CONCENTRATION POINTS			
VTN11 Q = OFFE + OFFV + WUS95 + 95-4A	0.06	62	26
VTN1E Q = VTN1 + VTN1S	0.06	56	24
VTN1S Q = VTN1 + VTN1E	0.06	6	3
VTN2I Q = WC44A + WC44B	2.38	1333	450
RVTN2I DIVERT FROM V TN2I	2.38	1133	210
RMPU95 DIVERT FROM V TN2I	2.38	200	200
VTN2E Q = V TN2I + VTN2S	2.38	377	148
VTN2S Q = RV TN2I - VTN2E	2.38	757	62
CHU02B Q = VTN1S + VTN2E + 95-5A	2.40	378	148
CHU02C Q = CHD01C + DCH01C	2.40	228	98
VTN4I Q = VTN2S + WC3	5.08	1166	386
VTN4E Q = VTN4I - VTN4S	5.08	854	386
VTN4S Q = VTN4I - VTN4E	5.08	312	0
CHD04B Q = CHD03B + 95-7A + VTN3E	5.16	957	393
CHD04C Q = CHD03B + CHD04B	5.16	608	286
VTN5I Q = VTN4E + WC5	5.17	464	74
VTN5E Q = VTN5I - VTN5S	5.17	232	73
VTN5S Q = VTN5I - VTN5E	5.17	232	0
CHD05B Q = CHD05B + 95-7B + VTN3E	5.25	681	187
CHD05C Q = CHD04C + CHD05B	5.25	659	254
VTN6I Q = VTN5S + WC9 + OFF14	5.36	777	394
VTN6E Q = VTN6I - VTN6S	5.37	712	394
VTN6S Q = VTN6I - VTN6E	5.37	65	0
CHD06B Q = 95-8A + VTN6E	5.38	720	398
CHD06C Q = CHD05C + CHD06B	5.38	1111	487
VTN7I Q = VTN6S + OFF15	5.41	106	16
CHD07B Q = CHD06B + 95-9A	5.39	67	8
C05-8B Q = B5-7B + RETC2C + RETBC + 95-8B	5.38	985	635
CPCU1V Q = V TN7I + CHD05B+ CHD07B + CHD06C	5.43	856	73

REFERENCED ONSITE BASINS

NOTE:

- 5-FT TOPOGRAPHIC CONTOURS SHOWN ON EXHIBIT
- FLOW RATES REPORTED AT POINTS CNW128, CTULEDB, TULEDB ARE OBTAINED FROM SDN4 HEC-1 MODEL. ALL OTHER FLOW RATES OBTAINED FROM SDN3 MODEL.
- REFER TO EXHIBIT N – PROPOSED CONDITION US-95 HYDRAULICS FOR DETAILED DRAINAGE PATTERNS IN OFFSITE US-95 RIGHT OF WAY.

LEGEND

- BASIN BOUNDARY
- MATCHLINE SEE EXHIBIT FOR MAP EXTENSION
- ID — BASIN ID
- NW ID — MPA BASIN ID
- ID — CONCENTRATION POINT ID
- FLOW DIRECTION
- ID — FACILITY ID
- ID / ID — FLOW SPLIT

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

OLYMPIA COMPANIES

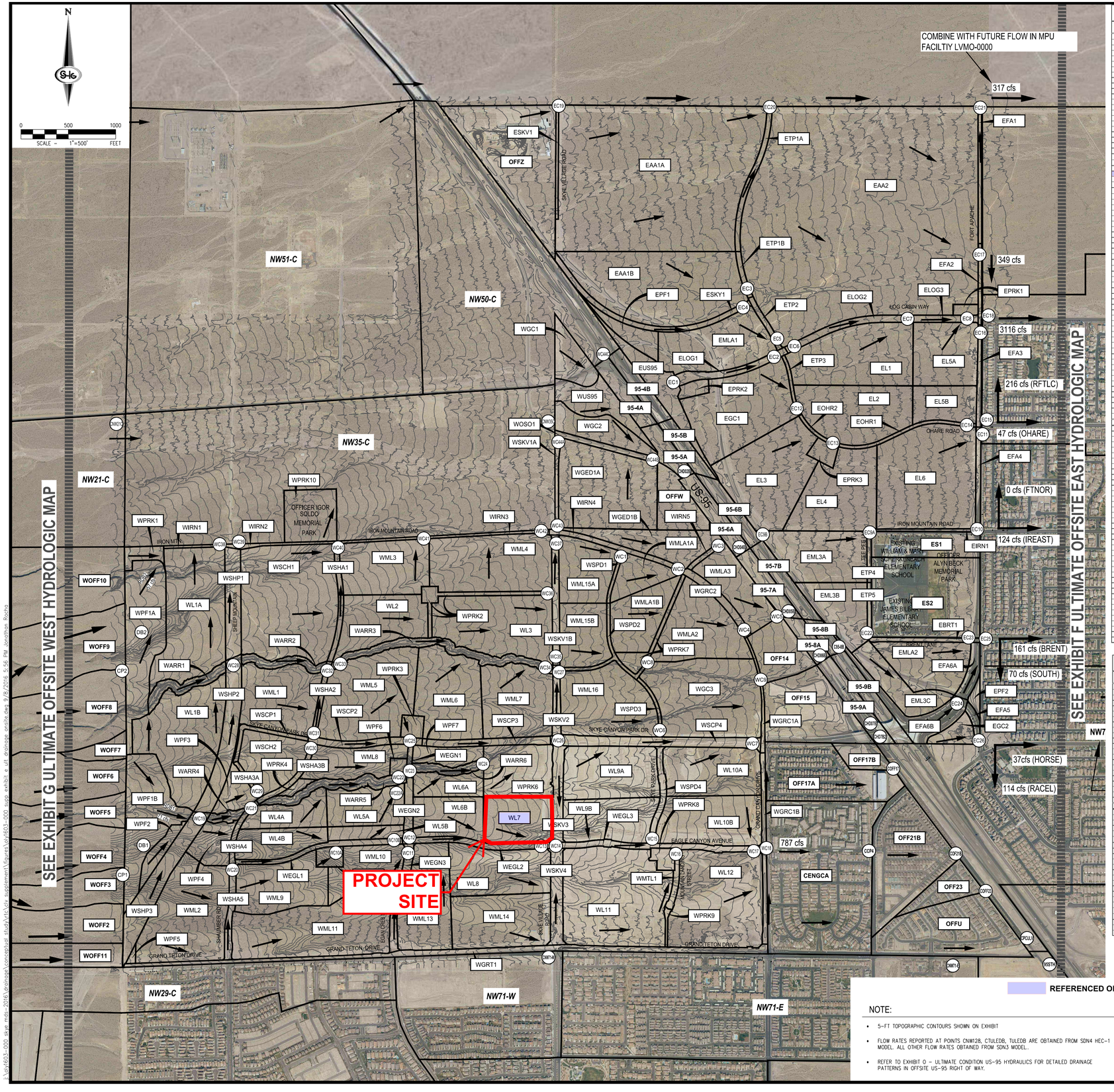
SKYE CANYON - MASTER DRAINAGE STUDY

PROPOSED CONDITION ONSITE HYDROLOGIC MAP

DATE: SEPT 2016
DRAFTER: JSR
DESIGNER: JSR
CHECKED: SMJ
PROJECT NO. OLY1603.000

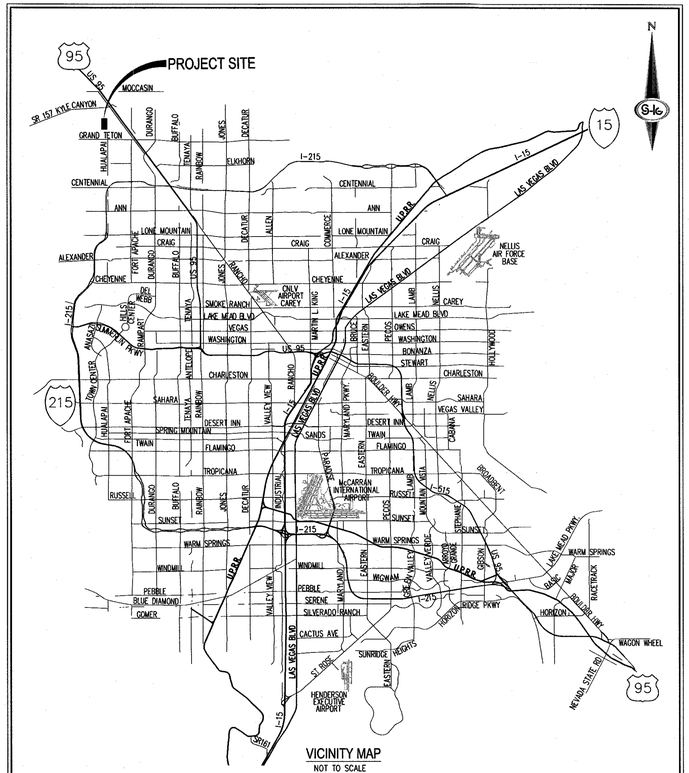
EXHIBIT C
SHEET 1 OF 1

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N
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SCALE – 1"=500' FEET
SEE EXHIBIT G ULTIMATE OFFSITE WEST HYDROLOGIC MAP
SEE EXHIBIT F ULTIMATE OFFSITE EAST HYDROLOGIC MAP
COMBINE WITH FUTURE FLOW IN MPU FACILTIY LVMO-0000
317 cfs
349 cfs
3116 cfs
216 cfs (RFTLC)
47 cfs (OHARE)
0 cfs (FTNOR)
124 cfs (IREAST)
161 cfs (BRENT)
70 cfs (SOUTH)
37cfs (HORSE)
114 cfs (RACEL)
787 cfs
PROJECT SITE
NW51-C
NW50-C
NW35-C
NW21-C
NW29-C
NW71-W
NW71-E
NW7
SKYE VILLAGE ROAD
FORT APACHE
LOG CABIN WAY
OHARE ROAD
IRON MOUNTAIN ROAD
SKYE CANYON PARK DR
GRAND TETON DRIVE
EAGLE CANYON AVENUE
SHEEP MOUNTAIN
SHUMBER RD
EGAN CREEK
SKYE LEAVE ROAD
SEE PEBBLE
SEE PARK DRIVE
GRAND CANYON EAST
EXISTING WILLIAM & MARY [illegible] ELEMENTARY SCHOOL
EXISTING JAMES BILBRAY ELEMENTARY SCHOOL
OLD CCR ALYN BECK MEMORIAL PARK
ESKV1
OFFZ
ETP1A
EAA1A
EAA2
ETP1B
EAA1B
EPF1
ESKY1
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ELOG2
ELOG3
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EFA3
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WUS95
EPRK2
EL2
EL5B
95-4A
EGC1
EOHR2
EOHR1
WOSO1
WGC2
95-5B
WSKV1A
95-5A
WGED1A
EL3
EPRK3
EL6
OFFW
US-95
95-6B
WIRN4
WGED1B
WIRN5
EL4
95-6A
WMLA1A
EML3A
ES1
EIRN1
WSPD1
95-7B
WMLA3
ETP4
WGRC2
95-7A
EML3B
ETP5
ES2
WMLA1B
WSPD2
95-8B
EBRT1
WMLA2
WPRK7
95-8A
EMLA2
EFA6A
OFF14
95-9B
OFF15
EML3C
EFA6B
95-9A
WGRC3
WGRC1A
EGC2
OFF17B
OFF17A
WGRC1B
OFF21B
CENGCA
OFF23
OFFU
WGRT1
WPRK10
WPRK1
WIRN1
WIRN2
WIRN3
WSHP1
WSCH1
WSHA1
WOFF10
WPF1A
WL1A
WOFF9
DB2
WARR1
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WARR3
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WOFF8
WL1B
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WSHA2
WML5
WPRK3
WSCP1
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WSKV2
WOFF7
WPF3
WSCH2
WML8
WEGN1
WARR6
WOFF6
WARR4
WSHA3A
WSHA3B
WPRK4
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WSHA5
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WSPD1
WML15A
WML15B
WSPD2
WML16
WGC3
WSPD3
WSCP4
WML6
WML7
WSCP3
WSKV2
WPRK8
WEGL3
WMLA1
WMLA2
WMLA3
WGRC2
WMLA1B
WMLA2
WPRK7
WGC3
WSPD3
WSCP4
WGRC1A
WGRC1B
EGC2
EFA3
EL1
EL5A
EL2
EL5B
EOHR2
EOHR1
EL3
EPRK3
EL6
EL4
EML3A
ETP4
ETP5
EML3B
EBRT1
EML3C
EFA6A
EFA6B
EPF2
EFA5
EGC2
EFA4
EIRN1
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APPENDIX H

CD of Electronic Files and Improvement Plans



IMPROVEMENT PLANS FOR SKYE CANYON II PARCEL 2.14

A SINGLE FAMILY RESIDENTIAL SUBDIVISION OF THE SKYE CANYON MASTER-PLANNED COMMUNITY WITHIN THE CITY OF LAS VEGAS, NEVADA

APN: 126-12-710-002

CITY OF LAS VEGAS NEVADA 1916

SHEET LIST TABLE		
NO.	SHEET	TITLE
1	C-1	COVER SHEET
2	C-2	GENERAL NOTES
3	C-3	GENERAL NOTES AND QUANTITIES
4	G-1	GRADING PLAN – I
5	G-2	GRADING PLAN – II
6	G-3	GRADING PLAN – III
7	G-4	GRADING PLAN – IV
8	D-1	STREET SECTIONS AND DETAILS
9	D-2	GRADING SECTIONS AND DETAILS – I
10	D-3	GRADING SECTIONS AND DETAILS – II
11	PP-1	PLAN AND PROFILE – I
12	PP-2	PLAN AND PROFILE – II
13	PP-3	PLAN AND PROFILE – III
14	PP-4	PLAN AND PROFILE – IV
15	PP-5	PLAN AND PROFILE – V
16	PP-6	PLAN AND PROFILE – VI
17	PP-7	PLAN AND PROFILE – VII
18	PP-8	PLAN AND PROFILE – VIII
19	PP-9	PLAN AND PROFILE – IX
20	PP-10	PLAN AND PROFILE – X



APPROVALS

CITY ENGINEER–ALLEN PAVELKA PE, #9029 DATE

APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED OF RIGHT–OF–WAY, AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS EXCEPT THOSE SPECIALLY LISTED UNDER DEVIATIONS FORM STANDARDS. THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN DEVIATIONS FROM STANDARDS IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS, CLARK COUNTY AREA, NEVADA.

