DS #: 4572

APN: 125-19-301-007 & 125-19-301-008

PROJECT: QUEST Academy

SUBMITTAL: 3rd

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: November 1, 2012
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: **Quest Academy**			**COPIES TO:** DRC Surveying Nevada, Inc.
Cross Streets:	SWC Deer Springs Way & Grand Canyon Dr			Quest Academy
File Number:	F:\Depot\DSMemos\DS4572C.doc			Bart Anderson, P.E., DevCo
Parcel Number:	125-19-301-007 & 125-19-301-008			CCPW
Zoning Action:	SDR-46570; SUP-46572; SUP-46573 & PMP-46996			
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	9/18/2012	10/1/2012	Not Approved	$400.00	296281: $400
2nd Submittal	10/9/2012	10/23/2012	Not Approved	$400.00	298139: $400
3rd Submittal	10/30/2012	11/1/2012	See Comments Below	N/C	N/C
			TOTAL FEES (LDDRS):	**$800.00**	**----**

REMARKS:

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

	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to satisfaction of Comment #1 below
X	is conditionally approved subject to Clark County Public Works Department concurrence.

1. Sites with a grade difference of 2 feet above or below existing grades are required to have approval from the *City of Las Vegas Planning and Development Department*. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the *City Planning Department* (229-6301). The engineer must provide *Planning* approval prior to the final approval of the drainage study.

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4. Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).

In an effort to increase administrative efficiency, the City of Las Vegas Public Works Department requires all soil reports, drainage studies and traffic impact analysis submittals to be accompanied by an electronic copy of the submittal. Electronic documents must be submitted with one original hard copy of the study. Electronic documents should be on a universal computer-readable digital output replicating your submittal to be used for archival or display purposes. This may be more than one file if necessary. An Indexed Portable Document Format (PDF) or Print Ready CAD file formats with a minimum of 300dpi are the desired formats, but provided it is a high quality digitized replication of the submittal, other formats may be acceptable. If figures are in color, they must be scanned in color and saved as a separate file. The new submittal requirement is effective on **July 1, 2011**. If there are any questions regarding these new requirements, please contact Albert Sung in the Flood Section at (702) 229-2001 or Rick Schroder in Traffic Engineering at (702) 229-6327.

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or call (775) 687-9429.

END OF REMARKS
ays

T/R/S: T19S/R60E/19
AREA G-19

DRC Surveying Nevada

Civil Engineering • Land Surveying • Planning
3301 W. Spring Mountain Road. Suite 19 LV, NV 89102 (Ph. 270-6119 Fax 270-4899)

October 25, 2012 Job No. SN12-723

City of Las Vegas

RE: Justification letter for Finish Floor Waiver request – Quest Academy
APN 125-19-301-007 & 008

To Whom it May Concern,

Please approve this request for a Finish Floor Waiver. This request is being made because the proposed finish floor on this commercial site deviates more than 2' from the existing ground. This 10 acre, commercial development consists of a single large building that will be utilized as a charter school. The reason the elevation of this finish floor must deviate from the existing ground is that the large footprint of the school doesn't allow for elevation drops yet the natural terrain drops approximately 20' from the west to the east. To balance the site, the grading has been designed to cut into the existing ground on the west portion and fill on the east portion.

Please contact me should you have any questions.

Sincerely,

DENNIS P. WERTZLER EXP. 6-30-14 CIVIL

10/25/12

Dennis Wertzler, PE
Principal

RECEIVED
OCT 25 2012

Attachments

APPROVED
2'KO ONLY / GRADE DIFFERENCE
NO SITE CHANGES APPROVED PER THIS
BY. 11.5.12
CURRENT PLANNING DIVISION
CITY OF LAS VEGAS
SDR-46570

TECHNICAL DRAINAGE STUDY
FOR
QUEST ACADEMY

DRC Job# SN 12-723
CLV # DS4572

Prepared for:

Quest Academy

Connie Jordan
6610 Grand Montecito Pkwy
Las Vegas, Nevada 89149
Ph: (702) 631-4751
Fax: (702) 586 0386

Prepared by:

DRC Surveying Nevada, Inc.

3301 W. Spring Mountain Rd., STE #19
Las Vegas, Nevada 89102
Ph: (702) 270-6119
Fax: (702) 270-4899

Submitted to:
City of Las Vegas
Public Works - Flood Control
333 North Rancho Drive
Las Vegas, NV 89106

October, 2012

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: **Quest Academy** Date: 10/8/12

Location of Development: a) Descriptive (Cross Streets): North/South Grand Canyon Drive East/West Deer Springs Way
b) Sect. 19 Twn. 19S Rng. 60E

Name of Owner: Quest Academy Assessors Parcel Number: 125-19-301-007, & 008
Telephone Number: (702) 631-4751 Facsimile Number: (702) 586-0386
Address: 5535 W. Glenn Drive, Glendale, AZ 85301
Contact Person - Name: Dennis P. Wertzler, P.E. Telephone Number: **(702) 270-6119**
Firm: **DRC Surveying Nevada, Inc.** Email: **dwertzler@drc-lasvegas.com**
Address: **Spring Mountain Rd., Ste. #19, Las Vegas, NV 89102**

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: 10 acres Being Developed/Disturbed: 10 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 Master Plan Facility? : YES* **NO**
4. Proposed type of development (Residential, Commercial, Etc.): Charter School
5. Approximate upstream land area which drains to the subject site: 55 acres
6. Has the site been evaluated in the past? YES **NO** If yes, please identify documentation:
7. If known, please identify the proposed point(s) of runoff from the site: Intersection of Grand Canyon Drive and Echelon Point
8. Briefly describe your proposed schedule for the subject project: ASAP

Submit this form as part of the required drainage study to the local entity which has jurisdiction over the 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.

Revisions	Date
Addm # 1	10/8/2012

Local Entity File Number

Engineer's Seal

REFERENCE: **STANDARD FORM 1**

DRC Surveying Nevada
Civil Engineering • Land Surveying • Planning
3301 W. Spring Mountain Road. Suite 19, Las Vegas, NV 89102 (Ph. 270-6119 Fax 270-4899)

October 7, 2012

Albert Sung, P.E.
City of Las Vegas
Public Works – Flood Control
333 N. Rancho Drive
Las Vegas, NV 89106

Subject: **Addendum #1 to the Technical Drainage Study for Quest Academy**
DRC # SN 12-723

Dear Mr. Sung:

We have received the review comments for the above-mentioned study dated October 2, 2012. The comments are restated and addressed below.

1. **Provide a copy of the zoning/planning conditions associated with this site (SDR-46570; SUP-46572; SUP-46573 & PMP-46996) with the next submittal to verify compliance with conditions. City of Las Vegas Flood Control Section will not issue conditional approval of the drainage study without associated zoning 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.**

   At this time, the entitlements are still going through the public hearing process so we don't have the final conditions yet. These will be provided to you as soon as we have them so we can get your final approval.

2. **Sites with a grade difference of 2 feet above or below existing grades are required to have approval from the City of Las Vegas Planning and Development Department. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the City Planning Department (229-6301). The engineer must provide Planning approval with the next submittal.**

   We will submit the grading to planning as required and the approval letter will be provided prior to your final approval.

3. **The site is adjacent to the jurisdiction of the County of Clark to the north and to the south. The engineer must coordinate with Clark County Department of Public Works (CCPW) and incorporate any concerns for boundary conditions along the north and south borders. CCPW concurrence is required prior to final acceptance of the study.**

   A copy of the drainage study and addenda will be submitted to CCPW upon Conditional Letter of Approval by CLV.

4. **The Interim and Existing Condition Drainage Maps cited a 100-year of 136cfs at "CP-4D" (intersection of Deer Springs Way and Grand Canyon Drive) from reference study. A flow split result was stated that 49cfs would drain east in Deer Springs Way and 111cfs would drain south in Grand Canyon Drive. However, a flow split calculation was not found in the technical drainage study. Provide as such in the next submittal and revise all subsequent calculations necessary.**

   Enclosed in the Appendix is a copy of the Flow Split Calculation, Interim Condition Map and Hec-1 analysis that is referenced from the "TDS for Town Center L-TC60/75 No. 5" for that study's "Interim Condition".

   In our initial review of the approved referenced study; when comparing the referenced flow split calculation to the HEC-1 analysis and Exhibit H for the Interim Condition, we noticed a small discrepancy that was pretty insignificant to our project. We didn't find an actual split flow calculation for the 136 cfs in the Slater-Hanifan study but instead there was a split flow calculation for 99 cfs. However; all the tables, exhibits and HEC-1 indicated 136 cfs with the split described. We compared the ratio of the 136 splits flow and the 99 cfs calculation in the study and found the ratio of split exactly corresponded to the 136 cfs so we accept the 136 cfs split flow. We also did a quick check using the same formula's and ours came out within 1 cfs (that calculation is now attached) so for consistency we accepted the Slater-Hanifan split flow.

   Since our site is so significantly higher than Grand Canyon, we were comfortable with this conclusion. It would be prudent for future downstream properties more directly impacted by these flows to re-evaluate all the flow conditions as the impacts on their development might be more relavent to their projects than to our project.

5. **On Sheet 3 of 12 (Grading Plan), a Q10=5cfs and Q100=24cfs were labeled in Deer Springs Way. However, when comparing the flow rates to the Depth Flow Summary Table in Figure 11 (Street Flow Section Map) of the drainage study, discrepancies occur at Section A-A of "Int. Deer Springs" and "Ult. Deer Springs". The situation also holds true in the proposed riprap channel and elsewhere. Review and revise accordingly.**

   The flow rates were taken off the grading plans since all the information is provided on the drainage maps within the study. Having flows on the grading plans would create confusion because there are multiple conditions. To be meaningful, the flow quantities need the context of the study.

6. **Sheet 3 of 12 (Grading Plan): The plan shows a flow line of 0.5% adjacent to the west and north sides of the proposed building in asphaltic pavement. Note that 0.5% in asphalt does not drain well. Provide a minimum of 2'-concrete valley gutter in place where slope is less than 1%. Review and revise accordingly.**

   Sheet 3 was revised to include a 2-ft wide concrete valley gutter at swales less than 1% slope.

7. **Sheet 4 of 12 (Grading Plan): Provide 2'-concrete valley gutter in flow lines where slope is less than 1%.**
   Extend an existing storm drain to the west in Deer Springs Way and provide a nuisance drop inlet at the BCR in Deer Springs.
   Label the existing storm drain system with City of Las Vegas recorded drawing number on the plan.
   Provide sidewalk underdrain at the proposed 2'-wide concrete flume in Grand Canyon Drive.

   Sheet 4 was revised as follows: 1) 2-ft valley gutter is added in places where the slope is less than 1%, 2) a nuisance drop inlet and 18" storm drain lateral is provided in Deer Springs Way, 3) the existing storm drain system is labeled as requested, and 4) a sidewalk underdrain is provided at the proposed 2-ft wide concrete flume in Grand Canyon Drive.

8. **Sheet 5 of 12 (Grading Plan): Provide a 3'-valley gutter throughout the proposed riprap open channel.**
   Specify the number of 18" pipe at the driveway entrance on the plan and in the construction note column clearly.

   Sheet 5 was revised as follows: 1) a 3-ft wide valley gutter is provided throughout the riprap section of the channel, and 2) a construction note is added to each pipe separately.

9. **Sheet 6 of 12 (Grading Plan): See comment #8.**

   The engineer proposes to discharge a 100-year flow of 55 cfs in the riprap channel at the southeast corner of the development. However, this point discharge happens to impact a proposed water utility vault-like structure (a square shape on the plan) It is recommended to relocate this structure and a hydraulic calculation must be provided to obtain the discharge depth and velocity at the intersection of Echelon Point Drive and Grand Canyon Drive. Address the impact to the intersection under the current design in the next submittal.

   The proposed water facility has been relocated to the north away from the flows.

   Discussion on flows in the channel and discharge over the sidewalk: The flows in the channel and from the onsite basin being discharged near the intersection of Echelon Point Drive and Grand Canyon Drive are less than the 55 cfs (CP3 includes the channel and the street – the split of this flow upstream is described in the text of the original text). The flows in the channel at Section G-G on the street flow section map are 29 cfs combines with 6 cfs from CP6 for a total discharge of 35 cfs. However to minimize the discharge at a single point, the engineer has slightly raised the flow line of the easterly 100' of the

channel so some flows will weir into Echelon Point upstream of the main discharge point thereby reducing the point impact. A flow depth calculation of the modified swale indicates that the capacity of the swale is reduced to 10 cfs just upstream of the discharge point. Combined with 6 cfs the point discharge is reduced to 16 cfs at the sidewalk underdrain upstream of the proposed inlet. Assuming the sidewalk underdrain has minimal flow capacity, most of the flow will sheet flow over the sidewalk. To get a rough idea of the flow characteristics over the sidewalk we did a normal depth calculation assuming a width of approximately 20' (see attached normal depth discharge calculation). The depth is approximately 0.2' with a velocity less than 4 ft/s.

Discussion of flows at Echelon Point Drive and Grand Canyon Drive: To analyze the interim flow characteristics in the intersection of Grand Canyon and Echelon Point Drive, we did two normal depth calculations across Grand Canyon (one for the east half and one for the west half) to determine the flow capacity of the street to the south and one weir (50' width) calculation to determine the flows that would break over the small high point and flow east in Echelon past the school. Through a series of iterations to get the water surface elevation the same for all three calculations, we estimate that about 142 cfs (velocity ranges between 3 to 5 ft/s and depth of flow is less than 0.6') will flow south in Grand Canyon and 34 cfs will flow east in Echelon.

Provide a nominal drop inlet at both the curb returns in Echelon Point Drive and Grand Canyon Drive. Connect the drop inlets and tie to the existing storm drain in the street.

Sheet 6 was revised to show two inlets and an 18-inch storm drain lateral per your request.

Label an existing 24" storm drain in Grand Canyon Drive with City of Las Vegas record drawing plan number.

Sheet 6 was revised to show the existing 24-inch storm drain record drawing plan number.

10. **Sheet 7 of 12 (Detail & Cross-Sections): Typical Section A: A fence is proposed at the property line. What type of fence is this? Is it wrought iron fence or a block wall fence with wall openings? Please clarify.**

A wrought iron fence label was added to the detail.

Label the section of the riprap channel as "Public Drainage Easement to be Privately Maintained" and "Width Varies". Specify the minimum depth of the channel.

The section of the riprap channel was revised as requested. The minimum depth of the channel has been added. Two more normal depth calculations were performed within the channel along the west boundary. Some riprap on the upper end of the swale was removed since the velocities are less than 5 fps. Figure 11 was revised accordingly.

Show a 3'valley gutter at the bottom of the channel.
Provide a layer of geotextile filter fabric beneath the riprap section. Review and revise all pertinent cross sections accordingly.

The valley gutter was added and a note was added to the details to include the geotextile fabric.

11. **Provide legal description and an exhibit for the proposed public drainage easement (privately maintained) to City Right-of-Way Section (Contact Mary Wulff at 229-2139) for recordation.**

    The easement is being granted as part of a parcel map that is currently being processed through the city so there is no reason to process a stand alone easement. A copy of the Parcel Map is provided in the appendix of this report.

12. **City of Las Vegas does not allow HDPE pipe in public right-of-ways or public drainage easements. Note that City of Las Vegas only allows the use of HDPE storm drainpipes for privately owned and privately maintained storm drain systems which serve and are located exclusively on private properties. Any proposed HDPE storm drain pipes must also meet all design criteria established by the Clark County Regional Flood Control District and must be installed per Clark County Regional Transportation Uniform Standard Drawings and Specifications.**

    The two 18-inch storm drain pipes under the site entrance were revised to be RCPs.

13. **The engineer must provide a table on the grading plans that shows a quantity estimate of all drainage improvements within Public Drainage Easements. All drainage improvements within Public Drainage Easements must be bonded and inspected.**

    A quantity estimate of drainage improvements within drainage easements is provided on Sheet 3 of the grading plan. We acknowledge that the drainage improvements need to be bonded and inspected.

14. **Put a note on the grading plan: "All Onsite Storm Drains and the Associated Facilities are Privately Owned and to be Privately Maintained".**

    A note has been added as requested.

15. **This drainage study assumes that the project will be constructed in one phase. If improvement plans are submitted to break the project into separate phases, a drainage study update will be required for each phase addressing the interim condition.**

    We acknowledge that an update will be required if the project is to be built in phases.

16. **Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (Stormwater Quality Management Stamp and Sign Detail).**

    A reference to this standard has been included in the construction note for the inlets.

If there are any questions concerning this study or additional information is needed, please contact me at (702) 270-6119.

Sincerely,

DRC Surveying Nevada, Inc.

Dennis P. Wertzler, PE
President

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    Label the section of the riprap channel as "Public Drainage Easement to be Privately Maintained" and "Width Varies". Specify the minimum depth of the channel.

    Show a 3'-valley gutter at the bottom of the channel.

    Provide a layer of geotextile filter fabric beneath the riprap section. Review and revise all pertinent cross sections accordingly.

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12. *City of Las Vegas* does not allow HDPE pipe in public right-of-ways or public drainage easements. Note that *City of Las Vegas* only allows the use of HDPE storm drain pipes for privately owned and privately maintained storm drain systems which serve and are located exclusively on private properties. Any proposed HDPE storm drain pipes must also meet all design criteria established by the *Clark County Regional Flood Control District* and must be installed per *Clark County Regional Transportation Commission Uniform Standard Drawings and Specifications.*

13. The engineer must provide a table on the grading plans that shows a quantity estimate of all drainage improvements within Public Drainage Easements. All drainage improvements within Public Drainage Easements must be bonded and inspected.

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END OF REMARKS
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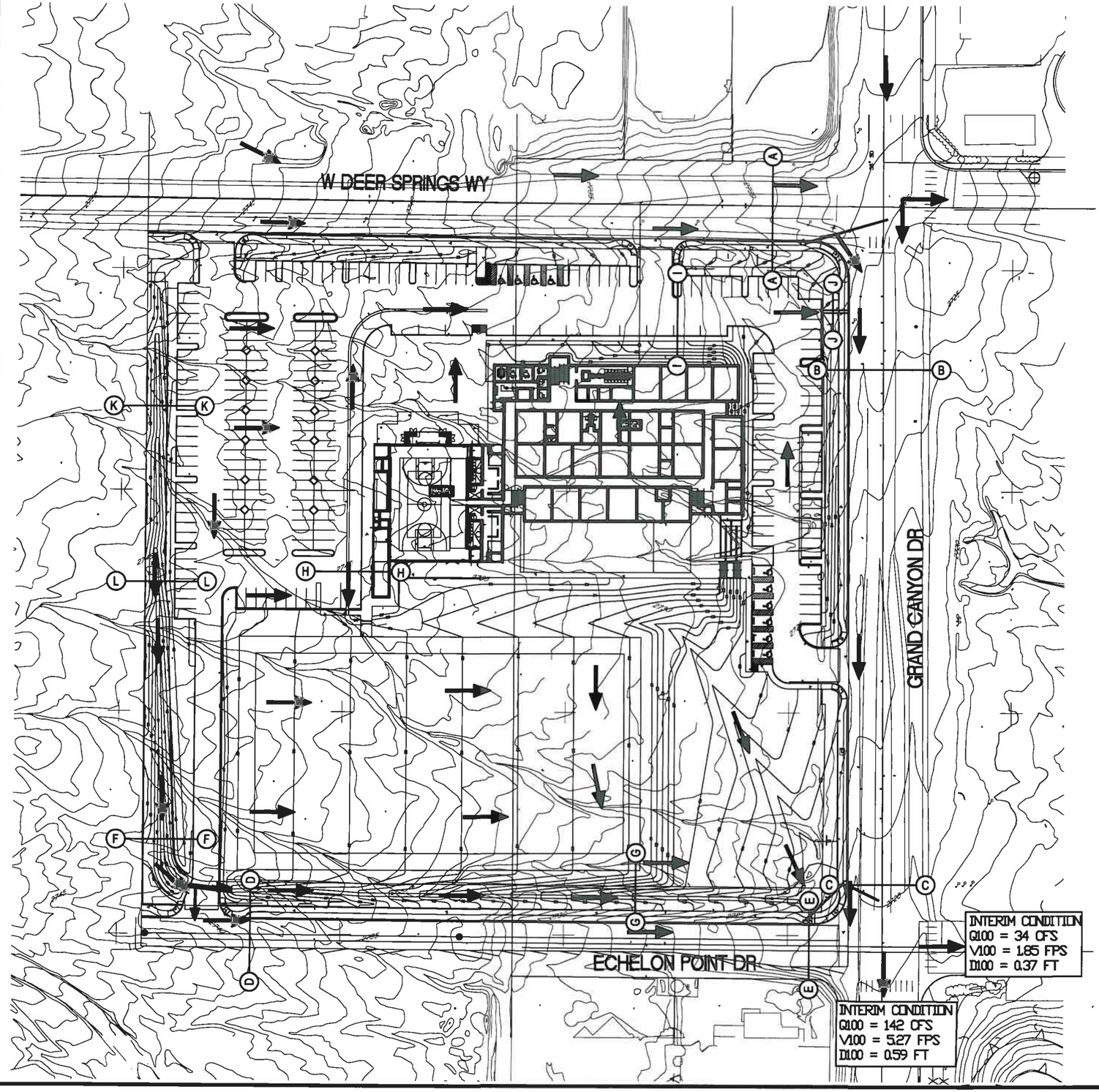
T/R/S: T19S/R60E/19
AREA G-19

APPENDIX A
FIGURES



N

GRAPHIC SCALE
50 0 50 100
(IN FEET)
1 inch = 100 ft.

DEPTH FLOW SUMMARY					
SECTION	SLOPE (%)	Q10/Q100 (CFS)	D10/D100 (FT)	V10/V100 (FPS)	DXV
A-A DEER SPRINGS (INT)	4.2	1/3	0.22/0.30	3.33/3.87	0.73/1.16
A-A DEER SPRINGS (ULT)	4.2	10/33	0.33/0.46	4.72/6.15	1.56/2.83
B-B GRAND CANYON (INT)	1.6	13/126	0.49/0.94	3.96/6.77	1.94/6.36
B-B GRAND CANYON (ULT)	1.6	6/80	0.33/0.69	2.90/4.67	0.96/3.22
C-C GRAND CANYON (INT)	1.3	14/128	0.53/0.98	3.58/6.39	1.90/6.26
C-C GRAND CANYON (ULT)	1.3	7/83	0.34/0.71	2.97/4.34	1.01/3.08
D-D ECHELON (INT)	3.7	0/20	0/0.51	0/5.94	0/3.03
D-D ECHELON (ULT)	3.7	0/0	0/0	0/0	0/0
E-E ECHELON (INT)	4.6	12/55	-/0.65	-/8.03	-/5.22
E-E ECHELON (ULT)	4.6	9/29	-/0.44	-/6.36	-/2.80
F-F CHANNEL (INT)	1.0	11/49	-/1.57	-/4.06	-/6.37
F-F CHANNEL (ULT)	1.0	7/21	-/1.05	-/3.25	-/3.41
G-G CHANNEL (INT)	3.5	11/29	-/0.90	-/5.61	-/5.05
H-H VALLEY GUTTER	0.5	1/2	-/0.26	-/0.60	-/0.16
I-I VALLEY GUTTER	2.9	6/12	-/0.29	-/4.10	-/1.19
J-J U-CHANNEL	2.6	6/12	-/0.36	-/8.34	-/3.00
K-K CHANNEL (INT)	1.0	4/17	-/0.80	-/3.93	-/3.14
L-L CHANNEL (INT)	1.0	9/39	-/1.20	-/4.90	-/5.88

LEGEND

(A)—(A) STREET SECTIONLOCATION

FLOW DIRECTION

FIGURE 11

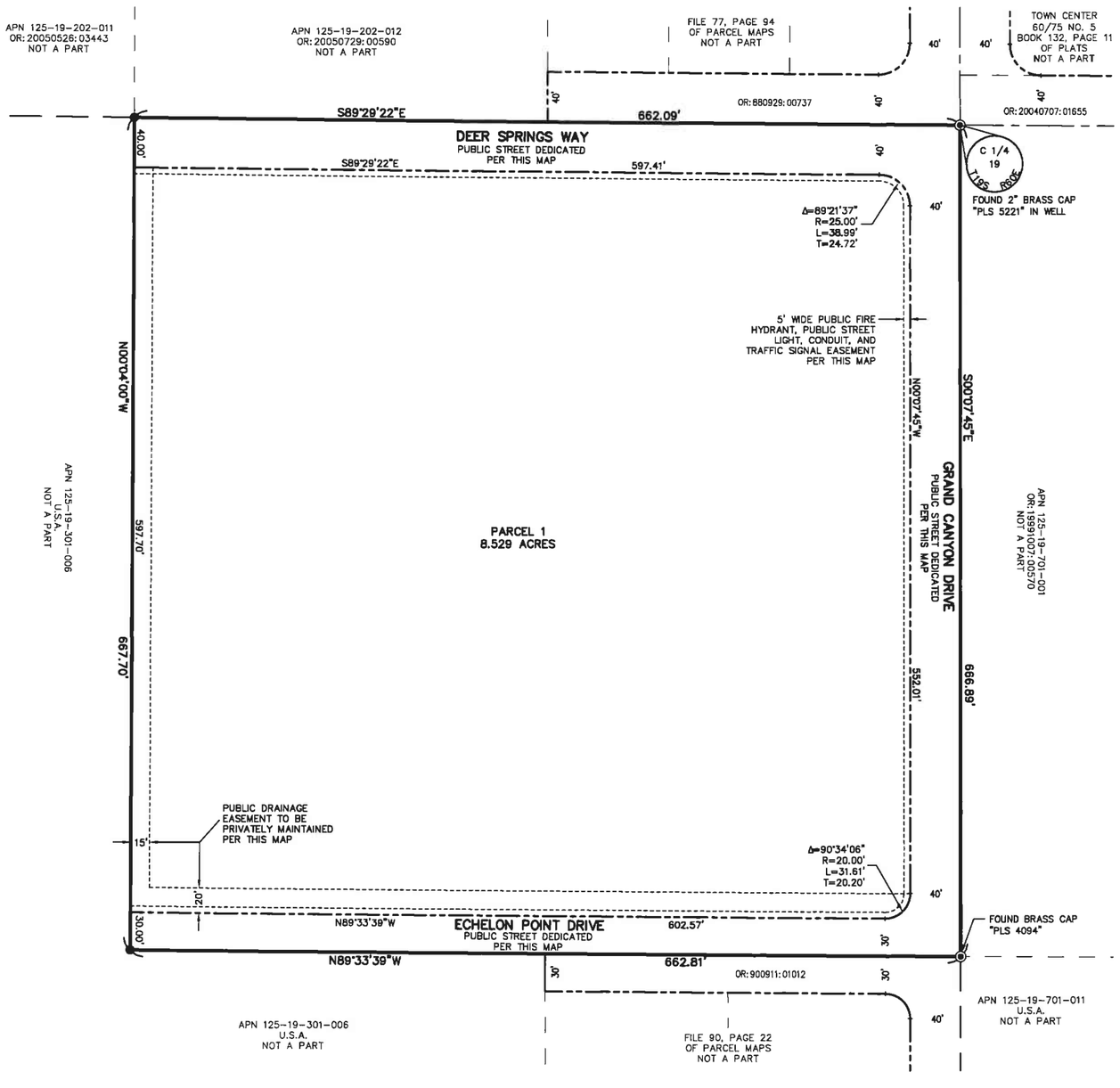
QUEST ACADEMY
STREET FLOW SECTION MAP

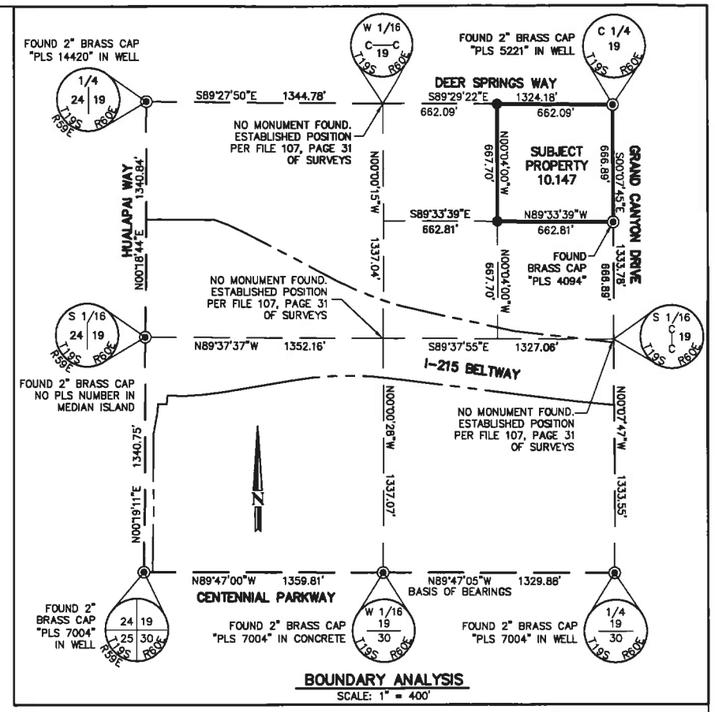
DRC SURVEYING NEVADA, Inc.
Civil Engineering • Land Surveying • Land Planning
3301 W SPRING MOUNTAIN RD., STE #19
LAS VEGAS, NV 89101 (702) 270-6119

FILENAME: X:\2012\2012-723 Rick Eng - Deer Springs\Engineering\Drainage\Figures\FIG 11-STREET-FLOW-MAP.dwg, LAST SAVED ON: Oct 05 2012 3:11pm PLOTTED BY: ANDY, ON: Oct 05 2012 3:12pm

PARCEL MAP

THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4)
OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19,
TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M.,
CITY OF LAS VEGAS, CLARK COUNTY, NEVADA





BOUNDARY ANALYSIS
SCALE: 1" = 400'

LEGEND

- BOUNDARY LINE
- CENTERLINE
- RIGHT-OF-WAY LINE
- SECTION LINE
- EASEMENT LINE
- ADJACENT LOT LINE
- FOUND MONUMENT AS NOTED
- FOUND MONUMENT STAMPED "PLS 14414"
- APN — ASSESSOR'S PARCEL NUMBER
- OR: XXXX: XXXX — CLARK COUNTY OFFICIAL RECORDS BOOK: INSTRUMENT NO.

BASIS OF BEARINGS

NORTH 89°47'05" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, NEVADA AS SHOWN BY MAP THEREOF ON FILE IN FILE 107, PAGE 31 OF SURVEYS.

