

DS #: 4715

APN: Portion of 125-17-610-017

PROJECT: Farm and Durango Commercial - Update to
(Tuk Springs Village)

SUBMITTAL: 1st and Supplement

SCANNED BY/DATE: _____

CHECKED BY/DATE: _____



CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		March 3, 2015
TO: Land Development Services Department of Building & Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for:	COPIES TO:
	Farm & Durango Commercial – Update to (Tule Springs Village)	Thomason Consulting Engineers
Cross Streets:	East of Farm Road & Durango Drive	Farm Capital Management LLC
File Number:	F:\Depot\DSMemos\DS4715A.doc	Bart Anderson, P.E., DevCo
Parcel Number:	Portion of 125-17-610-017	
Zoning Action:	SUP-55741 & SDR-55742	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal & Supplement	12/23/2014 & 2/12/2015	3/2/2015	See Comments Below	\$400.00	380848: \$400
TOTAL FEES (LDDRS):				\$400.00	----

REMARKS:

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

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

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

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

END OF REMARKS

ays

T/R/S: T19S/R60E/17
AREA G-17

 *** TX REPORT ***

JOB NO. 0400
 ST. TIME 03/03 08:56
 PGS. 1
 SEND DOCUMENT NAME

 TX IMCOMPLETE -----
 TRANSACTION OK 7029326129
 ERROR -----

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NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a

TECHNICAL HYDROLOGY STUDY FOR FARM & DURANGO COMMERCIAL

(aka Update to the TDS for Tule Springs Village)

CITY OF LAS VEGAS
TCE# 007-14131

Prepared for:
FARM CAPITAL MANAGEMENT LLC
7155 S. Rainbow Drive, Suite 200
Las Vegas, NV 89118

Prepared by:
TCE
7080 La Cienega Street, Suite 200
Las Vegas, Nevada 89119
(702) 932-6125
FAX (702) 932-6129

December 2014

T ☐ **THOMASON**
C ☐ ☐ **CONSULTING**
E ☐ ☐ ☐ **ENGINEERS**

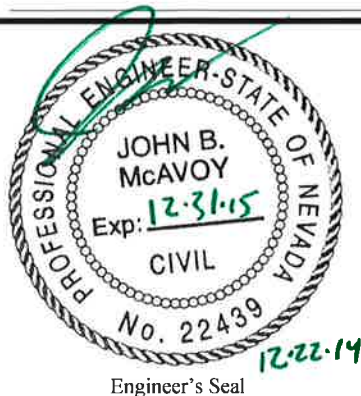
DRAINAGE STUDY INFORMATION FORMName of Development: Farm and Durango Commercial DATE: December 9, 2014Location of development: a) Descriptive (Cross Streets) North/South Durango Drive East/West Farm Roadb) Sect. 17 Twn. 19S Rng 60EName of Owner: Farm Capital Management LLCAssessors Parcel No.: Portion of 125-17-610-017Telephone No.: (702) 304-8383Facsimile No.: (702) 304-1622Address: 7155 S. Rainbow Drive, Suite 200Las Vegas, NV 89118Contact Person-Name: John B. McAvoyTelephone No: 702-932-6125Email: jmcavoy@tce-lv.comFirm: TCEAddress: 7080 La Cienega Street, Suite 200 Las Vegas, Nevada 89119

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 0.58 Acres Being Developed/Disturbed 0.58 Acres2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? YES ☐ NO ☒3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? YES ☐ NO ☒4. Proposed type of development (Residential, Commercial, Etc.)? Commercial5. Approximate upstream land area, which drains to the subject site? Less than 1 acre6. Has the site drainage been evaluated in the past? YES ☒ NO ☐ If yes, please documentation:TDS for Tule Springs Village (DS2741)Retail Shops & Mini Storage (Update to Tule Springs Village) (DS4099)

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site:

The project perpetuates the conveyance of the onsite drainage to Tule Springs Road.8. Briefly describe your proposed schedule for the subject project: ASAP

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

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

Local Entity File No.

Revision

Date

REFERENCE:

STANDARD FORM 1

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Farm and Durango Commercial

Map ID:

Firm Name: TCE

Engineer: John B. McAvoy

Address: 7080 La Cienega Street, Suite 200

City: Las Vegas

State: NV

Zip: 89119

Phone Number: 702-932-6125

Fax Number: 702-932-6129

Property Owner: Farm Capital Management LLC

Address: 7155 S. Rainbow Drive, Suite 200

City: Las Vegas

State: NV

Zip: 89118

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 (CCRFCDD) 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 REQUIREMENTS

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.

II. MAPS AND EXHIBITS

YES NO

- ☒ ☐ A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated
- ☒ ☐ A copy of the current CCRFCDD Master Plan Update Figure, (F-x), for Flood Control Facilities and Environmental areas with the site delineated.

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 interim and future 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"x36" 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 crown 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

- N/A** ☐ Streets with off-set crowns.
- ☒ ☐ Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
- ☒ ☐ Property lines.
- N/A** ☐ Right-of-way lines and widths, existing and proposed.
- ☒ ☐ Existing improvements and their elevations.
- ☒ ☐ Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm Peak flows at basin concentration points.
- ☒ ☐ Concentration points and drainage flow direction with Q_{100} and V_{100} and D_{100} in streets.
- ☒ ☐ Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
- N/A** ☐ Location and cross-section of street capacity calculations.
- N/A** ☐ Cross-sectional detail for channels, including cutoff wall locations.
- ☒ ☐ Existing and proposed drainage facilities, appurtenances, and connections (i.e., sidewalks, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, materials, shape, and slope with plan and profile and HGL calculations.
- N/A** ☐ Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
- N/A** ☐ Location and detail of existing, proposed, and future block wall openings. Minimum size is 16"X48". Wrought iron gate is required for flows > 10 cfs.
- N/A** ☐ Location and detail of floodwalls illustrating depth of flow, proposed grouting height, etc.
- ☒ ☐ 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.
- ☒ ☐ Building and/or lot numbers.
- N/A** ☐ Alignment of all existing, proposed, or future Regional Facilities. Adjacent to the site.
- N/A** ☐ Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

YES NO

- N/A** ☐ For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table. Finish floor elevations must be a minimum of 18 inches above BFE.
- N/A** ☐ Appropriately elevated "humps" 6 inches above the 100 year water surface elevation at site accesses where the intent is to protect the site from Q_{100} flows.
- ☒ ☐ Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.
- N/A** ☐ Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).

IV. HYDROLOGIC ANALYSIS

YES NO

- N/A** ☐ Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
- N/A** ☐ Input and output information for existing conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
- ☒ ☐ 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.
- ☒ ☐ Use of correct precipitation values in and around the McCarran Airport rainfall area.
- ☒ ☐ A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
- ☒ ☐ A summary table of stormwater flows showing basin area, Q_{10} and Q_{100} for both individual basins and combined basin flows, where applicable.
- ☒ ☐ Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.
- ☒ ☐ On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners in accordance with current Nevada Drainage Law.
- N/A** ☐ 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

N/A ☐ Flow split calculations and supporting documentation or reference for the method of flow split calculations used.

N/A ☐ Normal depth street flow calculations and cross-section diagrams for all interior and perimeter streets. Provide "dxv" products for the Q_{100} and Q_{10} flows representing the worst case for interior and all perimeter streets. $Q_{100} d \times v \leq 8$. $Q_{10} d \times v \leq 6$ and 12 foot dry lane for rights-of-way ≥ 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan.

N/A ☐ A summary table of interior and exterior street capacity calculations showing the street name, Q_{100} flow, slope, depth of flow, velocity and depth times velocity product and streets needing to meet 12 foot dry lane criteria.

N/A ☐ Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged.)

N/A ☐ Appropriate hydraulic calculations at drainage easement entrance and discharge locations to set finish floor elevations. Hydraulic calculations must include submerged weir, superelevation and tee intersection losses, where appropriate.

☒ ☐ 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 requirements is 6 inches above adjacent upstream top of curb. Buildings adjacent to drainage easements must always be provided with 18 inches of freeboard above the Q_{100} weir height or flow depth, which ever is greater.

A complete water surface profile analysis (HEC-2, HEC-RAS, etc.) for channel flows and FEMA Zone A flood zones.

N/A ☐

- Field survey data.
- Input and output information.
- Plotted cross-sections based on survey with proper encroachments.
- A map showing the location of the cross-sections.
- Analysis of both sub and super-critical flow segments.
- A summary table and a discussion of the results in the text of the report.

N/A ☐ Provide a 50 percent clogging factor in the capacity calculation for drop inlets.

N/A ☐ Hydraulic calculations for culverts and storm drains. D-Load calculations must be provided for storm drain pipes in public right-of-way, including headwater pool inundation.

☒ ☐ The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed

N/A ☐ Provide BMP type, size and supporting calculations for parking lots and LIDs (if required).

REFERENCE:

STANDARD FORM 2



CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

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

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

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

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

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

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

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

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

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

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

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

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

December 9, 2014

Albert Sung, P.E.
City of Las Vegas Flood Control
333 N. Rancho Drive
Las Vegas, Nevada 89106

**Re: Technical Drainage Study for Farm & Durango Commercial
(aka Update to the TDS for Tule Springs Village)**

Mr. Sung:

Thomason Consulting Engineers has prepared this drainage study as an update to the approved *Technical Drainage Study for Tule Springs Village*. This study addresses the improvements for the proposed commercial building only. The original study was conditionally approved on September 28, 2000 (see approval letter in the reference material). There have been two updates that were submitted and approved after the original drainage submittal; *McDonald's at Durango & El Capitan* (DS3119) on May 15, 2002 and *Retail Shops & Mini Storage* (DS4099) on January 29, 2007

Location

The project area is within the Northeast Quarter (NE 1/4) of Section 17, Township 19 South, Range 60 East, Mount Diablo Meridian, City of Las Vegas, Nevada. The site is located on the northeast corner of Durango Drive and Farm Road (portion of APN 125-17-610-017). See Figure 1 and 1A, *Vicinity Map* and *APN Map*.

FEMA Floodplain Information

A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) Community-Panel Number 32003C1745F, effective date September 27, 2002 indicates the site is located within a FEMA Zone 'X'. A Zone 'X' is described by FEMA as areas outside of the 0.2% annual chance floodplain. A map depicting the FEMA flood zones in the vicinity of the site is included in the appendix of this study. (Figure 3- FIRM Map)

CCRFC Master Plan Information

As shown on Figure F-13 from the *Flood Control Master Plan Update of the Las Vegas Valley* (see Figures 4 and 5 in the Appendix), prepared by PBS&J, Louis Berger Group, etc., the subject site is not adjacent to a proposed Master Plan Flood Control Facility. As shown on Figure H-13 (see Figure 6 in the appendix) the site is a part of basin NW138-C.

