DS #: 4627

APN: 125-21-102-009

PROJECT: SOMERSET ACADEMY — PHASE IV

SUBMITTAL: 2ND

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: September 28, 2015
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Somerset Academy Phase IV (Update to DS4570)**			**COPIES TO:** Collins Engineers, Inc.
Cross Streets:	SEC of Elkhorn Road & Sky Pointe Drive			Boyer Skypointe Academy LC
File Number:	F:\Depot\DSMemos\DS4627C.doc			Bart Anderson, P.E., DevCo
Parcel Number:	125-21-102-009			
Zoning Action:	SDR-59541 & SUP-59539			
FEMA Flood Zone	YES	NO	**X**	
Proposed Storm Drain	YES	NO	**X**	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	9/18/2013	10/2/2013	Not Approved	$400.00	333736: $400
Supplement	10/2/2013	10/2/2013	Approved	N/C	N/C
2nd Submittal	9/15/2015	9/28/2015	See Comments Below	$100.00	414635: $100
			TOTAL FEES (LDDRS):	**$500.00**	**----**

REMARKS:

2nd Submittal: Update for Phase IV Development

1st Submittal & Supplement: Update to add a couple buildings onsite

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.

1. Provide a copy of the zoning/planning conditions associated with this site (**SDR-59541 & SUP-59539**) 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.

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

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

END OF REMARKS

ays

T/R/S: T19S/R60E/21

AREA G-21

****
*** FAX TX REPORT ***
****

TRANSMISSION OK

JOB NO.	2622
DESTINATION ADDRESS	7022488070
PSWD/SUBADDRESS	
DESTINATION ID	
ST. TIME	09/28 16:34
USAGE T	00'33
PGS.	1
RESULT	OK

CITY OF LAS VEGAS
INTER-OFFICE MEMORANDUM

DATE: September 28, 2015

TO:
Land Development Services
Department of Building & Safety

FROM:
Albert Sung, P.E.
Flood Control Project Engineer
Department of Public Works

COPIES TO:
Collins Engineers, Inc.
Boyer Skypointe Academy LC
Bart Anderson, P.E., DevCo

SUBJECT:	Drainage Study for:		
Somerset Academy Phase IV (Update to DS4570)			
Cross Streets:	SEC of Elkhorn Road & Sky Pointe Drive		
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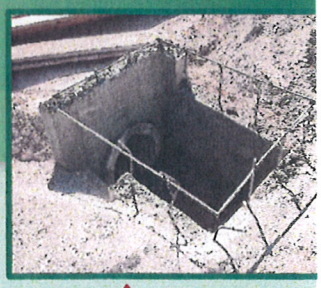
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NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas*









Update #2 to the TDS for Somerset Academy Phase IV

Rec'd: 9/15/15
DS4627-1
G-21
$100
SDR-5954

September 2015

Prepared for:

Ethos Three Architecture
8985 S. Eastern Ave, Suite 216
Las Vegas, NV 89123
Contact: John Lopeman, AIA
LEED AP
702-456-1070

Prepared by:

COLLINS ENGINEERS INC.

3130 S. Durango Drive, Suite 404
Las Vegas, Nevada 89117
702.248.8000 • www.collinsengr.com









Update #2 to the TDS for Somerset Academy Phase IV

September 2015

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HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: **Somerset Academy Phase IV** Date: **9/15/2015**

Location of Development: a) Descriptive (Cross Streets) **SEC of Elkhorn Road and Sky Pointe Drive**

b) Section **21** Township **19 South** Range **60 East**

Name of Owner: **Boyer Skypointe Academy LC** Assessors Parcel Number: **125-21-102-009**

Telephone Number: **(801) 366-7169**

Address: **90 South 400 West #200**
Salt Lake City, UT 84101-1365

Contact Person Name: **James Yancey, P.E.** Telephone Number: **(702) 248-8000**

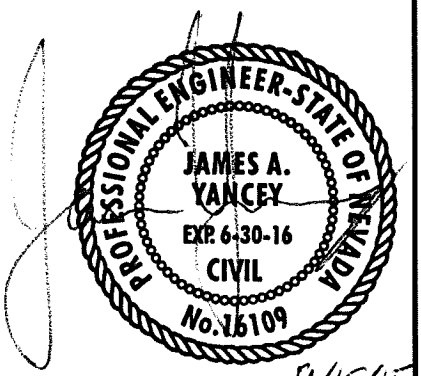
Firm: **Collins Engineers** Fax Number: **(702) 248-8070**

Address: **3130 South Durango Drive, Suite 404** Email: jyancey@collinsengr.com
Las Vegas, NV 89117

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	X	Building Permit		

1. Total Owned Land Area: At Site: **± 12.14 Ac** Being Developed: **± 3 Ac**
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? YES **NO**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? **YES** NO
4. Proposed type of development (Residential, Commercial, Etc.)? **Private School**
5. Approximate upstream land area which drains to the subject site? **0 Ac**
6. Has the site drainage been evaluated in the past? **YES** NO
   If yes, please identify documentation:
   Technical Drainage Study for Somerset Academy (DS 4570 and Update DS 4627B)
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site:
   Into adjacent existing Elkhorn-Cimarron Estates Residential Subdivision
8. Briefly describe your proposed schedule for the subject project: **ASAP**



Engineer's Seal 9/16/15

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.

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

Revision	Date

Local Entity File No.

REFERENCE: Collins Engineers Project No. 9198 **STANDARD FORM 1**

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: **Somerset Academy Phase IV**	Map ID:	
Firm Name: **Collins Engineers**	**Engineer: James Yancey, P.E.**	
Address: **3130 South Durango Drive, Suite 404**		
City: **Las Vegas**	State: **NV**	Zip: **89117**
Phone Number: **(702) 248-8000**	Fax Number: **(702) 248-8070**	
Property: Somerset Academy of Las Vegas		
Address: **90 South 400 West #200**		
City: **Salt Lake City**	State: **UT**	Zip: **84101-1365**
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 (HC&DDM).

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 REQUIREMENTS

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**

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

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, for Flood Control Facilities and Environmental areas with the site delineated.
X		Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.
X		On-site drainage basin maps for existing and proposed conditions showing the existing topography, basin boundaries, concentration points, and on-site and off-site flows in cfs.
N/A		Vicinity Map with local and major cross streets identified and a north arrow.

III. DRAINAGE PLAN

YES	NO	
X		Sheet size: 24" x 36" sealed by a registered engineer in the State of Nevada
X		Minimum scale: 1"=60'
X		Project Name.
X		Vicinity Map with local and major cross streets.
X		Revision box.
X		North arrow and bar scale.
X		Engineer's/consultants 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.

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 finished floor elevations with top-of-curb elevations at upstream end of lot.
X		Proposed typical street sections.
X		Streets with offset crowns.
X		Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
X		Property lines.
X		Right-of-way lines and widths, existing and proposed.
X		Existing improvements and their elevations.
X		Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
X		Concentration points and drainage flow direction with Q_{100} and V_{100} and D_{100} in streets.
X		Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
X		Location and cross-section of street capacity calculations.
N/A		Cross-sectional detail for channels, including cutoff wall locations.
X		Existing and proposed drainage facilities, appurtenances, and connections (i.e., sidewalk, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, material, shape, and slope with plan and profile and HGL calculations.
N/A		Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement. N/A
N/A		Location and detail of existing, proposed, and future block wall openings. Minimum size is 16" x 48". Wrought iron gate is required for flows > 10 cfs.
N/A		Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.

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. Facilities are not listed as Regional.
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
N/A		For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table. Finish floor elevations must be a minimum of 18 inches above BFE. N/A
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 perimeters and interior streets. The minimum slope is 0.4 percent.

IV. Hydrologic Analysis

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

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 street. 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 $\leq$8. Q_{10} d x v $\leq$ 6 and 12 foot dry lane for rights-of –way $\geq$ 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. N/A - 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 this report.
N/A		Provide a 50 percent clogging factor in the capacity calculations for drop inlets.
X		Hydraulic calculations for culverts and storm drains. D-load calculations must be provided for storm drain pipes in public right-of-way, including headwater pool inundation.
X		The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.

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. SAM 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.
X		Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
X		On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners. (The project must pass flows through the site every 600 feet where the project is blocking flow paths.)
N/A		This project uses a solid grouted stem wall (or approved alternate) at the back of sidewalk to provide erosion protection for landscaped areas where the depth of flow in the roadway exceeds the back of walk elevation. A corresponding cross-section detail is included.
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	
X		Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.
N/A		Ten-foot wide public drainage easements to be privately maintained are allowed for flow less than 20 cfs. The depth of flow entering the easement must be checked using the submerged weir calculation.
N/A		The limits of the flood zones and the base flood elevations (BFE) must be shown on all grading plans for all developments within a Special Flood Hazard Zone A, AO, AE, etc.
X		Minimum finish floor elevation is 6 inches above highest adjacent top of curb. Finish floor calculations must include allowances for super elevations on curves and velocity head for tee intersections.
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.

COLLINS
ENGINEERS INC.

September 15, 2015

City of Las Vegas Department of Public Works
Flood Control
333 N. Rancho Drive
Las Vegas, Nevada 89106

Attention: Mr. Albert Sung, P.E.
Project Engineer

SUBJECT: UPDATE #2 TO THE TDS FOR SOMERSET ACADEMY PHASE IV
Collins Engineers Project No. 9182

Dear Mr. Sung:

We are submitting for your review, comment, and approval of an update to the TDS for Somerset Academy Phase IV. This phase IV of the overall Somerset Academy, Drainage Study number DS4570 and update 1 (4627B). This Update is to address the addition of a classroom building and surface parking lot on the northwest side of the existing improvements. Copies of the approval letters from City of Las Vegas Public Works and Clark County Regional Flood Control District for the previously approved Drainage Study (DS4570) and for the update to the TDS (DS 4627) are included in Appendix C. In addition, copies of the Conditions of Approval associated with the overall Somerset Academy from City of Las Vegas for SDR-45943, GPA-45940, MOD-45944 and SUP-45941 are also included in Appendix C.

The Somerset Academy is located within a portion of Section 21, Township 19 South, Range 60 East, M.D.M., City of Las Vegas, and Clark County, Nevada. More specifically the property APN: 125-21102-009. The proposed site is located at the southeast corner of Elkhorn Road and Sky Pointe Drive (or Rancho Drive) (refer to Figure 1, APN map and Figure 2, Vicinity Map included in Appendix A).

According to the Federal Emergency Management Agency (FEMA) Community Panel 32003C1745 E, Clark County, Nevada and Incorporated Areas, effective September 27, 2002, the proposed site is located within Zone "X". Zone "X" is described as an area to be outside of the 500-year floodplain. Refer to Figure 2, Flood Insurance Map, included in Appendix A.

According to the Clark County Regional Flood Control District 2008 Las Vegas Valley Flood Control Master Plan Update, the project is adjacent to Regional Facility CN95 0000, a proposed Concrete Channel 22-feet wide, 10-feet deep with 0:1 side slope. Please refer to Figure F-13 of the Clark County Regional Flood Control District 2013 Las Vegas Valley Flood Control Master Plan Update included in Appendix A.

In this phase, instead of different small buildings, one building with variable finished floor elevations is proposed. The east side of the proposed building is set at 2507.50' which is 0.5' above the approved one. The middle part of the building is set at 2510.00' which is the same as the approved one. On the

west side, the finished floor elevation is set at 2512.50 which is 0.5' lower than the approved one to get ADA access from the existing parking lot on the north. Please note that the approved fished floor elevation is taken from the approved Technical Drainage Study for Somerset Academy (Addendum), DS4570 which is included in Appendix C.

The depth of flow at the northwest side of the building (at FM-2) is 0.15'. The Finished floor elevation 2512.50' is 0.95' higher than the flowline at the entrance. On the west side of the building at the FlowMaster section FM-3 (at the narrow location of the ditch), the water depth is 0.35'. The finished floor elevation (2512.50') is 1.55' above the water surface elevation (2510.95').

The revised/added grading has the same discharge points and drainage directions as the above mentioned approved Drainage Study (DS4570). The FlowMaster sections and prorated flow are calculated to check the proposed finished floor elevation at local flow depth.

A copy of the proposed grading plan and detail sheets are included in Appendix D and the approved plan and basin map are included in Appendix C.

We look forward to your acceptance of this update to the Technical Drainage Study for Somerset Academy Phase IV. If you have any questions or additional information is needed, please feel free to contact our office.

Respectfully,

Said A. Mohammed, P.E., CFM, PhD
Sr. Project Engineer
Collins Engineers, INC.

James Yancey, P.E.
Group Manager
Collins Engineers, INC.

TABLE OF APPENDICES

APPENDIX A
(Figures)

- Figure 1 – Assessor's Parcel MAP
- Figure 2 – Vicinity Map
- Figure 3 – F-13 Flood Control Facilities CCRFCD 2013
- Figure 4 – F-13 Facility Inventory - CCRFCD 2013
- Figure 5 – FIRM Flood Insurance Rate Map FM32003C1745 E
- Figure 6 – Developed Condition Drainage Basin Map

APPENDIX B
(Hydraulic Analysis)

- Flow Depth Analysis

APPENDIX D
(Reference Material)

- SDR-45943-Site Development Plan Review
- GPA-45940-General Plan Amendment
- MOD-45944-Major Modification
- SUP-45941-Special Use Permit
- Technical Drainage Study for Somerset Academy (DS#4570)
- Technical Drainage Study for Somerset Academy Phase III (DS #4627)

APPENDIX E
(Plans)

- Grading Plan
- Detail Sheet

APPENDIX A
(Figures)

- Figure 1 – Assessor's Parcel MAP
- Figure 2 – Vicinity Map
- Figure 3 – F-13 Flood Control Facilities CCRFCD 2013
- Figure 4 – F-13 Facility Inventory - CCRFCD 2013
- Figure 5 – FIRM Flood Insurance Rate Map FM32003C1745 E
- Figure 6 – Developed Condition Drainage Basin Map

NOTES

This map is for assessment use only and does NOT represent a survey.

No liability is assumed for the accuracy of the data deliniated herein. Information on roads and other non-assessed parcels may be obtained from the Road Document Listing in the Assessor's Office.

This map is compiled from official records, including surveys and deeds, but only contains the information required for assessment. See the recorded documents for more detailed legal information.

USE THIS SCALE(FEET) WHEN MAP REDUCED FROM 11X17 ORIGINAL

0 100 200 400 600 800

MAP LEGEND

- PARCEL BOUNDARY
- SUB BOUNDARY
- PM/LD BOUNDARY
- ROAD EASEMENT
- MATCH / LEADER LINE
- HISTORIC LOT LINE
- HISTORIC SUB BOUNDARY
- HISTORIC PM/LD BOUNDARY
- SECTION LINE
- CONDOMINIUM UNIT
- AIR SPACE PCL
- RIGHT OF WAY PCL
- SUB-SURFACE PCL

ASSESSOR'S PARCELS - CLARK CO., NV.
Michele W. Shafe - Assessor

001 ROAD PARCEL NUMBER
001 PARCEL NUMER
1.00 ACREAGE
202 PARCEL SUB/SEQ NUMBER
PB 24-45 PLAT RECORDING NUMBER
5 BLOCK NUMBER
5 LOT NUMBER
GL5 GOV. LOT NUMBER

099	100	101
126	125	124
137	138	139

BOOK T19S R60E

SEC. 21

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

MAP N 2 NW 4

8	4	8	4
5	1	5	1
6	2	6	2
7	3	7	3
8	4	8	4
5	1	5	1

125-21-1

CLARK COUNTY ASSESSOR MAPPING DIVISION NEVADA

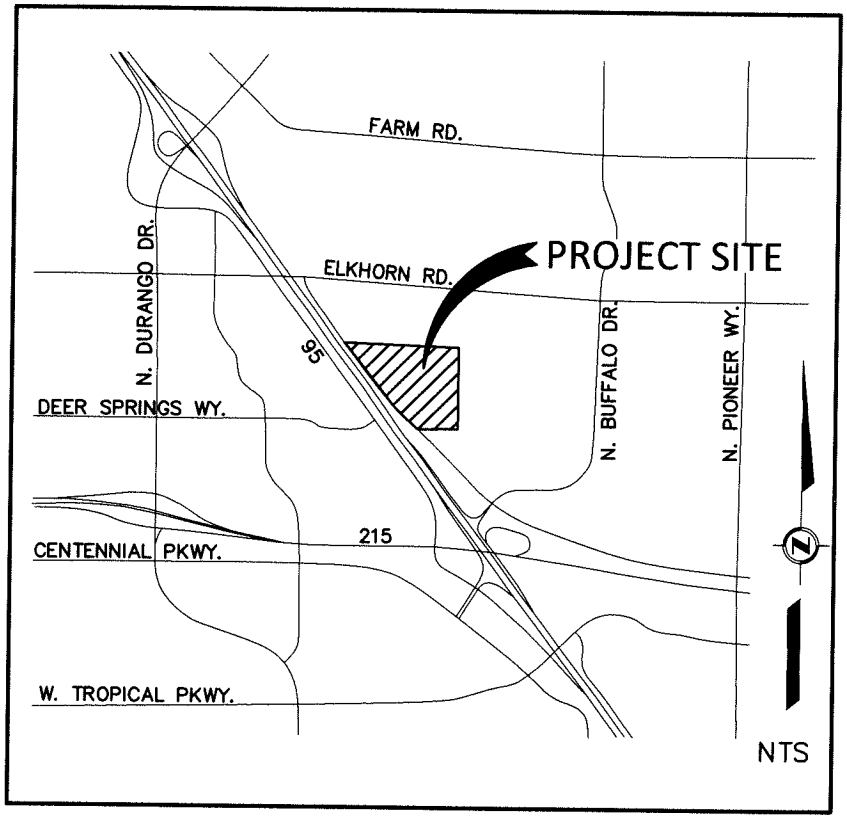
Scale: 1" = 200' Rev: 3/25/2015

ELKHORN RD
CIMARRON RD
DOE BROOK TR
U S HWY NO 95
RANCHO DR
DORRELL LN
ARCTURUS PL
CANIS MAJOR LN
NEBULA CLOUD AVE
SOUTHERN CROSS AVE
ORION BANDS ST
SOMERSET EAGLE WY
ALTAIR EAGLE AVE
LANCELEAF AVE
EYEBRIGHT ST
SWEET CLOVER CT
DILLSEED DR
BOXBERRY AVE
DANAIDES CT
CANDLENUT AVE
PANPIPE CT
THESEAS AVE
SAVORY ST
WONDERBERRY ST
HESPERIDES AVE

SKY POINTE BY RYLAND HOMES UNIT 2 — 116 — PB 148-43 — 95-002
SKY POINTE BY RYLAND HOMES UNIT 3 — PB 148-72 — 95-003
SKY POINTE BY RYLAND HOMES UNIT — 95-001
115
114
ELKHORN SPRINGS - PARCEL 3D 41 — PB 73-25
ELKHORN - CIMARRON ESTATES - UNIT 2-A — PB 80-93 — 110
ELKHORN - CIMARRON - UNIT 1-B
ELKHORN - CIMARRON ESTATES - UNIT 2-B — PB 123-08 — 95-001
ELKHORN - CIMARRON ESTATES - UNIT 1-B
111
113
112
PM 118-98
102
SITE LOCATION
009
12.14
101
001
1.34
002
1.4
PT C

TAX DIST 200

FIGURE 1



COLLINS ENGINEERS
2033 West Howard Ave.
Milwaukee, WI 53221
Phone: 414-282-6905
Fax: 414-282-6955

SOMERSET ACADEMY
SKY POINT PHASE IV
VICINITY MAP
FIGURE 2
CITY OF LAS VEGAS, NV

INSPECTED BY: SAM	CEI PROJECT: 21-9182
DRAWN BY: SAM	DATE: 09/08/2015
CHECKED BY: SAM	FIGURE 2

H:\CAD\LAND\9182\ADMIN\DRAINAGE\DWG\9198 FIG 2.DWG 09/08/2015 05:00:12 PM

REGIONAL FLOOD CONTROL DISTRICT

2013
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

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

N

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

Scale: 1 inch = 2,000 feet

Refer to Figure G-2 for Aerial Source(s)

US95 I-15 I-215

	1	2	3					A1	A2		
	4	5	6					A3	A4		
		7	8	9	10			A5	A6		
	11	12	13	14	15	16	17				
		18	19	20	21	22	23				
		24	25	26	27	28					
		29	30	31	32	33	34				
		35	36	37	38	39	40				
		41	42	43	44	45	46				
		47	48	49	50	51	52				
		53	54	55	56						
		57	58	59							

SITE LOCATION

FIGURE 3

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
BCHU		**BELTWAY CHANNEL - HUALAPAI**						
0000	E	12' X 5' RCAP	853	501	CBA3-C	WEST3	0.84	1.11
0017	E	8' X 5' RCAP	1216	501	CBA3-C	WEST3	0.84	1.33
0040	E	66" RCP	60	222	DNW26-C	WEST3	0.51	1.04
0042	E	60" RCP	615	222	DNW26-C	WEST3	0.51	1.42
0054	E	54" RCP	770	222	DNW26-C	WEST3	0.51	1.23
BRDB		**BRENT DRAINAGE SYSTEM**						
0000	E	36" RCP with 18" Orifice Plate	2170	37	BRDB	WEST3	2.48	0.40
0031	E	45,080 cfs PMF Spillway		45080	CBRDB	WEST3	2.48	
0032	E	450 ac-ft South Environmental Enhancement Area		1902	CBRDB	WEST3	2.48	
0033	E	Energy Dissipator	100	957	CNW113-C	WEST3	1.58	
0043	P1	8' X 6' RCB	2920	957	CNW113-C	WEST3	1.58	2.10
0107	P1	8' X 6' RCB	2660	957	CNW113-C	WEST3	1.58	2.40
0157	P1	12' X 6' RCB	1260	741	CNW96-C	WEST3	0.95	0.25
CN95		**CENTENNIAL PKWY CHANNEL WEST / U.S 95 BRANCH**						
0000	P1	Conc Chnl 22'W 10'D 0:1 SS	2690	3340	CNWBB3-C	WEST3	3.36	2.17
0068	P1	3: 8' X 7' RCB	3380	3216	CNW103-C	WEST3	3.05	2.12
0102	P1	3: 8' X 6' RCB	1710	2888	2CNW89-C	WEST3	2.66	2.09
0167	P1	2: 10' X 6' RCB	1580	2160	2CNW71-E	WEST3	1.64	1.50
0199	E	2: 10' X 6' RCB	320	1423	2CNW72-C	WEST3	1.14	0.82
0218	E	15' X 9' RCB	1127	1423	2CNW72-C	WEST3	1.14	0.82
0257	E	Transition Structure	59	1423	2CNW72-C	WEST3	1.14	0.77
0259	E	15' X 9' RCB	290	653	CNW74-C	WEST3	0.44	0.77
0313	E	10' X 6' RCB	2680	653	CNW74-C	WEST3	0.44	2.50
0318	E	Transition Structure	60	653	CNW74-C	WEST3	0.44	1.50
0333	E	5' X 5' RCB	670	339	NW62-S	WEST3	0.22	1.50
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
CNWE		**CENTENNIAL PKWY CHANNEL WEST**						
0150	E	Conc Chnl 40'W 9.5'D 0:1 SS	2279	4233	CNW3B3-C	WEST3	5.64	0.42
0173	E	3: 18' X 8' RCBC @ Torrey Pines	200	4233	CNW3B3-C	WEST3	5.64	0.42
0176	E	Conc Chnl 40'W 9'D 0:1 SS	150	4233	CNW3B3-C	WEST3	5.64	0.41
0189	E	Conc Chnl 36'W 10'D 0:1 SS	1200	4067	CNW2D4-C	WEST3	5.15	0.42
0200	E	Conc Chnl 36'W 9'D 0:1 SS	2470	4067	CNW2D4-C	WEST3	5.15	1.00
0226	E	2: 18' X 8.5' RCBC @ Rio Vista	100	4067	CNW2D4-C	WEST3	5.15	0.51
0241	E	Conc Chnl 36'W 9.5'D 0:1 SS	405	3951	CNW2D3-C	WEST3	4.65	0.51
0251	E	Conc Chnl 36'W 9'D 0:1 SS	575	3951	CNW2D3-C	WEST3	4.65	0.51
0271	E	Conc Chnl 32'W 10'D 0:1 SS	229	3951	CNW2D3-C	WEST3	4.65	0.51
0274	E	32' X 10' RCBC @ Tenaya	142	3951	CNW2D3-C	WEST3	4.65	0.51
0277	E	Conc Chnl 32'W 9'D 0:1 SS	579	3951	CNW2D3-C	WEST3	4.65	0.64
0287	E	Conc Chnl 13'W 10'D 2:1 SS	605	3593	CNW2B2-C	WEST3	3.84	1.19
0301	P2	Conc Chnl 32'W 10'D 0:1 SS	235	3593	CNW2B2-C	WEST3	3.84	1.19
0304	P2	32' X 10' RCB	3259	3593	CNW2B2-C	WEST3	3.84	1.79
0314	E	22' X 7' RCB	785	3593	CNW2B2-C	WEST3	3.84	1.79
0325	P1	32' X 10' RCB	2200	3593	CNW2B2-C	WEST3	3.84	1.75
EKBU		**ELKHORN SPRINGS AND BUFFALO**						
0000	E	60" RCP	1046	375	NW134-C	WEST3	0.46	1.00
EKDB		**ELKHORN SPRINGS DETENTION BASIN**						
0000	E	Grass Chnl 15'W 5.8'D 3.5:1 SS	2575	238	CNW150-C	WEST3	1.41	0.39
0025	E	4' X 3' RCB	160	120	ELKBASIN	WEST3	0.84	0.50
0026	E	48" RCP	1270	120	ELKBASIN	WEST3	0.84	1.23
0049	E	60" RCP	1095	120	ELKBASIN	WEST3	0.84	0.13
0070	E	48 ac-ft Elkhorn Springs Detention Basin		629	CNW133-C	WEST3	0.84	

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
EKHU		**ELKHORN AND HUALAPAI**						
0000	E	6' X 5' RCB Overflow Structure	48	638	CNW26-C	WEST3	0.51	0.91
0001	E	6' X 5' RCAP	72	638	CNW26-C	WEST3	0.51	0.91
0003	E	6' X 4' RCAP	980	638	CNW26-C	WEST3	0.51	3.61
0020	E	6' X 5' RCAP	150	638	CNW26-C	WEST3	0.51	3.61
0023	E	8' X 5' RCAP	1200	638	CNW26-C	WEST3	0.51	0.90
GOEC		**GOWAN NORTH - EL CAPITAN BRANCH**						
0176	P1	78" RCP	1320	363	CCPFR-C	ALLGOW3	0.46	1.15
GONO		**GOWAN NORTH SYSTEM**						
0511	P1	7' X 6' RCB	1320	546	CCPHW-C	ALLGOW3	0.60	1.14
LVMD		**LAS VEGAS WASH - MIDDLE**						
2490	E	2: 13' X 7' RCB	2555	2278	CNW168-C	CWEST3	4.69	0.40
2507	E	2: 13' X 9' RCB	2831	2278	CNW168-C	CWEST3	4.69	0.36
2525	E	24' X 8' RCB	1140	1913	CNW159-C	CWEST3	3.91	0.40
2550	E	24' X 8' RCB	1445	1664	CD161-C	CWEST3	3.41	0.40
2574	E	24' X 8' RCB	1430	1664	CD161-C	CWEST3	3.41	0.40
2599	E	Conc Chnl 24'W 7'D 2:1 SS	1577	1585	CNW162-C	CWEST3	3.08	0.50
2632	E	18' X 5' RCB	1580	968	CNW138-C	WEST3	1.16	0.46
2661	E	18' X 5' RCB	2640	968	CNW138-C	WEST3	1.16	0.46
2711	E	10' X 5' RCB	1320	968	CNW138-C	WEST3	1.16	1.54
2737	E	10' X 5' RCB	1320	818	CNW139-C	WEST3	0.93	2.22
2763	E	6' X 5' RCB	1320	818	CNW139-C	WEST3	0.93	1.79
2789	E	6' X 5' RCB	1470	818	CNW139-C	WEST3	0.93	2.17
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
MOIR		**MOCCASIN - IRON MOUNTAIN BRANCH**						
0000	P0	66" RCP	2770	446	2CNW33-C	LOWER3	1.76	3.60
MOKC		**MOCCASIN AND KYLE CANYON**						
0000	P1	11' X 8' RCB	5450	2662	CNW35-C	LOWER3	2.69	3.40
MOSM		**MOCCASIN AND SHEEP MOUNTAIN PARKWAY**						
0000	P0	14' X 9' RCB	3370	3778	CNW64-C	LOWER3	5.32	2.40
0064	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
MSNV		**MOUNTAIN SPA/VISTA RANCH**						
0000	E	6: 12' X 5' RCBC @ Grand Teton	273	679	CNW163-C	CWEST3	1.67	0.40
0005	E	Grass Chnl 100'W 4.5'D 10:1 SS	6325	679	CNW163-C	CWEST3	1.67	0.40
0125	E	Grass Chnl 100'W 4.5'D 10:1 SS	1300	116	CNW147E	WEST3	1.54	0.40
RACO		**RACEL STREET COLLECTOR**						
0000	E	96" RCP Baffled Energy Dissipator	54	497	CNW111S	WEST3	0.55	4.20
0001	E	78" RCP	3245	497	CNW111S	WEST3	0.55	2.46
0064	E	78" RCP	2650	423	DNW111S	WEST3	0.44	2.09
RCBC		**RANCHO ROAD SYSTEM - BELTWAY CHANNEL**						
0000	E	6' X 5' RCB	1062	222	FADB	WEST3	1.60	1.04
0002	E	54" RCP Outlet with 41" Orifice	503	222	FADB	WEST3	1.60	2.38
0003	E	2,341 cfs PMF Spillway		2341	FADBIN	WEST3	1.60	
0004	E	76 ac-ft Fort Apache Detention Basin		1255	FADBIN	WEST3	1.60	
0007	E	Energy Dissipator	100	1255	FADBIN	WEST3	1.60	
0009	E	12' X 6' RCBC @ Fort Apache Detention Basin	133	1255	FADBIN	WEST3	1.60	1.79
0012	E	Conc Chnl 12'W 6'-7'D 0:1 SS	1937	1255	FADBIN	WEST3	1.60	3.15
0048	E	12' X 6' RCBC @ Grand Canyon	140	1040	CMNA1	WEST3	1.32	3.15
0051	E	Conc Chnl 12'W 6'-8'D 0:1 SS	2660	1040	CMNA1	WEST3	1.32	3.44
0096	E	1: 10' X 6' and 1: 6' X 6' RCBC @ Hualapai Way	190	1040	CMNA1	WEST3	1.32	1.93
0100	E	Conc Chnl 12'W 5.5'D 0:1 SS	2085	598	CDMNA1	WEST3	0.48	2.88
0140	E	Conc Chnl 10'W 5'D 0:1 SS	2155	598	CDMNA1	WEST3	0.48	1.65