19 SEPTEMBER 2012

JOB# SN12-723

DEER SPRINGS PM

APPENDIX C
HYDRAULICS

STREET/FLOW SECTION CALCULATIONS

K-K TRAPAZOIDAL CHANNEL - INTERIM COND (Q100=17 CFS)
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	K-K TRAP CHANNEL - INTERIM CONDITION (Q100=17CFS)
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

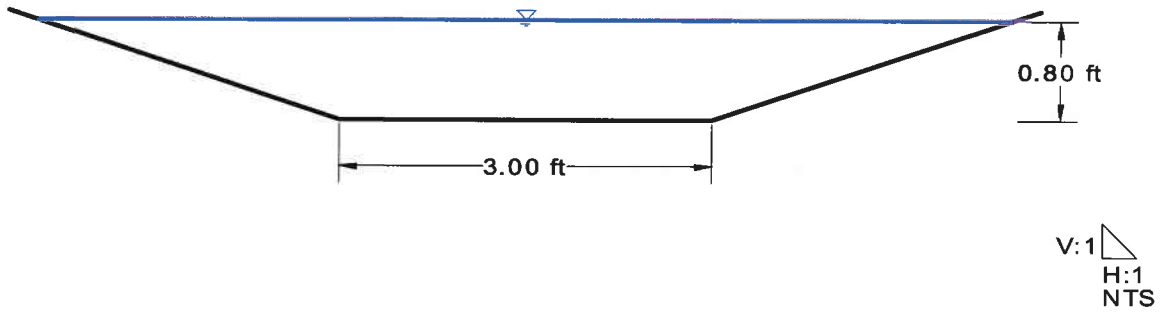
Input Data	
Mannings Coefficient	0.025
Channel Slope	1.00 %
Left Side Slope	3.00 H : V
Right Side Slope	3.00 H : V
Bottom Width	3.00 ft
Discharge	17.00 cfs

Results	
Depth	0.80 ft
Flow Area	4.3 ft²
Wetted Perimeter	8.07 ft
Top Width	7.81 ft
Critical Depth	0.77 ft
Critical Slope	1.17 %
Velocity	3.93 ft/s
Velocity Head	0.24 ft
Specific Energy	1.04 ft
Froude Number	0.93
Flow Type	Subcritical

K-K TRAPAZOIDAL CHANNEL - INTERIM COND (Q100=17 CFS)
Cross Section for Trapezoidal Channel

Project Description	
Worksheet	K-K TRAP CHANNEL - INTERIM CONDITION (Q100=17CFS)
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.025
Channel Slope	1.00 %
Depth	0.80 ft
Left Side Slope	3.00 H : V
Right Side Slope	3.00 H : V
Bottom Width	3.00 ft
Discharge	17.00 cfs



L-L TRAP CHANNEL - INTERIM CONDITION (Q100=39CFS)
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	L-L TRAP CHANNEL - INTERIM CONDITION (Q100=39CFS)
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.025	
Channel Slope	1.00	%
Left Side Slope	3.00	H : V
Right Side Slope	3.00	H : V
Bottom Width	3.00	ft
Discharge	39.00	cfs

Results		
Depth	1.20	ft
Flow Area	8.0	ft²
Wetted Perimeter	10.61	ft
Top Width	10.22	ft
Critical Depth	1.19	ft
Critical Slope	1.04	%
Velocity	4.90	ft/s
Velocity Head	0.37	ft
Specific Energy	1.58	ft
Froude Number	0.98	
Flow Type	Subcritical	

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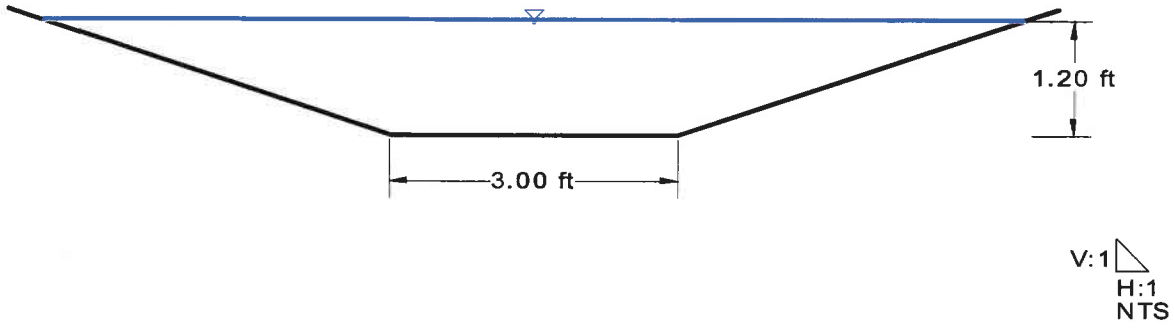
L-L TRAP CHANNEL - INTERIM CONDITION (Q100=39CFS)
Cross Section for Trapezoidal Channel

Project Description	
Worksheet	L-L TRAP CHANNEL - INTERIM CONDITION (Q100=39CFS)
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.025
Channel Slope	1.00 %
Depth	1.20 ft
Left Side Slope	3.00 H : V
Right Side Slope	3.00 H : V
Bottom Width	3.00 ft
Discharge	39.00 cfs



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@ INT. OF GRANDCANYON & ECHELON POINT

INTERIM CAPACITY CALC WEST 1/2 STREET
Worksheet for Irregular Channel

Project Description	
Worksheet	M-M INTERIM CAPACITY CALC WEST 1/2 ST
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	1.00 %
Water Surface Elevation	19.35 ft

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

Results	
Mannings Coefficient	0.019
Elevation Range	18.88 to 23.90
Discharge	23.04 cfs
Flow Area	7.0 ft²
Wetted Perimeter	25.25 ft
Top Width	25.14 ft
Actual Depth	0.47 ft
Critical Elevation	19.37 ft
Critical Slope	0.83 %
Velocity	3.27 ft/s
Velocity Head	0.17 ft
Specific Energy	19.52 ft
Froude Number	1.09
Flow Type	Supercritical

Calculation Messages:
Water elevation exceeds lowest end station by 0.05 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.0	0+20.0	0.030
0+20.0	0+40.0	0.017

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.0	23.90
0+16.0	19.00
0+20.0	18.88
0+40.0	19.30

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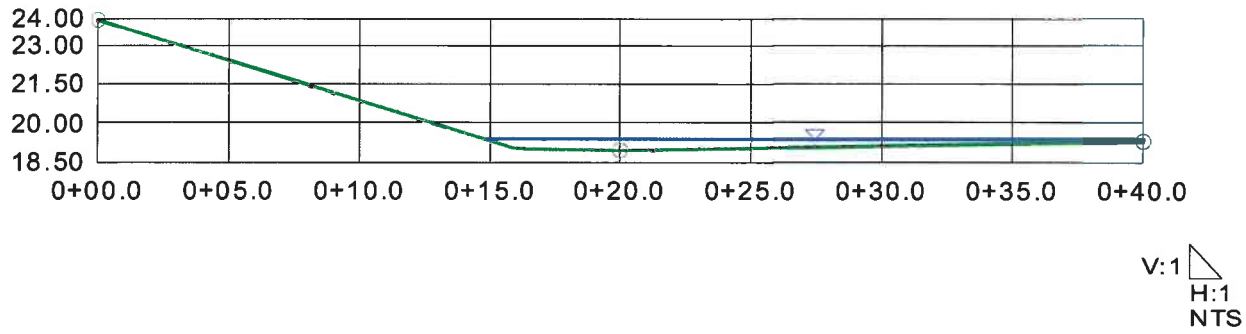
INTERIM CAPACITY CALC WEST 1/2 STREET
Cross Section for Irregular Channel

Project Description	
Worksheet	M-M INTERIM CAPACITY CALC WEST 1/2 ST
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficient	0.019	
Channel Slope	1.00	%
Water Surface Elevation	19.35	ft
Elevation Range	18.88 to 23.90	
Discharge	23.04	cfs



@ INT OF GRAND CANYON & ECHELON POINT

GRAND CANYON EAST 1/2 STREET CAPACITY
Worksheet for Irregular Channel

Project Description	
Worksheet	N-N EAST 1/2 ST CAPACITY CALC
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Channel Slope	1.00 %
Water Surface Elevation	19.36 ft

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

Results	
Mannings Coefficient	0.015
Elevation Range	18.77 to 19.52
Discharge	118.19 cfs
Flow Area	22.4 ft²
Wetted Perimeter	56.63 ft
Top Width	56.26 ft
Actual Depth	0.59 ft
Critical Elevation	19.48 ft
Critical Slope	0.43 %
Velocity	5.27 ft/s
Velocity Head	0.43 ft
Specific Energy	19.79 ft
Froude Number	1.47
Flow Type	Supercritical

Calculation Messages:
Water elevation exceeds lowest end station by 0.365 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.0	0+29.0	0.017
0+29.0	0+37.0	0.013
0+37.0	0+63.0	0.017

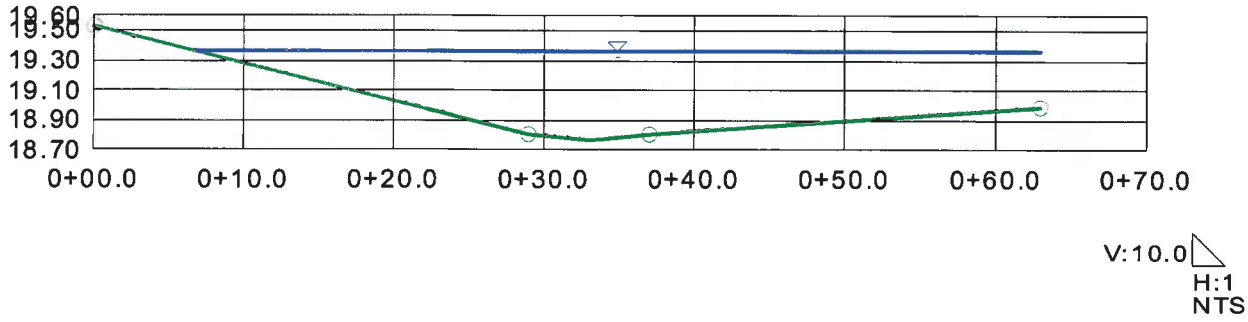
Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.0	19.52
0+29.0	18.81
0+33.0	18.77
0+37.0	18.81
0+63.0	18.99

PT. OF GRANDCANYON & ECHELON POINT

GRAND CANYON EAST 1/2 STREET CAPACITY
Cross Section for Irregular Channel

Project Description	
Worksheet	N-N EAST 1/2 ST CAPACITY CALC
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficient	0.015	
Channel Slope	1.00	%
Water Surface Elevation	19.36	ft
Elevation Range	18.77 to 19.52	
Discharge	118.19	cfs



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Project Engineer: Andrew Whittaker

WEIR @ ECHELON POINT
INTERSECTION OF GRAND CANYON & ECHELON POINT

Worksheet for Broad Crested Weir

Project Description	
Worksheet	WEIR @ ECHELON EAST OF GRAND CANYON
Type	Broad Crested Weir
Solve For	Discharge

Input Data		
Headwater Elevation	19.36	ft
Crest Elevation	18.99	ft
Tailwater Elevation	19.10	ft
Crest Surface Type	Paved	
Crest Breadth	2.00	ft
Crest Length	50.00	ft

Results		
Discharge	33.75	cfs
Headwater Height Above Crest	0.37	ft
Tailwater Height Above Crest	0.11	ft
Discharge Coefficient	3.06	US
Submergence Factor	1.00	
Adjusted Discharge Coefficient	3.06	US
Flow Area	18.3	ft^2
Velocity	1.85	ft/s
Wetted Perimeter	50.73	ft
Top Width	50.00	ft

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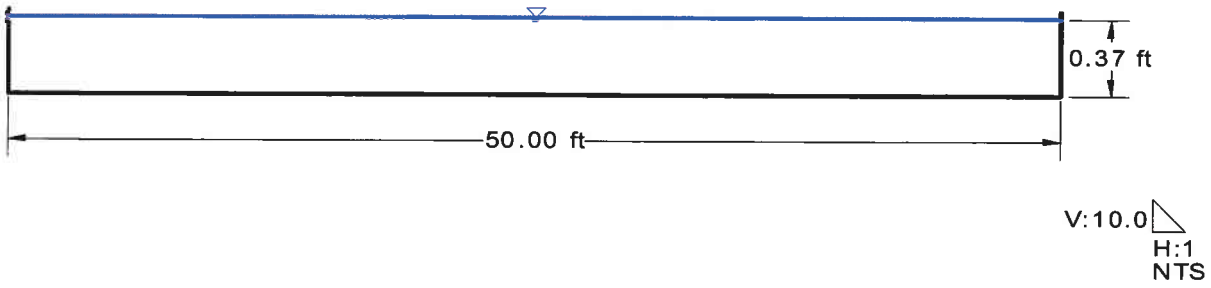
WEIR AT ECHELON EAST OF GRAND CANYON
Cross Section for Broad Crested Weir

Project Description	
Worksheet	WEIR @ ECHELON EAST OF GRAND CANYON
Type	Broad Crested Weir
Solve For	Discharge

Section Data		
Discharge	33.75	cfs
Headwater Elevation	19.36	ft
Crest Elevation	18.99	ft
Tailwater Elevation	19.10	ft
Crest Surface Type	Paved	
Crest Breadth	2.00	ft
Crest Length	50.00	ft



REDUCED SWALE CALCULATION
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	REDUCED SWALE CALCULATION
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.035	
Channel Slope	4.00	%
Depth	0.50	ft
Left Side Slope	3.00	H : V
Right Side Slope	3.00	H : V
Bottom Width	3.00	ft

Results		
Discharge	10	cfs
Flow Area	2.2	ft²
Wetted Perimeter	6.16	ft
Top Width	6.00	ft
Critical Depth	0.57	ft
Critical Slope	2.49	%
Velocity	4.34	ft/s
Velocity Head	0.29	ft
Specific Energy	0.79	ft
Froude Number	1.25	
Flow Type	Supercritical	

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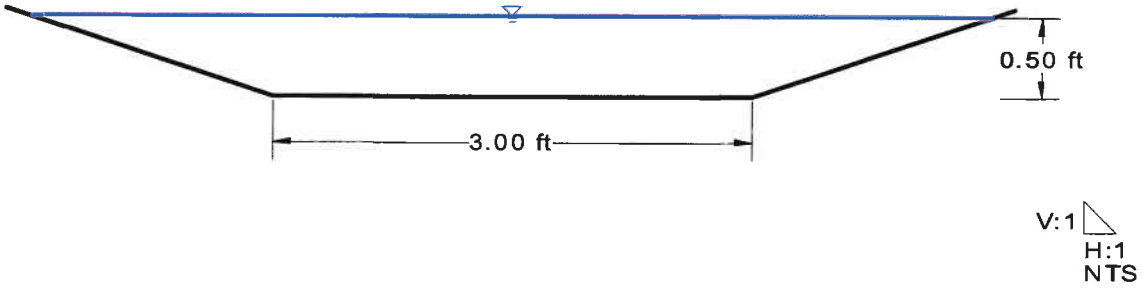
REDUCED SWALE CALCULATION
Cross Section for Trapezoidal Channel

Project Description	
Worksheet	REDUCED SWALE CALCULATION
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficient	0.035	
Channel Slope	4.00	%
Depth	0.50	ft
Left Side Slope	3.00	H : V
Right Side Slope	3.00	H : V
Bottom Width	3.00	ft
Discharge	10	cfs



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DISCHARGE ACROSS SIDEWALK
Worksheet for Rectangular Channel

Project Description	
Worksheet	DISCHARGE ACROSS SIDEWALK
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	1.00	%
Bottom Width	20.00	ft
Discharge	16	cfs

Results		
Depth	0.20	ft
Flow Area	4.1	ft^2
Wetted Perimeter	20.41	ft
Top Width	20.00	ft
Critical Depth	0.27	ft
Critical Slope	0.39	%
Velocity	3.91	ft/s
Velocity Head	0.24	ft
Specific Energy	0.44	ft
Froude Number	1.52	
Flow Type	Supercritical	

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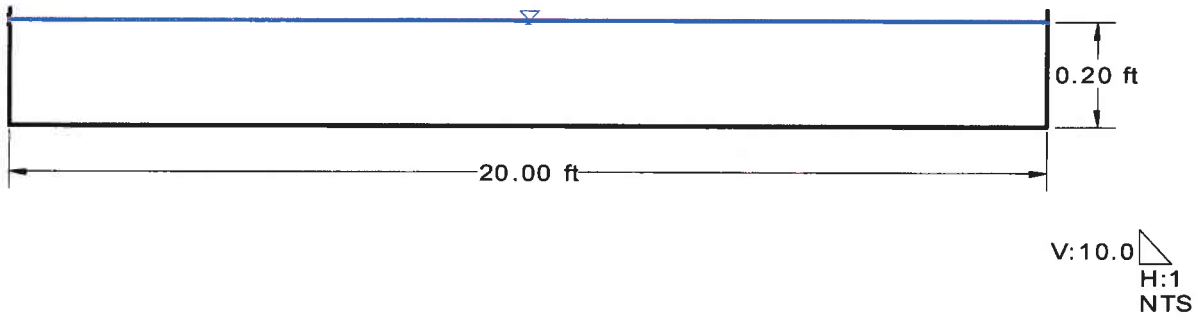
DISCHARGE ACROSS SIDEWALK
Cross Section for Rectangular Channel

Project Description	
Worksheet	DISCHARGE ACROSS SIDEWALK
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.013	
Channel Slope	1.00	%
Depth	0.20	ft
Bottom Width	20.00	ft
Discharge	16	cfs



FLOW SPLIT CALCULATIONS

THIS IS DRCS SPLIT FLOW CHECK, THIS SPLIT FLOW RESULTS ARE WITHIN 1 CFS OF THE APPROVED SLATER-HANIFAN STUDY SO WE HAVE ACCEPTED THEIR SPLIT FLOW.

PIMA COUNTY FLOW SPLIT

DEER SPRINGS FROM GRAND CANYON (100-YR, INTERIM CONDITION)

$Q_L = 0.042*[(Q_M^{0.93}*W$ Referenced from the Pima County Drainage Manual (Tucsan, Arizona), EQ: 12.3

ət = Q_{TOT} =	136	cfs	
in Street =	5.67	ft/s	(Get from Flowmaster)
ank flow =	0	fps	
ank flow =	0	fps	

here: Q_L =		Lateral flow into side street (cfs)
Q_M =	136	QTOT - QLOB - QROB = Main Street flow measured between curbs (cfs)
S_M =	0.019	Main street side slope (ft/ft)
W_M =	63	Main street width (ft)
W_{SS} =	63	Side street width (ft)

Q_L = 26 cfs

$Q_O = 46.8 * y_O * W_{SS}$ * Referenced from the Pima County Drainage Manual (Tucsan, Arizona), EQ: 12.4

ıere: Q_O =		Overbank flow intercepted by the side street (cfs)
y_o =	0.78	Average depth of overbank flow intercepted by side street (ft) (get from FlowMaster)
S_{SS} =	0.035	Slope of side street (ft)

Q_O = 430 cfs

If $Q_O > Q_{OB}$, assume all overbank flow goes to side street

Q_{OB} = 0 cfs

Q_{SS} = Total flow into side street = $Q_{OB} + Q_L$

Q_{SS} =	**26 cfs**	**East on Deer Springs**

ACCEPTED FLOWS

.25 CFS

Q_{MS} = Total flow remaining in main street = $Q_T - Q_{SS}$

Q_{MS} =	**110 cfs**	**South on Grand Canyon**

111 CFS

Note: 1) If the main street has an inverted crown, or if the side street has been crested to impede flow, Q_M should be calculated as only that portion of the total discharge flowing above the elevation of the crest.

2) If flow extends beyond the curbs, Q_M should be only that portion of the total discharge which would be flowing between the curbs. Equation 12.4 is then used to calculate the maximum amount of "overbank" flow which will also turn and flow down the side street. Note that if Q_O from Equation 12.4 is positive and is greater that the actual overbank flow, it should be assumed that all of the actual overbank flow turns and flows down the side street. Also, if Q_O calculated from 12.4 is negative, it should be assumed that no overbank flow turns down the side street

GRAND CANYON NORTH OF DEER SPRINGS_Q100_INT
Worksheet for Irregular Channel

Project Description	
Worksheet	GRAND CANYON NORTH OF DEER SPRINGS_Q100_INT
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Channel Slope	1.90	%
Discharge	136.00	cfs

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

Results		
Mannings Coefficient	0.016	
Water Surface Elevation	0.78	ft
Elevation Range	0.00 to 0.77	
Flow Area	24.0	ft²
Wetted Perimeter	81.34	ft
Top Width	80.00	ft
Actual Depth	0.78	ft
Critical Elevation	0.92	ft
Critical Slope	0.50	%
Velocity	5.67	ft/s
Velocity Head	0.50	ft
Specific Energy	1.28	ft
Froude Number	1.83	
Flow Type	Supercritical	

USED TO GET VELOCITY & Depth for FLOWSPLIT CALC.

Calculation Messages:
Water elevation exceeds lowest end station by 0.11698658 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.0	0+05.0	0.013
0+05.0	0+08.0	0.030
0+08.0	0+10.0	0.013
0+10.0	0+70.0	0.017
0+70.0	0+72.0	0.013
0+72.0	0+75.0	0.030
0+75.0	0+80.0	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.0	0.66
0+05.0	0.56
0+08.0	0.50
0+08.5	0.50

GRAND CANYON NORTH OF DEER SPRINGS_Q100_INT
Worksheet for Irregular Channel

Natural Channel Points	
Station (ft)	Elevation (ft)
0+08.5	0.00
0+10.0	0.13
0+10.0	0.17
0+40.0	0.77
0+70.0	0.17
0+70.0	0.13
0+71.5	0.00
0+71.5	0.50
0+72.0	0.50
0+75.0	0.56
0+80.0	0.66

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APPENDIX D
REFERENCES

SLATER HANIFAN GROUP
CONSULTING ENGINEERS & PLANNERS

Pima County Flow Split Calculations
Grand Canyon and Deer Springs (100-Year, Interim)

Project: Town Center 60/75 No.5
Date: 8/3/2005

Reference

$Q_L = 0.042*[(Q_M^{0.93} * W_{SS}^{0.85})/(S_M^{0.41} * W_M^{0.79})]$ — From the Pima County Drainage Manual (Tuscon, Arizona) Equation 12.3

Total Flow in Main Street = Q_{TOT} = 99 cfs
Velocity in Main Street = 6.36 ft/s (get from FlowMaster)
Estimated Left Overbank Flow = 12 cfs
Estimated Right Overbank Flow = 0 cfs

Q_L = 0 Lateral flow into side street (cfs)
Q_M = 87 $Q_{TOT}-Q_{LOB}-Q_{ROB}$ = Main street flow measured between curbs (cfs)
S_M = 0.0155 Main street slope (ft/ft)
W_M = 34.5 Main street width (ft)
W_{SS} = 34.5 Side street width (ft)

Q_L = 18.2 cfs

$Q_O = 46.8 * y_o * W_{SS} * S_{ss}^{0.5} - Q_L$ — Equation 12.4

Q_O = 12 Overbank flow intercepted by the side street (cfs)
yo = 0.88 Average depth of overbank flow intercepted by side street (ft) (get from FlowMaster)
Sss = 0.0467 Slope of side street (ft/ft)

Q_O = 288.8 cfs

If $Q_o > Q_{OB}$, assume <u>all</u> overbank flow goes to side street

Q_{OB} = 12.0 cfs

Q_{SS} = Total flow into side street = $Q_{OB} + Q_L$

Q_{SS} = 30 **East on Deer Springs**

Q_{MS} = Total flow remaining in main street = $Q_T - Q_{SS}$

Q_{MS} = 69 **South on Grand Canyon**

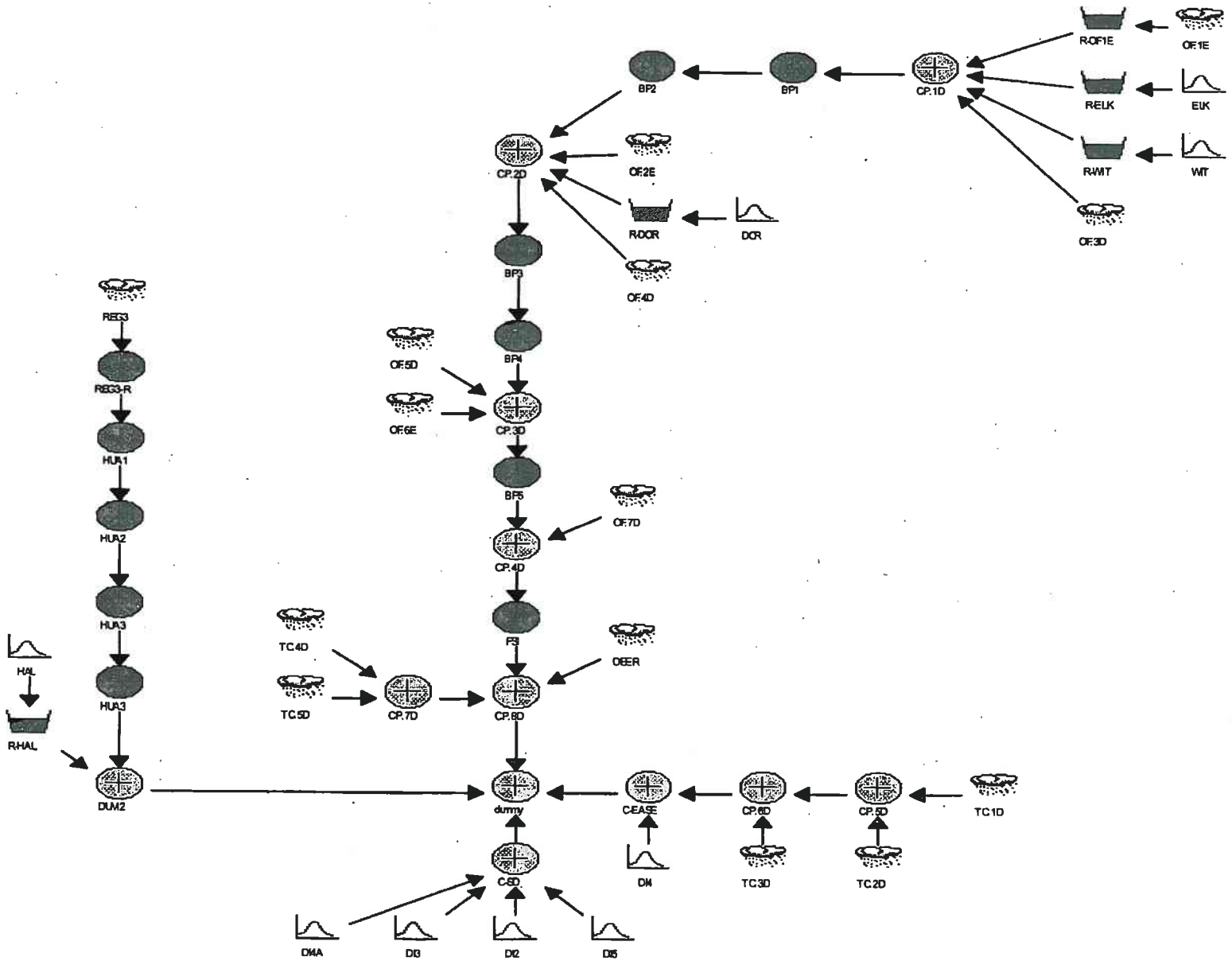
Note:

1) If the main street has an inverted crown, or if the side street has been crested to impede flow, Q_M should be calculated as only that portion of the total discharge flowing above the elevation of the crest.

2) If flow extends beyond the curbs, Q_M should be only that portion of the total discharge which would be flowing between the curbs. Equation 12.4 is then used to calculated the maximum amount of "overbank" flow which will also turn and flow down the side street. Note that if Q_O from Equation 12.4 is positive and is greater than the actual overbank flow, it should be assumed that all of the actual overbank flow turns and flows down the side street. Also, if Q_O calculated from 12.4 is negative, it should be assumed that no overbank flow turns and flows down the side street.

5740 S. Arville St., Suite 216 - Las Vegas, NV 89118
Ph. 702-284-5300 - Fx. 702-284-5399

INTERIM CONDITION NETWORK DIAGRAM



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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY  1991                *
*            VERSION 4.0.1E             *
*                                       *
*  RUN DATE  08/05/2005  TIME  12:22:02 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    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
```

```
:::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::
:::                                     :::
:::  Full Microcomputer Implementation  :::
:::                 by                  :::
:::       Haestad Methods, Inc.         :::
:::                                     :::
:::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

HEC-1 INPUT PAGE 1

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

   1          ID  INTERIM CONDITION - TOWN CENTER RPD5 60/75 NO.5
   2          IT       5                   300
   3          IO       5       0
   4          JR    PREC    1.00    0.54

   5          KK  REG3
   6          KM  Basin referenced from Cliffs Edge Master Study Add#2
   7          KO                                   22
   8          BA   .5828
   9          PB   3.15
  10          PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
  11          PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
  12          PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
  13          PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
  14          PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
  15          PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
  16          PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
  17          PC    .998    .999   1.000
  18          LS              84
  19          UD    .462

  20          KK  REG3-R
  21          KM  DIVERT PART OF FLOW IN STORM DRAIN AT HUALAPAI PER CLIFFS EDGE MASTER STUDY
  22          KO                                   22
  23          DT  BLAH
  24          DI       0     348     493
  25          DQ       0     347     147

  26          KK  HUA1
  27          KM  SPLIT CLIFFS EDGE FLOW TO MATCH DISCHARGE LOCATIONS
  28          KO                                   22
  29          DT  ELK
  30          DI       0     347
  31          DQ       0     215

  32          KK  HUA2
```

```
 33          KM  DIVERT RUNOFF FROM WITTIG/HUALAPAI INTERSECTION TO MATCH VTN STUDY
 34          KO                                        22
 35          DT  WIT
 36          DI        0      132
 37          DQ        0       69

 38          KK  HUA3
 39          KM  SPLIT FLOW DOWN DORRELL
 40          KO                                        22
 41          DT  DOR
 42          DI        0       63
 43          DQ        0       51

 44          KK  HUA3
 45          KM  FLOW SPLIT AT HALEY
 46          KO                                        22
 47          DT  HAL
 48          DI        0       12
 49          DQ        0        8
```



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

 50          KK  HAL
 51          KM
 52          KO                                        22
 53          DR  HAL

 54          KK  R-HAL
 55          KM  ROUTE FLOW DOWN HALEY TO GRAND CANYON
 56          KO                                        22
 57          RK    2640    .026    .020            TRAP       60       2

 58          KK  DUM2
 59          KM
 60          KO                                        22
 61          HC        2

 62          KK  ELK
 63          KM
 64          KO                                        22
 65          DR  ELK

 66          KK  R-ELK
 67          KM  ROUTE FLOW FROM HUALAPAI DOWN TO GRAND CANYON
 68          KO                                        22
 69          RK    2640    .028    .020            TRAP       60       2

 70          KK  WIT
 71          KM
 72          KO                                        22
 73          DR  WIT

 74          KK  R-WIT
 75          KM  ROUTE FLOW FROM HUALAPAI DOWN WITTIG TO GRAND CANYON
 76          KO                                        22
 77          RK    2640    .028    .020            TRAP       60       2

 78          KK  OF.1E
 79          KM
 80          KO                                        22
 81          BA   .0156
 82          PB    3.00
 83          LS              77
 84          UD    .150

 85          KK  R-OF1E
 86          KM  ROUTE OF.1E DOWN WITTIG TO GRAND CANYON
 87          KO                                        22
 88          RK    1980    .028    .020            TRAP       60       2

 89          KK  OF.3D
 90          KM
 91          KO                                        22
 92          BA   .0470
 93          PB    3.00
 94          LS              70
```



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

 95          UD    .261

 96          KK  CP.1D
 97          KM
 98          KO                                        22
 99          HC        4

100          KK  BP1
101          KM  REMOVE RUNOFF CAPTURED BY DI5
102          KO                                        22
103          DT  DI5
```

```
104          DI        0        6      296
105          DQ        0        6       12

106          KK  BP2
107          KM  BYPASS FLOW FROM DI4a
108          KO                                      22
109          DT  DI4A
110          DI        0      284
111          DQ        0       15

112          KK  DOR
113          KM
114          KO                                      22
115          DR  DOR

116          KK  R-DOR
117          KM  ROUTE FLOW DOWN DORRELL TO GRAND CANYON
118          KO                                      22
119          RK     2640     .026     .020          TRAP       60        2

120          KK  OF.2E
121          KM
122          KO                                      22
123          BA    .0080
124          PB    3.00
125          LS                77
126          UD     .121

127          KK  OF.4D
128          KM
129          KO                                      22
130          BA    .0561
131          LS                70
132          UD     .283