LAS VEGAS FIRE AND RESCUE DATE

CITY OF LAS VEGAS – PLANNING DEPARTMENT DATE

THIS PLAN MEETS THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

CENTRAL TELEPHONE CO. DBA CENTURYLINK DATE

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

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
SHEETS: _____

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM LAS VEGAS VALLEY WATER DISTRICT.

NV ENERGY DATE

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

SOUTHWEST GAS CORPORATION DATE

COX COMMUNICATIONS LAS VEGAS, INC. DATE

OWNER	DEVELOPER	ENGINEER
K A G DEVELOPMENT WEST, LLC OLYMPIA COMPANIES 11411 SOUTHERN HIGHLANDS #300 LAS VEGAS, NV 89141 PH: 702-220-6565	NINETY FIVE MANAGEMENT, LLC 11411 SOUTHERN HIGHLANDS #300 LAS VEGAS, NV 89141 PH: 702-220-6565	SLATER HANIFAN GROUP, INC. 5740 S. ARVILLE STREET, SUITE 216 LAS VEGAS, NV 89118 PH: (702) 284-5300 FX: (702) 284-5399 CONTACT: STANLEY OKEY AMADI

LEGAL DESCRIPTION

BEING A PORTION OF SECTION 12, TOWNSHIP 19 SOUTH, RANGE 59 EAST M.D.M., CLARK COUNTY, NEVADA.

BENCHMARK

BM 7LV90 7NWS CITY OF LAS VEGAS RIVET AND ROUND PLATE IN CONCRETE CYLINDER, SOUTHEAST CORNER OF HUALAPAI WAY AND IRON MOUNTAIN ROAD.

ELEV: 2840.13 FEET (865.67 METERS) (NAVD 1988)

BASIS OF BEARINGS

SOUTH 00°34'18" EAST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 12, TOWNSHIP 19 SOUTH, RANGE 59 EAST M.D.M., AS PER FILE 151, PAGE 14, OF SURVEYS ON FILE IN THE COUNTY RECORDER'S OFFICE.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (AREA OUTSIDE THE 500 YEAR FLOODPLAIN), PER THE FEMA FIRM PANELS 32003C1750E DATED SEPTEMBER 27, 2002

DEVIATIONS FROM STANDARDS

NONE

SWPPP NOTE

NOTE: ALL LAND SURFACE AREA DISTURBANCES OVER 1 ACRE REQUIRE A STORMWATER DISCHARGE PERMIT ISSUED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP). A PHASED CONSTRUCTION UNIT IN A CONTIGUOUS SUBDIVISION IS CONSIDERED UNDER CONSTRUCTION UNTIL ALL STRIPPED SURFACE AREAS HAVE BEEN COVERED BY PAVING, BUILDING CONSTRUCTION OR PLANTING. A STORMWATER DISCHARGE PERMIT APPLICATION AND ASSOCIATED INFORMATION MAY BE DOWNLOADED FROM THE WEB SITE: HTTP://WWW.STATE.NV.US/BWPC/STORM01.HTM PROJECTS THAT DISTURB MORE THAN ONE ACRE OF LAND MUST SUBMIT TO NDEP A "NOTICE OF INTENT" FOR INCLUSION UNDER STORMWATER PERMIT NO. NVR100000 ALONG WITH THE APPROPRIATE FILLING FEE.

PROJECT INFORMATION

ACREAGE (GROSS):	= 13.4± AC
ACREAGE (NET):	= 12.3± AC
DENSITY (LOTS/NET ACRE):	= 5.0± DU/NET AC
ZONING:	= T-D (R-1 STANDARDS)
TOTAL NO. OF RESIDENTIAL LOTS	= 61
TOTAL NO. OF COMMON ELEMENTS *	= 11
MINIMUM LOT SIZE	= 5452 SF±
MAXIMUM LOT SIZE	= 8750 SF±
PROVIDED OPEN SPACE	= SF±

EARTHWORK SUMMARY (UNADJUSTED)

CUT	----- CY.
FILL	----- CY.
NET	----- CY.

GEOTECHNICAL ENGINEER

PREPARED BY: ANGLE ENGINEERING
ADDRESS: 5995 SOUTH EDMOND STREET
PHONE: 702-382-6453
PROJECT No. 57024-1
DATED: MARCH 9, 2018







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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

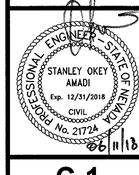
SKYE CANYON II PARCEL 2.14

COVER SHEET

S12 T19 R59

DATE: 6/11/18
DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS

PROJECT NO.
OLY1719-000



C-1
SHEET 1 OF 20

J:\Oly\1719.000 skye canyon parcel 2.14\dwg\improv\oly1719-000 cvr.dwg 6/11/2018 1:23 PM Dominic Panaligan

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 NVR100000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS AND ALL BMPS WEEKLY, AND WITHIN 24 HOURS AFTER ANY 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 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.

LEGAL DESCRIPTION

BEING A PORTION OF SECTION 12, TOWNSHIP 19 SOUTH, RANGE 59 EAST M.D.M., CLARK COUNTY, NEVADA.

BENCHMARK

BM 7LV90 7NWS CITY OF LAS VEGAS RIVET AND ROUND PLATE IN CONCRETE CYLINDER, SOUTHEAST CORNER OF HUALAPAI WAY AND IRON MOUNTAIN ROAD.

ELEV: 2840.13 FEET (865.67 METERS) (NAVD 1988)

BASIS OF BEARINGS

SOUTH 00°34'18" EAST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 12, TOWNSHIP 19 SOUTH, RANGE 59 EAST M.D.M., AS PER FILE 151, PAGE 74, OF SURVEYS ON FILE IN THE COUNTY RECORDER'S OFFICE.

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 "Y" 'S SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.
7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.
8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT #_____ (REVISED 08/01/2017)

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

15. **NO LEAD COMPLIANCE NOTE:**
    TO COMPLY WITH THE FEDERAL SAFE DRINKING WATER 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 ANGLE ENGINEERING, PROJECT NO. 57024-1, DATED MARCH 9, 2018.
6. EARTHWORK QUANTITIES (RAW):
    -CUT = ##### CUBIC YARDS.
    -FILL = ##### 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 # 6325, FOR HYDRANT SPECIFICATIONS, AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICT'S – **APPROVED PRODUCTS LIST** ARE ALLOWED TO BE INSTALLED.
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR ALL INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK [IFC 105.7.12]
4. ON ANT RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. [IFC 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. [IFC 507.5.7.3]
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. [IFC 106.3]
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. [IFC 507.2.1, NFPA 24]
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. [IFC 507]
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. [IFC 507.5.7.1]
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. [IFC 507]
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: [IFC 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, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. [IFC C102.8]
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FEET OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. [IFC 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. [IFC C102.4]
16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. [IFC C102.7]
17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. [IFC C102.6]
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE ARE 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. SECTIONAL CONTROL 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. [IFC C104]
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. [IFC 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%. [IFC 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. [IFC 503.2.4]
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13 FT 6 INS. [IFC 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. [IFC 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. [IFC 503.1.1]
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 100 OR MORE DWELLING UNITS, ROAD(S) 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. [IFC 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. [IFC 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 WITH 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 OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. [IFC 503.3]
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. SAID SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE IFC 503.6 AND IFC 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 COMPACTION, IN THE AREAS INDICATED:

	HORIZONTAL	VERTICAL GUIDANCE	
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

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

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT 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 HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER 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 INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-HALF INCH (½") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY ANGLE ENGINEERING, REPORT #57024-1, MARCH 9, 2018 APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.380 & CITY OF LAS VEGAS TITLE 19, APPENDIX D.
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.

WALL NOTES:

16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPRO

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	QTY	QUANTITY
APPROX OR ~	APPROXIMATE	FUT	FUTURE	R	RADIUS
AVE	AVENUE	GRD	GRADE OR GROUND	RCA	REINFORCED CONCRETE ARCH
@	AT	GB	GRADE BREAK OR GRADE CHANGE	RCB	REINFORCED CONCRETE BOX
BC	BEGIN CURVE OR BACK OF CURB	GV	GATE VALVE	RCP	REINFORCED CONCRETE PIPE
BCR	BEGINNING OF CURB RETURN	HDPE	HIGH DENSITY POLYETHYLENE	RD	ROAD
BHW	BOTTOM OF HEADWALL	HOA	HOME OWNERS ASSOCIATION	RDWY ESMT	ROADWAY EASEMENT
BLDG	BUILDING	HORZ	HORIZONTAL	REQD	REQUIRED
BLVD	BOULEVARD	HP	HIGH POINT	REV	REVISION
BM	BENCHMARK	HWL	HIGH WATER LEVEL	RG	ROUGH GRADE
BVC	BEGIN VERTICAL CURVE	HDWL OR HW	HEADWALL	RT OR R	RIGHT
BWV	BACK WATER VALVE	HYD	HYDRAULIC OR HYDRANT	R/W, ROW	RIGHT OF WAY
CC	CLARK COUNTY	ID	INSIDE DIAMETER	S	SLOPE
CCAUSD	CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS	IN	INCH	SCH	SCHEDULE
CCPW	CLARK COUNTY PUBLIC WORKS	INT	INTERSECTION	SD	STORM DRAIN
CCRFCD	CLARK COUNTY REGIONAL FLOOD DISTRICT	INV	INVERT ELEVATION	SDDI	STORM DRAIN DROP INLET
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT	IP	IRON PIPE	SDMH	STORM DRAIN MANHOLE
CE	COMMON ELEMENT	IRRG	IRRIGATION	SEC	SECTION
CL,C/L,C	CENTERLINE	LF	LINEAR FEET	SF	SQUARE FEET
CLR	CLEAR OR CLEARANCE	LP	LOW POINT	SHT	SHEET
CLSM	CONTROLLED LOW STRENGTH MATERIAL	LT OR L	LEFT	SNWA	SOUTHERN NEVADA WATER AUTHORITY
CLV	CITY OF LAS VEGAS	LVVWD	LAS VEGAS VALLEY WATER DISTRICT	SPECS	SPECIFICATIONS
CML&C	CEMENT MORTAR LINED AND COATED	LWL	LOW WATER LEVEL	ST	STREET
CMU	CONCRETE MASONRY UNIT	MAX	MAXIMUM	SSMH	SANITARY SEWER MANHOLE
CNLV	CITY OF NORTH LAS VEGAS	MECH	MECHANICAL	STA	STATION
COH	CITY OF HENDERSON	MH	MANHOLE	STD	STANDARD
CONC	CONCRETE	MIN	MINIMUM	STL	STEEL OR STREET LIGHT
CT	COURT	MISC	MISCELLANEOUS	SW	SIDEWALK
CY OR CU YD	CUBIC YARD	MUE	MUNICIPAL UTILITY EASEMENT	SWG	SOUTHWEST GAS
DCWCS	DESIGN AND CONSTRUCTION FOR WASTEWATER COLLECTION SYSTEMS	NDOT	NEVADA DEPARTMENT OF TRANSPORTATION	SWR OR SS	SANITARY SEWER
		NPC	NEVADA POWER COMPANY	SY	SQUARE YARD
DET	DETAIL	NTS	NOT TO SCALE	TAN	TANGENT
DI	DUCTILE IRON OR DRAIN INLET	NUE	NONEXCLUSIVE UTILITY EASEMENT	TC	TOP OF CURB
DIA, ø	DIAMETER	OC	ON CENTER	TF	TOP OF FLOOR OR TOP OF FOOTING
DIP	DUCTILE IRON PIPE	OD	OUTSIDE DIAMETER OR OVERALL DIMENSION	TG	TOP OF GRATE
DR	DRIVE	OFF	OFFSET	THRU	THROUGH
DWG(S)	DRAWING	ORIG	ORIGINAL	THW	TOP OF HEADWALL
DWY	DRIVEWAY	PAE	PUBLIC OR PEDESTRIAN ACCESS EASEMENT	TP	TOP OF PIPE
EA	EACH	PB	PULL BOX	TW	TOP OF WALL
ECR	END CURB RETURN	PC	POINT OF CURVE	TRW	TOP OF RETAINING WALL
EG	EXISTING GROUND	PCC	POINT OF COMPOUND CURVE	TSW	TOP OF SCREEN WALL
EL	ELEVATION	PDE	PUBLIC DRAINAGE EASEMENT	TYP	TYPICAL
ESMT	EASEMENT	℄ OR PL	PROPERTY LINE	UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS
EP	EDGE OF PAVEMENT	POB	POINT OF BEGINNING		
ERU	EQUIVALENT RESIDENTIAL UNIT	POC	POINT OF CURVATURE	VC	VERTICAL CURVE
EVC	END VERTICAL CURVE	POE	POINT OF ENDING	VERT	VERTICAL
EX OR EXIST	EXISTING	PRC	POINT OF REVERSE CURVATURE	VG	VALLEY GUTTER
FC	FACE OF CURB	PRELIM	PRELIMINARY	WI	WROUGHT IRON
FF	FINISHED FLOOR	PROP	PROPOSED	WL	WATER LINE
FG	FINISHED GRADE	PRV	PRESSURE REDUCING VALVE	WPZ	WATER PRESSURE ZONE
FGH	FINISHED GRADE, HIGH SIDE	PUE	PUBLIC UTILITY EASEMENT	WT	WEIGHT
FGL	FINISHED GRADE, LOW SIDE	PT	POINT OF TANGENT OR POINT	WTR	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 CLARK COUNTY 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
(1900)	1900	5' CONTOUR
		1' CONTOUR
		STRIPING
		SEWER MANHOLE
		CURB AND GUTTER
EX 8" PVC SS	8" PVC SS	SANITARY SEWER PIPE AND FLOW ARROW
EX 8" PVC WTR	8" PVC WTR	WATER PIPE
		WATER GATE VALVE
		FIRE HYDRANT
		WATER BLOW-OFF
		WATER LATERAL W/ METER
		SANITARY SEWER LATERAL
		STREETLIGHT
		EDGE OF PAVEMENT
		TRAFFIC SIGN
PAD= XXX.X FF = XXX.X	PAD= XXX.X FF = XXX.X	PAD ELEVATION FINISHED FLOOR ELEVATION
(00.00) TC	00.00 TC	ELEVATION
		RETAINING WALL
		STORM DRAIN W/ MANHOLE