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
RCHB		**RANCHO ROAD SYSTEM - BELTWAY**						
0034	E	Conc Chnl 21'W 8'D 0:1 SS	1000	2631	CNW1C-W	WEST3	4.68	1.19
0053	E	2: 12' X 8' RCBC @ South Ramp Connector	85	2304	CDW1C1	WEST3	4.31	1.40
0054	E	Conc Chnl 21'W 8'D 0:1 SS	432	2304	CDW1C1	WEST3	4.31	1.51
0062	E	Transition Structure	130	2304	CDW1C1	WEST3	4.31	1.51
0065	E	24' X 7' RCB	480	2304	CDW1C1	WEST3	4.31	0.30
0074	E	24' X 6' RCB	50	2226	CNWBC6-C	WEST3	4.17	0.30
0075	E	20' X 6' RCBC @ Beltway	428	2226	CNWBC6-C	WEST3	4.17	2.81
0083	P1	20' X 6' RCB	950	2226	CNWBC6-C	WEST3	4.17	2.49
0101	P1	Conc Chnl 20'W 7'D 0:1 SS	980	2226	CNWBC6-C	WEST3	4.17	2.38
0120	E	20' X 6' RCBC @ Grand Montecito	120	2226	CNWBC6-C	WEST3	4.17	1.00
0122	P1	Conc Chnl 16'-20'W 6'D 0:1 SS	350	2226	CNWBC6-C	WEST3	4.17	1.84
0130	P1	Conc Chnl 16'W 6'D 0:1 SS	1012	2226	CNWBC6-C	WEST3	4.17	2.67
0149	P1	Conc Chnl 16'W 6'-7'D 0:1 SS	87	1888	CNWBC3	WEST3	3.75	2.27
0151	P1	Conc Chnl 16'W 7'D 0:1 SS	1255	1888	CNWBC3	WEST3	3.75	2.65
0171	E	16' X 6' RCBC @ El Capitan Way	234	1888	CNWBC3	WEST3	3.75	1.75
0175	E	Conc Chnl 14'W 7'D 0:1 SS	1220	1888	CNWBC3	WEST3	3.75	2.93
0198	E	Conc Chnl 14'W 7'D 0:1 SS	225	1402	CNWBA6-C	WEST3	3.61	2.93
0227	E	12' X 6' RCB	1885	1402	CNWBA6-C	WEST3	3.61	1.02
0250	E	12' X 6' RCB	3200	1402	CNWBA6-C	WEST3	3.61	1.00
0275	P1	7' X 6' RCB	2650	973	CNW66-C	WEST3	1.75	3.30
0295	P1	7' X 6' RCB	2875	973	CNW66-C	WEST3	1.75	3.30
TSDB		**TULE SPRINGS DRAINAGE SYSTEM**						
0000	E	2: 10' X 4' RCBC @ Echo Grande	100	26	TULEDB	WEST3	1.35	1.04
0002	E	36" RCP with 22" Orifice Plate	320	26	TULEDB	WEST3	1.35	0.33
0010	E	14,013 cfs PMF Spillway		14013	CTULEDB	WEST3	1.35	
0011	E	117 ac-ft North Environmental Enhancement Area		804	CTULEDB	WEST3	1.35	
0012	E	Energy Dissipator	260	376	CNW148-C	WEST3	0.52	
0023	P1	84" RCP	1320	376	CNW148-C	WEST3	0.52	0.80
0059	P1	78" RCP	2640	376	CNW148-C	WEST3	0.52	1.03

** The HEC-1 node shown identifies the controlling concentration point for the associated facility and is located upstream of this facility due to decreasing peak flow with increasing tributary area caused by storm distribution transitions, depth area reduction factors, or attenuation of flow from routing.*

*** As-built or design slopes were used when available. All other slopes are based on existing topography. The user should verify the facility slope listed prior to performing any facility specific analysis.*

^ For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e., HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).

REGIONAL FLOOD CONTROL DISTRICT

2013 LAS VEGAS VALLEY FLOOD CONTROL MASTER PLAN UPDATE

FACILITY INVENTORY FIGURE F - 13

LEGEND

ID (Facility Identifier) AABB
- Parent Stream Name
- Stream Name

River Mile 0000
- Distance Above Confluence with Parent Stream (Miles)
- Miles in Hundredths

Existing Facility..... E
Proposed or Modified Facility..... P
Contingency Level
- Category B..... P0
- Master Plan..... P1
- Preliminary Design..... P2
- Design..... P3

Bottom Width..... W

Depth..... D

Side Slope, H:V..... SS

Construction Features

- Cast in Place Concrete Pipe..... CIPCP
- Corrugated Metal Arch Pipe Culvert..... CMAP
- Corrugated Metal Pipe Culvert..... CMPC
- High Density Polyethylene..... HDPE
- Horizontal Elliptical Reinforced Concrete Pipe..... HERCP
- Reinforced Concrete Arch Pipe..... RCAP
- Reinforced Concrete Arch Culvert..... RCAC
- Reinforced Concrete Box..... RCB
- Reinforced Concrete Box Culvert..... RCBC
- Reinforced Concrete Pipe..... RCP
- Reinforced Concrete Pipe Culvert..... RCPC
- Storm Sewer Pipe..... SSP

FIGURE 4

RK COUNTY
PORATED AREAS
320003

17

OSO BLANCA ROAD

DURANGO DRIVE

TULE SPR

CIMARRON

SUNNY SPRINGS LANE

BUFFALO DRIVE

ELKHORN ROAD

SITE LOCATION

CITY OF LAS VEGAS
325276

GR1151

ZONE X

20

21

CLARK COUNTY
UNINCORPORATED AREAS
320003

DEER SPRINGS WAY

ROME BOULEVARD

PARKWAY

ZONE X

GR1302

CITY OF LAS VEGAS
325276

OSO BLANCA ROAD

CENTENNIAL

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METE

PANEL 1745 E

FIRM

FLOOD INSURANCE RATE MAP

CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS

PANEL 1745 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LAS VEGAS, CITY OF	325276	1745	E
CLARK COUNTY, UNINCORPORATED AREAS	320003	1745	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
32003C1745 E

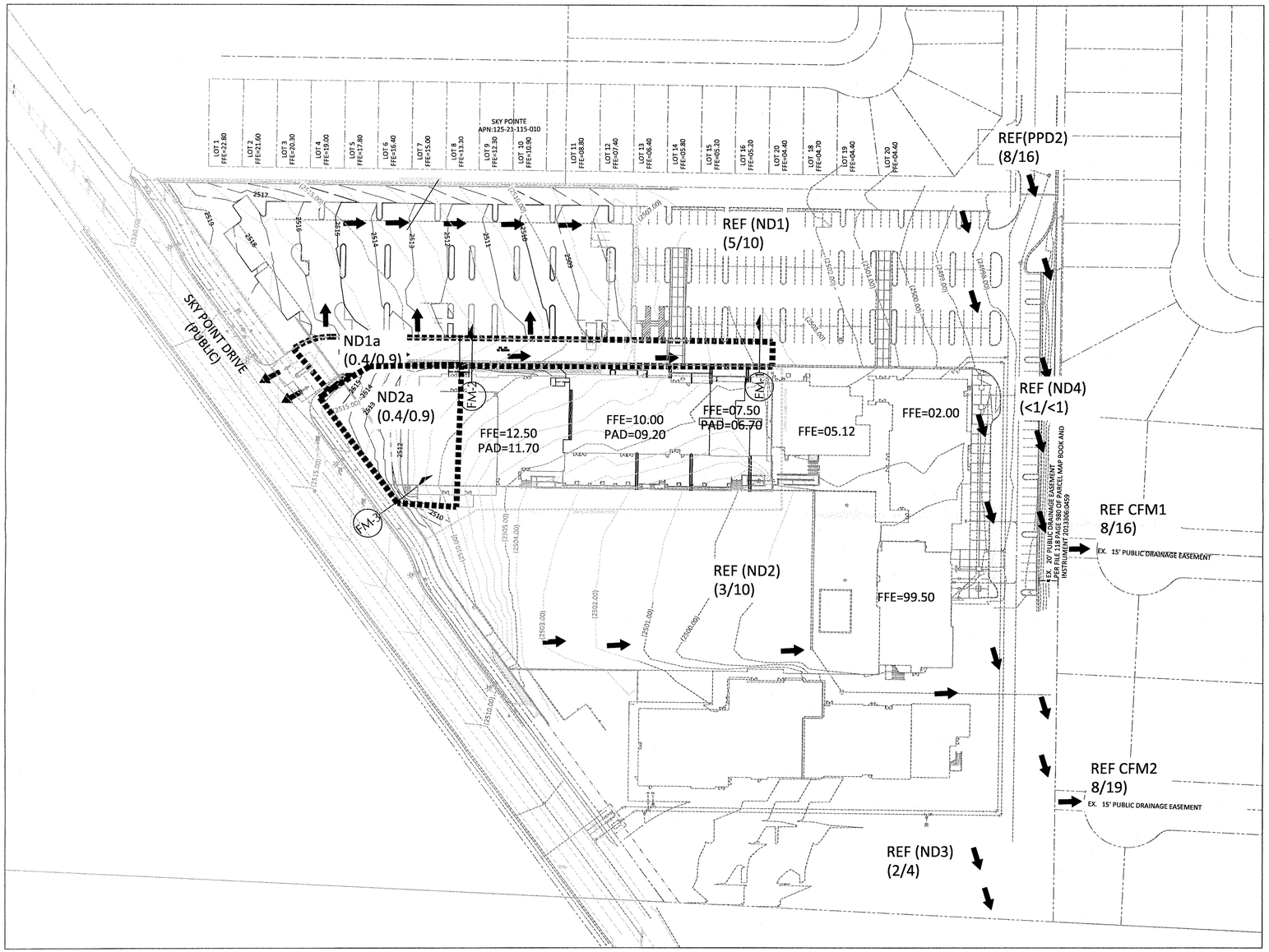
MAP REVISED:
SEPTEMBER 27, 2002

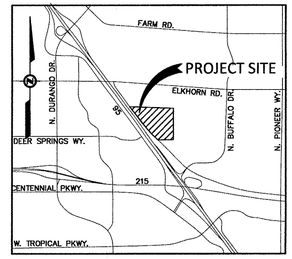
Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FIGURE 5





VICINITY MAP
NTS

GRAPHIC SCALE

60 0 30 60

SCALE: 1"=60'

REFRECED BAISNS			
BASIN ID	AREA (ACRES)	Q_{10} (CFS)	Q_{100} (CFS)
ND1	3.87	5	10
ND2	5.98	3	10

FOR REFERENCE STUDY BASIN BOUNDARY PLEASE SEE SHEET DR3 IN APPENDIX D

PRORATED BASINS				
BASIN ID	AREA (ACRES)	PRORATED FROM	Q_{10} (CFS)	Q_{100} (CFS)
ND1a	0.33	ND1	0.4	0.9
@(FM-2)	0.13	ND1	0.2	0.4
ND2a	0.35	ND2	0.2	0.6

FLOOD ZONE NOTE:
THE PROJECT SITE LIES WITHIN UNSHADED FLOOD ZONE "X". PER FIRM PANEL 32003C1745 E REVISED SEPTEMBER 27, 2002. PER FEMA, UNSHADED FLOOD ZONE "X" IS AN AREAS OF OUTSIDE THE 500-YEAR FLOODPLAIN.

DRAINAGE LEGEND

$(Q_{10/100})$	PEAK 10 YR FLOW / PEAK 100 YR FLOW
▬▬	DRAINAGE AREA BOUNDARY
➡	DRAINAGE AREA FLOW DIRECTION
ONX1	AREA DESIGNATION
CP1 ●	CONCENTRATION FLOW POINT
FM1 ⌒	LOCATION OF HYDRAULIC CROSS SECTION

FLOW DEPTH ANALYSIS SUMMARY										
SECTION	ST. WIDTH (FT)	SLOPE (%)	Q_{100} (CFS)	D_{100} (ft)	V_{100} (ft/sec)	$D_{100} \times V_{100}$	Q_{10}	D_{10} (ft)	V_{10} (ft/sec)	$D_{10} \times V_{10}$
FM1	N/A	2.3	0.9	0.23	2.43	-	-	-	-	-
FM2	N/A	2.3	0.4	0.15	3.12	-	-	-	-	-
FM3	N/A	1.0	0.6	0.35	1.79	-	-	-	-	-

COLLINS ENGINEERS INC
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

NO.	DESCRIPTION OF REVISIONS	DATE	APPROVAL

SOMERSET ACADEMY PHASE IV

APN: 125-21-102-009

DEVELOPED CONDITION BASIN MAP

DATE:	09/15/15
JOB NUMBER:	9182
DESIGNED:	SAM
DRAWN:	SAM
CHECKED:	T. MILLER, P.E.

SHEET NUMBER

FIG. 6

APPENDIX B
(Hydraulic Analysis)

- Flow Depth Analysis

Cross Section for FM-1

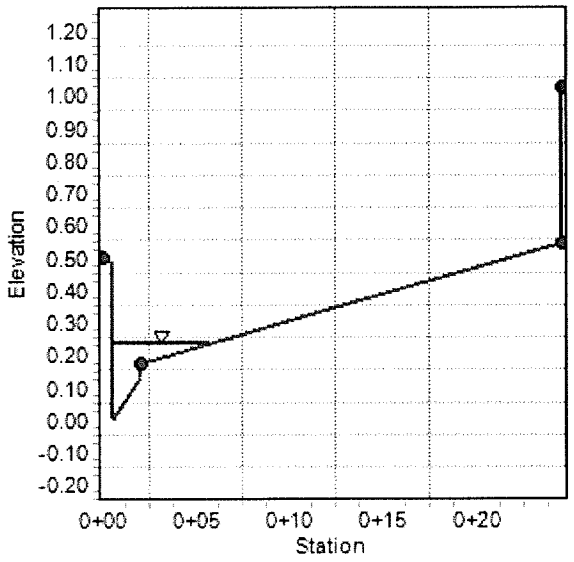
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02300	ft/ft
Normal Depth	0.23	ft
Discharge	0.90	ft³/s

Cross Section Image



Worksheet for FM-1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02300	ft/ft
Discharge	0.90	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+24.50	0.54
0+24.50	1.02

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+24.50, 0.54)	0.016
(0+24.50, 0.54)	(0+24.50, 1.02)	0.013

Options

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

Results

Normal Depth	0.23	ft
Elevation Range	0.00 to 1.02 ft	
Flow Area	0.37	ft²
Wetted Perimeter	5.58	ft

Worksheet for FM-1

Results

Hydraulic Radius		0.07	ft
Top Width		5.31	ft
Normal Depth		0.23	ft
Critical Depth		0.26	ft
Critical Slope		0.00821	ft/ft
Velocity		2.43	ft/s
Velocity Head		0.09	ft
Specific Energy		0.32	ft
Froude Number		1.63	
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	0.23	ft
Critical Depth	0.26	ft
Channel Slope	0.02300	ft/ft
Critical Slope	0.00821	ft/ft

Cross Section for FM-2

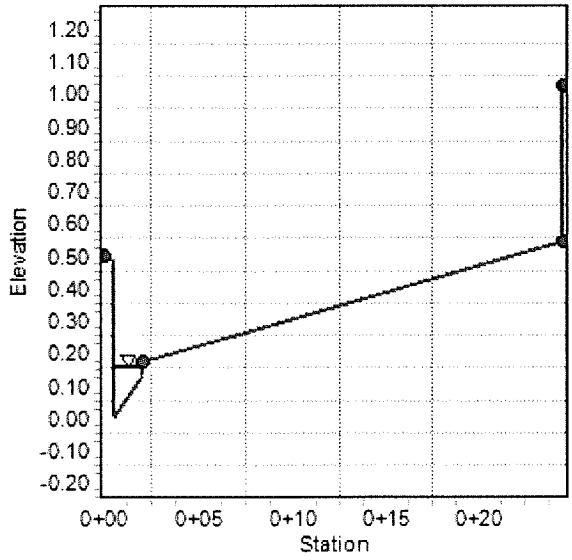
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02300	ft/ft
Normal Depth	0.15	ft
Discharge	0.40	ft³/s

Cross Section Image



Worksheet for FM-2

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02300	ft/ft
Discharge	0.40	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+24.50	0.54
0+24.50	1.02

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+24.50, 0.54)	0.016
(0+24.50, 0.54)	(0+24.50, 1.02)	0.013

Options

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

Results

Normal Depth	0.15	ft
Elevation Range	0.00 to 1.02 ft	
Flow Area	0.13	ft²
Wetted Perimeter	1.68	ft

Worksheet for FM-2

Results

Hydraulic Radius		0.08	ft
Top Width		1.50	ft
Normal Depth		0.15	ft
Critical Depth		0.21	ft
Critical Slope		0.00657	ft/ft
Velocity		3.12	ft/s
Velocity Head		0.15	ft
Specific Energy		0.30	ft
Froude Number		1.88	
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	0.15	ft
Critical Depth	0.21	ft
Channel Slope	0.02300	ft/ft
Critical Slope	0.00657	ft/ft

Cross Section for FM-3

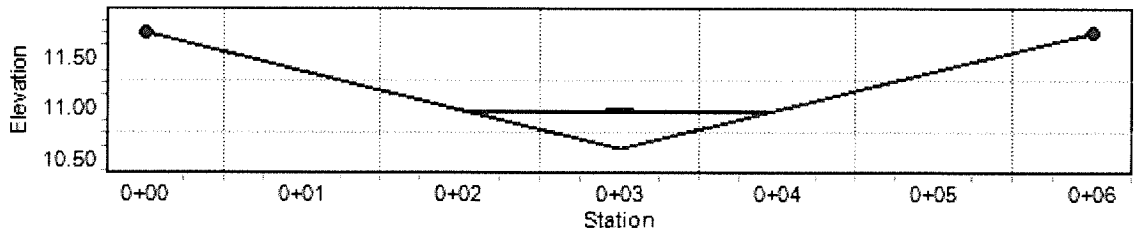
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01000	ft/ft
Normal Depth	0.35	ft
Discharge	0.60	ft³/s

Cross Section Image



Worksheet for FM-3

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01000	ft/ft
Discharge	0.60	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	11.72
0+03.00	10.60
0+06.00	11.72

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 11.72)	(0+06.00, 11.72)	0.025

Options

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

Results

Normal Depth	0.35	ft
Elevation Range	10.60 to 11.72 ft	
Flow Area	0.33	ft²
Wetted Perimeter	2.02	ft
Hydraulic Radius	0.17	ft
Top Width	1.89	ft
Normal Depth	0.35	ft
Critical Depth	0.32	ft
Critical Slope	0.01839	ft/ft
Velocity	1.79	ft/s

Worksheet for FM-3

Results

Velocity Head		0.05	ft
Specific Energy		0.40	ft
Froude Number		0.75	
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	0.35	ft
Critical Depth	0.32	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.01839	ft/ft

APPENDIX C

(Reference Material)

- SDR-45943-Site Development Plan Review
- GPA-45940-General Plan Amendment
- MOD-45944-Major Modification
- SUP-45941-Special Use Permit
- Technical Drainage Study for Somerset Academy (DS#4570)
- Technical Drainage Study for Somerset Academy Phase III (DS #4627)

LAS VEGAS
CITY COUNCIL

CAROLYN G. GOODMAN
MAYOR

STAVROS S. ANTHONY
MAYOR PRO TEM

LOIS TARKANIAN
STEVEN D. ROSS
RICKI Y. BARLOW
BOB COFFIN
BOB BEERS

ELIZABETH N. FRETWELL
CITY MANAGER

November 8, 2012

Rancho Drive – Tule Springs Road
7321 West Charleston Boulevard
Las Vegas, Nevada 89117

RE: SDR-45943 – SITE DEVELOPMENT PLAN REVIEW
CITY COUNCIL MEETING OF OCTOBER 17, 2012
RELATED TO GPA-45940, MOD-45944 AND SUP-45941

Dear Applicant:

The City Council at a regular meeting held October 17, 2012, APPROVED the request for a Site Development Plan Review FOR A PROPOSED 280-UNIT MULTI-FAMILY RESIDENTIAL DEVELOPMENT, A 139,250 SQUARE-FOOT PRIVATE SCHOOL, PRIMARY AND SECONDARY CAMPUS AND AN ASSOCIATED ENCROACHMENT AGREEEMENT INTO THE PUBLIC RIGHT-OF-WAY on 24.45 acres at the southeast corner of Elkhorn Road and Sky Pointe Drive (APN 125-21-102-001), T-C (Town Center) Zone [SC-TC (Service Commercial - Town Center) Special Land Use Designation] [PROPOSED: SX-TC (Suburban Mixed Use - Town Center)]. The Notice of Final Action was filed with the Las Vegas City Clerk on October 18, 2012. This approval is subject to:

Planning

1. No lighting shall be provided for the athletic field. Any future lighting shall first be approved at a public hearing by a Review of Condition.

2. Approval of a General Plan Amendment (GPA-45940) and Major Modification (MOD-45944) of the Town Center Plan and approval of and conformance to the Conditions of Approval for Special Use Permit (SUP-45941) shall be required, if approved.

3. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.

4. All development shall be in conformance with the site plan and landscape plan date stamped 08/13/12 and building elevations date stamped 08/06/12, and the phasing plan date stamped 08/20/12, except as amended by conditions herein.

CITY OF LAS VEGAS
495 S. MAIN STREET
LAS VEGAS, NEVADA 89101

VOICE 702.229.6011
TTY 702.386.9108
www.lasvegasnevada.gov

5. All necessary building permits shall be obtained and final inspections shall be completed in compliance with Title 19 and all codes as required by the Department of Building and Safety.

6. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.

7. Revised locations for van accessible handicap parking spaces shall be determined by the Department of Building and Safety prior to issuance of a building permit.

8. The minimum distance between multi-family residential buildings shall be 10 feet.

9. A technical landscape plan, signed and sealed by a Registered Architect, Landscape Architect, Residential Designer or Civil Engineer, must be submitted prior to or at the same time application is made for a building permit. A permanent underground sprinkler system is required, and shall be permanently maintained in a satisfactory manner; the landscape plan shall include irrigation specifications. Installed landscaping shall not impede visibility of any traffic control device. The technical landscape plan shall include the following changes from the conceptual landscape plan:

   A. Provide the three-foot wide streetscaped amenity zone along the west side of Sky Pointe Drive per the Town Center Arterial requirements. Installation and maintenance of the amenity zone is the responsibility of the developer per the Town Center Development Standards.

   B. Along Elkhorn Road, street trees within the amenity zone shall be provided 35 feet on center in an alternating pattern consisting of one 36-inch box Rio Grande Ash shade tree and two 25-foot brown trunk height Mexican Fan Palms with groundcover in conformance with the specifications of the Town Center Development Standards.

   C. Provide the required 15-foot landscape buffer along the full length of Elkhorn Road adjacent to this site as required by Town Center Development Standards Section C.2.B. Trees within this buffer shall be a minimum of 24-inch box size and shall be spaced no more than 20 feet apart on center.

   D. Street trees within the amenity zone along Sky Pointe Drive shall be spaced no more than 30 feet on center in conformance with the Town Center Arterial standards.

   E. Trees within the required 15-foot landscape buffer along Sky Pointe Drive shall be a minimum of 24-inch box size and shall be spaced no more than 20 feet apart on center.

F. Provide parking lot trees at the ends of all parking rows within the multi-family portion of the site in conformance with Town Center Development Standards Section C.2.B.

10. 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.

11. A Comprehensive Construction Staging Plan shall be submitted to the Department of Planning for review and approval prior to the issuance of any building permits. The Construction Staging Plan shall include the following information: design and location of construction trailer(s); design and location of construction fencing; all proposed temporary construction signage; location of materials staging area; and the location and design of parking for all construction workers.

12. Prior to the submittal of a building permit application, the applicant shall meet with Department of Planning staff to develop a comprehensive address plan for the subject site. A copy of the approved address plan shall be submitted with any future building permit applications related to the site.

13. All City Code requirements and design standards of all City Departments must be satisfied, except as modified herein.

Public Works

14. The developer of this site shall design, construct and maintain landscaped "Gateway Portals," meeting City approval, on Cimarron Road at the intersections with Sky Pointe Drive and Elkhorn Road. Such improvements shall be constructed concurrently with any on-site development activities, and shall be maintained in perpetuity by the owner or owner's successors and/or assigns. Appropriate Encroachment Agreements or Occupancy Permits shall be obtained for any improvements within the City of Las Vegas or Nevada Department of Transportation rights-of-way.

15. Dedicate approximately 10 feet of right-of-way for a total width of 80 feet on Sky Pointe Drive adjacent to this site. Additionally, grant a Multi-Use Non-Equestrian Trail Easement for all portions of the required trail that are outside the right-of-way.

16. Construct half street improvements between the two proposed driveways on Elkhorn Road per Town Center Development Standards adjacent to this site. No construction of new improvements on the Elkhorn Road overpass and the Elkhorn Road bridge embankment is required. Construct full-width street improvements to the satisfaction of the City Engineer on Sky Pointe Drive, including the required Multi-use Non Equestrian Trail, to Town Center Developments Standards adjacent to this site per Title 19.04.120.B. Where legally able, extend widened paving north to prevent a "sawtooth" roadway on the east side of Tule Springs Road and install pavement transitions on Sky Pointe Drive to the south. All roadway designs shall meet the approval of the City Traffic Engineer. Construction may be phased in accordance with the Phasing Plan date stamped 08/20/12.

17. Construct median modifications on Elkhorn Road in conformance with the approved site plan to the satisfaction of the City Traffic Engineer.

18. Dedicate and construct deceleration lanes at all driveways for both the east bound traffic entering this site from Elkhorn Road and the north bound traffic entering this site from Sky Pointe Drive, unless specifically noted as not required in the approved Traffic Study for this site. All driveways servicing this site shall be designed, located and constructed to meet the requirements of Standard Drawing #222.1. Unless specifically not required in the Traffic Study, dedication from the APN #125 21 202 001 must be obtained to construct the deceleration lane at the southernmost driveway on Sky Pointe Drive. Alternatively, the southernmost driveway on Sky Pointe Drive shall be designated and signed as an egress only driveway.