133          KK  CP.2D
134          KM
135          KO                                      22
136          HC        4
```



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

137          KK  BP3
138          KM  BYPASS FLOW FROM DROP INLET 4
139          KO                                      22
140          DT  DI4
141          DI        0        4      340
142          DQ        0        0      152

143          KK  BP4
144          KM  BYPASS FLOW FROM DROP INLET 3
145          KO                                      22
146          DT  DI3
147          DI        0        4      188
148          DQ        0        0       42

149          KK  OF.5D
150          KM
151          KO                                      22
152          BA    .0080
153          LS                70
154          UD     .172

155          KK  OF.6E
156          KM
157          KO                                      22
158          BA    .0080
159          LS                77
160          UD     .135

161          KK  CP.3D
162          KM
163          KO                                      22
164          HC        3

165          KK  BP5
166          KM  FLOW CAPTURED BY DROP INLET 2
167          KO                                      22
168          DT  DI2
169          DI        0        6      151
170          DQ        0        0       18

171          KK  OF.7D
172          KM
173          KO                                      22
174          BA    .0089
175          LS                70
176          UD     .172

177          KK  CP.4D
178          KM
179          KO                                      22
```

```
180          HC       2
```



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

181          KK  FS1
182          KM  FLOW SPLIT AT THE INTERSECTION OF GRAND CANYON AND DEER SPRINGS
183          KO                                    22
184          DT  BP6
185          DI        0        6      136
186          DQ        0        6      111

187          KK  TC.4D
188          KM
189          KO                                    22
190          BA   .0065
191          LS                 84
192          UD    .140

193          KK  TC.5D
194          KM
195          KO                                    22
196          BA   .0103
197          LS                 84
198          UD    .134

199          KK  CP.7D
200          KM
201          KO                                    22
202          HC       2

203          KK  DEER
204          KM  DEER SPRINGS
205          KO                                    22
206          BA   .0005
207          LS                 98
208          UD     .05

209          KK  CP.8D
210          KM
211          KO                                    22
212          HC       3

213          KK  TC.1D
214          KM
215          KO                                    22
216          BA   .0037
217          LS                 84
218          UD    .102

219          KK  TC.2D
220          KM
221          KO                                    22
222          BA   .0040
223          LS                 84
224          UD    .135
```



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

225          KK  CP.5D
226          KM
227          KO                                    22
228          HC       2

229          KK  TC.3D
230          KM
231          KO                                    22
232          BA   .0034
233          LS                 84
234          UD    .099

235          KK  CP.6D
236          KM
237          KO                                    22
238          HC       2

239          KK  DI4
240          KM  FLOW DISCHARGED INTO CONCRETE CHANNEL FROM DI4
241          KO                                    22
242          DR  DI4

243          KK  C-EASE
244          KM  COMBINE FLOW SPLIT FLOW AND DI2 FOR TOTAL IN CHANNEL
245          KO                                    22
246          HC       2

247          KK  DI5
248          KM  FLOW IN STORM DRAIN CAPTURED BY DI1
249          KO                                    22
250          DR  DI5
```

```
          251          KK  DI3
          252          KM  FLOW IN STORM DRAIN FROM DI3
          253          KO                                      22
          254          DR  DI3

          255          KK  DI2
          256          KM  FLOW IN STORM DRAIN FROM DI4
          257          KO                                      22
          258          DR  DI2

          259          KK  DI4A
          260          KM
          261          KO                                      22
          262          DR  DI4A

          263          KK  C-SD
          264          KM  GRAND CANYON STORM DRAIN
          265          KO                                      22
          266          HC       4
```



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

          267          KK  dummy
          268          KM
          269          KO                                      22
          270          HC       4
          271          ZZ
```

HEC1 S/N: 1343001909 HMVersion: 6.33 Data File: C:\WINDOWS\TEMP\~vbh3A32.TMP

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              MAY  1991                *
*            VERSION 4.0.1E             *
*                                       *
*  RUN DATE  08/05/2005  TIME  12:22:02 *
*                                       *
*****************************************
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```
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*                                       *
*   U.S. ARMY CORPS OF ENGINEERS        *
*   HYDROLOGIC ENGINEERING CENTER       *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

INTERIM CONDITION - TOWN CENTER RPD5 60/75 NO.5

```
  3 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     0.08 HOURS
                      TOTAL TIME BASE     24.92 HOURS

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

    JP          MULTI-PLAN OPTION
                     NPLAN          1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                   RATIOS OF PRECIPITATION
                  1.00      0.54
```

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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1	RATIO 2
					1.00	0.54
HYDROGRAPH AT	REG3	0.58	1	FLOW	493.	162.
				TIME	3.92	3.92
DIVERSION TO	BLAH	0.58	1	FLOW	338.	162.
				TIME	3.67	3.92
HYDROGRAPH AT	REG3-R	0.58	1	FLOW	347.	0.
				TIME	3.92	3.92
DIVERSION TO	ELK	0.58	1	FLOW	215.	0.
				TIME	3.92	3.92
HYDROGRAPH AT	HUA1	0.58	1	FLOW	132.	0.
				TIME	3.92	3.92
DIVERSION TO	WIT	0.58	1	FLOW	69.	0.
				TIME	3.92	3.92
HYDROGRAPH AT	HUA2	0.58	1	FLOW	63.	0.
				TIME	3.92	3.92
DIVERSION TO	DOR	0.58	1	FLOW	51.	0.
				TIME	3.92	3.92
HYDROGRAPH AT	HUA3	0.58	1	FLOW	12.	0.
				TIME	3.92	3.83
DIVERSION TO	HAL	0.58	1	FLOW	8.	0.
				TIME	3.92	3.83
HYDROGRAPH AT	HUA3	0.58	1	FLOW	4.	0.
				TIME	3.92	3.83
HYDROGRAPH AT	HAL	0.00	1	FLOW	8.	0.
				TIME	3.92	3.83
ROUTED TO	R-HAL	0.00	1	FLOW	8.	0.
				TIME	4.08	6.33
2 COMBINED AT	DUM2	0.58	1	FLOW	10.	0.
				TIME	4.08	6.33
HYDROGRAPH AT	ELK	0.00	1	FLOW	215.	0.
				TIME	3.92	3.92
ROUTED TO	R-ELK	0.00	1	FLOW	206.	0.
				TIME	3.92	4.58
HYDROGRAPH AT	WIT	0.00	1	FLOW	69.	0.
				TIME	3.92	3.92
ROUTED TO	R-WIT	0.00	1	FLOW	67.	0.
				TIME	4.00	5.00
HYDROGRAPH AT	OF.1E	0.02	1	FLOW	15.	3.
				TIME	3.58	3.58
ROUTED TO	R-OF1E	0.02	1	FLOW	14.	3.
				TIME	3.67	3.83
HYDROGRAPH AT	OF.3D	0.05	1	FLOW	23.	3.

				TIME	3.75	3.83
4 COMBINED AT	CP.1D	0.06	1	FLOW	296.	6.
				TIME	3.92	3.83
DIVERSION TO	DI5	0.06	1	FLOW	12.	6.
				TIME	3.92	3.83
HYDROGRAPH AT	BP1	0.06	1	FLOW	284.	0.
				TIME	3.92	0.08
DIVERSION TO	DI4A	0.06	1	FLOW	15.	0.
				TIME	3.92	0.08
HYDROGRAPH AT	BP2	0.06	1	FLOW	269.	0.
				TIME	3.92	0.08
HYDROGRAPH AT	DOR	0.00	1	FLOW	51.	0.
				TIME	3.92	3.92
ROUTED TO	R-DOR	0.00	1	FLOW	50.	0.
				TIME	4.00	5.08
HYDROGRAPH AT	OF.2E	0.01	1	FLOW	8.	2.
				TIME	3.58	3.58
HYDROGRAPH AT	OF.4D	0.06	1	FLOW	26.	3.
				TIME	3.75	3.92
4 COMBINED AT	CP.2D	0.13	1	FLOW	340.	4.
				TIME	3.92	3.83
DIVERSION TO	DI4	0.13	1	FLOW	152.	0.
				TIME	3.92	3.83
HYDROGRAPH AT	BP3	0.13	1	FLOW	188.	4.
				TIME	3.92	3.83
DIVERSION TO	DI3	0.13	1	FLOW	42.	0.
				TIME	3.92	3.83
HYDROGRAPH AT	BP4	0.13	1	FLOW	146.	4.
				TIME	3.92	3.83
HYDROGRAPH AT	OF.5D	0.01	1	FLOW	4.	1.
				TIME	3.58	3.75
HYDROGRAPH AT	OF.6E	0.01	1	FLOW	8.	2.
				TIME	3.58	3.58
3 COMBINED AT	CP.3D	0.14	1	FLOW	151.	6.
				TIME	3.92	3.75
DIVERSION TO	DI2	0.14	1	FLOW	18.	0.
				TIME	3.92	0.08
HYDROGRAPH AT	BP5	0.14	1	FLOW	133.	6.
				TIME	3.92	3.75
HYDROGRAPH AT	OF.7D	0.01	1	FLOW	5.	1.
				TIME	3.58	3.75
2 COMBINED AT	CP.4D	0.15	1	FLOW	136.	6.
				TIME	3.92	3.75
DIVERSION TO	BP6	0.15	1	FLOW	111.	6.
				TIME	3.92	3.75
HYDROGRAPH AT	FS1	0.15	1	FLOW	25.	0.
				TIME	3.92	3.75
HYDROGRAPH AT						

EXISTING & INTERIM

Ref. flow North of Deer Springs IN GRAND CANYON

Ref. FLOW SPLIT SOUTH IN GRAND CANYON

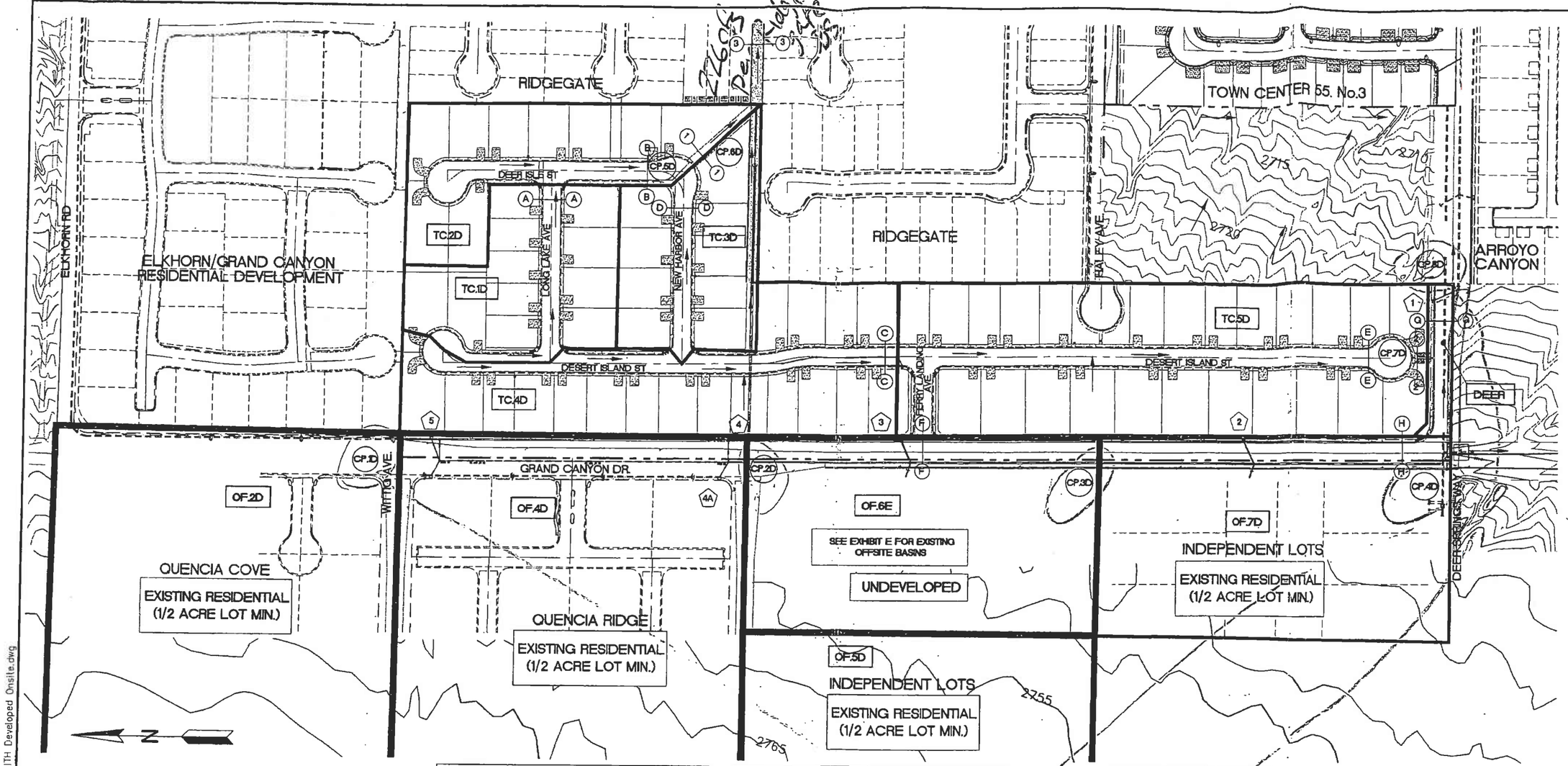
REF. FLOW SPLIT EAST IN DEER SPRINGS

	TC.4D	0.01	1	FLOW	9.	3.
				TIME	3.58	3.58
HYDROGRAPH AT						
	TC.5D	0.01	1	FLOW	14.	5.
				TIME	3.58	3.58
2 COMBINED AT						
	CP.7D	0.02	1	FLOW	22.	7.
				TIME	3.58	3.58
HYDROGRAPH AT						
	DEER	0.00	1	FLOW	1.	1.
				TIME	3.50	3.50
3 COMBINED AT						
	CP.8D	0.17	1	FLOW	32.	8.
				TIME	3.92	3.58
HYDROGRAPH AT						
	TC.1D	0.00	1	FLOW	5.	2.
				TIME	3.50	3.58
HYDROGRAPH AT						
	TC.2D	0.00	1	FLOW	5.	2.
				TIME	3.58	3.58
2 COMBINED AT						
	CP.5D	0.01	1	FLOW	10.	3.
				TIME	3.58	3.58
HYDROGRAPH AT						
	TC.3D	0.00	1	FLOW	5.	2.
				TIME	3.50	3.58
2 COMBINED AT						
	CP.6D	0.01	1	FLOW	15.	5.
				TIME	3.58	3.58
HYDROGRAPH AT						
	DI4	0.00	1	FLOW	152.	0.
				TIME	3.92	3.83
2 COMBINED AT						
	C-EASE	0.01	1	FLOW	156.	5.
				TIME	3.92	3.58
HYDROGRAPH AT						
	DI5	0.00	1	FLOW	12.	6.
				TIME	3.92	3.83
HYDROGRAPH AT						
	DI3	0.00	1	FLOW	42.	0.
				TIME	3.92	3.83
HYDROGRAPH AT						
	DI2	0.00	1	FLOW	18.	0.
				TIME	3.92	0.08
HYDROGRAPH AT						
	DI4A	0.00	1	FLOW	15.	0.
				TIME	3.92	0.08
4 COMBINED AT						
	C-SD	0.00	1	FLOW	87.	6.
				TIME	3.92	3.83
4 COMBINED AT						
	dummy	0.76	1	FLOW	280.	14.
				TIME	3.92	3.58

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= 1.00									
R-HAL	MANE	3.28	7.97	244.97	-1.00	5.00	7.96	245.00	-1.00
FOR PLAN = 1 RATIO= 0.54									
R-HAL	MANE	5.00	0.01	382.92	-1.00	5.00	0.01	385.00	-1.00
FOR PLAN = 1 RATIO= 1.00									
R-ELK	MANE	1.38	211.93	236.93	-1.00	5.00	205.63	235.00	-1.00

```
          FOR PLAN = 1  RATIO= 0.54
            R-ELK   MANE          4.91      0.29    273.68      -1.00       5.00       0.29     275.00       -1.00


          FOR PLAN = 1  RATIO= 1.00
            R-WIT   MANE          1.95     67.68    239.66      -1.00       5.00      67.17     240.00       -1.00


          FOR PLAN = 1  RATIO= 0.54
            R-WIT   MANE          5.00      0.09    298.01      -1.00       5.00       0.09     300.00       -1.00


          FOR PLAN = 1  RATIO= 1.00
            R-OF1E  MANE          2.62     14.35    219.98       1.08       5.00      14.34     220.00        1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8911E+00 EXCESS=0.0000E+00 OUTFLOW=0.8954E+00 BASIN STORAGE=0.2820E-04 PERCENT ERROR=  -0.5

          FOR PLAN = 1  RATIO= 0.54
            R-OF1E  MANE          3.43      3.13    226.09       0.27       5.00       3.04     230.00        0.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2170E+00 EXCESS=0.0000E+00 OUTFLOW=0.2207E+00 BASIN STORAGE=0.2608E-04 PERCENT ERROR=  -1.7

          FOR PLAN = 1  RATIO= 1.00
            R-DOR   MANE          2.16     50.75    239.58      -1.00       5.00      50.26     240.00       -1.00


          FOR PLAN = 1  RATIO= 0.54
            R-DOR   MANE          5.00      0.07    307.48      -1.00       5.00       0.07     310.00       -1.00



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



SYMBOL KEY	
TC.1D	DRAINAGE SUBBASIN
C1	COMBINATION POINT
	SUBBASIN BOUNDARY
	FLOW DIRECTION
A — A	STREET CROSS SECTION
1 — 1	DRAINAGE EASEMENT SECTION
1	FLOW SPLIT & BYPASS LOCATION
1	DROP INLET & BYPASS LOCATION

200 0 200 400
SCALE FEET

SUMMARY OF INLETS AND FLOW SPLITS		
COMBINATION PT	Q100 (CFS)	Q10 (CFS)
DI5 / BP1	12 / 284	6 / 0
DI4A / BP2	15 / 269	0 / 0
DI4 / BP3	152 / 42	0 / 0
DI3 / BP4	42 / 146	0 / 4
DI2 / BP5	18 / 133	0 / 6
FS1 / BP6	25 / 111	0 / 6
DI1	NUISANCE ONLY	

(I.E. DI5 CORRESPONDS TO BP1)

SUMMARY OF CONCENTRATION PTS		
COMBINATION PT	Q100 (CFS)	Q10 (CFS)
CP.1D	296	6
CP.2D	340	4
CP.3D	151	6
CP.4D	136	6
CP.5D	10	3
CP.6D	15	5
CP.7D	22	7
CP.8D	32	8
C-SD	87	6
C-EASE	156	5

SUMMARY OF BASIN FLOWRATES			
SUBBASIN	Q100 (CFS)	Q10 (CFS)	AREA (ACRES)
TC.1D	5	2	2.38
TC.2D	5	2	2.58
TC.3D	5	2	2.19
TC.4D	9	3	4.18
TC.5D	14	5	6.59
DEER	1	1	0.32
OF.1E	15	3	10.0
OF.2E	8	2	5.1
OF.3D	23	3	30.1
OF.4D	26	3	35.9
OF.5D	4	1	5.1
OF.6E	8	2	5.6
OF.7D	5	1	5.7

NOTE: DI# IS RUNOFF CAPTURED BY THE DROP INLET, FS# IS RUNOFF FROM A FLOWSPLIT THAT LEAVE THE MAIN LINE. BP# IS THE RUNOFF THAT BY PASSES THE INLET OR MAINTAINS FLOW PATH FROM A FLOW SPLIT.

File: J:\PAR0302-007\Drainage\Technical Study\Figures\EXHIBITH Developed Onsite.dwg

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

NO.	DESCRIPTION	DATE	BY	APP.

TOWN CENTER ASSEMBLAGE 60/75 NO.5

ON-SITE DRAINAGE MAP
INTERIM CONDITIONS

DATE:	08/09/05
DRAFTER:	JDS
DESIGNER:	JDS
CHECKED:	MJF
PROJECT NO.	PAR0302.007A

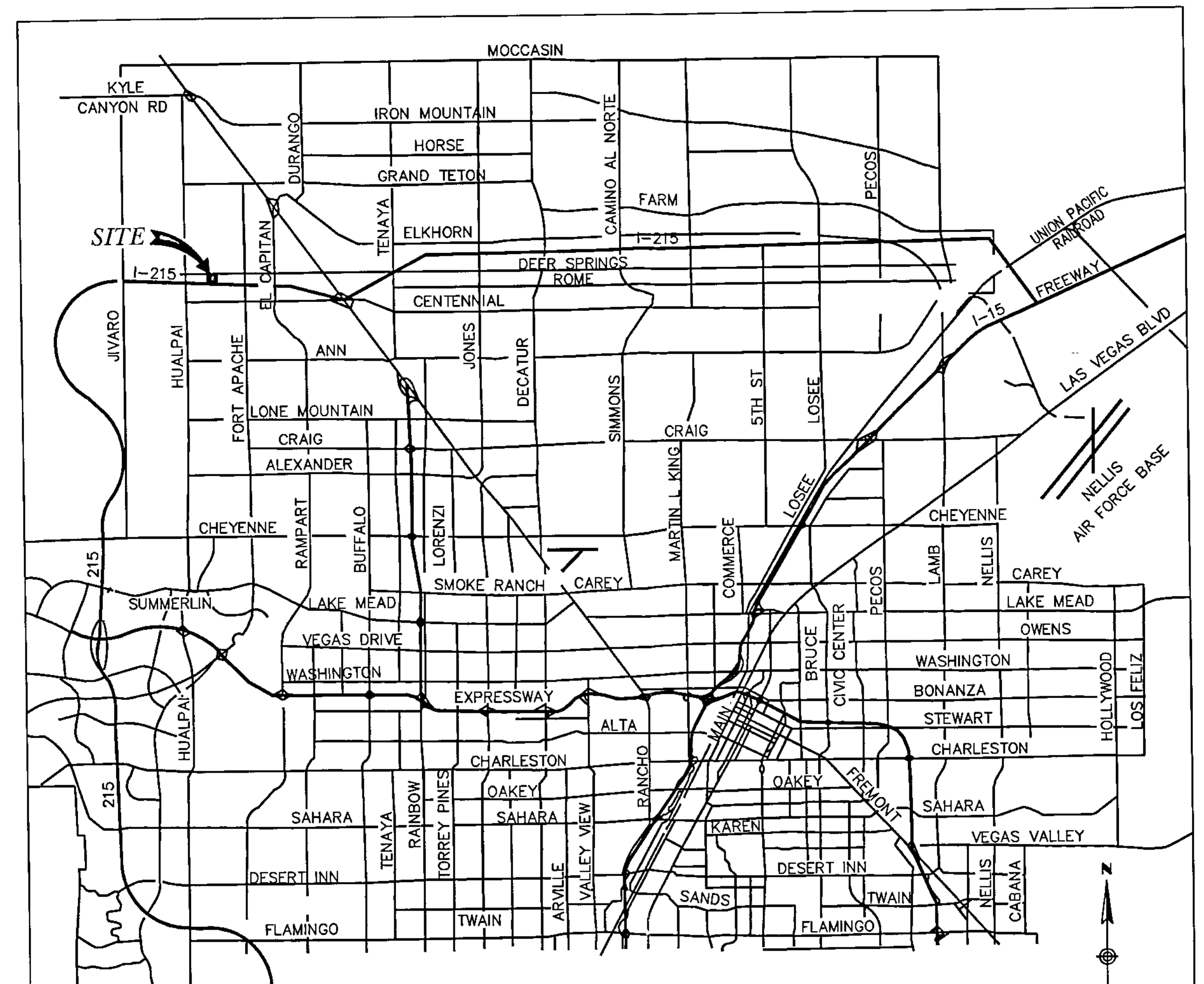
EXHIBIT H
SHEET 1 OF 1

APPENDIX E
GRADING PLANS

CITY OF LAS VEGAS, NEVADA
A SCHOOL DEVELOPMENT
APN 125-19-301-007, 125-19-301-008

CITY OF LAS VEGAS GENERAL NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST REVISED EDITION; THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALLSUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-HALF INCH (1/2") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY THE SOILS ENGINEER APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATURE NO. 625.550.
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.
16. WALL NOTES:
17. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
18. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
19. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
20. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.



VICINITY MAP
N.T.S.

ABBREVIATIONS:

AC	ASPHALTIC CONCRETE	LAT	LATERAL
BC	BACK OF CURB	LF	LINEAL FEET
BCR	BEGIN CURB RETURN	MH	MANHOLE
BDRY	BOUNDARY	OHP	OVERHEAD POWER
BEG	BEGIN	P	PAVEMENT ELEVATION
BM	BENCH MARK	PC	POINT OF CURVATURE
BW	BACK OF SIDEWALK	PCC	POINT OF COMPOUND CURVE
BVC	BEGIN VERTICAL CURVE	PI	POINT OF INTERSECTION
C	CONCRETE ELEVATION	POC	POINT ON CURVE
CL	CENTER LINE	PP	POWER POLE
CO	CLEAN OUT	PRC	POINT OF REVERSE CURVE
CONC	CONCRETE	PROP	PROPOSED
CONST	CONSTRUCT	PT	POINT OF TANGENCY
DI	DROP INLET	PVC	POLYVINYL CHLORIDE
E	ELECTRIC	PVMT	PAVEMENT
EG	EXISTING GROUND GRADE	ROW	RIGHT-OF-WAY
EL	ELEVATION	SS	SANITARY SEWER
EP	EDGE OF PAVEMENT	SSMH	SANITARY SEWER MANHOLE
ESMT	EASEMENT	SD	STORM DRAIN
EVC	END VERTICAL CURVE	SDMH	STORM DRAIN MANHOLE
EX, EXIST	EXISTING	STA	STATION
FC	FACE OF CURB	STLT	STREETLIGHT
FF	FINISH FLOOR	SW	SIDEWALK
FG	FINISH GRADE	TC	TOP OF CURB
FH	FIRE HYDRANT	T	TELEPHONE
FL	FLOW LINE	TMH	TOP OF MANHOLE
G	GAS	TRANS	TRANSITION
GB	GRADE BREAK	VG	VALLEY GUTTER
HP	HIGH POINT	W	WATER
INV	INVERT		

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6610 GRAND MONTECITO PKWY
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PHONE: (702) 631-4751
FAZ: (702) 586-0386

DEVELOPER:
WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

BENCHMARK:
CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DEER SPRINGS AND GRAND CANYON DRIVE.

ELEVATION = 830.34016 Meters (NAVD'88)
ELEVATION = 2724.21 Feet (NAVD'88)

BASIS OF BEARINGS:
NORTH 89°47'05" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, NEVADA AS SHOWN BY MAP THEREOF ON FILE IN FILE 107, PAGE 31 OF SURVEYS.

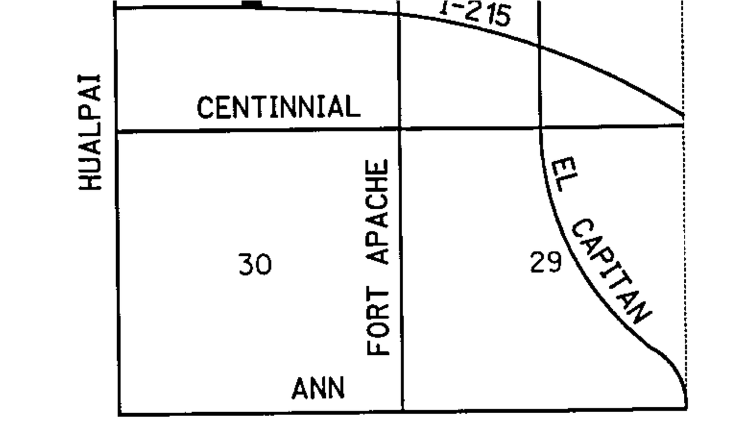
LEGAL DESCRIPTION:
PARCEL 1:

THE WEST HALF (W 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA.

PARCEL 2:

THE EAST HALF (E 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA.

DEVIATION FROM STANDARD:



SITE MAP
N.T.S.

APPROVALS

CITY ENGINEER — DATE

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

PLANNING MANAGER — DATE

THIS PLAN MEETS THE APPLICABLE STANDARDS OF PLANNING AND DEVELOPMENT DEPARTMENT.

CITY FIRE MARSHAL — DATE

LAS VEGAS VALLEY WATER DISTRCT — DATE
PROJECT #
SHEETS

SOUTHWEST GAS CORPORATION — DATE

COX COMMUNICATIONS, LAS VEGAS INC. — DATE

CENTURY LINK — DATE

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

NV ENERGY — DATE

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

This grading plan is a part of drainage study #4572 which was received on 10/9/12 and Rejected on 10/23/12. Page 1 of 10.

SHEET INDEX	
SHEET NUMBER	SHEET DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3	GRADING PLAN 1
4	GRADING PLAN 2
5	GRADING PLAN 3
6	GRADING PLAN 4
7	DETAILS & CROSS-SECTIONS
8	DEER SPRINGS WAY IMPROVEMENTS
9	GRAND CANYON ROAD IMPROVEMENTS
10	ECHELON POINT IMPROVEMENTS
11	UTILITY PLAN 1
12	UTILITY PLAN 2

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJ #
DATE ________ PROJ NO. ________
LVVWD APPROVED FIRE FLOW 2,375 GPM AT 20 PSI RESIDUAL

CITY OF LAS VEGAS FIRE DEPT.

APPROVED

BY: ________ DATE

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OF COUNTY LAWS.

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM THE LVVWD.

FIRE FLOW 2,375 GPM AT 20 P.S.I. RESIDUAL.

DISCLAIMER NOTE:
UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILTY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND OR OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION. CONTRACTOR TO NOTIFY ENGINEER OF ANY CHANGES OR DISCREPANCIES.

AVOID HITTING UNDERGR ND TRAFFIC SIGNAL SYSTEMS AND STREET LIGHT SYSTEM CONDUITS IT'S COSTLY

CALL BEFORE YOU DO UNDERGROUND

Call before you UnderGround

Avoid overhead power line contact. It's costly.

Call before you Overhead
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NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

Avoid cutting underground utility lines. It's costly.

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

1-702-229-6611
F.A.S.T.

QUEST ACADEMY
COVER SHEET

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

PROFESSIONAL ENGINEER - STATE OF NEVADA
ROBERT E. MOHNING
EXP. 12/31/13
CIVIL
No. 7711
10/5/12

RICK ENGINEERING COMPANY
Phoenix
6150 NORTH 16TH STREET
PHOENIX, AZ 85016
602.957.3350
(FAX)602.285.2396
Tucson - San Diego - Sacramento - Riverside - Orange - San Luis Obispo - Bakersfield
rickengineering.com

DESIGNED: DGM
DRAWN: PV
PROJECT NO: 4313
DATE: 05-OCT-2012

SHEET 1 OF 12
DRAWING NO.

O:\4313\Civil\4313imp01.dgn (Model: Default)
05-OCT-2012

3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAVING OF THE EXCAVATION.

4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.

5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.

6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

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

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

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.

8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.

9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.

10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

CITY OF LAS VEGAS SEWER NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.

2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY PLANNING ENGINEER.

3. CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.

4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.

5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETROFIT IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.

6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y"'S SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.

7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.

8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.

9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY PLANNING ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.

10. INSTALLATION OF CURVED SEWER REQUIRES SPECIAL CONSTRUCTION PROCEDURES AND INSPECTIONS. CONTACT CITY OF LAS VEGAS CONSTRUCTION SERVICES 24 HOURS PRIOR TO INSTALLATION.

INSTALLED BEFORE COMBUSTIBLE CONSTRUCTION COMMENCES AND SAID FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER WITH AN ADEQUATE WATER SUPPLY.

4. CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT CENTERLINE OF STREET ADJACENT TO FIRE HYDRANT AS REQUIRED IN ORDINANCE NO. 3944 TO IDENTIFY FIRE HYDRANT LOCATIONS.

5. CONTRACTOR SHALL CALL THE LAS VEGAS BUILDING DEPARTMENT AT 229-2071 FOR UNDERGROUND INSPECTION, PRESSURE AND FLUSH VERIFICATION OF ALL FIRE HYDRANTS AND FIRE LINES BEFORE BACK FILLING.

6. PAINTING OF THE CURBS AND HYDRANT AND ANY WORK NECESSARY FOR PROTECTION OF HYDRANTS FROM PHYSICAL DAMAGE, PER ORDINANCE NO. 3944, SHALL BE COMPLETED BEFORE APPROVAL BY THE CITY OF LAS VEGAS FIRE DEPARTMENT.

