

DS #: 5217

APN: 138-03-602.018

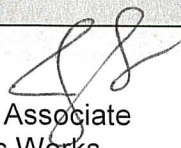
PROJECT: Red Coach Mini Storage

SUBMITTAL: 1st

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		December 3, 2019
TO: Land Development Services Department of Building & Safety		FROM: Jennifer Shinn, P.E.  Flood Control, Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for:	
	Red Coach Mini Storage	
Cross Streets:	SEC of Balsam Street & Red Coach Avenue	COPIES TO:
File Number:	F:\Depot\DSMemos\DS5217A.doc	Baughman & Turner, Inc.
Parcel Number:	138-03-602-018	Investment Solutions, Inc.
Zoning Action:	Sdr-75990	Bart Anderson, P.E., DevCo
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES X	NO
		CCPW

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	11/14/2019	12/2/2019	See Comments Below	\$400.00	3645678: \$400
TOTAL FEES (LDDRS):				\$400.00	----

REMARKS:

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

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

Note that the Clark County Regional Flood Control District (District) has begun efforts to update the Hydrologic Criteria and Drainage Design Manual (HCDDM) and is requesting participation from the engineering community. The District is collecting comments and suggestions on errors, clarifications, or changes needed to the current Manual and/or content and usability enhancements to be incorporated into the updated Manual. Additional information on procedures and deadline to provide feedback and comments are available online at (<http://www.ccrfd.org/hcddmupdate.html>).

1. The site is adjacent to Clark County's jurisdiction. The engineer must coordinate with Clark County Department of Public Works (CCPW) and incorporate any concerns for boundary conditions along the western and northern borders. CCPW concurrence is required prior to final acceptance of the study.
2. The Proposed Condition increases the flow discharging from the site. Provide FlowMaster sections for Balsam Street and Red Coach Avenue to account for these increases and demonstrate no adverse impacts to the downstream properties.
3. Revise all curbs such that curbs that convey flows are L-Type.
4. Clearly identify and label the different jurisdictions.

5. Label the existing storm drain facilities with the CLV and CC Drawing Numbers.
6. Reference CCAUSD for commercial driveways.
7. The finish floor elevations shown on the Grading Details Sheet do not match the Grading Plan. Revise the pertinent plans accordingly.
8. Revise Section B to reflect the correct cross slope.
9. Revise the directional arrow for Section C on the Grading Plan.
10. The curb flow line is higher than the onsite flow line discharging through the sidewalk drain at the southwest corner of the subject site. Revise accordingly to provide for positive drainage.
11. Provide curb flow line at the northeast corner of the site to demonstrate positive drainage through the sidewalk drain.
12. Provide a note on the Grading Plan to protect the existing drop inlet in place.

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

END OF REMARKS

jks

T/R/S: T20S/R60E/03
AREA L-03

**TECHNICAL DRAINAGE STUDY UPDATE FOR
RED COACH MINI STORAGE
SECTION 03, TOWNSHIP 20 SOUTH, RANGE 60 EAST
CITY OF LAS VEGAS, NEVADA**

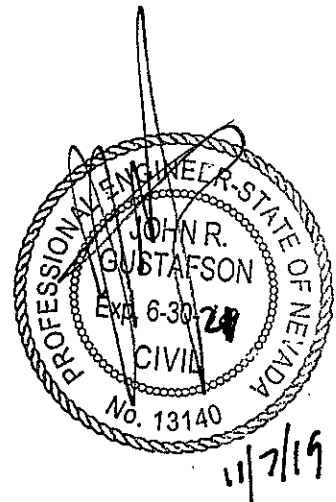
November 7, 2019

PREPARED FOR:

INVESTMENT SOLUTIONS, INC.
PO BOX 80987
LAS VEGAS, NEVADA 89180

PREPARED BY:

BAUGHMAN & TURNER, INC.
1210 HINSON STREET
LAS VEGAS, NEVADA 89102
TEL: (702) 870-8771/FAX: (702) 878-2695



HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Red Coach Mini Storage Date: 10/14/2019
 Location of Development: a) Descriptive (Cross Streets) North/South: Balsam Street
 East/West: Red Coach Avenue
 b) Section: 3 Township: 20 S Range: 60 E
 c) APN: 138-03-602-018

Name of Owner: Investment Solutions, Inc.
 Telephone No.: (702) 528-3199 Fax No.: _____ E-Mail Address: tom@lvagency.com
 Address: PO Box 80987 Las Vegas, NV 89180

Contact Person-Name: Sunshine Woods Telephone No.: 702-870-8771
 *E-Mail Address: sunshinew@baughman-turner.com Fax No.: 702-878-2695

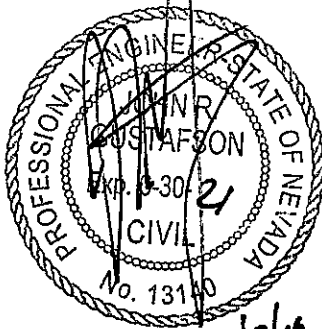
Firm: Baughman & Turner, Inc.
 Address: 1210 Hinson Street Las Vegas, NV 89102

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	☒ Building Permit	

1. Total Owned Land Area: At Site: 1.04 ac Being Developed/Disturbed: 1.04 ac
2. Is a portion or all the subject property located in a designated FEMA Flood Hazard Area? ☐ Yes** ☒ No
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☐ Yes** ☒ No
4. Proposed type of development (Residential, Commercial, Etc.): Commercial
5. Approximate upstream land area which drains to the subject site: 0 acres
6. Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation: TDS for PM 23-01, DS3218C, approved April 23, 2004 by Baughman & Turner, Inc.
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: To Red Coach and Balsam

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



Engineer's Seal

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

*New Required Field

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

	Revision	Date
Local Entity File No.		

REFERENCE:

STANDARD FORM 1



CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

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

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

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

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

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

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

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

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
		Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.
NA		Ten-foot wide public drainage easements to be privately maintained are allowed for flow less than 20 cfs. The depth of flow entering the easement must be checked using the submerged weir calculation.
✓		The limits of the flood zones and the base flood elevations (BFE) must be shown on all grading plans for all developments within a Special Flood Hazard Zone A, AO, AE, etc.
✓		Minimum finish floor elevation is 6 inches above highest adjacent top of curb. Finish floor calculations must include allowances for super elevations on curves and velocity head for tee intersections.
✓		Finished floor elevations for buildings adjacent to public drainage easements must be a minimum of 18 inches above the Q100 weir of submerged weir elevation, whichever is greater.

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

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

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

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

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL																										
DRAINAGE SUBMITTAL CHECKLIST																										
Project Name: Red Coach Mini Storage	Map ID:																									
Firm Name: Baughman & Turner, Inc.	Engineer:																									
Address: 1210 Hinson Street																										
City: Las Vegas	State: NV	Zip: 89122																								
Phone Number: 702-870-8771	Fax Number: 702-8782695																									
Property Owner: Investment Solutions, Inc.																										
Address: PO Box 80987																										
City: Las Vegas	State: NV	Zip: 89180																								
Reviewed By:	Date Received:	Date Accepted for Review:																								
The following checklist is intended as a guide for the engineer preparing a Technical Drainage Study to submit to the local entity and Clark County Regional Flood Control District (if necessary). The listed items are the minimum information required prior to the entity performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the Clark County Regional Flood Control District (CCRFCD) Hydrologic Criteria and Drainage Design Manual (MANUAL). This document is intended as an aid in preparing Technical Drainage Studies. Each study submitted is reviewed for compliance with local and regional criteria. This form is not intended to be all inclusive and does not limit the extent of the information, calculations or exhibits which may be necessary to properly evaluate the intended land use. If items are not applicable for the subject site, provide N/A. I. GENERAL REQUIREMENT <table style="width: 100%;"> <tr> <td style="width: 10%;">Yes</td> <td style="width: 10%;">No</td> <td></td> </tr> <tr> <td>☒</td> <td>☐</td> <td>Design Manual Standard Form 1 with the engineer's seal and signature.</td> </tr> <tr> <td>☒</td> <td>☐</td> <td>Design Manual Standard Form 4.</td> </tr> <tr> <td>☒</td> <td>☐</td> <td>2 copies of the 24" x 36" Drainage Plan.</td> </tr> <tr> <td>☐</td> <td>☒</td> <td>A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.</td> </tr> </table> II. MAPS AND EXHIBITS <table style="width: 100%;"> <tr> <td style="width: 10%;">Yes</td> <td style="width: 10%;">No</td> <td></td> </tr> <tr> <td>☒</td> <td>☐</td> <td>A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.</td> </tr> <tr> <td>☒</td> <td>☐</td> <td>A copy of the current CCRFCD Master Plan Update Figure, (F-x), for Flood Control Facilities and Environmental areas with the site delineated.</td> </tr> </table>			Yes	No		☒	☐	Design Manual Standard Form 1 with the engineer's seal and signature.	☒	☐	Design Manual Standard Form 4.	☒	☐	2 copies of the 24" x 36" Drainage Plan.	☐	☒	A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.	Yes	No		☒	☐	A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.	☒	☐	A copy of the current CCRFCD Master Plan Update Figure, (F-x), for Flood Control Facilities and Environmental areas with the site delineated.
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REFERENCE:		STANDARD FORM 2																								

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS (Continued)

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

III. DRAINAGE PLAN

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

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
<u> </u>	<u>N/A</u>	Streets with off-set crowns.
<u> X </u>	<u> </u>	Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
<u> X </u>	<u> </u>	Property lines.
<u> X </u>	<u> </u>	Right-of-way lines and widths, existing and proposed.
<u> X </u>	<u> </u>	Existing improvements and their elevations.
<u> X </u>	<u> </u>	Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
<u> X </u>	<u> </u>	Concentration points and drainage flow direction with Q_{100} and V_{100} and D_{100} in streets.
<u> X </u>	<u> </u>	Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
<u> X </u>	<u> </u>	Location and cross-section of street capacity calculations.
<u> X </u>	<u> </u>	Cross-sectional detail for channels, including cutoff wall locations.
<u> X </u>	<u> </u>	Existing and proposed drainage facilities, appurtenances, and connections (i.e., sidewalk, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, material, shape, and slope with plan and profile and HGL calculations.
<u> </u>	<u>N/A</u>	Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
<u> </u>	<u>N/A</u>	Location and detail of existing, proposed, and future block wall openings. Minimum size is 18" x 48". Wrought iron gate is required for flows > 10 cfs.
<u>N/A</u>	<u> </u>	Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.
<u> X </u>	<u> </u>	Perimeter retaining wall locations. All existing and proposed walls (retaining screen and flood) must be shown with adjacent ground elevations. Flood walls with 8-inch concrete masonry unit.
<u> X </u>	<u> </u>	Building and/or lot numbers.
<u> X </u>	<u> </u>	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
<u> X </u>	<u> </u>	Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

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

IV. HYDROLOGIC ANALYSIS

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

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

- | Yes | No | |
|-------------------------------------|-------------------------------------|--|
| ☐ | ☒ | <u>N/A</u> Flow split calculations and supporting documentation or reference for the method of flow split calculations used. |
| ☐ | ☐ | Normal depth street flow calculations and cross section diagrams for all interior and perimeter streets. Provide "d x v" products for the Q_{100} and Q_{10} flows representing the worst case for interior and all perimeter streets. $Q_{100} d \times v \leq 8$. $Q_{10} d \times v \leq 6$ and 12 foot dry lane for rights-of-way ≥ 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan. |
| ☐ | ☐ | A summary table of interior and exterior street capacity calculations showing the street name, Q_{100} flow, slope, depth of flow, velocity and depth times velocity product and streets needing to meet 12 foot dry lane criteria. |
| ☐ | ☒ | <u>N/A</u> Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged.) |
| ☐ | ☒ | <u>N/A</u> Appropriate hydraulic calculations at drainage easement entrance and discharge locations to set finish floor elevations. Hydraulic calculations must include submerged weir, super-elevation and tee intersection losses, where appropriate. |
| ☒ | ☐ | <u>X</u> Provide necessary freeboard requirements to set the finished floor elevations of all proposed buildings, 2 x depth of flow or depth of flow plus 18 inches of freeboard, whichever is less. The minimum requirement is 6 inches above adjacent upstream top of curb. Buildings adjacent to drainage easements must always be provided with 18 inches of freeboard above the Q_{100} weir height or flow depth, whichever is greater. |
| ☐ | ☒ | <u>N/A</u> A complete water surface profile analysis (HEC-2, HEC-RAS, etc.) for channel flows and FEMA Zone A flood zones. <ul style="list-style-type: none"> • Field survey data. • Input and output information. • Plotted cross-sections based on survey with proper encroachments. • A map showing the location of the cross-sections. • Analysis of both sub and super-critical flow segments. • A summary table and a discussion of the results in the text of the report. |
| ☐ | ☒ | <u>N/A</u> Provide a 50 percent clogging factor in the capacity calculation for drop inlets. |
| ☐ | ☒ | <u>N/A</u> Hydraulic calculations for culverts and storm drains. D-Load calculations must be provided for storm drain pipes in public rights-of-way, including headwater pool inundation. |
| ☒ | ☐ | <u>X</u> The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed. |
| ☒ | ☐ | <u>X</u> Provide BMP type, size and supporting calculations for parking lots and LIDs (if required). |

REFERENCE:

STANDARD FORM 2

November 6, 2019
3-20-60

City of Las Vegas – Flood Control

Attn.: Mr. Albert Sung, PE

333 N. Rancho Drive
Las Vegas, Nevada 89101

**Re: Technical Drainage Study for Red Coach Mini Storage
An Update to PM 23-01, DS 3218**

Dear Mr. Sung,

Please accept this letter as our update to the Technical Drainage Study for PM 23-01 DS3218 for Red Coach Mini Storage. The original study dated October 7, 2002 was prepared by Baughman & Turner. An update was done on March 15, 2004 also proposed by Baughman & Turner and was approved April 8, 2004. Baughman & Turner, Inc. has reviewed the original study, associated updates, and addendums and still concurs with the results except as noted herein.

This update will discuss the development of a mini storage located in the most westerly portion of the original parcel for the LDS Church, since then the remaining undeveloped land has been parceled out. The undeveloped lot is located at the southeast corner of Red Coach Avenue and Balsam Street (See Figure 1, Vicinity Map). The site is surrounded by commercial, residential, and a school. The site is more specifically identifies as APN 138-03-602-018 (See Figure 2, Assessor's Parcel Map). The proposed development is for an 56,400 square foot mini storage building.

A review of the 2018 CCRFCD's Master Plan Update, Figure F-17, (see Figure 5A and 5B, Flood Control Facilities), indicates that there are no existing regional or local facilities adjacent to the site. There is an existing local facility in the intersection of Rainbow Boulevard and Red Coach Avenue and runs both north in Rainbow and east through the apartment complex parking lot. There is a drop inlet at the southwest corner of the site that was installed by the school to the south of the site. The proposed development is located at the upstream end of sub-basin PT2B2-C within the Gowan Watershed, as shown on Master Plan Figure W-4 (see Figure 6, Hydrologic Sub-basins).

The Flood Insurance Rate Map, Clark County, Nevada, Community Panel No. 32003 C 2155 F (effective date November 16, 2011), published by the Federal Emergency Management Agency (FEMA), indicates that the site is in a Zone X. A Zone X is determined to be an area outside the 0.2% annual chance floodplain (see Figure 7, Flood Insurance Rate Map).

The benchmark associated with the referenced study and grading plan for the church no longer exists. A new benchmark was established for the area. Using the new benchmark, the topography for the entire site and surrounding area has been adjusted down 0.53 inches.

As discussed in the LDS Church study, PM 23-01 and shown on the referenced Figure 8, the subject

As discussed in the LDS Church study, PM 23-01 and shown on the referenced Figure 8, the subject parcel lies within the Basin PROP. This basin is the only area to generate flows which impact the parcel. In the original study Basin PROP generates about 2 cfs and <1 cfs in the 100 and 10-yr, 6-hour storm, respectively. The parcel was analyzed as a residential development, performing a new HEC-1 calculation considering a commercial development, the site will generate 3 cfs and 2 cfs in the 100 and 10-year storms events. These flows will be dispersed to the streets in all directions, as they are in the referenced study. These flows do not impact the proposed retail pad or effect the approved pad elevation.

The referenced study set a finished floor for this pad at 2323.78 using the old benchmark system which, sits 0.53 inches above the updated benchmark. Using the new benchmark, the original study proposed a finished floor of 2323.25. As the grading plan shows, the proposed finished floor of the retail building will be set just slightly (0.02 feet) above the approved elevation and the surrounding drainage pattern stays the same. All other drainage conditions match the existing condition.

The drainage facilities proposed for this site consist of:

- Positive onsite grading;
- Finished floor set slightly above the height approved in the original study (which meets all City of Las Vegas and Clark County criteria.)
- Perpetuate existing drainage facilities and flood mitigation measures.

The contractor will provide a SWPPP plan to mitigate the nuisance water during construction. However, typical mitigation measures will be utilized such as silt curtains and/or waddles downstream of disturbed soils. Additional BMP practices such as materials handling, disposal requirements, and spill prevention methods may be implemented. Although the parking lot area for the site is less than 1 acre in size, BMP measures have been provided where onsite drainage discharges to public streets.

Please find attached our grading plan indicating the slight revisions to the parking area and the perpetuation of the existing drainage patterns. This study and associated grading plan comply with the conditions of approval for the original drainage study and site development.

If there are any questions concerning this update, please contact this office.

Sincerely,

Baughman & Turner, Inc.

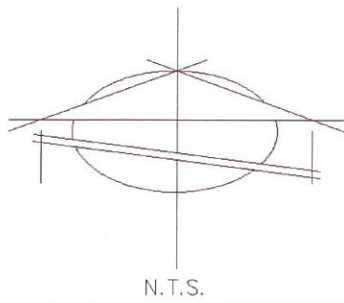


Sunshine M. Woods
Staff Engineer

REFERENCES

The following documents were used in the preparation of this hydrology study update:

- 1) DRAINAGE DESIGN MANUAL, 1999 - Hydrologic Criteria and Drainage Design Manual, Clark County Regional Flood Control District.
- 2) CCRFCD, 2018 - Flood Control Master Plan Update, Volume 1, Clark County Regional Flood Control District, James M. Montgomery Consulting Engineers, Inc., 2018.
- 3) NRCS, 2019 - Soil Survey of the Las Vegas Valley Area, Nevada, United States Department of Agriculture Soils, Natural Resources Conservation Service, Washington D.C., October 2019.
- 4) FEMA, 2011 - Flood Insurance Rate Maps, Clark County, Nevada, U.S. Federal Emergency Management Agency, November 16, 2011.
- 5) HEC, 1988 - HEC-1 Flood Hydrograph Package, User's Manual, U.S. Army Corps of Engineers, the Hydrologic Engineering Center, Davis, California, 1988.
- 6) LDS Church, 2002 – Technical Drainage for PM 23-01, dated September 23, 2002, by Baughman & Turner, Inc., approved April 23, 2004.



VICINITY MAP

FIGURE 1



BAUGHMAN & TURNER, INC.
 CIVIL ENGINEERS LAND SURVEYORS LAND PLANNERS
 1210 HINSON STREET LAS VEGAS, NEVADA
 (702) 870-8771 89102

PREPARED FOR :

**RED COACH MINI
STORAGE**

DATE: 2019
 DESIGN: SW
 DRAWN: SW
 JOB: 3-20-60

NOTES

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

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

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

USE THIS SCALE (FEET) WHEN MAP REDUCED FROM 11X17 ORIGINAL
0 100 200 400 600 800

ASSESSOR'S PARCELS - CLARK COUNTY, NV.
Briana Johnson - Assessor

PARCEL BOUNDARY

SUB BOUNDARY

PM/LD BOUNDARY

ROAD EASEMENT

MATCH / LEADER LINE

HISTORIC LOT LINE

HISTORIC SUB BOUNDARY

HISTORIC PM/LD BOUNDARY

SECTION LINE

CONDOMINIUM UNIT

AIR SPACE PCL

RIGHT OF WAY PCL

SUB-SURFACE PCL

001 ROAD PARCEL NUMBER

001 PARCEL NUMBER

1.00 ACREAGE

202 PARCEL SUB/SEQ NUMBER

PB 24-45 PLAT RECORDING NUMBER

5 BLOCK NUMBER

5 LOT NUMBER

GL5 GOV. LOT NUMBER

BOOK

T20S R60E

SEC

3

MAP

S 2 NE 4

138-03-6

099 100 101

126 125 124

137 138 139

164 163 162

6 5 4 3 2 1

7 8 9 10 11 12

18 17 16 15 14 13

19 20 21 22 23 24

30 29 28 27 26 25

31 32 33 34 35 36

8 4 8 4

5 1 5 1

6 2 6 2

7 3 7 3

8 4 8 4

5 1 5 1

Scale: 1" = 200'

Rev: 1/8/2019

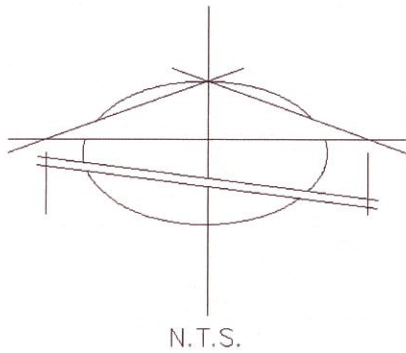
CLARK COUNTY

NEVADA

This is a detailed assessor's map of parcels in Clark County, NV. The map shows a grid of lots, many of which are numbered. Key roads include Lone Mountain Village, Lone Mountain Village - Unit 3 and 4, Lone Mountain Village - Unit 4, Golden Desert Ave, Red Coach Ave, Balsam St, Oran K Gragson Hwy, Tenaya Ave, Slick Ave, Ornate Ct, Craig Rd, and Rainbow Blvd. Landmarks and areas labeled include Lone Mountain Village, Lone Mountain Village - Unit 3 and 4, Lone Mountain Village - Unit 4, Golden Desert Ave, Red Coach Ave, Balsam St, Oran K Gragson Hwy, Tenaya Ave, Slick Ave, Ornate Ct, Craig Rd, and Rainbow Blvd. The map also shows various lots, many of which are numbered. The map is titled 'ASSESSOR'S PARCELS - CLARK COUNTY, NV. Briana Johnson - Assessor'. The map includes a scale bar (0 to 800 feet) and a north arrow. The map is dated 1/8/2019. The map is for assessment use only and does not represent a survey. No liability is assumed for the accuracy of the data delineated herein. Information on roads and other non-assessed parcels may be obtained from the Road Document Listing in the Assessor's Office. This map is compiled from official records, including surveys and deeds, but only contains the information required for assessment. See the recorded documents for more detailed legal information.