19. Obtain a Nevada Department of Transportation (NDOT) occupancy permit for all work on Sky Pointe Drive within NDOT jurisdiction prior to approval of plans for work within NDOT right-of-way.

20. Construct the necessary downstream sanitary sewer capacity improvements to accommodate the projected increase in wastewater flows from this site as directed by the Sanitary Sewer Planning Section of the Department of Public Works (229 5384). The plan may be implemented coincident with phased development of the site.

21. No structures, and no trees or vegetation over 3 feet tall, will be allowed within the proposed public sewer easement on the east edge of the property near the Hesperides Avenue cul-de-sac.

22. 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.

23. Submit a pick-up/drop-off queuing analysis for the proposed private schools for approval by the City Traffic Engineering Division. The analysis must be approved prior to the issuance of any permits for the school portion of the site.

24. An encroachment for any landscaping in the Elkhorn Road and Sky Pointe Drive public rights-of way as shown on the approved Site Plan is hereby approved and staff is directed to process an encroachment application that is in conformance with this approved Site Plan after the applicant provides appropriate documentation and fees for such application. The applicant must carry an insurance policy for the term of the Encroachment Agreement and add the City of Las Vegas as an additionally insured entity on this insurance policy. If requested by the City, the applicant shall remove property encroaching in the public right- of-way at the applicant's expense pursuant to the terms of the City's Encroachment Agreement. The installation and maintenance of all private improvements in the public right-of-way shall be the responsibility of the adjacent property owner(s) and shall be transferred with the sale of the property for the entire term of the Encroachment Agreement.

25. A Traffic Impact Analysis must be submitted to and approved by the Department of Public Works prior to the issuance of any building or grading permits, or the submittal of any construction drawings. Comply with the recommendations of the approved Traffic Impact Analysis prior to occupancy of the site. The Traffic Impact Analysis shall also include a section addressing Standard Drawings #234.1 #234.2 and #234.3 to determine additional right-of-way requirements for bus turnouts adjacent to this site, if any; dedicate all areas recommended by the approved Traffic Impact Analysis. All additional rights-of-way required by Standard Drawing #201.1 for exclusive right turn lanes and dual left turn lanes shall be dedicated prior to or concurrent with the commencement of on site development activities unless specifically noted as not required in the approved Traffic Impact Analysis. If additional rights-of-way are not required and Traffic Control devices are or may be proposed at this site outside of the public right-of-way, all necessary easements for the location and/or access of such devices shall be granted prior to the issuance of permits for this site. Phased compliance will be allowed if recommended by the approved Traffic Impact Analysis. No recommendation of the approved Traffic Impact Analysis, nor compliance therewith, shall be deemed to modify or eliminate any condition of approval imposed by the Planning Commission or the City Council on the development of this site.

26. 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.

Sincerely,

Angela Crolli
Deputy City Clerk II for
Beverly K. Bridges, MMC, City Clerk

Flinn Fagg
Director
Planning

cc: Mr. Vince Schettier
Investor Equity Homes
3455 Cliff Shadows Parkway, Suite #220
Las Vegas, Nevada 89129

Mr. Bob Gronauer
Kaempfer Crowell
8345 West Sunset Road, Suite #250
Las Vegas, Nevada 89113

LAS VEGAS
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BOB BEERS

ELIZABETH N. FRETWELL
CITY MANAGER

October 22, 2012

Rancho Drive – Tule Springs Road
7321 West Charleston Boulevard
Las Vegas, Nevada 89117

RE: GPA-45940 – GENERAL PLAN AMENDMENT
CITY COUNCIL MEETING OF OCTOBER 17, 2012
RELATED TO MOD-45944, SUP-45941 AND SDR-45943

Dear Applicant:

The City Council at a regular meeting held October 17, 2012, APPROVED the request to amend the Planned Streets and Highways Map and Schedule 13-1A and to modify Map 2C of the Transportation & Streets and Highways Element of the Las Vegas 2020 Master Plan TO REMOVE THE FRONTAGE STREET ALIGNMENT BETWEEN SKY POINTE DRIVE AND ELKHORN ROAD AND TO DESIGNATE SKY POINTE DRIVE AS A FRONTAGE STREET - SPECIAL DESIGN: TOWN CENTER ARTERIAL FROM TULE SPRINGS ROAD TO THE SOUTH END OF THE SUBJECT SITE. The Notice of Final Action was filed with the Las Vegas City Clerk on October 18, 2012.

Sincerely,

Angela Crolli
Deputy City Clerk for
Beverly K. Bridges, MMC, City Clerk

cc: Mr. Vince Schettier
Investor Equity Homes
3455 Cliff Shadows Parkway, Suite #220
Las Vegas, Nevada 89129

Mr. Bob Gronauer
Kaempfer Crowell
8345 West Sunset Road, Suite #250
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CITY OF LAS VEGAS
495 S. MAIN STREET
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LAS VEGAS
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LOIS TARKANIAN
STEVEN D. ROSS
RICKI Y. BARLOW
BOB COFFIN
BOB BEERS

ELIZABETH N. FRETWELL
CITY MANAGER

October 22, 2012

Rancho Drive – Tule Springs Road
7321 West Charleston Boulevard
Las Vegas, Nevada 89117

RE: MOD-45944 – MAJOR MODIFICATION
CITY COUNCIL MEETING OF OCTOBER 17, 2012
RELATED TO GPA-45940, SUP-45941 AND SDR-45943

Dear Applicant:

The City Council at a regular meeting held October 17, 2012, APPROVED the request for a Major Modification of the Town Center Land Use Plan to Amend the Special Land Use Designation FROM: SC-TC (SERVICE COMMERCIAL - TOWN CENTER) TO: SX-TC (SUBURBAN MIXED USE - TOWN CENTER) AND TO REMOVE CERTAIN ROAD AND TRAIL ALIGNMENTS FROM THE TOWN CENTER STREET CLASSIFICATION MAP on 24.45 acres at the southeast corner of Elkhorn Road and Sky Pointe Drive. The Notice of Final Action was filed with the Las Vegas City Clerk on October 18, 2012.

Sincerely,

Angela Crolli
Deputy City Clerk for
Beverly K. Bridges, MMC, City Clerk

cc: Mr. Vince Schettier
Investor Equity Homes
3455 Cliff Shadows Parkway, Suite #220
Las Vegas, Nevada 89129

Mr. Bob Gronauer
Kaempfer Crowell
8345 West Sunset Road, Suite #250
Las Vegas, Nevada 89113

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BOB COFFIN
BOB BEERS

ELIZABETH N. FRETWELL
CITY MANAGER

October 22, 2012

Rancho Drive – Tule Springs Road
7321 West Charleston Boulevard
Las Vegas, Nevada 89117

RE: SUP-45941- SPECIAL USE PERMIT
CITY COUNCIL MEETING OF OCTOBER 17, 2012
RELATED TO GPA-45940, MOD-45944 AND SDR-45943

Dear Applicant:

The City Council at a regular meeting held October 17, 2012, APPROVED the request for a Special Use Permit FOR A PRIVATE SCHOOL, PRIMARY AND SECONDARY, WITH DIRECT ACCESS/EGRESS FROM A TOWN CENTER PRIMARY ARTERIAL at the southeast corner of Elkhorn Road and Sky Pointe Drive (APN 125-21-102-001), T-C (Town Center) Zone [SC-TC (Service Commercial - Town Center) Special Land Use Designation] [PROPOSED: SX-TC (Suburban Mixed Use - Town Center)]. The Notice of Final Action was filed with the Las Vegas City Clerk on October 18, 2012. This approval is subject to:

Planning

1. Approval of a General Plan Amendment (GPA-45940) and Major Modification (MOD-45944) of the Town Center Plan and approval and conformance to the Conditions of Approval for Site Development Plan Review (SDR-45943) shall be required.

2. Conformance to the approved conditions for Rezoning (Z-0076-98).

3. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.

4. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.

CITY OF LAS VEGAS
495 S. MAIN STREET
LAS VEGAS, NEVADA 89101

VOICE 702.229.6011
TTY 702.386.9108
www.lasvegasnevada.gov

5. All City Code requirements and design standards of all City departments must be satisfied, except as modified herein.

Sincerely,

Angela Crolli
Deputy City Clerk for
Beverly K. Bridges, MMC, City Clerk

cc: Mr. Vince Schettier
Investor Equity Homes
3455 Cliff Shadows Parkway, Suite #220
Las Vegas, Nevada 89129

Mr. Bob Gronauer
Kaempfer Crowell
8345 West Sunset Road, Suite #250
Las Vegas, Nevada 89113

Reference Material #1

- Technical Drainage Study for Somerset Academy (DS#4570)

The reference material is used to support on-site flow pattern, flow quantity and approved grading plan and off-site flows.

Technical Drainage Study
For
Somerset Academy

JOB# 121075

August 2012

Prepared for:

Ethos Three Architecture
8985 South Eastern Avenue
Suite 220
Las Vegas, Nevada 89123
(702) 456-1070

Prepared By:
LOCHSA ENGINEERING
6345 South Jones Boulevard
Suite 100
Las Vegas, Nevada 89118
(702) 365-9312

DS #: 4570

APN: 125-21-102-001

PROJECT: Somerset Academy

SUBMITTAL: 1st

SCANNED BY/DATE:

CHECKED BY/DATE:

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Somerset Academy Date: August 27, 2012

Location of Development: a) Descriptive (Cross Streets) North/South: Sky Pointe Drive

East/West: Elkhorn Road

b) Section: 21 Township: 19 South Range: 60 East

c) APN : 125-21-102-001

Name of Owner: Rancho Drive - Tule Springs Road Limited Partnership

Telephone No.: 702-456-1070 Fax No.: (702) 365-9317 E-Mail Address:

Address: 6767 West Charleston Boulevard, Suite 150, Las Vegas, Nevada 89146

Contact Person-Name: Stanley Okey Amadi, P.E. **Telephone No.:** (702) 365-9312

* **E-Mail Address:** stanley@lochsa.com **Fax No.:** (702) 365-9317

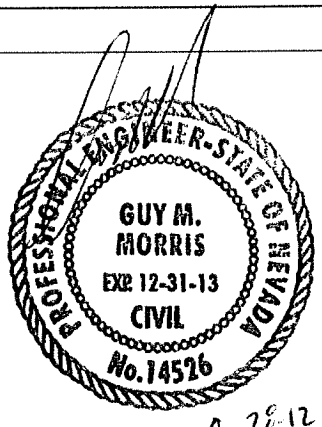
Firm: Lochsa Engineering

Address: 6345 South Jones Boulevard, Suite 100, Las Vegas, Nevada 89118

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 24.45 +/- Acres Being Developed/Disturbed: 12.20 +/- Acres
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ **Yes**** ☒ **No**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ **Yes**** ☐ **No**
4. Proposed type of development (Residential, Commercial, Etc.): Residential (Multi-Family)
5. Approximate upstream land area which drains to the subject site: 15.0 +/- Acres
6. Has the site drainage been evaluated in the past? ☐ **YES** ☒ **NO** If yes, please identify documentation:
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Southeasterly into the adjacent Elkhorn-Cimarron Estates Residential Subdivision Following Existing Drainage Patterns
8. Briefly describe your proposed schedule for the subject project: ASAP



8-28-12

Engineer's Seal

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

*New Required Field

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

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

CITY OF LAS VEGAS **INTER-OFFICE MEMORANDUM**			**DATE:** **January 24, 2013**
TO: **Land Development Services** Department of Public Works			**FROM:** Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Somerset Academy**		**COPIES TO:** Lochsa Engineering
Cross Streets:	SEC of Elkhorn Road & Sky Pointe Drive		Rancho – Tule Springs LP
File Number:	F:\Depot\DSMemos\DS4570E.doc		Bart Anderson, P.E., DevCo
Parcel Number:	125-21-102-001		CCRFCD
Zoning Action:	VAR-45939; GPA-45940; SUP-45941; SDR-45943; MOD-45944 & PMP-46559		NDOT
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	8/28/2012	9/12/2012	Not Approved	$400.00	294474: $400
2nd Submittal	11/8/2012	11/21/2012	Not Approved	$400.00	301477: $400
Supplement	12/3/2012	12/12/2012	Conditional Approval	N/C	N/C
CCRFCD	1/3/2013	1/17/2013	Concurrence Recv'd	N/C	N/C
Notarized Letter from School	1/24/2013	1/24/2013	Approved	N/C	N/C
			TOTAL FEES (LDDRS):	**$800.00**	----

REMARKS:

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

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to the satisfaction of the following Comment #1

1. The project proposes to construct and improve *Sky Pointe Drive* (NDOT ROW). The engineer must contact NDOT for encroachment permit for the proposed project.
2. All drainage easements must be "Public Drainage Easements to be Privately Maintained" and to be granted and recorded as such by a separate document prior to the final acceptance of the improvement plans.

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 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.

END OF REMARKS
ays

T/R/S: T19S/R60E/21
AREA G-21

REGIONAL FLOOD CONTROL DISTRICT

Rec'd: 1/3/13
DS 4570

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

Lawrence L. Brown, III
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Clark County

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City of Las Vegas

Mayor Roger Tobler
City of Boulder City

December 27, 2012

Mr. Oh Sang Kwon, P.E.
City of Las Vegas
333 North Rancho Drive
Las Vegas, NV 89106

DISTRICT CONCURRENCE: SOMERSET ACADEMY (DS4570C) (RFCD No. 12-8110)

Dear Mr. Kwon:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated August 27, 2012, Addendum No. 1 dated November 6, 2012, and Supplement No. 1 dated December 3, 2012 for above-mentioned project as submitted by LOCHSA ENGINEERING. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas dated December 12, 2012.

District concurs with acceptance of this Technical Drainage Study by City of Las Vegas.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage.*

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by LOCHSA ENGINEERING may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

BY:

Abigail Mayrena, P.E., CFM
Senior Engineer

Andrew R. Trelease, P.E., CFM
Principal Civil Engineer

AM:ART:sa

c: Guy M. Morris, P.E., Lochsa Engineering

P:\Letters and Memos\Local Drainage\Land Development & Drainage\2012\L-12-8110.doc

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 685-0000 • FAX: (702) 685-0001
Website: *http://www.regionalflood.org*

Somerset Academy
(Addendum to Technical Drainage Study)

10-Year and 100-Year,
Six Hour Storm:
Interim Condition

FILE: 121075P.DAT

Peak Flow Summary
Interim Condition

HEC-1 I.D.	Area (acres)	10-year Flow (cfs)	100-year Flow (cfs)
PPX1	5.57	2	7
SPD1	1.16	2	4
RSPD1	-	2	4
CMD1	-	4	11
PPX2	6.93	2	9
RPPX2	-	2	9
ND4	0.19	<1	<1
CMD2	-	2	9
ND1	3.87	5	10
RND1	-	4	10
ND2	5.98	3	10
CMD3	-	8	19
ND3	1.54	2	4
SPD2	1.05	2	4
RSPD2	-	2	4
SPD3	0.64	1	2
CMD4	-	3	6

DEVELOPMENT: Somerset Academy
CALCULATED BY: SOA
PROJECT NUMBER: 121075

DATE: October 23, 2012

	SUB-BASIN DATA			INITIAL/OVERLAND TIME (ti)			TRAVEL TIME (tt)					tc CHECK (URBANIZED BASINS)		FINAL tc			REMARKS
DESIGN (1)	K (2)	AREA Ac (3)	AREA Sq. Mile (4)	LENGTH Ft (5)	SLOPE % (6)	ti Min (7)	LENGTH Ft (8)	SLOPE % (9)	VELOCITY FPS (10)	tt Min (11)	TOTAL LENGTH Ft (12)	tc =(L/180)+10 Min (13)	Min (14)	CN (15)	tL Hrs (16)	Urbanized? (17)	Soil Type (18)
	0.6264		0.00870			7.6			1.4	7.8	-	-	15.4	77.0	0.154		
	0.6264		0.01083			5.0			2.7	6.3	-	-	11.3	77.0	0.113		
	0.6264		0.00858			6.9			2.4	6.0	-	-	12.9	77.0	0.129		
	0.6264		0.00626			7.5			1.1	7.3	-	-	14.9	77.0	0.149		
	0.6264		0.00327			7.1			1.6	5.4	-	-	12.5	77.0	0.125		
	0.9036		0.00181			1.5			2.1	4.2	630	13.5	5.7	98.0	0.057		
	0.9036		0.00164			1.5			2.2	4.0	600	13.3	5.5	98.0	0.055		
	0.9036		0.00100			1.5			2.1	2.8	380	12.1	4.3	98.0	0.050		
	0.8157		0.00605			4.6			2.6	5.2	1,070	15.9	9.8	91.3	0.098		
	0.6887		0.00934			8.5			2.5	5.3	1,140	16.3	13.8	81.7	0.138		
	0.7913		0.00241			4.0			2.9	1.9	490	12.7	5.9	89.5	0.059		
	0.5617		0.00080			5.5			1.7	3.7	386	12.1	9.1	72.1	0.091		
	0.8244		0.00870			4.4			3.8	3.9	1,035	15.8	8.4	92.0	0.084		
	0.8244		0.01083			2.9			3.8	4.4	1,110	16.2	7.3	92.0	0.073		

ti = 1.8 (1.1 - K) L^(0.5) / S^(1/3)

K = 0.0132 CN - 0.39

tt = L / (60 V)

tc = ti + tt

tL = tLAG = 0.6 tc

LOCATION: Onsite and Offsite.
HYDROLOGIC CONDITION: Existing and Developed

TRIAL: Final Iteration

AVERAGE VELOCITY

Input Variables	Basin PPX1	Basin PPX2	Basin NX1	Basin NX2	Basin NX3	Basin SPD1	Basin SPD2	Basin SPD3	Basin ND1	Basin ND2	Basin ND3	Basin ND4	Basin PPD1	Basin PPD2		
Bottom Width, B, (ft):																
Right Side Slope, Zr:																
Left Side Slope, Zl:																
Manning's n:																
Geometric Slope, So (ft/ft):																
Flowrate, Q (cfs):																
							Output Variables									
Normal Depth, Yn (ft):	0.21	0.29	0.23	0.14	0.11	0.15	0.15	0.10	0.23	0.23	0.13	0.12	0.25	0.25		
Area of Flow, A, (sf):	2.08	1.88	1.88	1.69	1.26	0.83	0.83	0.47	1.79	1.79	0.67	0.60	2.10	2.10		
Velocity, V (fps):	1.92	2.67	2.41	1.77	1.59	2.40	2.40	2.11	2.79	2.79	2.99	1.66	3.81	3.81		
Wetted Perimeter, p (ft):	14.59	7.96	9.59	14.20	12.27	9.48	9.49	7.27	13.76	13.76	8.55	5.24	14.88	14.88		
Hydraulic Radius, Rh (ft):	0.14	0.24	0.17	0.12	0.10	0.09	0.09	0.07	0.13	0.13	0.08	0.11	0.14	0.14		
Free SurfaceTop Width, T (ft):	14.58	7.91	9.56	14.19	12.26	9.34	9.35	7.17	13.53	13.53	8.42	5.00	14.63	14.63		
Centroid, Y*, (ft):	0.09	0.13	0.10	0.07	0.05	0.06	0.06	0.04	0.09	0.09	0.05	0.05	0.09	0.09		

* NOTE : HALF OF THE 100-YEAR STORM RUNOFF FLOWS IS USED TO DETERMINE THE BASIN TRAVEL VELOCITY REQUIRED FOR THE LAG TIME CALCULATIONS

Curve Number Calculations
Somerset Academy

Sub-Basin: SPD1
Total Area: 1.16 Acres

Land Use/Cover type	Area [A] (acres)	Soil Type	Percentage, P [P]	Cruve Number [CN]	Product (CN x P)
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)	1.16	B	100%	98	98.0
Total:	1.16	-	100%	-	98.0

Curve Number Calculations
Somerset Academy

Sub-Basin: SPD2
Total Area: 1.05 Acres

Land Use/Cover type	Area [A] (acres)	Soil Type	Percentage, P [P]	Cruve Number [CN]	Product (CN x P)
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)	1.05	B	100%	98	98.0
Total:	1.05	-	100%	-	98.0

Curve Number Calculations
Somerset Academy

Sub-Basin: SPD3
Total Area: 0.64 Acres

Land Use/Cover type	Area [A] (acres)	Soil Type	Percentage, P [P]	Cruve Number [CN]	Product (CN x P)
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)	0.64	B	100%	98	98.0
Total:	0.64	-	100%	-	98.0

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE (HEC-1)    *
*             JUN  1998                 *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   23OCT12  TIME  12:22:18   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    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
   1          ID       SOMERSET ACADEMY - TECHNICAL DRAINAGE STUDY
   2          ID       INTERIM CONDITIONS - ONSITE AND OFFSITE
   3          ID       USING SCS METHODS AND KINEMATIC WAVE ROUTING
   4          ID       MASTER PLAN ADJUSTED 6-HOUR RAINFALL AND STORM DISTRIBUTION
   5          ID       LOCHSA JOB# 121075
   6          ID
   7          ID       INPUT FILE NAME:  121075P.DAT
   8          ID
   9          ID       AUGUST 2012
  10          ID       **************************************************************************
  11          ID       **************************************************************************
  12          ID            McCARRAN AIRPORT RAINFALL AREA
  13          ID            10 & 100 YEAR - 6 HOUR STORM EVENT
  14          ID            PRECIPITATION:
  15          ID                  10-YEAR:  1.58 INCHES
  16          ID                  100-YEAR: 2.77 INCHES
  17          ID
  18          ID                  10-YEAR/100-YEAR RATIO:  1.58/2.77 = 0.5704
  19          ID       **************************************************************************
  20          ID       **************************************************************************
              *DIAGRAM
  21          IT    5                 300
  22          IO    5       0
  23          IN    5
  24          JR   PREC   .5704     1.0

  25          KK    PPX1
  26          KM   EXISTING NORTHWESTERN PORTION OF THE SUBJECT PROJECT PARCEL. THIS AREA WILL
  27          KM   BE DEVELOPED IN LATER PHASES
  28          KM   DRAINING NORTHEASTERLY TOWARDS ELKHORN ROAD
  29          PB   2.770
  30          PC     0.0     .02     .057     .07     .087     .108     .124     .13     .13     .13
  31          PC     .13     .13      .13     .133     .14     .142     .148     .158     .172     .181
  32          PC     .19     .197     .199     .2     .201     .204     .214     .229     .241     .249
  33          PC     .251     .256     .27     .278     .281     .283     .295     .322     .352     .409
  34          PC     .499     .59     .71     .744     .781     .812     .819     .835     .851     .856
  35          PC     .86     .868     .876     .888     .91     .926     .937     .95     .97     .976
  36          PC     .982     .985     .987     .989     .99     .993     .993     .994     .995     .998
  37          PC     .998     .999     1.0
  38          BA   .00870
  39          LS       0     77.0
  40          UD     .154

  41          KK    SPD1
  42          KM   THE PORTION OF SKY POINTE DRIVE ALONG BASIN PPX1
  43          KM   SINCE LARGE PORTION OF THIS BASIN IS ALREADY PAVED, THE BASIN IS ASSUMED
  44          KM   TO BE ENTIRELY DEVELOPED
  45          BA   .00181
  46          LS       0     98.0
  47          UD     .057
```

1 HEC-1 INPUT PAGE 2

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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
  48          KK   RSPD1
  49          KM   ROUTE RUNOFF FROM SPD1 NORTHEASTERLY THROUGH PPX1 TOWARDS ELKHORN ROAD
  50          RK     800   0.020    0.030            TRAP       3      30

  51          KK    CMD1
  52          KM   COMBINE PPX1 AND RSPD1
  53          KM   TOTAL RUNOFF FLOWS DRAINING ONTO ELKHORN AT THE NORTHEAST CORNER OF THE SITE
  54          HC       2

  55          KK    PPX2
  56          KM   REMAINDER NORTHERN PORTION OF THE SUBJECT PARCEL TO BE DEVELOPED IN LATER
  57          KM   PHASES DRAINING EASTERLY AND DIVERTED SOUTHERLY TOWARDS ONSITE BASIN ND4
  58          BA   .01083
  59          LS       0     77.0
  60          UD     .113

  61          KK   RPPX2
  62          KM   ROUTE RUNOFF FROM PPX2 SOUTHERLY THROUGH ND4 TOWARDS THE NORTHERN
  63          KM   WROUGHT IRON GATE AND 20' DRAIANGE EASEMENT
```

```
 64          RK     360   0.005   0.015            RECT        4        0

 65          KK     ND4
 66          KM    ONSITE BASIN ND4. NORTHERN LANDSCAPE PORTION OF THE SITE THAT CONVEYS
 67          KM    DRAINAGE SOUTH AND EASTERLY TOWARDS THE EXISTING NORTHERN 20' DRAINAGE ESMT
 68          KM    INTO THE ADJACENT ELKHORN-CIMARRON ESTATES RESIDENTIAL SUBDIVSION
 69          BA   .00030
 70          LS        0    72.1
 71          UD     .091

 72          KK     CMD2
 73          KM    COMBINE RPPX2 AND ND4
 74          KM    TOTAL ONSITE FLOWS DRAINING TOWARDS THE EXISTING 20' DRAINAGE EASEMENT ONTO
 75          KM    DENAIDES COURT THROUGH THE NORTHERN WROUGHT IRON GATE
 76          HC        2

 77          KK     ND1
 78          KM    ONSITE BASIN ND1. NORTHERN PORTION OF THE SUBJECT PROJECT SITE
 79          KM    DRAINING EASTERLY TOWARDS THE EXISTING SOUTHERN WROUGHT IRON GATE
 80          KM    INTO THE ADJACENT ELKHORN-CIMARRON ESTATES RESIDENTIAL SUBDIVSION
 81          BA   .00605
 82          LS        0    91.3
 83          UD     .098

 84          KK     RND1
 85          KM    ROUTE RUNOFF FROM ND1 SOUTHEASTERLY THROUGH BASIN ND2 ALONG THE ONSITE DRIVE
 86          KM    TO THE SOUTHWEST CORNER OF THE SITE
 87          RK      425   0.018   0.015             TRAP        2       50

 88          KK     ND2
 89          KM    ONSITE BASIN ND2. MIDDLE PORTION OF THE SUBJECT PROJECT SITE.
 90          KM    DRAINING SOUTHEASTERLY TOWARDS THE EXISTING SOUTHERN WROUGHT IRON GATE
 91          KM    INTO THE ADJACENT ELKHORN-CIMARRON ESTATES RESIDENTIAL SUBDIVSION
 92          BA   .00934
 93          LS        0    81.7
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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 94          UD     .138

 95          KK     CMD3
 96          KM    COMBINE RND1 AND ND2
 97          KM    TOTAL ONSITE FLOWS DRAINING TOWARDS THE EXISTING 20' DRAINAGE EASEMENT ONTO
 98          KM    HESPERIDES AVENUE THROUGH THE SOUTHERN WROUGHT IRON GATE
 99          HC        2

100          KK     ND3
101          KM    ONSITE BASIN ND3. SOUTHERN PORTION OF THE SUBJECT PROJECT SITE.
102          KM    DRAINING SOUTHEASTERLY TOWARDS THE VACANT PARCEL TO THE SOUTH
103          BA   .00241
104          LS        0    89.5
105          UD     .059

106          KK     SPD2
107          KM    THE CENTRAL PORTION OF SKY POINTE DRIVE ADJACENT TO THE NORTHERN HALF OF THE
108          KM    SINCE LARGE PORTION OF THIS BASIN IS ALREADY PAVED, THE BASIN IS ASSUMED
109          KM    TO BE ENTIRELY DEVELOPED
110          BA   .00164
111          LS        0    98.0
112          UD     .055

113          KK    RSPD2
114          KM    ROUTE RUNOFF FROM SPD2 SOUTHEASTERLY ALONG SKY POINTE DRIVE THRU BASIN SPD3
115          KM    TO THE SOUTHWEST CORNER OF THE SITE
116          RK      365   0.018   0.015             TRAP        2       50

117          KK     SPD3
118          KM    THE SOUTHERN PORTION OF SKY POINTE DRIVE ADJACENT TO THE SOUTHERN HALF OF THE
119          KM    SINCE LARGE PORTION OF THIS BASIN IS ALREADY PAVED, THE BASIN IS ASSUMED
120          KM    TO BE ENTIRELY DEVELOPED
121          BA   .00100
122          LS        0    98.0
123          UD     .050

124          KK     CMD4
125          KM    COMBINE RSPD2 AND SPD3
126          KM    TOTAL RUNOFF FLOWS DRAINING TOWARDS THE VACANT PARCEL TO THE SOUTH OF THE SIT
127          HC        2
128          ZZ
```

1

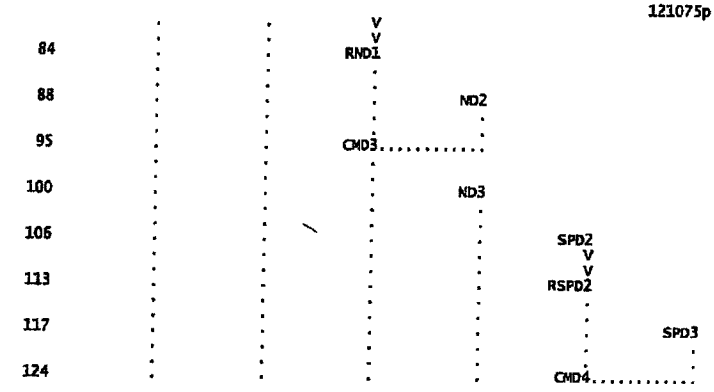
SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE NO.