Drainage Description

As shown in the approved *Technical Drainage Study for Tule Springs Village*, Durango Drive and Farm Road convey flows away from the site. The site entrances and landscaped areas along the adjacent streets have been elevated so that no flow enters the site. The proposed commercial building is part of onsite basin ON-4 (see reference material). The general parking lot flow pattern and street flows have been reviewed and are accepted.

The Update for the *Retail Shops & Mini Storage* revised the parking lot hydrology, the hydrologic calculations have been reviewed and are accepted. The proposed building is part of basin PR-ON1 (see

reference material). The basin generates 6 cfs in the 10-year condition and 11 cfs in the 100-year condition with a total area of 3.4 acres. The proposed improvements encompass an area of 0.58 acres (17% of the total basin). The project therefore generates 1 cfs in the 10-year condition and 2 cfs in the 100-year condition. As the existing parking lot was analyzed as a commercial CN, no change in the hydrologic calculations are proposed. The flows continue east in the same flow pattern as shown in the approved study update.

Please note no parking lot LID BMP's are proposed with this development as the redevelopment area is less than 1 acre.

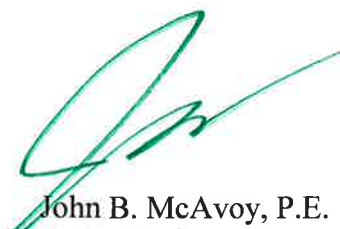
Conclusions

The current plans in this submittal show the finished floor elevation at 2554.75 feet. The local tributary area is minimal. The finished floor is in compliance with the original approved study.

A portion of the proposed improvements are on the adjacent property (APN 125-17-610-010). A permission to grade letter is being obtained and will be submitted upon receipt.

I trust this satisfies your concerns regarding this project. If there are any questions, or additional information necessary, please contact this office.