FIGURE 2

TAX DIST 125,200



AERIAL VIEW

FIGURE 3

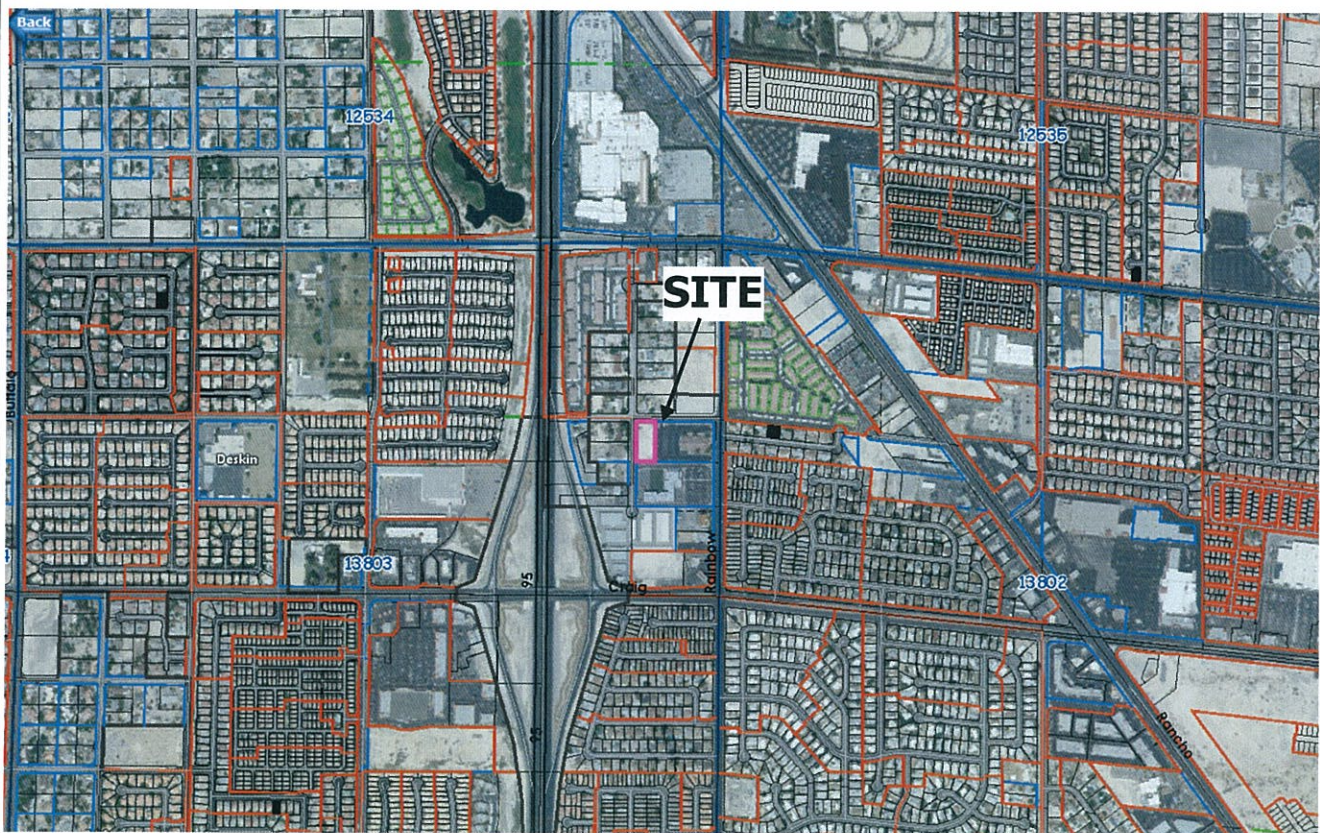
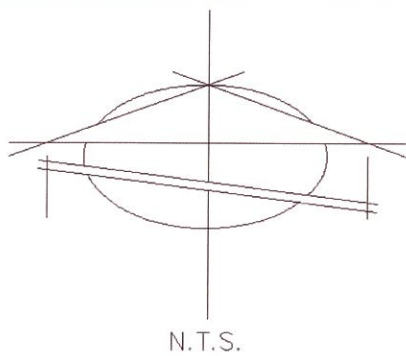


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PREPARED FOR :

**RED COACH MINI
STORAGE**

DATE: 2019
 DESIGN: SW
 DRAWN: SW
 JOB: 3-20-60



GENERAL AERIAL VIEW

FIGURE 4



BAUGHMAN & TURNER, INC.
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 (702) 870-8771 89102

PREPARED FOR :

**RED COACH MINI
STORAGE**

DATE: 2019
 DESIGN: SW
 DRAWN: SW
 JOB: 3-20-60



LEGEND

-

A 10x10 grid map of the Los Angeles area showing major freeways. The grid is numbered 1 to 53. Freeways are color-coded: US95 (blue), I-15 (orange), CC-215 (green), and I-215 (red). The grid shows the layout of these freeways and their intersections.

FIGURE 5A

Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **		
ANN ROAD CHANNEL WEST - RAINBOW								
9' X 6' RCB	167	817	CNW2B5-C	WEST3	0.99	0.30		
11' X 5' RCB	1140	817	CNW2B5-C	WEST3	0.99	0.23		
10' X 3' RCB	1240	517	CNW2A3-C	WEST3	0.63	0.35		
ANN ROAD CHANNEL WEST								
9' X 8' RCB	2050	817	2CNW2B5C	CWEST3	0.99	0.70		
6' X 6' RCB	2360	135	RCHOD8	WEST3	4.61	0.87		
6' X 6' RCB	760	135	RCHOD8	WEST3	4.61	0.34		
54" RCP	1950	135	RCHOD8	WEST3	4.61	1.17		
CENTENNIAL PKWY CHANNEL WEST								
CONC CHNL 36"W 9"D 0:1 SS	1130	3771	CNW3B3-C	WEST3	5.64	0.60		
CONC CHNL 36"W 9"D 0:1 SS	1340	3523	CNW2D4-C	WEST3	5.14	1.00		
2-18" X 8.5" RCBC @ RIO VISTA	100	3523	CNW2D4-C	WEST3	5.14	0.51		
CONC CHNL 36"W 9.5"D 0:1 SS	405	3523	CNW2D4-C	WEST3	5.14	0.51		
CONC CHNL 36"W 9"D 0:1 SS	575	3234	CNW2D3-C	WEST3	4.64	0.51		
CONC CHNL 32"W 10"D 0:1 SS	229	3234	CNW2D3-C	WEST3	4.64	0.51		
32" X 10" RCBC @ TENAYA	142	3234	CNW2D3-C	WEST3	4.64	0.51		
CONC CHNL 32"W 9"D 0:1 SS	579	3234	CNW2D3-C	WEST3	4.64	0.64		
CONC CHNL 32"W 8"D 0:1 SS	865	2992	CNW2B2-C	WEST3	3.83	1.59		
2-15" X 7" RCB	1738	2992	CNW2B2-C	WEST3	3.83	1.30		
22" X 7" RCB	3410	2992	CNW2B2-C	WEST3	3.83	1.85		
GOWAN OUTFALL - U.S. 95 CHANNEL								
CONC CHNL 12"W 4"D 2:1 SS	2640	318	GD17B8-C	GOW3A	0.36	0.30		
CONC CHNL 12"W 4"D 2:1 SS	2450	318	GD17B8-C	GOW3A	0.36	0.30		
GOWAN OUTFALL - ALEXANDER ROAD FACILITIES								
10' X 7' RCB	4200	829	CPT2B2	GOW3A	2.32	0.50		
CONC CHNL 12"W 5.5"D 2:1 SS	2640	574	CGD20BMC	GOW3A	2.02	0.30		
GOWAN NORTH - BUFFALO BRANCH								
2-12" X 6" RCB	1705	421	CGD14CBC	GOW3A	2.52	0.20		
2-12" X 5" RCB	1248	343	CGD14AAC	GOW3A	2.29	0.25		
2-11" X 4" RCB	1398	301	CGD17AAC	GOW3A	1.87	0.25		
11' X 5" RCB	1356	241	CGD17ABC	GOW3A	1.49	0.25		
8' X 5" RCB	1380	180	CGD20ACC	GOW3A	1.12	0.65		
5' X 5" RCB	2740	72	GD24AAC	GOW3A	0.44	0.50		
GOWAN BELTWAY WEST								
48" RCP	2527	115	LMBWDB	GOW4A	10.81	4.37		
72" RCP	131	115	LMBWDB	GOW4A	10.81	2.21		
72" RCP OUTLET	1522	115	LMBWDB	GOW4A	10.81	0.30		
589 AC-FT LONE MOUNTAIN-BELTWAY DETENTION BASIN								
17,100 CFS PMF SPILLWAY		17100	CLMBW1	GOW3B	3.64			
60" RCP	375	660	UVB1-1	GOW3A	0.37	8.06		
ENERGY DISSIPATOR	162	660	UVB1-1	GOW3A	0.37	50.00		
42" RCP	92	660	UVB1-1	GOW3A	0.37	7.00		
8' X 8" RCB CONNECTOR PIPE UNDER LONE MOUNTAIN	899				0.25			
20' X 10' RCB	100	3589	CWRBW1	GOW3B	2.41	25.00		
14' X 9' RCB	648	3156	CHLBW1-C	GOW3A	5.83	1.27		
14' X 9' RCB	1182	3156	CHLBW1-C	GOW3A	5.83	2.89		
14' X 9' RCB	3414	3156	CHLBW1-C	GOW3A	5.83	1.77		
10' X 8' RCB	739	1823	CEFP0A2	GOW3A	4.94	2.78		
GOWAN BOX CANYON								
66" RCP	258	696	LWBW1	GOW3A	0.47	10.00		
ENERGY DISSIPATOR	206	696	LWBW1	GOW3A	0.47	39.00		
6' X 4' RCB	95	696	LWBW1	GOW3A	0.47	4.72		
66" RCP	6783	39	BOXDET	GOW3A	3.41	6.55		
GOWAN NORTH - DURANGO BRANCH								
12' X 6" RCB	2629	905	CLV14-C	GOW3A	1.40	0.91		
9' X 6" RCB	865	681	CLV20-C	GOW3A	0.98	1.50		
GOWAN NORTH - EL CAPITAN BRANCH								
10' X 8" RCB	1436	474	CWRJ5-C*	GOW3A	1.95	1.07		
10' X 7" RCB	1330	474	CWRJ5-C	GOW3A	1.95	0.82		
10' X 7" RCB	1290	439	CHLFR-C	GOW3A	1.69	1.06		
10' X 7" RCB	1335	382	CARFR-C	GOW3A	1.45	0.54		
ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
GOEC		GOWAN NORTH - EL CAPITAN BRANCH						
0100	P	10' X 6" RCB	1320	321	CEAFR-C	GOW3A	1.21	0.76
0126	P	10' X 7" RCB	1320	290	CTFRF-C	GOW3A	0.96	0.38
0152	P	7' X 6" RCB	1320	238	CARFP-C	GOW3A	0.70	0.77
0176	P	78" RCP	1320	190	CCPFR-C	GOW3A	0.46	1.15
GOL2		GOWAN LONE MOUNTAIN SYSTEM-BRANCH 2						
0000	E	5' X 4" RCB	150	359	CRBW	GOW3A	0.36	14.60
0003	E	66" RCP	607	359	CRBW	GOW3A	0.36	1.97
0014	E	84" RCP @ ALEXANDER	125	359	CRBW	GOW3A	0.36	4.00
GOL3		GOWAN LONE MOUNTAIN SYSTEM-BRANCH 3						
0000	E	2-10' X 10" RCBC @ BELTWAY	500	3713	CLMT5	GOW3A	7.83	3.39
0010	E	CONC CHNL 20"W 10"D 0:1 SS	3037	3277	CRCLMT1R	GOW3A	7.31	2.78
GOL5		GOWAN LONE MOUNTAIN SYSTEM-BRANCH 5						
0000	E	6' X 5" RCB	309	421	UVB2	GOW3A	0.33	7.69
0006	E	CONC CHNL 6"W 5"D 0:1 SS	740	421	UVB2	GOW3A	0.33	3.85
0020	E	6' X 5" RCBC @ ALEXANDER RD	815	421	UVB2	GOW3A	0.33	2.08
0032	E	CONC CHNL 6"W 5"D 0:1 SS	1756	421	UVB2	GOW3A	0.33	1.67
GOLM		GOWAN LONE MOUNTAIN SYSTEM						
0000	E	78" RCP	2590	278	CLV15-C	GOW4A	11.09	1.80
0049	E	6' X 5" RCB	585	278	CLV15-C	GOW4A	11.09	1.87
0060	E	66" RCP	817	278	CLV15-C	GOW4A	11.09	2.40
0075	E	60" RCP	1385	278	CLV15-C	GOW4A	11.09	2.55
0101	E	54" RCP	700	184	LMTNDB	GOW4A	10.74	1.74
0115	E	48" RCP	1799	184	LMTNDB	GOW4A	10.74	3.08
0140	E	42" RCP	438	184	LMTNDB	GOW4A	10.74	1.60
0142	E	48" RCP	348	184	LMTNDB	GOW4A	10.74	2.14
0144	E	66" RCP	196	184	LMTNDB	GOW4A	10.74	5.44
0145	E	66" RCP OUTLET	378	184	LMTNDB	GOW4A	10.74	0.90
0146	E	888 AC-FT LONE MOUNTAIN DETENTION BASIN		6518	LMTNIN	GOW3B	6.43	
0147	E	36,000 CFS PMF SPILLWAY		36000	LMTNIN	GOW3B	6.43	
0150	E	DROP STRUCTURE	481	5731	CGABW	GOW3B	5.49	
0162	E	28' X 8" RCBC @ HUALAPAI	625	5731	CGABW	GOW3B	5.49	1.86
0174	E	CONC CHNL 28"W 8"D 0:1 SS	2715	5532	CCLMT5	GOW3B	5.19	3.20
0226	E	10' X 10" RCBC @ BELTWAY	246	2246	CUVB2	GOW3A	1.67	2.50
0230	E	10' X 10" RCB	290	1931	CLMT3	GOW3A	1.34	2.50
0236	E	CONC CHNL 15"W 8"D 0:1 SS	869	1931	CLMT3	GOW3A	1.34	3.69
GOLO		GOWAN OUTFALL - LONE MTN. ROAD BRANCH						
0275	E	8' X 6" RCB	3000	580	CPT3AA2	GOW3A	1.17	1.04
0332	E	8' X 6" RCB	150	492	CC3AA1	GOW3A	1.02	1.90
GONO		GOWAN NORTH SYSTEM						
0000	E	8' X 8" RCB OUTLET	184	523	GWNNDB	GOW5A	68.55	0.51
0001	E	8' X 8" RCB OUTLET	156	523	GWNNDB	GOW5A	68.55	0.63
0006	E	30,780 CFS PMF SPILLWAY		30780	CCLV43-C*	GOW4B	11.91	
0008	E	921 AC-FT GOWAN NORTH DETENTION BASIN		2599	CCLV43-C*	GOW4B	11.91	
0009	E	3-13' X 8" RCB	1662	2281	CLV43-C	GOW4B	11.22	0.62
0012	E	CONC CHNL 30"W 8"-9.5"D 0:1 SS	2665	2131	CCLV36-C	GOW4B	8.53	1.18
0062	E	BRIDGE 30"W 8.5"D @ CIMARRON	80	1912	CCLV15-C	GOW4B	8.02	0.30
0063	E	CONC CHNL 30"W 8.5"-10"D 0:1 SS	2302	1912	CCLV15-C	GOW4B	8.02	1.00
0110	E	2-12' X 8" RCAC @ ALEXANDER	547	1392	CHAFR2-C	GOW3B	6.26	1.00
0117	E	2-12' X 8" RCAP	424	1392	CHAFR2-C	GOW3B	6.26	1.10
0124	E	CONC CHNL 24"W 9"D 0:1 SS	887	1392	CHAFR2-C	GOW3B	6.26	1.36
0141	E	CONC CHNL 24"W 9"-10.5"D 0:1 SS	2064	1367	CCRSFR-C	GOW3B	6.12	0.59
0181	E	BRIDGE 30"W 7"D @ CRAIG	142	1367	CCRSFR-C	GOW3B	6.12	0.65
0183	E	CONC CHNL 22"W 8"-10.6"D 0:1 SS	2193	1185	CCRSFR-C	GOW3B	5.19	0.72
0225	E	CONC CHNL WIDTH VARIES DEPTH VARIES 0:1 SS	508	1144	CCLWFR-E	GOW3B	4.54	1.05
0230	E	13' X 6" RCB	256	766	CLWFR-W	GOW3B	2.46	2.78
0234	E	12' X 6" RCB	2010	766	CLWFR-W	GOW3B	2.46	1.67
0272	E	10' X 6" RCB	2797	766	CLWFR-W	GOW3B	2.46	3.15
0325	E	15' X 7" RCB	291	749	CCWRHW-C	GOW3B	2.34	4.20
0335	E	15' X 7" RCB	529	749	CWRHW-C	GOW3A	2.34	0.40
0350	P	10' X 6" RCB	3473	749	CWRHW-C	GOW3A	2.34	0.88
0411	P	10' X 6" RCB	1320	679	CARHW-C	GOW3A	1.84	0.76
ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
GONO		GOWAN NORTH SYSTEM						
0436	P	8' X 6" RCB	1320	607	CEAHW-C	GOW3A	1.50	1.14
0461	P	8' X 7" RCB	1320	508	CTRHW-C	GOW3A	1.21	0.38
0486	P	7' X 5" RCB	1320	400	CADHW-C	GOW3A	0.90	0.76
0511	P	6' X 5" RCB	1320	326	CCPHW-C	GOW3A	0.60	1.14
GOOF		GOWAN OUTFALL FACILITIES						
0511	E	8' X 5" RCB	8390	740	CPT6B-C	GOW3B	1.08	0.50
0531	E	8' X 5" RCB	1300	523	GWNNDB	GOW5A	68.55	0.50
0551	E	72" RCP	524	523	GWNNDB	GOW5A	68.55	0.62
0773	E	60" RCP	803	255	LV30-C	GOW3A	0.42	1.40
0775	E	60" RCP	1300	255	LV30-C	GOW3A	0.42	1.00
RCBC		RANCHO ROAD SYSTEM - BELTWAY CHANNEL						
0140	E	CONC CHNL 10"W 5"D 0:1 SS	2155	475	CDMNA1	WEST3	0.43	1.65
RCHB		RANCHO ROAD SYSTEM - BELTWAY						
0000	E	2-12" X 8.5" RCAP	1700	1766	CNW1C-W*	WEST3	3.91	0.63
0034	E	CONC CHNL 21"W 8"D 0:1 SS	1000	1766	CNW1C-W	WEST3	3.91	1.19
0053	E	2-12" X 8" RCBC @ SOUTH RAMP CONNECTOR	85	1465	CDW1C1-C	WEST3	3.55	1.40
0054	E	CONC CHNL 21"W 8"D 0:1 SS	432	1465	CDW1C1-C	WEST3	3.55	1.51
0062	E	TRANSITION STRUCTURE	130	1465	CDW1C1-C	WEST3	3.55	1.51
0065	E	24" X 7" RCB	480	1465	CDW1C1-C	WEST3	3.55	0.30
0074	E	24" X 6" RCB	50	1414	CNWBC6-C	WEST3	3.41	0.30
0075	E	20' X 6" RCBC @ BELTWAY	428	1414	CNWBC6-C	WEST3	3.41	2.81
0083	P	20' X 4" RCB	950	1414	CNWBC6-C	WEST3	3.41	2.49
0101	P	CONC CHNL 20"W 5"D 0:1 SS	980	1414	CNWBC6-C	WEST3	3.41	2.38
0120	E	20' X 6" RCBC @ GRAND MONTECITO	120	1414	CNWBC6-C	WEST3	3.41	1.00
0122	P	CONC CHNL 16"-20"W 6"D 0:1 SS	350	1414	CNWBC6-C	WEST3	3.41	1.84
RCHO		RANCHO ROAD SYSTEM						
0000	E	60" RCP W/ 36" ORIFICE PLATE	1183	135	RCHOD8	WEST3	4.61	0.74
0025	E	321 AC-FT RANCHO ROAD DETENTION BASIN		2057	RCHOIN	WEST3	4.61	
0027	E	18,000 CFS PMF SPILLWAY		18000	RCHOIN	WEST3	4.61	
0050	E	ENERGY DISSIPATOR	65	240	CNW1A4-C	WEST3	0.50	
0052	E	CONC CHNL 10"W 10"D 0:1 SS	115	240	CNW1A4-C	WEST3	0.50	11.73</

2018 Las Vegas Valley Master Plan Update

Figure W-4
Gowan Watershed

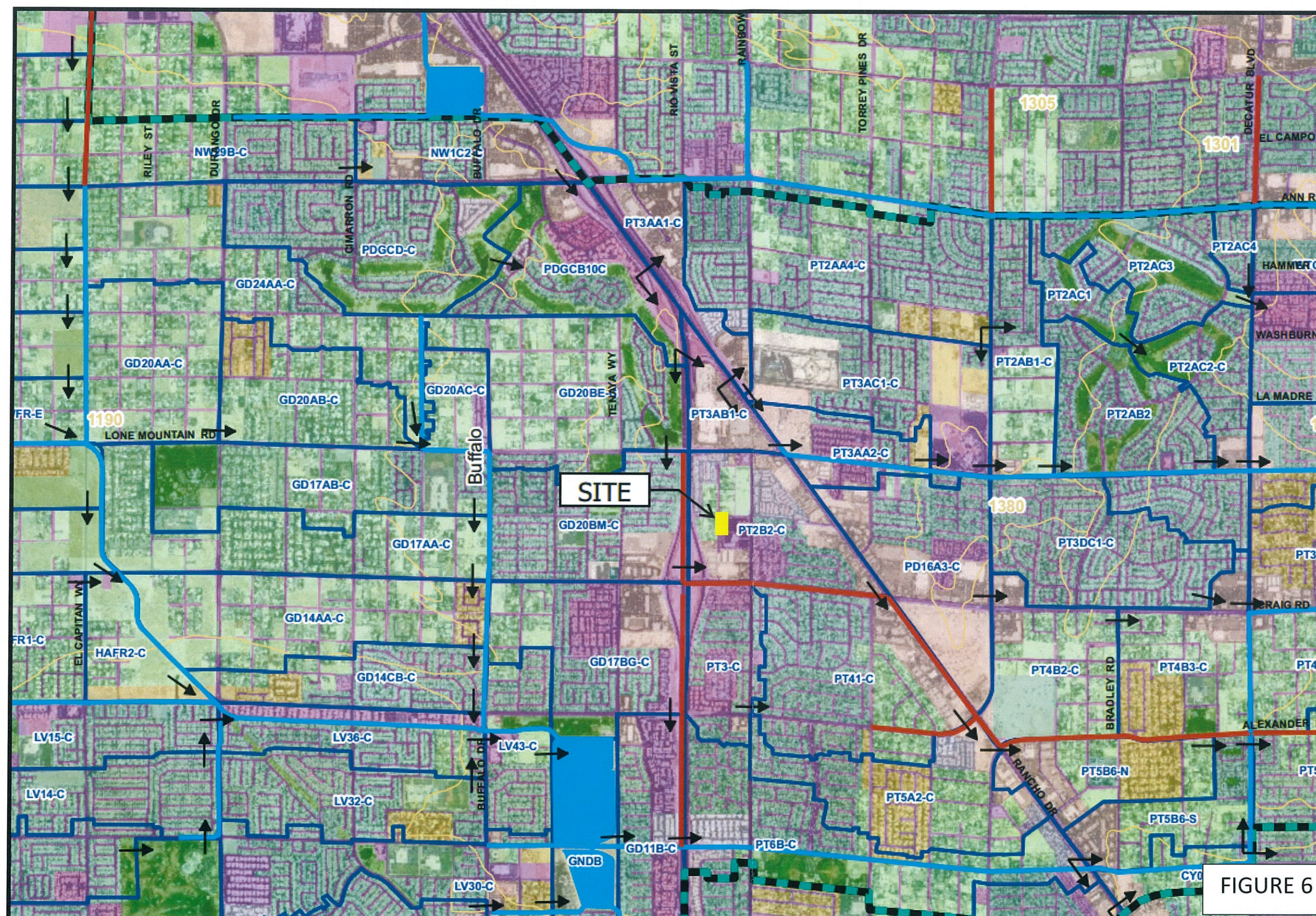
Legend

- Flow Arrows
- Concentration Points
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Ultimate Development Boundary
- Watershed
- Subbasins
- Soils
- 1: Undeveloped Land, Open desert
- 2: Parks, Golf Courses
- 3: Rural, 0.5-1 units per acre (uses 1 unit/acre)
- 4: Low-Density Residential, 1-2 units per acre (uses 2 units/acre)
- 5: Medium-Density Residential, 2-4 units per acre (uses 3 units/acre)
- 6: High-Density Residential, 4-8 units per acre (uses 6 units/acre)
- 7: Public Facility and Residential, 8-12 units/acre
- 8: Very High-Density Residential, 12 units/acre or more
- 9: Commercial, Retail, Casino, High Rise Condominiums
- 10: Light Industrial
- 11: Heavy Industrial
- 12: Schools
- 13: Lakes