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

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

```
 25        PPX1
             .
             .
 41          .        SPD1
             .          V
             .          V
 48          .       RSPD1
             .          .
             .          .
 51        CMD1.........
             .
             .
 55          .        PPX2
             .          V
             .          V
 61          .       RPPX2
             .          .
             .          .
 65          .          .        ND4
             .          .         .
             .          .         .
 72          .       CMD2.........
             .          .
             .          .
 77          .          .        ND1
```



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1**********
* *
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
* *
* RUN DATE 23OCT12 TIME 12:22:18 *
* *
****

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

SOMERSET ACADEMY - TECHNICAL DRAINAGE STUDY
INTERIM CONDITIONS - ONSITE AND OFFSITE
USING SCS METHODS AND KINEMATIC WAVE ROUTING
MASTER PLAN ADJUSTED 6-HOUR RAINFALL AND STORM DISTRIBUTION
LOCHSA JOB# 121075

INPUT FILE NAME: 121075P.DAT

AUGUST 2012

MCCARRAN AIRPORT RAINFALL AREA
10 & 100 YEAR - 6 HOUR STORM EVENT
PRECIPITATION:
10-YEAR: 1.58 INCHES
100-YEAR: 2.77 INCHES

10-YEAR/100-YEAR RATIO: 1.58/2.77 = 0.5704

22 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
.57 1.00

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 .57	RATIO 2 1.00
HYDROGRAPH AT						
+	PPX1	.01	1	FLOW	2.	7.
				TIME	3.67	3.58
HYDROGRAPH AT						
+	SPD1	.00	1	FLOW	2.	4.
				TIME	3.50	3.50

ROUTED TO						
+	RSPD1	.00	1	FLOW	2.	4.
				TIME	3.58	3.58
2 COMBINED AT						
+	CMD1	.01	1	FLOW	4.	11.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	PPX2	.01	1	FLOW	2.	9.
				TIME	3.58	3.58
ROUTED TO						
+	RPPX2	.01	1	FLOW	2.	9.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	ND4	.00	1	FLOW	0.	0.
				TIME	3.58	3.50
2 COMBINED AT						
+	CMD2	.01	1	FLOW	2.	9.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	ND1	.01	1	FLOW	5.	10.
				TIME	3.50	3.50
ROUTED TO						
+	RND1	.01	1	FLOW	4.	10.
				TIME	3.58	3.50
HYDROGRAPH AT						
+	ND2	.01	1	FLOW	3.	10.
				TIME	3.58	3.58
2 COMBINED AT						
+	CMD3	.02	1	FLOW	8.	19.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	ND3	.00	1	FLOW	2.	4.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	SPD2	.00	1	FLOW	2.	4.
				TIME	3.50	3.50
ROUTED TO						
+	RSPD2	.00	1	FLOW	2.	4.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	SPD3	.00	1	FLOW	1.	2.
				TIME	3.50	3.50
2 COMBINED AT						
+	CMD4	.00	1	FLOW	3.	6.
				TIME	3.50	3.50

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	INTERPOLATED TO COMPUTATION INTERVAL PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .57									
RSPD1	MANE	2.22	2.23	214.02	1.37	5.00	2.12	215.00	1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1312E+00 EXCESS= .0000E+00 OUTFLOW= .1323E+00 BASIN STORAGE= .5266E-08 PERCENT ERROR= -.9

FOR PLAN = 1 RATIO= 1.00									
RSPD1	MANE	1.85	4.08	213.79	2.56	5.00	3.69	215.00	2.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2451E+00 EXCESS= .0000E+00 OUTFLOW= .2470E+00 BASIN STORAGE= .4083E-08 PERCENT ERROR= -.8

FOR PLAN = 1 RATIO= .57									
RPPX2	MANE	.48	2.29	215.93	.24	5.00	2.20	215.00	.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1405E+00 EXCESS= .0000E+00 OUTFLOW= .1406E+00 BASIN STORAGE= .2102E-06 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00									
RPPX2	MANE	.38	9.11	215.23	.92	5.00	9.08	215.00	.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5284E+00 EXCESS= .0000E+00 OUTFLOW= .5286E+00 BASIN STORAGE= .1636E-06 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .57									
RND1	MANE	.71	4.57	211.32	.83	5.00	4.41	215.00	.83

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2659E+00 EXCESS= .0000E+00 OUTFLOW= .2662E+00 BASIN STORAGE= .1198E-09 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00									
RND1	MANE	.66	10.05	211.31	1.88	5.00	9.61	210.00	1.89

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6078E+00 EXCESS= .0000E+00 OUTFLOW= .6082E+00 BASIN STORAGE= .9675E-10 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .57

121075p

RSPD2	MANE	.82	2.05	211.15	1.36	5.00	1.98	210.00	1.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1189E+00 EXCESS= .0000E+00 OUTFLOW= .1190E+00 BASIN STORAGE= .4969E-10 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RSPD2	MANE	.62	3.71	211.34	2.54	5.00	3.58	210.00	2.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2221E+00 EXCESS= .0000E+00 OUTFLOW= .2224E+00 BASIN STORAGE= .5678E-10 PERCENT ERROR= -.1

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

Somerset Academy

(Addendum to Technical Drainage Study)

10-Year and 100-Year,
Six Hour Storm:
Future Condition

FILE: 121075F.DAT

Peak Flow Summary
Future Condition

HEC-1 I.D.	Area (acres)	10-year Flow (cfs)	100-year Flow (cfs)
PPD1	5.57	7	16
PPD2	6.93	8	16
RPPD2	-	8	16
ND4	0.19	<1	<1
CMF1	-	8	16
ND1	3.87	5	10
RND1	-	4	10
ND2	5.98	3	10
CMF2	-	8	19
ND3	1.54	2	4
SPD1	1.16	2	4
RSPD1	-	2	4
SPD2	1.05	2	4
CMF3	-	4	8
RCMF3	-	4	7
SPD3	0.64	1	2
CMF4	-	5	10

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE   23OCT12  TIME  12:22:29   *
*                                       *
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**************************************
*                                    *
*    U.S. ARMY CORPS OF ENGINEERS    *
*    HYDROLOGIC ENGINEERING CENTER   *
*         609 SECOND STREET          *
*       DAVIS, CALIFORNIA 95616      *
*         (916) 756-1104             *
*                                    *
**************************************
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X     X  XXXXXXX   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

   1          ID        SOMERSET ACADEMY - TECHNICAL DRAINAGE STUDY
   2          ID        FUTURE CONDITIONS - ONSITE AND OFFSITE
   3          ID        USING SCS METHODS AND KINEMATIC WAVE ROUTING
   4          ID        MASTER PLAN ADJUSTED 6-HOUR RAINFALL AND STORM DISTRIBUTION
   5          ID        LOCHSA JOB# 121075
   6          ID
   7          ID        INPUT FILE NAME:  121075F.DAT
   8          ID
   9          ID        AUGUST 2012
  10          ID        ************************************************************************
  11          ID        ************************************************************************
  12          ID             McCARRAN AIRPORT RAINFALL AREA
  13          ID             10 & 100 YEAR - 6 HOUR STORM EVENT
  14          ID             PRECIPITATION:
  15          ID                   10-YEAR:  1.58 INCHES
  16          ID                   100-YEAR: 2.77 INCHES
  17          ID
  18          ID                   10-YEAR/100-YEAR RATIO:  1.58/2.77 = 0.5704
  19          ID        ************************************************************************
  20          ID        ************************************************************************
              *DIAGRAM
  21          IT      5                  300
  22          IO      5       0
  23          IN      5
  24          JR    PREC   .5704     1.0

  25          KK     PPD1
  26          KM    NORTHWESTERN PORTION OF THE SUBJECT PROJECT PARCEL. THIS AREA WILL
  27          KM    BE DEVELOPED IN THE FUTURE BY OTHERS DRAINING NORTHEASTERLY
  28          KM    TOWARDS ELKHORN ROAD
  29          PB    2.770
  30          PC      0.0      .02     .057      .07     .087     .108     .124      .13      .13      .13
  31          PC      .13      .13      .13     .133      .14     .142     .148     .158     .172     .181
  32          PC      .19     .197     .199       .2     .201     .204     .214     .229     .241     .249
  33          PC     .251     .256      .27     .278     .281     .283     .295     .322     .352     .409
  34          PC     .499      .59      .71     .744     .781     .812     .819     .835     .851     .856
  35          PC      .86     .868     .876     .888      .91     .926     .937      .95      .97     .976
  36          PC     .982     .985     .987     .989      .99     .993     .993     .994     .995     .998
  37          PC     .998     .999      1.0
  38          BA   .00870
  39          LS       0     92.0
  40          UD     .084

  41          KK     PPD2
  42          KM    REMAINDER NORTHERN PORTION OF THE PROJECT PARCEL TO BE DEVELOPED IN THE
  43          KM    FUTURE BY OTHERS DRAINING EASTERLY AND DIVERTED SOUTHERLY THROUGH ONSITE
  44          KM    BASIN ND4
  45          BA   .00870
  46          LS       0     92.0
  47          UD     .071
```

1 HEC-1 INPUT PAGE 2

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

  48          KK    RPPD2
  49          KM    ROUTE RUNOFF FROM PPD2 SOUTHERLY THROUGH ND4 TOWARDS THE NORTHERN
  50          KM    WROUGHT IRON GATE AND 20' DRAINAGE EASEMENT
  51          RK      360   0.005   0.015            RECT       4       0

  52          KK     ND4
  53          KM    ONSITE BASIN ND4. NORTHERN PORTION OF THE SUBJECT PROJECT SITE
  54          KM    DRAINING EASTERLY TOWARDS THE EXISTING NORTHERN WROUGHT IRON GATE
  55          KM    INTO THE ADJACENT ELKHORN-CIMARRON ESTATES RESIDENTIAL SUBDIVSION
  56          BA   .00030
  57          LS       0     72.1
  58          UD     .091

  59          KK     CMF1
  60          KM    COMBINE RPPD2 AND ND4
  61          KM    TOTAL ONSITE FLOWS DRAINING TOWARDS THE EXISTING 20' DRAINAGE EASEMENT ONTO
  62          KM    DENAIDES COURT THROUGH THE NORTHERN WROUGHT IRON GATE
  63          HC       2
```

```
 64          KK    ND1
 65          KM   ONSITE BASIN ND1. NORTHERN PORTION OF THE SUBJECT PROJECT SITE
 66          KM   DRAINING EASTERLY TOWARDS THE EXISTING NORTHERN WROUGHT IRON GATE
 67          KM   INTO THE ADJACENT ELKHORN-CIMARRON ESTATES RESIDENTIAL SUBDIVSION
 68          BA  .00605
 69          LS      0    91.3
 70          UD    .098

 71          KK    RND1
 72          KM   ROUTE RUNOFF FROM ND1 SOUTHEASTERLY THROUGH BASIN ND2 ALONG THE ONSITE DRIVE
 73          KM   AISLE TO THE SOUTHWEST CORNER OF THE SITE
 74          RK     425   0.018   0.015           TRAP       2      50

 75          KK    ND2
 76          KM   ONSITE BASIN ND2. MIDDLE PORTION OF THE SUBJECT PROJECT SITE.
 77          KM   DRAINING SOUTHEASTERLY TOWARDS THE EXISTING SOUTHERN WROUGHT IRON GATE
 78          KM   INTO THE ADJACENT ELKHORN-CIMARRON ESTATES RESIDENTIAL SUBDIVSION
 79          BA  .00934
 80          LS      0    81.7
 81          UD    .138

 82          KK    CMF2
 83          KM   COMBINE RND1 AND ND2
 84          KM   TOTAL ONSITE FLOWS DRAINING TOWARDS THE EXISTING 20' DRAINAGE EASEMENT ONTO
 85          KM   HESPERIDES AVENUE THROUGH THE SOUTHERN WROUGHT IRON GATE
 86          HC      2

 87          KK    ND3
 88          KM   ONSITE BASIN ND3. SOUTHERN PORTION OF THE SUBJECT PROJECT SITE.
 89          KM   DRAINING SOUTHEASTERLY TOWARDS THE VACANT PARCEL TO THE SOUTH
 90          BA  .00241
 91          LS      0    89.5
 92          UD    .059
```



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

 93          KK    SPD1
 94          KM   THE PORTION OF SKY POINTE DRIVE ALONG BASIN PPX1
 95          KM   SINCE LARGE PORTION OF THIS BASIN IS ALREADY PAVED, THE BASIN IS ASSUMED
 96          KM   TO BE ENTIRELY DEVELOPED
 97          BA  .00181
 98          LS      0    98.0
 99          UD    .057

100          KK   RSPD1
101          KM   ROUTE RUNOFF FROM SPD1 SOUTHEASTERLY THROUGH SPD2 ADJACENT TO THE SITE
102          RK     590   0.018   0.015           TRAP       2      50

103          KK    SPD2
104          KM   THE CENTRAL PORTION OF SKY POINTE DRIVE ADJACENT TO THE NORTHERN HALF OF THE
105          KM   SINCE LARGE PORTION OF THIS BASIN IS ALREADY PAVED, THE BASIN IS ASSUMED
106          KM   TO BE ENTIRELY DEVELOPED
107          BA  .00164
108          LS      0    98.0
109          UD    .055

110          KK    CMF3
111          KM   COMBINE RSPD1 AND SPD2
112          KM   TOTAL RUNOFF FLOWS DRAINING SOUTHEASTERLY PAST THE NORTHWESTERN DRIVEWAY
113          HC      2

114          KK   RCMF3
115          KM   ROUTE RUNOFF FROM CMF2 SOUTHEASTERLY ALONG SKY POINTE DRIVE THRU BASIN SPD3
116          KM   TO THE SOUTHWEST CORNER OF THE SITE
117          RK     365   0.018   0.015           TRAP       2      50

118          KK    SPD3
119          KM   THE SOUTHERN PORTION OF SKY POINTE DRIVE ADJACENT TO THE SOUTHERN HALF OF THE
120          KM   SINCE LARGE PORTION OF THIS BASIN IS ALREADY PAVED, THE BASIN IS ASSUMED
121          KM   TO BE ENTIRELY DEVELOPED
122          BA  .00100
123          LS      0    98.0
124          UD    .050