	EXISTING GAS GATE VALVE
@MH	EXISTING UNKNOWN MANHOLE
GAS	EXISTING GAS, SIZE PER PLAN
	EXISTING POWER POLE
	EXISTING TRAFFIC SIGNAL
	EXISTING WALL
	WATER PIPE FITTING
POC	WATER POINT OF CONNECTION
POC	SEWER POINT OF CONNECTION
	DAYLIGHT LINE
	STREET CENTERLINE
	RIGHT-OF-WAY
	MATCHLINE
	BOUNDARY LINE
	PHASE LINE
	PROPERTY LINE
	FLOWLINE
	SAWCUT
FILL / CUT	CUT/FILL TRANSITION LINE
	SIDEWALK
	EX STRIPING TO BE OBLITERATED
	GRADE BREAK LINE
	REFLECTIVE RAISED PAVEMENT MARKERS
BWV	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

	PROPOSED SCARP AREA
	DRIVEWAY
	PROPOSED RIP RAP
	SIGHT VISIBILITY ZONE PER STD DWG NO. 201.2
	HANDICAP RAMP

QUANTITIES

			PRIVATE	PUBLIC
DRAINAGE				
1.	60" TYPE III STORM DRAIN MANHOLE	EA	–	–
2.	5.0' TYPE "CM2" DROP INLET	EA	–	–
3.	10.0' TYPE "CM2" DROP INLET	EA	–	–
4.	12.5' TYPE "CM2" DROP INLET	EA	–	–
5.	15.0' TYPE "CM2" DROP INLET	EA	–	1
6.	18" RCP CLASS IV STORM DRAIN	LF	–	–
7.	24" RCP CLASS III STORM DRAIN	LF	–	72
8.	30" RCP CLASS IV STORM DRAIN	LF	–	–
9.	36" RCP CLASS IV STORM DRAIN	LF	–	–
10.	RIPRAP D50=8", THK=16"	SF	–	–
11.	8' WIDE CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	–	2718
12.	SIDEWALK UNDER DRAIN	SF	–	–
13.				
SEWER SYSTEM				
1.	4" PVC SEWER LATERAL (PRIVATE)	LF	–	–
2.	8" PVC SEWER PIPE (PUBLIC)	LF	–	–
3.	STANDARD 48" SEWER MANHOLE (PUBLIC)	EA	–	–
4.	8" SEWER PIPE CAP	EA	–	–
5.	BACK WATER VALVE	EA	–	–
6.	8" C-900 WATER QUALITY SEWER PIPE (PUBLIC)	EA	–	–
7.				
WATER SYSTEM				
1.	FIRE HYDRANT ASSEMBLY W/6" GATE VALVE PER UDACS PLATE NO. 40	EA	–	–
2.	6" PVC WATER PIPE (CLASS 150)	LF	–	–
3.	8" PVC WATER PIPE (CLASS 150)	LF	–	–
4.	8" DIP WATER PIPE (CLASS 53)	LF	–	–
5.	8" GATE VALVE WITH VALVE BOX PER UDACS PLATE NO. 30 & 39	EA	–	–
6.	8" X 6" TEE PER UDACS PLATE NO. 31	EA	–	–
7.	8" X 8" TEE PER UDACS PLATE NO. 31	EA	–	–
8.	8" 5 DEGREE BEND WITH RESTRAINED JOINTS	EA	–	–
9.	8" 11.25 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
10.	8" 22.5 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
11.	8" 45 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
12.	8" 90 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
13.	CAP AND 2" BLOW-OFF ASSEMBLY W/CAP PER UDACS PLATE NO. 36	EA	–	–
14.	1" COPPER SERVICE W/ 3/4" METER PER UDACS PLATE NO. 2	EA	–	–
15.	1" COPPER SERVICE W/ 1" METER PER UDACS PLATE NO. 4	EA	–	–
16.	1" COPPER SERVICE W/ 3/4" METER & 1" RPPA PER UDACS PLATE NO. 4 & 8	EA	–	–
		EA	–	
STREET IMPROVEMENTS				
1.	2" A.C. PAVEMENT W/ 4" TYPE II OVER 6" TYPE I AGGREGATE BASE	SY	–	–
2.	STANDARD 18" TYPE "L" ISLAND CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
3.	STANDARD 8" TYPE "A" ISLAND CURB W/6" TYPE I AGGREGATE BASE	LF	–	–
4.	STANDARD 30" TYPE "ROLL" CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
5.	4' WIDE CONCRETE SIDEWALK W/4" TYPE II AGGREGATE BASE	SF	–	–
6.				–
7.				
TRAFFIC SIGNALS				
1.	30" STOP SIGN WITH POST (R1-1)	EA	–	–
2.	9" STREET NAME SIGN (D-3, BROWN W/ WHITE LETTERS)(6 POLES x 2 PER POLE=12)	EA	–	–
3.	BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKER	EA	–	–
4.	CROSSWALK MARKINGS	LF	–	–
5.				
6.				
7.				
8.				
DRY UTILITIES				
1.	100W H.P.S. LUMINAIRE STREET LIGHT W/DECORATIVE POLE	EA	–	–
2.	1-1/4" PVC STREET LIGHT CONDUIT WITH (2) #4 AND (1) #8 CONDUCTORS	LF	–	–
3.	NO. 3-1/2 PULL BOX W/METAL COVER	EA	–	–
4.	150 AMP SERVICE PEDESTAL (IRR)	EA	–	–
5.	200 AMP SERVICE PEDESTAL (STLT)	EA	–	–
6.				

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

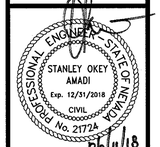
SKYE CANYON II PARCEL 2.14

GENERAL NOTES AND QUANTITIES

S12 T19 R59

DATE: 6/11/18
DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS

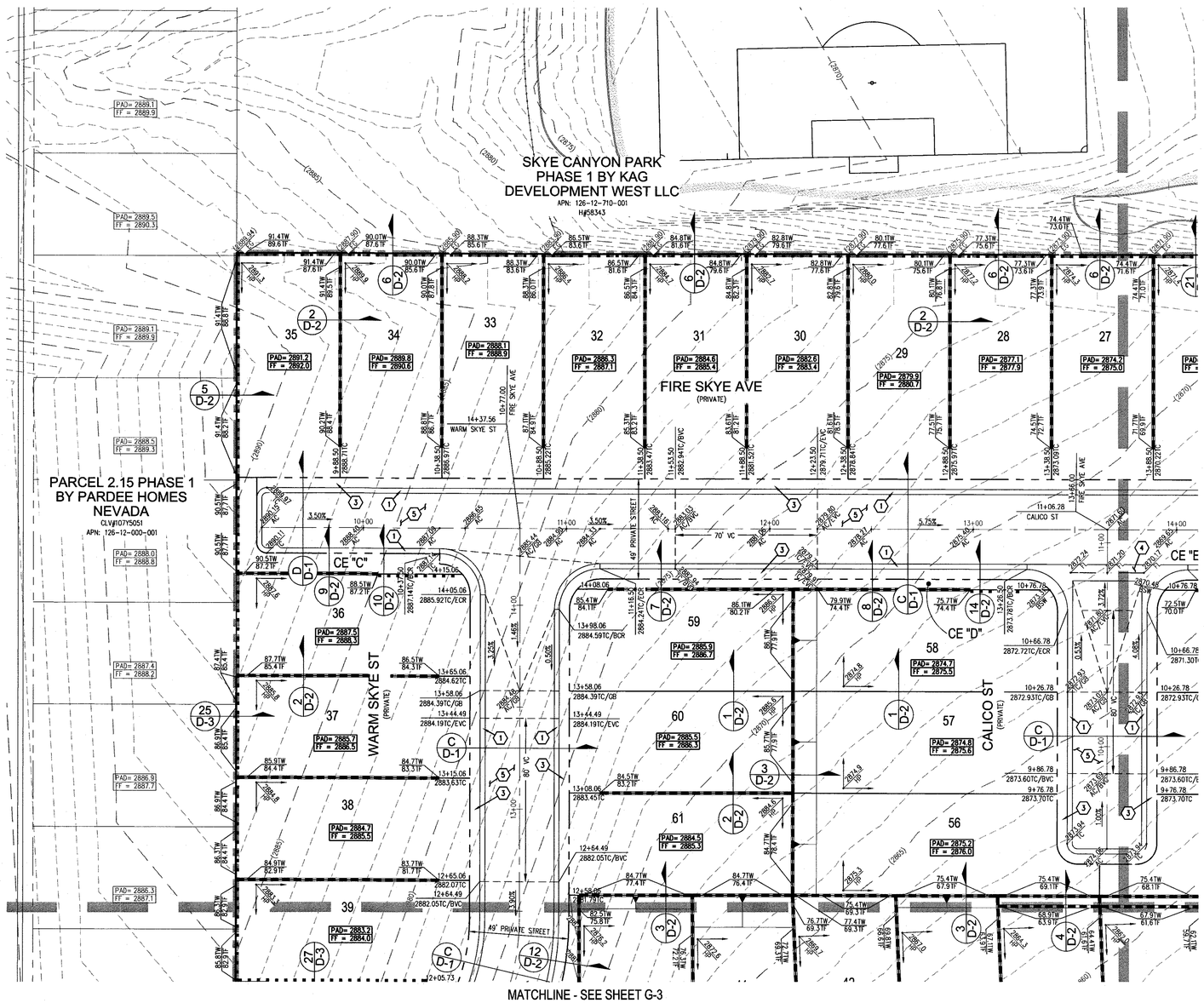
PROJECT NO.
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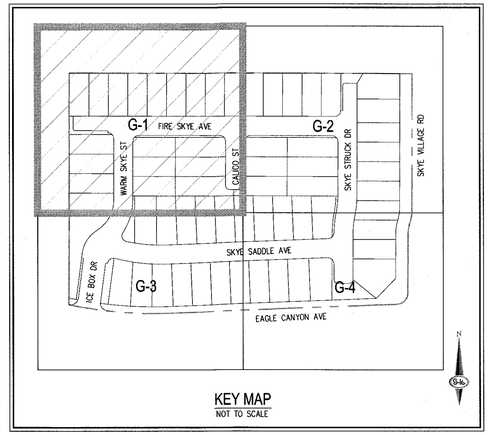


6/11/18

C-3
SHEET 3 OF 20

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KEY MAP
NOT TO SCALE

SCALE - 1"=30' FEET

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SURVEY NOTE

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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)

SOILS REPORT

SOILS REPORT BY ANGLE ENGINEERING
PROJECT NO. 57024-1 DATED MARCH 9, 2018

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= ##,### CU YDS
FILL= ##,### 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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GRADING NOTES

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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.
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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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.