Scale: 1 inch = 0.65 mile
0 0.325 0.65 1.3
Miles

FIGURE 6



National Flood Hazard Layer FIRMette



36°14'51.77"N



FIGURE 7

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, V, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee, See Notes, Zone X
	Area with Flood Risk due to Levee Zone D
OTHER AREAS	Area of Minimal Flood Hazard Zone X
	Effective LOMRs
GENERAL STRUCTURES	Area of Undetermined Flood Hazard Zone D
	Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall
OTHER FEATURES	Cross Sections with 1% Annual Chance Water Surface Elevation
	Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
MAP PANELS	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
MAP PANELS	Hydrographic Feature
	Digital Data Available
	No Digital Data Available
MAP PANELS	Unmapped

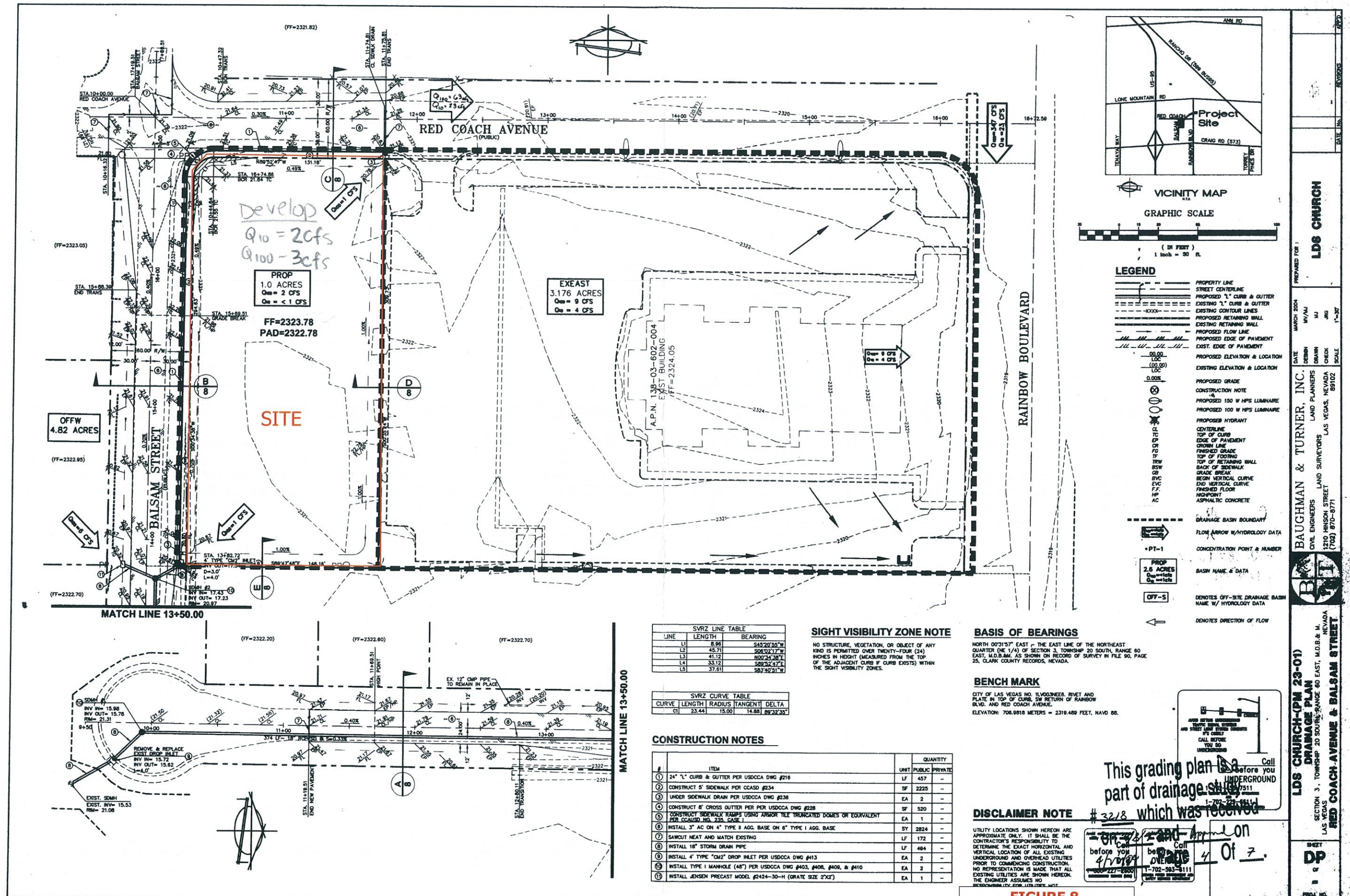


The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/10/2019 at 8:23:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.




```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 11OCT19 TIME 12:10:02
*
*****

```

```

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

```

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X X XXXXXX XXXX X
X X X X X XX
X X X X X
XXXXXX XXXX X XXXX X
X X X X X
X X X X X
X X XXXXXX XXXX XXX

```

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

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

1 HEC-1 INPUT PAGE 1

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
*DIAGRAM
1 ID
2 ID
3 ID
4 ID Developed Condition I
5 ID
6 ID File N:
7 ID
8 ID
9 IT 5 300
10 IO 5
11 IN 5
12 JR PREC 0.57 1.0
* *****
* Developed Conditions *
* *****
13 KK PROP
14 BA 0.0016
15 PB 2.77
16 PC 0.00 2 5.7 7 8.7 10.8 12.4 13 13 13
17 PC 13 13 13.3 14 14.2 14.8 15.8 17.2 18.1
18 PC 19 19.7 19.7 20.1 20.1 20.4 21.4 22.9 24.1 24.9
19 PC 25.1 25.6 27 27.8 28.1 28.3 29.5 32.2 35.2 40.9
20 PC 49.9 59 71 74.4 78.1 81.2 81.9 83.5 85.1 85.6
21 PC 86 86.8 87.6 88.8 91 92.6 93.7 95 97 97.6
22 PC 98.2 98.5 98.7 98.9 99 99.3 99.3 99.4 99.5 99.8
23 PC 99.8 99.9 100
24 LS 94
25 UD 0.062
26 ZZ

```

1 SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

13 PROP

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 11OCT19 TIME 12:10:02
*
*****

```

```

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

```


10 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

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

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS

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

JP MULTI-PLAN OPTION

NPLAN	1	NUMBER OF PLANS
-------	---	-----------------

JR MULTI-RATIO OPTION

RATIOS OF PRECIPITATION	
.57	1.00

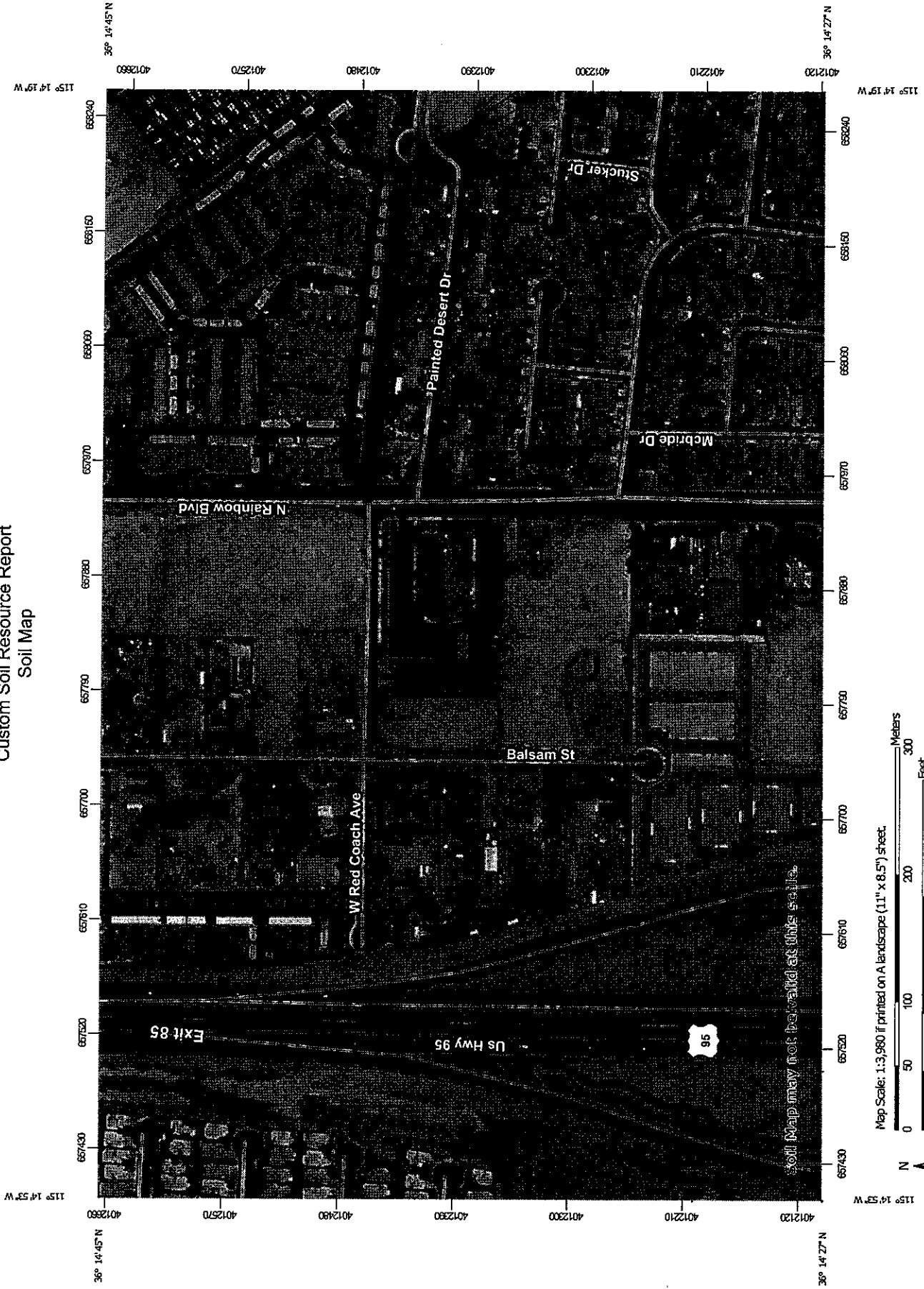
1

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1	RATIO 2
				.57	1.00
HYDROGRAPH AT					
+	PROP	.00	1	FLOW	2.
				TIME	3.50
					3.
					3.50

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

Custom Soil Resource Report Soil Map



Map Scale: 1:3,980 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

HYDROLOGIC SOIL UNITS FOR THE LAS VEGAS VALLEY
(continued)

Soil Unit - 282

Combined HSG - C

85% - Land	HSG - C
5% - Glencarb	HSG - B
5% - McCarran	HSG - B
5% - Spring	HSG - C

Soil Unit - 300

Combined HSG - D

90% - Las Vegas	HSG - D
5% - Destazo	HSG - B
5% - Grapevine	HSG - B

Soil Unit - 301

Combined HSG - D

95% - Las Vegas	HSG - D
5% - Destazo	HSG - B

Soil Unit - 302

Combined HSG - C

40% - Las Vegas	HSG - D
25% - McCarran	HSG - B
20% - Grapevine	HSG - B
5% - Badland	HSG - D
5% - Bluepoint	HSG - A
5% - Bracken	HSG - B



Soil Unit - 305

Combined HSG - C

<u>60%</u> - Las Vegas	HSG - D
<u>25%</u> - Destazo	HSG - B
5% - Bluepoint	HSG - A
5% - Glencarb	HSG - B
5% - Skyhaven	HSG - C

Soil Unit - 307

Combined HSG - C

60% - Las Vegas	HSG - D
30% - Skyhaven	HSG - C
10% - Weiser	HSG - B

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
305	Las Vegas-DeStazo complex, 0 to 2 percent slopes	76.8	100.0%
Totals for Area of Interest		76.8	100.0%

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Las Vegas Valley Area, Nevada, Part of Clark County

305—Las Vegas-DeStazo complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hrbs
Elevation: 1,400 to 5,200 feet
Mean annual precipitation: 3 to 10 inches
Mean annual air temperature: 55 to 70 degrees F
Frost-free period: 180 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Las Vegas and similar soils: 60 percent
Destazo and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Las Vegas

Setting

Landform: Alluvial flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from limestone

Typical profile

H1 - 0 to 2 inches: gravelly fine sandy loam
H2 - 2 to 8 inches: fine sandy loam
H3 - 8 to 12 inches: gravelly sandy clay loam
H4 - 12 to 16 inches: indurated

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 3 to 14 inches to petrocalcic
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 85 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 12.0
Available water storage in profile: Very low (about 1.6 inches)

Interpretive groups

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

Description of Destazo

Setting

Landform: Alluvial flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 11 inches: fine sandy loam
H2 - 11 to 51 inches: very gravelly sandy clay loam
H3 - 51 to 62 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Other vegetative classification: LIMY 3-5" P.Z. (030XB019NV_3)
Hydric soil rating: No

Minor Components

Glencarb

Percent of map unit: 5 percent
Landform: Alluvial flats
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: LOAMY BOTTOM (030XB020NV)
Hydric soil rating: No

Bluepoint

Percent of map unit: 5 percent
Landform: Fan piedmonts, sand sheets
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Other vegetative classification: LIMY SAND 5-7" P.Z. (030XB037NV_2)
Hydric soil rating: No

Skyhaven

Percent of map unit: 5 percent
Landform: Alluvial flats
Down-slope shape: Linear

TIME OF CONCENTRATION AND HEC-1 INPUT

DEVELOPMENT LDS Church - Developed Condition

CALCULATED BY Pamela Ouellette DATE

Sub-Basin Data			Initial /Overland Time (ti)				Travel Time (tt)				tc Check (Urbanized Basins)		Final tc	UD	LS	Remarks
KK			Area Ac (3)	BA Area sq mi (4)	Length Ft (5)	Slope % (6)	ti Min (7)	Length Ft (8)	Slope % (9)	Vel. FPS (10)	tt Min (11)	Total Length Ft (12)	tc= (L/180)*10 Min (13)	Lag Time hr (15)	CN (16)	HEC-1 Card
Desig: (1)	K (2)	OFFSITE	0.6528	4.82	0.00752	300	1	13.94	0.5	1.81	8.29	1200	16.67	0.16670	79	Developed
LOCAL																
OFF-W																
ONSITE																
EXEAST	0.8508	3.16	0.00493	90	1	4.26	5.68	630	0.6	1.85	5.68	720	14.00	0.09931	94	Developed
PROP	0.6528	1.04	0.00162	70	0.5	8.49	1.54	130	0.5	1.41	1.54	200	11.11	0.10022	79	Developed

K = 0.0132*CN - 0.39
 $t_i = 1.8 * (1.1 - K) * L^{0.5} / S^{0.3333}$
 $t_c = t_i + t_t$

HEC1 S/N: 1343001715 HMVersion: 6.33 Data File: ldsdev.HC1

* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* MAY 1991 *
* VERSION 4.0.1E *
* RUN DATE 07/15/1982 TIME 12:40:58 *

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

```

X X XXXXXXXX XXXXX X
X X X X X XX
X X X X X
XXXXXXXX XXXX X XXXXX X
X X X X X
X X X X X
X X XXXXXXXX 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

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

*DIAGRAM

1 ID
 2 ID LDS Church Developed Condition
 3 ID Sec 16, T22S, R61E, M.D.B. & M., Las Vegas, Nevada
 4 ID File ldsdev.hc1
 5 ID
 6 IT 5 100
 7 IO 5
 8 JR PREC .57 1.0

* *****

* * Developed Condition *

* *****

9 KK OFFC
 10 BA 0.0075
 11 PB 2.77
 12 PC 0.00 2 5.7 7 8.7 10.8 12.4 13 13 13
 13 PC 13 13 13 13.3 14 14.2 14.8 15.8 17.2 18.1
 14 PC 19 19.7 19.7 20.1 20.1 20.4 21.4 22.9 24.1 24.9
 15 PC 25.1 25.6 27 27.8 28.1 28.3 29.5 32.2 35.2 40.9
 16 PC 49.9 59 71 74.4 78.1 81.2 81.9 83.5 85.1 85.6
 17 PC 86 86.8 87.6 88.8 91 92.6 93.7 95 97 97.6
 18 PC 98.2 98.5 98.7 98.9 99 99.3 99.3 99.4 99.5 99.8
 19 PC 99.8 99.9 100
 20 LS 0 79
 21 UD .16670
 22 KK PROP
 23 BA .0016
 24 LS 0 79
 25 UD .10276
 26 KK PT-1
 27 KM COMBINE OFFC AND EXWEST
 28 HC 2
 29 KK EXEAST
 30 BA 0.0049
 31 LS 0 94
 32 UD 0.0991
 33 ZZ

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT
LINE

(V) ROUTING

(—>) DIVERSION OR PUMP FLOW

NO.

(.) CONNECTOR

(<—) RETURN OF DIVERTED OR PUMPED FLOW

9

OFFC

22

PROP

26

PT-1.....

29

EXEAST

(**) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N: 1343001715 HMVersion: 6.33 Data File: ldsdev.HC1

* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* MAY 1991 *
* VERSION 4.0.1E *
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* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *

LDS Church Developed Condition
Sec 16, T22S, R61E, M.D.B. & M., Las Vegas, Nevada
File ldsdev.hc1

7 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 101 NUMBER OF HYDROGRAPH ORDINATES
 NDDATE 1 0 ENDING DATE
 NDTIME 0820 ENDING TIME
 ICENT 19 CENTURY MARK

COMPUTATION INTERVAL 0.08 HOURS
TOTAL TIME BASE 8.33 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
 0.57 1.00

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 0.57	RATIO 2 1.00
HYDROGRAPH AT	OFFC	0.01	1	FLOW	6.
				TIME	3.67
HYDROGRAPH AT	PROP	0.00	1	FLOW	2.
				TIME	3.58
2 COMBINED AT	PT-1	0.01	1	FLOW	8.
				TIME	3.58
HYDROGRAPH AT	EXEAST	0.00	1	FLOW	9.
				TIME	3.50

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

TIME OF CONCENTRATION

BAUGHMAN & TURNER, INC.
CONSULTING ENGINEERS

Reversed / updated

PROJECT NO. : 03-20-60

FILE ..

DEVELOPMENT :

CALCULATED BY: pp

DATE: 10/11/19

[illegible]**REFERENCE:**

STANDARD FORM 4

REC'D 4-8-04

BS 3218

23

200.00

**DRAINAGE STUDY ADDENDUM 2
FOR PM 23-01
SECTION 3, TOWNSHIP 20 SOUTH, RANGE 60 EAST
CITY OF LAS VEGAS, NEVADA**

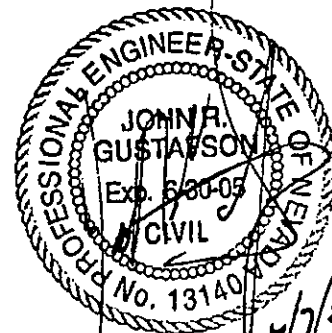
APRIL 7, 2004

PREPARED FOR:

**LDS CHURCH
50 EAST, NORTH TEMPLE
SALT LAKE, UTAH 84150**

PREPARED BY:

**BAUGHMAN & TURNER, INC.
1210 HINSON STREET
LAS VEGAS, NEVADA 89102**



Baughman & Turner, Inc.

Consulting Engineers & Land Surveyors

1210 HINSON ST.
LAS VEGAS, NEVADA 89102-1604

PHONE (702) 870-8771
FAX (702) 878-2695

April 7, 2004
03-20-60

City of Las Vegas, Land Development Services

Attn: Mr. Albert Sung, P.E.

720 South Fourth Street
Las Vegas, Nevada 89101

**Subject: Technical Drainage Study for PM 23-01
(LDS Church – Red Coach and Rainbow)**

Dear Mr. Sung,

This letter is in response to the comments and conditions of approval placed on the *Technical Drainage Study Addendum for PM 23-01*. In a memo dated March 30, 2004, the City expressed concern about the following items:

Comment No. 1: A copy of the Parcel Map has not been submitted for review. Provide the parcel map in the next submittal.

A copy of the Parcel Map has been provided for your review.

Comment No. 2: Revise all drop inlets to Modified Type CM or Neenah Pre-cast inlets. Contact Al Jankowiak at 229-2142 for an AutoCAD detail to be included within the improvement plans if Modified Type CM inlets are used.

The drop inlets located within curbs have been revised to a Modified Type CM2 per the details on the detail sheet, DT07. The grate inlet located on the west side of Balsam remains a grate type inlet.

Comment No. 3: Show the length of the proposed drop inlets on the grading plan and the plan and profile sheets.

The length of the proposed drop inlets have been shown on the grading plan and the plan and profile sheet.

April 7, 2004

14-19-60

Page 2 of 2

Comment No. 4: The Drainage Plan (Sheet DP) shows the wrong lot size for the existing LDS site. Provide correct lot size for each lot. Also, label the Q_{10}/Q_{100} in Red Coach Avenue on the drainage plan.

The correct lot size has been provided for each lot. The Q_{10}/Q_{100} in Red Coach Avenue has been added to the drainage plan.

Comment No. 5: Provide typical sections at the east and south property lines of the new residential lot. Address whether any boundary wall is proposed.

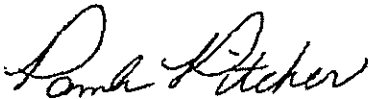
Typical sections at the east and south property lines of the new residential lot have been provided. An existing wall lies along the east property line. No other boundary wall is proposed.

We trust that this letter addresses the comments and conditions raised with the original hydrology study.

If you have any further questions, please feel free to contact this office.

Sincerely,

Baughman & Turner, Inc.



Pamela J. Ouellette Pitcher
Hydrology and Traffic Manager

PJP/ab

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM		DATE: April 23, 2004 <i>AS</i>
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: PM 23-01	
Cross Streets:	SWC Rainbow & Red Coach (by Lone Mtn.)	
File Number:	F:\Depot\DSMemos\DS3218C.doc	
Parcel Number:	138-03-602-004	
Zoning Action:		
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X
COPIES TO: Baughman & Turner, Inc.		
		LDS Church
		Bart Anderson, P.E., DEVCO

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID G.R. #
1 st Submittal	10/7/2002	10/21/2002	Not Approved	\$250.00	92709: \$250
2 nd Submittal	3/15/2004	3/29/2004	Not Approved	\$400.00	121258: \$400
3 rd Submittal	4/8/2004	4/22/2004	See Comments Below	\$400.00	122783: \$400
TOTAL FEES (LDDRS):				\$1,050.00	---

REMARKS:

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

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

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

NOTE: All land surface area disturbances over 1 acre require a storm water discharge permit issued by the Nevada Division of Environmental Protection (NDEP). A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. A storm water discharge permit application and associated information may be downloaded from the web site:

<http://www.state.nv.us/ndep/bwpc/storm01.htm>

Projects that disturb more than one acre of land must submit to NDEP a "Notice of Intent" for inclusion under Storm Water Permit No. NVR100000 along with the appropriate filling fee.