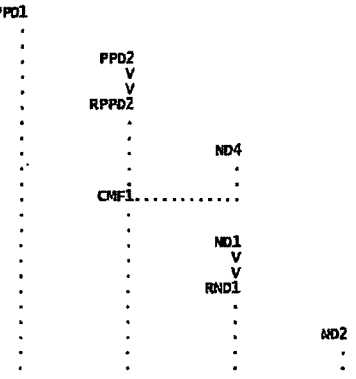
125          KK    CMF4
126          KM   COMBINE RSPD2 AND SPD3
127          KM   TOTAL RUNOFF FLOWS DRAINING SOUTHEASTERLY IN SKY POINTE DRIVE DOWNSTREAM OF T
128          HC      2
129          ZZ
```

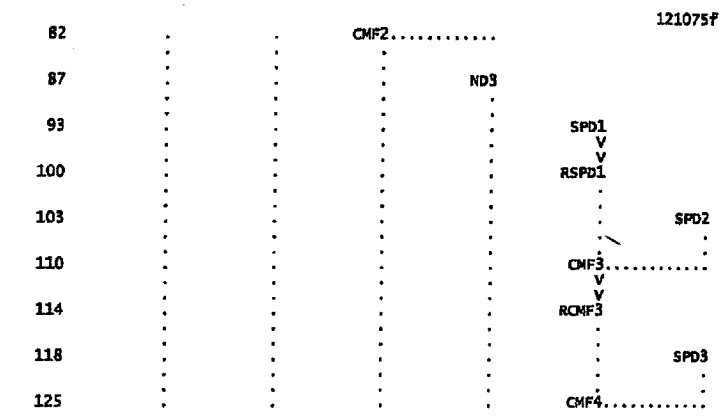
1 SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE NO.

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

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





(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1**********
* *
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
* *
* RUN DATE 23OCT12 TIME 12:22:29 *
* *
****

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

SOMERSET ACADEMY - TECHNICAL DRAINAGE STUDY
FUTURE CONDITIONS - ONSITE AND OFFSITE
USING SCS METHODS AND KINEMATIC WAVE ROUTING
MASTER PLAN ADJUSTED 6-HOUR RAINFALL AND STORM DISTRIBUTION
LOCHSA JOB# 121075

INPUT FILE NAME: 121075F.DAT

AUGUST 2012

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10 & 100 YEAR - 6 HOUR STORM EVENT
PRECIPITATION:
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10-YEAR/100-YEAR RATIO: 1.58/2.77 = 0.5704

22 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
.57 1.00

*** FOKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 1

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 .57	RATIO 2 1.00
HYDROGRAPH AT						
+	PPD1	.01	1	FLOW	7.	16.

				TIME	3.50	3.50
HYDROGRAPH AT						
+	PPD2	.01	1	FLOW	8.	16.
				TIME	3.50	3.50
ROUTED TO						
+	RPPD2	.01	1	FLOW	8.	16.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ND4	.00	1	FLOW	0.	0.
				TIME	3.58	3.50
2 COMBINED AT						
+	CMF1	.01	1	FLOW	8.	16.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ND1	.01	1	FLOW	5.	10.
				TIME	3.50	3.50
ROUTED TO						
+	RND1	.01	1	FLOW	4.	10.
				TIME	3.58	3.50
HYDROGRAPH AT						
+	ND2	.01	1	FLOW	3.	10.
				TIME	3.58	3.58
2 COMBINED AT						
+	CMF2	.02	1	FLOW	8.	19.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	ND3	.00	1	FLOW	2.	4.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	SPD1	.00	1	FLOW	2.	4.
				TIME	3.50	3.50
ROUTED TO						
+	RSPD1	.00	1	FLOW	2.	4.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	SPD2	.00	1	FLOW	2.	4.
				TIME	3.50	3.50
2 COMBINED AT						
+	CMF3	.00	1	FLOW	4.	8.
				TIME	3.50	3.50
ROUTED TO						
+	RCMF3	.00	1	FLOW	4.	7.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	SPD3	.00	1	FLOW	1.	2.
				TIME	3.50	3.50
2 COMBINED AT						
+	CMF4	.00	1	FLOW	5.	10.
				TIME	3.50	3.50

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .57									
RPPD2	MANE	.33	7.70	210.61	.87	5.00	7.51	210.00	.87
CONTINUITY SUMMARY (AC-FT) - INFLOW= .4031E+00 EXCESS= .0000E+00 OUTFLOW= .4035E+00 BASIN STORAGE= .1838E-06 PERCENT ERROR= -.1									
FOR PLAN = 1 RATIO= 1.00									
RPPD2	MANE	.28	16.27	210.44	1.95	5.00	16.08	210.00	1.95
CONTINUITY SUMMARY (AC-FT) - INFLOW= .9023E+00 EXCESS= .0000E+00 OUTFLOW= .9029E+00 BASIN STORAGE= .1865E-06 PERCENT ERROR= -.1									
FOR PLAN = 1 RATIO= .57									
RND1	MANE	.71	4.57	211.32	.83	5.00	4.41	215.00	.83
CONTINUITY SUMMARY (AC-FT) - INFLOW= .2659E+00 EXCESS= .0000E+00 OUTFLOW= .2662E+00 BASIN STORAGE= .1198E-09 PERCENT ERROR= -.1									
FOR PLAN = 1 RATIO= 1.00									
RND1	MANE	.66	10.05	211.31	1.88	5.00	9.61	210.00	1.89
CONTINUITY SUMMARY (AC-FT) - INFLOW= .6078E+00 EXCESS= .0000E+00 OUTFLOW= .6082E+00 BASIN STORAGE= .9875E-10 PERCENT ERROR= -.1									
FOR PLAN = 1 RATIO= .57									
RSPD1	MANE	1.19	2.26	212.22	1.36	5.00	2.09	210.00	1.36
CONTINUITY SUMMARY (AC-FT) - INFLOW= .1312E+00 EXCESS= .0000E+00 OUTFLOW= .1316E+00 BASIN STORAGE= .3707E-09 PERCENT ERROR= -.3									
FOR PLAN = 1 RATIO= 1.00									
RSPD1	MANE	1.06	4.03	212.16	2.55	5.00	3.81	210.00	2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2451E+00 EXCESS= .0000E+00 OUTFLOW= .2458E+00 BASIN STORAGE= .3768E-09 PERCENT ERROR= -.3

FOR PLAN = 1 RATIO= .57

RCMF3	MANE	.73	4.12	211.43	1.36	5.00	4.00	210.00	1.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2504E+00 EXCESS= .0000E+00 OUTFLOW= .2506E+00 BASIN STORAGE= .8195E-09 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= 1.00

RCMF3	MANE	.66	7.43	211.17	2.54	5.00	7.27	210.00	2.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4676E+00 EXCESS= .0000E+00 OUTFLOW= .4679E+00 BASIN STORAGE= .7925E-09 PERCENT ERROR= -.1

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

REVISED HYDROLOGIC ANALYSIS

Standard Form 4 and HEC-1 Output Files

(Existing, Interim and Future Conditions)

Sky Pointe Drive at Section AA (Future Condition - 10-Year)
Worksheet for Irregular Channel

Project Description	
Worksheet	Sky Pointe Drive at Section AA (Future Condition - 10-Year)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.016000	ft/ft
Discharge	4.00	cfs

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

Results		
Mannings Coefficient	0.015	
Water Surface Elevation	0.30	ft
Elevation Range	0.00 to 0.90	
Flow Area	1.6	ft²
Wetted Perimeter	16.93	ft
Top Width	16.23	ft
Actual Depth	0.30	ft
Critical Elevation	0.33	ft
Critical Slope	0.007572	ft/ft
Velocity	2.52	ft/s
Velocity Head	0.10	ft
Specific Energy	0.40	ft
Froude Number	1.42	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.030
0+07.00	0+17.00	0.013
0+17.00	0+20.00	0.030
0+20.00	0+22.00	0.013
0+22.00	0+82.00	0.016
0+82.00	0+84.00	0.013
0+84.00	0+92.00	0.030

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.90
0+07.00	0.76
0+17.00	0.56
0+20.00	0.50

Sky Pointe Drive at Section AA (Future Condition - 10-Year)
Worksheet for Irregular Channel

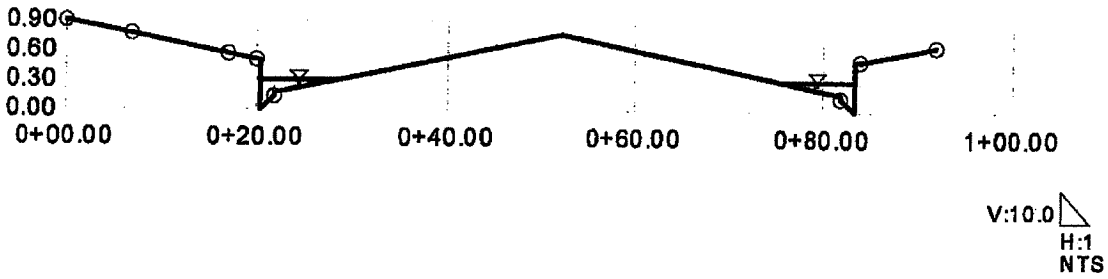
Natural Channel Points	
Station (ft)	Elevation (ft)
0+20.50	0.50
0+20.50	0.00
0+22.00	0.13
0+22.00	0.17
0+52.00	0.77
0+82.00	0.17
0+82.00	0.13
0+83.50	0.00
0+83.50	0.50
0+84.00	0.50
0+87.00	0.56
0+92.00	0.66

Notes:
Q10/Q100 = Combined runoff flow at Combination Point CMF3 (4/8 cfs)

Sky Pointe Drive at Section AA (Future Condition - 10-Year)
Cross Section for Irregular Channel

Project Description	
Worksheet	Sky Pointe Drive at Section AA (Future Condition - 10-Year)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.015
Slope	0.016000 ft/ft
Water Surface Elevation	0.30 ft
Elevation Range	0.00 to 0.90
Discharge	4.00 cfs



Sky Pointe Drive at Section AA (Future Condition - 100-Year)
Worksheet for Irregular Channel

Project Description	
Worksheet	Sky Pointe Drive at Section AA (Future Condition - 100-Year)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.016000	ft/ft
Discharge	8.00	cfs

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

Results		
Mannings Coefficient	0.016	
Water Surface Elevation	0.36	ft
Elevation Range	0.00 to 0.90	
Flow Area	2.6	ft²
Wetted Perimeter	22.40	ft
Top Width	21.59	ft
Actual Depth	0.36	ft
Critical Elevation	0.40	ft
Critical Slope	0.007038	ft/ft
Velocity	3.08	ft/s
Velocity Head	0.15	ft
Specific Energy	0.50	ft
Froude Number	1.56	
Flow Type	Supercritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+07.00	0.030
0+07.00	0+17.00	0.013
0+17.00	0+20.00	0.030
0+20.00	0+22.00	0.013
0+22.00	0+82.00	0.016
0+82.00	0+84.00	0.013
0+84.00	0+92.00	0.030

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	0.90
0+07.00	0.76
0+17.00	0.56
0+20.00	0.50

Sky Pointe Drive at Section AA (Future Condition - 10-Year)
Worksheet for Irregular Channel

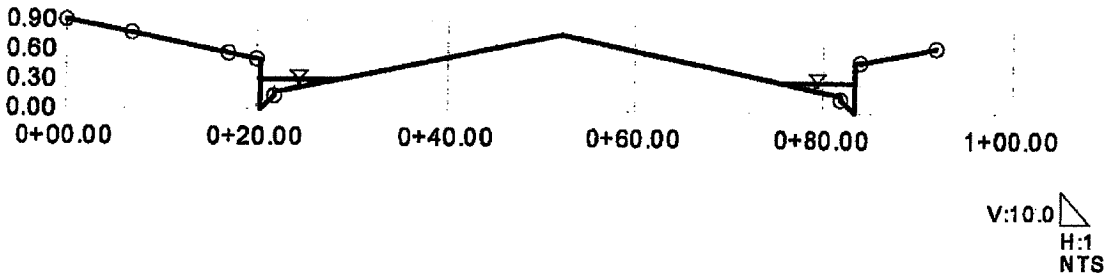
Natural Channel Points	
Station (ft)	Elevation (ft)
0+20.50	0.50
0+20.50	0.00
0+22.00	0.13
0+22.00	0.17
0+52.00	0.77
0+82.00	0.17
0+82.00	0.13
0+83.50	0.00
0+83.50	0.50
0+84.00	0.50
0+87.00	0.56
0+92.00	0.66

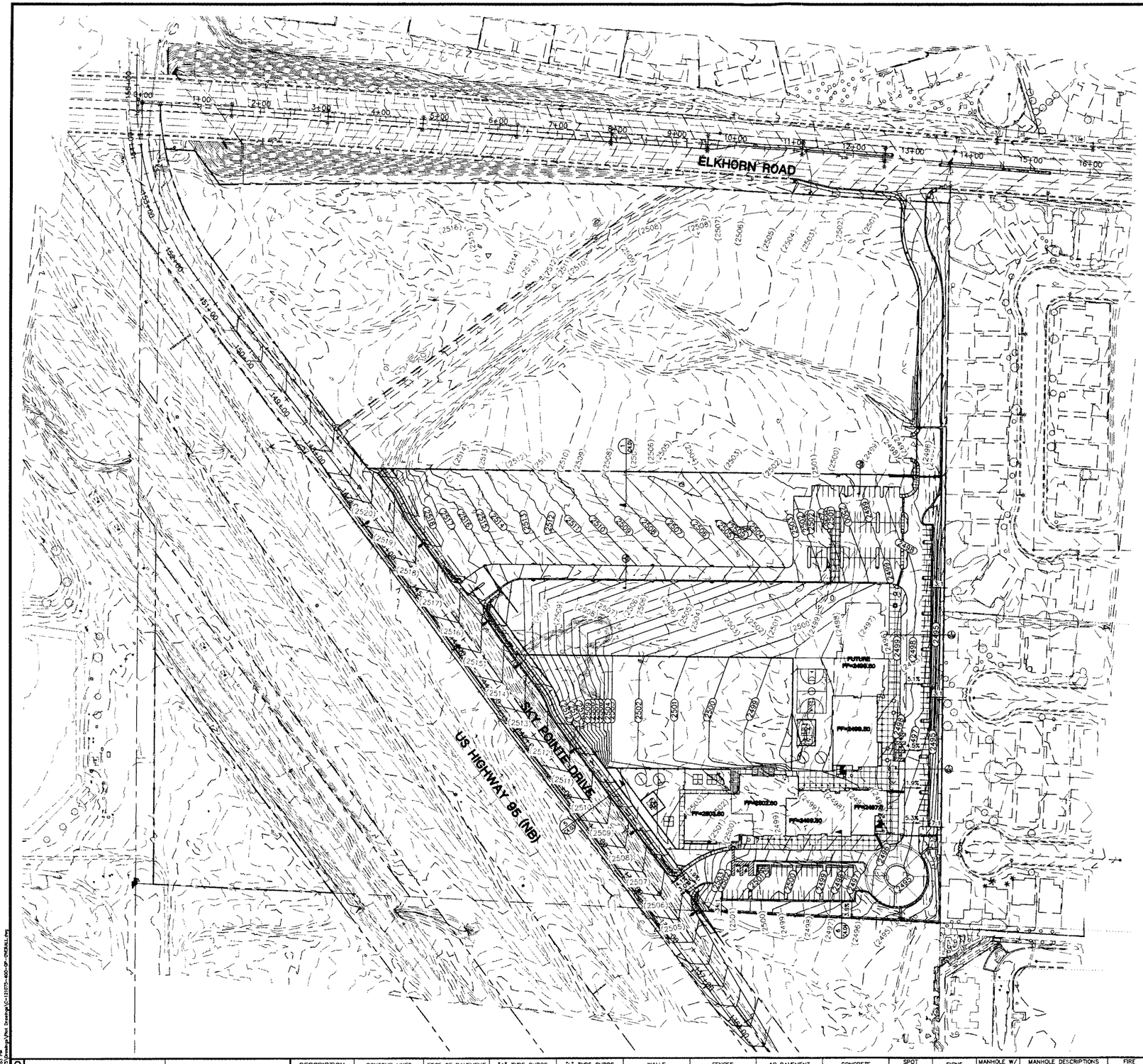
Notes:
Q10/Q100 = Combined runoff flow at Combination Point CMF3 (4/8 cfs)

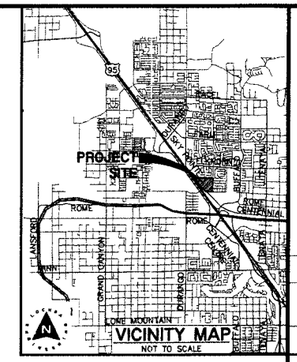
Sky Pointe Drive at Section AA (Future Condition - 10-Year)
Cross Section for Irregular Channel

Project Description	
Worksheet	Sky Pointe Drive at Section AA (Future Condition - 10-Year)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.015
Slope	0.016000 ft/ft
Water Surface Elevation	0.30 ft
Elevation Range	0.00 to 0.90
Discharge	4.00 cfs







GRAPHIC SCALE

80 0 40 80 160

(IN FEET)

1 Inch = 80 ft.

A.P.N.:
125-21-102-001

BASIS OF BEARINGS:
NORTH 85°49'07" WEST, BEING THE NORTH LINE OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 21, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS SHOWN ON A RECORD OF SURVEY IN FILE 73, PAGE 26 IN THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK:
CITY OF LAS VEGAS BENCHMARK (2008 ADJUSTED) 6LV90 21NNW6 A RIVET AND PLATE IN TOP CURB ON THE SOUTH SIDE OF ELKHORN ROAD APPROXIMATELY 1/4 MILE WEST OF CIMARRON ROAD. ELEVATION=2498.19 FEET (761.449 METERS) (NAVD'88)

NOTE:
LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.

SAFETY ALERT

Call Before You Overhead

Call before you UnderGround

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

Call 811

1-702-432-5300

1-702-227-2929 PERMIT AND NOTICE SYSTEM OF NEVADA 1-800-227-2600

LEGEND																																	
CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS Ⓢ = SANITARY SEWER Ⓓ = STORM DRAIN Ⓔ = ELECTRICAL Ⓣ = TELEPHONE	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS	200w HPS STREETLIGHTS	250w HPS STREETLIGHTS
PROPERTY LINE	SAWCUT LINE	EXISTING:	(2210)								(12.34 BC)		Ⓢ							BWV				
ROW LINE	SCARP LINE	PROPOSED:	2122								12.34 BC		Ⓓ							BWV				

PROJECT No.:	121075
DATE:	12/03/12
SCALE:	1"=80'
DRAWN BY:	MW
DESIGNED BY:	MW
CHECKED BY:	GM

GUY M. MORRIS — EXP. 12-31-13 — CIVIL — No. 14526 — STATE OF NEVADA — PROFESSIONAL ENGINEER

12-3-12

SHEET No.
C4.00
SHEET 12 OF 27
HTE No.

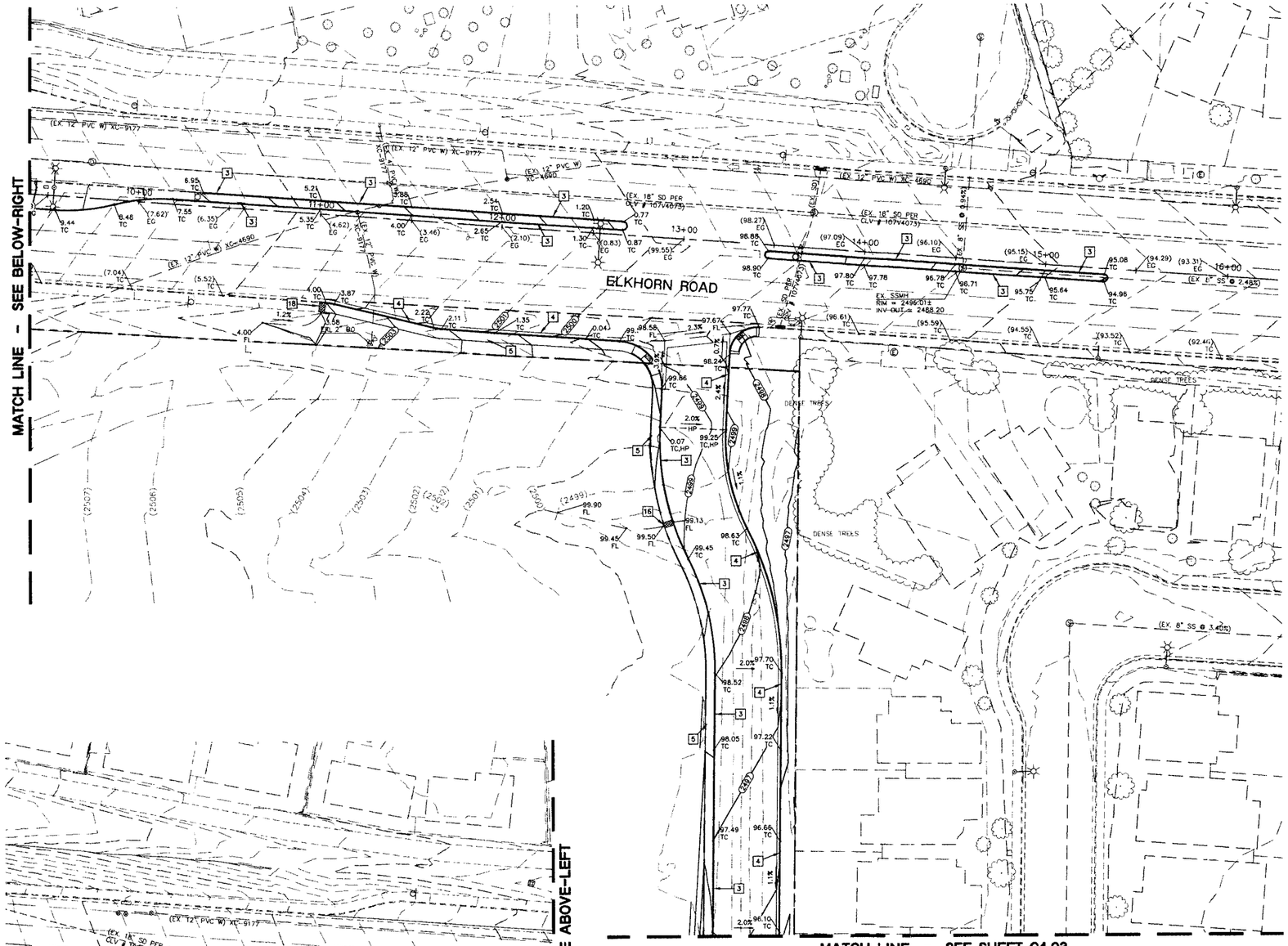
SHEET TITLE: **GRADING PLANS**
OVERALL GRADING PLAN

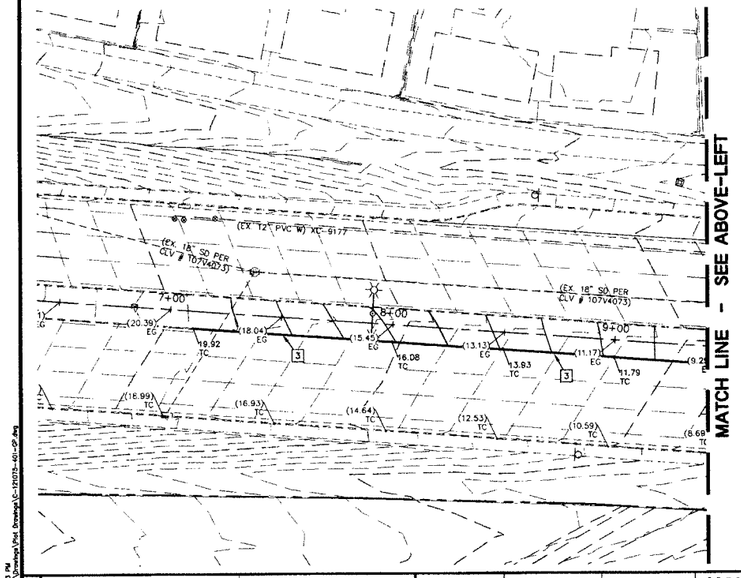
SOMERSET ACADEMY
SKY POINTE & ELKHORN
LAS VEGAS, NV

REV.	DATE:	BY:	DESCRIPTION:

Lochsa engineering
8345 South Jones Blvd.
Suite 100
Las Vegas, NV 89118
Phone (702) 385-6512
Fax (702) 385-6517
www.lochsa.com

12/7/2012 2:51 PM
N:\CAD\121075\Drawings\Plan Sheets\C4-121075-4DS-GP-OVERALL.dwg





GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES GUIDANCE MANUAL SECTION 3.5.1 STANDARD NOTES 1-5

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 RIGHT-OF-WAY OF THE CITY OF LAS VEGAS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIAL SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CITY OF LAS VEGAS AND 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 NVR10000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPS WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR1000000, SECTION III.A.12.
5. ACCUMULATED SEDIMENT IN BMP'S 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.

GRADING NOTES:

1. SLOPES 4:1 OR STEEPER AND FINE-GRAINED MATERIALS THAT HAVE BEEN DISTURBED (SANDY AND SILTY MATERIALS) SHOULD BE PROTECTED WITH BURLAP OR OTHER EROSION CONTROL FABRIC/MATERIAL UNLESS OTHERWISE SPECIFIED BY LANDSCAPE DRAWINGS AND SPECIFICATIONS OR THE SOILS REPORT.
2. CONTRACTOR SHALL DETERMINE HIS OWN FOOTING OR BASEMENT EXCAVATION QUANTITIES, EVEN THOUGH SHOWN ON ROUGH GRADING PLANS. ADDITIONALLY, STRUCTURE BACKFILL COSTS SHOULD BE INCLUDED IN THE COST OF THE STRUCTURE, UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.
3. CONTRACTOR SHALL NOTIFY LOCHSA ENGINEERING WITHIN 24 HOURS OF OMISSIONS AND ERRORS DISCOVERED ON PLANS. LOCHSA ENGINEERING WILL NOT BE RESPONSIBLE FOR ANY "CORRECTIVE" WORK DONE BY OTHERS.
4. CONTRACTOR TO ENSURE POSITIVE DRAINAGE, NO PONDING ALLOWED. CONTRACTOR TO FOLLOW RECOMMENDATIONS AS OUTLINED IN THE PROJECT GEOTECHNICAL REPORT, INCLUDING BUT NOT LIMITED TO EXCAVATION, GRADING AND COMPACTION. REFER TO THE REPORT PREPARED BY: TERRACON CONSULTANTS WESTERN, INC., PROJECT No. 64955351-1, DATED: DEC. 21, 1995.

FLOOD ZONE NOTE:

THE ENTIRE SUBJECT PROPERTY IS LOCATED WITHIN AN AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED). ZONE "X" (UNSHADED) IS DESCRIBED BY FEMA AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. THIS INFORMATION IS OBTAINED FROM THE EFFECTIVE FLOOD INSURANCE RATE MAP (FIRM) PANEL No. 32003F1745, EFFECTIVE DATE SEPTEMBER 27, 2002.

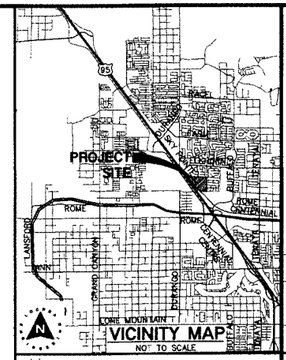
EXISTING UTILITY NOTE:

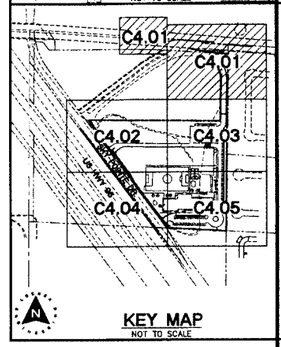
CONTRACTOR TO ADJUST ALL EXISTING UTILITIES TO MATCH PROPOSED FINISH GRADE ELEVATIONS.

STORM DRAIN CONSTRUCTION NOTES:

NOTE: ALL ONSITE STORM DRAIN AND THE PERTINENT FACILITIES ARE PRIVATELY OWNED AND PRIVATELY MAINTAINED.
– NOT ALL NOTES USED ON THIS SHEET –

1. INSTALL 48" TYPE I ECCENTRIC STORM DRAIN PER N.D.O.T DRAWING NO. R-4.7.1
2. INSTALL RCB CULVERT TYPE I HEADWALL PER N.D.O.T DRAWING NO. B-20-1.5.
3. INSTALL TYPE 3 DROP INLET PER N.D.O.T DRAWING NO. R-4.3.1. CONSTRUCT STORM DRAIN INLET PER USDCCA DRAWING NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).
4. INSTALL 3'X3' JENSEN PRECAST DROP INLET PER DETAIL 3 ON SHEET C6.02.
5. NSTALL 48" STORM DRAIN MANHOLE PER C.C.A.U.S.D. NO. 403 WITH CONCRETE COLLAR PER C.C.A.U.S.D. NO. 408. REFER TO C.C.A.U.S.D. NO. 409 FOR MANHOLE COVER AND RING.
6. INSTALL FLARED END SECTION OF 18" STORM DRAIN LINE. CURB TO BE ABUTTED TO FLARED END SECTION.
7. ROOF DRAIN LOCATION. SEE PLANS BY OTHERS.





CONSTRUCTION NOTES:

– ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH "CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS (C.C.A.U.S.D.)" LATEST EDITION AND/OR REGULATING ENTITY HAVING JURISDICTION.
– NOT ALL NOTES USED ON THIS SHEET –

1. CONSTRUCT AC PAVEMENT PER DETAIL 2 ON C6.01.
2. CONSTRUCT CONC. PAVEMENT PER DETAIL 3 ON C6.01.
3. CONSTRUCT "A" TYPE CURB PER CCAUSD No. 219.
4. CONSTRUCT "L" TYPE CURB PER CCAUSD No. 216.
5. CONSTRUCT CONC. SIDEWALK PER CCAUSD No. 234. REFER TO ARCH. PLANS FOR FINISHING SPECIFICATIONS.
7. CONSTRUCT SIDEWALK RAMP CCAUSD No. 235 CASE II.
8. CONSTRUCT 72" WIDE "U" CHANNEL PER DETAIL 5 ON C6.01.
9. CONSTRUCT 24" WIDE "U" CHANNEL PER DETAIL 4 ON C6.01.
10. CONSTRUCT COMMERCIAL DRIVEWAY PER CCAUSD No. 225.
11. LANDSCAPING. REFER TO LANDSCAPE ARCH. PLANS FOR SPECIFICATIONS.
14. SEE STRUCTURAL DETAILS BY OTHERS FOR STAIRS AND STRUCTURAL SLAB.
16. CONSTRUCT SIDEWALK DRAIN PER C.C.A.U.S.D. No. 236.
17. CONSTRUCT 2' VALLEY GUTTER PER DETAIL 11 ON C6.01.
18. CONSTRUCT SIDEWALK RAMP PER DETAIL 10 ON C6.01
19. CONSTRUCT 60" WIDE "U" CHANNEL PER DETAIL 12 ON C6.01
20. CONSTRUCT SIDEWALK RAMP PER DETAIL 9 ON C6.01.
21. INSTALL MIN. 36" HIGH RAIL ON TOP OF RETAINING WALL WHERE GRADE DIFFERENCE IS 18" OR GREATER.
22. CONSTRUCT RETAINING WALL PER STRUCTURAL DETAILS ON SHEET C6.03 AND ARCHITECTURAL PLAN.
23. CONSTRUCT 3' WIDE CONCRETE STRIP FOR GATE PATH. NOTCH CURB AS NECESSARY FOR THE GATE BYPASS.
24. CMU SCREEN WALL PER ARCHITECTURAL PLANS. WALL TO BE SOLID GROUTED 18" ABOVE FLOWLINE OF ROADWAY.
25. CONSTRUCT BUILDING CONCRETE STEM WALL PER ARCHITECTURAL PLANS.

EARTHWORK QUANTITIES

CUT	8,499 CU. YD.
FILL	31,269 CU.YD.
NET	FILL 22,770 CU. YD.

GRADING PLAN CERTIFICATION

NAME: GUY M. MORRIS PE #14526 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT CITY OF LAS VEGAS FOR THIS PROJECT. PROJECT# DS4570

A.P.N.:

125-21-102-001

BASIS OF BEARINGS:

NORTH 89°49'07" WEST, BEING THE NORTH LINE OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 21, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS SHOWN ON A RECORD OF SURVEY IN FILE 73, PAGE 26 IN THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK (2008 ADJUSTED) 6LV90 21NW8 A RIVET AND PLATE IN TOP CURB ON THE SOUTH SIDE OF ELKHORN ROAD APPROXIMATELY 1/4 MILE WEST OF CIMARRON ROAD. ELEVATION=2498.19 FEET (761.449 METERS) (NAVD'88)

NOTE:

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.

SAFETY ALERT
Call Before You Overhead
1-702-432-5300
Call before you Underground
Call 811
Call before you dig
Avoid cutting underground utility lines. It's costly.
1-702-227-2929 TOLL FREE