GRADING NOTES

1. CONSTRUCT 30" ROLL CURB AND GUTTER PER CCAUSD NO. 217.S1. 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
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 26 ON SHEET D-3
5. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
6. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT CCAUSD NO. 235, CASE I & 235.1
7. CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL 32 ON SHEET D-3
8. PERIMETER LANDSCAPE TO BE CONSTRUCTED BY MASTER DEVELOPER
9. INSTALL 20' WIDE GATE PER CCAUSED DWG NO. 425.S1
10. INSTALL WROUGHT IRON FENCE WITH PEDESTRIAN ACCESS GATE PER DETAIL 30 ON SHEET D-3
11. INSTALL "A" TYPE ISLAND CURB PER CCAUSD NO. 219
12. INSTALL 15 LF TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
13. INSTALL 24" CLASS III RCP STORM DRAIN

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 WLL 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 SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (UNSHADED), AREA OUTSIDE THE 0.2% ANNUAL CHANCE (500 YEAR) FLOODPLAIN, PER THE FEMA FIRM PANELS 32003C1750E DATED SEPTEMBER 27, 2002.

DRAINAGE EASEMENT NOTE

ALL PRIVATE STREETS, DRAINAGE EASEMENTS AND COMMON LOTS ARE PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE HOA

BONDABLE DRAINAGE QUANTITIES (PRIVATE)

8' WIDE CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	2718
24" RCP CLASS III STORM DRAIN	LF	72
15.0' TYPE "CM2" DROP INLET	EA	1

FLOOD CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY DS4984A ON FILE AT CITY OF LAS VEGAS FOR THE SUBJECT PROJECT.

STANLEY OKEY AMADI, P.E. 21724 DATE

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 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14
GRADING PLAN - I

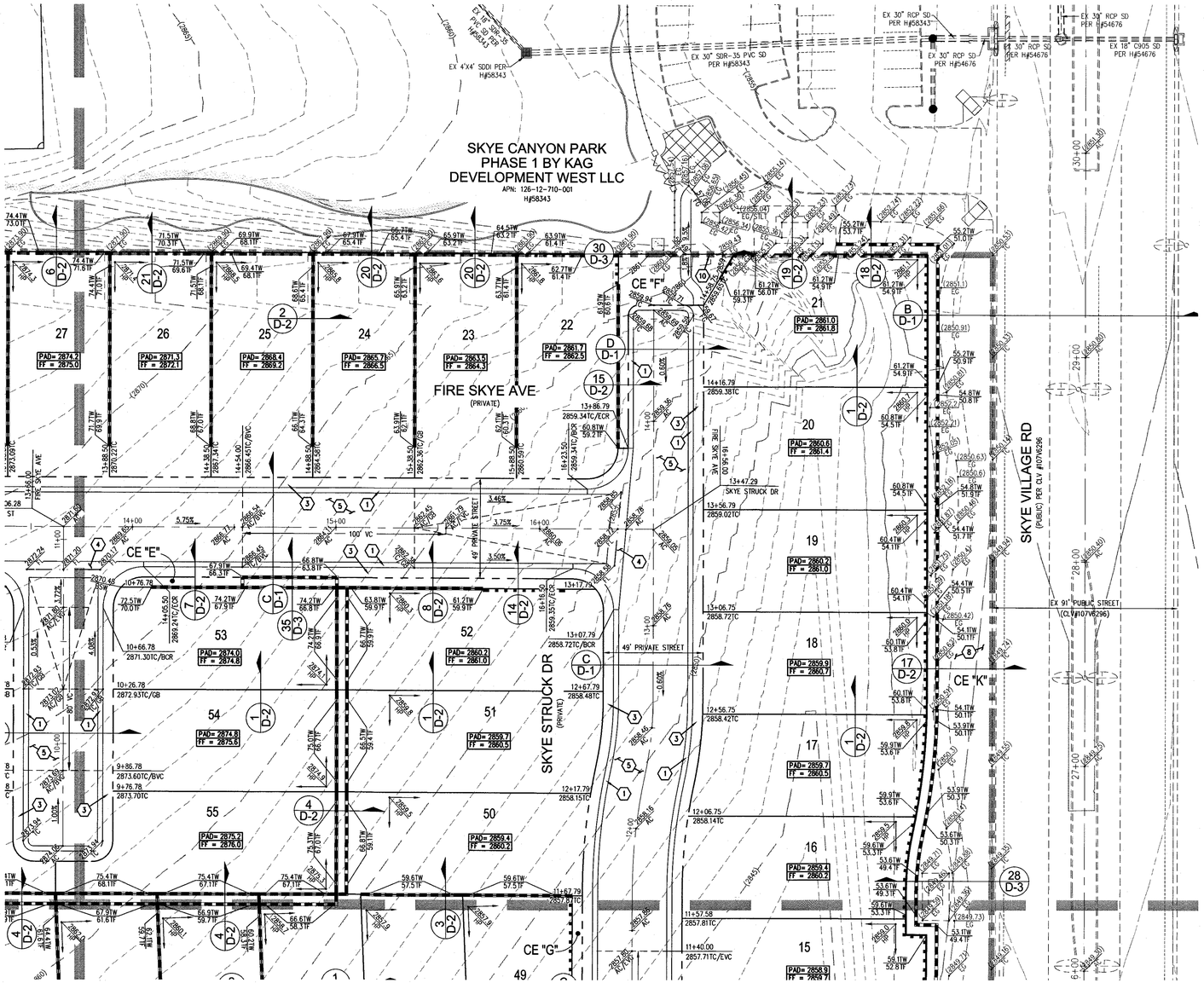
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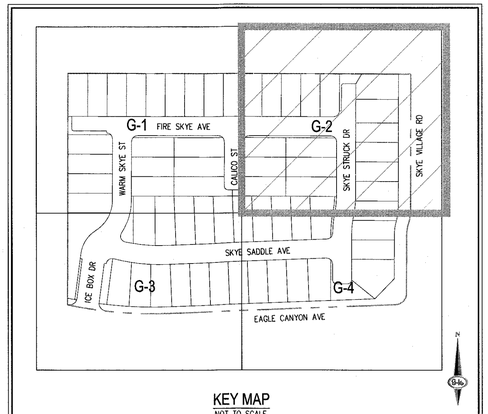
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DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS
PROJECT NO.
OLY1719-000

STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
STATE OF NEVADA
PROFESSIONAL ENGINEER
06/11/18

G-1
SHEET 4 OF 20

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NOT TO SCALE

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5. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE
6. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT CCAUSD NO. 235, CASE 1 & 235.1
7. CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL 32 ON SHEET D-3
8. PERIMETER LANDSCAPE TO BE CONSTRUCTED BY MASTER DEVELOPER
9. INSTALL 20' WIDE GATE PER CCAUSD DWG NO. 425.S1
10. INSTALL WROUGHT IRON FENCE WITH PEDESTRIAN ACCESS GATE PER DETAIL 30 ON SHEET D-3
11. INSTALL "A" TYPE ISLAND CURB PER CCAUSD NO. 219
12. INSTALL 15 LF TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
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8' WIDE CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	2718
24" RCP CLASS III STORM DRAIN	LF	72
15.0' TYPE "CM2" DROP INLET	EA	1

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STANLEY OKEY AMADI, P.E. 21724 DATE

FAST
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FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14

GRADING PLAN - II

S12 T19 R59

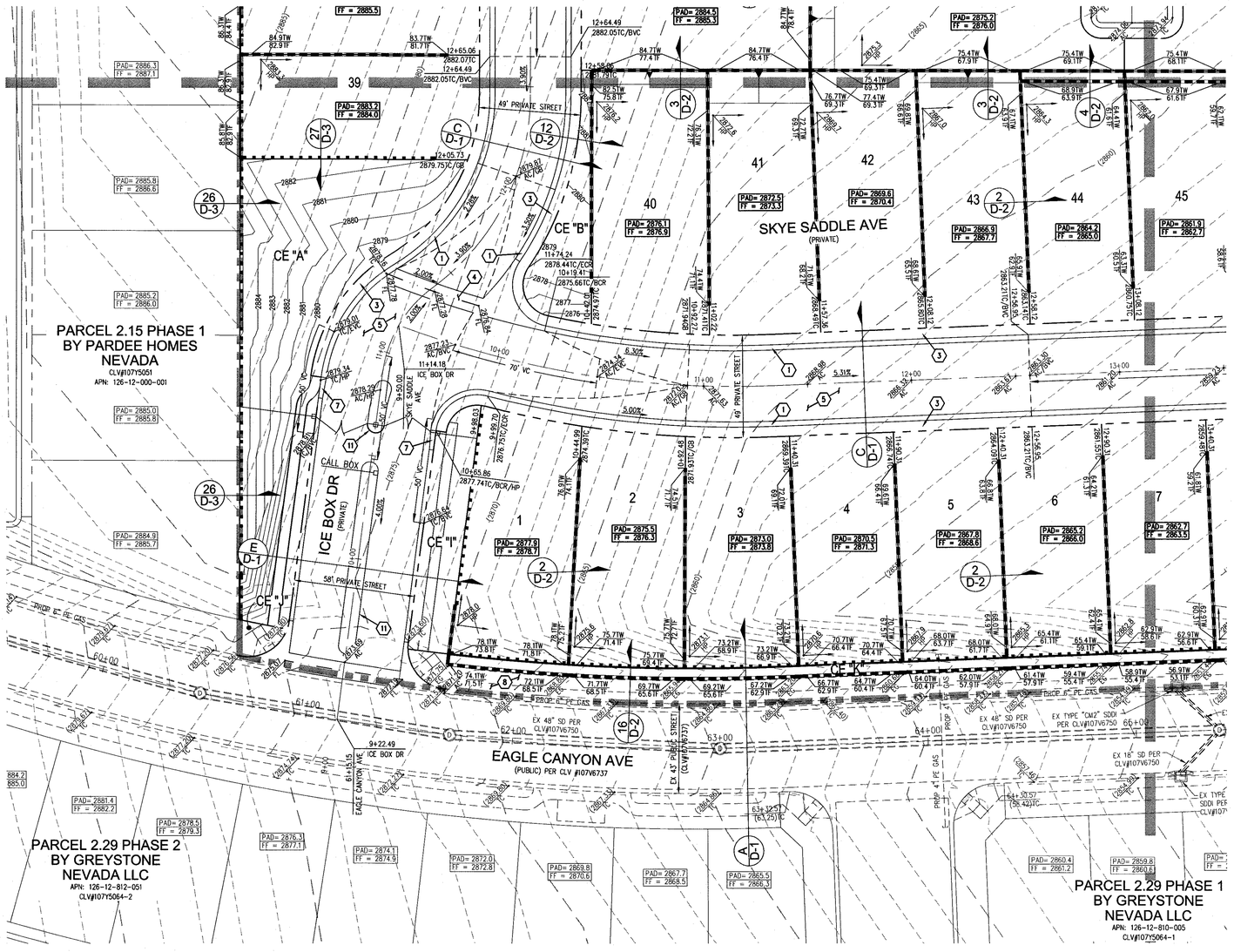
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DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS

PROJECT NO.
OLY1719-000

STANLEY OKEY AMADI Exp. 12/31/2018 CIVIL No. 21724 STATE OF NEVADA
6/11/18

G-2
SHEET 5 OF 20

J:\oly1719.000 skye canyon parcel 2.14\dwg\mmgrov\oly1719-000 grd.dwg 6/11/2018 1:23 PM Dominic Pandiscon





0 30 60
SCALE - 1"=30' FEET

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SURVEY NOTE

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ELEVATION NOTE

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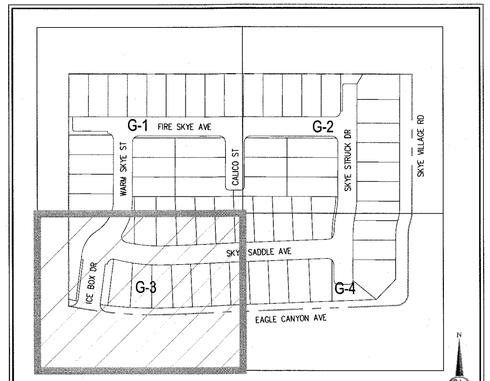
SOILS REPORT

SOILS REPORT BY ANGLE ENGINEERING
PROJECT NO. 57024-1 DATED MARCH 9, 2018

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= ##,### CU YDS
FILL= ##,### 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.