END OF REMARKS

Pbj/ays

T/R/S: T20S/R60E/03

AREA L-03

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		March 30, 2004 <i>MS</i>
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: PM 23-01	COPIES TO: Baughman & Turner, Inc.
Cross Streets:	SWC Rainbow & Red Coach (by Lone Mtn.)	LDS Church
File Number:	F:\Depot\DSMemos\DS3218B.doc	Bart Anderson, P.E., DEVCO
Parcel Number:	138-03-602-004	
Zoning Action:		
FEMA Flood Zone	YES NO X	
Proposed Storm Drain	YES NO X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID G.R. #
1 st Submittal	10/7/2002	10/21/2002	Not Approved	\$250.00	92709: \$250
2 nd Submittal	3/15/2004	3/29/2004	See Comments Below	\$400.00	121258: \$400
TOTAL FEES (LDDRS):				\$650.00	---

REMARKS:

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

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

1. A copy of the parcel map has not been submitted for review. Provide the parcel map in the next submittal.
2. Revise all drop inlets to Modified Type CM or Neenah Pre-cast inlets. Contact Al Jankowiak at 229-2142 for an AutoCAD detail to be included within the improvement plans if Modified Type CM inlets are used.
3. Show the length of the proposed drop inlets on the grading plan and the plan & profile sheets.
4. The Drainage Plan (Sheet DP) shows wrong lot size for the existing LDS site. Provide correct lot size for each lot. Also, label the Q_{10}/Q_{100} in Red Coach Avenue on the drainage plan.
5. Provide typical sections at the east and south property lines of the new residential lot. Address whether any boundary wall is proposed.

END OF REMARKS

Pbj/ays

T/R/S: T20S/R60E/03

AREA L-03

REC'D 3-15-04
DS 3218
L 3
400.00

**DRAINAGE STUDY ADDENDUM FOR PM 23-01
SECTION 3, TOWNSHIP 20 SOUTH, RANGE 60 EAST
CITY OF LAS VEGAS, NEVADA**

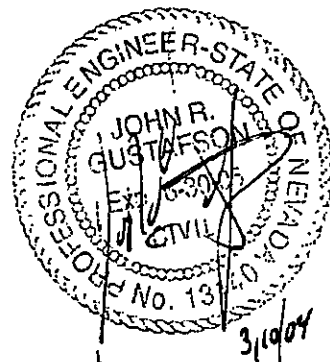
February 18, 2004

PREPARED FOR:

LDS CHURCH
50 EAST, NORTH TEMPLE
SALT LAKE, UTAH 84150

PREPARED BY:

BAUGHMAN & TURNER, INC.
1210 HINSON STREET
LAS VEGAS, NEVADA 89102



Baughman & Turner, Inc.

Consulting Engineers & Land Surveyors

1210 HINSON ST.
LAS VEGAS, NEVADA 89102-1604

PHONE (702) 870-8771
FAX (702) 878-2695

February 18, 2004
03-20-60

City of Las Vegas, Land Development Services
Attn: Mr. Albert Sung, P.E.
720 South Fourth Street
Las Vegas, Nevada 89101

Subject: Technical Drainage Study for PM 23-01
(LDS Church – Red Coach and Rainbow)

Dear Mr. Sung,

This letter is in response to the comments and conditions of approval placed on the *Technical Drainage Study for PM 23-01*. In a memo dated October 22, 2002, the City expressed concern about the following items:

Comment No. 1: The titles of the drainage study and the grading plan do not match. The purpose of the study appears to create a parcel map of two lots. Revise the title to show "PM 23-01". A technical drainage study will be required upon development of the residential lot.

The title on the grading plan has been revised to show "PM 23-01".

Comment No. 2: Provide a copy of the parcel map for review.

A copy of the Parcel Map has been provided for your review.

Comment No. 3: Provide topography 100' to the west and show the finished floor elevations of the existing homes.

Additional topography to the west was obtained as well as the finished floor elevations of the existing homes.

Comment No. 4: The offsite basin as analyzed in the study appears too small and not conclusive. The offsite area to the northwest of Red Coach and Balsam may have impact to the subject site. Provide further topography to justify the overall basins. Revise the street capacity calculations accordingly.

February 11, 2004
14-19-60
Page 2 of 3

As already identified by the topo provided, the area is extremely flat. The City's own Northwest Neighborhood Study indicates that the general slope is due east at about 0.4%. The northwest neighborhood study indicates a basin northwest of the site (PT2A2) generates 23 and 63 cfs for the 10 and 100-yr storm. Conservatively speaking, if all of that basin could reach Red Coach, the street could carry it and still meet City street standards for depth and $d \times v$. (See Appendix A). The high point in Balsam keeps flows in Red Coach and the existing and proposed finished floors are adequately elevated. No other analysis should be required.

Comment No. 5: Street slopes less than 0.4% must be proposed with a minimum 18" storm drain. Either add an 18" storm drain in Red Coach to Rainbow Boulevard or revise the street slopes to a minimum of 0.4% without negative impact to the adjacent existing residences.

In a meeting with the City of Las Vegas it was determined that it was impossible to adjust slopes in Red Coach to meet the 0.4% slope criteria. Most of the street is existing with slopes less than 0.4% and the street design requires it to meet existing grades on three sides. The street has been graded at 0.3%. No storm drain was required in Red Coach by City staff. It is impossible to drain and no place to drain it to.

Balsam Street could not meet the 0.4% slope criteria either, however, per the request of the City of Las Vegas staff, an 18-inch storm drain was designed to pick up flows in the sump areas within the street. The 18-inch storm drain will pick up the 10-year storm and then some. See Appendix B for storm drain and drop inlet analysis.

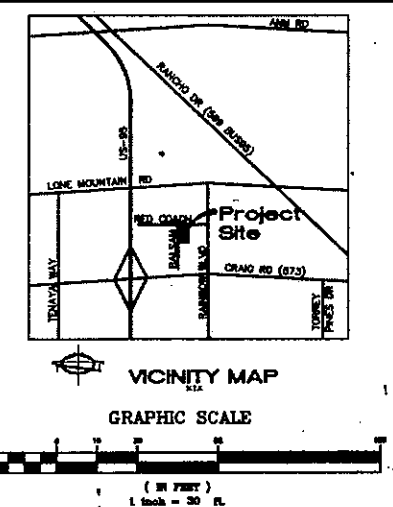
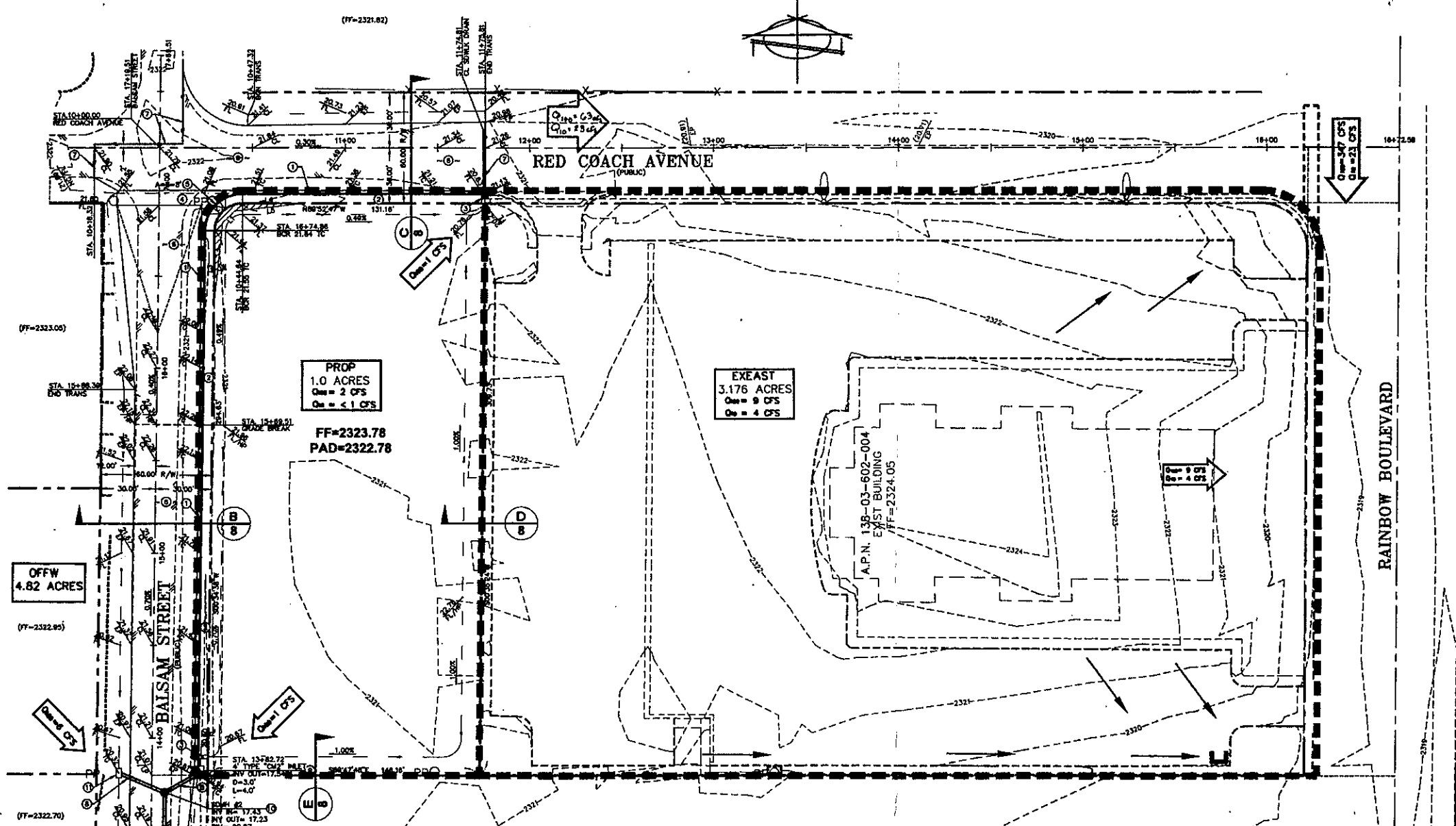
Comment No. 6: Show grade on the church site and show proposed lot grading high point and flow path in the residential lot.

Grades have been shown on the church site. Lot grading on the residential lot indicates a grading high point and a flow path.

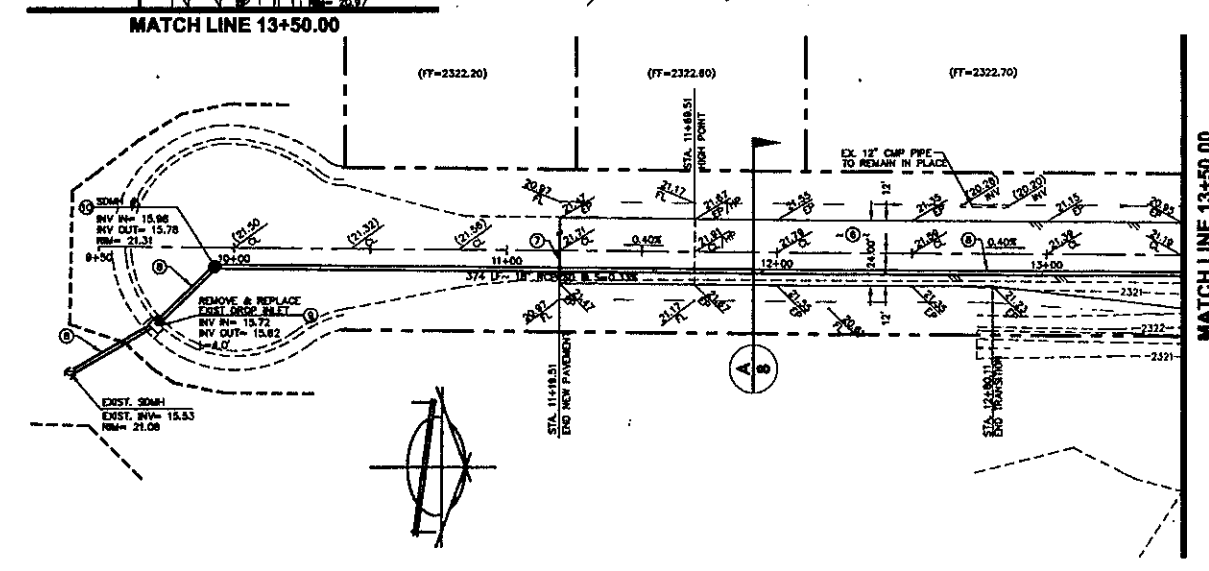
Comment No. 7: Provide correct lot size for each lot.

The correct lot size for each lot has been provided.

We trust that this letter addresses the comments and conditions raised with the original hydrology study.



- LEGEND**
- PROPERTY LINE
 - STREET CENTERLINE
 - PROPOSED 12" CURB & GUTTER
 - EXISTING 12" CURB & GUTTER
 - EXISTING CONTOUR LINES
 - PROPOSED RETAINING WALL
 - EXISTING RETAINING WALL
 - PROPOSED FLOW LINE
 - PROPOSED EDGE OF PAVEMENT
 - EXIST. EDGE OF PAVEMENT
 - PROPOSED ELEVATION & LOCATION
 - EXISTING ELEVATION & LOCATION
 - PROPOSED GRADE
 - CONSTRUCTION NOTE
 - PROPOSED 100 W HPS LUMINAIRE
 - PROPOSED 100 W HPS LUMINAIRE
 - PROPOSED HYDRANT
 - CENTERLINE
 - TOP OF CURB
 - EDGE OF PAVEMENT
 - ORIGIN LINE
 - FINISHED GRADE
 - TOP OF FOOTING
 - TOP OF RETAINING WALL
 - BACK OF SIDEWALK
 - GRADE BREAK
 - BEGIN VERTICAL CURVE
 - END VERTICAL CURVE
 - FINISHED FLOOR
 - MEASUREMENT
 - ASPHALTIC CONCRETE
 - DRAINAGE BASIN BOUNDARY
 - FLOW ARROW & HYDROLOGY DATA
 - CONCENTRATION POINT & NUMBER
 - BASIN NAME & DATA
 - OFF-SITE DRAINAGE BASIN NAME & HYDROLOGY DATA
 - DENOTES DIRECTION OF FLOW



SVRZ LINE TABLE

LINE	LENGTH	BEARING
L1	8.96	S48°20'25"W
L2	45.71	S08°32'17"W
L3	41.12	S03°34'56"E
L4	33.12	S88°32'47"E
L5	37.61	S83°40'31"W

SVRZ CURVE TABLE

CURVE	LENGTH	RADIUS	TANGENT DELTA
C1	23.44	15.00	14.86 @ 33°30'

SIGHT VISIBILITY ZONE NOTE

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

BASIS OF BEARINGS

NORTH 00°15'7" EAST - THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 3, TOWNSHIP 20 SOUTH, RANGE 90 EAST, M.D.B.M. AS SHOWN ON RECORD OF SURVEY IN FILE 90, PAGE 25, CLARK COUNTY RECORDS, NEVADA.

BENCH MARK

CITY OF LAS VEGAS NO. 1150000000, INSET AND PLATE IN TOP OF CURB, SW CORNER OF RAINBOW BLVD. AND RED COACH AVENUE.

ELEVATION: 706.9818 METERS = 2319.488 FEET, NAVD 83.

CONSTRUCTION NOTES

#	ITEM	QUANTITY	
		UNIT	PUBLIC PRIVATE
1	24" 12" CURB & GUTTER PER USDOCA DWG #218	LF	457 -
2	CONSTRUCT 5' SIDEWALK PER CCASD #234	SF	2225 -
3	UNDER SIDEWALK DRAIN PER USDOCA DWG #236	EA	2 -
4	CONSTRUCT 6" CROSS GUTTER PER PER USDOCA DWG #228	SF	520 -
5	CONSTRUCT SIDEWALK RAMP USING ARBOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCASD NO. 233, EASE J.	EA	1 -
6	INSTALL 3" AC ON 4" TYPE II AGG. BASE ON 6" TYPE I AGG. BASE	SY	2824 -
7	SAFETY HEAT AND MATCH EXISTING	LF	172 -
8	INSTALL 18" STORM DRAIN PIPE	LF	464 -
9	INSTALL 4" TYPE "CM2" DROP INLET PER USDOCA DWG #413	EA	2 -
10	INSTALL TYPE I MANHOLE (48") PER USDOCA DWG #403, #408, #409, & #410	EA	2 -
11	INSTALL JENSEN PRECAST MODEL #2424-30-H (GRATE SIZE 27x27)	EA	1 -

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND 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.

This grading plan is a part of drainage study # 3218 which was received before you on 4/1/04 and approved on 4/1/04.

Call before you dig 1-800-4-A-DIG

BAUGHMAN & TURNER, INC.
 CIVIL ENGINEERS
 1510 WINDY STREET
 LAS VEGAS, NEVADA 89102
 (702) 870-0771

LDS CHURCH-CPM 23-01
 DRAINAGE PLAN
 SECTION 3, TOWNSHIP 20 SOUTH, RANGE 90 EAST, M.D.B.M. NEVADA
 LAS VEGAS, NEVADA
 RED COACH AVENUE & BALSAM STREET

DATE: 03/03/04
 DRAWN: JAU
 CHECK: JAU
 SCALE: 1"=30'

PREPARED FOR: **LDS CHURCH**

E. Previous Hydrology Studies

There are no previous studies for this site specifically. The City of Las Vegas' "Northwest Neighborhood Flood Control Master Plan" does delineate offsite basins and flows, however.

III. PROPOSED DRAINAGE FACILITIES

A. General Description

1. Proposed On-Site Drainage Basins

The developed site was analyzed as two (2) basins, EXEAST, and PROP (See Grading Plan in the pocket at the end of this report).

Basin EXEAST is the same basin as in the existing condition. Basin EXEAST is the easterly 3.00 acres of fully developed property. The basin is developed as a church. Basin EXEAST generates 9 and 4 cfs for the 100 and 10-year, 6-hour storms. Runoff associated with Basin EXEAST drains to the east and exits the site to Rainbow Boulevard.

Basin PROP is 1.00 acres of rural, residential property. The basin is assumed to be developed as a residential lot and graded to drain to Balsam. PROP generates 2 and less than 1 cfs for the 100 and 10-year, 6-hour storms. These flows will travel west and discharge to Balsam Street.

2. Future Offsite Conditions

The future regional offsite flows which impact the site have been quantified by the City of Las Vegas' "Northwest Neighborhood Flood Control Master Plan" Figure F-11 of that study indicates that approximately 40 and <1 cfs travel south past the site in Rainbow Blvd. during a 100 and 10 year storm. See Figure 8, Future Drainage Conditions.

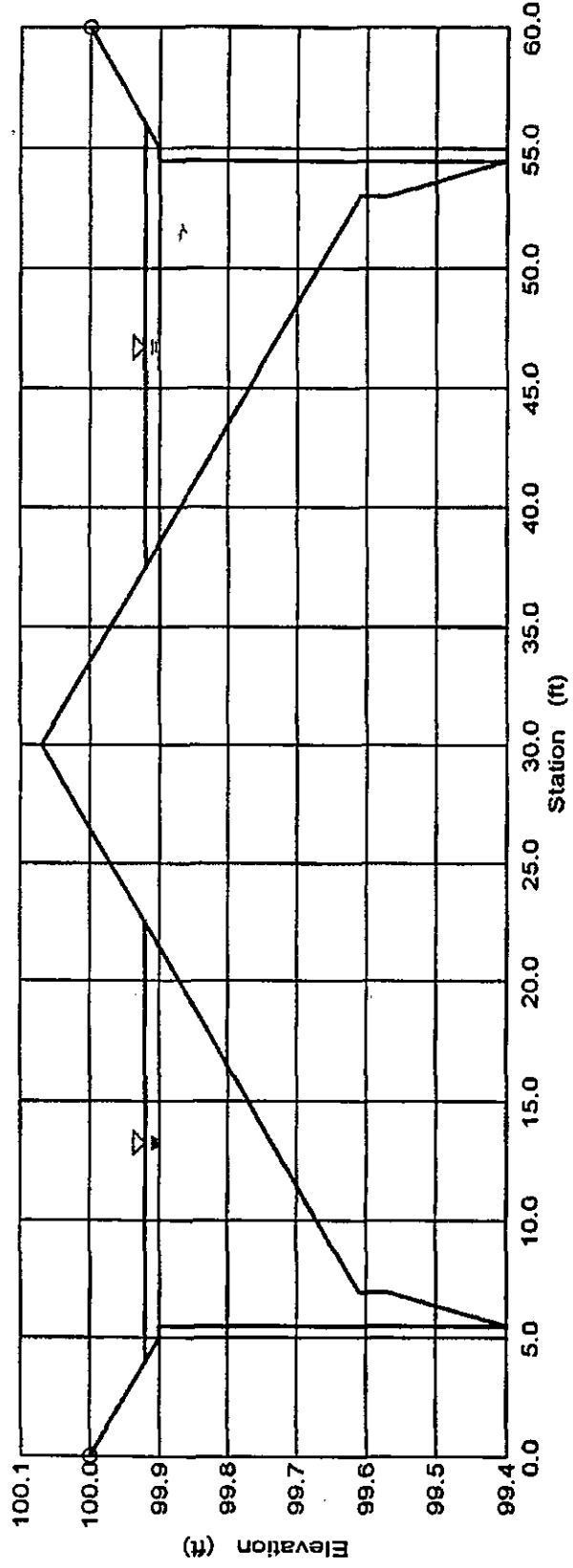
B. Compliance with Regulations and Adopted Plans

All design criteria has been established after first consulting with the CCRFCD's 1996 Master Plan Update, FEMA regulations and policies, and the CCRFCD's Hydrologic Criteria and Drainage Design Manual. Clark County will review this study as it relates to development standards. Clark County Regional Flood Control District will review this study as it relates to Master Planned Facilities and FEMA criteria.

Balsam Street Q100 Cross Section for Irregular Channel

Project Description	
Project File	u:\pam\60row.fm2
Worksheet	60' R/W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.017
Channel Slope	0.002500 ft/ft
Water Surface Elevation	99.92 ft
Discharge	8.00 cfs



Balsam Street Q100
Worksheet for Irregular Channel

Project Description	
Project File	u:\pam\60row.fm2
Worksheet	60' R/W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.002500 ft/ft			
Elevation range: 99.40 ft to 100.07 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	100.00	0.00	60.00	0.017
5.00	99.90			
5.50	99.90			
5.50	99.40			
7.00	99.57			
7.00	99.61			
30.00	100.07			
53.00	99.61			
53.00	99.57			
54.50	99.40			
54.50	99.90			
55.00	99.90			
60.00	100.00			
Discharge	8.00	cfs		

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	99.92	ft
Flow Area	6.17	ft ²
Wetted Perimeter	38.23	ft
Top Width	37.13	ft
Height	0.52	ft
Critical Depth	99.84	ft
Critical Slope	0.008460	ft/ft
Velocity	1.30	ft/s
Velocity Head	0.03	ft
Specific Energy	99.95	ft
Froude Number	0.56	
Flow is subcritical.		
Flow is divided.		