1-800-227-2800

REV.:	DATE:	BY:	DESCRIPTION:

Lochsa engineering
6345 South Jones Blvd.
Las Vegas, NV 89118
Phone (702) 365-6312
Fax (702) 365-6317
www.lochsa.com

SHEET TITLE: GRADING PLANS SHEET 1 OF 5

SOMERSET ACADEMY
SKY POINTE & ELKHORN
LAS VEGAS, NV

PROJECT No.: 121075
DATE: 12/03/12
SCALE: 1"=30'
DRAWN BY: MW
DESIGNED BY: MW
CHECKED BY: GM

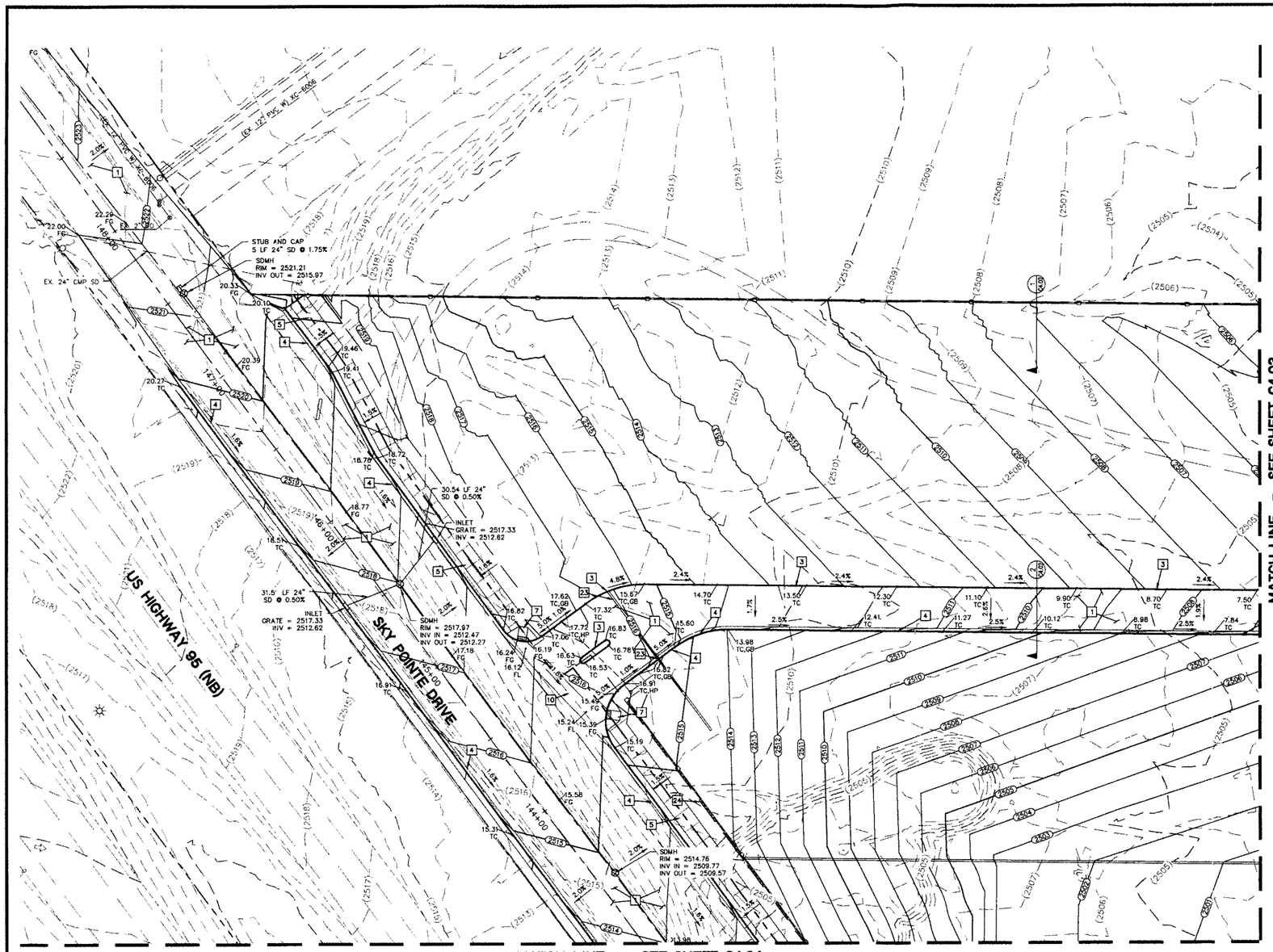
PROFESSIONAL ENGINEER - STATE OF NEVADA
GUY M. MORRIS
EXP. 12-31-13
CIVIL
No. 14526
12-7-12

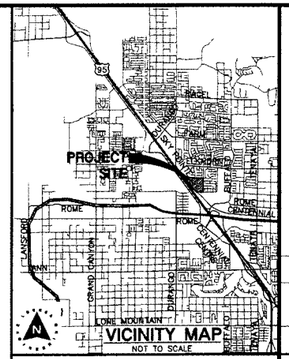
SHEET No.
C4.01
SHEET 13 OF 27
HTE No.

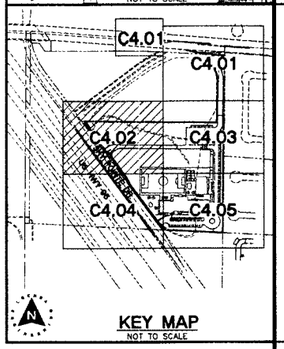
LEGEND

CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS (S) = SANITARY SEWER (D) = STORM DRAIN (E) = ELECTRICAL (T) = TELEPHONE	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS	200w HPS STREETLIGHTS	250w HPS STREETLIGHTS
PROPERTY LINE	SAWCUT LINE	EXISTING:	—(2210)—								12.34 BC		S							BWV				
ROW LINE	SCARP LINE	PROPOSED:	2122								12.34 BC		S							BWV				

12/3/2012 2:33 PM
K:\Civil\Projects\Somerset (Sky Pointe)\C-4\121075-4(01-05).dwg







GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 inch = 30 ft.

LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES GUIDANCE MANUAL SECTION 3.5.1 STANDARD NOTES 1-5

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 RIGHT-OF-WAY OF THE CITY OF LAS VEGAS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIAL SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CITY OF LAS VEGAS AND 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 ANY RAIN EVENT OR 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 BMP'S 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.

GRADING NOTES:

1. SLOPES 4:1 OR STEEPER AND FINE-GRAINED MATERIALS THAT HAVE BEEN DISTURBED (SANDY AND SILTY MATERIALS) SHOULD BE PROTECTED WITH BURLAP OR OTHER EROSION CONTROL FABRIC/MATERIAL, UNLESS OTHERWISE SPECIFIED BY LANDSCAPE DRAWINGS AND SPECIFICATIONS OR THE SOILS REPORT.
2. CONTRACTOR SHALL DETERMINE HIS OWN FOOTING OR BASEMENT EXCAVATION QUANTITIES, EVEN THOUGH SHOWN ON ROUGH GRADING PLANS. ADDITIONALLY, STRUCTURE BACKFILL COSTS SHOULD BE INCLUDED IN THE COST OF THE STRUCTURE, UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.
3. CONTRACTOR SHALL NOTIFY LOCHSA ENGINEERING WITHIN 24 HOURS OF OMISSIONS AND ERRORS DISCOVERED ON PLANS. LOCHSA ENGINEERING WILL NOT BE RESPONSIBLE FOR ANY "CORRECTIVE" WORK DONE BY OTHERS.
4. CONTRACTOR TO ENSURE POSITIVE DRAINAGE. NO PONDING ALLOWED. CONTRACTOR TO FOLLOW RECOMMENDATIONS AS OUTLINED IN THE PROJECT GEOTECHNICAL REPORT, INCLUDING BUT NOT LIMITED TO EXCAVATION, GRADING AND COMPACTION. REFER TO THE REPORT PREPARED BY: TERRACON CONSULTANTS WESTERN, INC., PROJECT No. 64955351-1, DATED: DEC. 21, 1995.

FLOOD ZONE NOTE:

THE ENTIRE SUBJECT PROPERTY IS LOCATED WITHIN AN AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED). ZONE "X" (UNSHADED) IS DESCRIBED BY FEMA AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. THIS INFORMATION IS OBTAINED FROM THE EFFECTIVE FLOOD INSURANCE RATE MAP (FIRM) PANEL No. 32003F1745, EFFECTIVE DATE SEPTEMBER 27, 2002.

EXISTING UTILITY NOTE:

CONTRACTOR TO ADJUST ALL EXISTING UTILITIES TO MATCH PROPOSED FINISH GRADE ELEVATIONS.

GRADING PLAN CERTIFICATION

NAME: GUY M. MORRIS PE # 14526 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT CITY OF LAS VEGAS FOR THIS PROJECT. PROJECT # DS4570

A.P.N.:

125-21-102-001

BASIS OF BEARINGS:

NORTH 85°49'07" WEST, BEING THE NORTH LINE OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 21, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS SHOWN ON A RECORD OF SURVEY IN FILE 73, PAGE 26 IN THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK (2008 ADJUSTED) 6LV90 21NNW6 A RIVET AND PLATE IN TOP CURB ON THE SOUTH SIDE OF ELKHORN ROAD APPROXIMATELY 1/4 MILE WEST OF CIMARRON ROAD. ELEVATION=2498.19 FEET (761.449 METERS) (NAVD'88)

CONSTRUCTION NOTES:

– ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH "CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS (C.C.A.U.S.D.)" LATEST EDITION AND/OR REGULATING ENTITY HAVING JURISDICTION.
– NOT ALL NOTES USED ON THIS SHEET –

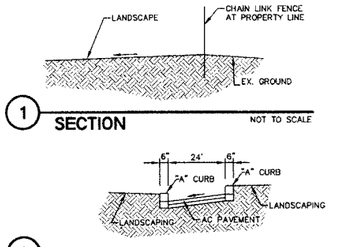
1. CONSTRUCT AC PAVEMENT PER DETAIL 2 ON C6.01.
2. CONSTRUCT CONC. PAVEMENT PER DETAIL 3 ON C6.01.
3. CONSTRUCT "A" TYPE CURB PER CCAUSD No. 219.
4. CONSTRUCT "L" TYPE CURB PER CCAUSD No. 216.
5. CONSTRUCT CONC. SIDEWALK PER CCAUSD No. 234. REFER TO ARCH. PLANS FOR FINISHING SPECIFICATIONS.
7. CONSTRUCT SIDEWALK RAMP CCAUSD No. 235 CASE II.
8. CONSTRUCT 72" WIDE "U" CHANNEL PER DETAIL 5 ON C6.01.
9. CONSTRUCT 24" WIDE "U" CHANNEL PER DETAIL 4 ON C6.01.
10. CONSTRUCT COMMERCIAL DRIVEWAY PER CCAUSD No. 225.
11. LANDSCAPING. REFER TO LANDSCAPE ARCH. PLANS FOR SPECIFICATIONS.
14. SEE STRUCTURAL DETAILS BY OTHERS FOR STAIRS AND STRUCTURAL SLAB.
16. CONSTRUCT SIDEWALK DRAIN PER C.C.A.U.S.D. No. 236.
17. CONSTRUCT 2' VALLEY GUTTER PER DETAIL 11 ON C6.01.
18. CONSTRUCT SIDEWALK RAMP PER DETAIL 10 ON C6.01
19. CONSTRUCT 60" WIDE "U" CHANNEL PER DETAIL 12 ON C6.01
20. CONSTRUCT SIDEWALK RAMP PER DETAIL 9 ON C6.01.
21. INSTALL MIN. 36" HIGH RAIL ON TOP OF RETAINING WALL WHERE GRADE DIFFERENCE IS 18" OR GREATER.
22. CONSTRUCT RETAINING WALL PER STRUCTURAL DETAILS ON SHEET C6.03 AND ARCHITECTURAL PLAN.
23. CONSTRUCT 2' WIDE CONCRETE STRIP FOR GATE PATH. NOTCH CURB AS NECESSARY FOR THE GATE BYPASS.
24. CMU SCREEN WALL PER ARCHITECTURAL PLANS. WALL TO BE SOLID GROUTED 18" ABOVE FLOWLINE OF ROADWAY.
25. CONSTRUCT BUILDING CONCRETE STEM WALL PER ARCHITECTURAL PLANS.

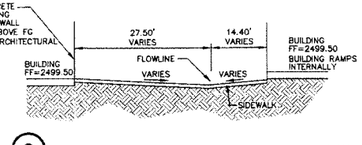
EARTHWORK QUANTITIES

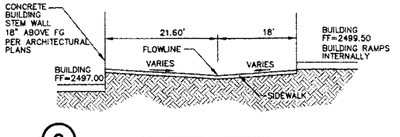
CUT	8,499 CU. YD.
FILL	31,269 CU. YD.
NET: FILL	22,770 CU. YD.

NOTE:

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.







STORM DRAIN CONSTRUCTION NOTES:

NOTE: ALL ONSITE STORM DRAIN AND THE PERTINENT FACILITIES ARE PRIVATELY OWNED AND PRIVATELY MAINTAINED.
– NOT ALL NOTES USED ON THIS SHEET –

1. INSTALL 48" TYPE I ECCENTRIC STORM DRAIN PER N.D.O.T DRAWING NO. R-4.7.1
2. INSTALL RCB CULVERT TYPE I HEADWALL PER N.D.O.T DRAWING NO. B-20-1.5.
3. INSTALL TYPE 3 DROP INLET PER N.D.O.T DRAWING NO. R-4.3.1. CONSTRUCT STORM DRAIN INLET PER USDCCA DRAWING NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).
4. INSTALL 3'X3' JENSEN PRECAST DROP INLET PER DETAIL 3 ON SHEET C6.02.
5. NSTALL 48" STORM DRAIN MANHOLE PER C.C.A.U.S.D. NO. 403 WITH CONCRETE COLLAR PER C.C.A.U.S.D. NO. 408. REFER TO C.C.A.U.S.D. NO. 409 FOR MANHOLE COVER AND RING.
6. INSTALL FLARED END SECTION OF 18" STORM DRAIN LINE. CURB TO BE ABUTTED TO FLARED END SECTION.
7. ROOF DRAIN LOCATION. SEE PLANS BY OTHERS.

SAFETY ALERT

Call Before You Overhead

1-702-432-5300

Call before you UnderGround

Call 811

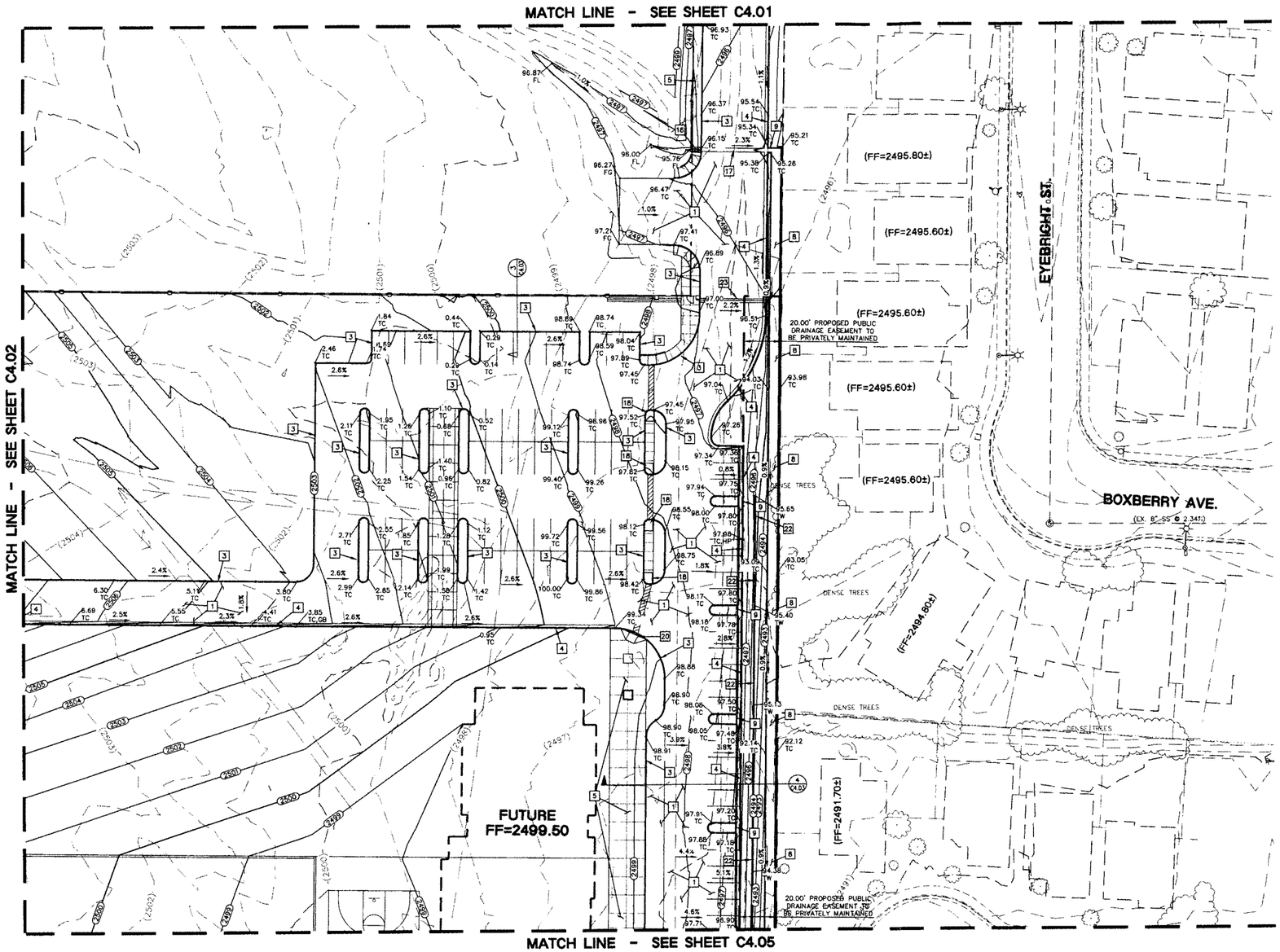
1-702-227-2929 1-800-227-2600

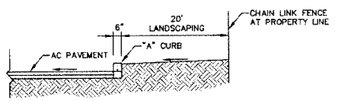
Call before you dig
Avoid cutting underground utility lines. It's costly.

GUY M. MORRIS EXP. 12-31-13 CIVIL No. 14526 STATE OF NEVADA

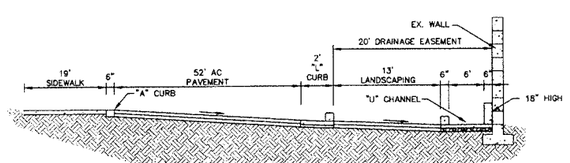
12-3-12

| | | |





3 SECTION — NOT TO SCALE



4 SECTION — NOT TO SCALE

STORM DRAIN CONSTRUCTION NOTES:

NOTE: ALL ONSITE STORM DRAIN AND THE PERTINENT FACILITIES ARE PRIVATELY OWNED AND PRIVATELY MAINTAINED.

– NOT ALL NOTES USED ON THIS SHEET –

1. INSTALL 48" TYPE I ECCENTRIC STORM DRAIN PER N.D.O.T DRAWING NO. R-4.7.1
2. INSTALL RCB CULVERT TYPE I HEADWALL PER N.D.O.T DRAWING NO. B-20-1.5.
3. INSTALL TYPE 3 DROP INLET PER N.D.O.T DRAWING NO. R-4.3.1. CONSTRUCT STORM DRAIN INLET PER USDCCA DRAWING NO. 421 (STORMWATER QUALTY MANAGEMENT STAMP AND SIGN DETAIL).
4. INSTALL 3'X3' JENSEN PRECAST DROP INLET PER DETAIL 3 ON SHEET C6.02.
5. NSTALL 48" STORM DRAIN MANHOLE PER C.C.A.U.S.D. NO. 403 WITH CONCRETE COLLAR PER C.C.A.U.S.D. NO. 408. REFER TO C.C.A.U.S.D. NO. 409 FOR MANHOLE COVER AND RING.
6. INSTALL FLARED END SECTION OF 18" STORM DRAIN LINE. CURB TO BE ABUTTED TO FLARED END SECTION.
7. ROOF DRAIN LOCATION. SEE PLANS BY OTHERS.

LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES GUIDANCE MANUAL SECTION 3.5.1 STANDARD NOTES 1-5

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2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CITY OF LAS VEGAS AND 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 NVR10000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPS WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OR 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 NVR10000, SECTION III.A.12.
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GRADING NOTES:

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4. CONTRACTOR TO ENSURE POSITIVE DRAINAGE. NO PONDING ALLOWED. CONTRACTOR TO FOLLOW RECOMMENDATIONS AS OUTLINED IN THE PROJECT GEOTECHNICAL REPORT, INCLUDING BUT NOT LIMITED TO EXCAVATION, GRADING AND COMPACTION. REFER TO THE REPORT PREPARED BY: TERRACON CONSULTANTS WESTERN, INC., PROJECT No. 64955351-1, DATED: DEC. 21, 1995.

FLOOD ZONE NOTE:

THE ENTIRE SUBJECT PROPERTY IS LOCATED WITHIN AN AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED). ZONE "X" (UNSHADED) IS DESCRIBED BY FEMA AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. THIS INFORMATION IS OBTAINED FROM THE EFFECTIVE FLOOD INSURANCE RATE MAP (FIRM) PANEL No. 32003F1745, EFFECTIVE DATE SEPTEMBER 27, 2002.

EXISTING UTILITY NOTE:

CONTRACTOR TO ADJUST ALL EXISTING UTILITIES TO MATCH PROPOSED FINISH GRADE ELEVATIONS.

GRADING PLAN CERTIFICATION

NAME: GUY M. MORRIS PE #14526 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT CITY OF LAS VEGAS FOR THIS PROJECT. PROJECT# 054570

A.P.N.:

125-21-102-001

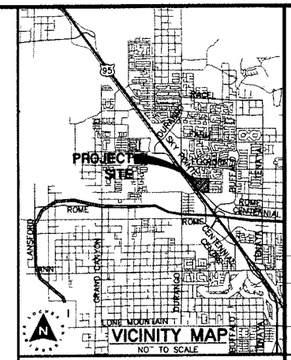
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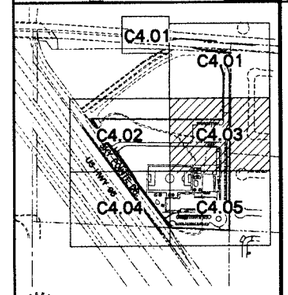
NORTH 89°49'07" WEST, BEING THE NORTH LINE OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 21, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS SHOWN ON A RECORD OF SURVEY IN FILE 73, PAGE 26 IN THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK (2008 ADJUSTED) 6LV90 21NWAG A RIVET AND PLATE IN TOP CURB ON THE SOUTH SIDE OF ELKHORN ROAD APPROXIMATELY 1/4 MILE WEST OF CIMARRON ROAD. ELEVATION=2498.19 FEET (761.449 METERS) (NAVD'88)

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.





CONSTRUCTION NOTES:

– ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH "CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS (C.C.A.U.S.D.)" LATEST EDITION AND/OR REGULATING ENTITY HAVING JURISDICTION.
– NOT ALL NOTES USED ON THIS SHEET –

1. CONSTRUCT AC PAVEMENT PER DETAIL 2 ON C6.01.
2. CONSTRUCT CONC. PAVEMENT PER DETAIL 3 ON C6.01.
3. CONSTRUCT "A" TYPE CURB PER CCAUSD No. 219.
4. CONSTRUCT "L" TYPE CURB PER CCAUSD No. 216.
5. CONSTRUCT CONC. SIDEWALK PER CCAUSD No. 234. REFER TO ARCH. PLANS FOR FINISHING SPECIFICATIONS.
7. CONSTRUCT SIDEWALK RAMP CCAUSD No. 235 CASE II.
8. CONSTRUCT 72" WDE "U" CHANNEL PER DETAIL 5 ON C6.01.
9. CONSTRUCT 24" WDE "U" CHANNEL PER DETAIL 4 ON C6.01.
10. CONSTRUCT COMMERCIAL DRIVEWAY PER CCAUSD No. 225.
11. LANDSCAPING. REFER TO LANDSCAPE ARCH. PLANS FOR SPECIFICATIONS.
14. SEE STRUCTURAL DETAILS BY OTHERS FOR STAIRS AND STRUCTURAL SLAB.
16. CONSTRUCT SIDEWALK DRAIN PER C.C.A.U.S.D. No. 236.
17. CONSTRUCT 2' VALLEY GUTTER PER DETAIL 11 ON C6.01.
18. CONSTRUCT SIDEWALK RAMP PER DETAIL 10 ON C6.01
19. CONSTRUCT 60" WDE "U" CHANNEL PER DETAIL 12 ON C6.01
20. CONSTRUCT SIDEWALK RAMP PER DETAIL 9 ON C6.01.
21. INSTALL MIN. 36" HIGH RAIL ON TOP OF RETAINING WALL WHERE GRADE DIFFERENCE IS 18" OR GREATER.
22. CONSTRUCT RETAINING WALL PER STRUCTURAL DETAILS ON SHEET C6.03 AND ARCHITECTURAL PLAN.
23. CONSTRUCT 2' WIDE CONCRETE STRIP FOR GATE PATH. NOTCH CURB AS NECESSARY FOR THE GATE BYPASS.
24. CMU SCREEN WALL PER ARCHITECTURAL PLANS. WALL TO BE SOLID GROUTED 18" ABOVE FLOWLINE OF ROADWAY.
25. CONSTRUCT BUILDING CONCRETE STEM WALL PER ARCHITECTURAL PLANS.

EARTHWORK QUANTITIES

CUT	8,498 CU. YD.
FILL	31,269 CU.YD.
NET	FILL 22,770 CU. YD.

NOTE:

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.

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Call 811
Call before you dig
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1-702-227-2929 FREE!!! NO INTERNET, VISIT US @ WWW.811.COM 1-800-227-2800

REV.:	DATE:	BY:	DESCRIPTION:

Lochsa engineering
6345 South Jones Blvd.
Suite 100
Las Vegas, NV 89118
Phone (702) 365-6310
Fax (702) 365-6311
www.LochsaEng.com

SHEET: GRADING PLANS SHEET 3 OF 5
TITLE: SOMERSET ACADEMY SKY POINTE & ELKHORN LAS VEGAS, NV

PROJECT No.: 121075
DATE: 12/03/12
SCALE: 1"=30'
DRAWN BY: MW
DESIGNED BY: MW
CHECKED BY: GM

SCALE: 1" = 30'
GUY M. MORRIS EXP. 12-31-13 CIVIL No. 14526 STATE OF NEVADA
12-7-12

SHEET No. C4.03
SHEET 15 OF 27
HTE No. ----

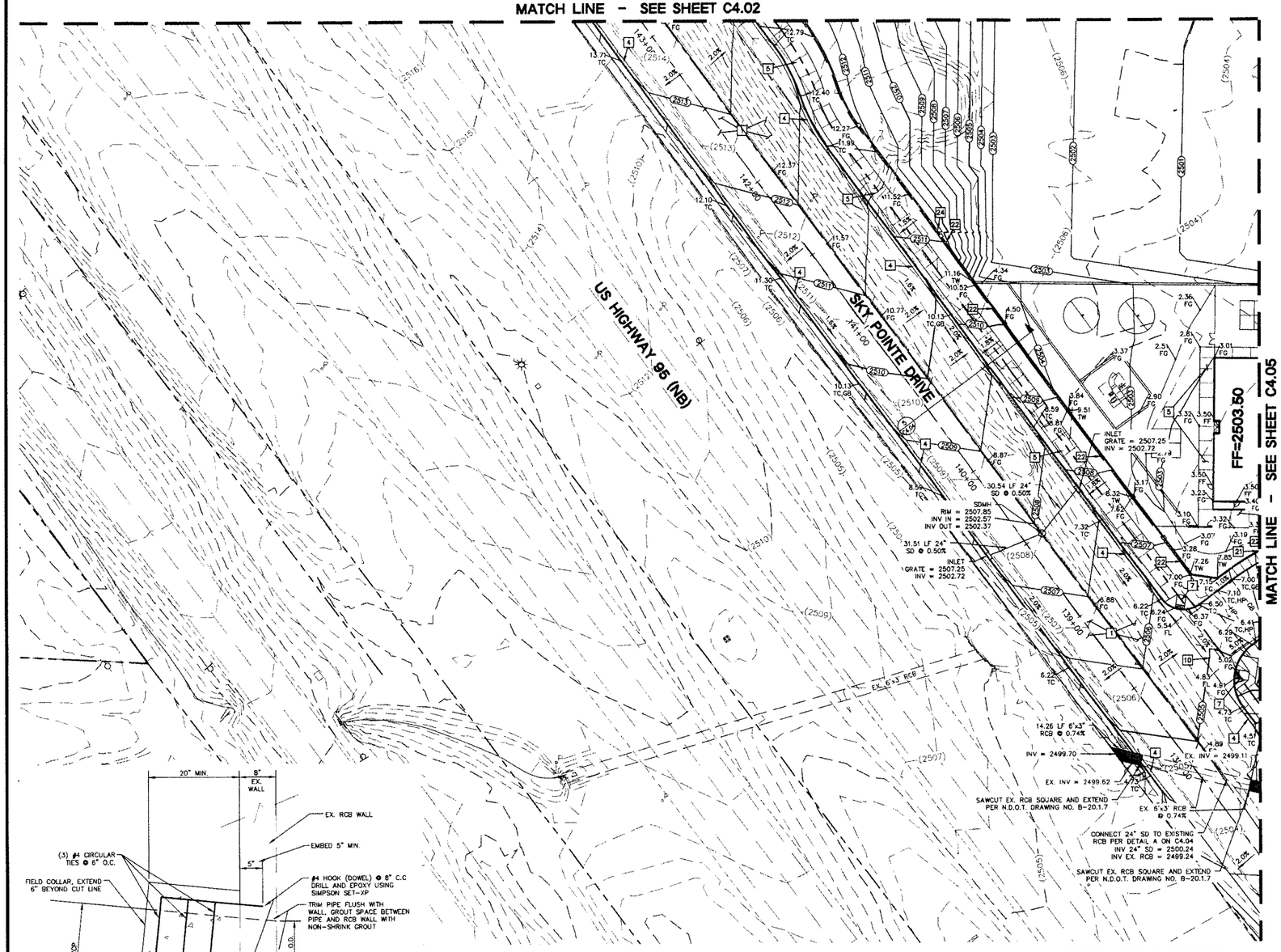
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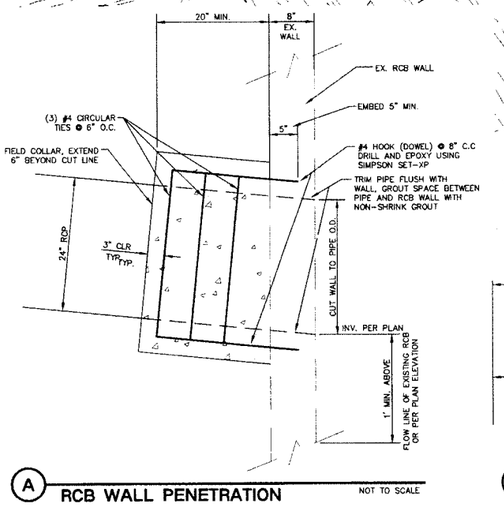
CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS	200w HPS STREETLIGHTS	250w HPS STREETLIGHTS
PROPERTY LINE	SAWCUT LINE	EXISTING:	(2210)								12.34 BC 12.34 BC		S	Ⓢ = SANITARY SEWER						BWV				
ROW LINE	SCARP LINE	PROPOSED:	2122											Ⓓ = STORM DRAIN Ⓔ = ELECTRICAL Ⓣ = TELEPHONE						BWV				

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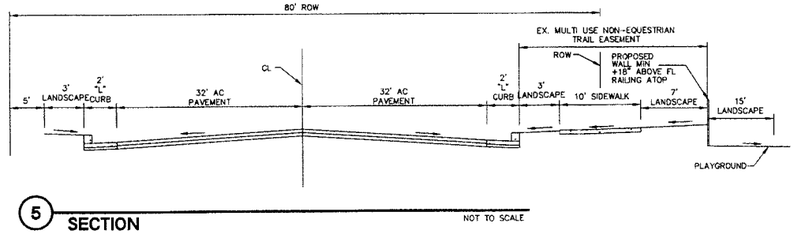
MATCH LINE - SEE SHEET C4.02

MATCH LINE - SEE SHEET C4.05





A RCB WALL PENETRATION — NOT TO SCALE



5 SECTION — NOT TO SCALE

STORM DRAIN CONSTRUCTION NOTES:

NOTE: ALL ONSITE STORM DRAIN AND THE PERTINENT FACILITIES ARE PRIVATELY OWNED AND PRIVATELY MAINTAINED.

– NOT ALL NOTES USED ON THIS SHEET –

1. INSTALL 48" TYPE I ECCENTRIC STORM DRAIN PER N.D.O.T DRAWING NO. R-4.7.1
2. INSTALL RCB CULVERT TYPE I HEADWALL PER N.D.O.T DRAWING NO. B-20-1.5.
3. INSTALL TYPE 3 DROP INLET PER N.D.O.T DRAWING NO. R-4.3.1. CONSTRUCT STORM DRAIN INLET PER USDCA DRAWING NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).
4. INSTALL 3'X3' JENSEN PRECAST DROP INLET PER DETAIL 3 ON SHEET C6.02.
5. INSTALL 48" STORM DRAIN MANHOLE PER C.C.A.U.S.D. NO. 403 WITH CONCRETE COLLAR PER C.C.A.U.S.D. NO. 408. REFER TO C.C.A.U.S.D. NO. 409 FOR MANHOLE COVER AND RING.
6. INSTALL FLARED END SECTION OF 18" STORM DRAIN LINE. CURB TO BE ABUTTED TO FLARED END SECTION.
7. ROOF DRAIN LOCATION. SEE PLANS FY OTHERS.

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 inch = 30 ft.

LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES GUIDANCE MANUAL SECTION 3.5.1 STANDARD NOTES 1-5

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 RIGHT-OF-WAY OF THE CITY OF LAS VEGAS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIAL SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CITY OF LAS VEGAS AND 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 NVR10000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPS WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OR 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 BMP'S 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.

GRADING NOTES:

1. SLOPES 4:1 OR STEEPER AND FINE-GRAINED MATERIALS THAT HAVE BEEN DISTURBED (SANDY AND SILTY MATERIALS) SHOULD BE PROTECTED WITH BURLAP OR OTHER EROSION CONTROL FABRIC/MATERIAL UNLESS OTHERWISE SPECIFIED BY LANDSCAPE DRAWINGS AND SPECIFICATIONS OR THE SOILS REPORT.
2. CONTRACTOR SHALL DETERMINE HIS OWN FOOTING OR BASEMENT EXCAVATION QUANTITIES, EVEN THOUGH SHOWN ON ROUGH GRADING PLANS. ADDITIONALLY, STRUCTURE BACKFILL COSTS SHOULD BE INCLUDED IN THE COST OF THE STRUCTURE, UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.
3. CONTRACTOR SHALL NOTIFY LOCHSA ENGINEERING WITHIN 24 HOURS OF OMISSIONS AND ERRORS DISCOVERED ON PLANS. LOCHSA ENGINEERING WILL NOT BE RESPONSIBLE FOR ANY "CORRECTIVE" WORK DONE BY OTHERS.