KEY MAP
NOT TO SCALE

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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.

GRADING NOTES

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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.
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7. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CITY OF LAS VEGAS BUILDING DEPARTMENT.
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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 EXIST) 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 NVR100000, SECTION III.A.5.
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STANLEY OKEY AMADI, P.E. 21724 DATE

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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14
GRADING PLAN - III

S12 T19 R59

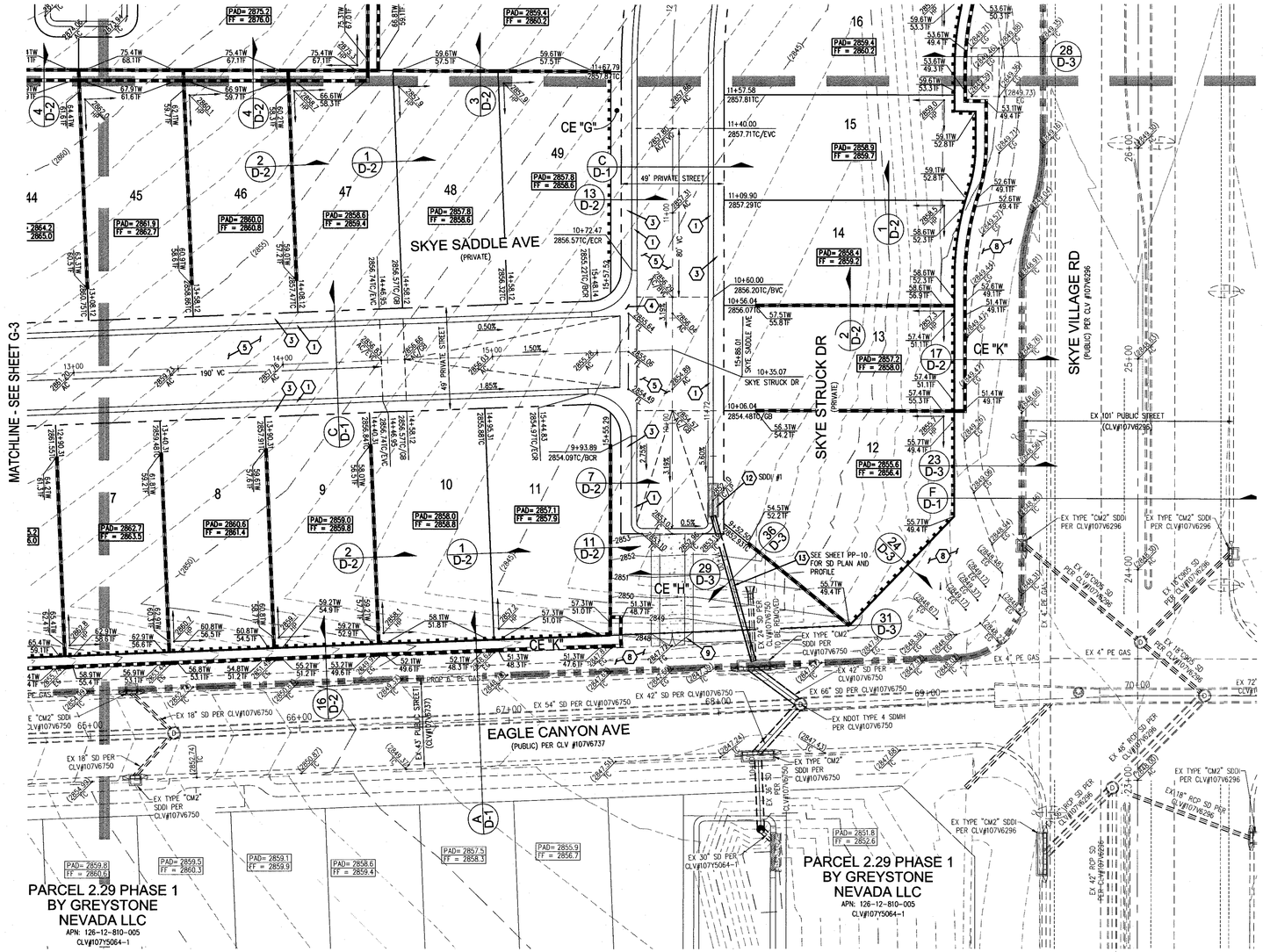
DATE: 6/11/18
DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS

PROJECT NO.
OLY1719-000

PROFESSIONAL ENGINEER — STATE OF NEVADA — STANLEY OKEY AMADI — Exp. 12/31/2018 — CIVIL — No. 21724
6/11/18

G-3
SHEET 6 OF 20

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N

SCALE - 1"=30' (0, 30, 60 FEET)

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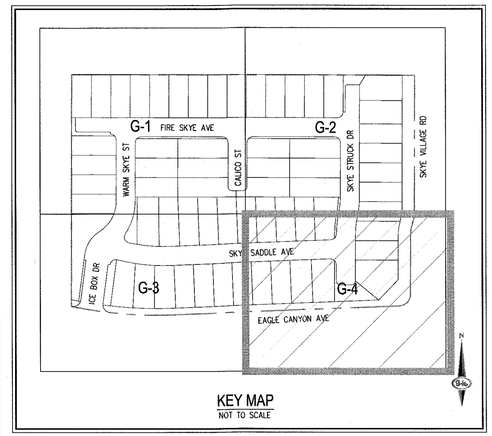
SOILS REPORT

SOILS REPORT BY ANGLE ENGINEERING
PROJECT NO. 57024-1 DATED MARCH 9, 2018

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
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FILL= ##,### CU YDS

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STANLEY OKEY AMADI, P.E. 21724 DATE







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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

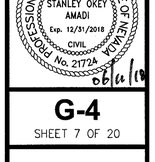
SKYE CANYON II PARCEL 2.14

GRADING PLAN - IV

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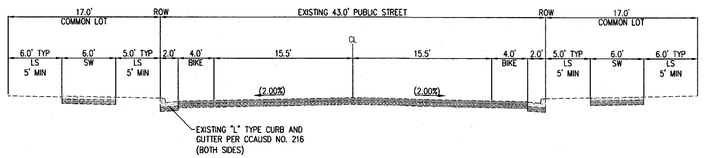
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DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS

PROJECT NO.
OLY1719000



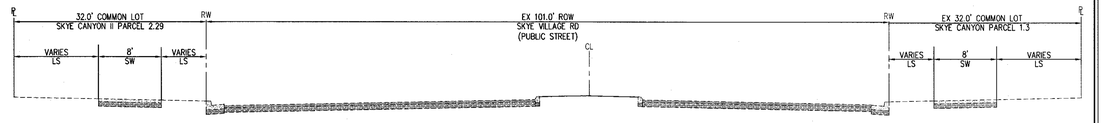
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SHEET 7 OF 20

J:\oly\719.000 skye canyon parcel 2.14\dwg\improv\oly\719-000 grd.dwn 6/11/2018 1:24 PM Dominic Pavalipon



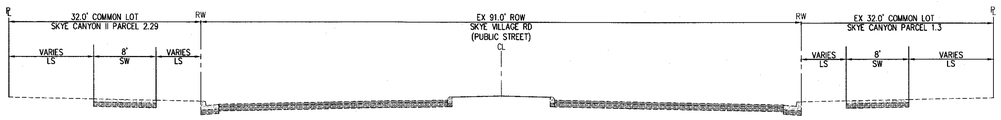
A. EXISTING STREET SECTION (PUBLIC) — EAGLE CANYON AVE

NOT TO SCALE



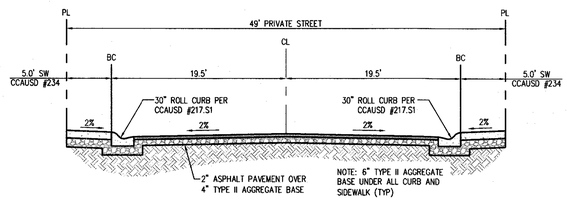
F. EXISTING STREET SECTION (PUBLIC) — SKYE VILLAGE RD

NOT TO SCALE



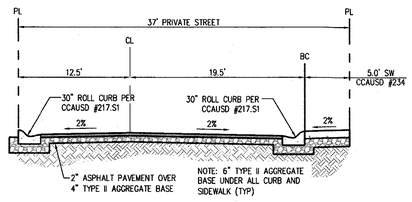
B. EXISTING STREET SECTION (PUBLIC) — SKYE VILLAGE RD

NOT TO SCALE



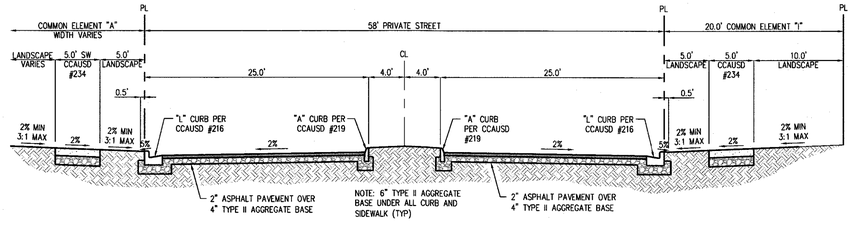
C. 49' INTERIOR STREET SECTION (PRIVATE)

NOT TO SCALE



D. 37' INTERIOR STREET SECTION (PRIVATE)

NOT TO SCALE



E. 58' ENTRY STREET SECTION (PRIVATE)

NOT TO SCALE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14

STREET SECTIONS AND DETAILS

S12 T19 R59

DATE: 6/11/18

DRAFTER: DNP

DESIGNER: DNP

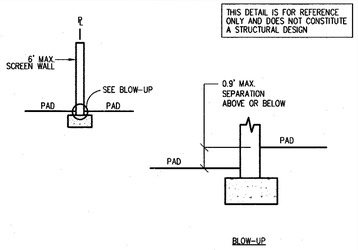
CHECKED: STS

PROJECT NO.
OLY1719-000

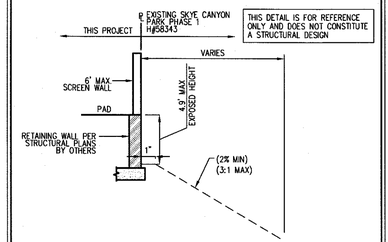
PROFESSIONAL ENGINEER - STATE OF NEVADA
STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
6/11/18

D-1
SHEET 8 OF 20

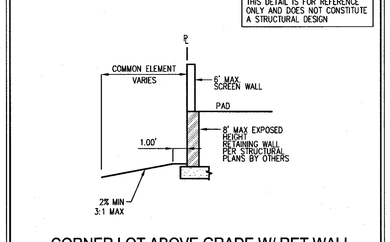
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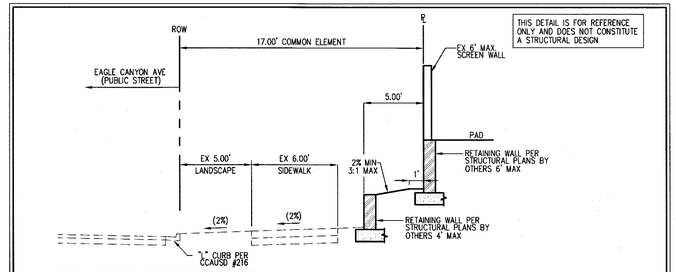
1. PAD TO PAD W/O RET WALL
NOT TO SCALE



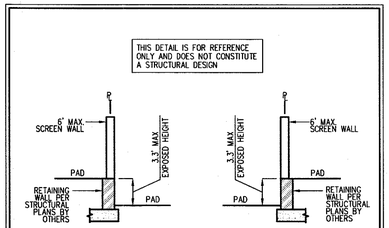
6. GRADING SECTION
NOT TO SCALE



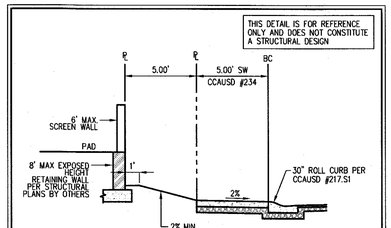
CORNER LOT ABOVE GRADE W/ RET WALL
11. AND ADJACENT COMMON ELEMENT
NOT TO SCALE



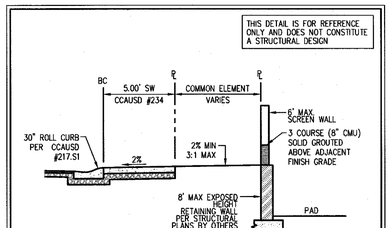
16. PERIMETER STREET SECTION WITH DOUBLE RETAINING WALL
NOT TO SCALE



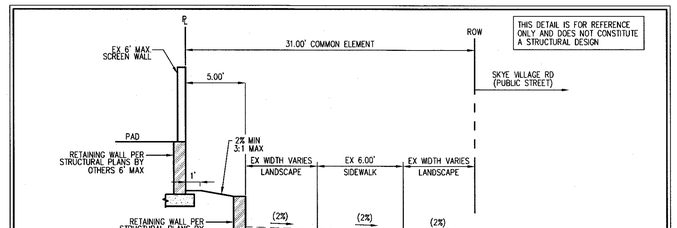
2. SIDEYARD WITH RETAINING WALL
NOT TO SCALE