Balsam Street Q10
Worksheet for Irregular Channel

Project Description	
Project File	u:\pam\60row.fm2
Worksheet	60' R/W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

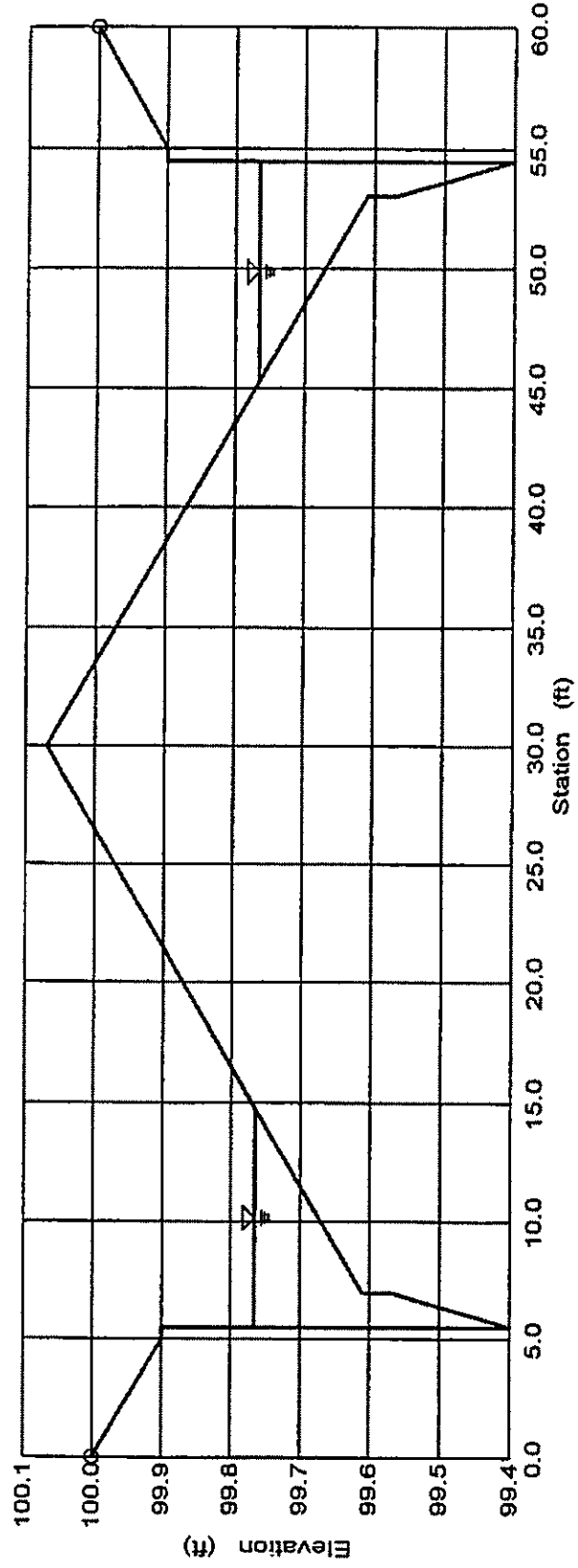
Input Data					
Channel Slope		0.002500 ft/ft			
Elevation range: 99.40 ft to 100.07 ft.					
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness	
0.00	100.00	0.00	60.00	0.017	
5.00	99.90				
5.50	99.90				
5.50	99.40				
7.00	99.57				
7.00	99.61				
30.00	100.07				
53.00	99.61				
53.00	99.57				
54.50	99.40				
54.50	99.90				
55.00	99.90				
60.00	100.00				
Discharge	2.00	cfs			

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	99.77	ft
Flow Area	2.05	ft ²
Wetted Perimeter	19.36	ft
Top Width	18.53	ft
Height	0.37	ft
Critical Depth	99.71	ft
Critical Slope	0.010085	ft/ft
Velocity	0.98	ft/s
Velocity Head	0.01	ft
Specific Energy	99.78	ft
Froude Number	0.52	
Flow is subcritical.		
Flow is divided.		

Balsam Street Q10 Cross Section for Irregular Channel

Project Description	
Project File	u:\pam\60row.fm2
Worksheet	60' R/W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.017
Channel Slope	0.002500 ft/ft
Water Surface Elevation	99.77 ft
Discharge	2.00 cfs



Red Coach Q10
Worksheet for Irregular Channel

Project Description	
Project File	u:\pam\60row.fm2
Worksheet	60' R/W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

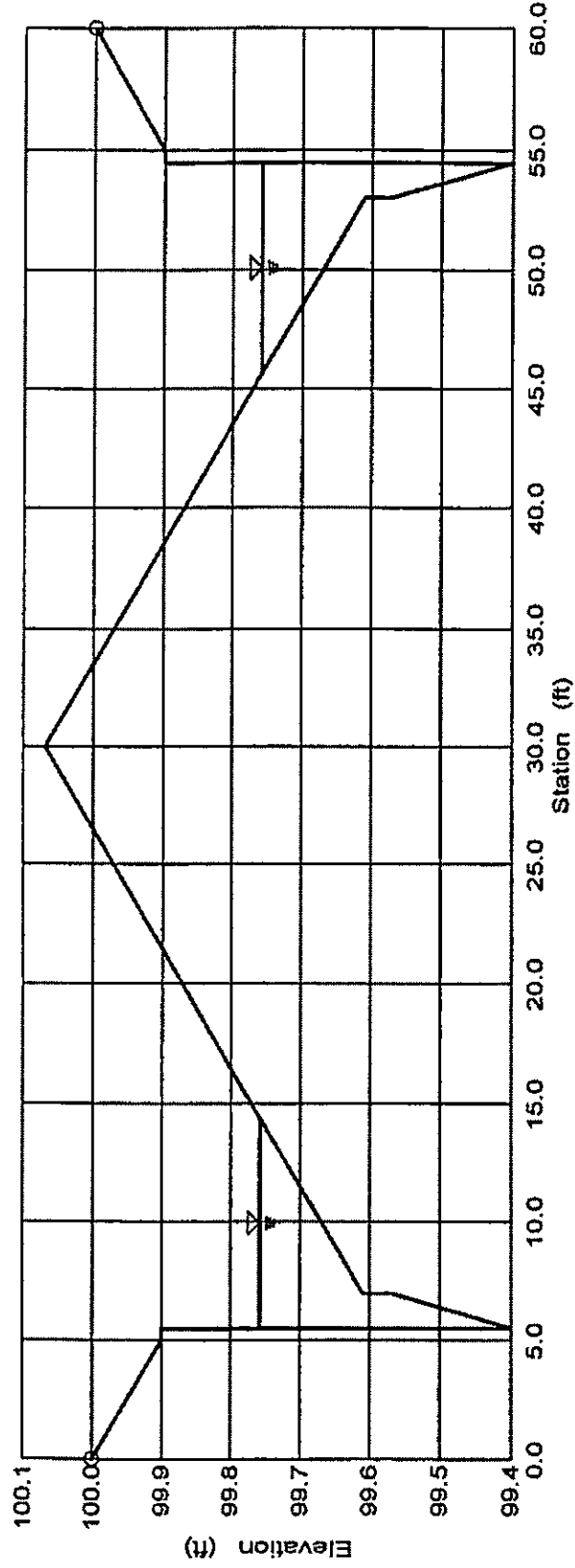
Input Data					
Channel Slope		0.003000 ft/ft			
Elevation range: 99.40 ft to 100.07 ft.					
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness	
0.00	100.00	0.00	60.00	0.017	
5.00	99.90				
5.50	99.90				
5.50	99.40				
7.00	99.57				
7.00	99.61				
30.00	100.07				
53.00	99.61				
53.00	99.57				
54.50	99.40				
54.50	99.90				
55.00	99.90				
60.00	100.00				
Discharge	2.00	cfs			

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	99.76	ft
Flow Area	1.91	ft ²
Wetted Perimeter	18.57	ft
Top Width	17.75	ft
Height	0.36	ft
Critical Depth	99.71	ft
Critical Slope	0.010085	ft/ft
Velocity	1.05	ft/s
Velocity Head	0.02	ft
Specific Energy	99.77	ft
Froude Number	0.56	
Flow is subcritical.		
Flow is divided.		

Red Coach Q10 Cross Section for Irregular Channel

Project Description	
Project File	u:\pam\60row.fm2
Worksheet	60' R/W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.017
Channel Slope	0.003000 ft/ft
Water Surface Elevation	99.76 ft
Discharge	2.00 cfs



Red Coach Q100
Worksheet for Irregular Channel

Project Description	
Project File	u:\pam\60row.fm2
Worksheet	60' R/W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

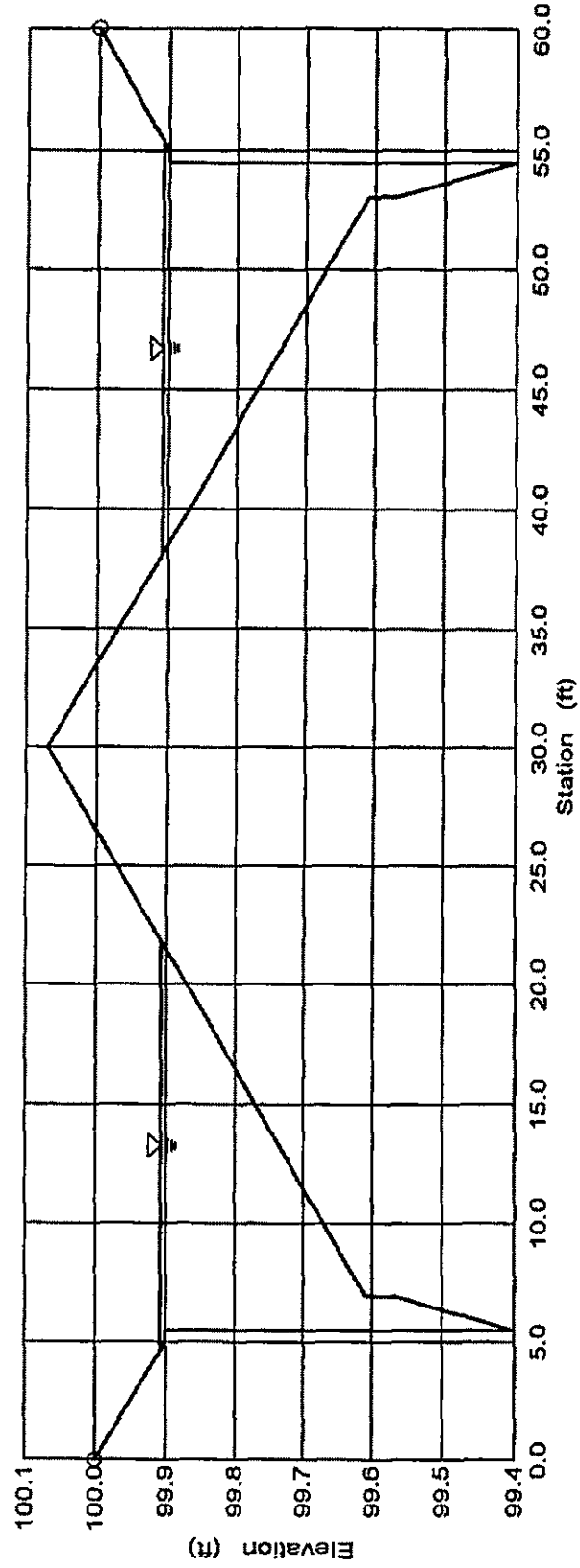
Input Data					
Channel Slope		0.003000 ft/ft			
Elevation range: 99.40 ft to 100.07 ft.					
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness	
0.00	100.00	0.00	60.00	0.017	
5.00	99.90				
5.50	99.90				
5.50	99.40				
7.00	99.57				
7.00	99.61				
30.00	100.07				
53.00	99.61				
53.00	99.57				
54.50	99.40				
54.50	99.90				
55.00	99.90				
60.00	100.00				
Discharge	8.00	cfs			

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	99.91	ft
Flow Area	5.67	ft ²
Wetted Perimeter	35.40	ft
Top Width	34.29	ft
Height	0.51	ft
Critical Depth	99.84	ft
Critical Slope	0.008460	ft/ft
Velocity	1.41	ft/s
Velocity Head	0.03	ft
Specific Energy	99.94	ft
Froude Number	0.61	
Flow is subcritical.		
Flow is divided.		

Red Coach Q100 Cross Section for Irregular Channel

Project Description	
Project File	u:\pam\60row.fm2
Worksheet	60' R/W
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wrd. Mannings Coefficient	0.017
Channel Slope	0.003000 ft/ft
Water Surface Elevation	99.91 ft
Discharge	8.00 cfs





**LAS VEGAS
CITY COUNCIL**

CAROLYN G. GOODMAN
Mayor

MICHELE FIORE
Mayor Pro Tem

STAVROS S. ANTHONY
CEDRIC CREAR
BRIAN KNUDSEN
VICTORIA SEAMAN
OLIVIA DIAZ

SCOTT D. ADAMS
City Manager

DEPARTMENT OF PLANNING
ROBERT SUMMERFIELD
DIRECTOR

**DEVELOPMENT
SERVICES CENTER**

333 N. RANCHO DRIVE
3RD FLOOR
LAS VEGAS, NV 89106
702.229.6301 | VOICE
702.474.7463 | FAX
711 | TTY



cityoflasvegas
lasvegasnevada.gov

September 5, 2019

Mr. Thomas J. Wheeler, Jr.
Investment Solutions, Inc.
P.O. Box 80987
Las Vegas, Nevada 89180

**RE: GPA-75993 [PRJ-75661] - GENERAL PLAN AMENDMENT
RELATED TO ZON-75986, VAR-75987, VAR-75988, SUP-75989 AND
SDR-75990
CITY COUNCIL MEETING OF SEPTEMBER 4, 2019**

Dear Mr. Wheeler:

The City Council at a regular meeting held on September 4, 2019 voted to **APPROVE** a request for a General Plan Amendment FROM: O (OFFICE) TO: SC (SERVICE COMMERCIAL) on 1.04 acres at 6885 West Red Coach Avenue (APN 138-03-602-018), Ward 4 (Anthony) [PRJ-75661].

The Notice of Final Action was filed with the Las Vegas City Clerk on September 5, 2019.

Sincerely,


Peter Lowenstein, AICP
Deputy Planning Director
Department of Planning

PL:clb

cc: Mr. Thomas J. Wheeler, Jr.
Wheeler Red Coach Mini Storage
P.O. Box 80987
Las Vegas, Nevada 89180

Mr. Tony Celeste
Kaempfer Crowell
1980 Festival Plaza Drive, Suite #650
Las Vegas, Nevada 89135



**LAS VEGAS
CITY COUNCIL**

CAROLYN G. GOODMAN
Mayor

MICHELE FIORE
Mayor Pro Tem

STAVROS S. ANTHONY

CEDRIC CREAR

BRIAN KNUDSEN

VICTORIA SEAMAN

OLIVIA DIAZ

SCOTT D. ADAMS
City Manager

DEPARTMENT OF PLANNING

ROBERT SUMMERFIELD
DIRECTOR

**DEVELOPMENT
SERVICES CENTER**

333 N. RANCHO DRIVE
3RD FLOOR
LAS VEGAS, NV 89106

702.229.6301 | VOICE
702.474.7463 | FAX
711 | TTY



cityoflasvegas
lasvegasnevada.gov

September 5, 2019

Mr. Thomas J. Wheeler, Jr.
Investment Solutions, Inc.
P.O. Box 80987
Las Vegas, Nevada 89180

**RE: ZON-75986 [PRJ-75661] – REZONING RELATED TO GPA-75933,
VAR-76987, VAR-75988, SUP-75989 AND SDR-75990
CITY COUNCIL MEETING OF SEPTEMBER 4, 2019**

Dear Mr. Wheeler:

The City Council at a regular meeting held on September 4, 2019 voted to **APPROVE** a request for a Rezoning FROM: O (OFFICE) TO: C-1 (LIMITED COMMERCIAL) on 1.04 acres at 6885 West Red Coach Avenue (APN 138-03-602-018), Ward 4 (Anthony) [PRJ-75661].

The Notice of Final Action was filed with the Las Vegas City Clerk on September 5, 2019.

Sincerely,

Peter Lowenstein, AICP[®]
Deputy Planning Director
Department of Planning

PL:clb

cc: Mr. Thomas J. Wheeler, Jr.
Wheeler Red Coach Mini Storage
P.O. Box 80987
Las Vegas, Nevada 89180

Mr. Tony Celeste
Kaempfer Crowell
1980 Festival Plaza Drive, Suite #650
Las Vegas, Nevada 89135



**LAS VEGAS
CITY COUNCIL**

CAROLYN G. GOODMAN
Mayor

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Mayor Pro Tem

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September 5, 2019

Mr. Thomas J. Wheeler, Jr.
Investment Solutions, Inc.
P.O. Box 80987
Las Vegas, Nevada 89180

**RE: VAR-75987 [PRJ-75661] – VARIANCE RELATED TO GPA-75993,
ZON-75986, VAR-75987, VAR-75988, SUP-75989 AND SDR-75990
CITY COUNCIL MEETING OF SEPTEMBER 4, 2019**

Dear Mr. Wheeler:

The City Council at a regular meeting held on September 4, 2019 accepted the applicant's request to **WITHDRAW WITHOUT PREJUDICE** a request for a Variance TO ALLOW 11 PARKING SPACES WHERE 12 SPACES ARE REQUIRED on 1.04 acres at 6885 West Red Coach Avenue (APN 138-03-602-018), O (Office) Zone [PROPOSED: C-1 (Limited Commercial)], Ward 4 (Anthony) [PRJ-75661].

The Notice of Final Action was filed with the Las Vegas City Clerk on September 5, 2019.

Sincerely,

Peter Lowenstein, AICP
Deputy Planning Director
Department of Planning

PL:clb

cc: Mr. Thomas J. Wheeler, Jr.
Wheeler Red Coach Mini Storage
P.O. Box 80987
Las Vegas, Nevada 89180

Mr. Tony Celeste
Kaempfer Crowell
1980 Festival Plaza Drive, Suite #650
Las Vegas, Nevada 89135



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September 5, 2019

Mr. Thomas J. Wheeler, Jr.
Investment Solutions, Inc.
P.O. Box 80987
Las Vegas, Nevada 89180

**RE: VAR-75988 [PRJ-75661] – VARIANCE RELATED TO GPA-75993,
ZON-75986, VAR-75987, SUP-75989 AND SDR-75990
CITY COUNCIL MEETING OF SEPTEMBER 4, 2019**

Dear Mr. Wheeler:

The City Council at a regular meeting held on September 4, 2019 voted to **APPROVE** a request for a Variance TO ALLOW A 70-FOOT SETBACK TO THE WEST AND AN 85-FOOT SETBACK TO THE NORTH WHERE RESIDENTIAL ADJACENCY STANDARDS REQUIRE 117 FEET on 1.04 acres at 6885 West Red Coach Avenue (APN 138-03-602-018), O (Office) Zone [PROPOSED: C-1 (Limited Commercial)], Ward 4 (Anthony) [PRJ-75661].

This approval is subject to the following conditions:

Planning

1. Approval of General Plan Amendment (GPA-75993) and Rezoning (ZON-75986) and conformance to the Conditions of Approval for Variance (VAR-75987), Special Use Permit (SUP-75989), and Site Development Plan Review (SDR-75990) shall be required.
2. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.
3. All necessary building permits shall be obtained and final inspections shall be completed in compliance with Title 19 and all codes as required by the Department of Building and Safety.
4. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.

Mr. Thomas J. Wheeler, Jr.
Investment Solutions, Inc.
VAR-75988 [PRJ-75661] - Page Two
September 5, 2019

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

The Notice of Final Action was filed with the Las Vegas City Clerk on September 5, 2019.

Sincerely,



Peter Lowenstein, AICP
Deputy Planning Director
Department of Planning

PL:clb

cc: Mr. Thomas J. Wheeler, Jr.
Wheeler Red Coach Mini Storage
P.O. Box 80987
Las Vegas, Nevada 89180

Mr. Tony Celeste
Kaempfer Crowell
1980 Festival Plaza Drive, Suite #650
Las Vegas, Nevada 89135



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September 5, 2019

Mr. Thomas J. Wheeler, Jr.
Investment Solutions, Inc.
P.O. Box 80987
Las Vegas, Nevada 89180

**RE: SUP-75989 [PRJ-75661] – SPECIAL USE PERMIT RELATED TO
GPA-75993, ZON-75986, VAR-75987, VAR-75988 AND SDR-75990
CITY COUNCIL MEETING OF SEPTEMBER 4, 2019**

Dear Mr. Wheeler:

The City Council at a regular meeting held on September 4, 2019 voted to **APPROVE** a request for a Special Use Permit FOR A PROPOSED MINI-STORAGE FACILITY USE at 6885 West Red Coach Avenue (APN 138-03-602-018), O (Office) Zone [PROPOSED: C-1 (Limited Commercial)], Ward 4 (Anthony) [PRJ-75661].

This approval is subject to the following amended conditions:

Planning

1. Hours of operation will be limited to the hours 6:00 am to 8:00 pm.
2. Conformance to all Minimum Requirements under LVMC Title 19.12 for a Mini-Storage Facility use, unless waived herein.
3. Approval of General Plan Amendment (GPA-75993) and Rezoning (ZON-75986) and conformance to the Conditions of Approval for Variance (VAR-75987), Variance (VAR-75988), and Site Development Plan Review (SDR-75990) shall be required, if approved.
4. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.
5. All necessary building permits shall be obtained and final inspections shall be completed in compliance with Title 19 and all codes as required by the Department of Building and Safety.

Mr. Thomas J. Wheeler, Jr.
Investment Solutions, Inc.
SUP-75989 [PRJ-75661] - Page Two
September 5, 2019

6. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit, as well as submitted as part of any business license application.
7. All City Code requirements and design standards of all City departments must be satisfied, except as modified herein.

The Notice of Final Action was filed with the Las Vegas City Clerk on September 5, 2019.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Lowenstein', is written over the typed name.

Peter Lowenstein, AICP[®]
Deputy Planning Director
Department of Planning

PL:clb

cc: Mr. Thomas J. Wheeler, Jr.
Wheeler Red Coach Mini Storage
P.O. Box 80987
Las Vegas, Nevada 89180

Mr. Tony Celeste
Kaempfer Crowell
1980 Festival Plaza Drive, Suite #650
Las Vegas, Nevada 89135



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ROBERT SUMMERFIELD
DIRECTOR

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September 5, 2019

Mr. Thomas J. Wheeler, Jr.
Investment Solutions, Inc.
P.O. Box 80987
Las Vegas, Nevada 89180

**RE: SDR-75990 [PRJ-75661] – SITE DEVELOPMENT PLAN REVIEW
RELATED TO GPA-75993, ZON-75986, VAR-75987. VAR-75988
AND SUP-75989
CITY COUNCIL MEETING OF SEPTEMBER 4, 2019**

Dear Mr. Wheeler:

The City Council at a regular meeting held on September 4, 2019 voted to **APPROVE** a request for a Site Development Plan Review FOR A PROPOSED THREE-STORY, 56,400 SQUARE-FOOT, 324-UNIT MINI-STORAGE FACILITY WITH A WAIVER TO ALLOW A ZERO-FOOT LANDSCAPE BUFFER WHERE EIGHT FEET IS REQUIRED ALONG PORTIONS OF THE EAST AND SOUTH PROPERTY LINES on 1.04 acres at 6885 West Red Coach Avenue (APN 138-03-602-018), O (Office) Zone [PROPOSED: C-1 (Limited Commercial)], Ward 4 (Anthony) [PRJ-75661].

This approval is subject to the following conditions:

Planning

1. Approval of General Plan Amendment (GPA-75993) and Rezoning (ZON-75986) and conformance to the Conditions of Approval for Variance (VAR-75987), Variance (VAR-75988), and Special Use Permit (SUP-75989) shall be required, if approved.
2. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.
3. All development shall be in conformance with the site plan stamped 07/25/19 and the landscape plan and building elevations stamped 03/11/19, except as amended by conditions herein.