4. CONTRACTOR TO ENSURE POSITIVE DRAINAGE. NO PONDING ALLOWED. CONTRACTOR TO FOLLOW RECOMMENDATIONS AS OUTLINED IN THE PROJECT GEOTECHNICAL REPORT, INCLUDING BUT NOT LIMITED TO EXCAVATION, GRADING AND COMPACTION. REFER TO THE REPORT PREPARED BY: TERRACON CONSULTANTS WESTERN, INC., PROJECT No. 64955351–1, DATED: DEC. 21, 1995.

FLOOD ZONE NOTE:

THE ENTIRE SUBJECT PROPERTY IS LOCATED WITHIN AN AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED). ZONE "X" (UNSHADED) IS DESCRIBED BY FEMA AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. THIS INFORMATION IS OBTAINED FROM THE EFFECTIVE FLOOD INSURANCE RATE MAP (FIRM) PANEL No. 32003F1745, EFFECTIVE DATE SEPTEMBER 27, 2002.

EXISTING UTILITY NOTE:

CONTRACTOR TO ADJUST ALL EXISTING UTILITIES TO MATCH PROPOSED FINISH GRADE ELEVATIONS.

GRADING PLAN CERTIFICATION

NAME: GUY M. MORRIS PE #14526 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT CITY OF LAS VEGAS FOR THIS PROJECT. PROJECT# DS4570

A.P.N.:

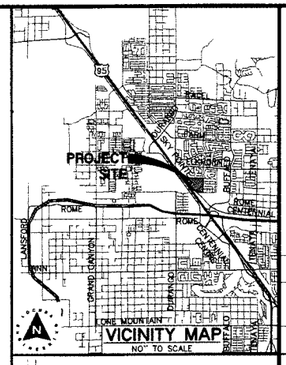
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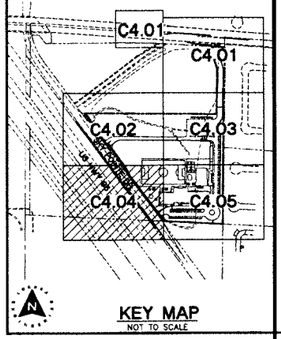
BASIS OF BEARINGS:

NORTH 89°49'07" WEST, BEING THE NORTH LINE OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 21, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS SHOWN ON A RECORD OF SURVEY IN FILE 73, PAGE 26 IN THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK (2008 ADJUSTED) 6LV90 21NW46 A RIVET AND PLATE IN TOP CURB ON THE SOUTH SIDE OF ELKHORN ROAD APPROXIMATELY 1/4 MILE WEST OF CIMARRON ROAD. ELEVATION=2498.19 FEET (761.449 METERS) (NAVD'88)





CONSTRUCTION NOTES:

– ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS (C.C.A.U.S.D.)" LATEST EDITION AND/OR REGULATING ENTITY HAVING JURISDICTION.

– NOT ALL NOTES USED ON THIS SHEET –

1. CONSTRUCT AC PAVEMENT PER DETAIL 2 ON C6.01.
2. CONSTRUCT CONC. PAVEMENT PER DETAIL 3 ON C6.01.
3. CONSTRUCT "A" TYPE CURB PER CCAUSD No. 219.
4. CONSTRUCT "L" TYPE CURB PER CCAUSD No. 216.
5. CONSTRUCT CONC. SIDEWALK PER CCAUSD No. 234. REFER TO ARCH. PLANS FOR FINISHING SPECIFICATIONS.
7. CONSTRUCT SIDEWALK RAMP CCAUSD No. 235 CASE II.
8. CONSTRUCT 72" WIDE "U" CHANNEL PER DETAIL 5 ON C6.01.
9. CONSTRUCT 24" WIDE "U" CHANNEL PER DETAIL 4 ON C6.01.
10. CONSTRUCT COMMERCIAL DRIVEWAY PER CCAUSD No. 225.
11. LANDSCAPING, REFER TO LANDSCAPE ARCH. PLANS FOR SPECIFICATIONS.
14. SEE STRUCTURAL DETAILS BY OTHERS FOR STAIRS AND STRUCTURAL SLAB.
16. CONSTRUCT SIDEWALK DRAIN PER C.C.A.U.S.D. No. 236.
17. CONSTRUCT 2' VALLEY GUTTER PER DETAIL 11 ON C6.01.
18. CONSTRUCT SIDEWALK RAMP PER DETAIL 10 ON C6.01
19. CONSTRUCT 60" WIDE "U" CHANNEL PER DETAIL 12 ON C6.01
20. CONSTRUCT SIDEWALK RAMP PER DETAIL 9 ON C6.01.
21. INSTALL MIN. 36" HIGH RAIL ON TOP OF RETAINING WALL WHERE GRADE DIFFERENCE IS 18" OR GREATER.
22. CONSTRUCT RETAINING WALL PER STRUCTURAL DETAILS ON SHEET C6.03 AND ARCHITECTURAL PLAN.
23. CONSTRUCT 2' WIDE CONCRETE STRIP FOR GATE PATH. NOTCH CURB AS NECESSARY FOR THE GATE BYPASS.
24. CMU SCREEN WALL PER ARCHITECTURAL PLANS. WALL TO BE SOLID GROUTED 18" ABOVE FLOWLINE OF ROADWAY.
25. CONSTRUCT BUILDING CONCRETE STEM WALL PER ARCHITECTURAL PLANS.

EARTHWORK QUANTITIES

CUT	8,499 CU. YD.
FILL	31,269 CU.YD.
NET	FILL 22,770 CU. YD.

NOTE:

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.

SAFETY ALERT

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REV.:	DATE:	BY:	DESCRIPTION

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Suite 100
Las Vegas, NV 89118
Phone (702) 365-6012
Fax (702) 365-6017
www.lochsa.com

SHEET TITLE: GRADING PLANS SHEET 4 OF 5

SOMERSET ACADEMY
SKY POINTE & ELKHORN
LAS VEGAS, NV

PROJECT No.: 121075

DATE: 12/03/12

SCALE: 1"=30'

DRAWN BY: MW

DESIGNED BY: MW

CHECKED BY: GM

SEAL: PROFESSIONAL ENGINEER STATE OF NEVADA GUY M. MORRIS EXP. 12-31-13 CIVIL No. 14526 (2-7-12

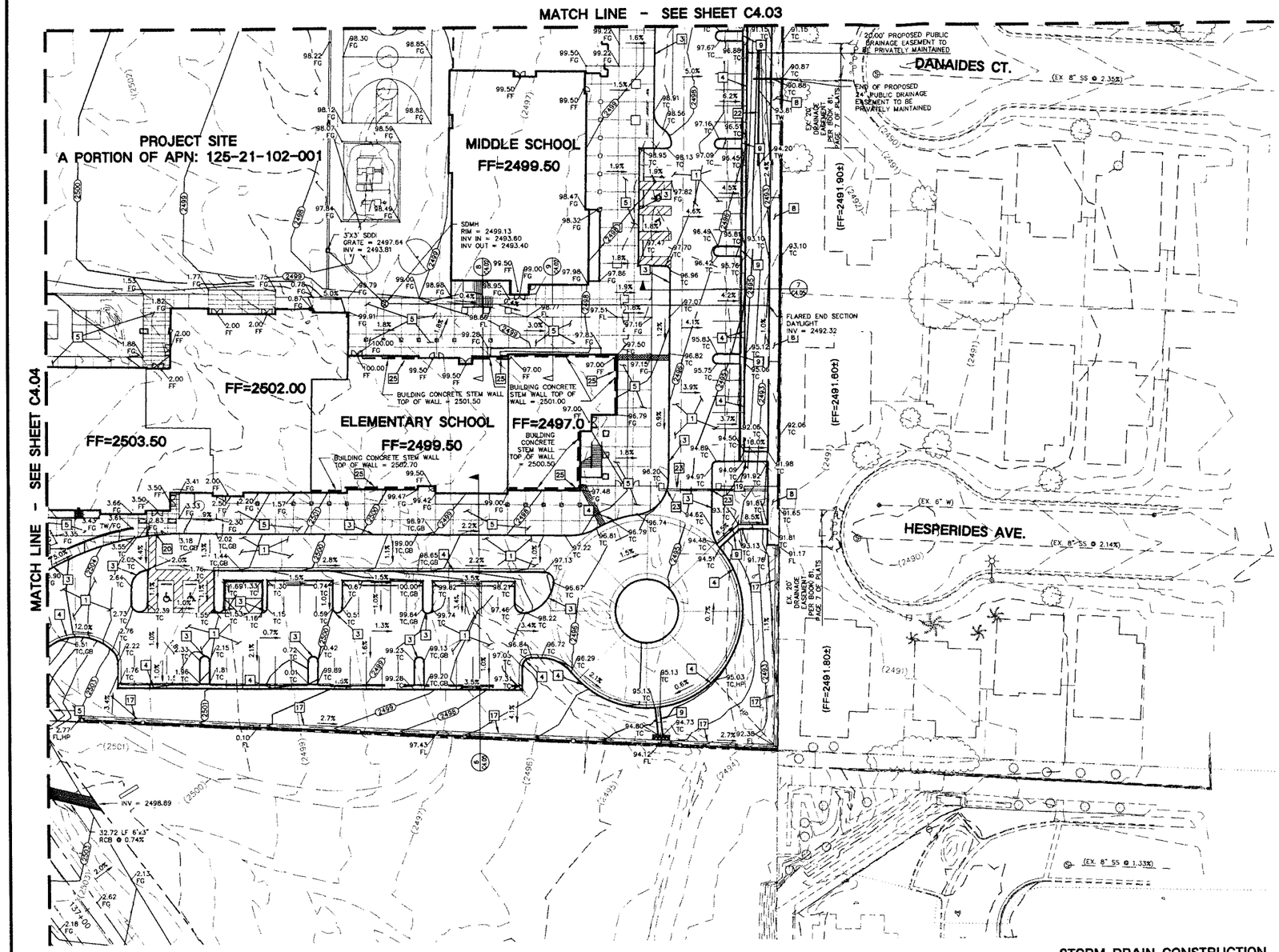
SHEET No. C4.04 SHEET 16 OF 27

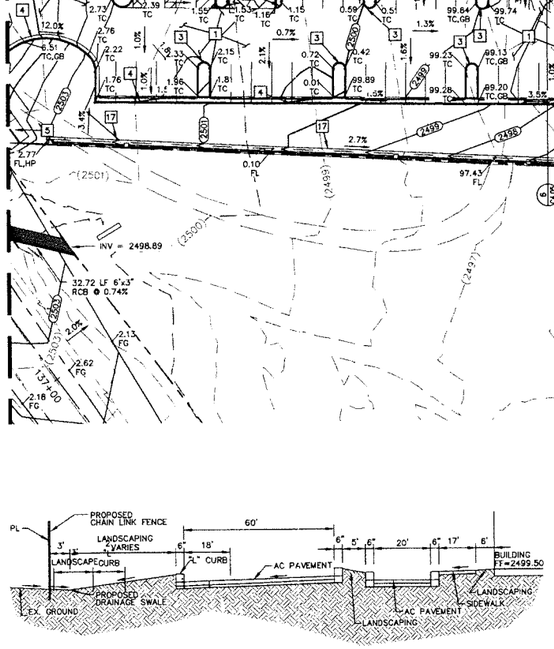
HTE No. ----

LEGEND

CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS (S) = SANITARY SEWER (D) = STORM DRAIN (E) = ELECTRICAL (T) = TELEPHONE	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS	200w HPS STREETLIGHTS	250w HPS STREETLIGHTS
PROPERTY LINE	SAWCUT LINE	EXISTING:	(2210)								123.33 BC 123.24 RC									BWV				
ROW LINE	SCARP LINE	PROPOSED:	2122																	BWV				

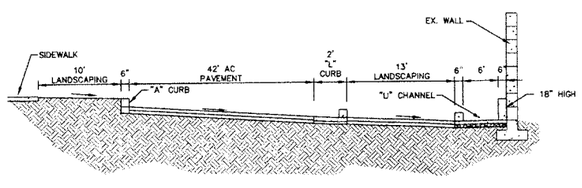
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6 SECTION

NOT TO SCALE



7 SECTION

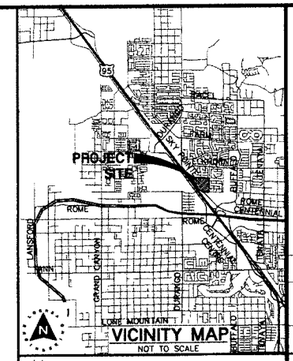
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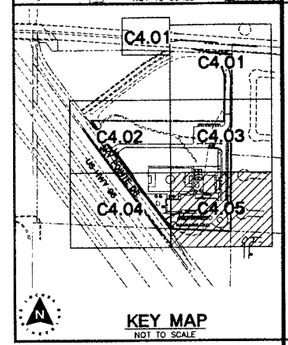
STORM DRAIN CONSTRUCTION NOTES:

NOTE: ALL ONSITE STORM DRAIN AND THE PERTINENT FACILITIES ARE PRIVATELY OWNED AND PRIVATELY MAINTAINED.

– NOT ALL NOTES USED ON THIS SHEET –

1. INSTALL 48" TYPE I ECCENTRIC STORM DRAIN PER N.D.O.T DRAWING NO. R-4.7.1
2. INSTALL RCB CULVERT TYPE I HEADWALL PER N.D.O.T DRAWING NO. B-20-1.5.
3. INSTALL TYPE 3 DROP INLET PER N.D.O.T DRAWING NO. R-4.3.1. CONSTRUCT STORM DRAIN INLET PER USDCCA DRAWING NO. 421 (STORMWATER QUALITY MANAGEMENT STAMP AND SIGN DETAIL).
4. INSTALL 3'X3' JENSEN PRECAST DROP INLET PER DETAIL 3 ON SHEET C6.02.
5. INSTALL 48" STORM DRAIN MANHOLE PER C.C.A.U.S.D. NO. 403 WITH CONCRETE COLLAR PER C.C.A.U.S.D. NO. 408. REFER TO C.C.A.U.S.D. NO. 409 FOR MANHOLE COVER AND RING.
6. INSTALL FLARED END SECTION OF 18" STORM DRAIN LINE. CURB TO BE ABUTTED TO FLARED END SECTION.
7. ROOF DRAIN LOCATION. SEE PLANS BY OTHERS.





GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 inch = 30 ft.

LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES GUIDANCE MANUAL SECTION 3.5.1 STANDARD NOTES 1-5

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 RIGHT-OF-WAY OF THE CITY OF LAS VEGAS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIAL SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CITY OF LAS VEGAS AND 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 ANY RAIN EVENT OR 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.
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GRADING NOTES:

1. SLOPES 4:1 OR STEEPER AND FINE-GRAINED MATERIALS THAT HAVE BEEN DISTURBED (SANDY AND SILTY MATERIALS) SHOULD BE PROTECTED WITH BURLAP OR OTHER EROSION CONTROL FABRIC/MATERIAL UNLESS OTHERWISE SPECIFIED BY LANDSCAPE DRAWINGS AND SPECIFICATIONS OR THE SOILS REPORT.
2. CONTRACTOR SHALL DETERMINE HIS OWN FOOTING OR BASEMENT EXCAVATION QUANTITIES, EVEN THOUGH SHOWN ON ROUGH GRADING PLANS. ADDITIONALLY, STRUCTURE BACKFILL COSTS SHOULD BE INCLUDED IN THE COST OF THE STRUCTURE, UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.
3. CONTRACTOR SHALL NOTIFY LOCHSA ENGINEERING WITHIN 24 HOURS OF OMISSIONS AND ERRORS DISCOVERED ON PLANS. LOCHSA ENGINEERING WILL NOT BE RESPONSIBLE FOR ANY "CORRECTIVE" WORK DONE BY OTHERS.
4. CONTRACTOR TO ENSURE POSITIVE DRAINAGE. NO PONDING ALLOWED. CONTRACTOR TO FOLLOW RECOMMENDATIONS AS OUTLINED IN THE PROJECT GEOTECHNICAL REPORT, INCLUDING BUT NOT LIMITED TO EXCAVATION, GRADING AND COMPACTION. REFER TO THE REPORT PREPARED BY: TERRACON CONSULTANTS WESTERN, INC., PROJECT No. 64955351-1, DATED: DEC. 21, 1995.

FLOOD ZONE NOTE:

THE ENTIRE SUBJECT PROPERTY IS LOCATED WITHIN AN AREA DESIGNATED AS FLOOD ZONE "X" (UNSHADED). ZONE "X" (UNSHADED) IS DESCRIBED BY FEMA AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. THIS INFORMATION IS OBTAINED FROM THE EFFECTIVE FLOOD INSURANCE RATE MAP (FIRM) PANEL No. 32003F1745, EFFECTIVE DATE SEPTEMBER 27, 2002.

EXISTING UTILITY NOTE:

CONTRACTOR TO ADJUST ALL EXISTING UTILITIES TO MATCH PROPOSED FINISH GRADE ELEVATIONS.

GRADING PLAN CERTIFICATION

NAME: GUY M. MORRIS PE #14526 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT CITY OF LAS VEGAS FOR THIS PROJECT. PROJECT # DS4570

A.P.N.:

125-21-102-001

BASIS OF BEARINGS:

NORTH 89°49'07" WEST, BEING THE NORTH LINE OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 21, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., AS SHOWN ON A RECORD OF SURVEY IN FILE 73, PAGE 26 IN THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK (2008 ADJUSTED) BLV90 21NWMB A RIVET AND PLATE IN TOP CURB ON THE SOUTH SIDE OF ELKHORN ROAD APPROXIMATELY 1/4 MILE WEST OF CIMARRON ROAD. ELEVATION=2498.19 FEET (761.449 METERS) (NAVD'88)

CONSTRUCTION NOTES:

– ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH "CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS (C.C.A.U.S.D.)", LATEST EDITION AND/OR REGULATING ENTITY HAVING JURISDICTION.
– NOT ALL NOTES USED ON THIS SHEET –

1. CONSTRUCT AC PAVEMENT PER DETAIL 2 ON C6.01.
2. CONSTRUCT CONC. PAVEMENT PER DETAIL 3 ON C6.01.
3. CONSTRUCT "A" TYPE CURB PER CCAUSD No. 219.
4. CONSTRUCT "L" TYPE CURB PER CCAUSD No. 216.
5. CONSTRUCT CONC. SIDEWALK PER CCAUSD No. 234. REFER TO ARCH. PLANS FOR FINISHING SPECIFICATIONS.
7. CONSTRUCT SIDEWALK RAMP CCAUSD No. 235 CASE 1.
8. CONSTRUCT 72" WIDE "U" CHANNEL PER DETAIL 5 ON C6.01.
9. CONSTRUCT 24" WIDE "U" CHANNEL PER DETAIL 4 ON C6.01.
10. CONSTRUCT COMMERCIAL DRIVEWAY PER CCAUSD No. 225.
11. LANDSCAPING. REFER TO LANDSCAPE ARCH. PLANS FOR SPECIFICATIONS.
14. SEE STRUCTURAL DETAILS BY OTHERS FOR STAIRS AND STRUCTURAL SLAB.
16. CONSTRUCT SIDEWALK DRAIN PER C.C.A.U.S.D. No. 236.
17. CONSTRUCT 2' VALLEY GUTTER PER DETAIL 11 ON C6.01.
18. CONSTRUCT SIDEWALK RAMP PER DETAIL 10 ON C6.01
19. CONSTRUCT 60" WIDE "U" CHANNEL PER DETAIL 12 ON C6.01
20. CONSTRUCT SIDEWALK RAMP PER DETAIL 9 ON C6.01.
21. INSTALL MIN. 36" HIGH RAIL ON TOP OF RETAINING WALL WHERE GRADE DIFFERENCE IS 18" OR GREATER.
22. CONSTRUCT RETAINING WALL PER STRUCTURAL DETAILS ON SHEET C6.03 AND ARCHITECTURAL PLAN.
23. CONSTRUCT 2' WIDE CONCRETE STRIP FOR GATE PATH. NOTCH CURB AS NECESSARY FOR THE GATE BYPASS.
24. CMU SCREEN WALL PER ARCHITECTURAL PLANS. WALL TO BE SOLID GROUTED 18" ABOVE FLOWLINE OF ROADWAY.
25. CONSTRUCT BUILDING CONCRETE STEM WALL PER ARCHITECTURAL PLANS.

EARTHWORK QUANTITIES

CUT	8,499 CU. YD.
FILL	31,289 CU.YD.
NET	FILL 22,770 CU. YD.

NOTE:

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.

SAFETY ALERT

Call Before You Overhead

Call before you UnderGround

Call 811

1-702-227-2929 1-702-432-5300

1-800-227-2600

Lochsa engineering
6345 South Jones Blvd
Suite 100
Las Vegas, NV 89118
Phone (702) 365-6312
Fax (702) 365-6317
www.lochsa.com

REV.	DATE:	BY:	DESCRIPTION:

GRADING PLANS
SHEET 5 OF 5

SOMERSET ACADEMY
SKY POINTE & ELKHORN
LAS VEGAS, NV

SHEET: TITLE:

PROJECT No.: 121075

DATE: 12/03/12

SCALE: 1"=30'

DRAWN BY: MW

DESIGNED BY: MW

CHECKED BY: GM

PROFESSIONAL ENGINEER STATE OF NEVADA GUY M. MORRIS EXP. 12-31-13 CIVIL No. 14526 12-7-12

SHEET No. C4.05
SHEET 17 OF 27
HTE No.

LEGEND

CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS Ⓢ = SANITARY SEWER Ⓓ = STORM DRAIN Ⓔ = ELECTRICAL Ⓣ = TELEPHONE	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS	200w HPS STREETLIGHTS	250w HPS STREETLIGHTS
PROPERTY LINE	SAWCUT LINE	EXISTING:	(2210)								(12.34) BC 12.34 EC		Ⓢ							BWV				
ROW LINE	SCARP LINE	PROPOSED:	2122										Ⓓ							BWV				

12/7/2012 2:51 PM
K:\CAD\121075\Drawings\Plot Sheets\C-121075-4D1-SP.dwg

Elkhorn Road

ELKHORN ROAD

Sky Pointe Drive

US-95 Highway

PPD1
5.57 ACRES

PPD2
6.93 ACRES

SPD1
1.16 ACRES

SPD2
1.05 ACRES

SPD3
0.64 ACRES

ND1
5.23 ACRES

ND2
4.82 ACRES

ND3
1.54 ACRES

ND4
0.19 ACRES

PROJECT SITE
A PORTION OF APN:
125-21-102-001

CMF1

CMF2

CMF3

Peak Flow Summary
Future Condition

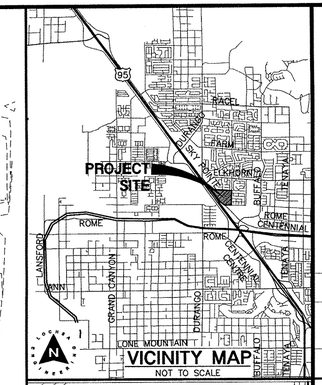
HEC-1 I.D.	Area (acres)	10-year Flow (cfs)	100-year Flow (cfs)
PPD1	5.57	7	16
PPD2	6.93	8	16
RPPD2	-	8	16
ND4	0.19	<1	<1
CMF1	-	8	16
ND1	3.87	5	10
RND1	-	4	10
ND2	5.98	3	10
CMF2	-	8	19
ND3	1.54	2	4
SPD1	1.16	2	4
RSPD1	-	2	4
SPD2	1.05	2	4
CMF3	-	4	8
RCMF3	-	4	7
SPD3	0.64	1	2
CMF4	-	5	10

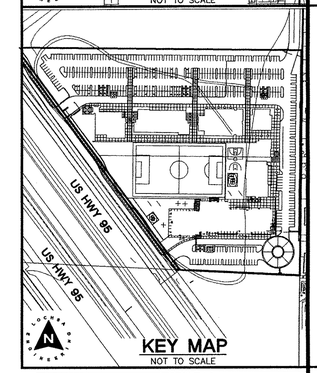
Street Flow Summary
(Future Condition)
10-year, 6-hour Storm

Street	Right of Way Width (ft)	Roadway Carriage Width BC-BC (ft)	Hydraulic Cross-Section Identifier	10-Year Flow [Q10] (cfs)	10-year Velocity [v] (fps)	10-year Flow Depth [d] (ft)	10-year Velocity x Depth Product (v x d)	Dry Lane Width (ft) (Within 1/2 ROW)
Sky Pointe Drive	80	64	AA	4	2.52	0.30	0.76	23.50
Sky Pointe Drive	80	64	BB	5	2.88	0.31	0.89	23.00

Street Flow Summary
(Future Condition)
100-year, 6-hour Storm

Street	Right of Way Width (ft)	Roadway Carriage Width BC-BC (ft)	Hydraulic Cross-Section Identifier	100-Year Flow [Q100] (cfs)	100-year Velocity [v] (fps)	100-year Flow Depth [d] (ft)	100-year Velocity x Depth Product (v x d)
Sky Pointe Drive	80	64	AA	8	3.08	0.36	1.11
Sky Pointe Drive	80	64	BB	10	3.84	0.36	1.38





DRAINAGE LEGEND

ND1	DRAINAGE BASIN LABEL
• CMD1	CONCENTRATION POINT
	COMBINATION POINT
	BASIN BOUNDARY LINE
SUMP-1	STORAGE POINT
1 (1.0)(1.2) / 1 (1.0)(1.2)	Q10 (V10)(D10) / Q100 (V100)(D100)
2 / 3	Q10 FLOW IN CFS (10 YR.) / Q100 FLOW IN CFS (100 YR.)
	FLOW DIRECTION
1D	HYDRAULIC CROSS-SECTION

HEC-RAS

	HEC-RAS CONTROL LINE
	LIMITS OF FEMA ZONE "A"
100	HEC-RAS CROSS-SECTION AND STATION NUMBER
	100 YR. WATER SURFACE ELEV.

GRAPHIC SCALE
80 0 40 80 160
(IN FEET)
1 inch = 80 ft.

NOTE:

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.

SAFETY ALERT
Call Before You Overhead
Call before you UnderGround
Call before you dig
Avoid cutting underground utility lines. It's costly.
Call 811
1-702-432-5300
1-702-227-2929 1-800-227-2600

LEGEND

| | | |

Reference Material #2

- Technical Drainage Study for Somerset Academy Phase III (DS #4627)

The reference material is used to show the updated improvement plan.



TECHNICAL DRAINAGE STUDY
for
SOMERSET ACADEMY PHASE III

Rec'd: 9/18/13

DS 4627

G-21

SEPTEMBER 2013

CIVIL SQUARED ENGINEERING PROJECT NO. 4098

$400-

Prepared for:

Ethos Three Architecture
8985 South Eastern Avenue, Suite 216
Las Vegas, NV 89123
Contact: John Lopeman, AIA, LEED AP
(702) 456-1070

SDR-50697

civilsquared engineering
Formerly Martin & Martin Civil Engineers
3130 S. Durango Drive, Suite 404
Las Vegas, Nevada 89117
Phone: (702) 248-8000
Fax: (702) 248-8070
www.mmcivil.com

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: **Somerset Academy Phase III** Date: **9/18/2013**

Location of Development: a) Descriptive (Cross Streets) **SEC of Elkhorn Road and Sky Pointe Drive**

b) Section **21** Township **19 South** Range **60 East**

Name of Owner: **Boyer Skypointe Academy LC** Assessors Parcel Number: **125-21-102-009**

Telephone Number: **(801) 366-7169**

Address: **90 South 400 West #200**
Salt Lake City, UT 84101-1365

Contact Person Name: **Christopher Zhang, P.E.** Telephone Number: **(702) 248-8000**

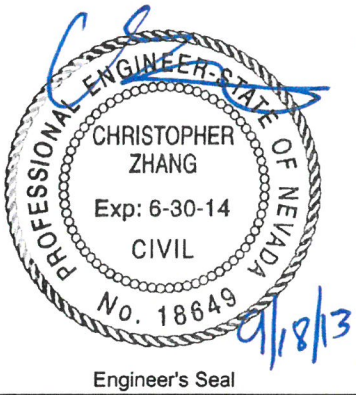
Firm: **Civil Squared Engineering** Fax Number: **(702) 248-8070**

Address: **3130 South Durango Drive, Suite 404** Email: **CZhang@mmcivil.com**
Las Vegas, NV 89117

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	X	Building Permit		

1. Total Owned Land Area: At Site: **± 12.14 Ac** Being Developed: **± 12.14 Ac**
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? YES **NO**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? **YES** NO
4. Proposed type of development (Residential, Commercial, Etc.)? **Private School**
5. Approximate upstream land area which drains to the subject site? **0 Ac**
6. Has the site drainage been evaluated in the past? **YES** NO
   If yes, please identify documentation:
   Technical Drainage Study for Somerset Academy (DS4570)
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site:
   Into adjacent existing Elkhorn-Cimarron Estates Residential Subdivision
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.

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

Revision	Date

Local Entity File No.

REFERENCE: CSE Project No. 4098 **STANDARD FORM 1**