7. A PERMIT IS REQUIRED FROM THE FIRE DEPARTMENT FOR ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE-PROTECTION ENGINEER PRIOR TO ANY WORK BEGINNING.

8. PRIVATE FIRE HYDRANTS SHALL BE PAINTED RED.

9. A FLOW TEST MUST BE WITNESSED BY THE FIRE DEPARTMENT PRIOR TO OCCUPANCY FOR VERIFICATION OF REQUIRED ON-SITE WATER SUPPLY.

10. ALL ON-SITE FIRE MAIN MATERIALS MUST BE U.L. LISTED AND A.W.W.A. APPROVED.

11. FIRE HYDRANT SPACING:
RESIDENTIAL- 500 FEET UNSPRINKLERED; 1000 FEET SPRINKLERED.
COMMERCIAL, INCLUDING MULTI-FAMILY- 300 FEET UNSPRINKLERED; 600 FEET SPRINKLERED.

12. WHERE NEW WATER MAINS ARE EXTENDED ALONG STREETS, HYDRANTS SHALL BE SPACED AT MAXIMUM ONE-THOUSAND (1,000') FOOT SPACING TO PROVIDE FOR TRANSPORTATION HAZARDS.

13. NO FIRE HYDRANT SHALL BE LOCATED WITHIN THE REQUIRED RADIUS OF A CUL-DE-SAC OR WITHIN TWENTY (20') FEET OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.

14. NO FIRE HYDRANT SHALL BE LOCATED WITHIN SIX FEET (6') OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREET LIGHT OR ANY OTHER OBSTRUCTION.

15. TWO SOURCES .OF SUPPLY ARE REQUIRED WHENEVER THERE ARE FOUR (4) OR MORE FIRE HYDRANTS INSTALLED ON A SINGLE SYSTEM.

16. NOT MORE THAN TWO (2) HYDRANTS CAN BE OUT OF SERVICE DUE TO A SINGLE MAIN BREAK.

17. FIRE APPARATUS ACCESS ROADS SHALL HAVE AN UNOBSTRUCTED WIDTH OF NOT LESS THAN TWENTY FEET (20') PROVIDED NO PARKING IS ALLOWED, NOT LESS THAN TWENTY-EIGHT FEET (28') IF PARALLEL PARKING IS ALLOWED ON ONE SIDE, AND NOT LESS THAN THIRTY-SIX FEET (36') IF PARALLEL PARKING IS ALLOWED ON BOTH SIDES. VERTICAL CLEARANCE SHALL NOT BE LESS THAN THIRTEEN-FEET-SIX- INCHES (13' 6").

18. THE TURNING RADIUS FOR ANY FIRE APPARATUS ACCESS ROAD AND/OR FIRE LANE, PUBLIC OR PRIVATE, SHALL BE NOT LESS THAN FORTY-FIVE FEET (45') OUTSIDE RADIUS AND TWENTY-TWO FEET (22') INSIDE RADIUS.

19. A FIRE APPARATUS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN ONE-HUNDRED FIFTY FEET (150') FROM A FIRE DEPARTMENT VEHICLE ACCESS (SEE EXCEPTIONS IN UFC 94, SECTION 902.2).

20. ALL DEAD END FIRE APPARATUS ACCESS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF ONE-HUNDRED FIFTY FEET (150') IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND AREA. SEE ORDINANCE NO. 3944.

21. ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE, ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF ONE-HUNDRED FEET (100') ALONG ALL DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN TEN FEET (10') OR LESS THAN SIX FEET (6') FROM ROADWAY LEVEL. THE CURBS ALONG OR ON THE PAVEMENT OR CEMENT IF CURB IS NOT PRESENT, SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS.

22. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. SAID SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF LAS VEGAS GUIDELINES FOR AUTOMATIC EMERGENCY VEHICLE ACCESS GATES.

THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS). THE LATEST EDITION OF UDACS SHALL SUPERCEDE ANY CONFLICTS CONTAINED IN THE APPROVED DRAWINGS AND/OR SPECIFICATIONS.

3. ALL WORK, EXCEPT AS MODIFIED BY THESE PLANS OR BY NOTE 2 ABOVE, SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT DRAFT OR EDITION OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENT, CLARK COUNTY AREA.

4. A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE LVVWD.

5. ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING WITH LVVWD APPROVED SERVICE SADDLES.

6. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF THE DRIVEWAY AREAS.

7. ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB GUTTERS.

8. ALL WATER AND STORM DRAIN OR SANITARY SEWER CROSSINGS SHALL CONFORM TO SECTION 2.22 OF THE 2010 EDITION OF THE UDACS.

9. ALL WATER FACILITIES SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED, AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO CONNECTION TO THE LVVWD DISTRIBUTION SYSTEM.

10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES. TELEPHONE 258-3152 OF 258-3802, TWO (2) WORKING DAYS PRIOR TO METER PICKUP.

11. ANY INTERRUPTION OF SERVICE MUST BE PERFORMED IN ACCORDANCE WITH UDACS SECTION 3.14.01, AND APPROVED BY THE LVVWD INSPECTION DIVISION PRIOR OR SHUTDOWN. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.

12. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE AS LISTED ON THE LVVWD PRE-APPROVED MATERIALS AND MANUFACTURER'S LISTING FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS.

13. TELEPHONE "CALL BEFORE YOU DIG" AT 1-800-227-2600 OR 811.

14. THE INSTALLATION OF LAS VEGAS VALLEY WATER DISTRICT (LVVWD) MUNICIPAL WATER FACILITIES WITHIN ALL STREETS IS ASSUMED TO BE IN COMPLIANCE WITH THE UNIFORM STANDARDS, INCLUDING THE PLACEMENT OF ASPHALT PAVING STREET SURFACES. ANY REPAIR WORK DONE BY THE LVVWD TO THE MUNICIPAL WATER FACILITIES WILL INCLUDE THE PLACEMENT OF AN APPROPRIATELY SIZED ASPHALT REPAIR PATCH ON THE STREET SURFACE.

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

TYPE I GRAVEL		C.Y.		C.Y.
TYPE II GRAVEL	628	C.Y.		C.Y.
CURB & GUTTER TYPE "L" & "A"	1,784	L.F.		L.F.
8" CONCRETE VALLEY GUTTER	1,975	S.F.		S.F.
SIDEWALK RAMP	10	EA.		EA.
SIDEWALK UNDERDRAIN	2	EA.		EA.
4-INCH THICK CONCRETE SIDEWALK	873	S.Y.		S.Y.
8-INCH SEWER	622	L.F.		L.F.
SEWER MANHOLE 6 TO 18 FEET	2	EA.		EA.
6-INCH WATER		L.F.		L.F.
8-INCH WATER	370	L.F.		L.F.
FIRE HYDRANT	4	EA.		EA.
STREETLIGHT RELOCATE	1	EA.		EA.
SURVEY MONUMENTS		EA.		EA.
STREET/STOP SIGNS	2	EA.		EA.
NOTE: THIS QUANTITY ESTIMATE IS FOR BONDING PURPOSES ONLY. CONTRACTOR TO DETERMINE INDEPENDANT ESTIMATIONS.				

LEGEND:

	EXISTING	PROPOSED
RIGHT-OF-WAY		
CENTERLINE		
SIDEWALK, CURB & GUTTER		
EASEMENT		
BOUNDARY LINE		
LOT LINE		
EDGE OF PAVEMENT		
GRADE BREAK	GB	GB
SAWCUT LINE		
SCARP		
SIDEWALK RAMP		
INDEX CONTOUR		35
INTERMEDIATE CONTOUR		34
SEWER MAIN	S	
SEWER MANHOLE	MH	
SEWER LATERAL		
WATER MAIN	W	
WATER LATERAL AND METER	W	
WATER METER		
WATER VALVE		
WATER TEE OR BEND		
WATER REDUCER		
FIRE HYDRANT	FH	FH
STORM DRAIN	24" SD	24" SD
STORM DRAIN MANHOLE	SDMH	
STREET NAME SIGN		
STOP SIGN		
FINISH FLOOR ELEVATION PAD ELEVATION		FF=37.30 PAD=36.3
RATE OF GRADE	(3.5%)	3.5%
ELEVATION	TC=(45.08)	TC=45.08
WALL HEIGHT ELEVATION	H=8'-8"	H=8'-8"
BLOCK WALL		
RETAINING WALL		
SIGHT VISIBILITY RESTRICTION ZONE SVRZ		
STREET LIGHT		

This grading plan is a part of drainage study #4572 which was received on 10/9/12 and finalized on 10/23/12 Page 2 of 10

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJ #
DATE ______ PROJ NO. ______
LVWD APPROVED FIRE FLOW 2,375 GPM AT 20 PSI RESIDUAL

BENCHMARK:
CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DEER SPRINGS AND GRAND CANYON DRIVE.

ELEVATION = 830.34016 Meters (NAVD'88)
ELEVATION = 2724.21 Feet (NAVD'88)

BASIS OF BEARINGS:
NORTH 89°47'05" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, NEVADA AS SHOWN BY MAP THEREOF ON FILE IN FILE 107, PAGE 31 OF SURVEYS.

CITY OF LAS VEGAS FIRE DEPT.
APPROVED
BY: ______ DATE
APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OF COUNTY LAWS.
APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM THE LVWD.
FIRE FLOW 2,375 GPM AT 20 P.S.I. RESIDUAL.

QUEST ACADEMY
GENERAL NOTES

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

PROFESSIONAL ENGINEER - STATE OF NEVADA
ROBERT E. MOHNING
EXP. 12/31/13
CIVIL
No. 7711
10/5/12

RICK ENGINEERING COMPANY
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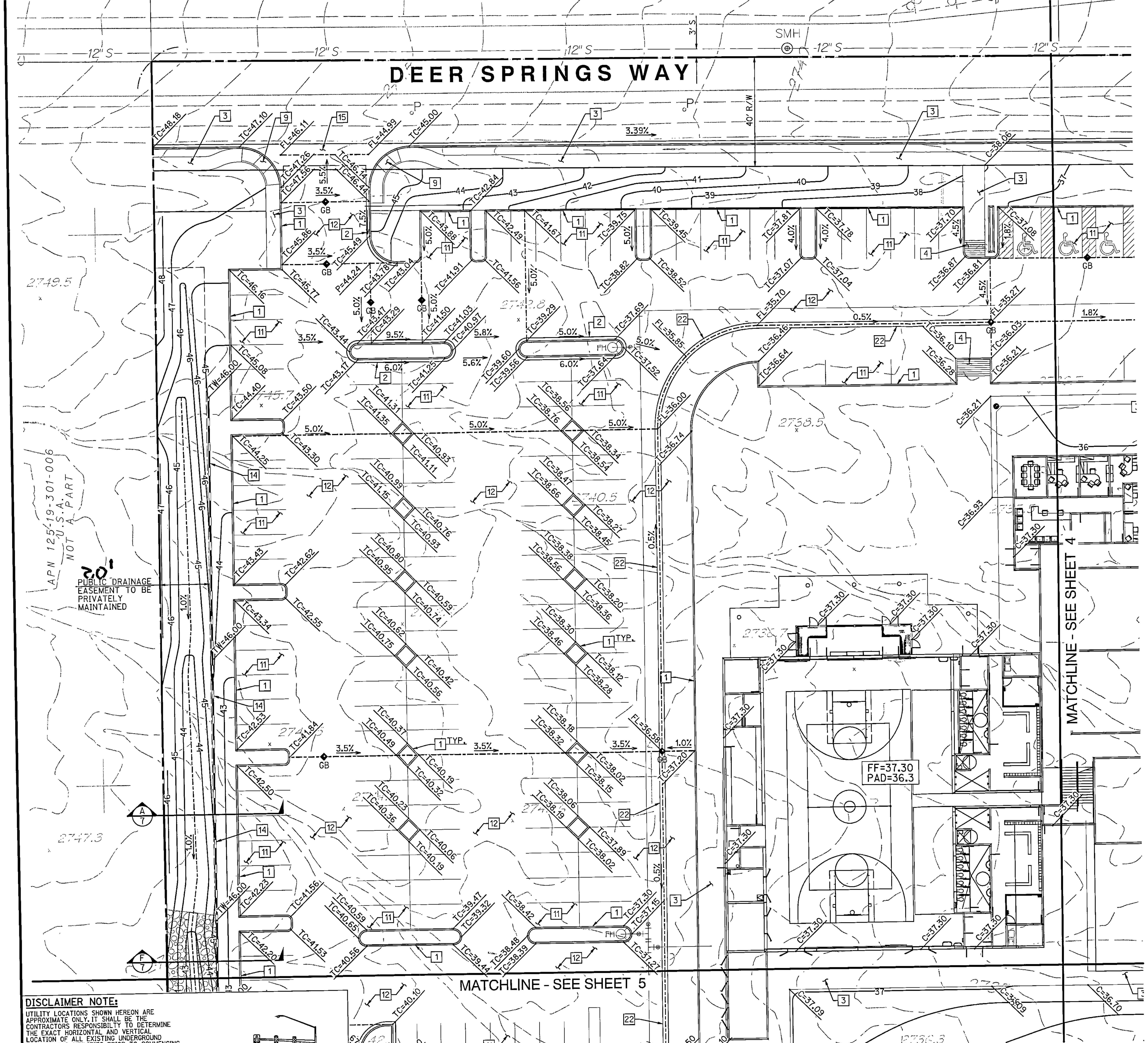
DESIGNED: DGM
DRAWN: PV
PROJECT NO: 4313
DATE: 05-OCT-2012



TRUNCATED DOMES OR EQUIVALENT PER DETAIL SHEET 7

5 CONSTRUCT PRECAST BUMPER BLOCK PER USD NO 238

6 CONSTRUCT 2' WIDE CONCRETE FLUME PER DETAIL 2 ON SHEET 7

7 TRANSITION FROM 6" TO 0" CURB

8 CONSTRUCT 0" CURB PER DETAIL 3 ON SHEET 7

9 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER USD NO 235, CASE I

10 CONSTRUCT 2' WIDE SIDEWALK UNDERDRAIN PER USD NO 236

11 CONSTRUCT PARKING PAVEMENT PER DETAIL 4 ON SHEET 7

12 CONSTRUCT TRUCK PAVEMENT PER DETAIL 5 ON SHEET 7

13 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 6 ON SHEET 7

14 CONSTRUCT RETAINING WALL PER SECTIONS ON SHEET 7

15 CONSTRUCT COMMERCIAL DRIVEWAY PER USD NO 228

16 INSTALL 18" RCP CLASS 3 STORM DRAIN

17 INSTALL LOOSE RIP-RAP, D50=6", THICKNESS=12" AS SHOWN

18 CONSTRUCT 6" CURB ON BACK OF SIDEWALK ALONG GRAND CANYON DRIVE

19 EXISTING STREET LIGHT TO BE REMOVED

20 EXISTING ELECTRIC VAULT TO BE RELOCATED

21 EXISTING SIGN TO BE RELOCATED

22 CONSTRUCT 2' WIDE VALLEY GUTTER PER DETAIL 8 ON SHEET 7

23 CONSTRUCT 3' WIDE VALLEY GUTTER PER DETAIL 9 ON SHEET 7

24 CONSTRUCT GRATE AND PIPE END PER DETAIL 7 ON SHEET 7

25 CONSTRUCT TYPE A DROP INLET PER USD NO 411 AND USD NO 421

NOTE:

ALL ONSITE STORM DRAINS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED

APPROXIMATE DRAINAGE QUANTITIES

FOR ESTIMATING ONLY, ENGINEER MAKES NO GUARANTEE OF ACCURACY

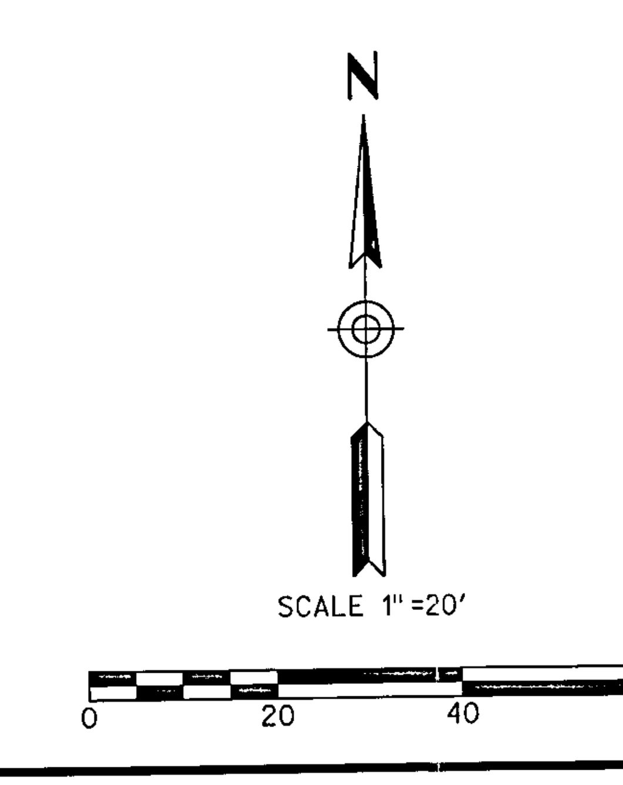
DRAINAGE EASEMENT

ITEM	DESCRIPTION	QTY.	UNIT
1	3' WIDE VALLEY GUTTER	1,030	L.F.
2	18" RCP CLASS 3 STORM DRAIN	100	L.F.
3	RIP-RAP, D50=6", THICKNESS=12"	2,295	S.Y.
4	TRASH RACKS	4	EA.

RIGHT-OF-WAY

ITEM	DESCRIPTION	QTY.	UNIT
1	4' TYPE "A" DROP INLET	3	EA.
2	18" RCP CLASS 3 STORM DRAIN	156	L.F.

This grading plan is a part of drainage stu... #4572 which was received on 10/9/12 and Rejected on 10/23/12. Page 3 of 10.



ADA NOTE:

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BENCHMARK:

CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

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AVOID HITTING UNDERGR' ND TRAFFIC SIGNAL SYSTEMS AND STREET LIGHT SYSTEM CONDUITS IT'S COSTLY

CALL BEFORE YOU DO UNDERGROUND

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QUEST ACADEMY

GRADING PLAN

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
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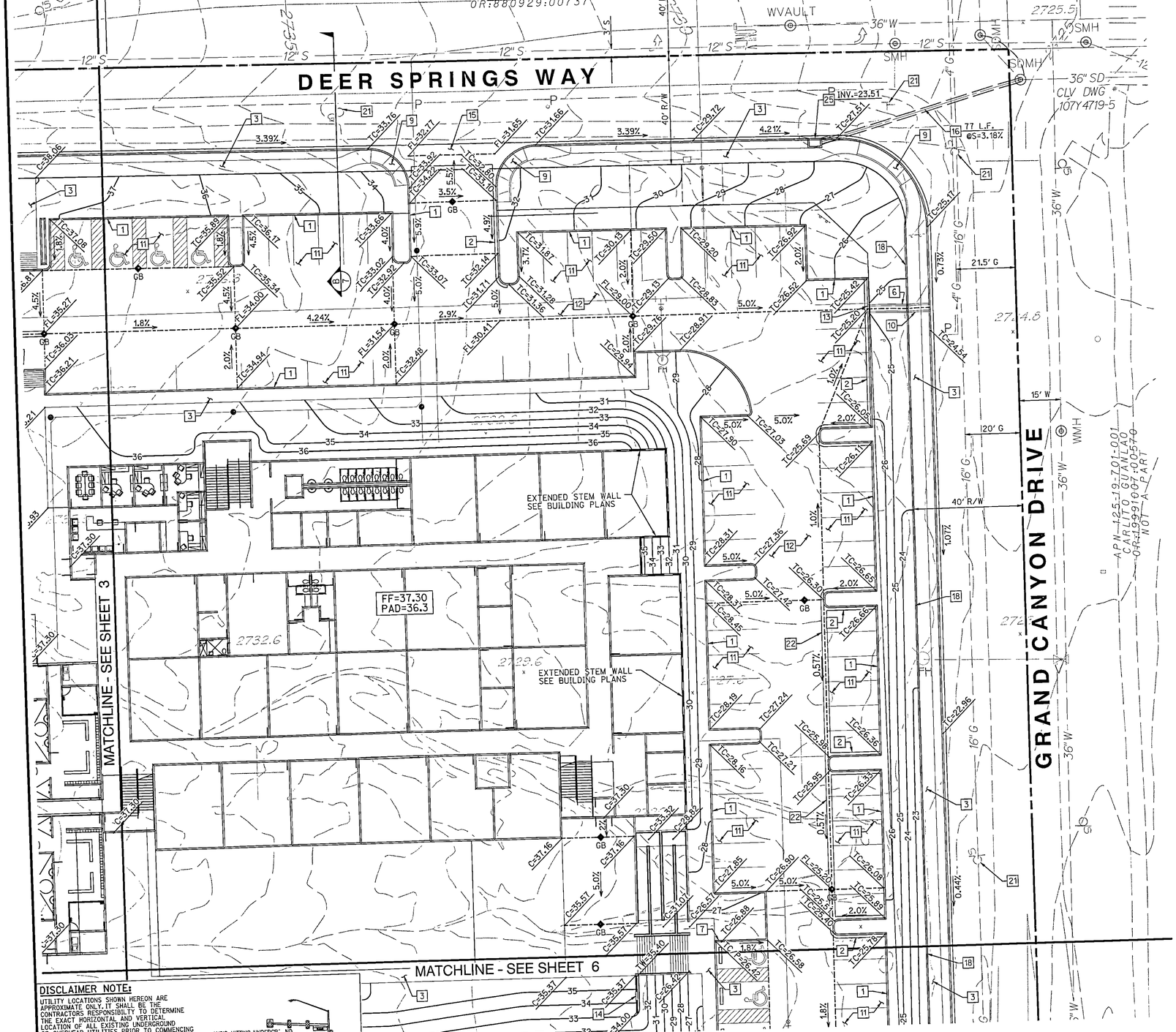
PROJECT NO: 4313
DATE: 05-OCT-2012
DESIGNED: DGM
DRAWN: PV

SHEET 3 OF 12
DRAWING NO.

NO.	REVISION DESCRIPTION



1 CONSTRUCT 4" CONCRETE SIDEWALK PER DETAIL 1 ON SHEET 7

2 CONSTRUCT 4" CONCRETE SIDEWALK PER DETAIL 1 ON SHEET 7 WITH INTEGRAL CURB

3 CONSTRUCT 6" CONCRETE SIDEWALK PER DETAIL 1 ON SHEET 7

4 CONSTRUCT 6" CONCRETE SIDEWALK PER DETAIL 1 ON SHEET 7 WITH INTEGRAL CURB

5 CONSTRUCT 6" CONCRETE SIDEWALK PER DETAIL 1 ON SHEET 7 WITH INTEGRAL CURB AND GUTTER

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7 TRANSITION FROM 6" TO 0" CURB

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10 CONSTRUCT 2' WIDE SIDEWALK UNDERDRAIN PER USD NO 236

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BENCHMARK:
CITY OF LAS VEGAS BENCHMARK: 6LV90 1904

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SCALE 1"=20'
0 20 40 60

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DRAWN: PV
PROJECT NO: 4313
DATE: 05-OCT-2012

SHEET 4 OF 12
DRAWING NO.

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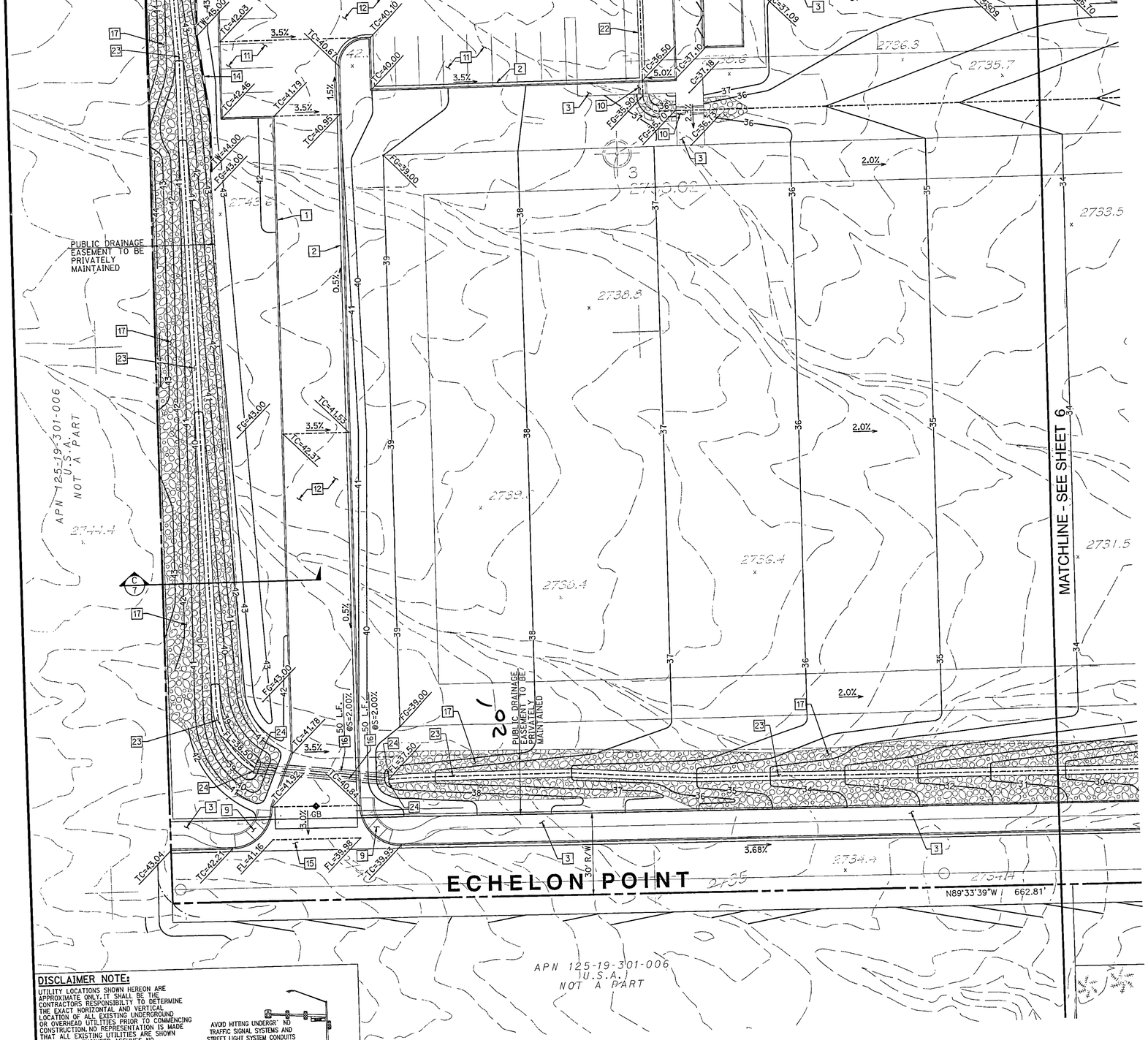
05-OCT-2012



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05-OCT-2012

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N

SCALE 1"=20'

0 20 40 60

NO.

QUEST ACADEMY

GRADING PLAN

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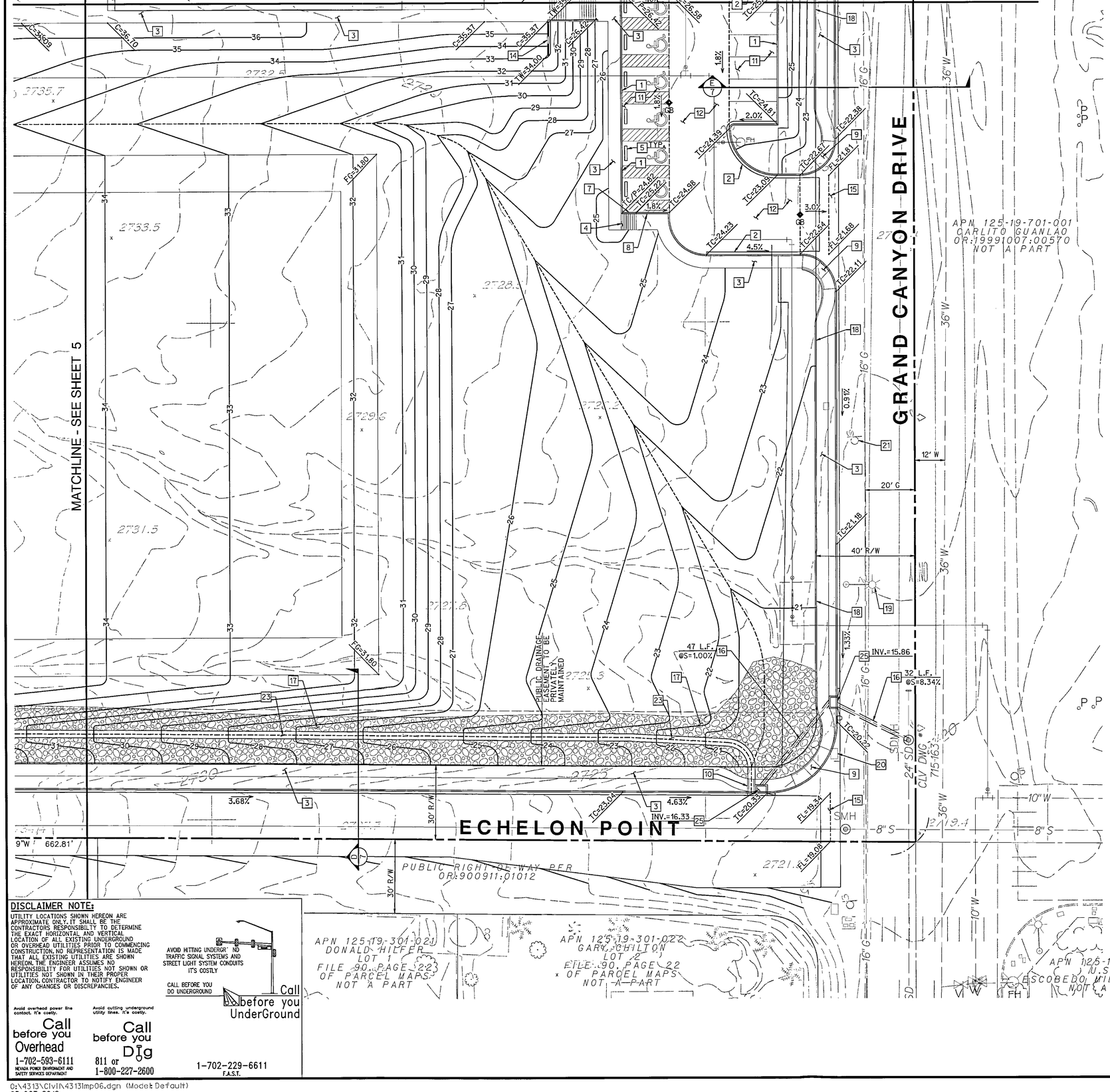

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1-702-229-6611 F.A.S.T.