Mr. Thomas J. Wheeler, Jr.
Investment Solutions, Inc.
SDR-75990 [PRJ-75661] - Page Two
September 5, 2019

4. A Waiver from Title 19.08.070 is hereby approved, to allow a zero-foot landscape buffer where eight feet is required along portions of the east and south property lines.
5. All necessary building permits shall be obtained and final inspections shall be completed in compliance with Title 19 and all codes as required by the Department of Building and Safety.
6. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.
7. A technical landscape plan, signed and sealed by a Registered Architect, Landscape Architect, Residential Designer or Civil Engineer, must be submitted prior to or at the same time application is made for a building permit. A permanent underground sprinkler system is required, and shall be permanently maintained in a satisfactory manner; the landscape plan shall include irrigation specifications. Installed landscaping shall not impede visibility of any traffic control device.
8. A fully operational fire protection system, including fire apparatus roads, fire hydrants and water supply, shall be installed and shall be functioning prior to construction of any combustible structures.
9. All City Code requirements and design standards of all City Departments must be satisfied, except as modified herein.

Public Works

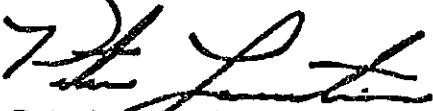
10. Construct all incomplete half-street improvements on Balsam Street and Red Coach Avenue to meet City standards concurrent with on-site development activities.
11. Concurrent with development, construct public sewer in Balsam Street from Red Coach Avenue to the south edge of this site at a size, depth and location acceptable to the Sanitary Sewer Section of the Department of Public Works.
12. Landscape and maintain all unimproved rights-of-way, if any, adjacent to this site. All landscaping and private improvements installed with this project shall be situated and maintained so as to not create sight visibility obstructions for vehicular traffic at all development access drives and abutting street intersections.

Mr. Thomas J. Wheeler, Jr.
Investment Solutions, Inc.
SDR-75990 [PRJ-75661] - Page Three
September 5, 2019

13. Submit a License Agreement for landscaping and private improvements in the Balsam Street and Red Coach Avenue public rights-of-way, if any, adjacent to this site prior to this issuance of permits for these improvements. The applicant must carry an insurance policy for the term of the License Agreement and add the City of Las Vegas as an additionally insured entity on this insurance policy. If requested by the City, the applicant shall remove property encroaching in the public right-of-way at the applicant's expense pursuant to the terms of the City's License Agreement. The installation and maintenance of all private improvements in the public right of way shall be the responsibility of the adjacent property owner(s) and shall be transferred with the sale of the property for the entire term of the License Agreement.
14. An update to the previously approved Drainage Plan and Technical Drainage Study must be submitted to and approved by the Department of Public Works prior to submittal of any construction drawings or the issuance of any building or grading permits, whichever may occur first. Provide and improve all drainage ways recommended in the approved drainage study update.

The Notice of Final Action was filed with the Las Vegas City Clerk on September 5, 2019.

Sincerely,

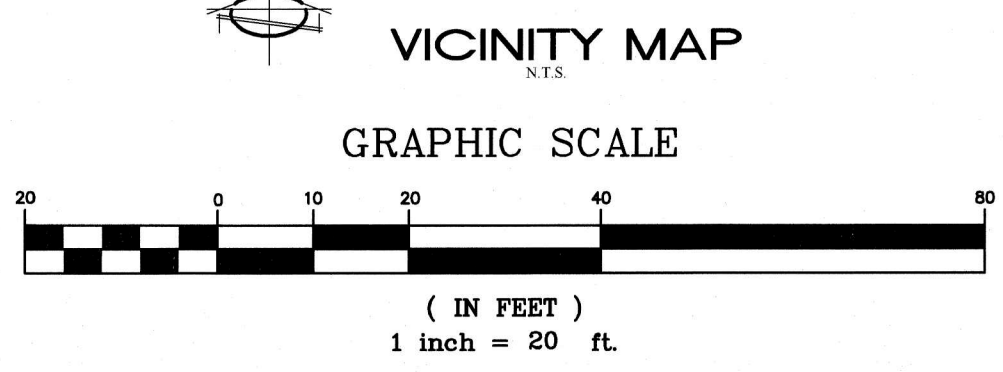
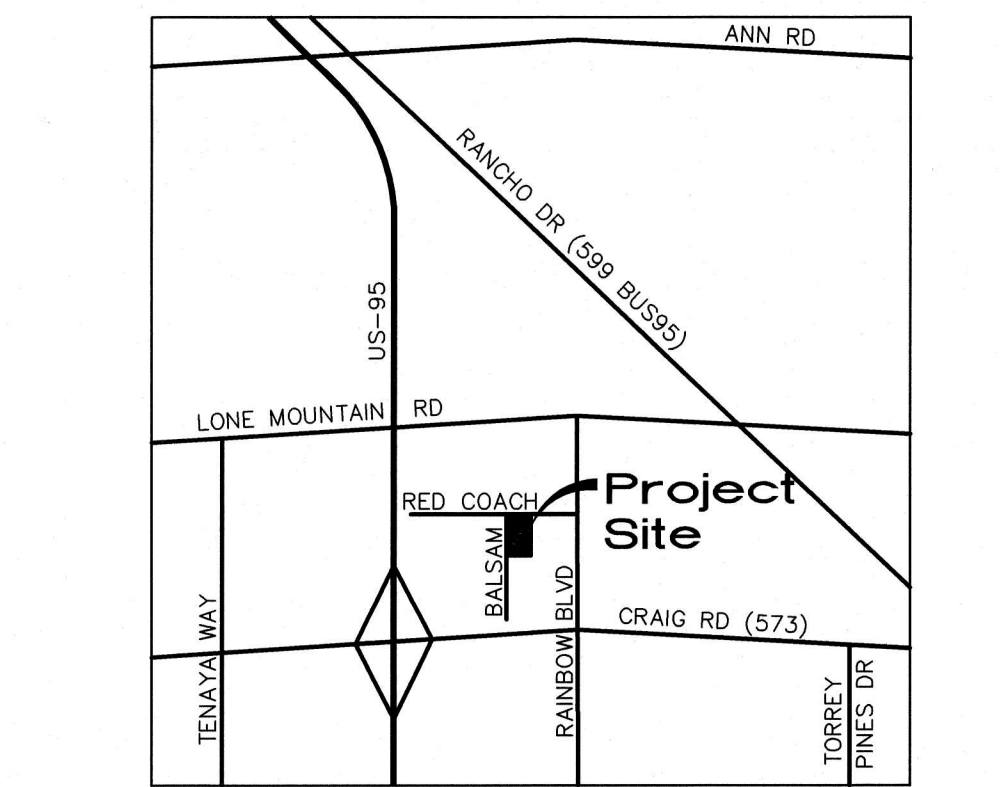
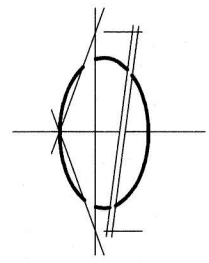
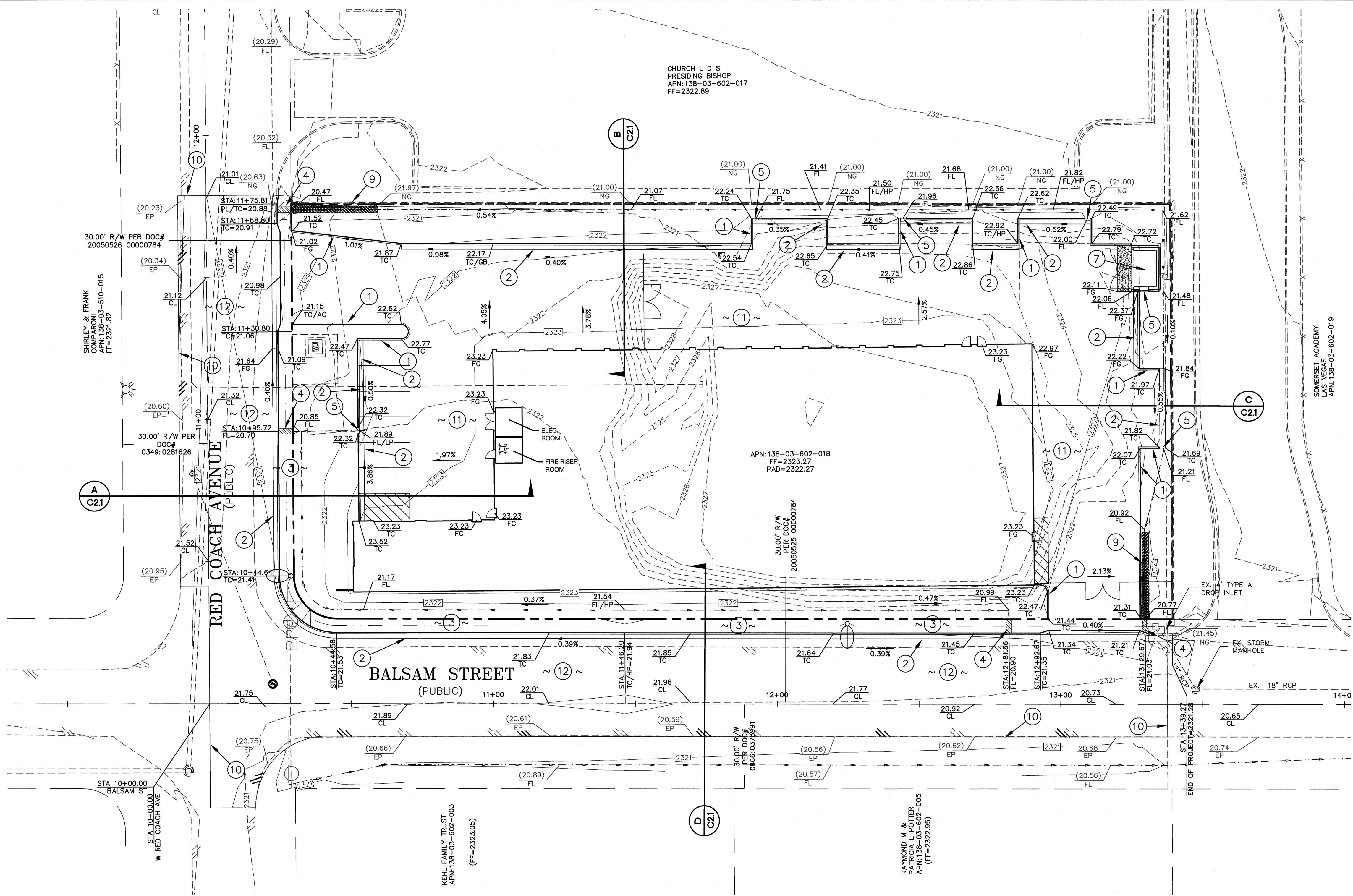


Peter Lowenstein, AICP
Deputy Planning Director
Department of Planning

PL:clb

cc: Mr. Thomas J. Wheeler, Jr.
Wheeler Red Coach Mini Storage
P.O. Box 80987
Las Vegas, Nevada 89180

Mr. Tony Celeste
Kaempfer Crowell
1980 Festival Plaza Drive, Suite #650
Las Vegas, Nevada 89135



LEGEND

	PROPERTY LINE
	STREET CENTERLINE
	LOT LINE
	BUILDING SETBACK LINE
	PROPOSED ROLL CURB
	EXISTING "L" CURB & GUTTER
	EXISTING CONTOUR LINES
	PROPOSED FLOW LINE
	SAW CUT LINE
	PROPOSED EDGE OF PAVEMENT
	EXIST. EDGE OF PAVEMENT
	PROPOSED BLOCK WALL
	PROPOSED SCARP
	EXIST. BLOCK WALL
	SAW CUT AREA
	MATCHLINE
	PROPOSED ELEVATION & LOCATION
	EXISTING ELEVATION & LOCATION
	PROPOSED GRADE
	CONSTRUCTION NOTE
	PROPOSED HYDRANT
	SIGHT VISIBILITY ZONE*
	ROADWAY EASEMENT
AC	ASPHALTIC CONCRETE
CL	CENTERLINE
TC	TOP OF CURB
EP	EDGE OF PAVEMENT
FG	FINISHED GRADE
TF	TOP OF FOOTING
TRW	TOP OF RETAINING WALL
TFW	TOP OF FLOOD WALL
TSW	TOP OF STEM WALL
BSW	BACK OF SIDEWALK
GB	GRADE BREAK
BVC	BEGIN VERTICAL CURVE
EVC	END VERTICAL CURVE
FF	FINISHED FLOOR
FL	FLOW LINE
HP	HIGH POINT
INV	INVERT
LF	LINEAR FEET
LP	LOW POINT
LS	LANDSCAPE
SWG	SOUTHWEST GAS
P.U.E.	PUBLIC UTILITY EASEMENT
P.D.E.	PRIVATE DRAINAGE EASEMENT
P.S.E.	PRIVATE SEWER EASEMENT
P.L.E.	PRIVATE LANDSCAPE EASEMENT

STORMWATER MANAGEMENT NOTES

1. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATED IN, THE PUBLIC RIGHTS OF WAY OF CLARK COUNTY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN CLARK COUNTY TITLE 24.40 AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY; REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00000, SECTION III.A.5
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPs WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTION TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO NEVADA GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00000, SECTION III.A.12.
5. ACCUMULATED SEDIMENT IN BMPs SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT, WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

CONSTRUCTION NOTES		UNIT	QUANTITY	
#	ITEM		PUBLIC	PRIVATE
1	INSTALL "A" TYPE CURB PER CCAUSD #219	LF	-	389
2	INSTALL "L" CURB & GUTTER PER CCAUSD # 216	LF	366	410
3	INSTALL SIDEWALK PER CCAUSD # 234	SY	244	-
4	INSTALL 2" SIDEWALK UNDERDRAIN PER CCAUSD #236	EA	4	-
5	CONSTRUCT 2" CURB OPENING PER DETAIL ON SHEET C2.1	EA	-	6
6	INSTALL CONCRETE PARKING BUMPER.	EA	-	3
7	INSTALL TRASH ENCLOSURE SEE ARCHITECTURAL PLANS	EA	-	1
8	CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I	EA	4	-
9	INSTALL RIP RAP PER SECTION 1500: STRUCTURAL BEST MANAGEMENT PRACTICES AS REFERENCED WITHIN THE CLARK COUNTY FLOOD CONTROL DISTRICT (CCFCD) HYDROLOGIC AND DRAINAGE DESIGN MANUAL (HDCDD), D ₅₀ = 3", THICKNESS 6".	SF	-	180
10	SAWCUT NEAT AND MATCH EXISTING	SY	1270	-
11	CONSTRUCT 3" AC OVER 4" TYPE II AGGREGATE BASE.	SY	-	1861
12	CONSTRUCT 3" AC OVER 6" TYPE II AGGREGATE BASE.	EA	1270	-



SLOPE REQUIREMENT DETAIL

LEGAL DESCRIPTION

BEING LOT 2 OF FILE 109 OF PARCEL MAPS, PAGE 62, CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BASIS OF BEARING

NORTH 89°52'47" WEST - BEING THE CENTERLINE OF RED COACH AVENUE AS SHOWN IN FILE 109 OF PARCEL MAPS, PAGE 62, CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK 8LV00 3E4 - BEING A RIVET AND PLATE IN TOP OF CURB AT THE NORTHWEST CORNER OF CRAIG ROAD AND RAINBOW BOULEVARD.

705.770 METERS NAVD 88 DATUM 2315.51 FEET

AREA OF DISTURBANCE

OFFSITES: 0.26 AC
ONSITES: 1.11 AC

FLOOD ZONE INFORMATION

THE SUBJECT PROPERTY LIES WITHIN FLOOD ZONE "X", FLOOD INSURANCE RATE MAP NO. 32003C2155F DATED NOVEMBER 16, 2011, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PROPERTY IS SITUATED.

ONSITE STORM DRAIN NOTE

ALL ONSITE STORM DRAINS AND ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY PROPERTY OWNER.

EARTHWORK QUANTITIES

QUANTITIES SHOWN WERE CALCULATED PRIOR TO ANY GRADING ON THE PROPOSED SITE LOCATION.

CUT 2116.99 CY
FILL 1196.93 CY
NET 920.06 (CUT) CY

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND 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.

OWNER/DEVELOPER

INVESTMENT SOLUTIONS
6885 W. RED COACH AVE
LAS VEGAS, NV 89108

NOTE:

ADD 2300 FEET TO ALL ELEVATION TAGS/GRADES.

NOTE:

*NOTE: NOTHING OVER 24" IN HEIGHT ALLOWED IN SIGHT VISIBILITY ZONE EXCEPT TRAFFIC CONTROL DEVICES.

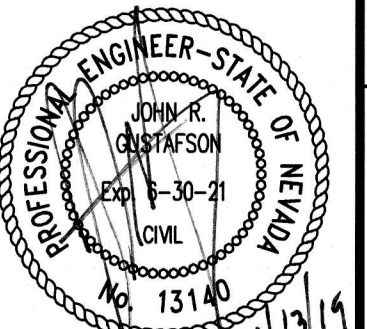
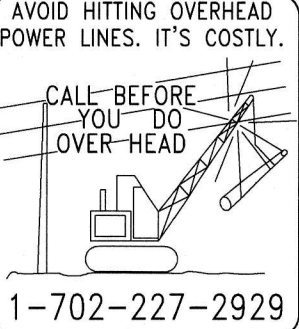
ENGINEERS CERTIFICATE

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

JOHN R. GUSTAFSON, P.E. 13140

DATE

CLV PROJECT # ----



RED COACH MINI STORAGE GRADING PLAN

SECTION 3, TOWNSHIP 30 SOUTH, RANGE 60 EAST, M.D.B. & M. NEVADA

APN 138-03-602-018

CITY OF LAS VEGAS

C2.0

3 OF 7
PROJ. NO. 1021

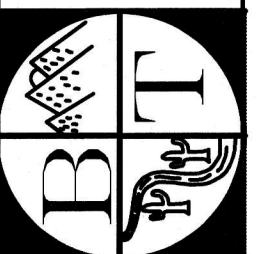
INVESTMENT SOLUTIONS
6885 W. RED COACH AVE
LAS VEGAS, NV 89108

PREPARED FOR :
KLP
DESIGN
KLP
DRAWN
JRG
CHECK
SCALE
1"=30'

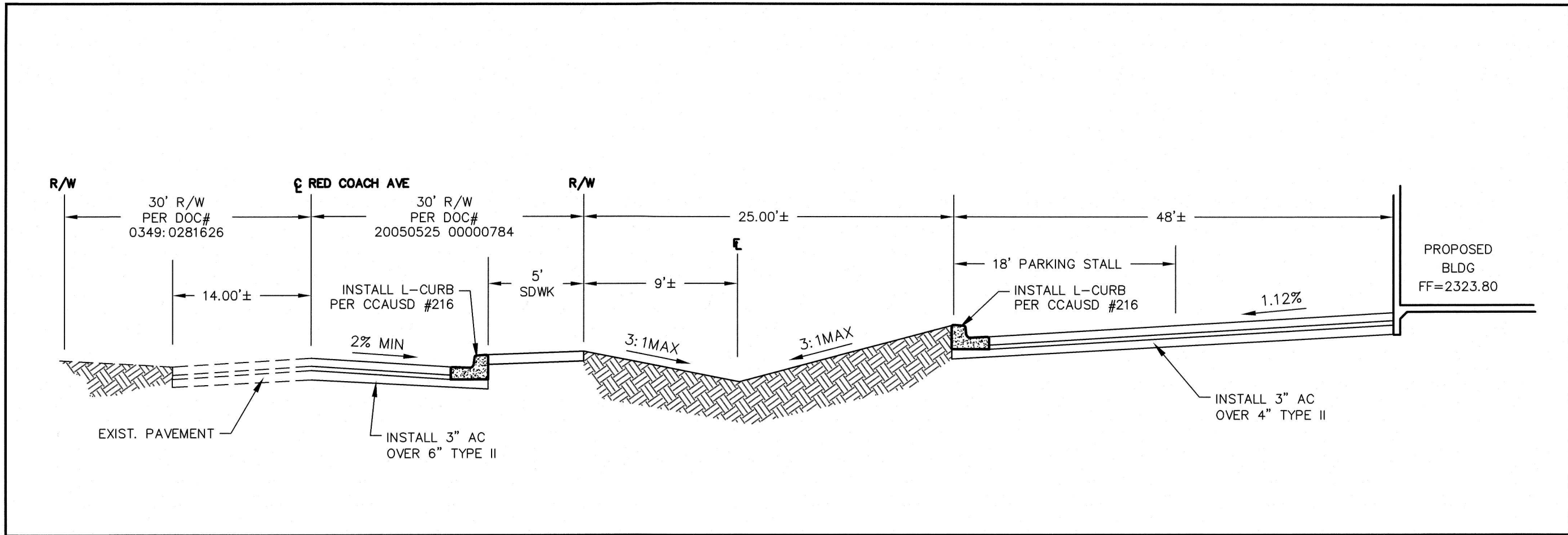
DATE
09/25/2019

REVISIONS
NO. DATE
1 11/21/19

BAUGHMAN & TURNER, INC.



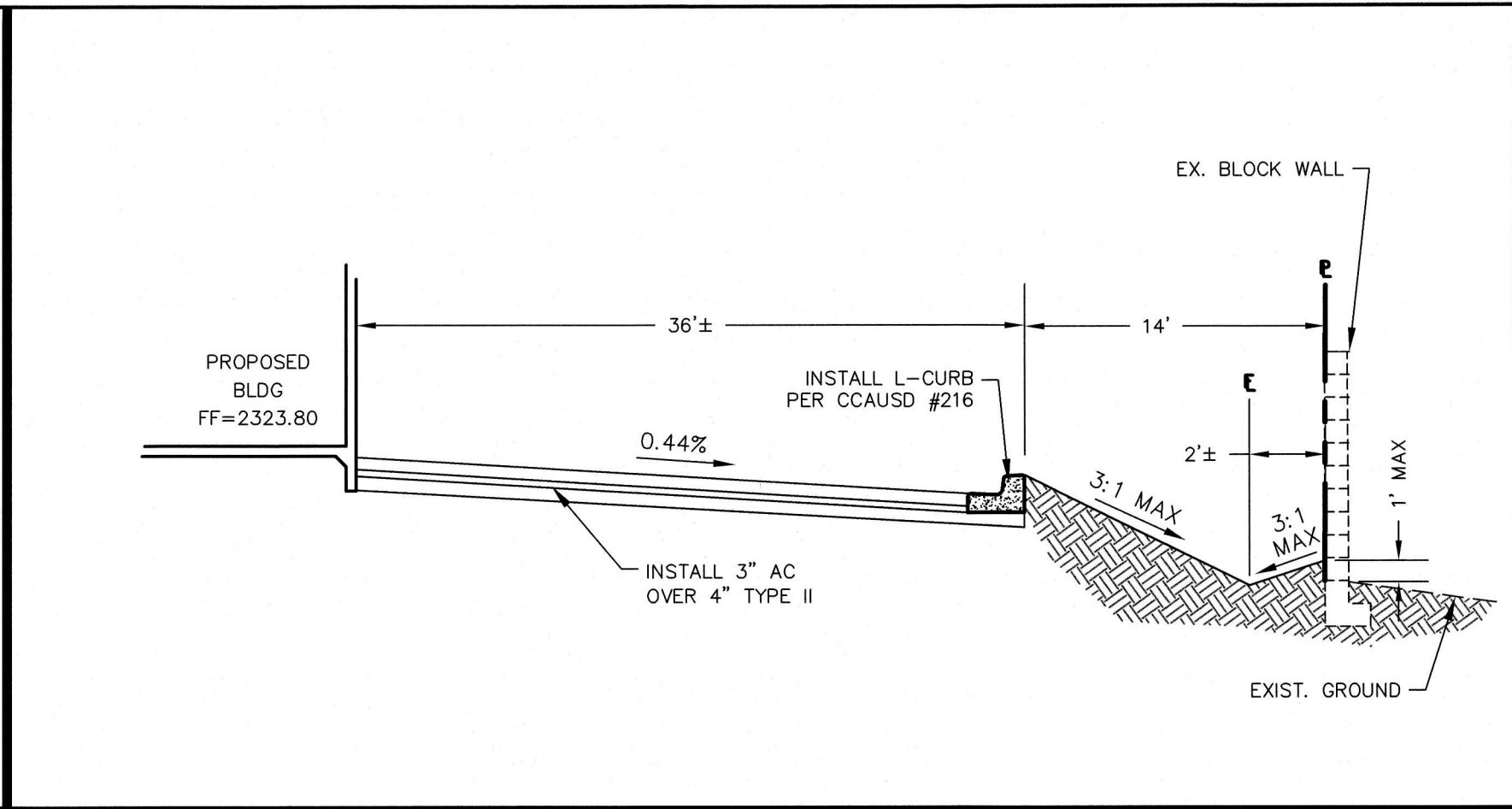
CIVIL ENGINEERS
1210 HINSON STREET
LAS VEGAS, NEVADA 89102
PHONE: (702) 870-8771 FAX: (702) 878-2695



SECTION

N.T.S.