DS #: 4627

APN: 125-21-102-009

PROJECT: Somerset Academy Phase III

SUBMITTAL: 1ST & SUPPLEMENT

SCANNED BY/DATE: _____

CHECKED BY/DATE: _____

CITY OF LAS VEGAS NEVADA

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: October 2, 2013
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: **Somerset Academy Phase III (Update to DS4570)**			**COPIES TO:** Civil Squared Engineering
Cross Streets:	SEC of Elkhorn Road & Sky Pointe Drive			Boyer Skypointe Academy LC
File Number:	F:\Depot\DSMemos\DS4627B.doc			Bart Anderson, P.E., DevCo
Parcel Number:	125-21-102-009			
Zoning Action:	SDR-50697			
FEMA Flood Zone	YES	NO	X	
Proposed Storm Drain	YES	NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	9/18/2013	10/2/2013	Not Approved	$400.00	333736: $400
Supplement	10/2/2013	10/2/2013	See Comments Below	N/C	N/C
			TOTAL FEES (LDDRS):	**$400.00**	**----**

REMARKS:

1st Submittal & Supplement: Update to add a couple buildings onsite

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

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

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

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

END OF REMARKS

ays

T/R/S: T19S/R60E/21

AREA G-21

****
*** FAX TX REPORT ***
****

TRANSMISSION OK

JOB NO.	2314
DESTINATION ADDRESS	2488070
PSWD/SUBADDRESS	
DESTINATION ID	
ST. TIME	10/02 08:26
USAGE T	00'32
PGS.	1
RESULT	OK

CITY OF LAS VEGAS **INTER-OFFICE MEMORANDUM**				**DATE:** **October 2, 2013**
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: **Somerset Academy Phase III (Update to DS4570)**			**COPIES TO:** Civil Squared Engineering
Cross Streets:	SEC of Elkhorn Road & Sky Pointe Drive			Boyer Skypointe Academy LC
File Number:	F:\Depot\DSMemos\DS4627B.doc			Bart Anderson, P.E., DevCo
Parcel Number:	125-21-102-009			
Zoning Action:	SDR-50697			
FEMA Flood Zone	YES	NO	X	
Proposed Storm Drain	YES	NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	9/18/2013	10/2/2013	Not Approved	$400.00	333736: $400
Supplement	10/2/2013	10/2/2013	See Comments Below	N/C	N/C
			TOTAL FEES (LDDRS):	**$400.00**	----

REMARKS:

1st Submittal & Supplement: Update to add a couple buildings onsite

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

Rec'd: 10/2/13
DS 4627
G-21
Supp. Info.
N/C

LAS VEGAS
CITY COUNCIL

CAROLYN G. GOODMAN
MAYOR

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LOIS TARKANIAN
STEVEN D. ROSS
RICKI Y. BARLOW
BOB COFFIN
BOB BEERS

ELIZABETH N. FRETWELL
CITY MANAGER

September 24, 2013

Mr. Brian Gochnour
Boyer Skypointe Academy, LLC
90 South 400 West, Suite #200
Salt Lake City, Utah 84101

RE: SDR-50697 (PRJ-50431) - MINOR SITE DEVELOPMENT PLAN REVIEW ADMINISTRATIVE CYCLE - SEPTEMBER 2013

Dear Mr. Gochnour:

Your request for a Minor Amendment of an approved Site Development Plan Review (SDR-45943) FOR A PRIVATE SCHOOL, PRIMARY AND SECONDARY AND A REVISED PHASING PLAN on 12.14 acres at 7038 and 7058 Sky Pointe Drive (APN 125-21-102-009), T-C (Town Center) Zone [SX-TC (Suburban Mixed Use - Town Center) Special Land Use Designation], Ward 6 (Ross) [PRJ-50431], has been considered administratively by the Department of Planning staff.

The Department of Planning has administratively ***APPROVED*** your request, subject to the following:

Planning

1. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.

2. This approval shall run concurrently with the previously approved Site Development Plan Review (SDR-48862). No further Extension of Time is required as this approval shall be exercised or shall expire with the previous approval.

3. All development shall be in conformance with the site plan, date stamped 09/17/13 and landscape plan and building elevations, date stamped 08/13/13, except as amended by conditions herein.

4. All necessary building permits shall be obtained and final inspections shall be completed in compliance with Title 19 and all codes as required by the Department of Building and Safety.

5. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.

CITY OF LAS VEGAS
DEPARTMENT OF PLANNING
BUSINESS LICENSING DIVISION
DEVELOPMENT SERVICES CENTER
333 NORTH RANCHO DRIVE
6TH FLOOR
LAS VEGAS, NEVADA 89106

VOICE 702 229 6281
FAX 702 382 6642
TTY 702 386 9108
www.lasvegasnevada.gov

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

7. All City Code requirements and design standards of all City Departments must be satisfied, except as modified herein.

This action by the Department of Planning staff on September 24, 2013 is final unless a written appeal is filed with the Director of the Department of Planning within ten days of the date of this letter.

Sincerely,

Peter Lowenstein, AICP
Planning Supervisor
Case Planning Division

PL:clb

cc: Mr. Ryan Reeves
Somerset Academy
7038 Skypointe Drive
Las Vegas, Nevada 89131

Mr. John Lopeman
Ethos Three Architecture
8985 South Eastern Avenue, Suite #220
Las Vegas, Nevada 89123

A PORTION OF APN: 125-21-102-001
NOT A PART

APN: 125-21-102-001
SOMERSET ACADEMY

S89°17'14"E – 901.76'

S00°42'46"W
291.43'

BEGIN SW CONSTRUCTION

FFE=2504.88
FFE=2505.00
FFE=2504.15

RAMP INSIDE

FFE=2503.00

12 STEPS

12:1 MAX.

SEE DETAIL 'C' & 'D'
SHEET C4.02

EXIST.
CONC. V.G.

SEE DETAIL 'A'
SHEET C4.02

FFE=2502.00

6 STEPS

SEE DETAIL 'B'
SHEET C4.02

FFE=2499.50

EXISTING BUILDING
FF=2499.50

GRAPHIC SCALE

20 0 10 20
(IN FEET)
INCH = 20 FT

BASIS OF BEARING

NORTH 85°49'07" WEST BEING THE NORTH LINE OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) AS SHOWN IN FILE 118, PAGE 98 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CLARK COUNTY VERTICAL CONTROL v.2003
BENCHMARK #BLV90 21N4

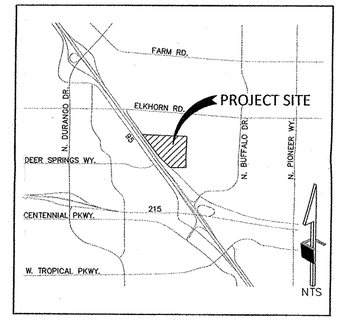
CITY OF LAS VEGAS RIVET AND ROUND PLATE IN THE TOP OF CURB, SOUTHEAST CORNER OF ELKHORN RD. AND CIMARRON RD.

NORTH AMERICAN VERTICAL DATUM OF 1998 (NAVD 88)

749.244 METERS, 2458.15 U.S. SURVEY FEET

CONSTRUCTION NOTES

NO.	ITEM CCAUSD: CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS
1	CONSTRUCT TYPE 'A' CURB PER DETAIL 'A' SHEET C8.01.
2	CONSTRUCT 2" MIN. AC OVER 4" TYPE II AB (LIGHT DUTY)
3	CONSTRUCT 3" MIN. AC OVER 4" TYPE II AB (HEAVY DUTY)
4	CONSTRUCT CONCRETE SIDEWALK PER CCAUSD No. 234. SEE DETAIL 'D' SHEET C8.01 FOR FINISHING SPECIFICATIONS.
5	CONSTRUCT CURB TRANSITION FROM 0" TO 6" TALL TYPE 'A' CURB. SEE DETAIL 'C' SHEET C8.01.
6	SAW CUT AND REMOVE AND REPLACE EXISTING AC PAVEMENT
7	HANDRAILS BY OTHERS
8	CONSTRUCT STAIRS PER DETAIL 'H' ON SHEET C8.01.
9	CONSTRUCT RETAINING WALLS. SEE STRUCTURAL PLAN FOR DETAILS.
10	CONSTRUCT BOLLARDS PER DETAIL 'E' ON SHEET C8.01.
11	0" CURB PER DETAIL 'B' SHEET C8.01.



VICINITY MAP

SIGHT VISIBILITY ZONE

NO WALLS, FENCES, TREES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER SUBJECT. OTHER THAN TRAFFIC CONTROL DEVICES AND STREETLIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITH THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT.

FLOOD ZONE NOTE:

THE PROJECT SITE LIES WITHIN ZONE X AS PER FEMA FIRM PANEL 32003C2590F DATED NOVEMBER 16, 2011.

ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "GEOTECHNICAL EXPLORATION 27 ACRE COMMERCIAL DEVELOPMENT SEC ELKHORN RD. AND U.S. HIGHWAY 93-95.

PROJECT NO.: 64955351-1 , DATED DECEMBER 21, 1995
UPDATED:
PREPARED BY:
TERRACON CONSULTANTS WESTERN, INC.
4343 SOUTH POLARIS AVENUE
LAS VEGAS, NV 89103
PHONE NO. (702) 597-9393
FAX NO. (702) 597-9009

ALL WORK SHALL BE PERFORMED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL SOILS ENGINEER.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS.

PAUL F. FRITZ, P.E. #16825 — DATE 9/18/13

GENERAL NOTE:

IT IS THE CONTRACTORS RESPONSIBILITY TO FILE A NOTICE OF INTENT/REQUEST TO BE INCLUDED IN THE STORM WATER GENERAL PERMIT, AND SUBMIT THE ASSOCIATED STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AS REQUIRED BY FEDERAL LAW, AND MONITORED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION.

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

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CALL 811
OR
1-800-227-2600

CIVIL SQUARED ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED	
(0.00%)	0.00%	SLOPE
(0.00) XXX	0.00 XXX	GRADING/ ELEVATION TAG
Ⓘ	Ⓘ	STORM MANHOLE
		DRAIN INLET
		CONTOUR
		SCREEN/ RETAINING WALL
		POWER LINE/POLE
		TELEPHONE LINE
		METER/PULL BOX
		UTILITY POLE
		STREET LIGHT
		AREA LIGHT
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		REDUCER
Ⓢ	Ⓢ	SEWER MANHOLE
		CLEANOUT
		GAS VALVE
		PL-RIGHT-OF-WAY
		PL-ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SIGN W/POLE
		SAWCUT LINE
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
		CONCRETE

civil squared engineering
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.civilsquared.com

PROFESSIONAL ENGINEER STATE OF NEVADA
PAUL F. FRITZ
EXP. 06-30-15
CIVIL
NO. 16825
9/18/13

NO.	DESCRIPTION OF REVISIONS	DATE	APPROVAL

SOMERSET ACADEMY PHASE III
APN: 125-21-102-009
GRADING PLAN

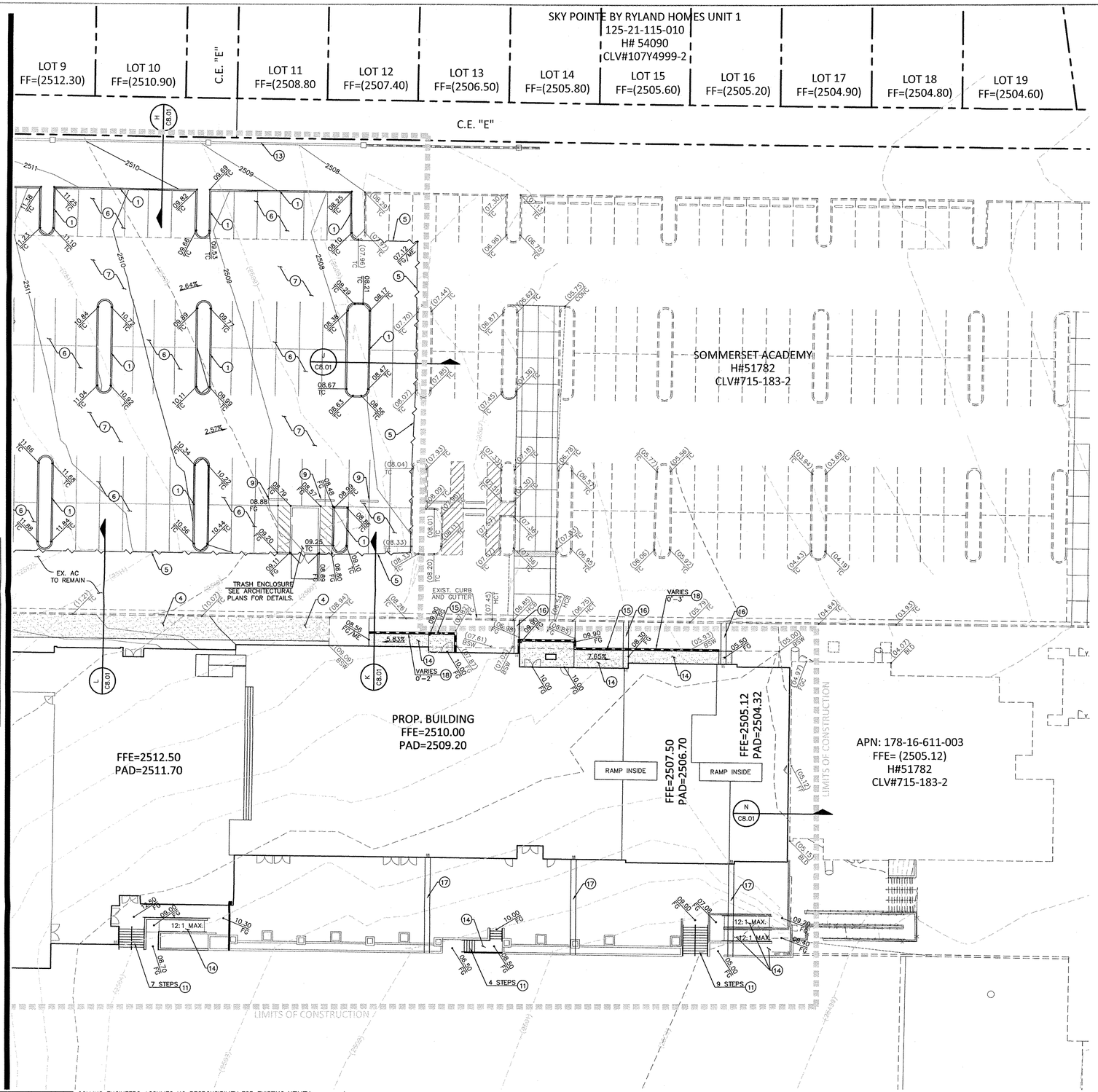
DATE:	9/18/13
JOB NUMBER:	4098
DESIGNED:	P. FRITZ
DRAWN:	J. MARTINEZ JR
CHECKED:	P. FRITZ, P.E.

SHEET NUMBER
C4.01

H#

APPENDIX D
(Plans)

- Grading Plan
- Detail Sheet



GRAPHIC SCALE

SCALE: 1"=20'

BASIS OF BEARING

NORTH 85°49'07" WEST BEING THE NORTH LINE OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) AS SHOWN IN FILE 118, PAGE 98 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CLARK COUNTY VERTICAL CONTROL V.2003
BENCHMARK #8LV90 21N4

CITY OF LAS VEGAS RIVET AND ROUND PLATE IN THE TOP OF CURB, SOUTHEAST CORNER OF ELKHORN RD. AND CIMARRON RD.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD '88)
749.244 METERS, 2458.15 U.S. SURVEY FEET

CONSTRUCTION NOTES:

NO.	ITEM
	USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	CONSTRUCT TYPE "A" CURB PER USDCCA DWG. No. 219.
2	CONSTRUCT 0" TALL TYPE "A" CURB PER DETAIL 'B' SHEET C8.01.
3	CONSTRUCT CURB TRANSITION FROM 0" TO 6" TALL TYPE "A" CURB. SEE DETAIL 'C' SHEET C8.01.
4	CONSTRUCT CONCRETE SIDEWALK PER USDCCA DWG. NO. 234. SEE ARCHITECTURAL PLANS FOR COLOR, FINISH, SCORING AND JOINTS.
5	SAWCUT, REMOVE AND REPLACE EXISTING AC PAVEMENT.
6	CONSTRUCT 2" MIN. AC OVER 4" TYPE II AB (LIGHT DUTY) PER DETAIL 'A' SHEET C8.01.
7	CONSTRUCT 3" MIN. AC OVER 4" TYPE II AB (HEAVY DUTY) PER DETAIL 'A' SHEET C8.01.
8	CONSTRUCT 6" CONCRETE SIDEWALK OVER 4" TYPE II AGGREGATE BASE SEE DETAIL 'D' SHEET C8.01 FOR FINISHING SPECIFICATIONS (HEAVY DUTY)
9	INSTALL PRECAST WHEEL STOP PER USDCCA DWG. No. 238.
10	CONSTRUCT BOLLARDS PER DETAIL 'B' SHEET C8.01.
11	CONSTRUCT STAIRS. SEE ARCHITECTURAL & STRUCTURAL PLANS FOR DETAILS.
12	CONSTRUCT GRADED SWALE.
13	SCREEN WALL PER ARCHITECTURAL PLANS.
14	CONSTRUCT CONCRETE ACCESS RAMP.
15	HANDRAILS REQUIRED. SEE ARCHITECTURAL PLAN FOR DETAILS.
16	INSTALL ROUND TO RECTANGLE CURB-O-LET ADAPTER (PART No. CP-SP4A14) OR APPROVED EQUIVALENT.
17	INSTALL 4" PVC SD PIPE. CONNECT TO ROOF DRAINS AND DAYLIGHT THROUGH FACE OF WALL AT GRADE.
18	CONSTRUCT RETAINING WALL, SEE STRUCTURAL PLANS FOR DETAILS.

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CLARK COUNTY TRAFFIC SYSTEMS AND
CALL 1-702-432-5300
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(0.00%)	0.00%	SLOPE
(0.00) XX	0.00 XX	ELEVATION TAG
Ⓓ	Ⓓ	STORM MANHOLE
		DROP INLET
-00-	-00-	CONTOUR
		RETAINING WALL
		SCREEN WALL

EXISTING	PROPOSED	
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		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
		PL-RIGHT-OF-WAY
		PL-ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SAWCUT LINE

FLOOD ZONE NOTE:

THE PROJECT SITE LIES WITHIN ZONE X AS PER FEMA FIRM PANEL 32003C1745E DATED SEPTEMBER 27, 2002.

NOTE:

SEE ARCHITECTURAL PLANS FOR CONSTRUCTION JOINTS, SCORE, COLOR AND TEXTURE FOR DECORATIVE CONCRETE PAVING.

GENERAL NOTE:

IT IS THE CONTRACTORS RESPONSIBILITY TO FILE A NOTICE OF INTENT/REQUEST TO BE INCLUDED IN THE STORM WATER GENERAL PERMIT, AND SUBMIT THE ASSOCIATED STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AS REQUIRED BY FEDERAL, AND MONITORED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION.

ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "GEOTECHNICAL EXPLORATION 27 ACRE COMMERCIAL DEVELOPMENT SEC ELKHORN RD. AND U.S. HIGHWAY" 93-95.
PROJECT No.: 64955351-1, DATED DECEMBER 21, 1995
UPDATED: NOVEMBER 15, 2012
PREPARED BY:
TERRACON CONSULTANTS WESTERN, INC.
4343 SOUTH POLARIS AVENUE
LAS VEGAS, NEVADA 89103
PHONE No.: (702) 597-9393
FAX No.: (702) 597-9009
ALL WORK SHALL BE PERFORMED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL SOILS ENGINEER.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINGE STUDY XXXX FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS.

JAMES A. YANCEY, P.E. 016109 DATE

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV. 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER - STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-16
CIVIL
NO. 016109
9/15/15

NO.	DESCRIPTION OF REVISIONS	DATE	APPROVAL

SOMERSET ACADEMY PHASE IV

APN: 125-21-102-009

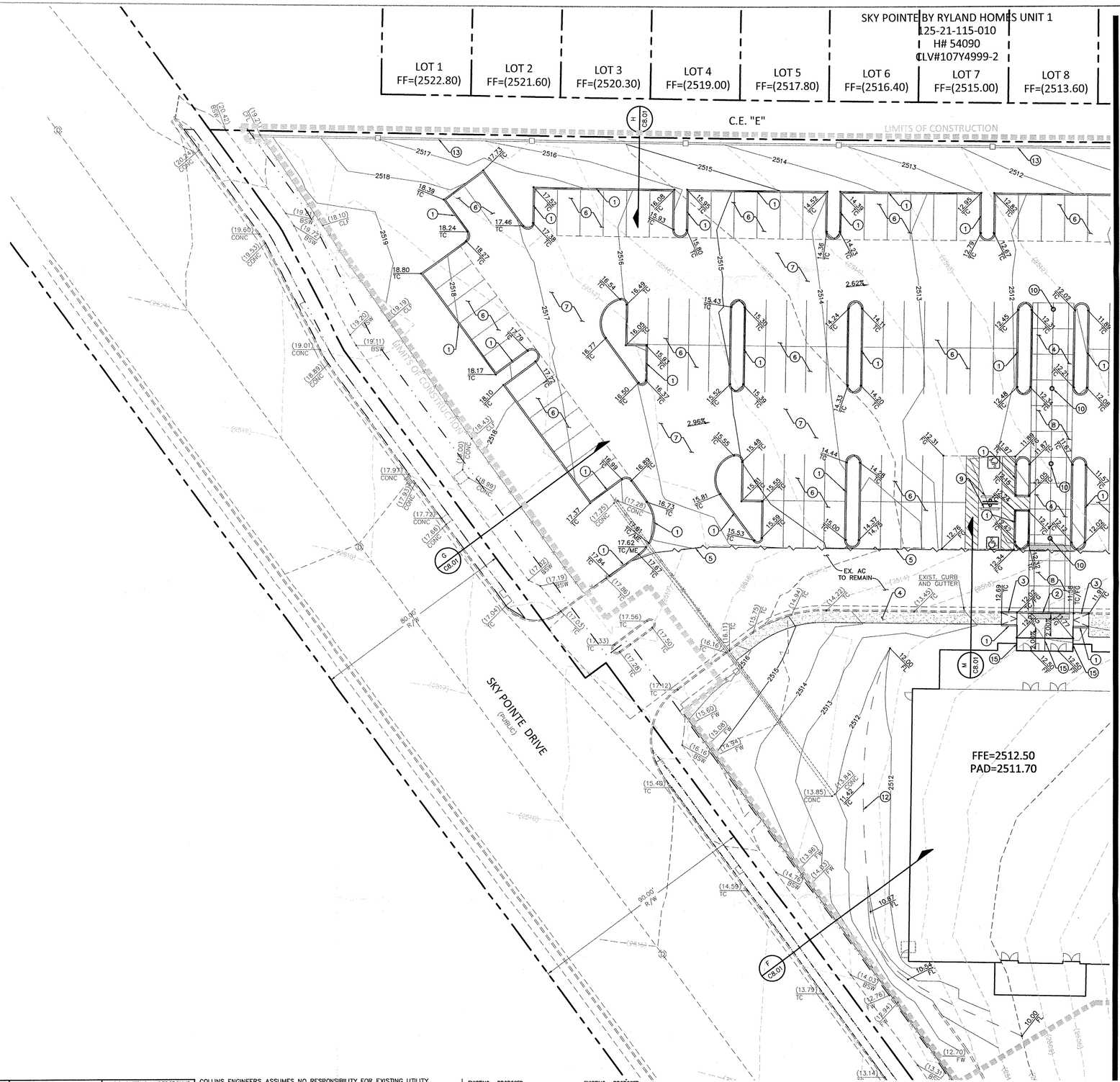
GRADING PLAN

DATE: 09/15/15
JOB NUMBER: 9182
DESIGNED:
DRAWN:
CHECKED:

SHEET NUMBER

C4.02

SHEET X OF



GRAPHIC SCALE

SCALE: 1"=20'

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BENCHMARK #8LV90 21N4

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PROFESSIONAL ENGINEER-STATE OF NEVADA
JAMES A. YANCEY
EXP. 12-30-16
CIVIL
NO. 016109
09/15/15

NO.	DESCRIPTION OF REVISIONS	DATE	APPROVAL

SOMERSET ACADEMY PHASE IV

APN: 125-21-102-009

GRADING PLAN

DATE:	09/15/15
JOB NUMBER:	9182
DESIGNED:	
DRAWN:	
CHECKED:	

SHEET NUMBER
C4.01
SHEETS OF

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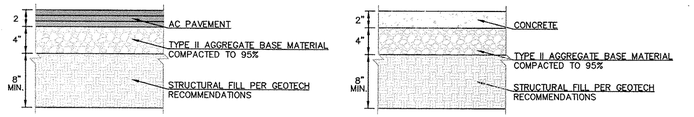
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(0.00) XX	0.00 XX	ELEVATION TAG
(D)	(D)	STORM MANHOLE
		DROP INLET
--00--	--00--	CONTOUR
		RETAINING WALL
		SCREEN WALL

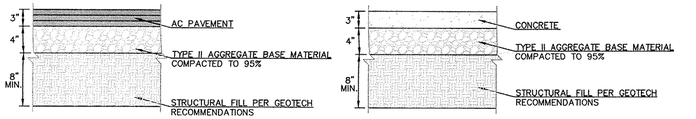
EXISTING	PROPOSED	
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB

	PL-RIGHT-OF-WAY
	PL-ADJACENT
	CENTERLINE
	EASEMENT LINE
	FLOW LINE
	SAWCUT LINE



LIGHT DUTY ASPHALT SECTION

LIGHT DUTY CONCRETE SECTION

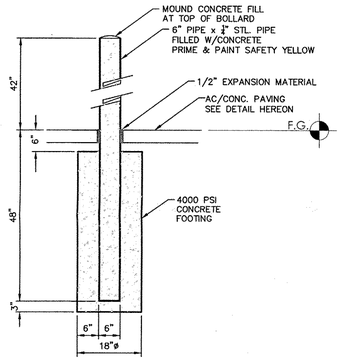


HEAVY DUTY ASPHALT SECTION

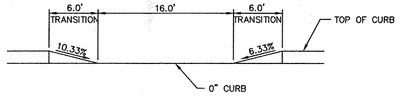
HEAVY DUTY CONCRETE SECTION

* SEE CURRENT GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.

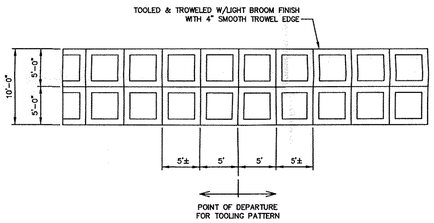
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NTS



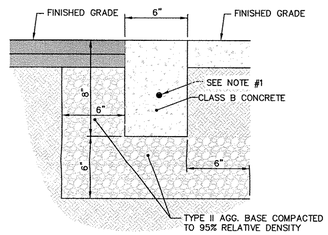
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NTS



CURB OPENING C C4.01
NTS

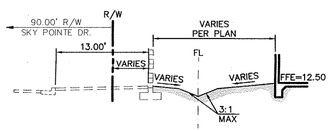


SIDEWALK FINISH D C4.01
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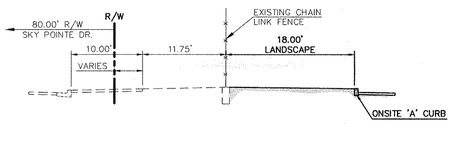


NOTES:
1. CONTINOUS #4 REBAR IN RADIUS OF CURB ONLY

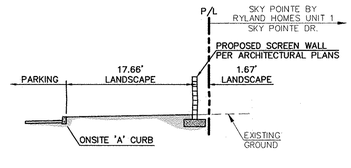
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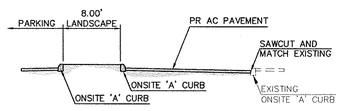
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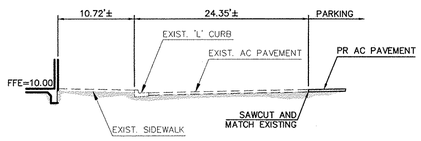
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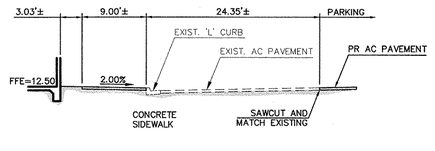
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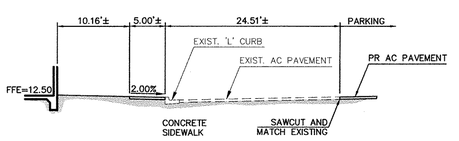
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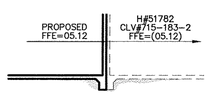
CROSS SECTION K C4.01
NTS



CROSS SECTION L C4.01
NTS



CROSS SECTION M C4.01
NTS



CROSS SECTION N C4.01
NTS

COLLINS ENGINEERS
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PROFESSIONAL ENGINEER - STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-16
CIVIL
NO. 016109
9/15/15

NO.	DESCRIPTION OF REVISIONS	DATE	APPROVAL

SOMERSET ACADEMY PHASE IV

APN: 125-21-102-009

DETAIL SHEET

DATE:	09/15/15
JOB NUMBER:	9182
DESIGNED:	
DRAWN:	
CHECKED:	

SHEET NUMBER

C8.01

SHEET OF