Sincerely,



John B. McAvoy, P.E.
Project Engineer

APPENDIX

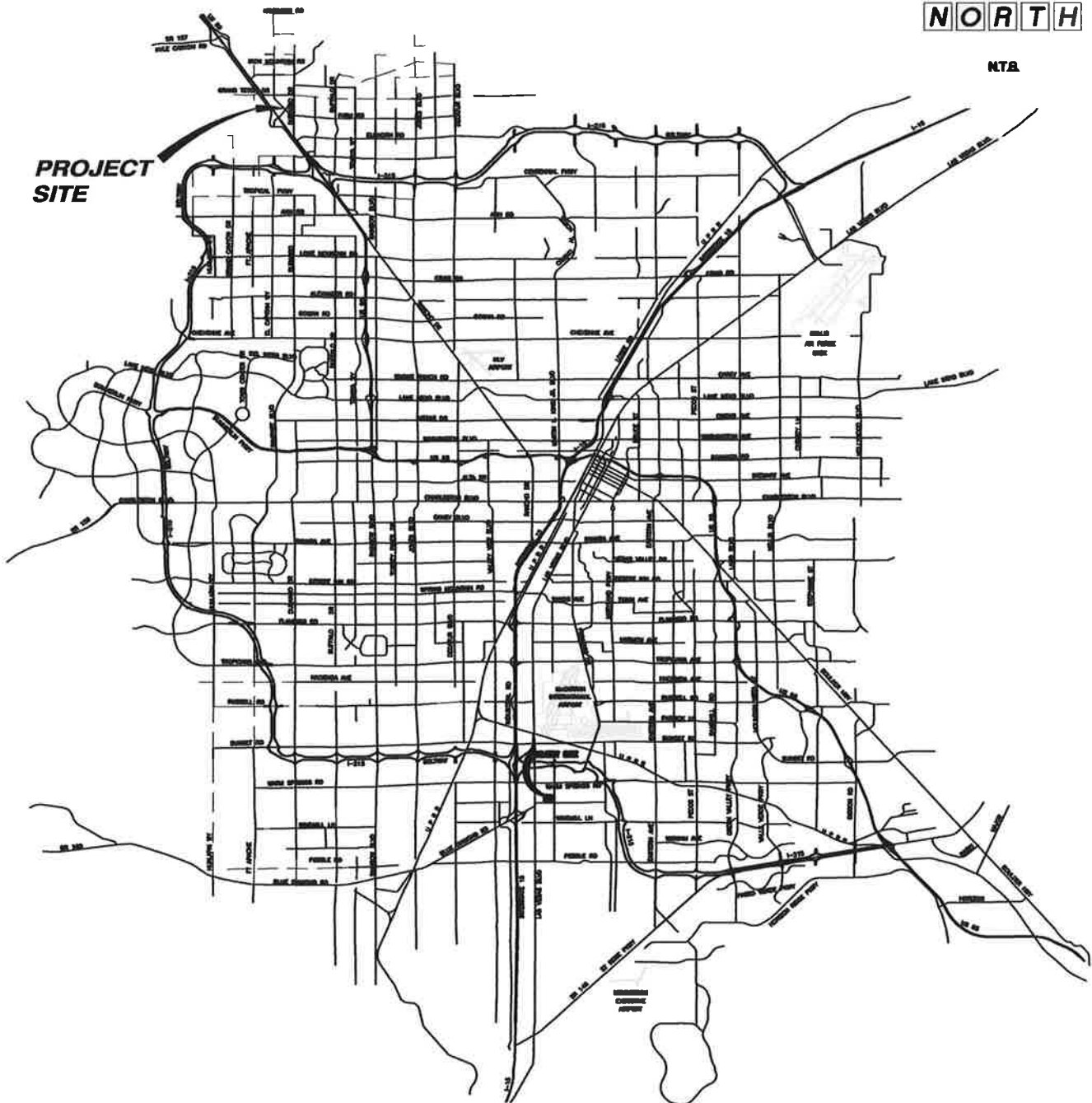
T THOMASON
C CONSULTING
E ENGINEERS

Figures



NT&

**PROJECT
SITE**



**FARM CAPITAL MANAGEMENT LLC
FARM AND DURANGO COMMERCIAL**

**VICINITY MAP
FIGURE 1**

T **THOMASON**
C **CONSULTING**
E **ENGINEERS**

7080 LA CIENEGA STREET, SUITE 200
LAS VEGAS, NEVADA 89119
702-932-6125 FAX: 702-932-6129



NTA



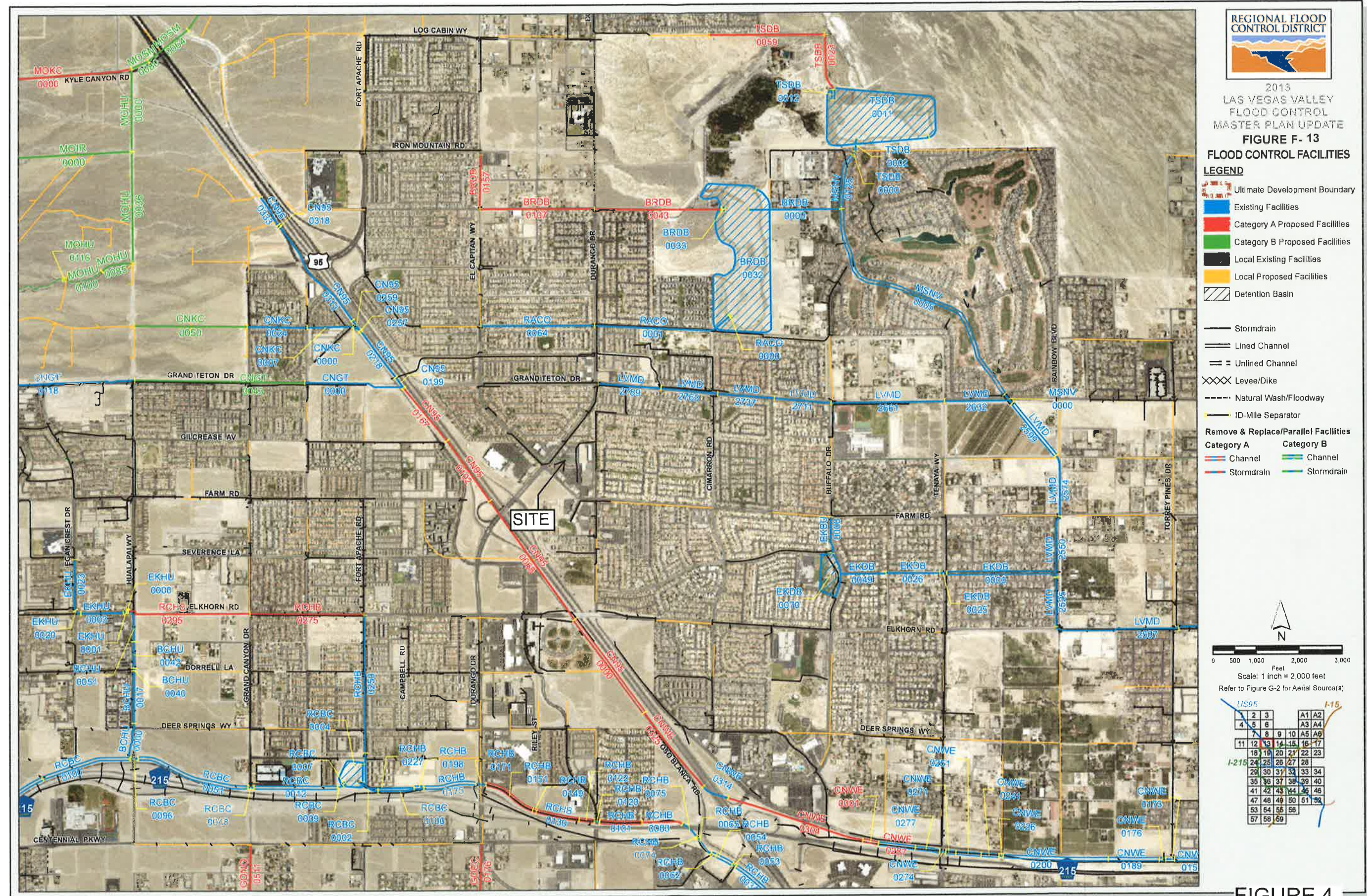
FARM CAPITAL MANAGEMENT LLC
FARM AND DURANGO COMMERCIAL

SITE DESCRIPTION MAP
FIGURE 2

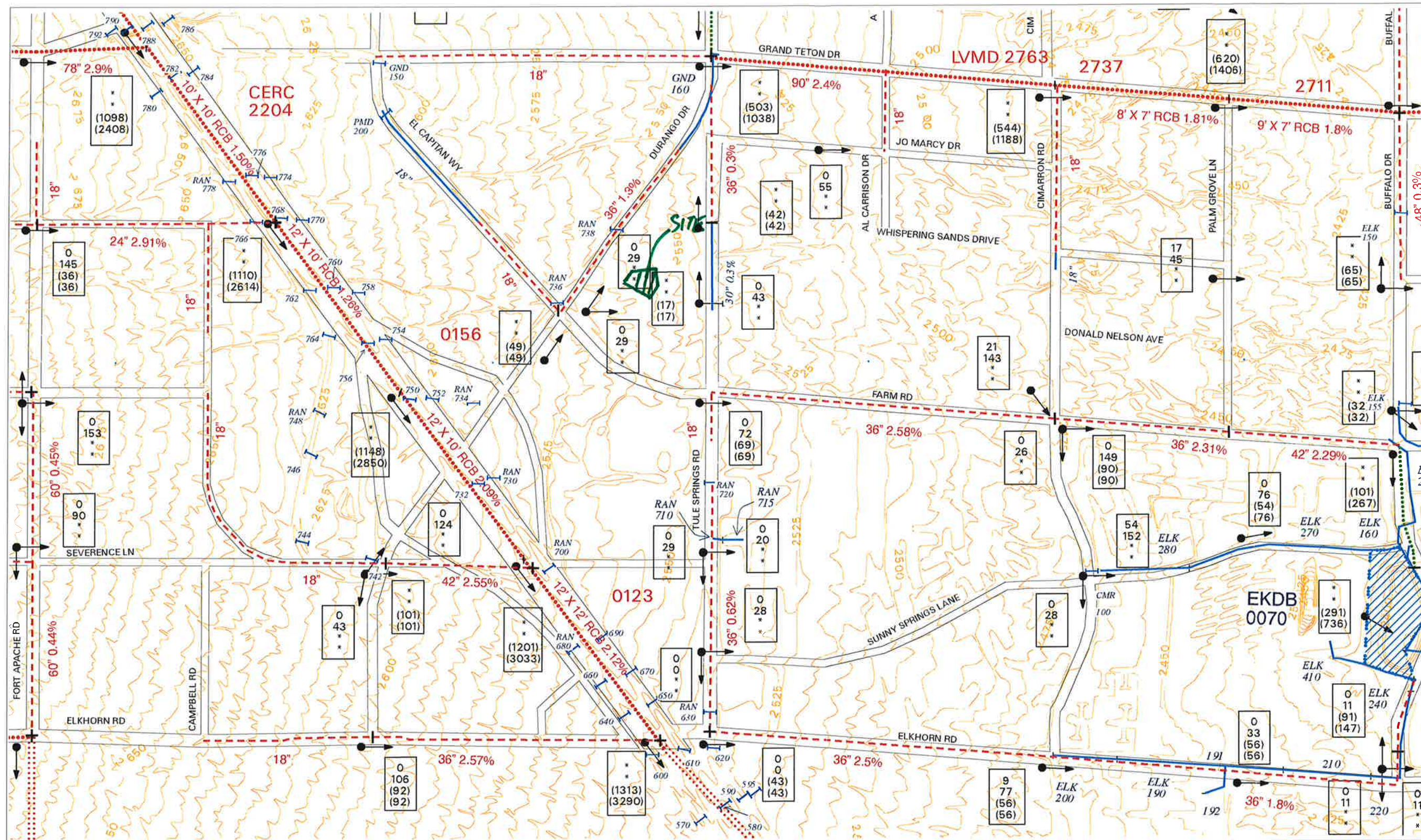
T **THOMASON**
C **CONSULTING**
E **ENGINEERS**