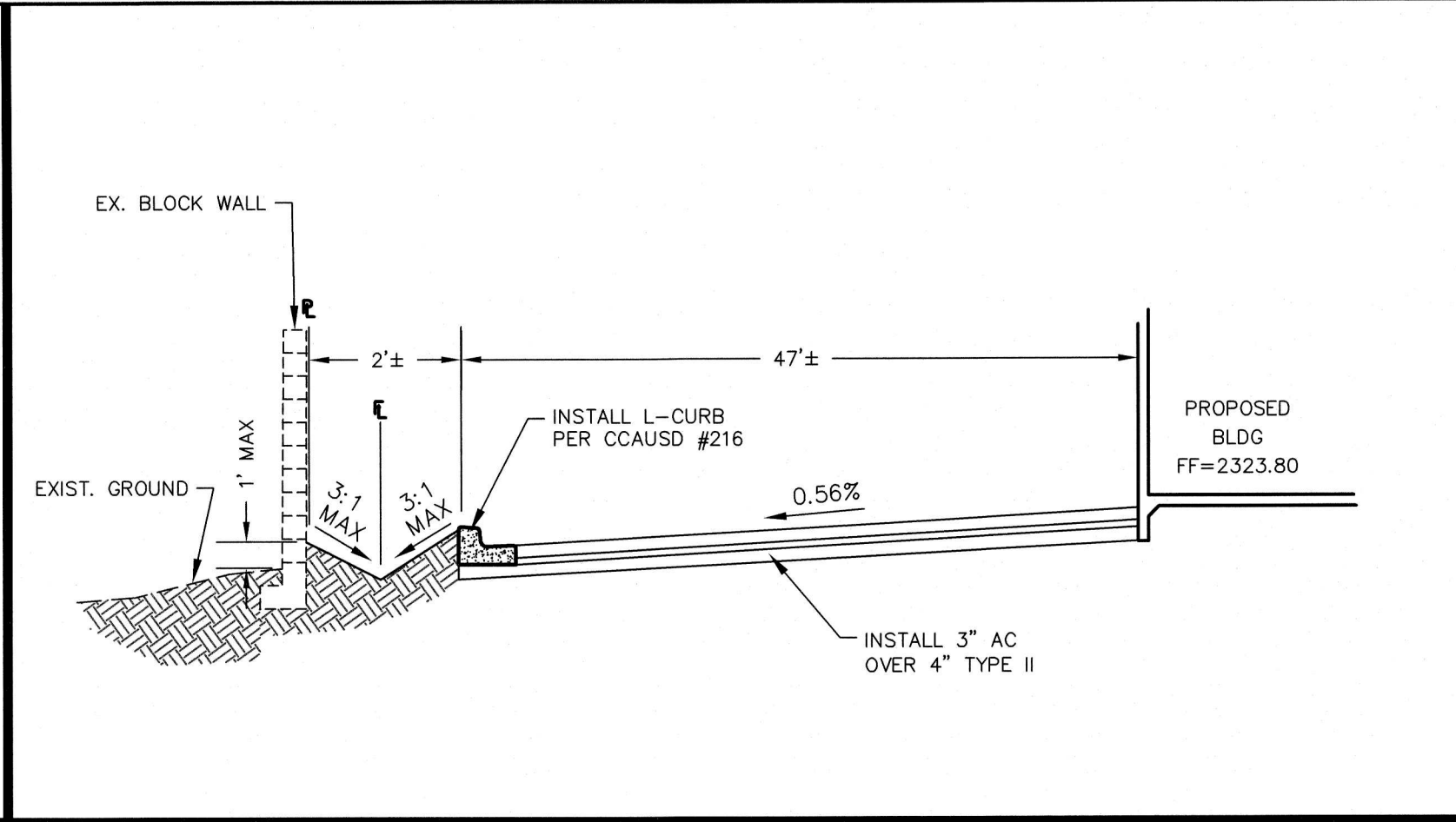
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SECTION

N.T.S.

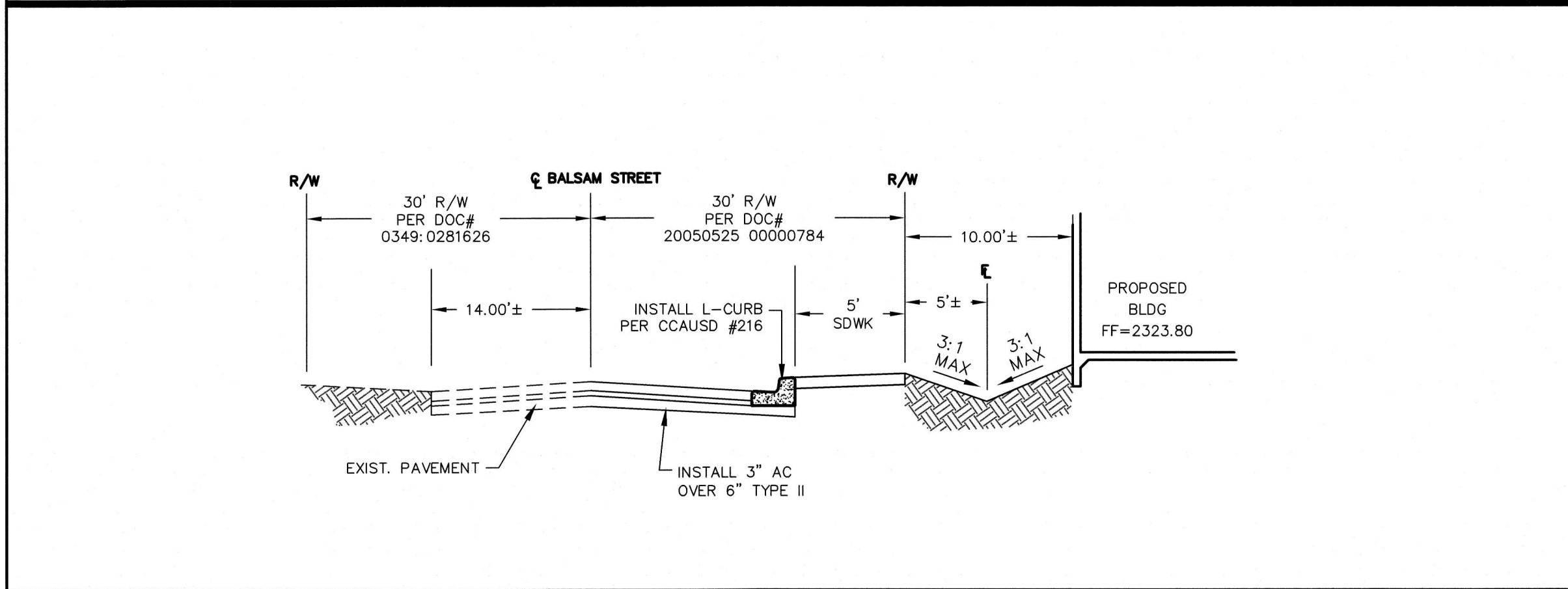
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SECTION

N.T.S.

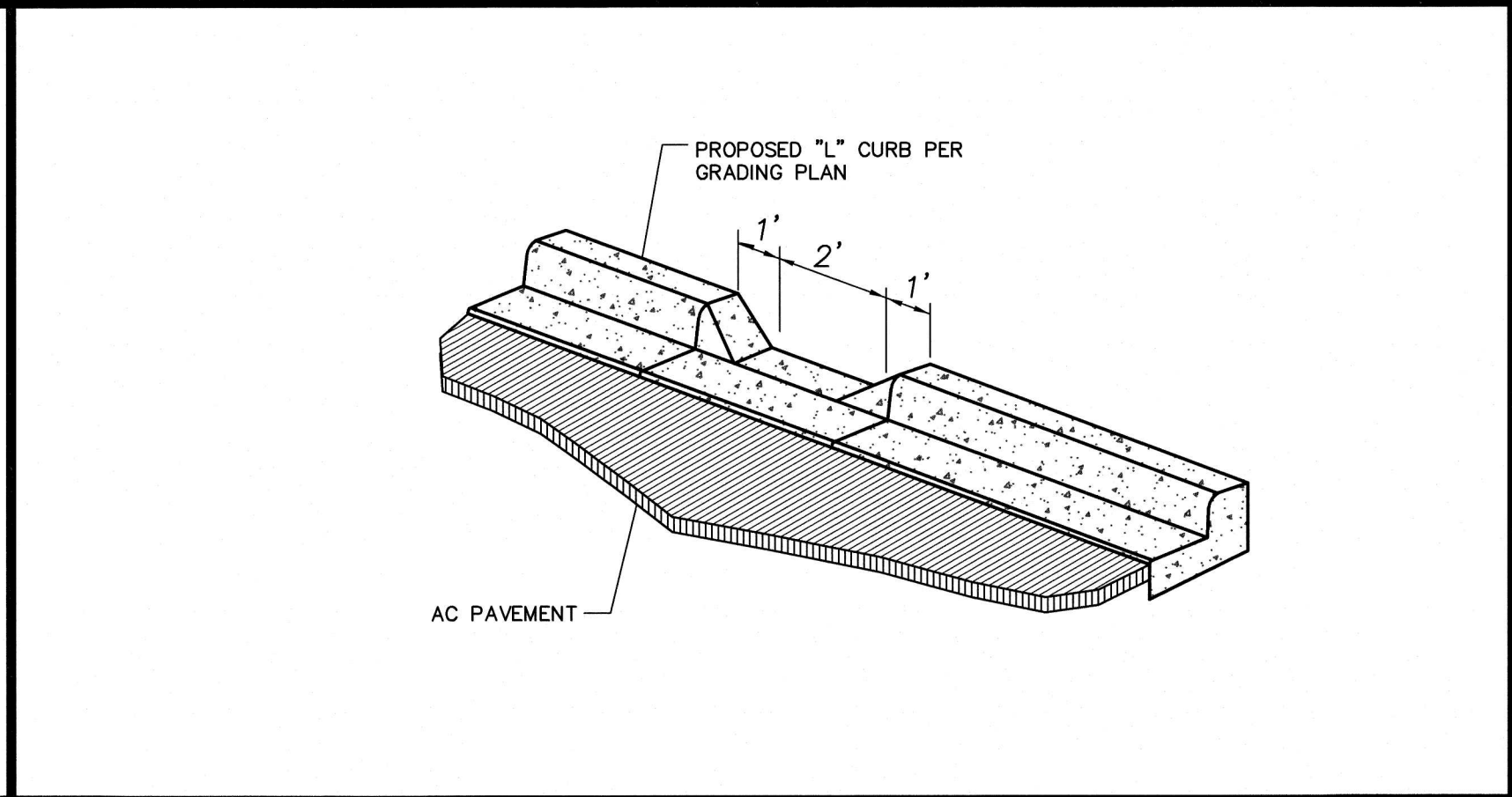
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SECTION.

N.T.S.

D



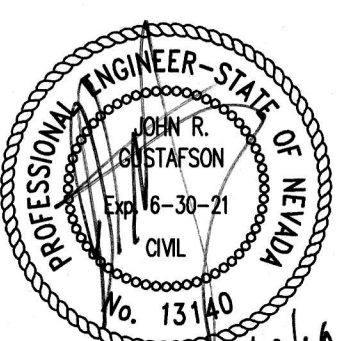
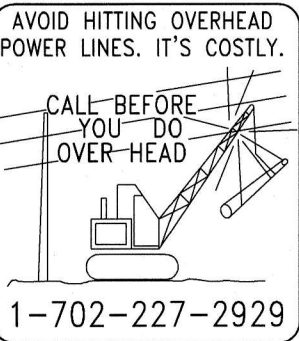
DETAIL - CURB OPENING

N.T.S.

1

DISCLAIMER NOTE

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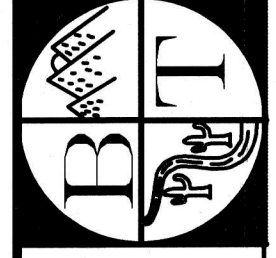


CLV PROJECT # ----

RED COACH MINI STORAGE
GRADING DETAILS

SECTION 3, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.B. & M., NEVADA
CITY OF LAS VEGAS

APN 138-03-602-018

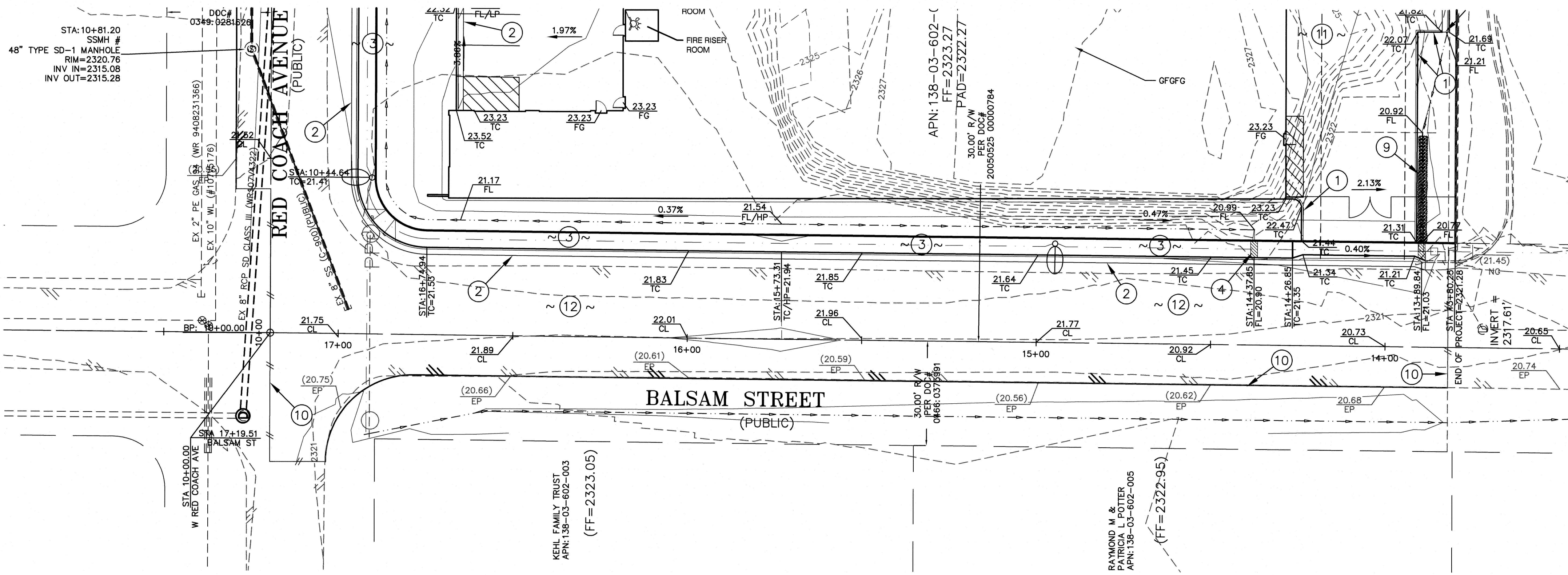


BAUGHMAN & TURNER, INC.
CIVIL ENGINEERS
1210 HINSON STREET
LAS VEGAS, NEVADA 89102
PHONE: (702) 870-8771 FAX: (702) 878-2695

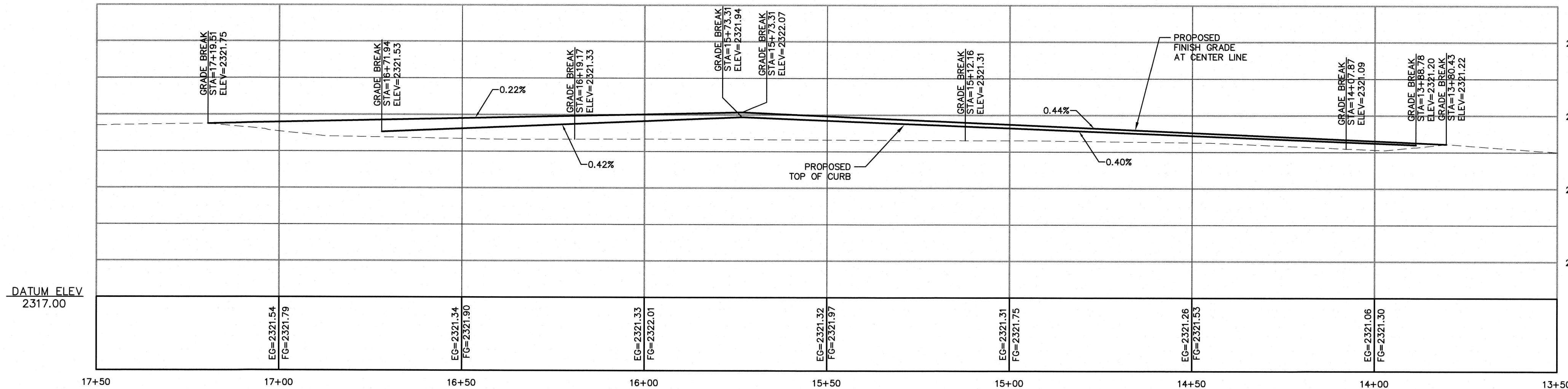
DATE 09/25/2019
DESIGN KLP
DRAWN KLP
CHECK JRG
SCALE

PREPARED FOR :
INVESTMENT SOLUTIONS
3838 W. RED COACH AVENUE
LAS VEGAS, NV 89108

DATE	REV	REVISIONS	APPRO	DATE



BALSAM ST. PLAN
(PUBLIC)
SCALE: HORIZONTAL 1"=20'



BALSAM ST. PROFILE
(PUBLIC)
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'

CONSTRUCTION NOTES			
#	ITEM	UNIT	QUANTITY
			PUBLIC PRIVATE
1	INSTALL "A" TYPE CURB PER CCAUSD #219	LF	- 389
2	INSTALL "L" CURB & GUTTER PER CCAUSD# 216	LF	366 410
3	INSTALL SIDEWALK PER CCAUSD # 234	SY	244 -
4	INSTALL 2' SIDEWALK UNDERDRAIN PER CCAUSD #236	EA	3 -
5	CONSTRUCT 2' CURB OPENING PER DETAIL ON SHEET C2.1	EA	- 6
6	INSTALL CONCRETE PARKING BUMPER.	EA	- 3
7	INSTALL TRASH ENCLOSURE SEE ARCHITECTURAL PLANS	EA	- 1
8	CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE 1	EA	4 -
9	INSTALL RIP RAP PER SECTION 1500. STRUCTURAL BEST MANAGEMENT PRACTICES AS REFERENCED WITHIN THE CLARK COUNTY FLOOD CONTROL DISTRICT (CCFCD) HYDROLOGIC AND DRAINAGE DESIGN MANUAL (HDDM), D ₅₀ = 3", THICKNESS 6".	SF	- 180
10	SAWCUT NEAT AND MATCH EXISTING	SY	1270 -
11	CONSTRUCT 3" AC OVER 4" TYPE II AGGREGATE BASE.	SY	- 1861
12	CONSTRUCT 3" AC OVER 6" TYPE II AGGREGATE BASE.	EA	1270 -

BASIS OF BEARING

NORTH 89°52'47" WEST - BEING THE CENTERLINE OF RED COACH AVENUE AS SHOWN IN FILE 109 OF PARCEL MAPS, PAGE 62, CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK BLV00 3E4 - BEING A RIVET AND PLATE IN TOP OF CURB AT THE NORTHWEST CORNER OF CRAIG ROAD AND RAINBOW BOULEVARD.

705.770 METERS
NAVD 88 DATUM

AREA OF DISTURBANCE

OFFSITES: 0.26 AC
ONSITES: 1.11 AC

LEGAL DESCRIPTION

BEING LOT 2 OF FILE 109 OF PARCEL MAPS, PAGE 62, CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

ONSITE STORM DRAIN NOTE

ALL ONSITE STORM DRAINS AND ASSOCIATED FACILITIES ARE PRIVATELY OWNED AND TO BE PRIVATELY MAINTAINED BY PROPERTY OWNER.

EARTHWORK QUANTITIES

QUANTITIES SHOWN WERE CALCULATED PRIOR TO ANY GRADING ON THE PROPOSED SITE LOCATION.

CUT 2116.99 CY
FILL 1106.93 CY
NET 920.06 (CUT) CY

FLOOD ZONE INFORMATION

THE SUBJECT PROPERTY LIES WITHIN FLOOD ZONE "X", BY THE SECRETARY OF HOUSING AND URBAN DEVELOPMENT, ON FLOOD INSURANCE RATE MAP NO. 32003C2155F DATED NOVEMBER 16, 2011, IN CLARK COUNTY, STATE OF NEVADA, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PROPERTY IS SITUATED.

NOTE:

*NOTE: NOTHING OVER 24" IN HEIGHT ALLOWED IN SIGHT VISIBILITY ZONE EXCEPT TRAFFIC CONTROL DEVICES.

ENGINEERS CERTIFICATE

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

JOHN R. GUSTAFSON, P.E. 13140

DATE

APPROVALS

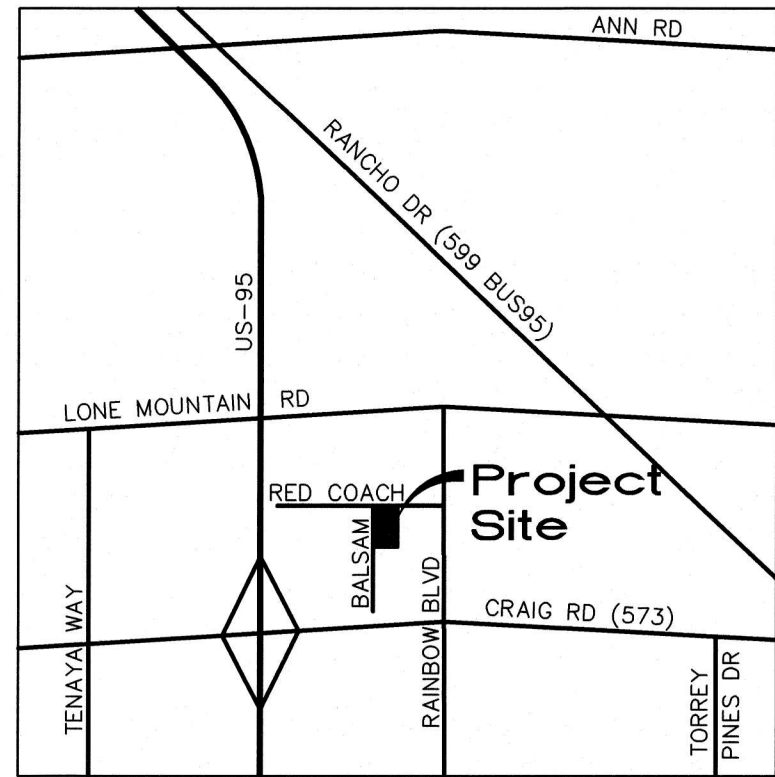
APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

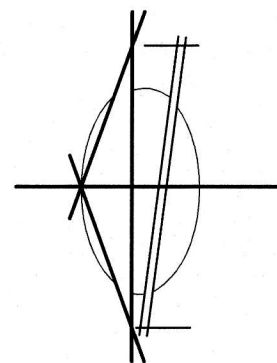
PROJECT NO.: _____ FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW: TOTAL _____ GPM/ONSITE _____ GPM

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND 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.