0:\4313\CIVIL\4313mp06.dgn (Model: Default)
05-OCT-2012

1 CONSTRUCT CURB OPENING PER DETAIL 1 ON SHEET 7

2 CONSTRUCT CURB RAMP PER DETAIL 2 ON SHEET 7

3 CONSTRUCT SIDEWALK PER DETAIL 3 ON SHEET 7

4 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER DETAIL 1 ON SHEET 7

5 CONSTRUCT PRECAST BUMPER BLOCK PER USD NO 238

6 CONSTRUCT 2' WIDE CONCRETE FLUME PER DETAIL 2 ON SHEET 7

7 TRANSITION FROM 6" TO 0" CURB

8 CONSTRUCT 0" CURB PER DETAIL 3 ON SHEET 7

9 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER USD NO 235, CASE I

10 CONSTRUCT 2' WIDE SIDEWALK UNDERDRAIN PER USD NO 236

11 CONSTRUCT PARKING PAVEMENT PER DETAIL 4 ON SHEET 7

12 CONSTRUCT TRUCK PAVEMENT PER DETAIL 5 ON SHEET 7

13 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 6 ON SHEET

14 CONSTRUCT RETAINING WALL PER SECTIONS ON SHEET 7

15 CONSTRUCT COMMERCIAL DRIVEWAY PER USD NO 228

16 INSTALL 18" RCP CLASS 3 STORM DRAIN

17 INSTALL LOOSE RIP-RAP, D50=6", THICKNESS=12" AS SHOWN

18 CONSTRUCT 6" CURB ON BACK OF SIDEWALK ALONG GRAND CANYON DRIVE

19 EXISTING STREET LIGHT TO BE REMOVED

20 EXISTING ELECTRIC VAULT TO BE RELOCATED

21 EXISTING SIGN TO BE RELOCATED

22 CONSTRUCT 2' WIDE VALLEY GUTTER PER DETAIL 8 ON SHEET 7

23 CONSTRUCT 3' WIDE VALLEY GUTTER PER DETAIL 9 ON SHEET 7

24 CONSTRUCT GRATE AND PIPE END PER DETAIL 7 ON SHEET 7

25 CONSTRUCT TYPE A DROP INLET PER USD NO 411 AND USD NO 421

NOTE:

ALL ONSITE STORM DRAINS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED

N

SCALE 1"=20'

0 20 40 60

This grading plan is a part of drainage study #4572 which was received on 10/9/12 and Rejected on 10/23/12. Page 6 of 10.

BENCHMARK:
CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DEER SPRINGS AND GRAND CANYON DRIVE.

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ELEVATION = 2724.21 Feet (NAVD'88)

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NO.	DESCRIPTION	REVISIONS

QUEST ACADEMY

GRADING PLAN

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

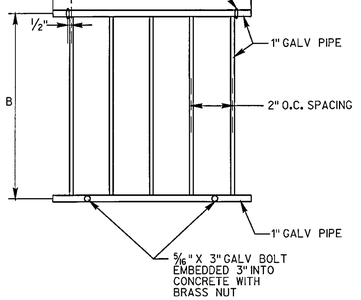
PROFESSIONAL ENGINEER - STATE OF NEVADA
ROBERT E. MOHNING
EXP. 12/31/13
CIVIL
No. 7711
10/5/12

RICK ENGINEERING COMPANY
Phoenix
6150 NORTH 16TH STREET
PHOENIX, AZ 85016
(602) 265-2330
(FAX)602.265.2396
Tucson - San Diego - Sacramento - Riverside - Orange - San Luis Obispo - Bakersfield
rickengineering.com

DESIGNED: DGM
DRAWN: PV

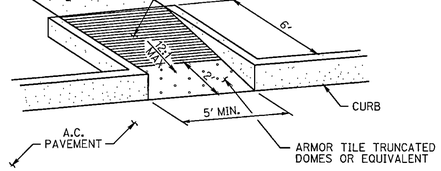
PROJECT NO: 4313
DATE: 05-OCT-2012

SHEET 6 OF 12
DRAWING NO.

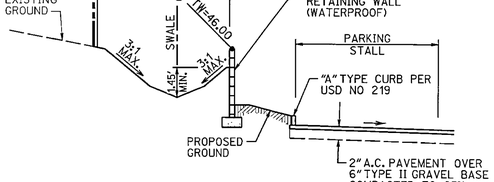


PIPE SIZE	NO. OF BARS	A	B
8"	5	12"	0.9'
10"	6	14"	1.1'
12"	7	16"	1.4'
15"	9	19"	1.7'
18"	9	22"	2'

GRATE



1 SIDEWALK RAMP DETAIL
N.T.S.



A TYPICAL SECTION
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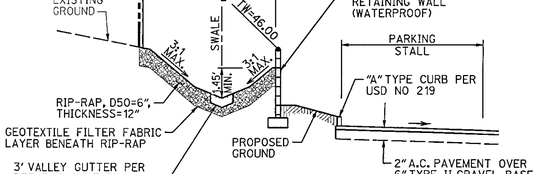
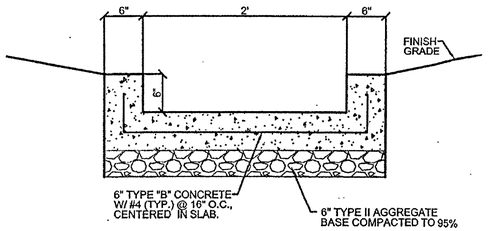
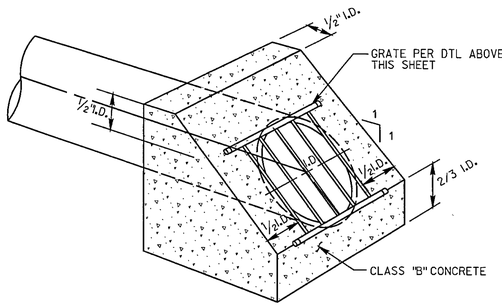


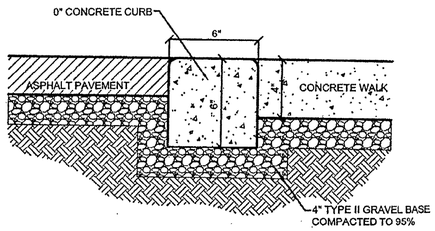
F TYPICAL SECTION
N.T.S.



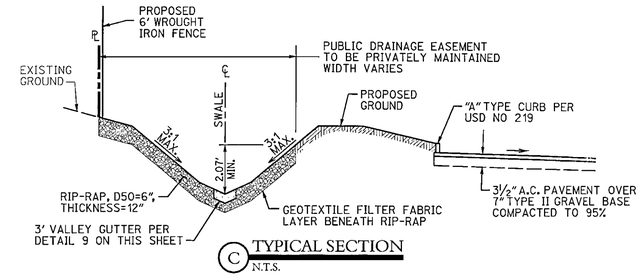
2 2' CONCRETE FLUME DETAIL
N.T.S.



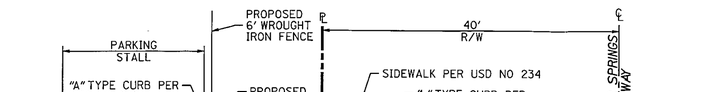
7 CONCRETE PIPE END DETAIL
N.T.S.



3 0' CURB DETAIL
N.T.S.



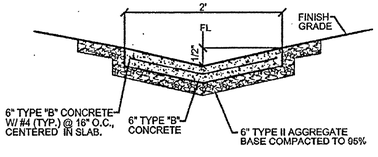
C TYPICAL SECTION
N.T.S.



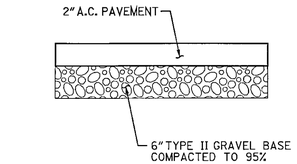
B TYPICAL SECTION
N.T.S.

D TYPICAL SECTION
N.T.S.

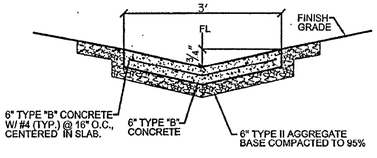
E TYPICAL SECTION
N.T.S.



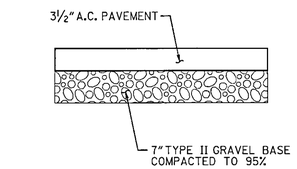
8 2' VALLEY GUTTER DETAIL
N.T.S.



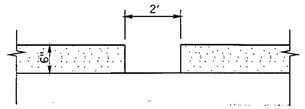
4 PARKING PAVEMENT SECTION
N.T.S.



9 3' VALLEY GUTTER DETAIL
N.T.S.



5 TRUCK PAVEMENT SECTION
N.T.S.



6 CURB OPENING DETAIL
N.T.S.

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BENCHMARK:
CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

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NO.	DESCRIPTION	DATE
	REVISIONS	

QUEST ACADEMY
DETAILS & CROSS-SECTIONS

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

PROFESSIONAL ENGINEER - STATE OF NEVADA
ROBERT E. MOHNING
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rickengineering.com
Tucson - San Diego - Sacramento - Riverside - Orange - San Luis Obispo - Bakersfield

DESIGNED: DGM
DRAWN: PV
PROJECT NO: 4313
DATE: 05-OCT-2012

SHEET 7 OF 12
DRAWING NO.

WATER:

1. TRENCH AND BACKFILL PER UDACS PLATE NO. 17.
2. INSTALL 10"X8" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
3. INSTALL 8" - 90° BEND WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
4. INSTALL 8"X6" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
5. INSTALL 8" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
6. INSTALL 6" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
7. INSTALL FIRE HYDRANT ASSEMBLY PER UDACS PLATE NO. 40.
8. SEE PLUMBING PLANS FOR CONTINUATION. CONTRACTOR TO VERIFY SIZE AND INVERT PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
9. SEE FIRE SPRINKLER FOR CONTINUATION. CONTRACTOR TO VERIFY SIZE AND INVERT PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
10. INSTALL 2" METER PER UDACS PLATE NO. 3 AND 2" BACKFLOW DEVICE PER UDACS PLATE NO. 8.
11. INSTALL 8" DCDA PER UDACS PLATE NO. 59.
12. DIP WATERLINE UNDER SEWER PER UDACS PLATE NO. 22.
13. INSTALL 10"X10" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
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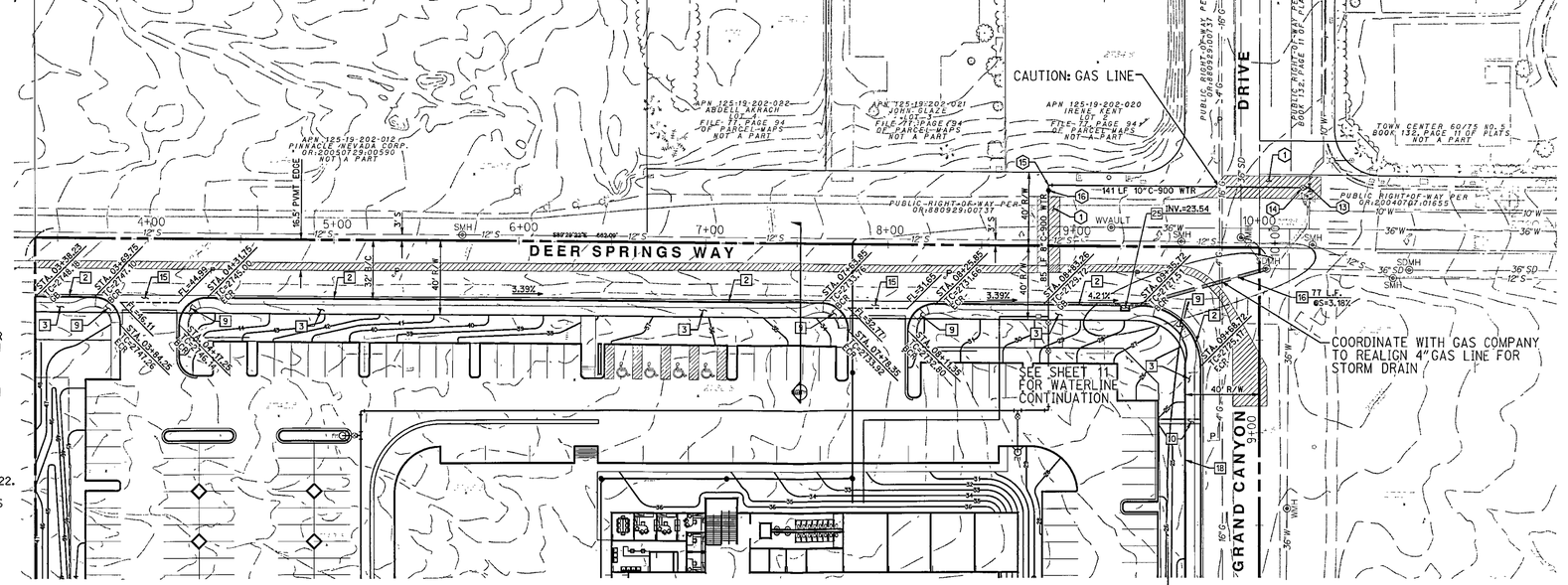
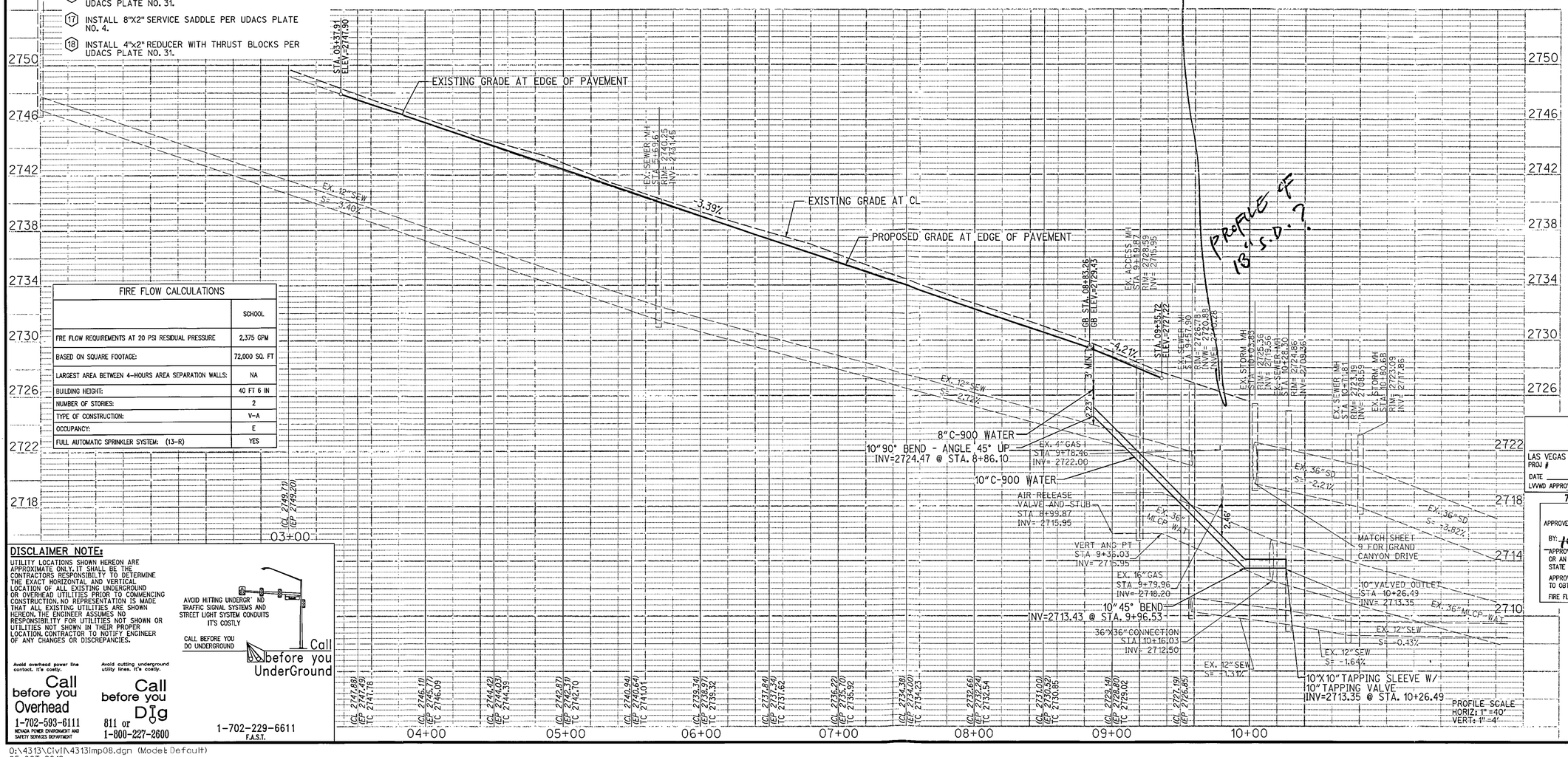
15. INSTALL 10" - 90° BEND WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
16. INSTALL 10"x8" REDUCER WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
17. INSTALL 8"X2" SERVICE SADDLE PER UDACS PLATE NO. 4.
18. INSTALL 4"x2" REDUCER WITH THRUST BLOCKS PER UDACS PLATE NO. 31.





FIRE FLOW CALCULATIONS	
	SCHOOL
FIRE FLOW REQUIREMENTS AT 20 PSI RESIDUAL PRESSURE	2,375 GPM
BASED ON SQUARE FOOTAGE:	72,000 SQ. FT
LARGEST AREA BETWEEN 4-HOURS AREA SEPARATION WALLS:	NA
BUILDING HEIGHT:	40 FT 6 IN
NUMBER OF STORIES:	2
TYPE OF CONSTRUCTION:	V-A
OCCUPANCY:	E
FULL AUTOMATIC SPRINKLER SYSTEM: (13-R)	YES

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EX. SEWER MH STA 9+35.61 RIM= 2756.11 INV= 2746.76

APPROVED FOR CONSTRUCTION

This grading plan is a part of drainage study

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJ # DRAINAGE

DATE

LVWD APPROVED FIRE FLOW 2,375 GPM AT 20 PSI RESIDUAL

which was received on 10/9/12 and approved by CITY OF LAS VEGAS FIRE DEPT.

APPROVED BY: DATE

"APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OF COUNTY LAWS.

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM THE LVVWD.

FIRE FLOW 2,375 GPM AT 20 P.S.I. RESIDUAL.

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

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NO.	REVISION / DESCRIPTION

1. CONSTRUCT 6" CURB PER USD NO 220
2. CONSTRUCT 6" CURB AND GUTTER PER USD NO 220
3. CONSTRUCT SIDEWALK PER USD NO 234
4. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER DETAIL 1 ON SHEET 7
5. CONSTRUCT PRECAST BUMPER BLOCK PER USD NO 238
6. CONSTRUCT 2' WIDE CONCRETE FLUME PER DETAIL 2 ON SHEET 7
7. TRANSITION FROM 6" TO 0" CURB
8. CONSTRUCT 0" CURB PER DETAIL 3 ON SHEET 7
9. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER USD NO 235, CASE I
10. CONSTRUCT 2' WIDE SIDEWALK UNDERDRAIN PER USD NO 236
11. CONSTRUCT PARKING PAVEMENT PER DETAIL 4 ON SHEET 7
12. CONSTRUCT TRUCK PAVEMENT PER DETAIL 5 ON SHEET 7
13. CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 6 ON SHEET 7
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16. INSTALL 18" RCP CLASS 3 STORM DRAIN
17. INSTALL LOOSE RIP-RAP, D50=6", THICKNESS=12" AS SHOWN
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20. EXISTING ELECTRIC VAULT TO BE RELOCATED
21. EXISTING SIGN TO BE RELOCATED
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24. CONSTRUCT GRATE AND PIPE END PER DETAIL 7 ON SHEET 7
25. CONSTRUCT TYPE A DROP INLET PER USD NO 411 AND USD NO 421

QUEST ACADEMY
DEER SPRINGS WAY IMPROVEMENTS

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

PROFESSIONAL ENGINEER - STATE OF NEVADA
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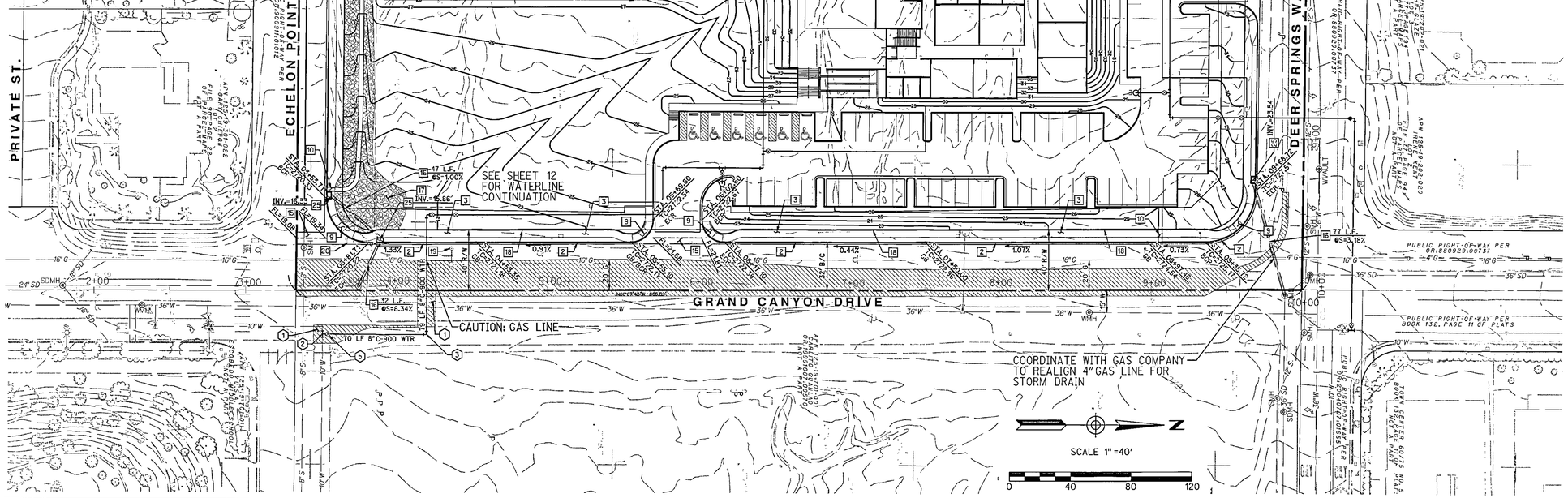
rickenstineerings.com
Tucson-San Diego - Sacramento - Riverside - Orange - San Luis Obispo - Bakersfield

DESIGNED: DGM
DRAWN: DGM
PROJECT NO. 4313-0
DATE: 05-OCT-2012

SHEET 8 OF 12
DRAWING NO.



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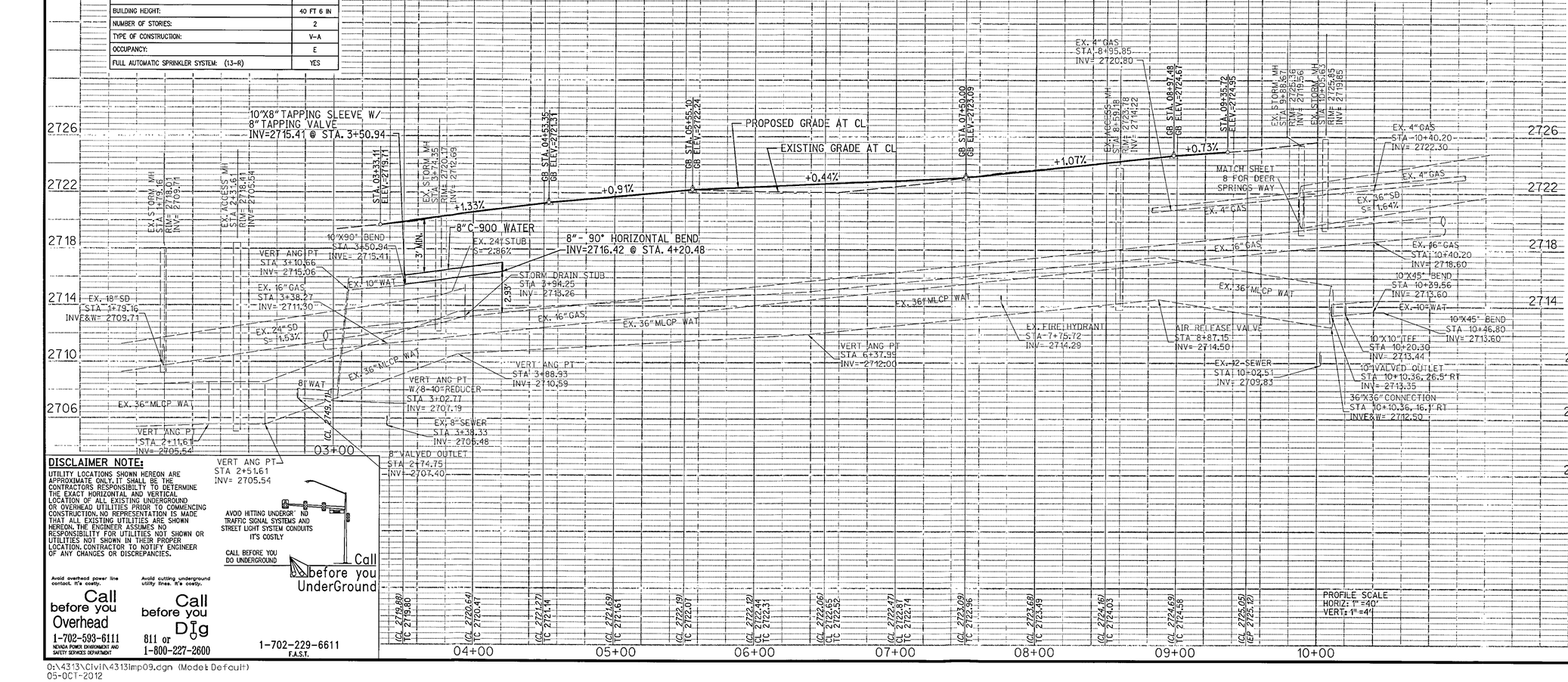
NUMBER OF STORIES:	2
TYPE OF CONSTRUCTION:	V-A
OCCUPANCY:	E
FULL AUTOMATIC SPRINKLER SYSTEM: (13-R)	YES



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4. INSTALL 8"X6" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
5. INSTALL 8" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
6. INSTALL 6" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
7. INSTALL FIRE HYDRANT ASSEMBLY PER UDACS PLATE NO. 40.
8. SEE PLUMBING PLANS FOR CONTINUATION. CONTRACTOR TO VERIFY SIZE AND INVERT PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
9. SEE FIRE SPRINKLER FOR CONTINUATION. CONTRACTOR TO VERIFY SIZE AND INVERT PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
10. INSTALL 2" METER PER UDACS PLATE NO. 3 AND 2" BACKFLOW DEVICE PER UDACS PLATE NO. 8.
11. INSTALL 8" DCDA PER UDACS PLATE NO. 59.
12. DIP WATERLINE UNDER SEWER PER UDACS PLATE NO. 22.
13. INSTALL 10"X10" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
14. INSTALL 10" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
15. INSTALL 10" - 90° BEND WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
16. INSTALL 10"X8" REDUCER WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
17. INSTALL 8"X2" SERVICE SADDLE PER UDACS PLATE NO. 4.

APPROVED FOR CONSTRUCTION
This grading plan is a part of drainage study
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJ #
DATE
LVVWD APPROVED FIRE FLOW 2,375 GPM AT 20 PSI RESIDUAL

CITY OF LAS VEGAS FIRE DEPT
APPROVED
BY: DATE
APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OF COUNTY LAWS.
APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM THE LVVWD.
FIRE FLOW 2,375 GPM AT 20 P.S.I. RESIDUAL.

Has received on 10/17/12 and Rejected

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DEER SPRINGS AND GRAND CANYON DRIVE.

ELEVATION = 830.34016 Meters (NAVD'88)
ELEVATION = 2724.21 Feet (NAVD'88)

BASIS OF BEARINGS:

NORTH 89°47'05"WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, NEVADA AS SHOWN BY MAP THEREOF ON FILE IN FILE 107, PAGE 31 OF SURVEYS.

NO.	REVISION DESCRIPTION

QUEST ACADEMY
GRAND CANYON ROAD IMPROVEMENTS

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

ROBERT E. MOHNING EXP. 12/31/13 CIVIL No. 7711 STATE OF NEVADA PROFESSIONAL ENGINEER 10/5/12

RICK ENGINEERING COMPANY
Phoenix
6150 NORTH 16TH STREET
PHOENIX, AZ 85016
(602) 265-2396
(FAX) 602.265.2396
rickengineering.com
Tucson - San Diego - Sacramento - Riverside - Orange - San Luis Obispo - Bakersfield

DESIGNED: DGM
DRAWN: DGM
PROJECT NO: 4313-0
DATE: 05-OCT-2012

SHEET 9 OF 12
DRAWING NO.