7080 LA CIENEGA STREET, SUITE 200
LAS VEGAS, NEVADA 89119
702-932-6125 FAX: 702-932-6129

**7080 LA CIENEGA STREET, SUITE 200
LAS VEGAS, NEVADA 89119
702-932-6125 FAX: 702-932-6129**



ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
BCHU	E	BELTWAY CHANNEL - HUALAPAI						
0000	E	12' X 5' RCAP	853	501	CBA3-C	WEST3	0.84	1.11
0017	E	8' X 5' RCAP	1216	501	CBA3-C	WEST3	0.84	1.33
0040	E	66" RCP	60	222	DNW26-C	WEST3	0.51	1.04
0042	E	60" RCP	615	222	DNW26-C	WEST3	0.51	1.42
0054	E	54" RCP	770	222	DNW26-C	WEST3	0.51	1.23
BRDB	E	BRENT DRAINAGE SYSTEM						
0000	E	36" RCP with 18" Orifice Plate	2170	37	BRDB	WEST3	2.48	0.40
0031	E	45,080 cfs PMF Spillway		45080	CBRDB	WEST3	2.48	
0032	E	450 ac-ft South Environmental Enhancement Area		1902	CBRDB	WEST3	2.48	
0033	E	Energy Dissipator	100	957	CNW113-C	WEST3	1.58	
0043	P1	8' X 6' RCB	2820	957	CNW113-C	WEST3	1.58	2.10
0107	P1	8' X 6' RCB	2680	957	CNW113-C	WEST3	1.58	2.40
0157	P1	12' X 6' RCB	1280	741	CNW96-C	WEST3	0.95	0.25
CN95	P1	CENTENNIAL PKWY CHANNEL WEST / U.S 95 BRANCH						
0000	P1	Conc Chnl 22'W 10'D 0:1 SS	2690	3340	CNW8B3-C	WEST3	3.36	2.17
0068	P1	3' 8' X 7' RCB	3380	3216	CNW103-C	WEST3	3.05	2.12
0102	P1	3' 8' X 6' RCB	1710	2888	2CNW89-C	WEST3	2.66	2.09
0167	P1	2' 10' X 6' RCB	1580	2160	2CNW71-E	WEST3	1.64	1.50
0198	E	2' 10' X 6' RCB	320	1423	2CNW72-C	WEST3	1.14	0.82
0218	E	15' X 9' RCB	1127	1423	2CNW72-C	WEST3	1.14	0.82
0257	E	Transition Structure	59	1423	2CNW72-C	WEST3	1.14	0.77
0258	E	15' X 9' RCB	290	653	CNW74-C	WEST3	0.44	0.77
0313	E	10' X 6' RCB	2680	653	CNW74-C	WEST3	0.44	2.50
0318	E	Transition Structure	60	653	CNW74-C	WEST3	0.44	1.50
0333	E	5' X 5' RCB	670	339	NW62-S	WEST3	0.22	1.50
CNGT	E	CENTENNIAL PKWY CHANNEL WEST / GRAND TETON BRANCH						
0000	E	10' X 5' RCB	2376	600	CNW71-E	WEST3	0.47	2.58
0043	P0	8' X 6' RCB	3980	600	CNW71-E	WEST3	0.47	3.00
0118	E	5' X 5' RCAP	5472	363	KYLEDET*	KYLEDDB	57.73	3.72
CNKC	E	CENTENNIAL PKWY CHANNEL WEST / KYLE CANYON BRANCH						
0000	E	12' X 4' RCB	377	999	CNW72-C	WEST3	0.71	4.58
0007	E	10' X 5' RCB	874	999	CNW72-C	WEST3	0.71	3.28
0024	E	8' X 5' RCB	1385	999	CNW72-C	WEST3	0.71	2.40
0050	P0	84" RCP	2610	854	CNW72-C	WEST3	0.71	3.60
CNWE	E	CENTENNIAL PKWY CHANNEL WEST						
0150	E	Conc Chnl 40'W 9.5'D 0:1 SS	2279	4233	CNW3B3-C	WEST3	5.64	0.42
0173	E	3' 18' X 8' RCBC @ Torrey Pines	200	4233	CNW3B3-C	WEST3	5.64	0.42
0176	E	Conc Chnl 40'W 9'D 0:1 SS	150	4233	CNW3B3-C	WEST3	5.64	0.41
0189	E	Conc Chnl 36'W 10'D 0:1 SS	1200	4067	CNW2D4-C	WEST3	5.15	0.42
0200	E	Conc Chnl 36'W 9'D 0:1 SS	2470	4067	CNW2D4-C	WEST3	5.15	1.00
0226	E	2' 18' X 6.5' RCBC @ Rio Vista	100	4067	CNW2D4-C	WEST3	5.15	0.51
0241	E	Conc Chnl 36'W 9.5'D 0:1 SS	405	3951	CNW2D3-C	WEST3	4.65	0.51
0251	E	Conc Chnl 36'W 8'D 0:1 SS	575	3951	CNW2D3-C	WEST3	4.65	0.51
0271	E	Conc Chnl 32'W 10'D 0:1 SS	229	3951	CNW2D3-C	WEST3	4.65	0.51
0274	E	32' X 10' RCBC @ Tenaya	142	3951	CNW2D3-C	WEST3	4.65	0.51
0277	E	Conc Chnl 32'W 9'D 0:1 SS	579	3951	CNW2D3-C	WEST3	4.65	0.64
0287	E	Conc Chnl 13'W 10'D 2:1 SS	605	3593	CNW2B2-C	WEST3	3.84	1.19
0301	P2	Conc Chnl 32'W 10'D 0:1 SS	235	3593	CNW2B2-C	WEST3	3.84	1.19
0304	P2	32' X 10' RCB	3259	3593	CNW2B2-C	WEST3	3.84	1.79
0314	E	22' X 7' RCB	785	3593	CNW2B2-C	WEST3	3.84	1.79
0325	P1	32' X 10' RCB	2200	3593	CNW2B2-C	WEST3	3.84	1.75
EKBU	E	ELKHORN SPRINGS AND BUFFALO						
0000	E	60" RCP	1046	375	NW134-C	WEST3	0.46	1.00
EKDB	E	ELKHORN SPRINGS DETENTION BASIN						
0000	E	Grass Chnl 15'W 5.6'D 3.5:1 SS	2575	238	CNW150-C	WEST3	1.41	0.39
0025	E	4' X 3' RCB	160	120	ELKBASIN	WEST3	0.84	0.50
0026	E	48" RCP	1270	120	ELKBASIN	WEST3	0.84	1.23
0049	E	60" RCP	1095	120	ELKBASIN	WEST3	0.84	0.13
0070	E	48 ac-ft Elkhorn Springs Detention Basin		628	CNW133-C	WEST3	0.84	
EKHU	E	ELKHORN AND HUALAPAI						
0000	E	6' X 5' RCB Overflow Structure	48	638	CNW26-C	WEST3	0.51	0.91
0001	E	6' X 5' RCAP	72	638	CNW26-C	WEST3	0.51	0.91
0003	E	6' X 4' RCAP	980	638	CNW26-C	WEST3	0.51	3.61
0020	E	6' X 5' RCAP	150	638	CNW26-C	WEST3	0.51	3.61
0023	E	6' X 5' RCAP	1200	638	CNW26-C	WEST3	0.51	0.90
GOEC	P1	GOWAN NORTH - EL CAPITAN BRANCH						
0176	P1	78" RCP	1320	363	CCPFR-C	ALLGOW3	0.46	1.15
GONO	P1	GOWAN NORTH SYSTEM						
0511	P1	7' X 6' RCB	1320	546	CCPHW-C	ALLGOW3	0.50	1.14
LVMD	E	LAS VEGAS WASH - MIDDLE						
2490	E	2' 13' X 7' RCB	2555	2278	CNW168-C	CWEST3	4.69	0.40
2507	E	2' 13' X 9' RCB	2831	2278	CNW168-C	CWEST3	4.69	0.36
2525	E	24' X 8' RCB	1140	1913	CNW159-C	CWEST3	3.91	0.40
2550	E	24' X 8' RCB	1445	1664	CD161-C	CWEST3	3.41	0.40
2574	E	24' X 8' RCB	1430	1664	CD161-C	CWEST3	3.41	0.40
2599	E	Conc Chnl 24'W 7'D 2:1 SS	1577	1585	CNW162-C	CWEST3	3.08	0.50
2632	E	18' X 5' RCB	1580	988	CNW138-C	WEST3	1.16	0.46
2681	E	18' X 5' RCB	2640	988	CNW138-C	WEST3	1.16	0.46
2711	E	10' X 5' RCB	1320	968	CNW138-C	WEST3	1.16	1.54
2737	E	10' X 5' RCB	1320	818	CNW139-C	WEST3	0.93	2.22
2763	E	6' X 5' RCB	1320	818	CNW139-C	WEST3	0.93	1.79
2789	E	6' X 5' RCB	1470	818	CNW139-C	WEST3	0.93	2.17
MOHU	P0	MOCCASIN - HUALAPAI BRANCH						
0000	P0	14' X 8' RCB	1920	761	2CNW45-N	LOWER3	2.10	0.50
0036	P0	10' X 8' RCB	2580	368	CNW45-N	LOWER3	1.15	0.50
0085	P0	72" RCP	790	368	CNW45-N	LOWER3	1.15	3.00
0100	P0	Natural Wash	850	65	DMODB1	LOWER3	0.81	3.00
0116	P0	60" RCP	12	65	DMODB1	LOWER3	0.81	3.00
0118	P0	Natural Wash	3485	65	DMODB1	LOWER3	0.81	3.00
MOIR	P0	MOCCASIN - IRON MOUNTAIN BRANCH						
0000	P0	66" RCP	2770	446	2CNW33-C	LOWER3	1.76	3.60
MOKC	P1	MOCCASIN AND KYLE CANYON						
0000	P1	11' X 6' RCB	5450	2682	CNW35-C	LOWER3	2.88	3.40
MOSM	P0	MOCCASIN AND SHEEP MOUNTAIN PARKWAY						
0000	P0	14' X 9' RCB	3370	3778	CNW64-C	LOWER3	5.32	2.40
0064	P0	14' X 8' RCB	880	3505	CNW50-C	LOWER3	4.98	3.00
0080	P0	14' X 8' RCB	710	3325	2CNW35-C	LOWER3	4.80	3.00
MSNV	E	MOUNTAIN SPAVISTA RANCH						
0000	E	6' 12' X 5' RCBC @ Grand Talon	273	679	CNW163-C	CWEST3	1.67	0.40
0005	E	Grass Chnl 100'W 4.5'D 10:1 SS	6325	679	CNW163-C	CWEST3	1.67	0.40
0125	E	Grass Chnl 100'W 4.5'D 10:1 SS	1300	116	CNW147E	WEST3	1.54	0.40
RACO	E	RACEL STREET COLLECTOR						
0000	E	96" RCP Baffled Energy Dissipator	54	497	CNW111S	WEST3	0.55	4.20
0001	E	78" RCP	3245	497	CNW111S	WEST3	0.55	2.46
0084	E	78" RCP	2650	423	DNW111S	WEST3	0.44	2.09
RCBC	E	RANCHO ROAD SYSTEM - BELTWAY CHANNEL						
0000	E	6' X 5' RCB	1062	222	FADB	WEST3	1.60	1.04
0002	E	54" RCP Outlet with 41" Orifice	503	222	FADB	WEST3	1.60	2.38
0003	E	2,341 cfs PMF Spillway		2341	FADBIN	WEST3	1.60	
0004	E	76 ac-ft Fort Apache Detention Basin		1255	FADBIN	WEST3	1.60	
0007	E	Energy Dissipator	100	1255	FADBIN	WEST3	1.60	
0008	E	12' X 6' RCBC @ Fort Apache Detention Basin	133	1255	FADBIN	WEST3	1.60	1.79
0012	E	Conc Chnl 12'W 6'-7'D 0:1 SS	1937	1255	FADBIN	WEST3	1.60	3.15
0048	E	12' X 6' RCBC @ Grand Canyon	140	1040	CMNA1	WEST3	1.32	3.15
0051	E	Conc Chnl 12'W 6'-8'D 0:1 SS	2680	1040	CMNA1	WEST3	1.32	3.44
0086	E	1: 10' X 6' and 1: 6' X 6' RCBC @ Hualapai Way	190	1040	CMNA1	WEST3	1.32	1.93
0100	E	Conc Chnl 12'W 5.5'D 0:1 SS	2085	598	CDMNA1	WEST3	0.48	2.88
0140	E	Conc Chnl 10'W 5'D 0:1 SS	2155	598	CDMNA1	WEST3	0.48	1.65
RCHB	E	RANCHO ROAD SYSTEM - BELTWAY						
0034	E	Conc Chnl 21'W 8'D 0:1 SS	1000	2831	CNW1C-W	WEST3	4.68	1.19
0053	E	2' 12' X 8' RCBC @ South Ramp Connector	85	2304	CDW1C1	WEST3	4.31	1.40
0054	E	Conc Chnl 21'W 8'D 0:1 SS	432	2304	CDW1C1	WEST3	4.31	1.51
0062	E	Transition Structure	130	2304	CDW1C1	WEST3	4.31	1.51
0065	E	24' X 7' RCB	480	2304	CDW1C1	WEST3	4.31	0.30
0074	E	24' X 6' RCB	50	2226	CNWBC6-C	WEST3	4.17	0.30
0075	E	20' X 6' RCBC @ Beltway	428	2226	CNWBC6-C	WEST3	4.17	2.81
0083	P1	20' X 6' RCB	950	2226	CNWBC6-C	WEST3	4.17	2.49
0101	P1	Conc Chnl 20'W 7'D 0:1 SS	980	2226	CNWBC6-C	WEST3	4.17	2.38
0120	E	20' X 6' RCBC @ Grand Montecito	120	2226	CNWBC6-C	WEST3	4.17	1.00
0122	P1	Conc Chnl 16'W 6'D 0:1 SS	350	2226	CNWBC6-C	WEST3	4.17	1.84
0130	P1	Conc Chnl 16'W 6'D 0:1 SS	1012	2226	CNWBC6-C	WEST3	4.17	2.67
0149	P1	Conc Chnl 16'W 6'-7'D 0:1 SS	87	1888	CNWBC3	WEST3	3.75	2.27
0151	P1	Conc Chnl 16'W 7'D 0:1 SS	1255	1888	CNWBC3	WEST3	3.75	2.65
0171	E	16' X 6' RCBC @ El Capitan Way	234	1888	CNWBC3	WEST3	3.75	1.75
0175	E	Conc Chnl 14'W 7'D 0:1 SS	1220	1888	CNWBC3	WEST3	3.75	2.93
0198	E	Conc Chnl 14'W 7'D 0:1 SS	225	1402	CNWBA6-C	WEST3	3.61	2.93
0227	E	12' X 6' RCB	1885	1402	CNWBA6-C	WEST3	3.61	1.02
0250	E	12' X 6' RCB	3200	1402	CNWBA6-C	WEST3	3.61	1.00
0275	P1	7' X 6' RCB	2650	973	CNW66-C	WEST3	1.75	3.30
0295	P1	7' X 6' RCB	2675	973	CNW66-C	WEST3	1.75	3.30
TSDB	E	TULE SPRINGS DRAINAGE SYSTEM						
0000	E	2' 10' X 4' RCBC @ Echo Grande	100	26	TULEDB	WEST3	1.35	1.04
0002	E	36" RCP with 22" Orifice Plate	320	26	TULEDB	WEST3	1.35	0.33
0010	E	14,013 cfs PMF Spillway		14013	CTULEDB	WEST3	1.35	
0011	E	117 ac-ft North Environmental Enhancement Area		804	CTULEDB	WEST3	1.35	
0012	E	Energy Dissipator	280	376	CNW148-C	WEST3	0.52	
0023	P1	84" RCP	1320	376	CNW148-C	WEST3	0.52	0.80
0059	P1	78" RCP	2640	376	CNW			

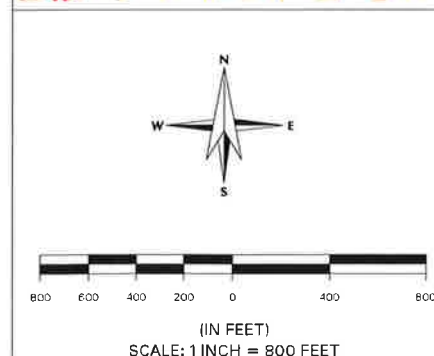


NORTHWEST NEIGHBORHOOD STUDY PHASE 2

LEGEND

- EXISTING REGIONAL DETENTION BASINS
- PROPOSED REGIONAL DETENTION BASINS (Not included in 1996 MPU)
- EXISTING REGIONAL BRIDGES
- PROPOSED REGIONAL BRIDGES
- PROPOSED REGIONAL BRIDGES (Not included in 1996 MPU)
- EXISTING LOCAL BRIDGES
- PROPOSED REGIONAL CULVERT
- EXISTING REGIONAL CULVERT
- EXISTING LOCAL CULVERT
- EXISTING REGIONAL PIPELINE
- PROPOSED REGIONAL PIPELINE
- PROPOSED REGIONAL PIPELINE (Not included in 1996 MPU)
- EXISTING LOCAL PIPELINE
- PROPOSED LOCAL PIPELINE
- EXISTING REGIONAL CHANNEL
- PROPOSED REGIONAL CHANNEL
- EXISTING LOCAL CHANNEL
- PROPOSED LOCAL CHANNEL
- PROPOSED REGIONAL CHANNEL (Not included in 1996 MPU)
- EXISTING REGIONAL DIKE/LEVEE
- PROPOSED REGIONAL DIKE/LEVEE
- PROPOSED REGIONAL DIKE/LEVEE (Not included in 1996 MPU)
- PROPOSED LOCAL DIKE/LEVEE

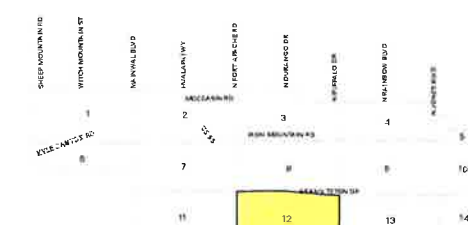
FIGURE F-12



FLOW ARROW
 250
 500
 (300)
 (800)
 (FLOWS IN CFS)

NOTE:
 Ultimate drainage conditions are based on future CN values with all flood control facilities in place.
 Regional facility identifiers were established based on the methodology used in the "1996 Clark County Regional Flood Control Master Plan Update for the Las Vegas Valley."