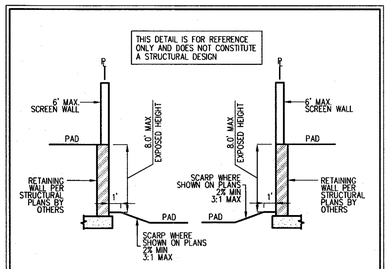
7. CORNER LOT W/ RET WALL ABOVE STREET
NOT TO SCALE



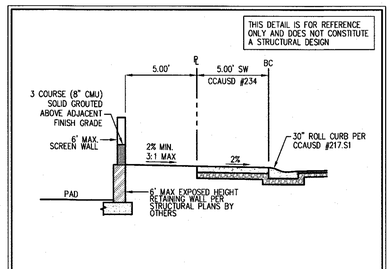
CORNER LOT BELOW STREET W/ RET WALL
12. AND ADJACENT COMMON ELEMENT
NOT TO SCALE



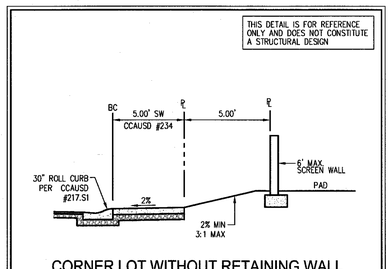
17. PERIMETER STREET SECTION - PAD ABOVE STREET WITH RETAINING WALL
NOT TO SCALE



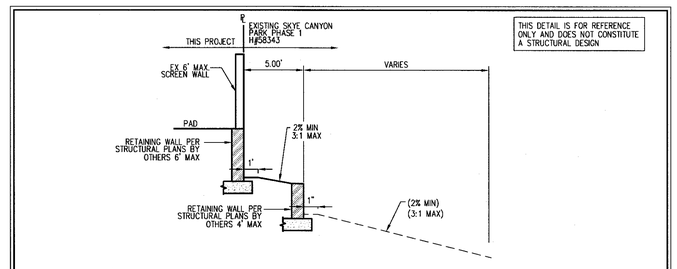
3. REAR YARD WITH RETAINING WALL
NOT TO SCALE



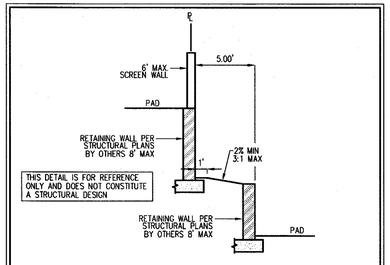
8. CORNER LOT W/ RET WALL BELOW STREET
NOT TO SCALE



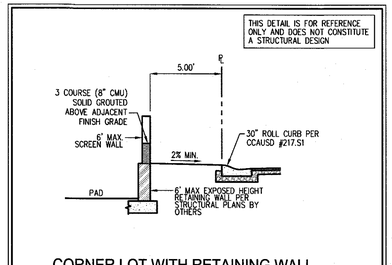
CORNER LOT WITHOUT RETAINING WALL
13. ABOVE ADJACENT GRADE
NOT TO SCALE



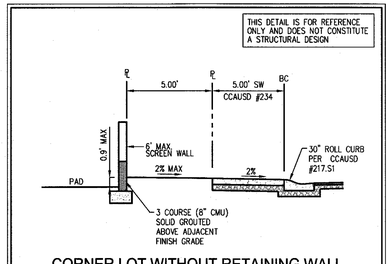
18. PERIMETER STREET SECTION - PAD BELOW STREET WITH RETAINING WALL
NOT TO SCALE



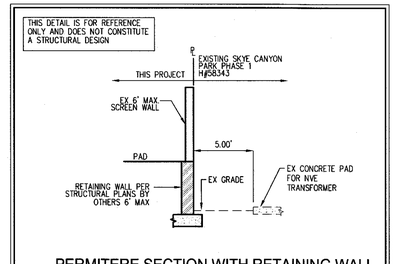
4. REARYARD W/ DOUBLE RETAINING WALL
NOT TO SCALE



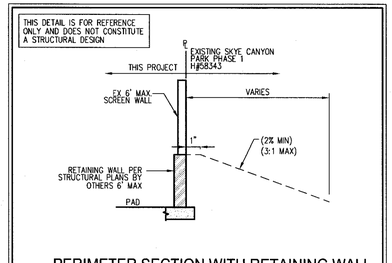
CORNER LOT WITH RETAINING WALL
9. NO SIDEWALK (BELOW ADJACENT GRADE)
NOT TO SCALE



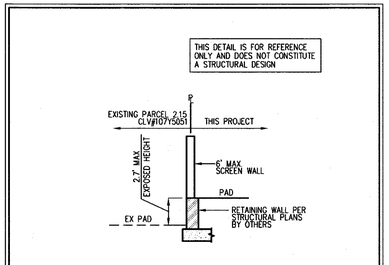
CORNER LOT WITHOUT RETAINING WALL
14. BELOW ADJACENT GRADE
NOT TO SCALE



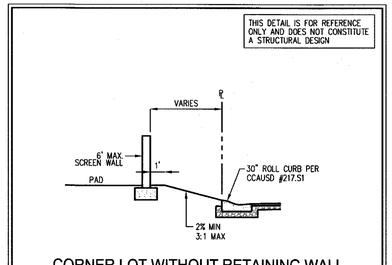
PERMITERE SECTION WITH RETAINING WALL
19. ABOVE ADJACENT GRADE
NOT TO SCALE



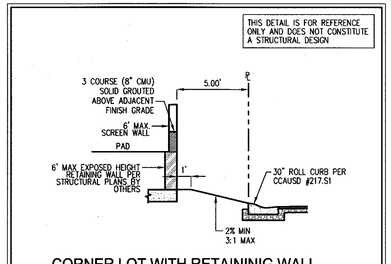
PERIMETER SECTION WITH RETAINING WALL
20. BELOW ADJACENT GRADE
NOT TO SCALE



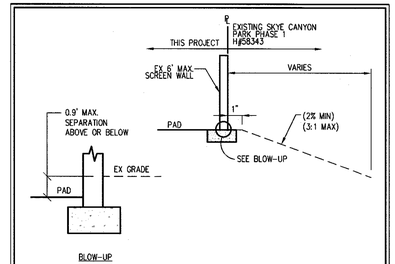
5. SIDEYARD WITH RETAINING WALL
NOT TO SCALE



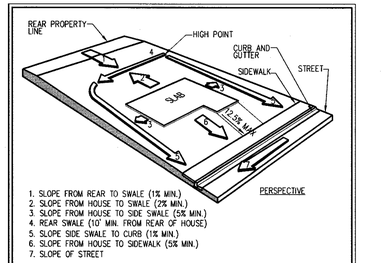
CORNER LOT WITHOUT RETAINING WALL
10. AND NO SIDEWALK
NOT TO SCALE



CORNER LOT WITH RETAININIG WALL
15. NO SIDEWALK (ABOVE ADJACENT GRADE)
NOT TO SCALE



21. PERIMETER SECTION WITHOUT RETAINING
NOT TO SCALE



22. TYPE "A" LOT GRADING (TYP.)
NOT TO SCALE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

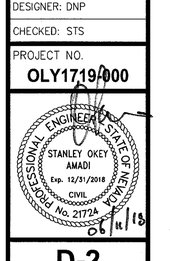
NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14

GRADING SECTIONS AND DETAILS - I

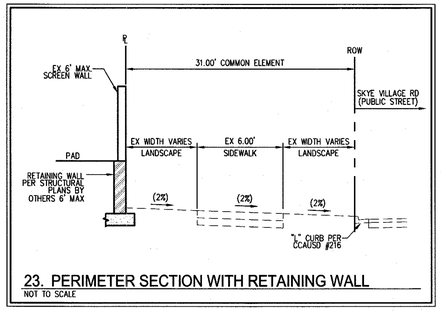
S12 T19 R59

DATE: 6/11/18
DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS
PROJECT NO. OLY1719.000



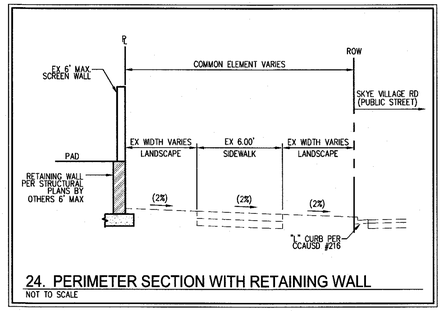
D-2
SHEET 9 OF 20

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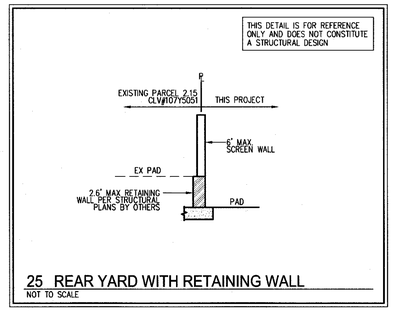
23. PERIMETER SECTION WITH RETAINING WALL

NOT TO SCALE



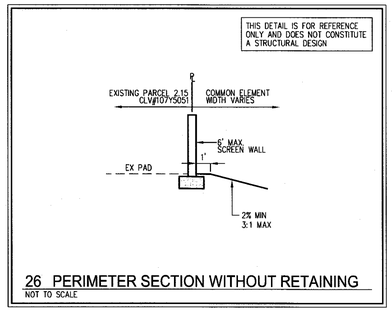
24. PERIMETER SECTION WITH RETAINING WALL