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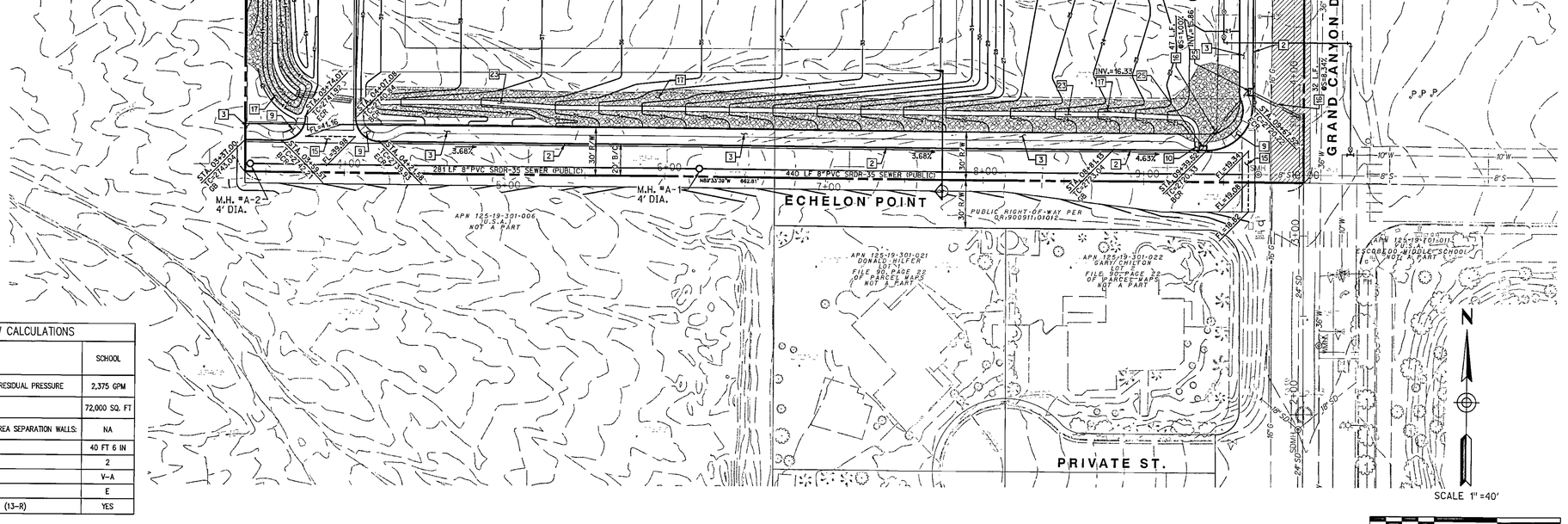
05-OCT-2012



FIRE FLOW CALCULATIONS	
	SCHOOL
FIRE FLOW REQUIREMENTS AT 20 PSI RESIDUAL PRESSURE	2,375 GPM
BASED ON SQUARE FOOTAGE:	72,000 SQ. FT
LARGEST AREA BETWEEN 4-HOURS AREA SEPARATION WALLS:	NA
BUILDING HEIGHT:	40 FT 6 IN
NUMBER OF STORIES:	2
TYPE OF CONSTRUCTION:	V-A
OCCUPANCY:	E
FULL AUTOMATIC SPRINKLER SYSTEM: (13-R)	YES

1 CONSTRUCT CURB RAMP PER USD NO 231

2 CONSTRUCT CURB AND GUTTER PER USD NO 220

3 CONSTRUCT SIDEWALK PER USD NO 234

4 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER DETAIL 1 ON SHEET 7

5 CONSTRUCT PRECAST BUMPER BLOCK PER USD NO 238

6 CONSTRUCT 2' WIDE CONCRETE FLUME PER DETAIL 2 ON SHEET 7

7 TRANSITION FROM 6" TO 0" CURB

8 CONSTRUCT 0" CURB PER DETAIL 3 ON SHEET 7

9 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER USD NO 235, CASE I

10 CONSTRUCT 2' WIDE SIDEWALK UNDERDRAIN PER USD NO 236

11 CONSTRUCT PARKING PAVEMENT PER DETAIL 4 ON SHEET 7

12 CONSTRUCT TRUCK PAVEMENT PER DETAIL 5 ON SHEET 7

13 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 6 ON SHEET 7

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16 INSTALL 18" RCP CLASS 3 STORM DRAIN

17 INSTALL LOOSE RIP-RAP, D50=6", THICKNESS=12" AS SHOWN

18 CONSTRUCT 6" CURB ON BACK OF SIDEWALK ALONG GRAND CANYON DRIVE

19 EXISTING STREET LIGHT TO BE REMOVED

20 EXISTING ELECTRIC VAULT TO BE RELOCATED

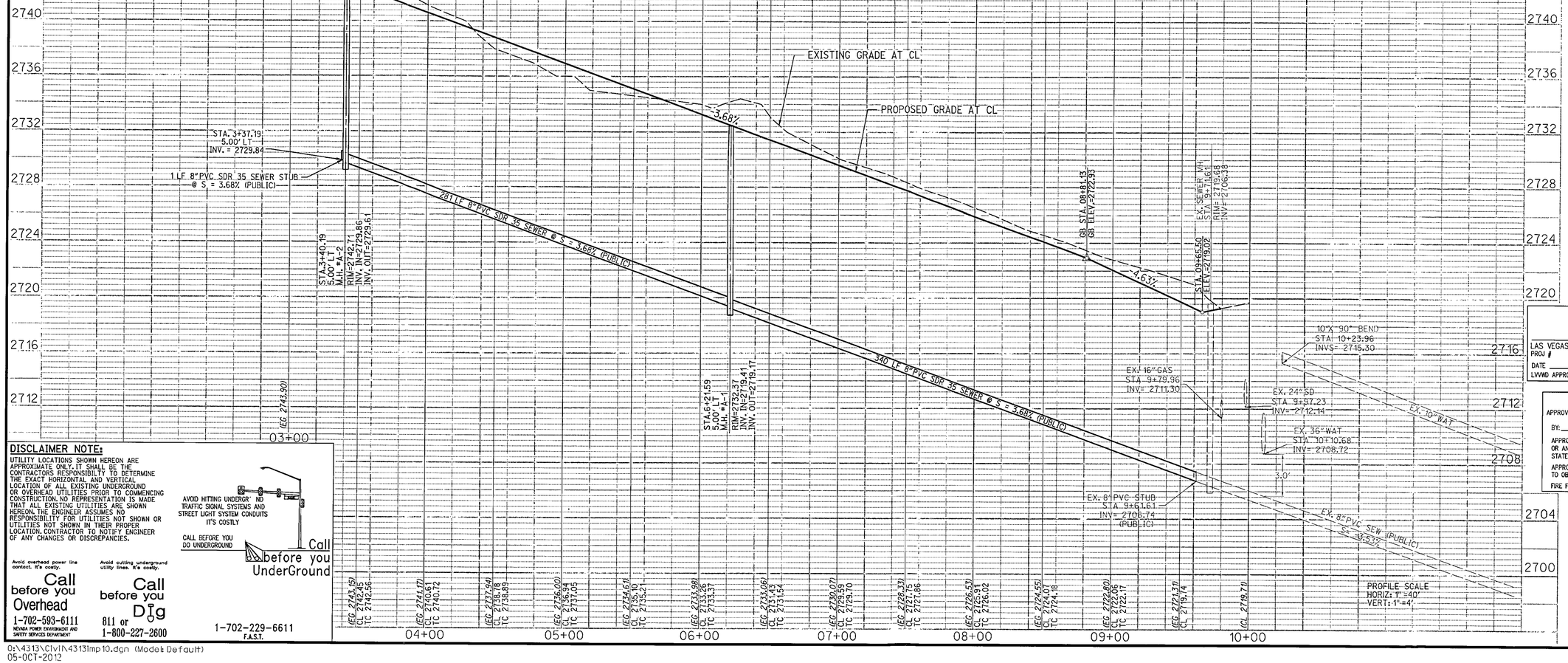
21 EXISTING SIGN TO BE RELOCATED

22 CONSTRUCT 2' WIDE VALLEY GUTTER PER DETAIL 8 ON SHEET 7

23 CONSTRUCT 3' WIDE VALLEY GUTTER PER DETAIL 9 ON SHEET 7

24 CONSTRUCT GRATE AND PIPE END PER DETAIL 7 ON SHEET 7

25 CONSTRUCT TYPE A DROP INLET PER USD NO 411 AND USD NO 421



PROFILE SCALE
HORIZ: 1"=40'
VERT: 1"=4'

DISCLAIMER NOTE:

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APPROVED FOR CONSTRUCTION

This grading plan is a part of drainage study #4572 which was received on 10/9/12 and Rejected

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJ # _____
DATE _____ PROJ NO. _____
LVVWD APPROVED FIRE FLOW 2,375 GPM AT 20 PSI RESIDUAL

CITY OF LAS VEGAS FIRE DEPT.
APPROVED
BY: _____ DATE 10/15/12

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FIRE FLOW 2,375 GPM AT 20 P.S.I. RESIDUAL.

NO.	REVISION / DESCRIPTION

QUEST ACADEMY
ECHELON POINT IMPROVEMENTS

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

ROBERT E. MOHNING
EXP. 12/31/13
CIVIL
STATE OF NEVADA
No. 7711
PROFESSIONAL ENGINEER
10/5/12

RICK ENGINEERING COMPANY
Phoenix
Tucson - San Diego - Sacramento - Riverside - Orange - San Luis Obispo - Bakersfield
rickengineering.com
6150 NORTH 16TH STREET
PHOENIX, AZ 85016
602.957.7350
(FAX)602.285.2356

DESIGNED: DGM
DRAWN: DGM
PROJECT NO. 4313.0
DATE: 05-OCT-2012

SHEET 10 OF 12
DRAWING NO.

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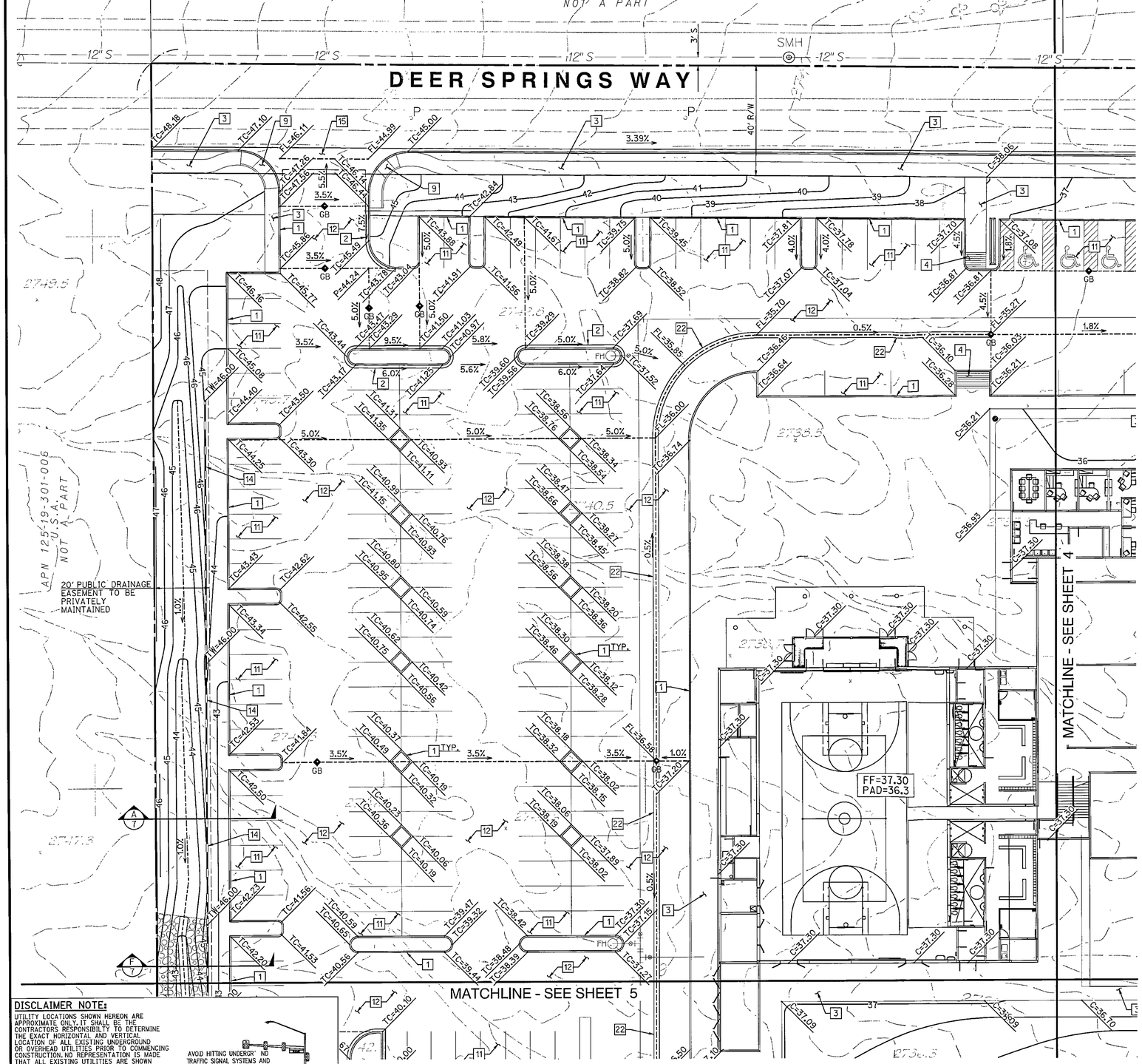
05-OCT-2012



1. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER DETAIL 1 ON SHEET 7
2. CONSTRUCT PRECAST BUMPER BLOCK PER USD NO 238
3. CONSTRUCT 2' WIDE CONCRETE FLUME PER DETAIL 2 ON SHEET 7
4. TRANSITION FROM 6" TO 0" CURB
5. CONSTRUCT 0" CURB PER DETAIL 3 ON SHEET 7
6. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER USD NO 235, CASE I
7. CONSTRUCT 2' WIDE SIDEWALK UNDERDRAIN PER USD NO 236
8. CONSTRUCT PARKING PAVEMENT PER DETAIL 4 ON SHEET 7
9. CONSTRUCT TRUCK PAVEMENT PER DETAIL 5 ON SHEET 7
10. CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 6 ON SHEET
11. CONSTRUCT RETAINING WALL PER SECTIONS ON SHEET 7
12. CONSTRUCT COMMERCIAL DRIVEWAY PER USD NO 228
13. INSTALL 18" RCP CLASS 3 STORM DRAIN
14. INSTALL LOOSE RIP-RAP, D50=6", THICKNESS=12" AS SHOWN
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20. CONSTRUCT 3' WIDE VALLEY GUTTER PER DETAIL 9 ON SHEET 7
21. CONSTRUCT GRATE AND PIPE END PER DETAIL 7 ON SHEET 7
22. MODIFIED TYPE C INLET PER DETAIL 10 ON SHEET 13 OR NEENAH. L=2.5'
23. TWO 18" RCP CLASS 3 STORM DRAIN PIPES, 53 LF EACH AT 2.0% SLOPE.

NOTE:

ALL ONSITE STORM DRAINS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED

APPROXIMATE DRAINAGE QUANTITIES

FOR ESTIMATING ONLY, ENGINEER MAKES NO GUARANTEE OF ACCURACY

DRAINAGE EASEMENT			
ITEM	DESCRIPTION	QTY.	UNIT
1	3' WIDE VALLEY GUTTER	1,030	L.F.
2	18"RCP CLASS 3 STORM DRAIN	100	L.F.
3	RIP-RAP, D50=6", THICKNESS=12"	2,295	S.Y.
4	TRASH RACKS	4	EA.

RIGHT-OF-WAY			
ITEM	DESCRIPTION	QTY.	UNIT
1	4' TYPE "A" DROP INLET	3	EA.
2	18"RCP CLASS 3 STORM DRAIN	156	L.F.

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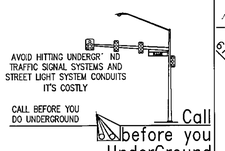

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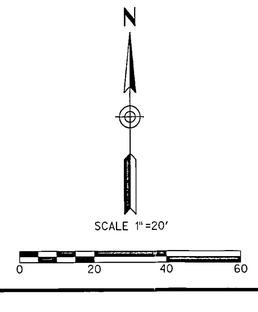

This grading plan is a part of drainage study #4572 which was received on 11/1/12 and Appd on 11/1/12. Page 7 of 7.

ADA NOTE:

ALL SIDEWALKS AND HANDICAP ACCESS RAMPS SHALL MEET ADA REQUIREMENTS. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN DESIGN INFORMATION AND ADA REQUIREMENTS PRIOR TO CONSTRUCTION.

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

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NO.	REVISION DESCRIPTION

QUEST ACADEMY

GRADING PLAN

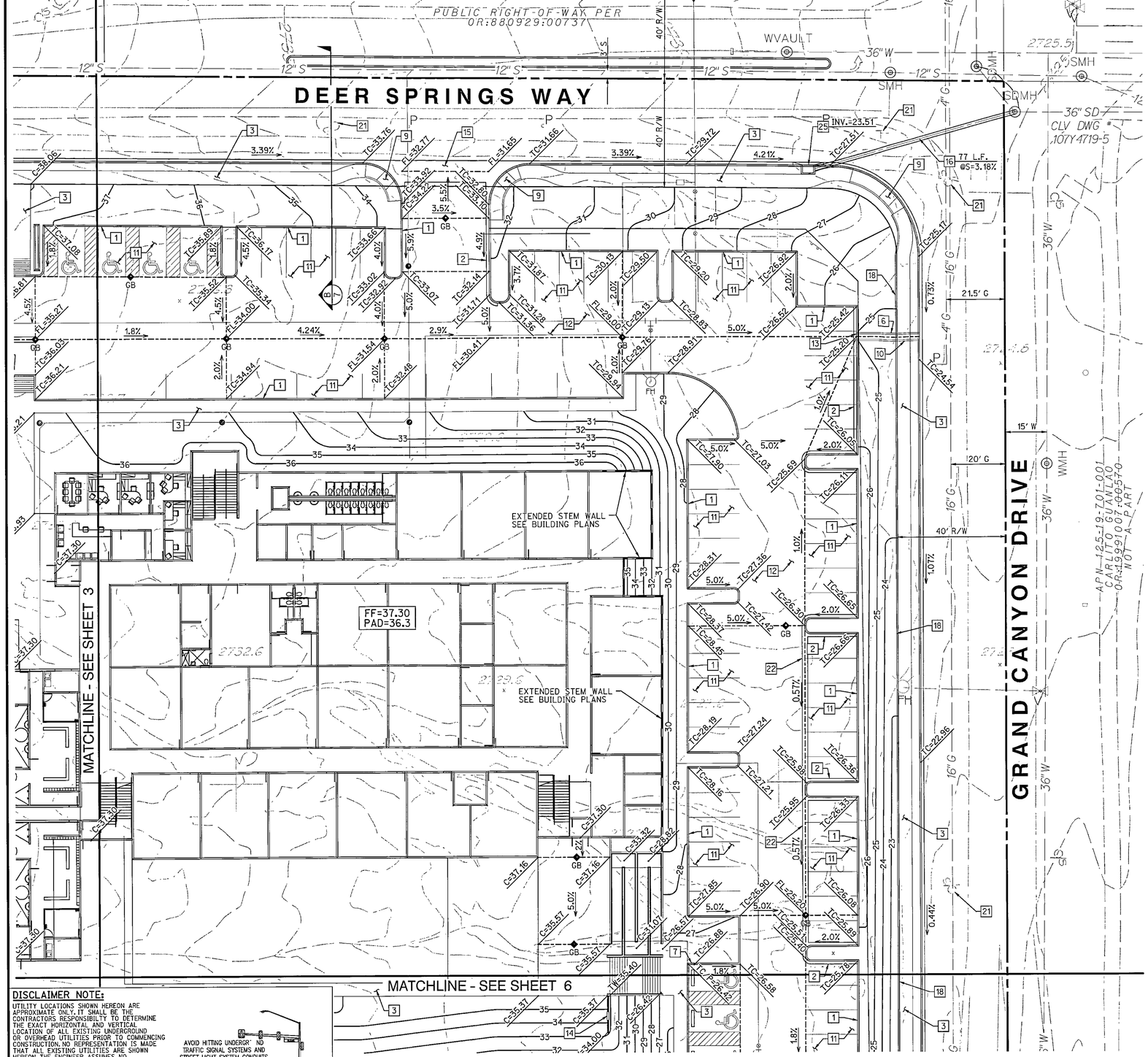
WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

ROBERT E. MOHNING
EXP. 12/31/13
CIVIL
STATE OF NEVADA
No. 7711
PROFESSIONAL ENGINEER
30-12

RICK ENGINEERING COMPANY
Phoenix
6150 NORTH 16TH STREET
PHOENIX, AZ 85016
602.957.3350
(FAX)602.285.2396
rickengineering.com
Tucson - San Diego - Sacramento - Riverside - Orange - San Luis Obispo - Bakersfield

DESIGNED: DGM
DRAWN: PV
PROJECT NO: 4313
DATE: 31-OCT-2012

SHEET 3 OF 13
DRAWING NO.



1 CONSTRUCT 6" CURB PER DETAIL 1 ON SHEET 7

2 CONSTRUCT 6" CURB RAMP PER DETAIL 1 ON SHEET 7

3 CONSTRUCT CONCRETE SWALE PER DETAIL 1 ON SHEET 7

4 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER DETAIL 1 ON SHEET 7

5 CONSTRUCT PRECAST BUMPER BLOCK PER USD NO 238

6 CONSTRUCT 2' WIDE CONCRETE FLUME PER DETAIL 2 ON SHEET 7

7 TRANSITION FROM 6" TO 0" CURB

8 CONSTRUCT 0" CURB PER DETAIL 3 ON SHEET 7

9 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER USD NO 235, CASE I

10 CONSTRUCT 2' WIDE SIDEWALK UNDERDRAIN PER USD NO 236

11 CONSTRUCT PARKING PAVEMENT PER DETAIL 4 ON SHEET 7

12 CONSTRUCT TRUCK PAVEMENT PER DETAIL 5 ON SHEET 7

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19 EXISTING STREET LIGHT TO BE REMOVED

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F.A.S.T.

SCALE 1"=20'
0 20 40 60

This grading plan is a part of drainage study #4572 which was received on 11/7/12 and App'd on 11/14/12. Page 2 of 7.

ADA NOTE:

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BENCHMARK:

CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

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NO.	DESCRIPTION	DATE

QUEST ACADEMY

GRADING PLAN

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

PROFESSIONAL ENGINEER - STATE OF NEVADA
ROBERT E. MORNING
EXP. 12/31/13
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10-12

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DESIGNED: DGM
DRAWN: PV
PROJECT NO: 4313
DATE: 31-OCT-2012

SHEET 4 OF 13
DRAWING NO.

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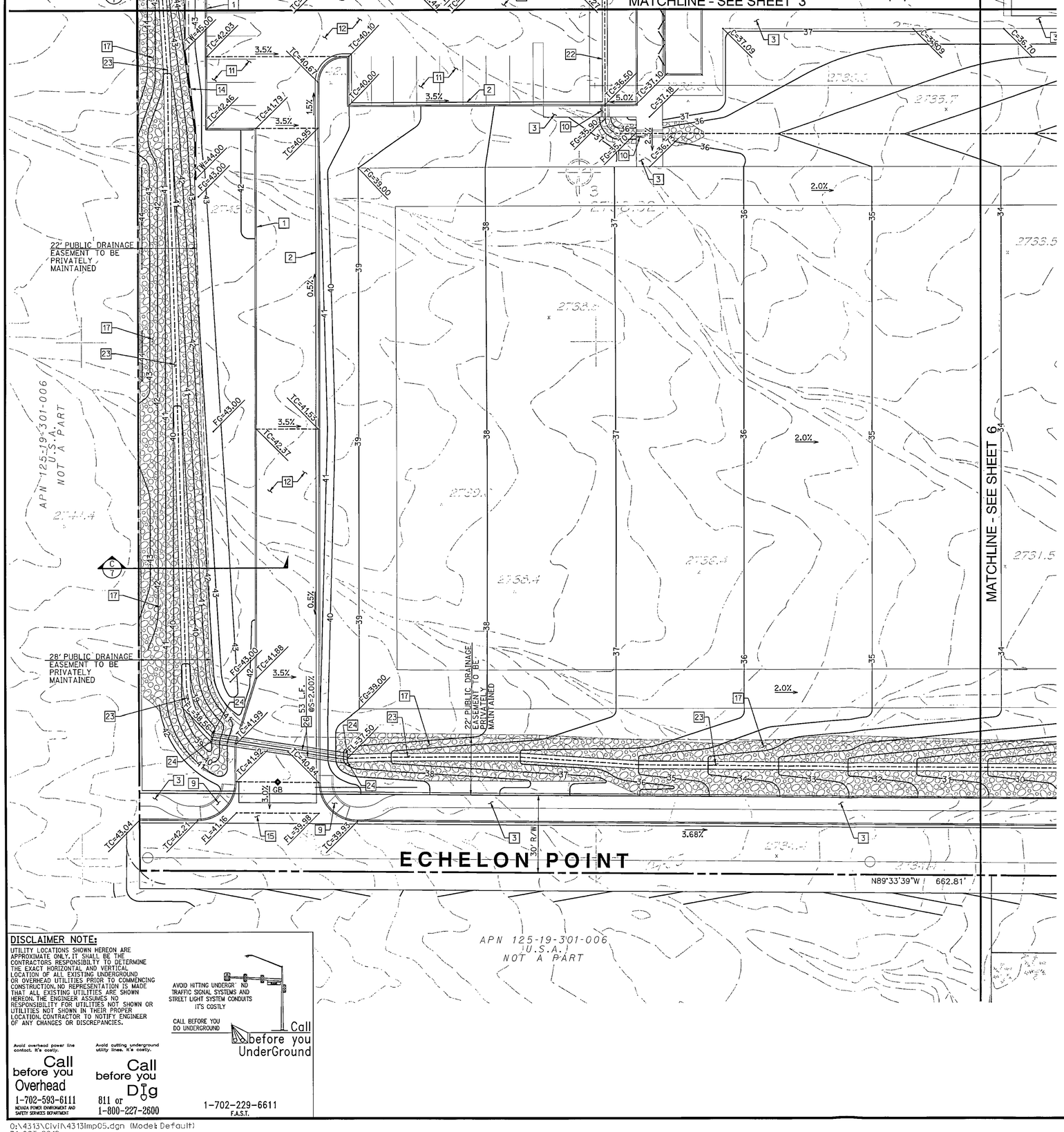
31-OCT-2012



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F.A.S.T.

SCALE 1"=20'
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NORTH 89°47'05" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, NEVADA AS SHOWN BY MAP THEREOF ON FILE IN FILE 107, PAGE 31 OF SURVEYS.

NO.	REVISION DESCRIPTION

QUEST ACADEMY

GRADING PLAN

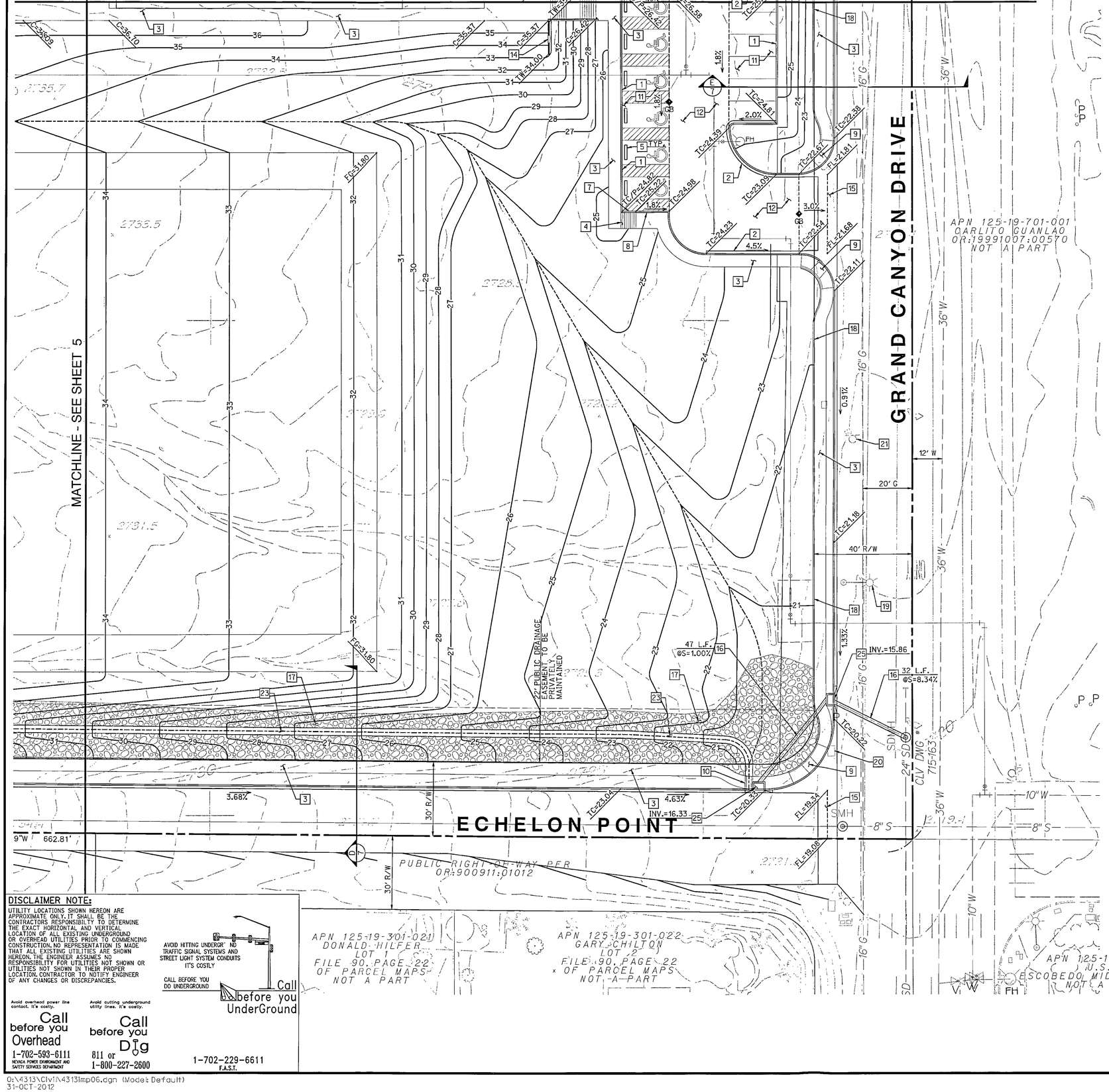
WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

PROFESSIONAL ENGINEER-STATE OF NEVADA
ROBERT E. MOHNING
EXP. 12/31/13
CIVIL
No. 7711
10-12

6150 NORTH 16TH STREET
PHOENIX, AZ 85016
602.957.3350
(FAX)602.285.2396
rickengineering.com
Tucson - San Diego - Sacramento - Riverside - Orange - San Luis Obispo - Bakersfield

DESIGNED: DGM
DRAWN: PV
PROJECT NO: 4313
DATE: 31-OCT-2012

SHEET 5 OF 13
DRAWING NO.



CONSTRUCTION NOTES

4 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER DETAIL 1 ON SHEET 7

5 CONSTRUCT PRECAST BUMPER BLOCK PER USD NO 238

6 CONSTRUCT 2' WIDE CONCRETE FLUME PER DETAIL 2 ON SHEET 7

7 TRANSITION FROM 6" TO 0" CURB

8 CONSTRUCT 0" CURB PER DETAIL 3 ON SHEET 7

9 CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER USD NO 235, CASE I

10 CONSTRUCT 2' WIDE SIDEWALK UNDERDRAIN PER USD NO 236

11 CONSTRUCT PARKING PAVEMENT PER DETAIL 4 ON SHEET 7

12 CONSTRUCT TRUCK PAVEMENT PER DETAIL 5 ON SHEET 7

13 CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 6 ON SHEET

14 CONSTRUCT RETAINING WALL PER SECTIONS ON SHEET 7

15 CONSTRUCT COMMERCIAL DRIVEWAY PER USD NO 228

16 INSTALL 18" RCP CLASS 3 STORM DRAIN

17 INSTALL LOOSE RIP-RAP, D50=6", THICKNESS=12" AS SHOWN

18 CONSTRUCT 6" CURB ON BACK OF SIDEWALK ALONG GRAND CANYON DRIVE

19 EXISTING STREET LIGHT TO BE REMOVED

20 EXISTING ELECTRIC VAULT TO BE RELOCATED

21 EXISTING SIGN TO BE RELOCATED

22 CONSTRUCT 2' WIDE VALLEY GUTTER PER DETAIL 8 ON SHEET 7

23 CONSTRUCT 3' WIDE VALLEY GUTTER PER DETAIL 9 ON SHEET 7

24 CONSTRUCT GRATE AND PIPE END PER DETAIL 7 ON SHEET 7

25 MODIFIED TYPE C INLET PER DETAIL 10 ON SHEET 13 OR NEENAH. L=2.5'

26 TWO 18" RCP CLASS 3 STORM DRAIN PIPES, 53 LF EACH AT 2.0% SLOPE.

NOTE:

ALL ONSITE STORM DRAINS AND THE ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED

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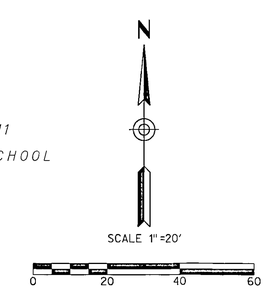

This grading plan is a part of drainage study #4572 which was received on 11/1/12 and App'd on 11/1/12. Page 4 of 7.

BENCHMARK:
CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DEER SPRINGS AND GRAND CANYON DRIVE.

ELEVATION = 830.34016 Meters (NAVD'88)
ELEVATION = 2724.21 Feet (NAVD'88)

BASIS OF BEARINGS:
NORTH 89°47'05" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, NEVADA AS SHOWN BY MAP THEREOF ON FILE IN FILE 107, PAGE 31 OF SURVEYS.