NOTE:
 All regional facilities proposed in the "1996 Clark County Regional Flood Control Master Plan Update for the Las Vegas Valley" have been resized based on the flows developed in this study. In addition, many of these facilities have been changed from channels to reinforced concrete box culverts.



FUTURE DRAINAGE CONDITIONS

PBSJ
 901 North Green Valley Parkway, Suite 100
 Henderson, Nevada 89014-6139
 Phone: 702/263-7275
 Fax: 702/263-7200
 ENGINEERING PLANNING GIS SURVEYING CONSTRUCTION SERVICES

Excerpts from the
Technical Drainage Study for
Tule Springs Village
(prepared by Orion Engineering)

T □ THOMASON
C □ □ CONSULTING
E □ □ □ ENGINEERS

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		September 28, 2000
TO: Land Development Services Department of Public Works		FROM: <i>AFS</i> Randy Fultz, P.E. <i>SR</i> Flood Control Project Manager Department of Public Works
SUBJECT: Drainage Study for: Tule Springs Village		COPIES TO: Albertson's, Inc.
Cross Streets:	NE corner of Farm Rd. & Durango Dr.	Orion Engineering and Surveying, Inc.
File Number:	F:\Depot\DSMEMOS\DS2741C.doc	Cheri Edelman, P.E., DEVCO
Parcel Number:	125-17-601-001	
Zoning Action:	C-1	
FEMA Flood Zone	YES NO X	
Proposed Storm Drain	YES X NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES
1 st Submittal	7/14/2000	7/26/2000	Not Acceptable	\$250.00
2 nd Submittal	9/1/2000	9/13/2000	Not Acceptable	\$250.00
3 rd Submittal	9/20/2000	9/28/2000	See Comments Below	\$250.00
TOTAL FEES:				\$750.00

REMARKS:

3rd Submittal (Addendum #2)

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

X	is acceptable in concept 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.

PLANS SENT TO LAND DEVELOPMENT JWB (initial)

END OF REMARKS

jwb

T/R/S: T19S/R60E/17

AREA G-17

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

REFERENCE
BASIN

TULE SPRINGS VILLAGE

CALCULATED BY: Matthew Haskin DATE: 04/30/00

SUB-BASIN DATA			INITIAL OVERLAND TIME (t)			TRAVEL TIME (t)					IC CHECK (URBANIZED BASINS)		REMARKS	
DESIG.	K	AREA Ac (3)	LENGTH ft (4)	SLOPE % (5)	Min (6)	LENGTH ft (7)	SLOPE % (8)	VEL fps (9)	Min (10)	TOTAL LENGTH (ft) (11)	Min (12)	FINAL t (13)	AREA (sq. mi.)	CN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)		
Interim Sub-Basins referenced from the Infrastructure technical drainage study, and used as existing conditions for this study.														
IN-4	0.63	1.3	100	2.8	6.0	250	2.8	3.3	1.3	350	11.9	7.3	0.00203	77
IN-5	0.63	6.6	100	2.4	6.4	850	2.4	2.8	4.9	950	15.3	11.3	0.01031	77
IN-6	0.73	12.1	100	2.8	4.7	1650	2.8	3.3	6.3	1750	19.7	13.0	0.01697	85
IN-7	0.63	5.6	100	2.2	6.6	1200	2.2	2.7	7.4	1300	17.2	14.0	0.00872	77
IN-8	0.67	6.2	100	2.6	5.7	1100	2.6	3.1	5.9	1200	16.7	11.6	0.00872	80
IN-9	0.76	9.2	100	2.4	4.8	1050	2.4	2.9	6.0	1150	16.4	10.6	0.01444	87
IN-10	0.77	2.7	100	2.7	4.2	400	2.7	3.2	2.1	500	12.8	6.3	0.00416	88
PR-1	0.80	1.1	100	2.8	2.5	415	2.8	4.0	1.7	515	12.9	4.2	0.00169	88
PR-2	0.90	1.5	100	2.1	2.8	1350	2.1	3.7	6.1	1450	18.1	6.8	0.00239	98
On-site Sub-Basins for the proposed development.														
ON-1	0.82	3.2	100	1.6	4.2	400	1.6	5.4	1.2	500	12.8	5.5	0.00502	92
ON-2	0.82	2.8	50	3.0	2.4	300	4.2	7.6	0.7	350	11.9	3.1	0.00436	92
ON-3	0.82	4.7	30	1.0	2.7	600	3.1	7.8	1.4	690	13.8	4.2	0.00736	92
ON-4	0.82	4.3	30	1.0	2.7	730	4.2	8.4	1.4	760	14.2	4.2	0.00875	92
ON-5	0.82	3.5	100	1.6	5.0	380	4.8	6.2	0.8	480	12.7	5.7	0.00591	92
ON-6	0.82	2.2	30	1.0	2.7	670	1.0	4.2	2.7	700	13.9	5.4	0.00350	92
ON-7	0.82	1.9	30	1.0	2.7	400	1.3	4.5	1.5	430	12.4	4.2	0.00285	92
Proposed Sub-Basins updated from the Infrastructure drainage study, and off-site Sub-Basins in built-out conditions.														
PR-1b	0.90	1.1	100	2.8	2.5	415	2.8	4.0	1.7	515	12.9	4.2	0.00169	88
PR-2b	0.90	1.8	100	2.1	2.8	1350	2.1	3.7	6.1	1450	18.1	8.8	0.00281	88
OFF-1	0.82	6.7	100	2.8	3.5	800	2.8	3.3	4.0	900	15.0	7.6	0.01047	95
OFF-2	0.86	10.9	100	3.1	2.9	1350	3.1	3.6	6.3	1450	18.1	9.2	0.01703	95

$T = 1.49(1.49L)^{0.78} / S^{0.48}$
 $K = 0.013CN^{0.58}$
 $T = T_1 + T_2$
 $T_{eq} = 0.8T_{CN}$

REFERENCE:
 Tule Springs Village at the east corner of Durango Road and Farm Road
 JOB No 042-9002

STANDARD FORM 4

```

*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* SEPTEMBER 1990 *
* VERSION 4.0 *
* RUN DATE 06/22/2000 TIME 12:46:53 *
*****

```

```

*****
* 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), HECIGS, HECIDB, AND HECIKW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSK- 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 TULE SPRINGS VILLAGE AT THE EAST CORNER OF DURANGO AND FARM
2 ID 10-YR AND 100-YR, 6 HOUR STORM EVENT
3 ID STORM DISTRIBUTION NUMBER 3 6/20/00 File: 9002-PR.DAT
4 IT 2 0 0 300
5 IO 5 0
6 IN 5 0 0
7 JR PRBC .61 1
8 KK ON-2
9 BA .0044
10 PC .000 .020 .057 .070 .087 .108 .124 .130 .130 .130
11 PC .130 .130 .130 .133 .140 .142 .148 .158 .172 .181
12 PC .190 .197 .199 .200 .201 .204 .214 .229 .241 .249
13 PC .251 .256 .270 .278 .281 .283 .295 .322 .352 .409
14 PC .499 .590 .710 .744 .781 .812 .819 .835 .851 .856
15 PC .860 .868 .876 .888 .910 .926 .937 .950 .970 .976
16 PC .982 .985 .987 .989 .990 .993 .993 .994 .995 .998
17 PC .998 .999 1.00
18 PB 2.86
19 LS 0 92
20 UD .031
21 KK DROP1
22 KM DIVERSION FOR DROP INLET-1
23 DT DIV1 1000 5
24 DI 0 5 6 50
25 DQ 0 5 5 5
26 KK ON-3
27 BA .0074
28 LS 0 92
29 UD .042
30 KK DROP2
31 KM DIVERSION FOR DROP INLET-2
32 DT DIV2 1000 9
33 DI 0 9 10 50
34 DQ 0 9 9 9
35 KK OVER1
36 KM THE AMOUNT OF OVERFLOW AT CROSS SECTION 1
37 NC 2
38 KK ON-4
39 BA .0068
40 LS 0 92
41 UD .042
42 KK DROP3
43 KM DIVERSION FOR DROP INLET-3
44 DT DIV3 1000 8
45 DI 0 8 9 50
46 DQ 0 8 8 8