VICINITY MAP



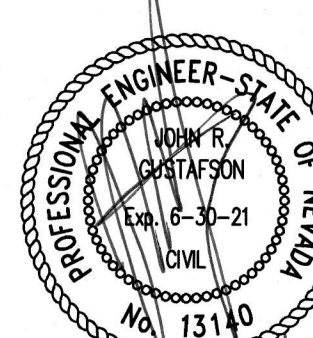
GRAPHIC SCALE

LEGEND

---	PROPERTY LINE
---	STREET CENTERLINE
---	LOT LINE
---	BUILDING SETBACK LINE
---	PROPOSED ROLL CURB
---	EXISTING "L" CURB & GUTTER
---	EXISTING CONTOUR LINES
---	PROPOSED FLOW LINE
---	SAW CUT LINE
---	PROPOSED EDGE OF PAVEMENT
---	EXIST. EDGE OF PAVEMENT
---	PROPOSED BLOCK WALL
---	PROPOSED SCARP
---	EXIST. BLOCK WALL
---	SAW CUT AREA
---	MATCHLINE
---	PROPOSED ELEVATION & LOCATION
---	EXISTING ELEVATION & LOCATION
---	PROPOSED GRADE
---	CONSTRUCTION NOTE
---	PROPOSED HYDRANT
---	SIGHT VISIBILITY ZONE*
---	ROADWAY EASEMENT
AC	ASPHALTIC CONCRETE
CL	CENTERLINE
TC	TOP OF CURB
EP	EDGE OF PAVEMENT
FG	FINISHED GRADE
TF	TOP OF FOOTING
TRW	TOP OF RETAINING WALL
TFW	TOP OF FLOOD WALL
TSW	TOP OF STEM WALL
BSW	BACK OF SIDEWALK
GB	GRADE BREAK
BVC	BEGIN VERTICAL CURVE
EVC	END VERTICAL CURVE
FF	FINISHED FLOOR
FL	FLOW LINE
HP	HIGH POINT
INV	INVERT
LF	LINEAR FEET
LP	LOW POINT
LS	LANDSCAPE
SWG	SOUTHWEST GAS
P.U.E.	PUBLIC UTILITY EASEMENT
P.D.E.	PRIVATE DRAINAGE EASEMENT
P.S.E.	PRIVATE SEWER EASEMENT
P.L.E.	PRIVATE LANDSCAPE EASEMENT

*NOTE: NOTHING OVER 24" IN HEIGHT ALLOWED IN SIGHT VISIBILITY ZONE EXCEPT TRAFFIC CONTROL DEVICES.

CLV PROJECT # ----



RED COACH MINI STORAGE PLAN & PROFILE - BALSAM ST.

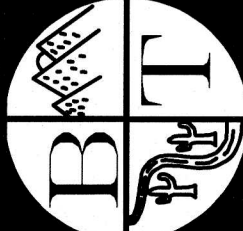
SECTION 3.1, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.B. & M. NEVADA
CITY OF LAS VEGAS
APN 138-03-602-018

SHEET

C3.1

6 OF 6
PROJ. NO.
1021

BAUGHMAN & TURNER, INC.



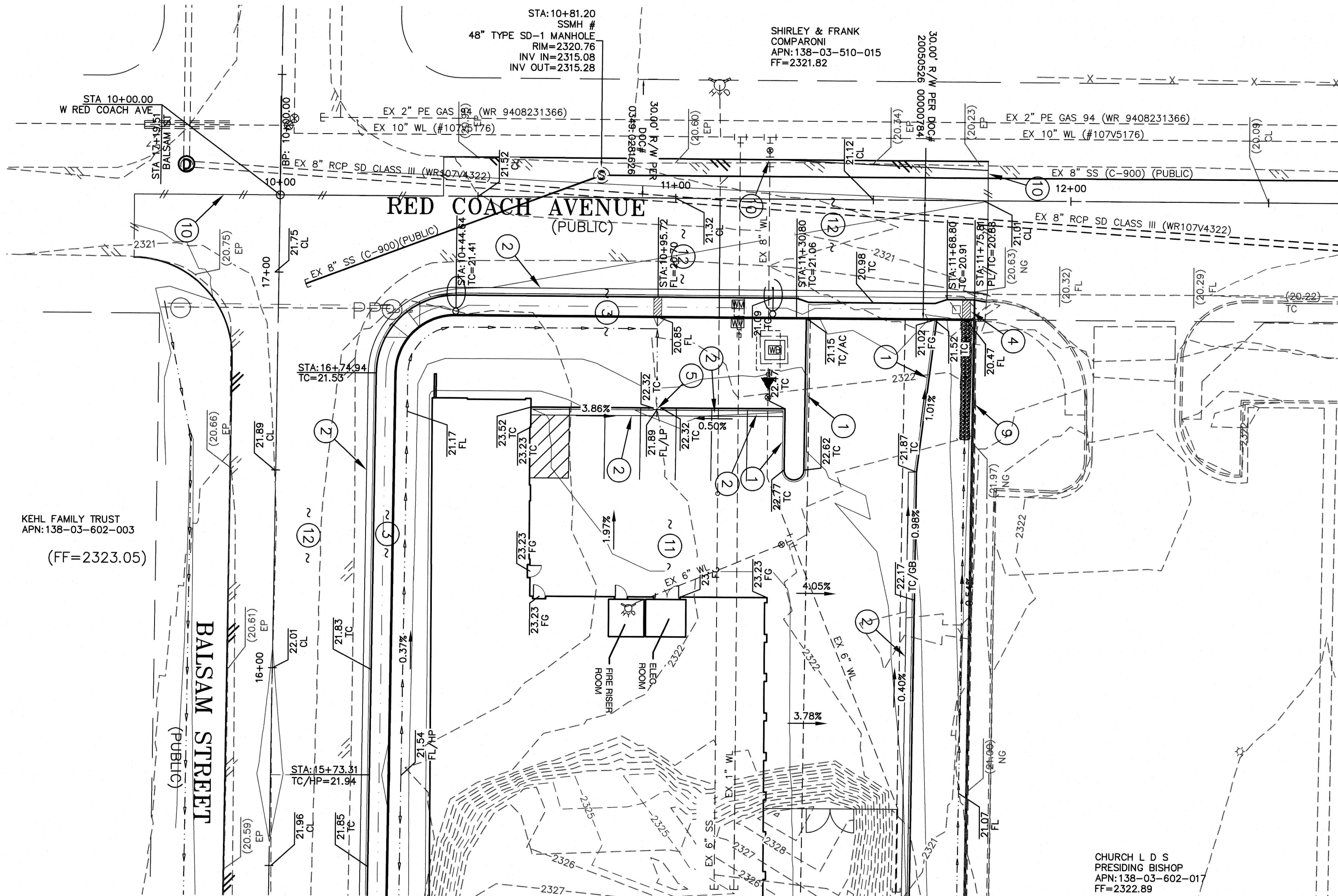
CIVIL ENGINEERS LAND PLANNERS
LAND SURVEYORS LAS VEGAS, NEVADA
1210 HINSON STREET
PHONE: (702) 870-8771 FAX: (702) 878-2695 89102

PREPARED FOR :

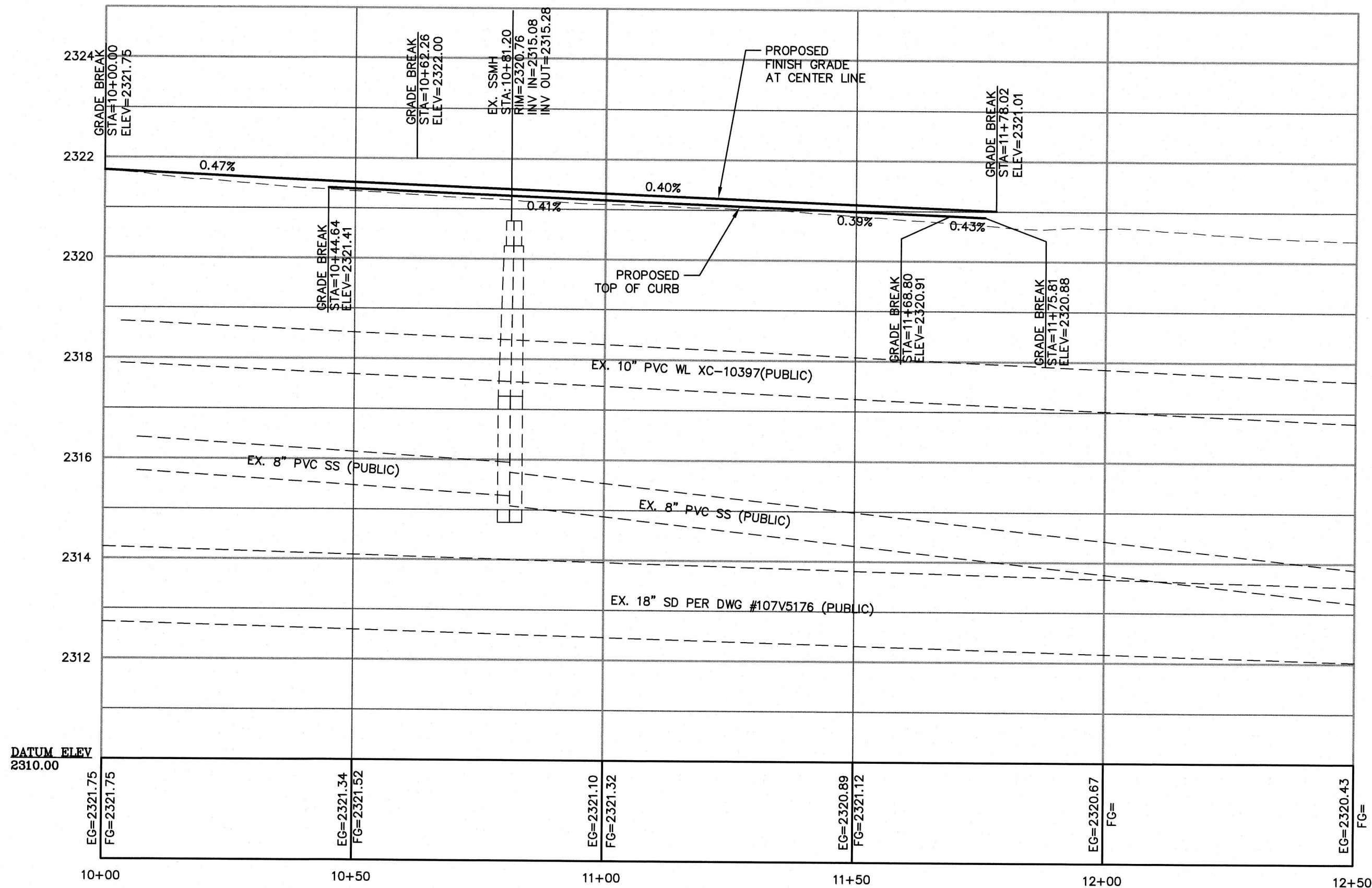
DATE 10/28/2019
DESIGN KLP
DRAWN KLP
CHECK JRG
SCALE

SUNDANCE BUILDERS LLC
7250 PEAK DRIVE STE 110
LAS VEGAS, NV 89128

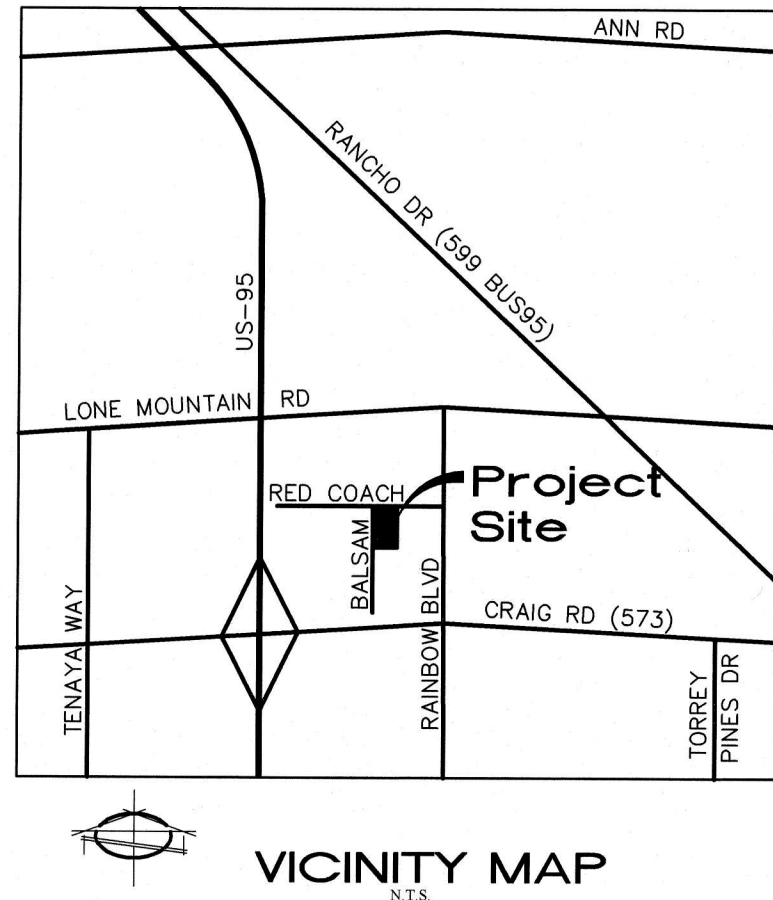
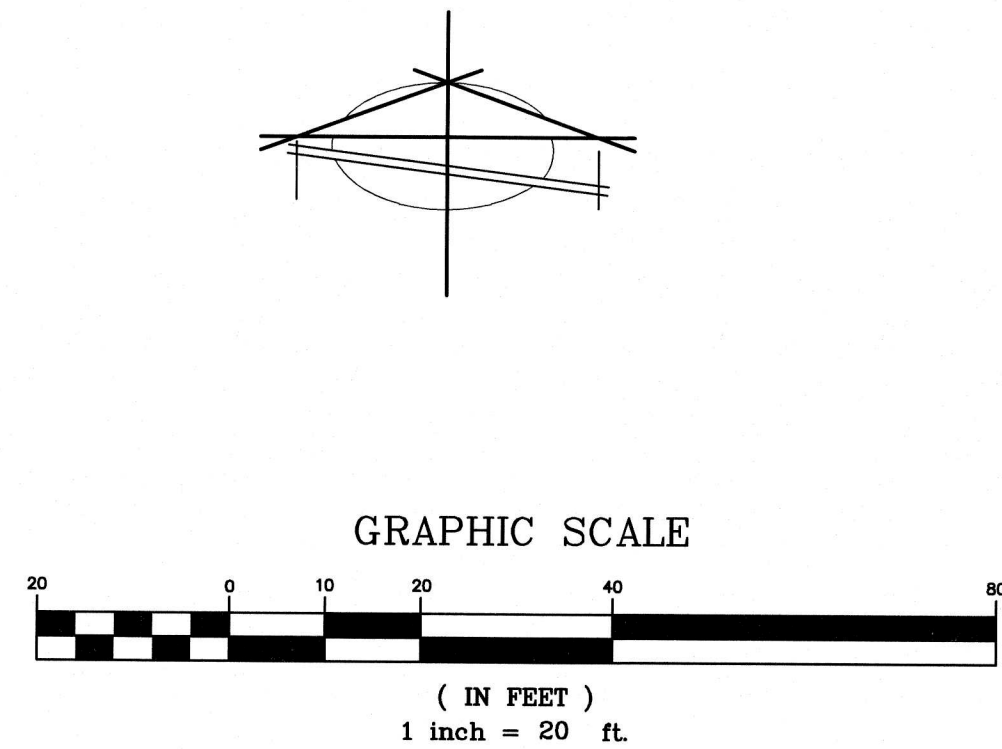
DATE	BY	REVISIONS	DATE	BY



RED COACH AVE PLAN
(PUBLIC)
SCALE: HORIZONTAL 1"=20'



RED COACH AVE PROFILE
(PUBLIC)
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'



LEGEND

	PROPERTY LINE
	STREET CENTERLINE
	LOT LINE
	BUILDING SETBACK LINE
	PROPOSED ROLL CURB
	EXISTING "L" CURB & GUTTER
	EXISTING CONTOUR LINES
	PROPOSED FLOW LINE
	SAW CUT LINE
	PROPOSED EDGE OF PAVEMENT
	EXIST. EDGE OF PAVEMENT
	PROPOSED BLOCK WALL
	PROPOSED SCARP
	EXIST. BLOCK WALL
	SAW CUT AREA
	MATCHLINE
	PROPOSED ELEVATION & LOCATION
	EXISTING ELEVATION & LOCATION
	PROPOSED GRADE
	CONSTRUCTION NOTE
	PROPOSED HYDRANT
	SIGHT VISIBILITY ZONE*
	ROADWAY EASEMENT
	ASPHALTIC CONCRETE
	CENTERLINE
	TOP OF CURB
	EDGE OF PAVEMENT
	FINISHED GRADE
	TOP OF FOOTING
	TOP OF RETAINING WALL
	TOP OF FLOOD WALL
	TOP OF STEM WALL
	BACK OF SIDEWALK
	GRADE BREAK
	BEGIN VERTICAL CURVE
	END VERTICAL CURVE
	FINISHED FLOOR
	FLOW LINE
	HIGH POINT
	INVERT
	LINEAR FEET
	LOW POINT
	LANDSCAPE
	SOUTHWEST GAS
	PUBLIC UTILITY EASEMENT
	PRIVATE DRAINAGE EASEMENT
	PRIVATE SEWER EASEMENT
	PRIVATE LANDSCAPE EASEMENT

*NOTE: NOTHING OVER 24" IN HEIGHT ALLOWED IN SIGHT VISIBILITY ZONE EXCEPT TRAFFIC CONTROL DEVICES.

CONSTRUCTION NOTES		QUANTITY	
#	ITEM	UNIT	PUBLIC PRIVATE
1	INSTALL "A" TYPE CURB PER CCAUSD #219	LF	- 389
2	INSTALL "L" CURB & GUTTER PER CCAUSD# 216	LF	366 410
3	INSTALL SIDEWALK PER CCAUSD # 234	SY	244 -
4	INSTALL 2' SIDEWALK UNDERDRAIN PER CCAUSD #236	EA	3 -
5	CONSTRUCT 2' CURB OPENING PER DETAIL ON SHEET C2.1	EA	- 6
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7	INSTALL TRASH ENCLOSURE SEE ARCHITECTURAL PLANS	EA	- 1
8	CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235, CASE I	EA	4 -
9	INSTALL RIP RAP PER SECTION 1500: STRUCTURAL BEST MANAGEMENT PRACTICES AS REFERENCED WITHIN THE CLARK COUNTY FLOOD CONTROL DISTRICT (CCFCD) HYDROLOGIC AND DRAINAGE DESIGN MANUAL (HCDDM), D ₅₀ = 3", THICKNESS 6".	SF	- 180
10	SAWCUT NEAT AND MATCH EXISTING	SY	1270 -
11	CONSTRUCT 3" AC OVER 4" TYPE II AGGREGATE BASE.	SY	- 1861
12	CONSTRUCT 3" AC OVER 6" TYPE II AGGREGATE BASE.	EA	1270 -

BENCHMARK

CITY OF LAS VEGAS BENCHMARK BLV00 3E4 - BEING A RIVET AND PLATE IN TOP OF CURB AT THE NORTHWEST CORNER OF CRAIG ROAD AND RAINBOW BOULEVARD.

705.770 METERS 2315.51 FEET
NAVD 88 DATUM

AREA OF DISTURBANCE

OFFSTES: 0.26 AC
ONSTES: 1.11 AC

LEGAL DESCRIPTION

BEING LOT 2 OF FILE 109 OF PARCEL MAPS, PAGE 62, CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

ONSITE STORM DRAIN NOTE

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EARTHWORK QUANTITIES

QUANTITIES SHOWN WERE CALCULATED PRIOR TO ANY GRADING ON THE PROPOSED SITE LOCATION.

CUT 2116.99 CY
FILL 1196.93 CY
NET 920.06 (CUT) CY

BASIS OF BEARING

NORTH 89°52'47" WEST - BEING THE CENTERLINE OF RED COACH AVENUE AS SHOWN IN FILE 109 OF PARCEL MAPS, PAGE 62, CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

FLOOD ZONE INFORMATION

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NOTE:

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OWNER

INVESTMENT SOLUTIONS
8885 W. RED COACH AVE
LAS VEGAS, NV 89108

DEVELOPER

SUNDANCE BUIDERS LLC
7250 PEAK DRIVE STE 110
LAS VEGAS, NV 89128

ENGINEERS CERTIFICATE

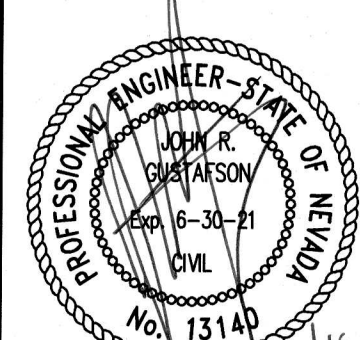
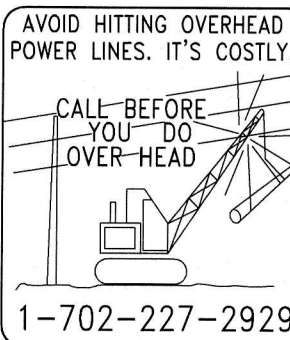
I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS, NEVADA.

JOHN R. GUSTAFSON, P.E. 13140

DATE

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CLV PROJECT # ----

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO.: FIRST APPROVED-DATE:
LVVWD APPROVED FIRE FLOW: 1074E- GPM/ONSITE GPM

PREPARED FOR :
SUNDANCE BUIDERS LLC
7250 PEAK DRIVE STE 110
LAS VEGAS, NV 89128

DATE: 10/28/2019
DESIGN: KLP
DRAWN: KLP
CHECK: JRG
SCALE: 1/8"=1'-0"

DATE: 10/28/2019
DESIGN: KLP
DRAWN: KLP
CHECK: JRG
SCALE: 1/8"=1'-0"

DATE: 10/28/2019
DESIGN: KLP
DRAWN: KLP
CHECK: JRG
SCALE: 1/8"=1'-0"

BAUGHMAN & TURNER, INC.
CIVIL ENGINEERS
1210 HINSON STREET
LAS VEGAS, NEVADA 89102
PHONE: (702) 870-8771
FAX: (702) 878-2695

RED COACH MINI STORAGE
PLAN & PROFILE - RED COACH
SECTION 3, TOWNSHIP 20 SOUTH, RANGE 60 EAST, M.D.B. & M.
CITY OF LAS VEGAS
APN 138-03-602-018

SHEET
C3.0
5 OF 6
PROJ. NO. 1021