NO.	REVISION DESCRIPTION	DATE

QUEST ACADEMY

GRADING PLAN

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PROFESSIONAL ENGINEER STATE OF NEVADA
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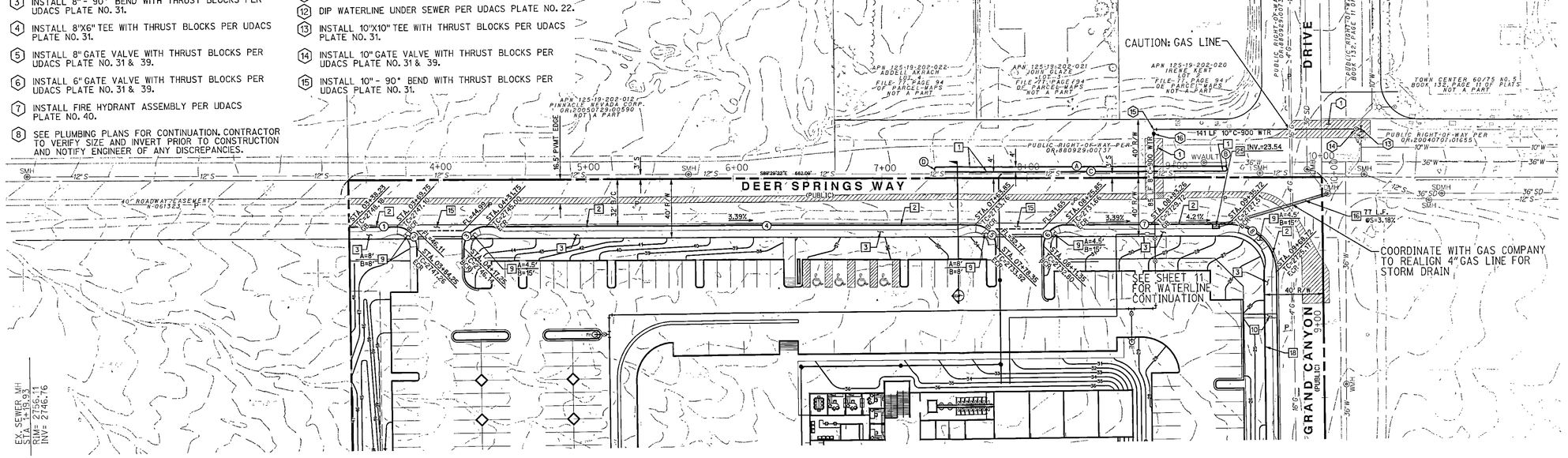
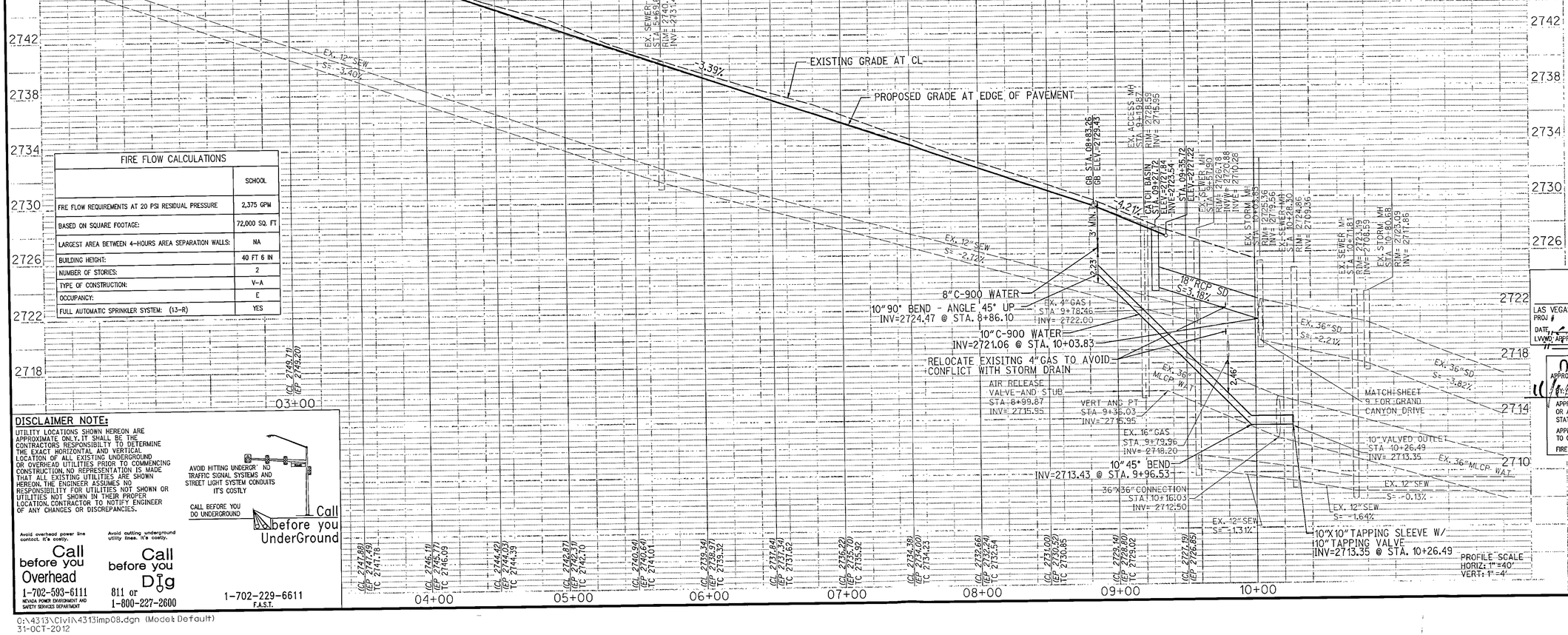
DESIGNED: DGM
DRAWN: PV
PROJECT NO: 4313
DATE: 31-OCT-2012

SHEET 6 OF 13
DRAWING NO.

1. INSTALL 8" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
2. INSTALL 8"X6" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
3. INSTALL 8"X6" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
4. INSTALL 8"X6" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
5. INSTALL 8" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
6. INSTALL 6" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
7. INSTALL FIRE HYDRANT ASSEMBLY PER UDACS PLATE NO. 40.
8. SEE PLUMBING PLANS FOR CONTINUATION. CONTRACTOR TO VERIFY SIZE AND INVERT PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
9. INSTALL 8" - 90° BEND WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
10. DIP WATERLINE UNDER SEWER PER UDACS PLATE NO. 22.
11. INSTALL 10"X10" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
12. INSTALL 10"GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
13. INSTALL 10" - 90° BEND WITH THRUST BLOCKS PER UDACS PLATE NO. 31.





1. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER DETAIL 1 ON SHEET 7
2. CONSTRUCT PRECAST BUMPER BLOCK PER USD NO 238
3. CONSTRUCT 2' WIDE CONCRETE FLUME PER DETAIL 2 ON SHEET 7
4. TRANSITION FROM 6" TO 0" CURB
5. CONSTRUCT 0" CURB PER DETAIL 3 ON SHEET 7
6. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER USD NO 235, CASE I
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14. INSTALL LOOSE RIP-RAP, D50=6", THICKNESS=12" AS SHOWN
15. CONSTRUCT 6" CURB ON BACK OF SIDEWALK ALONG GRAND CANYON DRIVE
16. EXISTING STREET LIGHT TO BE REMOVED
17. EXISTING ELECTRIC VAULT TO BE RELOCATED
18. EXISTING SIGN TO BE RELOCATED
19. CONSTRUCT 2' WIDE VALLEY GUTTER PER DETAIL 8 ON SHEET 7
20. CONSTRUCT 3' WIDE VALLEY GUTTER PER DETAIL 9 ON SHEET 7
21. CONSTRUCT GRATE AND PIPE END PER DETAIL 7 ON SHEET 7
22. MODIFIED TYPE C INLET PER DETAIL 10 ON SHEET 13 OR NEENAH. L=2.5'

N

SCALE 1"=40'

0 40 80 120

BACK OF CURB DATA			
NO.	DELTA OR BRG.	RADIUS	LENGTH
1	N89°29'22"W		31.51'
2	Δ=89°29'22"	14.50'	22.65'
3	Δ=90°30'38"	14.50'	22.91'
4	N89°29'22"W		332.10'
5	Δ=89°29'22"	14.50'	22.65'
6	Δ=90°30'38"	14.50'	22.91'
7	N89°29'22"W		109.81'
8	Δ=89°21'37"	33.00'	51.41'

MEDIAN BACK OF CURB DATA			
NO.	DELTA OR BRG.	RADIUS	LENGTH
A	N89°29'22"W		196.00'
B	Δ=180°00'00"	1.50'	4.71'
C	N89°29'22"W		196.00'
D	Δ=180°00'00"	1.50'	4.71'

FIRE FLOW CALCULATIONS	
	SCHOOL
FIRE FLOW REQUIREMENTS AT 20 PSI RESIDUAL PRESSURE	2,375 GPM
BASED ON SQUARE FOOTAGE:	72,000 SQ. FT
LARGEST AREA BETWEEN 4-HOURS AREA SEPARATION WALLS:	NA
BUILDING HEIGHT:	40 FT 6 IN
NUMBER OF STORIES:	2
TYPE OF CONSTRUCTION:	V-A
OCCUPANCY:	E
FULL AUTOMATIC SPRINKLER SYSTEM: (13-R)	YES

APPROVED FOR CONSTRUCTION

This grading plan is a part of drainage study

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJ # _____ PROJ NO. _____

DATE _____

LVVWD APPROVED FIRE FLOW 12,375 GPM AT 20PSI RESIDUAL

CITY OF LAS VEGAS FIRE DEPT.

APPROVED _____ DATE _____

Page 5 of 7

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OF COUNTY LAWS.

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM THE LVVWD.

FIRE FLOW 2,375 GPM AT 20 P.S.I. RESIDUAL.

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DEER SPRINGS AND GRAND CANYON DRIVE.

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PROFILE SCALE
HORIZ: 1"=40'
VERT: 1"=4'

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NO.	DESCRIPTION	DATE
	REVISIONS	

QUEST ACADEMY
DEER SPRINGS WAY IMPROVEMENTS

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET
TEMPE, ARIZONA
PHONE: 480-759-9622

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DESIGNED: DGM
DRAWN: DGM
PROJECT NO: 4313-0
DATE: 31-OCT-2012

SHEET 8 OF 13
DRAWING NO.

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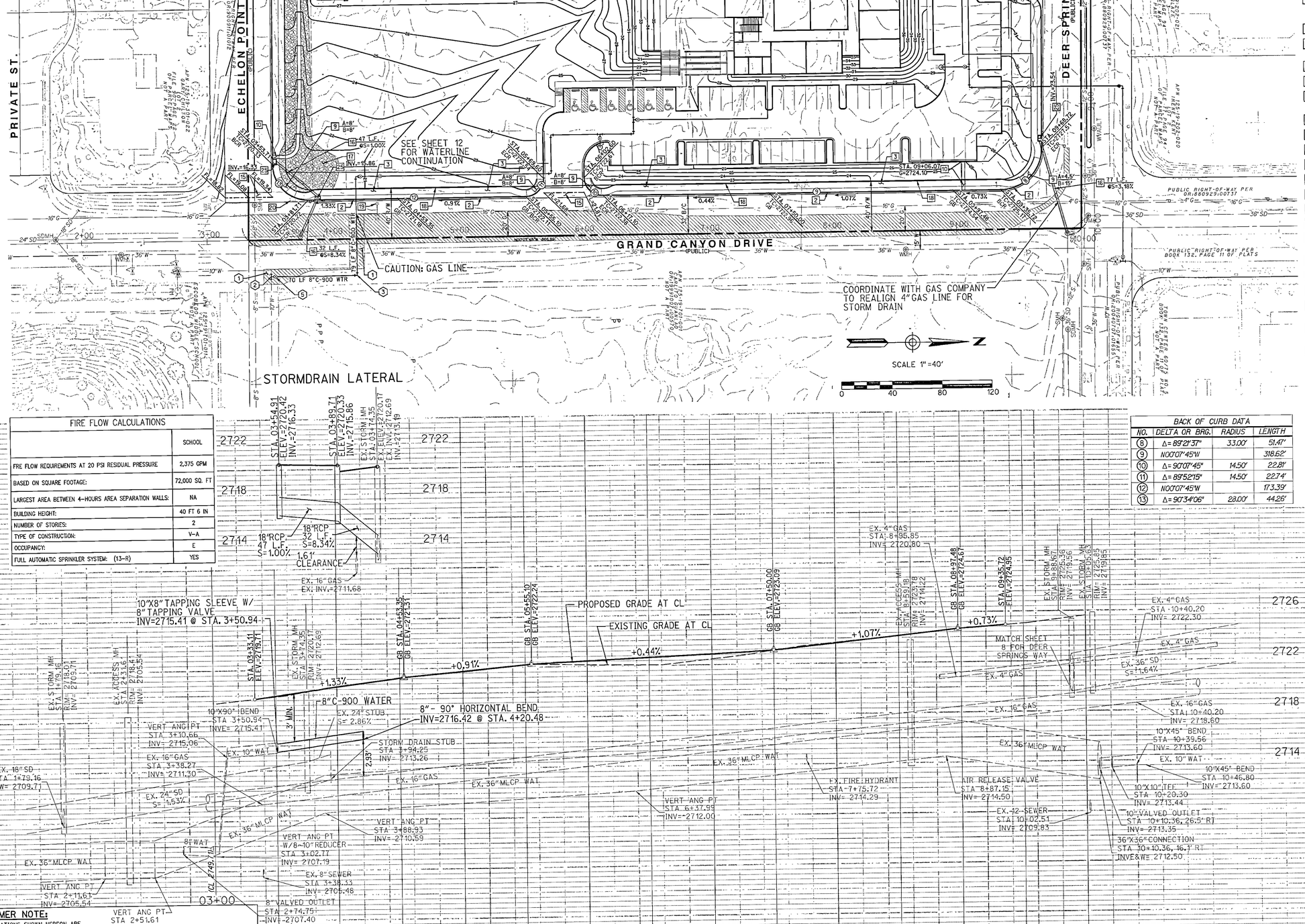
31-OCT-2012



FIRE FLOW CALCULATIONS	SCHOOL
FRE FLOW REQUIREMENTS AT 20 PSI RESIDUAL PRESSURE	2,375 GPM
BASED ON SQUARE FOOTAGE:	72,000 SQ. FT
LARGEST AREA BETWEEN 4-HOURS AREA SEPARATION WALLS:	NA
BUILDING HEIGHT:	40 FT 6 IN
NUMBER OF STORIES:	2
TYPE OF CONSTRUCTION:	V-A
OCCUPANCY:	E
FULL AUTOMATIC SPRINKLER SYSTEM: (13-R)	YES

BACK OF CURB DATA			
NO.	DELTA OR BRG.	RADIUS	LENGTH
(8)	Δ= 89°21'37"	33.00'	51.47'
(9)	N00°07'45"W		318.62'
(10)	Δ= 90°07'45"	14.50'	22.81'
(11)	Δ= 89°52'15"	14.50'	22.74'
(12)	N00°07'45"W		173.39'
(13)	Δ= 90°34'06"	28.00'	44.26'

WATER:

1. TRENCH AND BACKFILL PER UDACS PLATE NO. 17.
2. INSTALL 10"X8" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
3. INSTALL 8" - 90° BEND WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
4. INSTALL 8"X6" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
5. INSTALL 8" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
6. INSTALL 6" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
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9. SEE FIRE SPRINKLER FOR CONTINUATION. CONTRACTOR TO VERIFY SIZE AND INVERT PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
10. INSTALL 2" METER PER UDACS PLATE NO. 3 AND 2" BACKFLOW DEVICE PER UDACS PLATE NO. 8.
11. INSTALL 8" DCDA PER UDACS PLATE NO. 59.
12. DIP WATERLINE UNDER SEWER PER UDACS PLATE NO. 22.
13. INSTALL 10"X10" TEE WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
14. INSTALL 10" GATE VALVE WITH THRUST BLOCKS PER UDACS PLATE NO. 31 & 39.
15. INSTALL 10" - 90° BEND WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
16. INSTALL 10"X8" REDUCER WITH THRUST BLOCKS PER UDACS PLATE NO. 31.
17. INSTALL 8"X2" SERVICE SADDLE PER UDACS PLATE NO. 4.

1. CONSTRUCT 6" CURB PER DETAIL 1 ON SHEET 7
2. CONSTRUCT 4" WIDE CONCRETE SIDEWALK PER DETAIL 2 ON SHEET 7
3. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER DETAIL 1 ON SHEET 7
5. CONSTRUCT PRECAST BUMPER BLOCK PER USD NO 238
6. CONSTRUCT 2' WIDE CONCRETE FLUME PER DETAIL 2 ON SHEET 7
7. TRANSITION FROM 6" TO 0" CURB
8. CONSTRUCT 0" CURB PER DETAIL 3 ON SHEET 7
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12. CONSTRUCT TRUCK PAVEMENT PER DETAIL 5 ON SHEET 7
13. CONSTRUCT 2' WIDE CURB OPENING PER DETAIL 6 ON SHEET 7
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24. CONSTRUCT GRATE AND PIPE END PER DETAIL 7 ON SHEET 7
25. MODIFIED TYPE C INLET PER DETAIL 10 ON SHEET 13 OR NEENAH, L=2.5'

PROFILE SCALE
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QUEST ACADEMY
GRAND CANYON ROAD IMPROVEMENTS

NO.	REVISIONS DESCRIPTION

WALTZ CONSTRUCTION
449 SOUTH HARDY DR. STE. 105
TEMPE, ARIZONA
PHONE: 480-759-0622

PROFESSIONAL ENGINEER-STATE OF NEVADA
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DESIGNED: DGM
DRAWN: DGM
PROJECT NO: 4313-0
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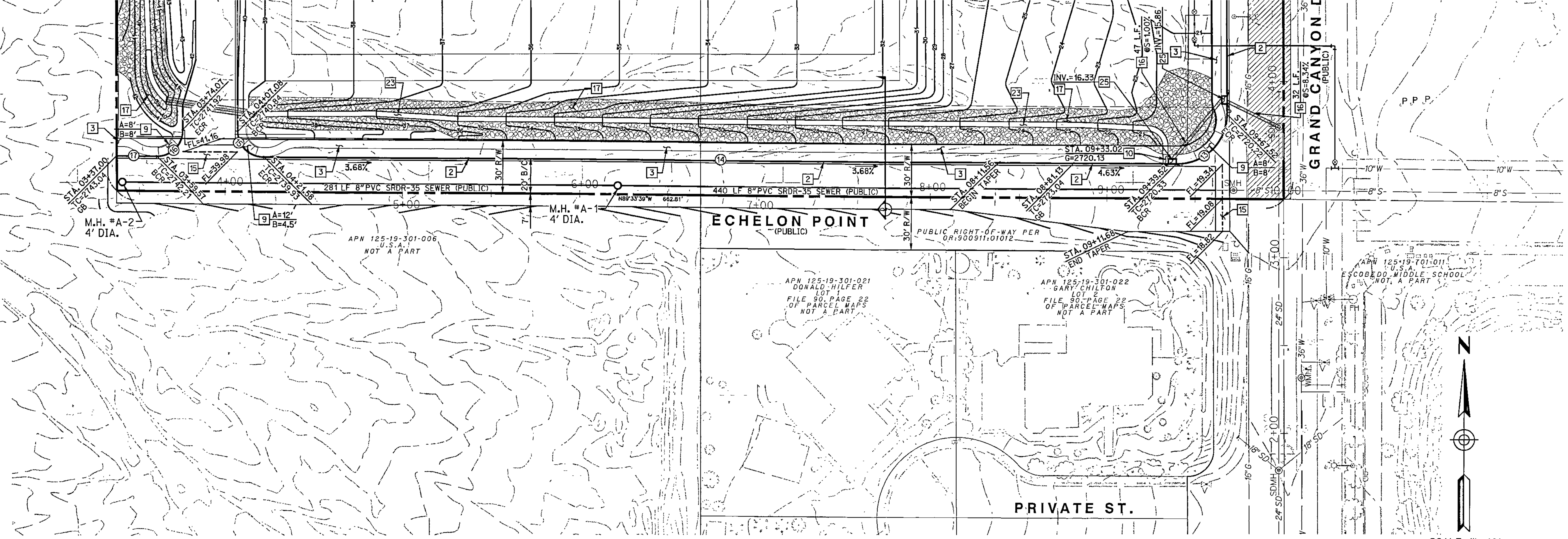
SHEET 9 OF 13
DRAWING NO.



BACK OF CURB DATA		
NO.	DELTA OR BRG.	RADIUS	LENGTH

NO.	DELTA OR BRG.	RADIUS	LENGTH
13	Δ=90°34'06"	28.00'	44.26'
14	N89°33'39"W		517.95'
15	Δ=89°33'39"	14.50'	22.67'
16	Δ=90°49'42"	14.50'	22.99'
17	N89°33'39"W		22.58'

FIRE FLOW CALCULATIONS	
	SCHOOL
FIRE FLOW REQUIREMENTS AT 20 PSI RESIDUAL PRESSURE	2,375 GPM
BASED ON SQUARE FOOTAGE:	72,000 SQ. FT
LARGEST AREA BETWEEN 4-HOURS AREA SEPARATION WALLS:	NA
BUILDING HEIGHT:	40 FT 6 IN
NUMBER OF STORIES:	2
TYPE OF CONSTRUCTION:	V-A
OCCUPANCY:	E
FULL AUTOMATIC SPRINKLER SYSTEM: (13-R)	YES

3. CONSTRUCT SIDEWALK PER USD NO 234
4. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER DETAIL 1 ON SHEET 7
5. CONSTRUCT PRECAST BUMPER BLOCK PER USD NO 238
6. CONSTRUCT 2' WIDE CONCRETE FLUME PER DETAIL 2 ON SHEET 7
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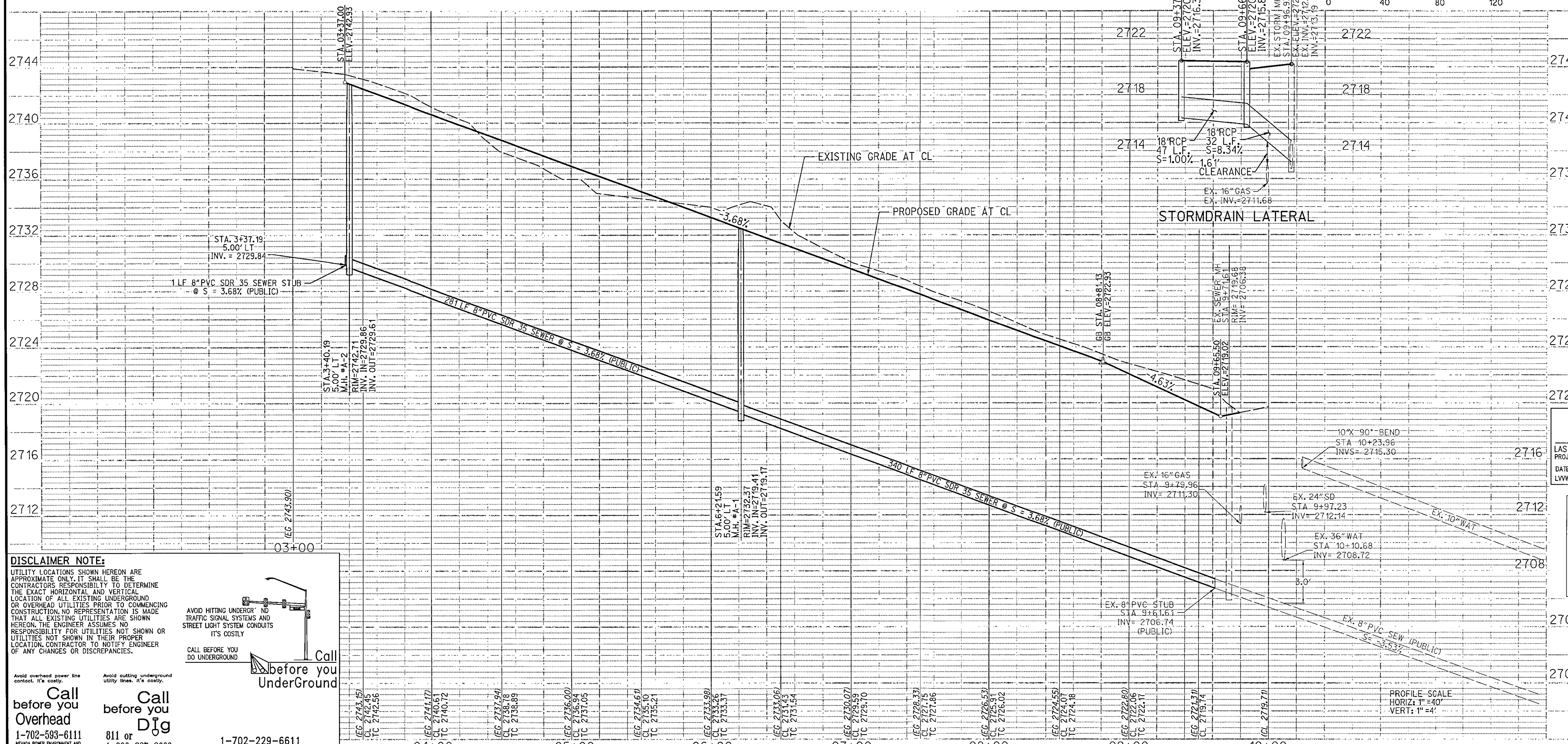

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AVOID HITTING UNDERGROUND TRAFFIC SIGNAL SYSTEMS AND STREET LIGHT SYSTEM CONDUITS IT'S COSTLY

CALL BEFORE YOU DO UNDERGROUND

Call before you UnderGround

Avoid overhead power line contact. It's costly.
Call before you Overhead
1-702-593-6111
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

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

1-702-229-6611
F.A.S.T.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJ # ____ PROJ NO. ____
DATE ____
LVVWD APPROVED FIRE FLOW 2,375 GPM AT 20 PSI RESIDUAL

This grading plan is a part of drainage study ... which was received on 11/1/12 and Appr'd ... Page ...

CITY OF LAS VEGAS FIRE DEPT.
APPROVED ____
BY: 11/1/12 ____ DATE ____
APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OF COUNTY LAWS.
APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM THE LVVWD.
FIRE FLOW 2,375 GPM AT 20 P.S.I. RESIDUAL

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DEER SPRINGS AND GRAND CANYON DRIVE.

ELEVATION = 830.34016 Meters (NAVD'88)
ELEVATION = 2724.21 Feet (NAVD'88)

BASIS OF BEARINGS:

NORTH 89°47'05" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, NEVADA AS SHOWN BY MAP THEREOF ON FILE IN FILE 107, PAGE 31 OF SURVEYS.

QUEST ACADEMY

ECHELON POINT IMPROVEMENTS

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

PROFESSIONAL ENGINEER - STATE OF NEVADA
ROBERT E. MOHNING
EXP. 12/31/13
CIVIL
No. 7711
10-30-12

RICK ENGINEERING COMPANY
6150 NORTH 16TH STREET
PHOENIX, AZ 85016
602.957.3350
(FAX)602.285.2396
rickengineering.com

DESIGNED: DGM
DRAWN: DGM
PROJECT NO: 4313-0
DATE: 31-OCT-2012

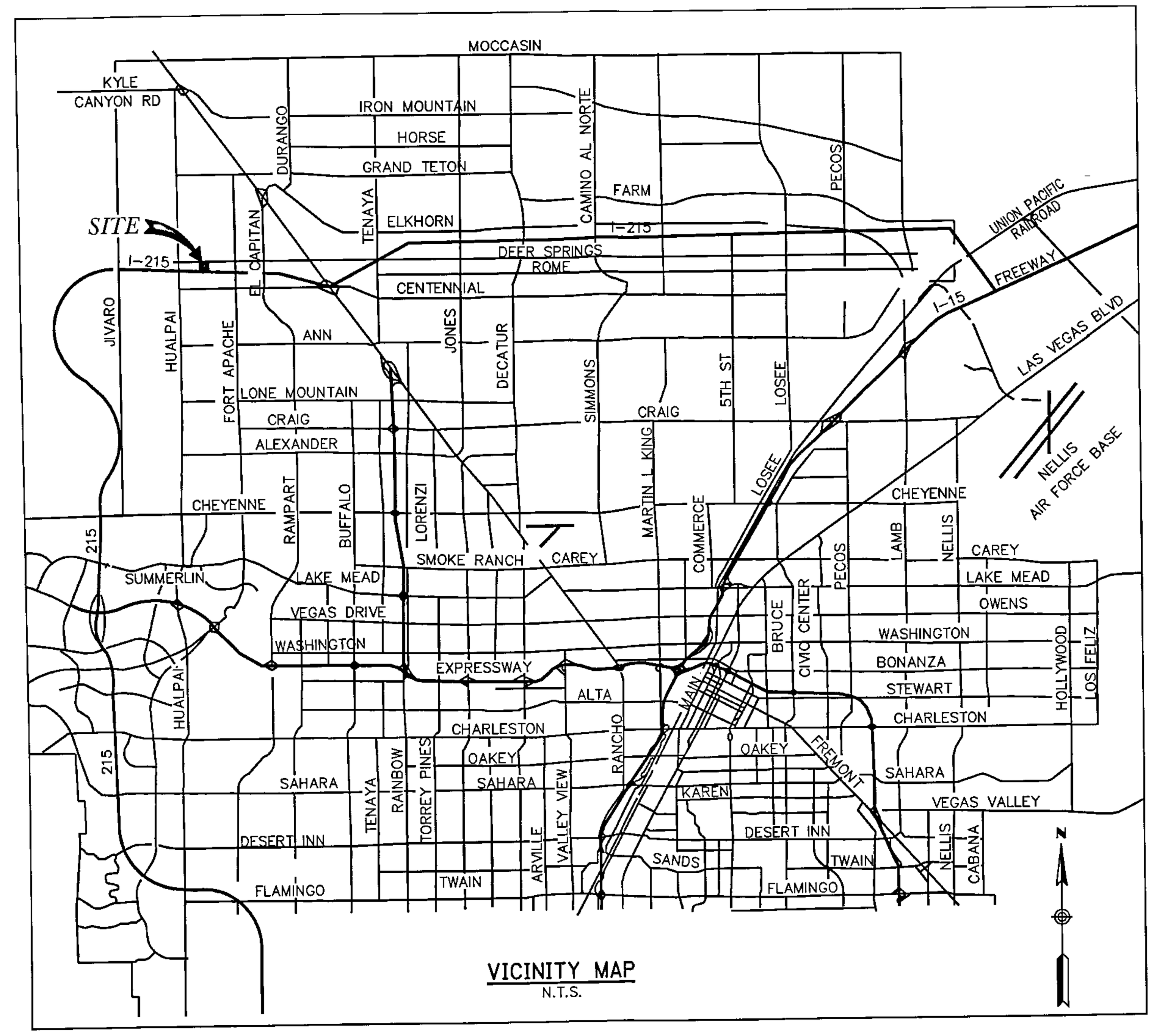
REVISION DESCRIPTION | NO.

O:\4313\Civil\4313imp10.dgn (Model: Default)
31-OCT-2012

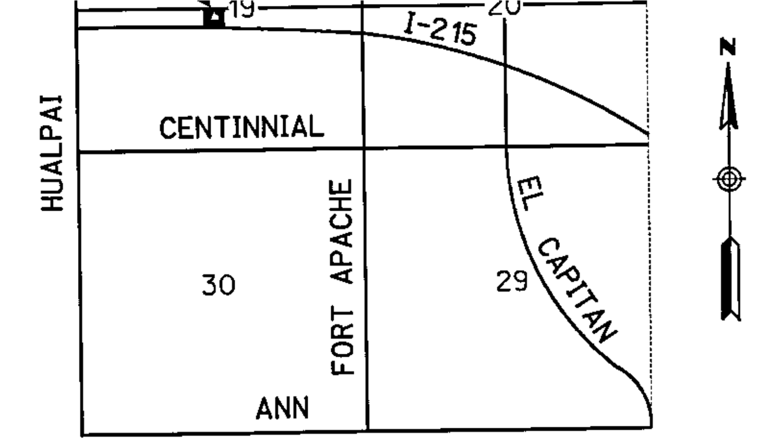
CITY OF LAS VEGAS, NEVADA
A SCHOOL DEVELOPMENT
APN 125-19-301-007, 125-19-301-008

CITY OF LAS VEGAS GENERAL NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST REVISED EDITION; THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALLSUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-HALF INCH (1/2") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY THE SOILS ENGINEER APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATURE NO. 625.550.
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.
16. WALL NOTES:
17. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
18. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
19. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
20. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.



VICINITY MAP
N.T.S.



SITE MAP
N.T.S.

ENGINEER:
RICK ENGINEERING COMPANY
6150 NORTH 16TH STREET
PHOENIX, ARIZONA 85016
PHONE: (602) 957-3350
FAX: (602) 285-2396

ARCHITECT:
SH ARCHITECTURE
7250 PRAK DR., STE. #216
LAS VEGAS, NV 89128
PHONE: (702) 363-2222
FAX: (702) 363-6060

OWNER:
QUEST ACADMEY
6610 GRAND MONTECITO PKWY
LAS VEGAS, NV 89149
PHONE: (702) 631-4751
FAZ: (702) 586-0386

DEVELOPER:
WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

BENCHMARK:
CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DEER SPRINGS AND GRAND CANYON DRIVE.

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LEGAL DESCRIPTION:
PARCEL 1:

THE WEST HALF (W 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA.