```

2 REFORMSED
BASIN

1

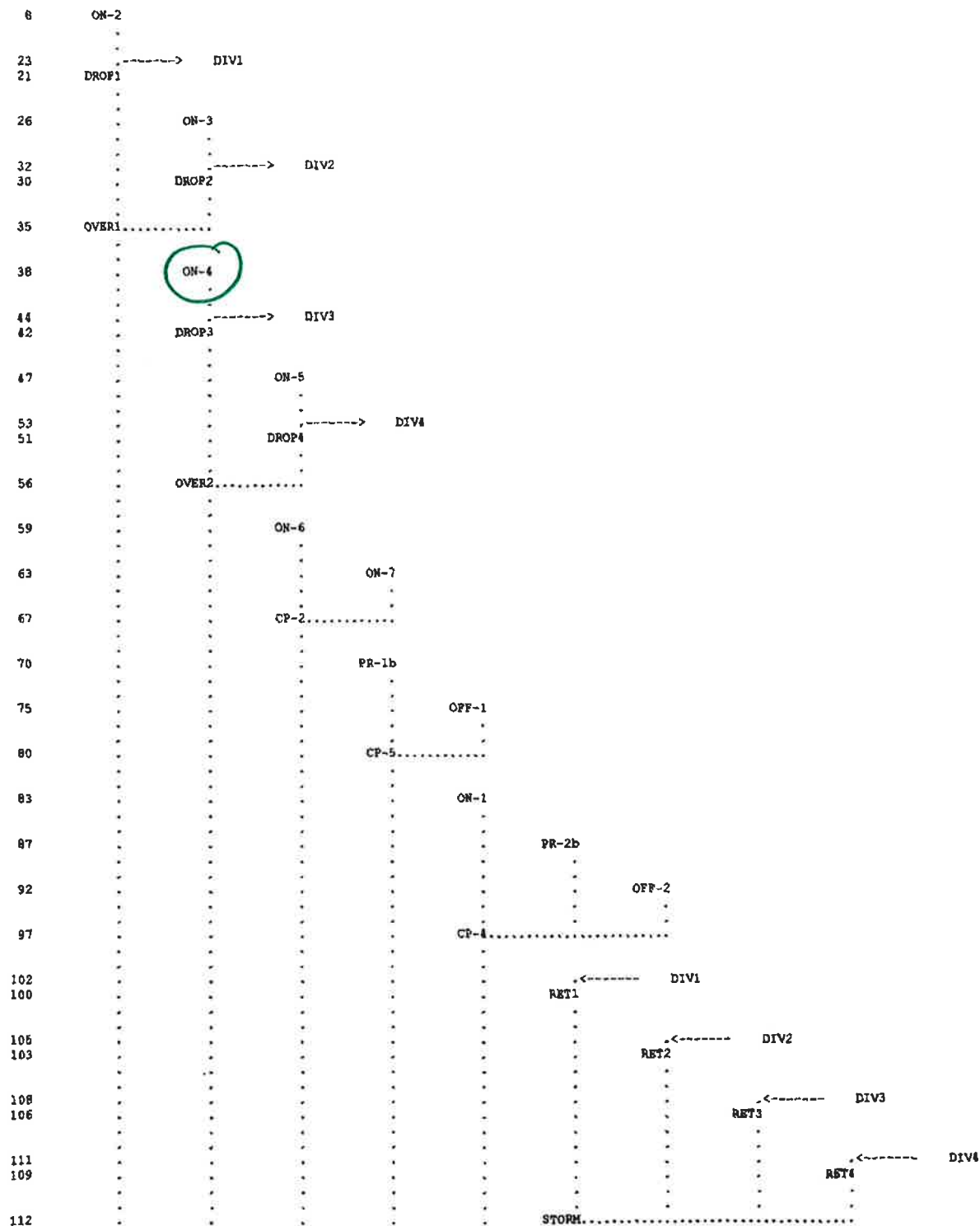
HEC-1 INPUT

PAGE 2

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT
LINE (V) ROUTING (---) DIVERSION OR PUMP FLOW
NO. (.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* SEPTEMBER 1990 *
* VERSION 4.0 *
* RUN DATE 06/22/2000 TIME 12:46:53 *
*****

```

```

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

```

TULE SPRINGS VILLAGE AT THE EAST CORNER OF DURANGO AND FARM
10-YR AND 100-YR, 6 HOUR STORM EVENT
STORM DISTRIBUTION NUMBER 3 6/20/00 File: 9002-PR.DAT

```

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

11        HYDROGRAPH TIME DATA
          NMIN      2  MINUTES IN COMPUTATION INTERVAL
          IDATE      1  0  STARTING DATE
          ITIME      0000  STARTING TIME
          NQ        300  NUMBER OF HYDROGRAPH ORDINATES
          NDDATE     1  0  ENDING DATE
          NDTIME     0958  ENDING TIME
          ICENT      19  CENTURY MARK

```

COMPUTATION INTERVAL .03 HOURS
TOTAL TIME BASE 9.97 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
        .61      1.00

```

1

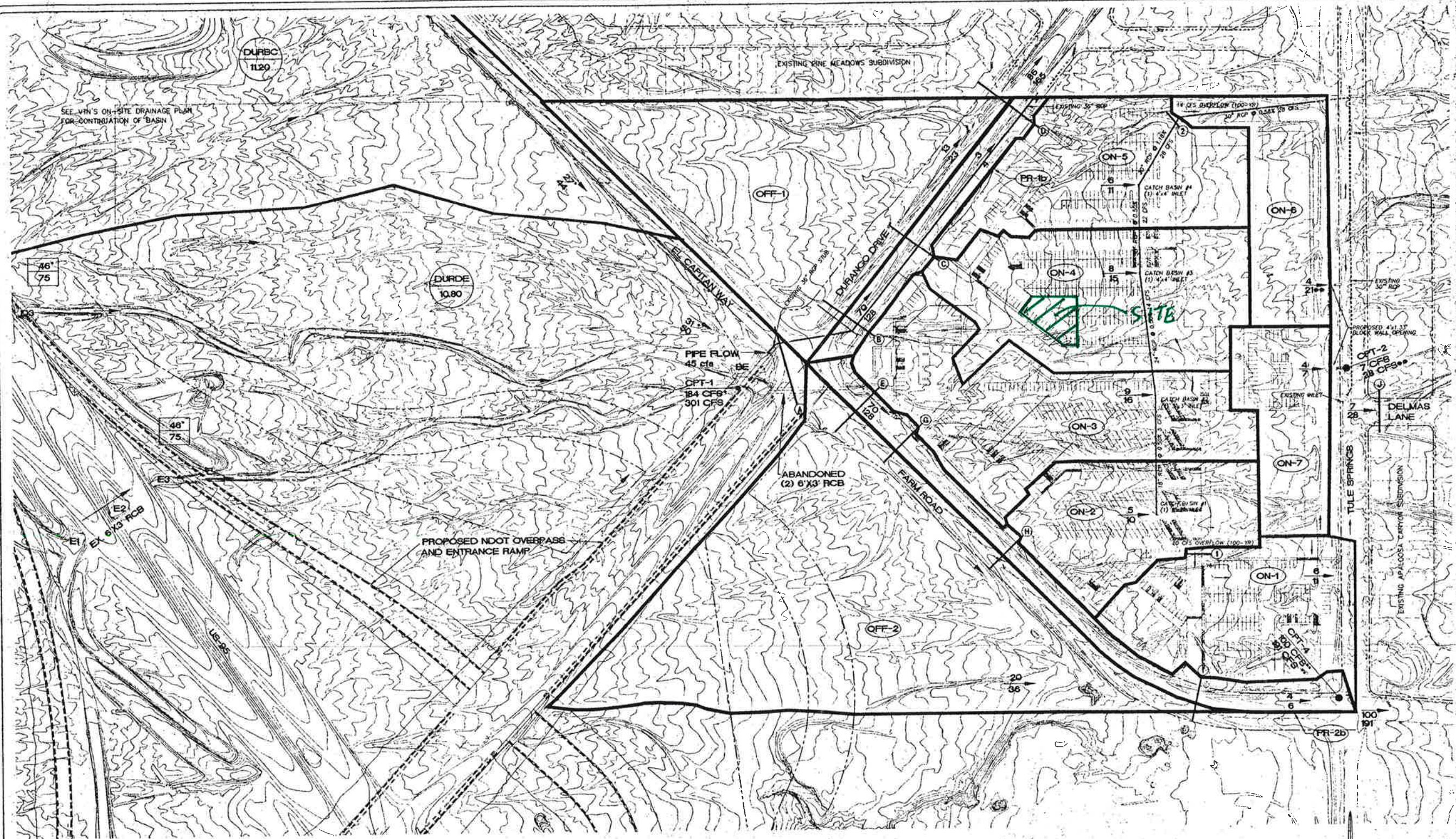
PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1 .61	RATIO 2 1.00
HYDROGRAPH AT					
+	ON-2	.00	1 FLOW	5.	10.
			TIME	3.50	3.50
DIVERSION TO					
+	DIV1	.00	1 FLOW	5.	5.
			TIME	3.50	3.30
HYDROGRAPH AT					
+	DROP1	.00	1 FLOW	0.	5.
			TIME	3.50	3.50
HYDROGRAPH AT					
+	ON-3	.01	1 FLOW	9.	16.
			TIME	3.50	3.50
DIVERSION TO					
+	DIV2	.01	1 FLOW	9.	9.
			TIME	3.50	3.30
HYDROGRAPH AT					
+	DROP2	.01	1 FLOW	0.	7.
			TIME	.03	3.50
2 COMBINED AT					
+	OVER1	.01	1 FLOW	0.	12.
			TIME	3.50	3.50
HYDROGRAPH AT					
+	ON-4	.01	1 FLOW	8.	15.
			TIME	3.50	3.50

REFERENCED BASIN

DIVERSION TO	DIV3	.01	1	FLOW TIME	8. 3.50	8. 3.30
HYDROGRAPH AT	DROP3	.01	1	FLOW TIME	0. .03	7. 3.50
HYDROGRAPH AT	ON-5	.01	1	FLOW TIME	6. 3.50	11. 3.50
DIVERSION TO	DIV4	.01	1	FLOW TIME	6. 3.50	6. 3.33
HYDROGRAPH AT	DROP4	.01	1	FLOW TIME	0. .03	5. 3.50
2 COMBINED AT	OVER2	.01	1	FLOW TIME	0. .03	12. 3.50
HYDROGRAPH AT	ON-6	.00	1	FLOW TIME	4. 3.50	7. 3.50
HYDROGRAPH AT	ON-7	.00	1	FLOW TIME	4. 3.50	7. 3.50
2 COMBINED AT	CP-2	.01	1	FLOW TIME	7. 3.50	14. 3.50
HYDROGRAPH AT	PR-1b	.00	1	FLOW TIME	3. 3.50	4. 3.50
HYDROGRAPH AT	OFF-1	.01	1	FLOW TIME	13. 3.53	23. 3.53
2 COMBINED AT	CP-5	.01	1	FLOW TIME	15. 3.50	26. 3.50
HYDROGRAPH AT	ON-1	.00	1	FLOW TIME	6. 3.50	11. 3.50
HYDROGRAPH AT	PR-2b	.00	1	FLOW TIME	4. 3.53	6. 3.53
HYDROGRAPH AT	OFF-2	.02	1	FLOW TIME	20. 3.53	36. 3.53
3 COMBINED AT	CP-4	.02	1	FLOW TIME	29. 3.53	52. 3.53
HYDROGRAPH AT	RET1	.00	1	FLOW TIME	5. 3.50	5. 3.30
HYDROGRAPH AT	RET2	.00	1	FLOW TIME	9. 3.50	9. 3.30
HYDROGRAPH AT	RET3	.00	1	FLOW TIME	8. 3.50	8. 3.30
HYDROGRAPH AT	RET4	.00	1	FLOW TIME	6. 3.50	6. 3.33
4 COMBINED AT	STORM	.00	1	FLOW TIME	28. 3.50	28. 3.33

*** NORMAL END OF NEC-1 ***



BASIN SUMMARY

Basin	Area (Acres)	Q10 (CFS)	Q100 (CFS)
ON-1	3.2	8	11
ON-2	2.8	6	10
ON-3	4.7	8	15
ON-4	4.3	6	11
ON-5	3.5	6	11
ON-6	2.2	4	7
ON-7	1.9	4	7
ON-8	1.1	3	4
PR-20	1.0	4	6
DURBC	27.7	22*	44
DURDE	26.7	31*	50
OFF-1	6.7	15	23
OFF-2	10.9	20	36

NOTE: *10-YEAR FLOW BASED UPON A 10-YR/100-YR RATIO OF 0.61.