NOT TO SCALE



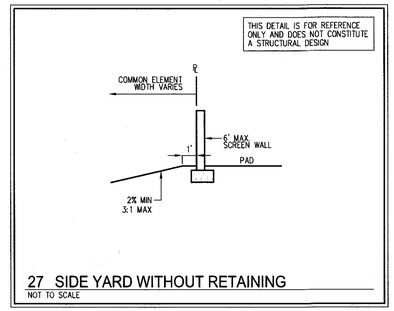
25 REAR YARD WITH RETAINING WALL

NOT TO SCALE



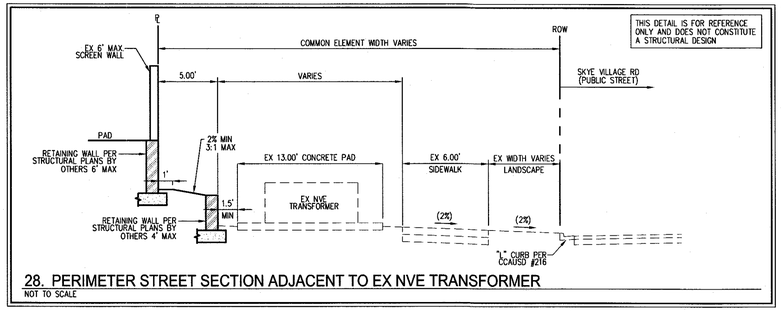
26 PERIMETER SECTION WITHOUT RETAINING

NOT TO SCALE



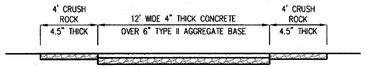
27 SIDE YARD WITHOUT RETAINING

NOT TO SCALE



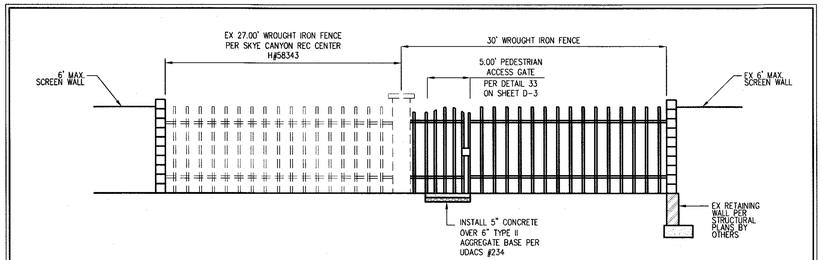
28. PERIMETER STREET SECTION ADJACENT TO EX NVE TRANSFORMER

NOT TO SCALE



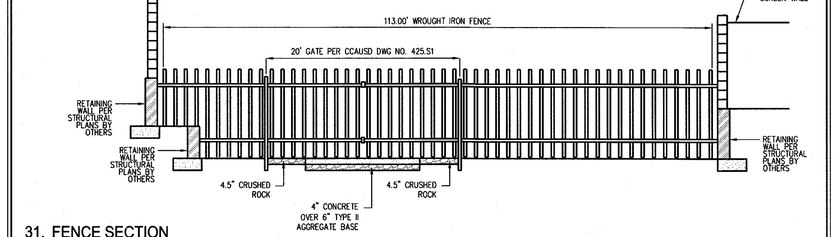
29 ACCESS ROAD SECTION

NOT TO SCALE



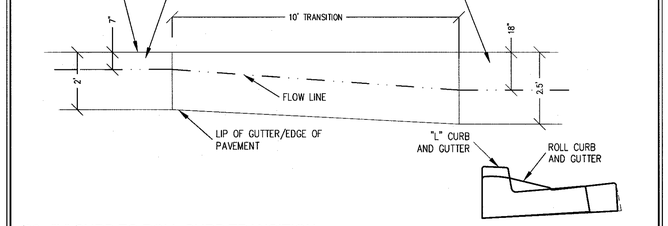
30. FENCE SECTION

NOT TO SCALE



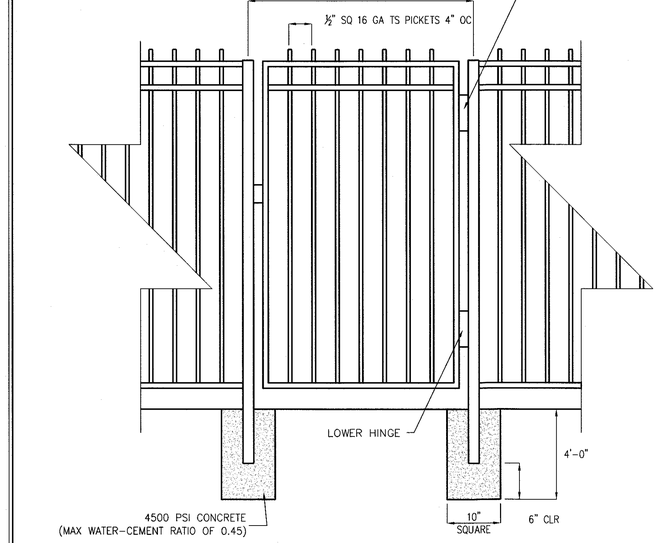
31. FENCE SECTION

NOT TO SCALE



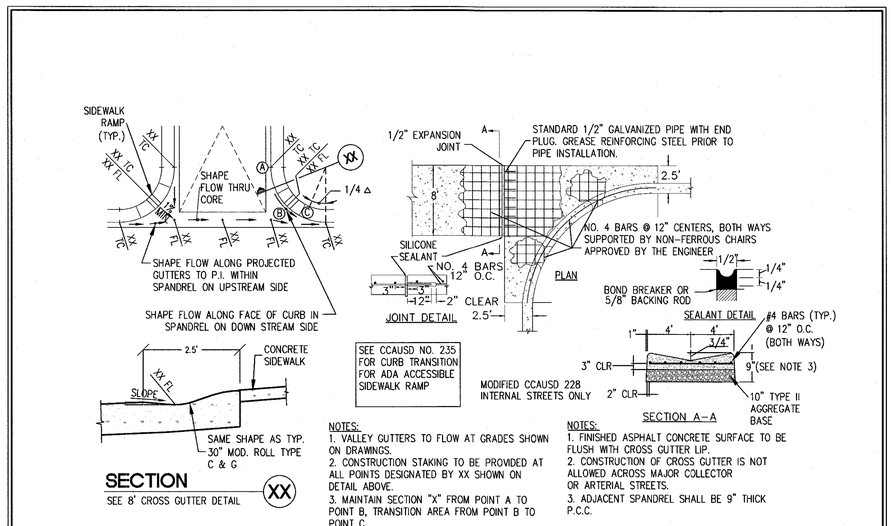
32. "L" CURB TO ROLL CURB TRANSITION

NOT TO SCALE



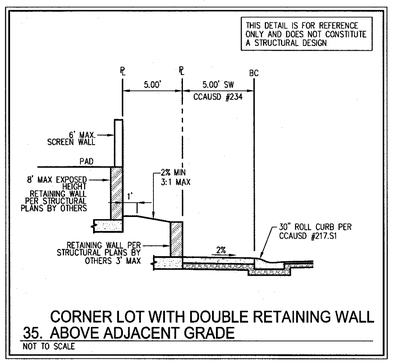
33. PEDESTRIAN GATE

NOT TO SCALE



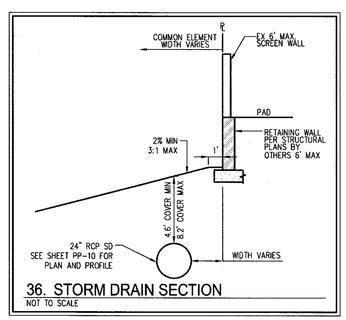
34. MODIFIED 8' WIDE CROSS GUTTER

NOT TO SCALE



CORNER LOT WITH DOUBLE RETAINING WALL
35. ABOVE ADJACENT GRADE

NOT TO SCALE



36. STORM DRAIN SECTION

NOT TO SCALE

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14

GRADING SECTIONS AND DETAILS - II

S12 T19 R59

DATE: 6/11/18

DRAFTER: DNP

DESIGNER: DNP

CHECKED: STS

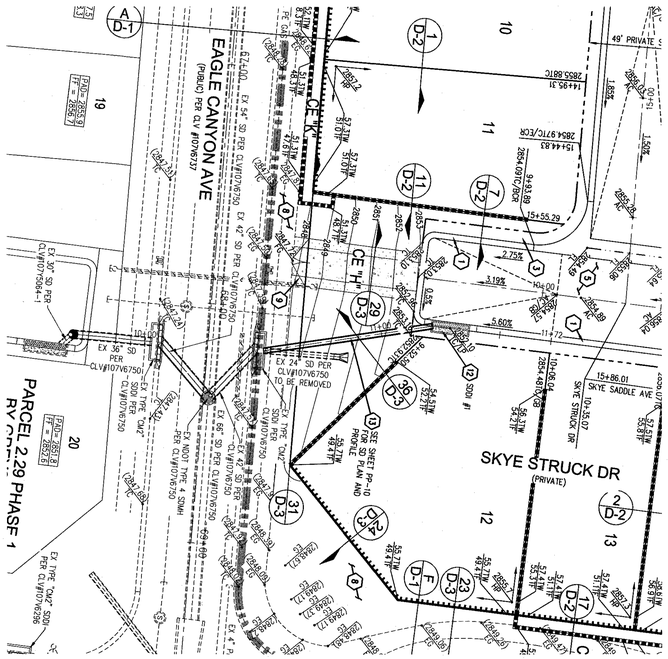
PROJECT NO. OLY1719-000

PROFESSIONAL ENGINEER STATE OF NEVADA
STANLEY OKEY AMADI
Exp. 12/31/2018
CIVIL
No. 21724
6/11/18

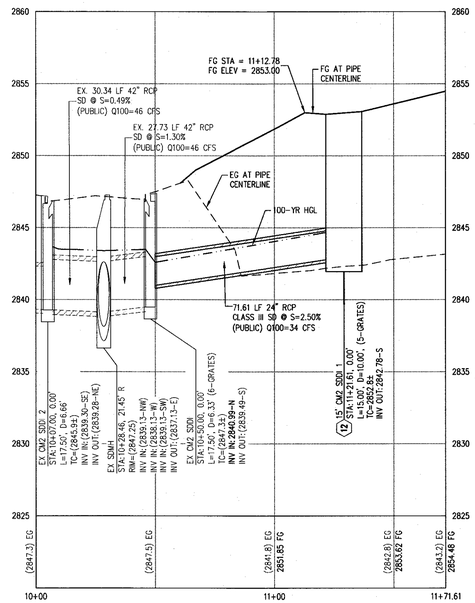
D-3

SHEET 10 OF 20

J:\oly1719.000 skye canyon parcel 2.14\dwg\improv\oly1719-000 ctl2.dwg 6/11/2018 1:24 PM Dominic Ponsiglion



SD #1 - PLAN VIEW
(PUBLIC)



SD #1 - PROFILE VIEW
HORIZ: 1" = 30'
VERT: 1" = 3'

0 30 60
SCALE - 1"=30' FEET

N

CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SURVEY NOTE

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

SOILS REPORT

SOILS REPORT BY ANGLE ENGINEERING
PROJECT NO. 57024-1 DATED MARCH 9, 2018

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= ##,### CU YDS
FILL= ##,### 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.

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/REPLEPING 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 EXIST) WITHIN THE SIGHT VISIBILITY ZONES.

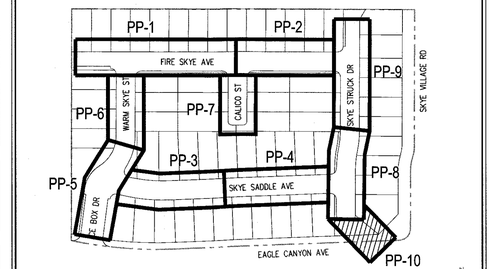
LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDELINES

(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 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 SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (UNSHADED), AREA OUTSIDE THE 0.2% ANNUAL CHANCE (500 YEAR) FLOODPLAIN, PER THE FEMA FIRM PANELS 32003C1750E DATED SEPTEMBER 27, 2002.



KEY MAP
NOT TO SCALE

GRADING NOTES

1. CONSTRUCT 30" ROLL CURB AND GUTTER PER CCAUSD NO. 217.S1. 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
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 26 ON SHEET D-3
5. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE III AGGREGATE BASE
6. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT CCAUSD NO. 235, CASE I & 235.1
7. CONSTRUCT 10' TRANSITION FROM "L" CURB TO ROLL CURB PER DETAIL 32 ON SHEET D-3
8. PERIMETER LANDSCAPE TO BE CONSTRUCTED BY MASTER DEVELOPER
9. INSTALL 20' WIDE GATE PER CCAUSED DWG NO. 425.S1
10. INSTALL WROUGHT IRON FENCE WITH PEDESTRIAN ACCESS GATE PER DETAIL 30 ON SHEET D-3
11. INSTALL "A" TYPE ISLAND CURB PER CCAUSD NO. 219
12. INSTALL 15 LF TYPE "CM2" DROP INLET PER CCAUSD #412.1 AND #421
13. INSTALL 24" CLASS III RCP STORM DRAIN

DRAINAGE EASEMENT NOTE

ALL PRIVATE STREETS, DRAINAGE EASEMENTS AND COMMON LOTS ARE PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE HOA

BONDABLE DRAINAGE QUANTITIES (PRIVATE)

8' WIDE CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	2718
24" RCP CLASS III STORM DRAIN	LF	72
15.0' TYPE "CM2" DROP INLET	EA	1

FLOOD CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY DS4984A ON FILE AT CITY OF LAS VEGAS FOR THE SUBJECT PROJECT.

STANLEY OKEY AMADI, P.E. 21724 DATE

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 811
OR
1-800-227-2600

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

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

CITY OF LAS VEGAS, NV

NINETY-FIVE MANAGEMENT, LLC

SKYE CANYON II PARCEL 2.14
PLAN AND PROFILE

S12
T19
R59

DATE: 6/11/18
DRAFTER: DNP
DESIGNER: DNP
CHECKED: STS

PROJECT NO.
OLY1719-000

PROFESSIONAL ENGINEER — STATE OF NEVADA — STANLEY OKEY AMADI — Exp. 12/31/2018 — CIVIL — No. 21724 — 6/11/18

PP-10
SHEET 20 OF 20

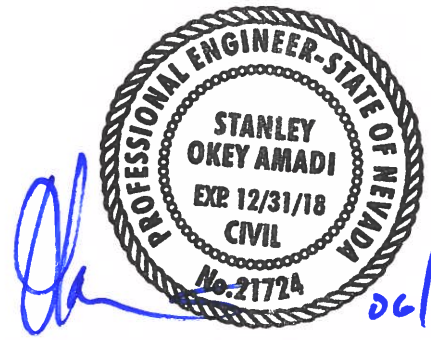
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TECHNICAL DRAINAGE STUDY
ADDENDUM
Skye Canyon II Parcel 2.14
City of Las Vegas, Nevada

Job No.: OLY1719.000
Date: June 2018

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



Stanley Okey Amadi, P.E.
NV Professional Engineer No. 21724

Assisted by: Cameron Bencini, P.E

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Skye Canyon II Parcel 2.14 – Addendum Date: June 2018

Location of Development: a) Descriptive (Cross Streets): North/South: Skye Village Road

East/West: Eagle Canyon Avenue

b) Section: 12 Township: 19 South Range: 59 East

c) APN: 126-12-710-002

Name of Owner/Developer: KAG Development West, LLC / Ninety-Five Management, LLC

Telephone No.: 702-220-6565 Fax No.: 702-220-6566 E-mail Address: mbolduc@olympiacompanies.com

Address: 11411 Southern Highlands Parkway, Suite 300; Las Vegas, NV 89141

Contact Person – Name: Stanley Okey Amadi, P.E. Telephone No.: 702-284-5300

*E-mail Address: samadi@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	☐	Roadway & Storm Drain Infrastructure

1. Total Owned Land Area: At Site: 12.25 Acres Being Developed/Disturbed: 12.25 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

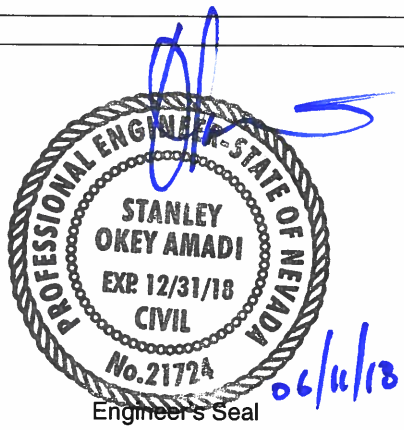
4. Proposed type of development (Residential, Commercial, Etc.): Single-Family Residential

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

6. Has the site drainage been evaluated in the past? ☒ Yes** ☐ No If yes, please identify documentation: *Master Drainage Study for Skye Canyon* (SHG, DS4420), *Technical Drainage Study for Skye Canyon Phase 2 Infrastructure* (SHG, DS4739) *& TDS Updates 1 thru 4*

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Drains to local storm drain that discharges to the trunkline in Eagle Canyon Avenue.