PARCEL 2:

THE EAST HALF (E 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CLARK COUNTY, NEVADA.

DEVIATION FROM STANDARD:

APPROVALS

CITY ENGINEER — DATE

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

PLANNING MANAGER — DATE

THIS PLAN MEETS THE APPLICABLE STANDARDS OF PLANNING AND DEVELOPMENT DEPARTMENT.

CITY FIRE MARSHAL — DATE

LAS VEGAS VALLEY WATER DISTRCT — DATE
PROJECT #
SHEETS

SOUTHWEST GAS CORPORATION — DATE

COX COMMUNICATIONS, LAS VEGAS INC. — DATE

CENTURY LINK — DATE

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

NV ENERGY — DATE

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

ABBREVIATIONS:

AC	ASPHALTIC CONCRETE	LAT	LATERAL
BC	BACK OF CURB	LF	LINEAL FEET
BCR	BEGIN CURB RETURN	MH	MANHOLE
BDRY	BOUNDARY	OHP	OVERHEAD POWER
BEG	BEGIN	P	PAVEMENT ELEVATION
BM	BENCH MARK	PC	POINT OF CURVATURE
BW	BACK OF SIDEWALK	PCC	POINT OF COMPOUND CURVE
BVC	BEGIN VERTICAL CURVE	PI	POINT OF INTERSECTION
C	CONCRETE ELEVATION	POC	POINT ON CURVE
CL	CENTER LINE	PP	POWER POLE
CO	CLEAN OUT	PRC	POINT OF REVERSE CURVE
CONC	CONCRETE	PROP	PROPOSED
CONST	CONSTRUCT	PT	POINT OF TANGENCY
DI	DROP INLET	PVC	POLYVINYL CHLORIDE
E	ELECTRIC	PVMT	PAVEMENT
EG	EXISTING GROUND GRADE	ROW	RIGHT-OF-WAY
EL	ELEVATION	SS	SANITARY SEWER
EP	EDGE OF PAVEMENT	SSMH	SANITARY SEWER MANHOLE
ESMT	EASEMENT	SD	STORM DRAIN
EVC	END VERTICAL CURVE	SDMH	STORM DRAIN MANHOLE
EX, EXIST	EXISTING	STA	STATION
FC	FACE OF CURB	STLT	STREETLIGHT
FF	FINISH FLOOR	SW	SIDEWALK
FG	FINISH GRADE	TC	TOP OF CURB
FH	FIRE HYDRANT	T	TELEPHONE
FL	FLOW LINE	TMH	TOP OF MANHOLE
G	GAS	TRANS	TRANSITION
GB	GRADE BREAK	VG	VALLEY GUTTER
HP	HIGH POINT	W	WATER
INV	INVERT		

SHEET INDEX

SHEET NUMBER	SHEET DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3	GRADING PLAN 1
4	GRADING PLAN 2
5	GRADING PLAN 3
6	GRADING PLAN 4
7	DETAILS & CROSS-SECTIONS
8	DEER SPRINGS WAY IMPROVEMENTS
9	GRAND CANYON ROAD IMPROVEMENTS
10	ECHELON POINT IMPROVEMENTS
11	UTILITY PLAN 1
12	UTILITY PLAN 2
13	DETAILS & CROSS-SECTIONS

This grading plan is a part of drainage study #4572 which was received on 10/30/12 ... on 11/1/12. Page 1 of 17

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJ #
DATE ______ PROJ NO. ______
LVVWD APPROVED FIRE FLOW 2,375 GPM AT 20 PSI RESIDUAL

CITY OF LAS VEGAS FIRE DEPT.
APPROVED
BY: ______ DATE
APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OF COUNTY LAWS.
APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM THE LVVWD.
FIRE FLOW 2,375 GPM AT 20 P.S.I. RESIDUAL.

DISCLAIMER NOTE:
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AVOID HITTING UNDERGR' ND TRAFFIC SIGNAL SYSTEMS AND STREET LIGHT SYSTEM CONDUITS IT'S COSTLY

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Avoid overhead power line contact. It's costly.
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F.A.S.T.

QUEST ACADEMY
COVER SHEET

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

PROFESSIONAL ENGINEER STATE OF NEVADA — ROBERT E. MOHNING — EXP. 12/31/13 — CIVIL — No. 7711

RICK ENGINEERING COMPANY
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PHOENIX, AZ 85016
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(FAX)602.285.2396
rickengineering.com

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DESIGNED: DGM
DRAWN: PV
PROJECT NO: 4313
DATE: 30-OCT-2012

SHEET 1 OF 13
DRAWING NO.

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30-OCT-2012

3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAVING OF THE EXCAVATION.

4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.

5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.

6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

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

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

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.

8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.

9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.

10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

CITY OF LAS VEGAS SEWER NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.

2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY PLANNING ENGINEER.

3. CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.

4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.

5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETROFIT IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.

6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y"'S SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.

7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.

8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.

9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY PLANNING ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.

10. INSTALLATION OF CURVED SEWER REQUIRES SPECIAL CONSTRUCTION PROCEDURES AND INSPECTIONS. CONTACT CITY OF LAS VEGAS CONSTRUCTION SERVICES 24 HOURS PRIOR TO INSTALLATION.

3. ON ANY NEW HOME OR BUILDING INSTALLATION, ACCESSIBLE FIRE HYDRANTS SHALL BE INSTALLED BEFORE COMBUSTIBLE CONSTRUCTION COMMENCES AND SAID FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER WITH AN ADEQUATE WATER SUPPLY.

4. CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT CENTERLINE OF STREET ADJACENT TO FIRE HYDRANT AS REQUIRED IN ORDINANCE NO. 3944 TO IDENTIFY FIRE HYDRANT LOCATIONS.

5. CONTRACTOR SHALL CALL THE LAS VEGAS BUILDING DEPARTMENT AT 229-2071 FOR UNDERGROUND INSPECTION, PRESSURE AND FLUSH VERIFICATION OF ALL FIRE HYDRANTS AND FIRE LINES BEFORE BACK FILLING.

6. PAINTING OF THE CURBS AND HYDRANT AND ANY WORK NECESSARY FOR PROTECTION OF HYDRANTS FROM PHYSICAL DAMAGE, PER ORDINANCE NO. 3944, SHALL BE COMPLETED BEFORE APPROVAL BY THE CITY OF LAS VEGAS FIRE DEPARTMENT.

7. A PERMIT IS REQUIRED FROM THE FIRE DEPARTMENT FOR ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE-PROTECTION ENGINEER PRIOR TO ANY WORK BEGINNING.

8. PRIVATE FIRE HYDRANTS SHALL BE PAINTED RED.

9. A FLOW TEST MUST BE WITNESSED BY THE FIRE DEPARTMENT PRIOR TO OCCUPANCY FOR VERIFICATION OF REQUIRED ON-SITE WATER SUPPLY.

10. ALL ON-SITE FIRE MAIN MATERIALS MUST BE U.L. LISTED AND A.W.W.A. APPROVED.

11. FIRE HYDRANT SPACING:
RESIDENTIAL- 500 FEET UNSPRINKLERED; 1000 FEET SPRINKLERED.
COMMERCIAL, INCLUDING MULTI-FAMILY- 300 FEET UNSPRINKLERED; 600 FEET SPRINKLERED.

12. WHERE NEW WATER MAINS ARE EXTENDED ALONG STREETS, HYDRANTS SHALL BE SPACED AT MAXIMUM ONE-THOUSAND (1,000') FOOT SPACING TO PROVIDE FOR TRANSPORTATION HAZARDS.

13. NO FIRE HYDRANT SHALL BE LOCATED WITHIN THE REQUIRED RADIUS OF A CUL-DE-SAC OR WITHIN TWENTY (20') FEET OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.

14. NO FIRE HYDRANT SHALL BE LOCATED WITHIN SIX FEET (6') OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREET LIGHT OR ANY OTHER OBSTRUCTION.

15. TWO SOURCES .OF SUPPLY ARE REQUIRED WHENEVER THERE ARE FOUR (4) OR MORE FIRE HYDRANTS INSTALLED ON A SINGLE SYSTEM.

16. NOT MORE THAN TWO (2) HYDRANTS CAN BE OUT OF SERVICE DUE TO A SINGLE MAIN BREAK.

17. FIRE APPARATUS ACCESS ROADS SHALL HAVE AN UNOBSTRUCTED WIDTH OF NOT LESS THAN TWENTY FEET (20') PROVIDED NO PARKING IS ALLOWED, NOT LESS THAN TWENTY-EIGHT FEET (28') IF PARALLEL PARKING IS ALLOWED ON ONE SIDE, AND NOT LESS THAN THIRTY-SIX FEET (36') IF PARALLEL PARKING IS ALLOWED ON BOTH SIDES. VERTICAL CLEARANCE SHALL NOT BE LESS THAN THIRTEEN-FEET-SIX- INCHES (13' 6").

18. THE TURNING RADIUS FOR ANY FIRE APPARATUS ACCESS ROAD AND/OR FIRE LANE, PUBLIC OR PRIVATE, SHALL BE NOT LESS THAN FORTY-FIVE FEET (45') OUTSIDE RADIUS AND TWENTY-TWO FEET (22') INSIDE RADIUS.

19. A FIRE APPARATUS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN ONE-HUNDRED FIFTY FEET (150') FROM A FIRE DEPARTMENT VEHICLE ACCESS (SEE EXCEPTIONS IN UFC 94, SECTION 902.2).

20. ALL DEAD END FIRE APPARATUS ACCESS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF ONE-HUNDRED FIFTY FEET (150') IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND AREA. SEE ORDINANCE NO. 3944.

21. ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE, ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF ONE-HUNDRED FEET (100') ALONG ALL DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN TEN FEET (10') OR LESS THAN SIX FEET (6') FROM ROADWAY LEVEL. THE CURBS ALONG OR ON THE PAVEMENT OR CEMENT IF CURB IS NOT PRESENT, SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS.

22. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. SAID SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF LAS VEGAS GUIDELINES FOR AUTOMATIC EMERGENCY VEHICLE ACCESS GATES.

2. ALL WORK SHALL CONFORM TO LVVWD STANDARD PLATES, DRAWINGS, AND SPECIFICATIONS, AND TO THE 2010 EDITION OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS). THE LATEST EDITION OF UDACS SHALL SUPERCEDE ANY CONFLICTS CONTAINED IN THE APPROVED DRAWINGS AND/OR SPECIFICATIONS.

3. ALL WORK, EXCEPT AS MODIFIED BY THESE PLANS OR BY NOTE 2 ABOVE, SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT DRAFT OR EDITION OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENT, CLARK COUNTY AREA.

4. A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE LVVWD.

5. ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING WITH LVVWD APPROVED SERVICE SADDLES.

6. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF THE DRIVEWAY AREAS.

7. ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB GUTTERS.

8. ALL WATER AND STORM DRAIN OR SANITARY SEWER CROSSINGS SHALL CONFORM TO SECTION 2.22 OF THE 2010 EDITION OF THE UDACS.

9. ALL WATER FACILITIES SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED, AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO CONNECTION TO THE LVVWD DISTRIBUTION SYSTEM.

10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES. TELEPHONE 258-3152 OF 258-3802, TWO (2) WORKING DAYS PRIOR TO METER PICKUP.

11. ANY INTERRUPTION OF SERVICE MUST BE PERFORMED IN ACCORDANCE WITH UDACS SECTION 3.14.01, AND APPROVED BY THE LVVWD INSPECTION DIVISION PRIOR OR SHUTDOWN. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.

12. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE AS LISTED ON THE LVVWD PRE-APPROVED MATERIALS AND MANUFACTURER'S LISTING FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS.

13. TELEPHONE "CALL BEFORE YOU DIG" AT 1-800-227-2600 OR 811.

14. THE INSTALLATION OF LAS VEGAS VALLEY WATER DISTRICT (LVVWD) MUNICIPAL WATER FACILITIES WITHIN ALL STREETS IS ASSUMED TO BE IN COMPLIANCE WITH THE UNIFORM STANDARDS, INCLUDING THE PLACEMENT OF ASPHALT PAVING STREET SURFACES. ANY REPAIR WORK DONE BY THE LVVWD TO THE MUNICIPAL WATER FACILITIES WILL INCLUDE THE PLACEMENT OF AN APPROPRIATELY SIZED ASPHALT REPAIR PATCH ON THE STREET SURFACE.

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

[illegible] ASPHALT CONCRETE PAVEMENT	[illegible]	S.Y.		S.Y.
4-INCH ASPHALT CONCRETE PAVEMENT		S.Y.		S.Y.
OPEN GRADE		S.Y.		S.Y.
TYPE I GRAVEL		C.Y.		C.Y.
TYPE II GRAVEL	628	C.Y.		C.Y.
CURB & GUTTER TYPE "L" & "A"	1,784	L.F.		L.F.
8" CONCRETE VALLEY GUTTER	1,975	S.F.		S.F.
SIDEWALK RAMP	10	EA.		EA.
SIDEWALK UNDERDRAIN	2	EA.		EA.
4-INCH THICK CONCRETE SIDEWALK	873	S.Y.		S.Y.
8-INCH SEWER	622	L.F.		L.F.
SEWER MANHOLE 6 TO 18 FEET	2	EA.		EA.
6-INCH WATER		L.F.		L.F.
8-INCH WATER	370	L.F.		L.F.
FIRE HYDRANT	4	EA.		EA.
STREETLIGHT RELOCATE	1	EA.		EA.
SURVEY MONUMENTS		EA.		EA.
STREET/STOP SIGNS	2	EA.		EA.

NOTE: THIS QUANTITY ESTIMATE IS FOR BONDING PURPOSES ONLY. CONTRACTOR TO DETERMINE INDEPENDANT ESTIMATIONS.

LEGEND:

	EXISTING	PROPOSED
RIGHT-OF-WAY		
CENTERLINE		
SIDEWALK, CURB & GUTTER		
EASEMENT		
BOUNDARY LINE		
LOT LINE		
EDGE OF PAVEMENT		
GRADE BREAK	GB	GB
SAWCUT LINE		
SCARP		
SIDEWALK RAMP		
INDEX CONTOUR		35
INTERMEDIATE CONTOUR		34
SEWER MAIN	S	
SEWER MANHOLE	MH	
SEWER LATERAL		
WATER MAIN	W	
WATER LATERAL AND METER	W	
WATER METER		
WATER VALVE		
WATER TEE OR BEND		
WATER REDUCER		
FIRE HYDRANT	FH	FH
STORM DRAIN	24" SD	24" SD
STORM DRAIN MANHOLE	SDMH	
STREET NAME SIGN		
STOP SIGN		
FINISH FLOOR ELEVATION PAD ELEVATION		FF=37.30 PAD=36.3
RATE OF GRADE	(3.5%)	3.5%
ELEVATION	TC=(45.08)	TC=45.08
WALL HEIGHT ELEVATION	H=8'-8"	H=8'-8"
BLOCK WALL		
RETAINING WALL		
SIGHT VISIBILITY RESTRICTION ZONE SVRZ		
STREET LIGHT		

This grading plan is a part of drainage study #457 which was received on 10/30/12 and App'd on 11/1/12. Page 2 of 11

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE ______ PROJ-NO. ______

LVVWD APPROVED FIRE FLOW 2,375 GPM AT 20 PSI RESIDUAL

BENCHMARK:
CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DEER SPRINGS AND GRAND CANYON DRIVE.

ELEVATION = 830.34016 Meters (NAVD'88)
ELEVATION = 2724.21 Feet (NAVD'88)

BASIS OF BEARINGS:
NORTH 89°47'05" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 19, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, NEVADA AS SHOWN BY MAP THEREOF ON FILE IN FILE 107, PAGE 31 OF SURVEYS.

CITY OF LAS VEGAS FIRE DEPT.

APPROVED

BY: ______ DATE

APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OF COUNTY LAWS.

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED PRIOR TO OBTAINING FINAL APPROVAL FROM THE LVVWD.

FIRE FLOW 2,375 GPM AT 20 P.S.I. RESIDUAL.

REVISIONS | NO. | DESCRIPTION

QUEST ACADEMY

GENERAL NOTES

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

PROFESSIONAL ENGINEER - STATE OF NEVADA
ROBERT E. MOHNING
EXP. 12/31/13
CIVIL
No. 7711
10-30-12

RICK ENGINEERING COMPANY
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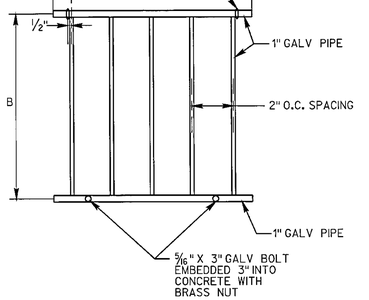
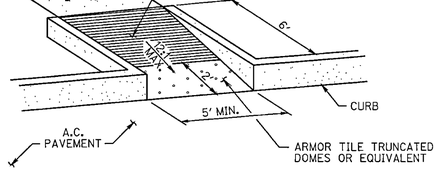
Tucson - San Diego - Sacramento - Riverside - Orange - San Luis Obispo - Bakersfield
rickengineering.com

PROJECT NO: 4313
DATE: 30-OCT-2012
DESIGNED: DGM
DRAWN: PV

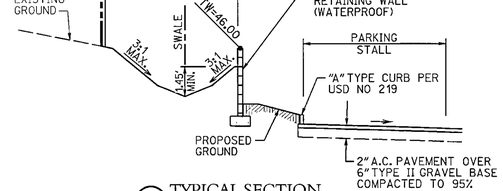


PIPE SIZE	NO. OF BARS	A	B
8"	5	12"	0.9'
10"	6	14"	1.1'
12"	7	16"	1.4'
15"	9	19"	1.7'
18"	9	22"	2'

GRATE



1 SIDEWALK RAMP DETAIL
N.T.S.



A TYPICAL SECTION
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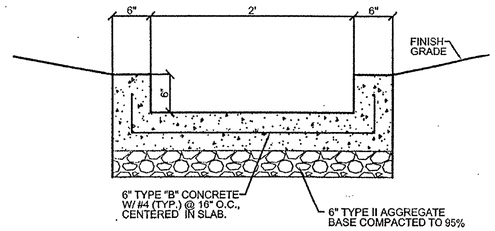

2 2' CONCRETE FLUME DETAIL
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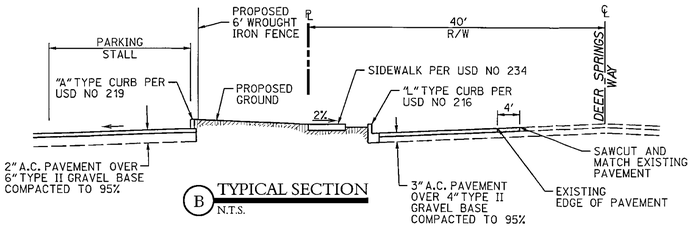

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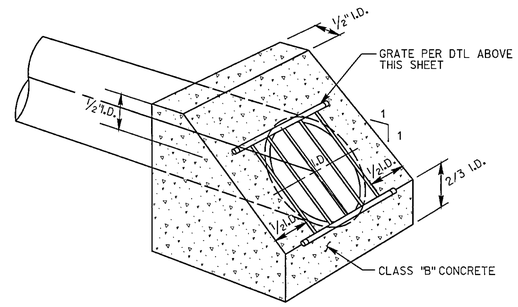

7 CONCRETE PIPE END DETAIL
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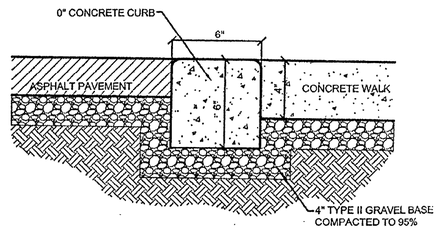

3 0' CURB DETAIL
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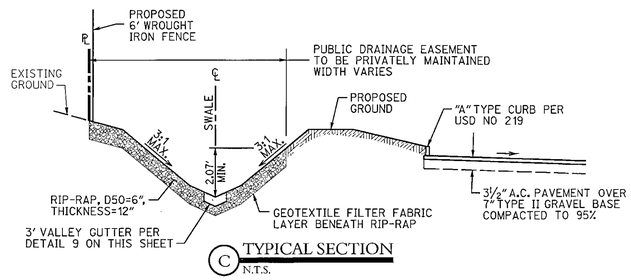

C TYPICAL SECTION
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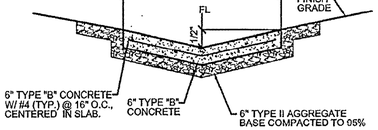

8 2' VALLEY GUTTER DETAIL
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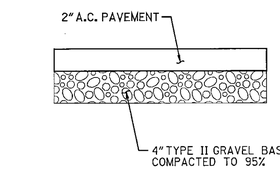
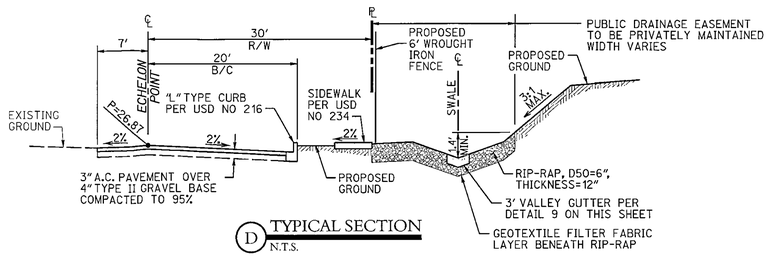


4 PARKING PAVEMENT SECTION
N.T.S.



D TYPICAL SECTION
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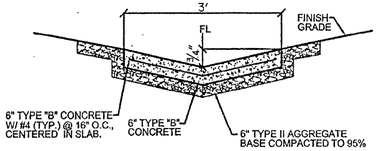

9 3' VALLEY GUTTER DETAIL
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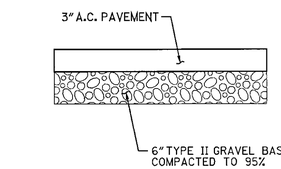

5 TRUCK PAVEMENT SECTION
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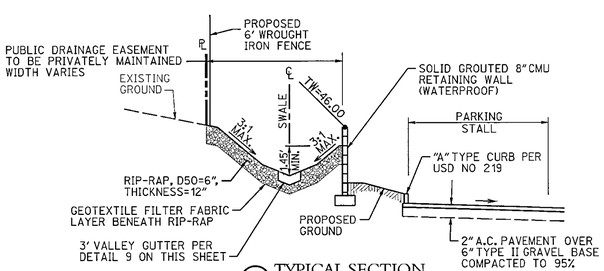
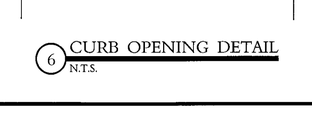
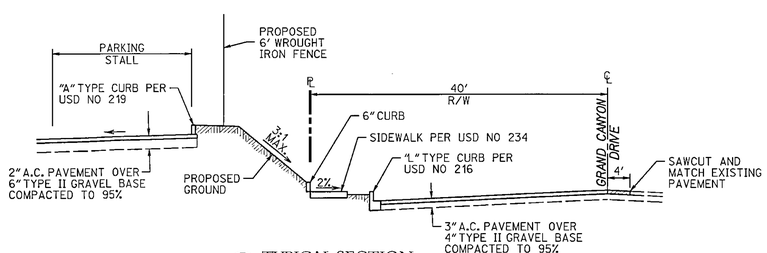


F TYPICAL SECTION
N.T.S.



6 CURB OPENING DETAIL
N.T.S.



E TYPICAL SECTION
N.T.S.

QUEST ACADEMY
DETAILS & CROSS-SECTIONS

NO.	REVISION DESCRIPTION

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-9622

ROBERT E. MOHNING — EXP. 12/31/13 — CIVIL — No. 7111 — PROFESSIONAL ENGINEER — STATE OF ARIZONA — 30/12

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6150 NORTH 16TH STREET
PHOENIX, AZ 85016
602.957.3350
(FAX)602.285.2396
rickengineering.com
Tucson - San Diego - Sacramento - Riverside - Orange - San Luis Obispo - Bakersfield

DESIGNED: DGM
DRAWN: PV
PROJECT NO: 4313
DATE: 30-OCT-2012

This grading plan is a part of drainage study #4572 which was received on 10/30/12 and App'd on 11/1/12. Page 7 of 11.

BENCHMARK:
CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

A RIVET AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DEER SPRINGS AND GRAND CANYON DRIVE.

ELEVATION = 830.34016 Meters (NAVD'88)
ELEVATION = 2724.21 Feet (NAVD'88)

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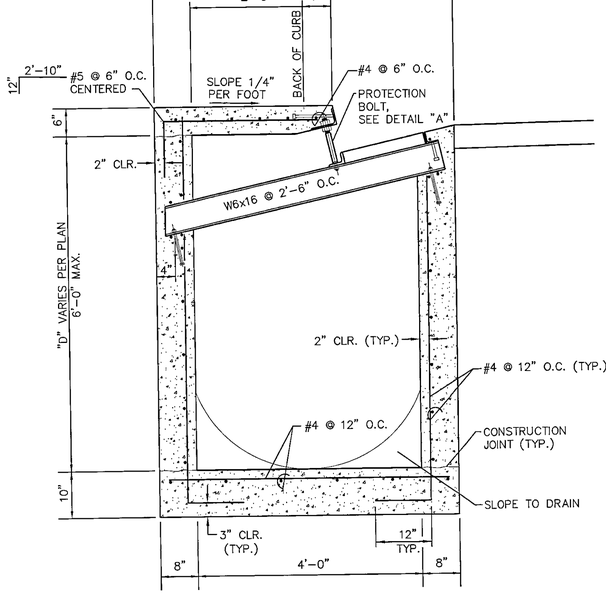
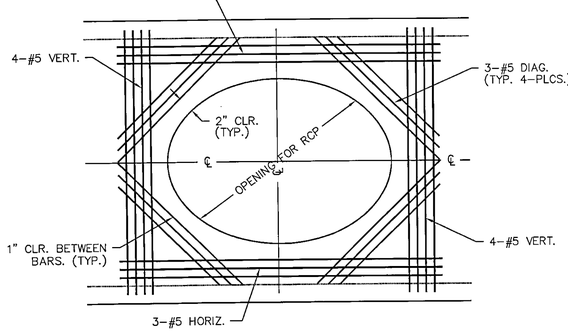
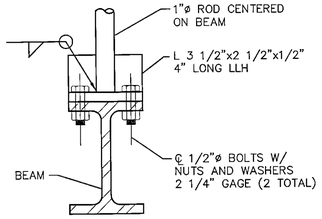
SHEET 7 OF 13
DRAWING NO.



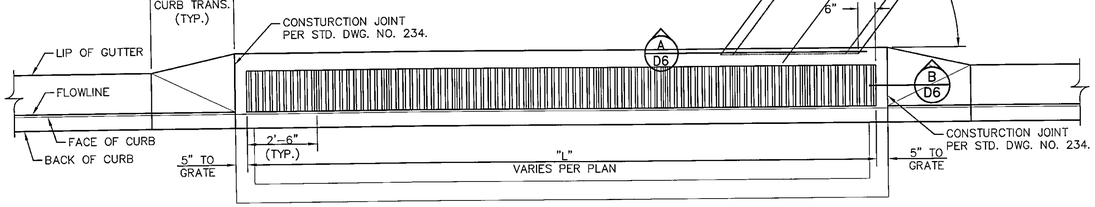
10 TYPE "CM" DROP INLET SECTION (6' DEEP MAX.)
SCALE ¾"=1'



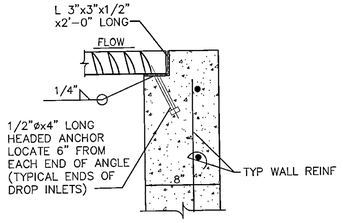
SECTION "A"
SCALE ¾"=1'



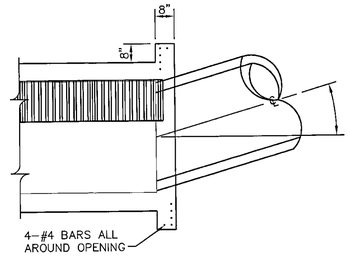
DETAIL "B"
SCALE 3"=1'



DROP INLET LAYOUT PLAN
SCALE ⅛"=1'



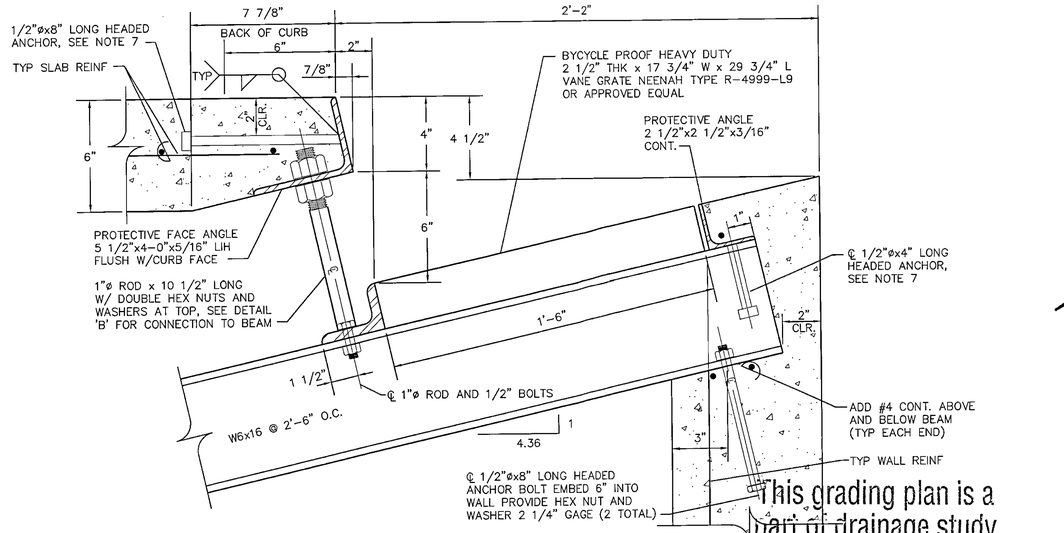
SECTION "B"
SCALE 1-½"=1'



ALTERNATE CONNECTION DETAIL
SCALE ¾"=1'

NOTES:

1. ALL EXPOSED METALS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
2. PROVIDE 1/2" (MIN.) CLEARANCE ALL AROUND THE STEEL BEAM, DRY PACK AFTER INSTALLATION.
3. WHEN REQUIRED BY LENGTH OF OPENING, PLATE ANGLE MAYBE DELIVERED IN SECTIONS AND BUTT WELDED IN PLACE.
4. ALL GALVANIZING DAMAGED BY WELDING SHALL RECEIVE TWO COATS OF GALVALLOY OR EQUAL.
5. CONCRETE SHALL BE MODIFIED CLASS DA, SEE SPECIAL PROVISIONS SECTION 501.
6. SEE GENERAL NOTES FOR STRUCTURES ON DWG D8.
7. ANGLE ANCHORS SHALL BE EMBEDDED MIDPOINT IN EACH ENDWALL AND EVENLY SPACED. (MAXIMUM SPACING OF 2')



PROTECTIVE FACE & ROD - DETAIL "A"
SCALE 3"=1'

This grading plan is a part of drainage study #4572 which was received on 10/30/12 and App'd on 11/1/12. Page 11 of 11.

BENCHMARK:
CITY OF LAS VEGAS BENCHMARK: 6LV90 19C4

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NO.	DESCRIPTION	DATE

QUEST ACADEMY
DETAILS & CROSS-SECTIONS

WALTZ CONSTRUCTION
449 SOUTH 48TH STREET, STE. 105
TEMPE, ARIZONA
PHONE: 480-759-3922

PROFESSIONAL ENGINEER-STATE OF NEVADA
ROBERT E. MOHNING
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30-12

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DESIGNED: DGM
DRAWN: PV

PROJECT NO: 4313
DATE: 30-OCT-2012

SHEET 13 OF 13
DRAWING NO.