** FLOWS DETERMINED BY ADDING OFFSITE FLOWS DIRECTLY TO HEC-1 RESULTS.

LEGEND

- Q10 10-YR OFFSITE FLOW CFS
- Q100 100-YR OFFSITE FLOW CFS
- Q10 10-YR BASIN FLOW
- Q100 100-YR BASIN FLOW
- ON-5 ONSITE BASIN
- CPT-1 61 CFS CONCENTRATION POINT
- 100 CFS 100-YEAR FLOW
- RIGHT OF WAY
- FWM CROSS SECTION

- OFF SITE FLOWS PER THE DRAINAGE STUDY FOR "DURANGO DRIVE/AUS-95 INTERCHANGE" AS SUBMITTED BY VTN, 90% DRAFT, 12-99. REFER TO VTN'S ON-SITE DRAINAGE BASIN MAP.
- DURDE 10.8 OFFSITE BASIN I.D. PER VTN
- HECTARES (1 HECTARE=2.471 ACRES)
- 61* EXISTING 10-YEAR FLOW*
- 100 EXISTING 100-YEAR FLOW PER VTN
- BE CULVERT I.D. PER VTN

STREET PARAMETERS

FWM CROSS SECTION	V (FPS)	D (FT)	VMD
CROSS SECTION A	3.82	0.49	1.9
10-YEAR	5.28	0.80	4.2
100-YEAR	4.62	1.08	5.0
CROSS SECTION B	5.18	1.22	6.3
10-YEAR	4.84	1.05	5.1
100-YEAR	5.36	1.21	6.5
CROSS SECTION C	5.32	0.52	2.8
10-YEAR	6.17	0.63	3.9
100-YEAR	4.01	0.71	2.8
CROSS SECTION D	4.53	0.85	3.9
10-YEAR	4.56	0.91	4.1
100-YEAR	5.28	1.09	5.8

FWM CROSS SECTION	V (FPS)	D (FT)	VMD
CROSS SECTION H	4.95	0.79	3.9
10-YEAR	5.71	0.86	5.5
100-YEAR	4.40	0.53	2.3
CROSS SECTION I	5.21	0.65	3.4
10-YEAR	2.56	0.14	0.4
100-YEAR	3.78	0.25	1.0
CROSS SECTION J	5.86	0.63	3.7
10-YEAR	7.09	0.76	5.4
100-YEAR	5.54	0.69	3.8
CROSS SECTION K	6.66	0.83	5.0
10-YEAR	2.37	0.25	0.8
100-YEAR	2.25	0.92	1.3

This grading plan is a part of drainage study # 2741 which was received on 5/1/00. *Handwritten signature and date.*

DESIGNED BY: MH DRAWN BY: MH DATE: 8-22-00
CHECKED BY: JOB NUMBER 042-9002
NO. REVISION BY DATE

FIGURE 6
TULE SPRINGS VILLAGE
DRAINAGE BASIN MAP
PROPOSED CONDITIONS
CITY OF LAS VEGAS NEVADA

ORION ENGINEERING AND SURVEYING, INC.
3068 E. SUNSET ROAD, SUITE 9
LAS VEGAS, NEVADA 89120
(702) 739-5921 FAX (702) 739-5929

Orion

SHEET 1
of 1

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM

DATE:

January 29, 2007

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:
Retail Shops & Mini Storage
Update to "Tule Springs Village (DS2741)"

COPIES TO:
Great Basin Engineering

Cross Streets: NWC of Farm Road & Tule Springs Road

Westar Development

File Number: F:\Depot\DSMemos\DS4099B.doc

Bart Anderson, P.E., DevCo

Parcel Number: 125-17-610-015 & 125-17-610-016

Zoning Action: SDR-10505 & SUP-10520

FEMA Flood Zone YES NO X

Proposed Storm Drain YES NO X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1 st Submittal	11/8/2006	12/1/2006	Not Approved	\$400.00	57477: \$400
2 nd Submittal	1/8/2007 & 1/26/2007	1/29/2007	See Comments Below	\$400.00	60739: \$400
			TOTAL FEES (LDDRS):	\$800.00	----

REMARKS:

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

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

1. Provide an executed "Mutual Storm Drain / Utilities Maintenance Agreement" between the two property owners for the future maintenance of onsite storm drains prior to the final approval of the improvement plans.

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

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or

planting. For more information, including forms and applications see
<http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

END OF REMARKS

ays

T/R/S: T19S/R60E/17
AREA G-17

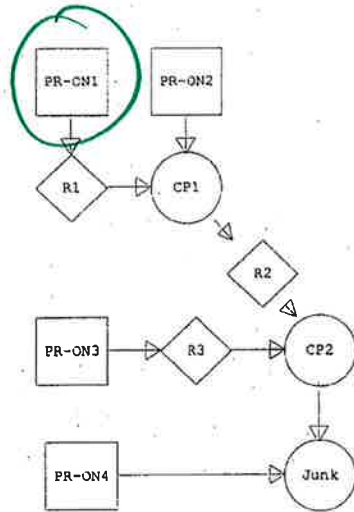
Time of Concentration and HEC-1 Input

Modified Standard Form 4

Development: Retail Shops and Mini Storage
Tule Springs Village
Durango Drive & Farm Road

Sub-Basin Data			Initial Overland Time (T)			Travel Time			To Check (Urbanized Basins)			Final Tc	UD	LS	Remarks
KK	K	Area (ft ²)	Area (Ac.)	Area (Sq M.)	Length (ft)	Slope (%)	Tri (Min.)	Length	Slope (%)	Vol (ft ³)	T (Min.)	Total Length Ft.	Tc - L/400 * 10 (min)	Lag Time Hr.	
Design	0.82	148,252	3.40	0.0053	205	3.36	4.76	455	2.09	4.4	1.72	660	13.67	0.065	92
ON1	0.82	126,448	2.90	0.0045	19	3.2	2.50	539	2.91	5.1	1.76	560	13.11	0.042	92
ON2	0.82	63,142	1.45	0.0023	185	1	6.75	48	2.29	4.6	0.17	233	11.29	0.069	92
ON3	0.82	98,725	2.27	0.0035	105	1.04	5.02	570	0.75	2.71	3.52	675	13.75	0.085	92

REFERENCED



HEC1 S/N: 1343001909

HMVersion: 6.33

Data File: C:\WINDOWS\TEMP\~vph007F.TMP

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*****
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*   FLOOD HYDROGRAPH PACKAGE   (HEC-1)
*
*       MAY   1991
*
*       VERSION 4.0.1E
*
*
*   RUN DATE   10/30/2006 .TIME   10:55:22
*
*****

```

*
* 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      X
XXXXXXXX  XXXX  X      XXXXX  X
X      X  X      X      X      X
X      X  X      X      X      X
X      X  XXXXXXXX  XXXXX      XXX

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.....
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 -AMSK- 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

PAGE 1

[illegible]

PAGE 2

[illegible]

HEC1 S/N: 1343001909

HMVersion: 6.33

Data File: C:\WINDOWS\TEMP\vbh007F.TMP

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* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* MAY 1991
* VERSION 4.0.1E
*
* RUN DATE 10/30/2006 TIME 10:55:22
*
*****
```

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

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

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

          COMPUTATION INTERVAL 0.08 HOURS
          TOTAL TIME BASE     24.92 HOURS
```

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

```
JP        MULTI-PLAN OPTION
          NPLAN      1  NUMBER OF PLANS
```

```
JR        MULTI-RATIO OPTION
          RATIOS OF PRECIPITATION
          0.61      1.00
```

5 KK

```
*****
*
* PR-ON1
*
*****
```

7 KO

```
OUTPUT CONTROL VARIABLES
IPRNT      5  PRINT CONTROL
IPLOT      0  PLOT CONTROL
QSCAL      0.  HYDROGRAPH PLOT SCALE
IPNCH      0  PUNCH COMPUTED HYDROGRAPH
IOUT       22  SAVE HYDROGRAPH ON THIS UNIT
ISAV1      1  FIRST ORDINATE PUNCHED OR SAVED
ISAV2     300  LAST ORDINATE PUNCHED OR SAVED
TIMINT     0.083 TIME INTERVAL IN HOURS
```

21 KK * R1 *

23 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

25 KK * PR-ON2 *

27 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

31 KK * CP1 *

33 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

35 KK * R2 *

37 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

39 KK

```
*****
*               *
*   PR-ON3     *
*               *
*****
```

41 KO

OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

45 KK

```
*****
*               *
*   R3         *
*               *
*****
```

47 KO

OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

49 KK

```
*****
*               *
*   CP2       *
*               *
*****
```

51 KO

OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

53 KK

```
*****
*               *
*   PR-ON4    *
*               *
*****
```

55 KO

OUTPUT CONTROL VARIABLES

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

IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

59 KK