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



Engineer's Seal

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

*Newly Required Field

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

Revision	Date

Local Entity File No.

REFERENCE: ***SHG Job No. OLY1709.000***

STANDARD FORM 1

Updated 05/01/2008

OLY1719.000

June 11, 2018

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: Addendum to the Technical Drainage Study for Skye Canyon Parcel 2.14 (CLV DS4984A)

Dear Mr. Sung:

This letter is submitted in response to comments contained in the May 14, 2018 review memorandum, regarding the above referenced project. A copy of the City of Las Vegas (CLV) Department of Public Works comment letter has been provided in Appendix A.

The comments have been individually addressed as follows:

1. **Comment:** *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.*

   Response: Noted. A copy of the drainage study will be submitted to CCRFCD for concurrence upon receipt of a conditional approval from CLV.

2. **Comment:** *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.*

   Response: A copy of the NOFA documents have been provided in Appendix C.

3. **Comment:** *All roadway and flood control facilities as proposed and approved in Skye Canyon Phase 2 Infrastructures must be substantially constructed prior to the issuance of occupancy permits.*

   Response: Noted.

4. **Comment:** *It appears that flows impacting the southeastern corner of the site (at SDDI #1) will overtop the roll curb to the south before the drop inlet is able to capture all the flow as calculated. Review and revise the grading in this area to direct the flows back towards the proposed drop inlet.*

Response: The grading has been revised around SDDI #1 to ensure all flow will be captured by the onsite inlet. Adequate grade difference between the grate elevation and overflow elevation has been provided to ensure that no flow overtops the curb. See revised Improvement Plans provided in Appendix D for the additional detail.

5. **Comment:** *Review and revise the Finish Floor Check Table to ensure the correct high side TC elevations are used—specifically for Lots 14, 21, 35, 50, 55, 56, and 59.*

   Response: The Finished Floor Check Table has been modified to show accurate high-side TC elevations. No modifications to the finished floor elevations has been made. All finished floor elevations meet the City of Las Vegas minimum finished floor criteria. See Appendix B for revised finished floor checks.

6. **Comment:** *Revise the footnotes for the Specific Energy Check Table to match the correct superscript notations.*

   Response: The Specific Energy Check Table has been updated with the correct superscript annotations. See Appendix B for revised finished floor checks.

7. **Comment:** *The proposed storm drain shall be labeled as private and privately maintained.*

   Response: The storm drain label has been revised as private to be privately maintained.

The revised plan, profile and detail sheets adopting the revisions addressed in this letter have been included in Appendix D. If you have any questions or require additional information, please do not hesitate to contact us at 702-284-5300.

Respectfully Submitted,

SLATER HANIFAN GROUP

Cameron Bencini, P.E.
Flood Control Division

cc: Stanley Okey Amadi, P.E. – SHG
Mark Failla, P.E., CFM – SHG
Tracy Stratton – SHG
Jerry Slater, P.E. – SHG

APPENDIX

Appendix A CLV Comment Letter

Appendix B Finished Floor Elevations

Appendix C NOFA Documents

Appendix D Revised Improvement Plans

APPENDIX A

CLV Comment Letter

CITY OF LAS VEGAS **INTER-OFFICE MEMORANDUM**				**DATE:** **May 14, 2018**
TO: **Land Development Services** Department of Building & Safety				**FROM:** Jennifer Shinn Flood Control Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for: **Skye Canyon Parcel 2.14**			**COPIES TO:** Slater-Hanifan Group, Inc.
Cross Streets:	NWC of Eagle Canyon & Skye Village			Ninety-Five Management, LLC
File Number:	F:\Depot\DSMemos\DS4984A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	126-12-710-002			
Zoning Action:	TMP-72766			
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	4/26/2018	5/10/2018	See Comments Below	$400.00	495305: $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. 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. 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. All roadway and flood control facilities as proposed and approved in Skye Canyon Phase 2 Infrastructures must be substantially constructed prior to the issuance of occupancy permits.
4. It appears that flows impacting the southeastern corner of the site (at SDDI #1) will overtop the roll curb to the south before the drop inlet is able to capture all the flow as calculated. Review and revise the grading in this area to direct the flows back towards the proposed drop inlet.
5. Review and revise the Finish Floor Check Table to ensure the correct high side TC elevations are used—specifically for Lots 14, 21, 35, 50, 55, 56, and 59.
6. Revise the footnotes for the Specific Energy Check Table to match the correct superscript notations.
7. The proposed storm drain shall be labeled as private and privately maintained.

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/R59E/12
AREA F-12

APPENDIX B

Finished Floor Computations

Specific Energy Check							
Lot Number	High TC[1]	High FL[2]	Section	Specific Energy[3]	Min FF[4]	Design FF	Check
12	2854.48	2854.10	O-1(Max)	1.05	2855.15	2856.40	OK
13	2856.07	2855.69	O-1(Max)	1.05	2856.74	2858.00	OK
18	2859.02	2858.64	O-1(Max)	1.05	2859.69	2860.70	OK
19	2858.72	2858.34	O-1(Max)	1.05	2859.39	2861.00	OK
26	2870.22	2869.84	O-1(Max)	1.05	2870.89	2872.10	OK
27	2873.09	2872.71	O-1(Max)	1.05	2873.76	2875.00	OK

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 obain the High FL elevation

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

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

SKYE CANYON II PARCEL 2.14 - ADDENDUM
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
14	O-1	2857.29	2856.91	0.54	2857.99	2857.79	2859.2	OK	OK	
21	O-1	2859.59	2859.21	0.54	2860.29	2860.09	2861.8	OK	OK	
35	O-1	2889.97	2889.59	0.54	2890.67	2890.47	2892.0	OK	OK	
50	O-1	2858.15	2857.77	0.54	2858.85	2858.65	2860.2	OK	OK	
55	O-1	2873.94	2873.56	0.54	2874.64	2874.44	2876.0	OK	OK	
56	O-1	2873.94	2873.56	0.54	2874.64	2874.44	2876.0	OK	OK	
59	O-1	2884.59	2884.21	0.54	2885.29	2885.09	2886.7	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:

-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.

-The finished floor shall be set a vertical distance of at least 6-inches above the highest adjacent top of curb.

APPENDIX C

NOFA Documents

DIY
Sky 2.14

April 11, 2018

Mr. Ben Morris
KAG Development West, LLC
11411 Southern Highlands Parkway, Ste. 300
Las Vegas, Nevada 89141

RE: TMP-72766 [PRJ-72678] - TENTATIVE MAP
PLANNING COMMISSION MEETING OF APRIL 10, 2018

Dear Applicant:

Your request for a Tentative Map FOR A 61-LOT SINGLE FAMILY RESIDENTIAL SUBDIVISION on 12.25 acres on the northwest corner of Eagle Canyon Drive and Skye Village Road (APN 125-12-710-002), T-D (Traditional Development) Zone [L (Residential Low) Kyle Canyon Special Land Use Designation], Ward 6 (Fiore) [PRJ-72678], was considered by the Planning Commission on April 10, 2018.

The Planning Commission voted to ***APPROVE*** your request, subject to the following:

Planning

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

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

3. Perimeter walls shall conform to the Kyle Canyon Development Standards and Architectural Design Guidelines.

4. Streetscape standards shall comply with the Kyle Canyon Development Standards and Architectural Design Guidelines.

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

LAS VEGAS CITY COUNCIL
CAROLYN G. GOODMAN
Mayor
LOIS TARKANIAN
Mayor Pro Tem
STAVROS S. ANTHONY
BOB COFFIN
STEVEN G. SEROKA
MICHELE FIORE

SCOTT D. ADAMS
City Manager

CITY HALL
495 S. MAIN ST.
LAS VEGAS, NV 89101
702.229.6011 | VOICE
711 | TTY

cityoflasvegas
lasvegasnevada.gov

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

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

Public Works

8. Private streets must be granted and labeled on the Final Map for this site as Public Utility Easements (P.U.E.), Public Sewer Easements, and Public Drainage Easements to be privately maintained by the Homeowner's Association.

9. All landscaping and private improvements installed with this project shall be situated and maintained so as to not create sight visibility obstructions for vehicular traffic at all development access drives and abutting street intersections. Per condition of approval # 19 of the Skye Canyon II Parent Tentative Map (TMP-65803), landscaping within calculated Site Visibility Restriction Zones (SVRZs) will be limited in height by the City Traffic Engineer.

10. No structures, and no trees or vegetation taller than three feet shall be allowed within any Public Sewer Easements. Grant a minimum 20-foot wide Public Sewer Easement with private surface maintenance by the Homeowner's Association (HOA) for the public sewer line within Common Element "C". Construct and maintain a 12-foot wide paved path to access this sewer line.

11. Meet with the Fire Protection Engineering Section of the Department of Fire Services to discuss fire requirements for the proposed subdivision. The design and layout of all onsite private circulation and access drives shall meet the approval of the Department of Fire Services. No parking is allowed on one side of stub streets where the curb to curb width is 32 feet unless allowed by the Fire Code.

12. Prior to the release of a Final Map for recordation on this site, the property owner must contact the Special Improvement District Section of the Department of Public Works (702-229 2136) and sign a notarized affidavit acknowledging and agreeing to a per lot assessment of all lots that will be created through a Final Map for this site. The City shall prepare an apportionment report following recordation of the Final Map and this apportionment report must be signed by the property owner prior to the release of any building permits for this site.

13. A working sanitary sewer connection shall be in place prior to final inspection of any units within this development. Full permanent improvements on all major access streets, including all required landscaped areas between the perimeter wall and adjacent public street, shall be constructed and accepted by the City prior to issuance of any building permits beyond 50% of all units within this development. All off-site improvements adjacent to this site, including all required landscaped areas between the perimeter walls and adjacent public streets, shall be constructed and accepted prior to issuance of building permits beyond 75%. The above thresholds notwithstanding, all required improvements shall be constructed in accordance with the approved Development Agreement.

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

15. The approval of all Public Works related improvements shown on this Tentative Map is in concept only. Specific design and construction details relating to size, type and/or alignment of improvements, including but not limited to street, sewer and drainage improvements, shall be resolved prior to approval of the construction plans by the City. A deviation from Standard Drawing #222.1 for gated entry

queuing length is hereby approved. No other deviations from adopted City Standards shall be allowed unless specific written approval for such is received from the City Engineer prior to the recordation of a Final Map or the approval of subdivision-related construction plans, whichever may occur first. Approval of this Tentative Map does not constitute approval of any deviations. If such approval cannot be obtained, a revised Tentative Map must be submitted showing elimination of such deviations. We note that curved sewers are not allowed and do not comply with City Standards.

16. Comply with all applicable conditions of approval for the Sky Canyon II Parent Tentative Map (TMP-65803) and any other site related actions.

This action by the Planning Commission on **April 10, 2018** is final unless a written appeal is filed with the City Clerk within seven days of the date of the Planning Commission's decision as allowed by code or there is a review action filed by the City Council within the same time period. For additional information on appeals or review requests submitted please access http://www.lasvegasnevada.gov/CheckStatus/DevelopmentApp.htm, or contact the Department of Planning and Development at 702.229.6301 after ***April 17, 2018***. No building permits or business licenses related to these items shall be issued prior to the expiration of the required ten day waiting period, or until any filed appeal is resolved pursuant to LVMC Title 19.18.

Sincerely,

Paul Bengtson
Senior Management Analyst
Case Planning Division

PB:nl

cc:

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APPENDIX D

Revised Improvement Plans