```

*****
*      Junk      *
*               *
*****

```

61 KO

OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

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 0.61	RATIO 2 1.00

HYDROGRAPH AT

PR-ON1	0.01	1	FLOW TIME	6. 3.50	11. 3.50
--------	------	---	--------------	------------	-------------

REFERENCED

ROUTED TO

R1	0.01	1	FLOW TIME	5. 3.50	10. 3.50
----	------	---	--------------	------------	-------------

HYDROGRAPH AT

PR-ON2	0.00	1	FLOW TIME	5. 3.50	10. 3.50
--------	------	---	--------------	------------	-------------

2 COMBINED AT

CP1	0.01	1	FLOW TIME	11. 3.50	20. 3.50
-----	------	---	--------------	-------------	-------------

ROUTED TO

R2	0.01	1	FLOW TIME	10. 3.50	19. 3.50
----	------	---	--------------	-------------	-------------

HYDROGRAPH AT

PR-ON3	0.00	1	FLOW TIME	2. 3.50	5. 3.50
--------	------	---	--------------	------------	------------

ROUTED TO

R3	0.00	1	FLOW TIME	2. 3.50	4. 3.50
----	------	---	--------------	------------	------------

2 COMBINED AT

CP2	0.01	1	FLOW TIME	12. 3.50	24. 3.50
-----	------	---	--------------	-------------	-------------

HYDROGRAPH AT

PR-ON4	0.00	1	FLOW TIME	3. 3.50	7. 3.50
--------	------	---	--------------	------------	------------

2 COMBINED AT

Junk	0.02	1	FLOW TIME	16. 3.50	30. 3.50
------	------	---	--------------	-------------	-------------

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

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL			
						DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
FOR PLAN = 1	RATIO= 0.00								
R1	MANE	0.73	5.49	210.62	1.01	5.00	5.39	210.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2858E+00 EXCESS=0.0000E+00 OUTFLOW=0.2857E+00 BASIN STORAGE=0.3931E-04 PERCENT ERROR= 0.0

FOR PLAN = 1	RATIO= 0.00								
R1	MANE	0.64	10.45	210.68	2.03	5.00	10.35	210.00	2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5736E+00 EXCESS=0.0000E+00 OUTFLOW=0.5735E+00 BASIN STORAGE=0.4151E-04 PERCENT ERROR= 0.0

FOR PLAN = 1	RATIO= 0.00								
R2	MANE	0.89	10.36	210.91	1.01	5.00	10.14	210.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5289E+00 EXCESS=0.0000E+00 OUTFLOW=0.5288E+00 BASIN STORAGE=0.5716E-04 PERCENT ERROR= 0.0

FOR PLAN = 1	RATIO= 0.00								
R2	MANE	0.79	19.64	210.54	2.03	5.00	19.38	210.00	2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1061E+01 EXCESS=0.0000E+00 OUTFLOW=0.1061E+01 BASIN STORAGE=0.6534E-04 PERCENT ERROR= 0.0

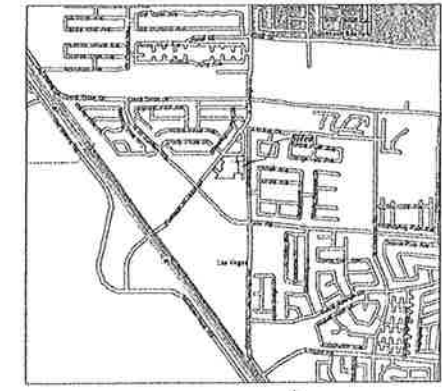
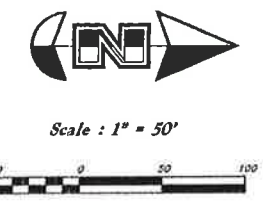
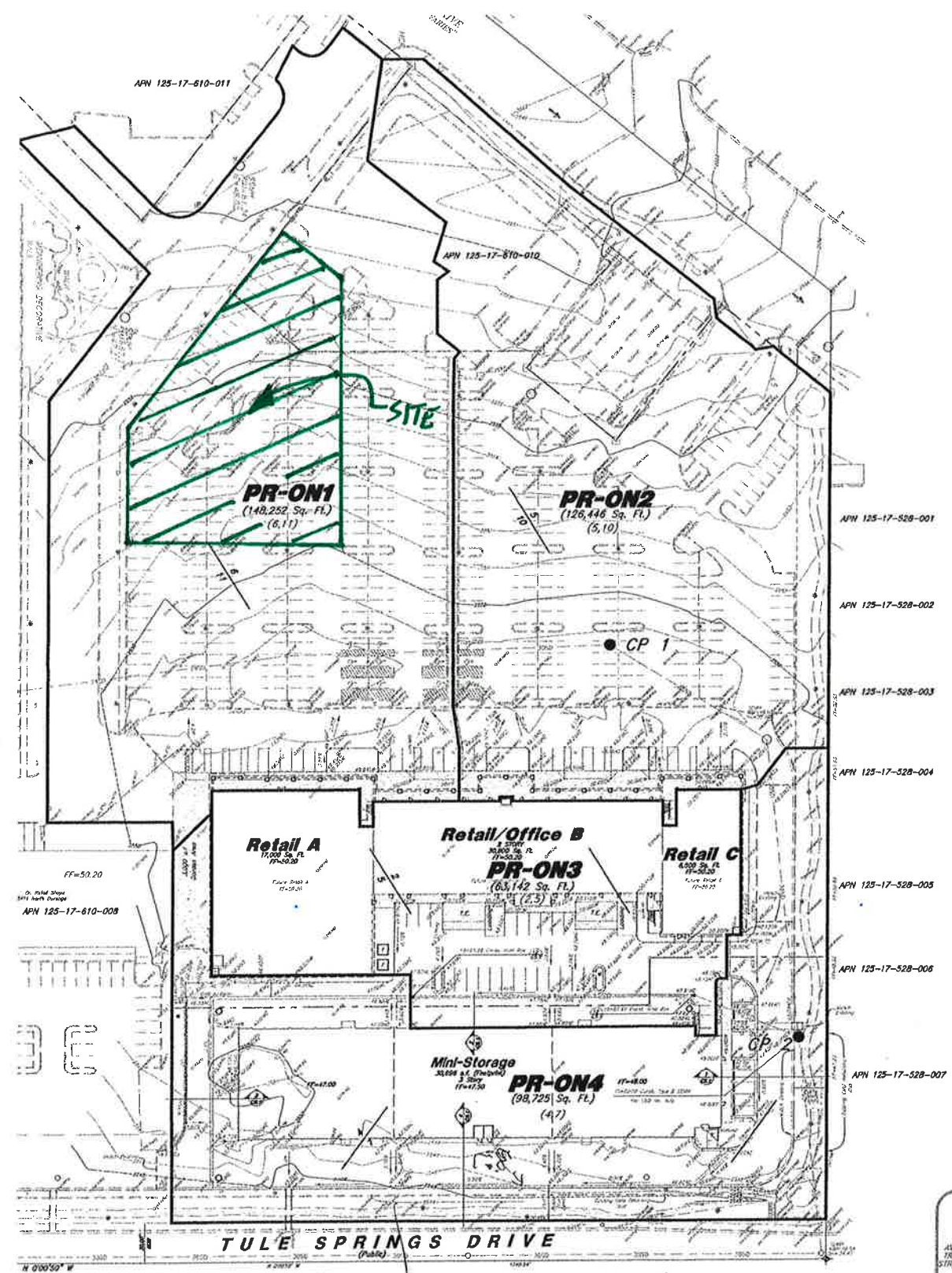
FOR PLAN = 1	RATIO= 0.00								
R3	MANE	0.85	2.33	210.93	1.01	5.00	2.29	210.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1240E+00 EXCESS=0.0000E+00 OUTFLOW=0.1240E+00 BASIN STORAGE=0.4023E-04 PERCENT ERROR= 0.0

FOR PLAN = 1	RATIO= 0.00								
R3	MANE	0.75	4.45	210.76	2.03	5.00	4.41	210.00	2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2490E+00 EXCESS=0.0000E+00 OUTFLOW=0.2489E+00 BASIN STORAGE=0.4527E-04 PERCENT ERROR= 0.0

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



Drainage Legend

Area Generated Flows
(Q_s , Q_m)

Surface Flows
 Q_s
 Q_m

Combination Point
● CP 1

- Key Notes:**
- 1 Const. Sidewalk Drain per DCAUSD No. 238
 - 2 Const. 8" Valley Gutter per DCAUSD No. 238
 - 3 Const. Drainage Channel
 - 4 Const. 2" Valley Gutter
 - 5 Const. 24" Curb & Gutter
 - 6 Const. Segmented Block Retaining Wall
 - 7 Const. Drainage Swale

Peak Flow Table

Drainage	10 Year	100 Year
Existing Conditions		
ON1	8	15
ON2	6	11
ON3	4	7
Proposed Conditions		
PR-ON1	8	11
PR-ON2	3	10
PR-ON3	2	5
PR-ON4	3	7
CP1	11	20
CP2	12	24

*See Figure 4: Albertson's Study

- Legend**
- Direction of Drainage
- Top of Asphalt AC
 - Top of Walk TW
 - Edge of Asphalt EA
 - Flowline FL
 - Top of Curb TC
 - Top of Grate TG
 - Top of Pavement TP
 - Top of Wall TWL
 - Ridge line RL
 - Ground NG
 - Grade Break GB
- Std. Curb & Gutter
- Open Face C & G
- Detail Number - 3
- Existing Spot Elevation
- Proposed Spot Elevation +34.80M
- Existing Contour

Acceptance of Plan for Filing:

Acceptance of these plans for filing shall not be construed to be a permit for, or an approval of any violation of any of the provisions of the state or county laws and/or specifications. Clark County shall be held free from damages which may result from the construction of the improvements from the engineering design depicted herein.

Notes: Power poles and/or other existing facilities not in proper location, based on proposed improvements shown herein, will be relocated at no expense to Clark County.

By: _____
Date: _____

I certify that this grading plan is in accordance with the approved drainage study on file with Clark County for this project.

HIT

Bret G. Wahlen P.E. No. 11109 Date: _____

Basis of Bearings

S 01°15'00"E, Being the east line of the Southeast Quarter (SE 1/4) of the Southeast Quarter (SE 1/4) of Section 8, Township 21° South, Range 82 East, N.D.M. As shown that certain map in File 25, Page 74, of Parcel maps on file in the County Records Office, Clark County, Nevada.

Benchmark

The Clark County Surveyors Benchmark Monument No. 11 6C12 9SWS - Rivet and Square aluminum plate in top of curb northeast corner of Wells Blvd. and Desert Inn Road, just north of a light pole.

Elevation = 324.149 meters (1079.65 feet)

Call before you Dig.

1-702-465-7511

CLARK COUNTY TRAFFIC OPERATIONS AND LAS VEGAS AREA COMPUTERIZED TRAFFIC SYSTEM

Call before you Overhead

1-702-227-2829

Call before you Dig.

1-800-227-2800

Flood Zone Note:

This site is located within zone A as designated on FEMA Flood Insurance Rate map for Clark County and Incorporated Areas Community Map No. 32003C2190 E Panel 2190 of 4090 dated September 27, 2002 and revised to reflect LOMR Dated June 19, 2003. Flood Zone A is defined as "Special flood hazard areas subject to inundation by the 1% annual chance flood event with no base flood elevations determined."

Contractor must maintain a running slope on accessible routes no steeper than 1:20. The cross slope for accessible routes must be no steeper than 1:48. All accessible routes must have a minimum clear width of 36".

Designed by: JT
Drafted by: JT
Client Name:
Wester & Vertical Holdings
08-0580R

GREAT BASIN ENGINEERING - SOUTH

CONSULTING ENGINEERS and LAND SURVEYORS

2010 North Redwood Road, P.O. Box 16747
Salt Lake City, Utah 84116

Salt Lake City (801)351-4539 Ogden (801)354-7288 Fax (801)351-4551

Drainage Map

Retail Shops/Mini-Storage

Farm Road & Durango Drive
Clark County, Nevada

PROFESSIONAL ENGINEER-STATE OF NEVADA

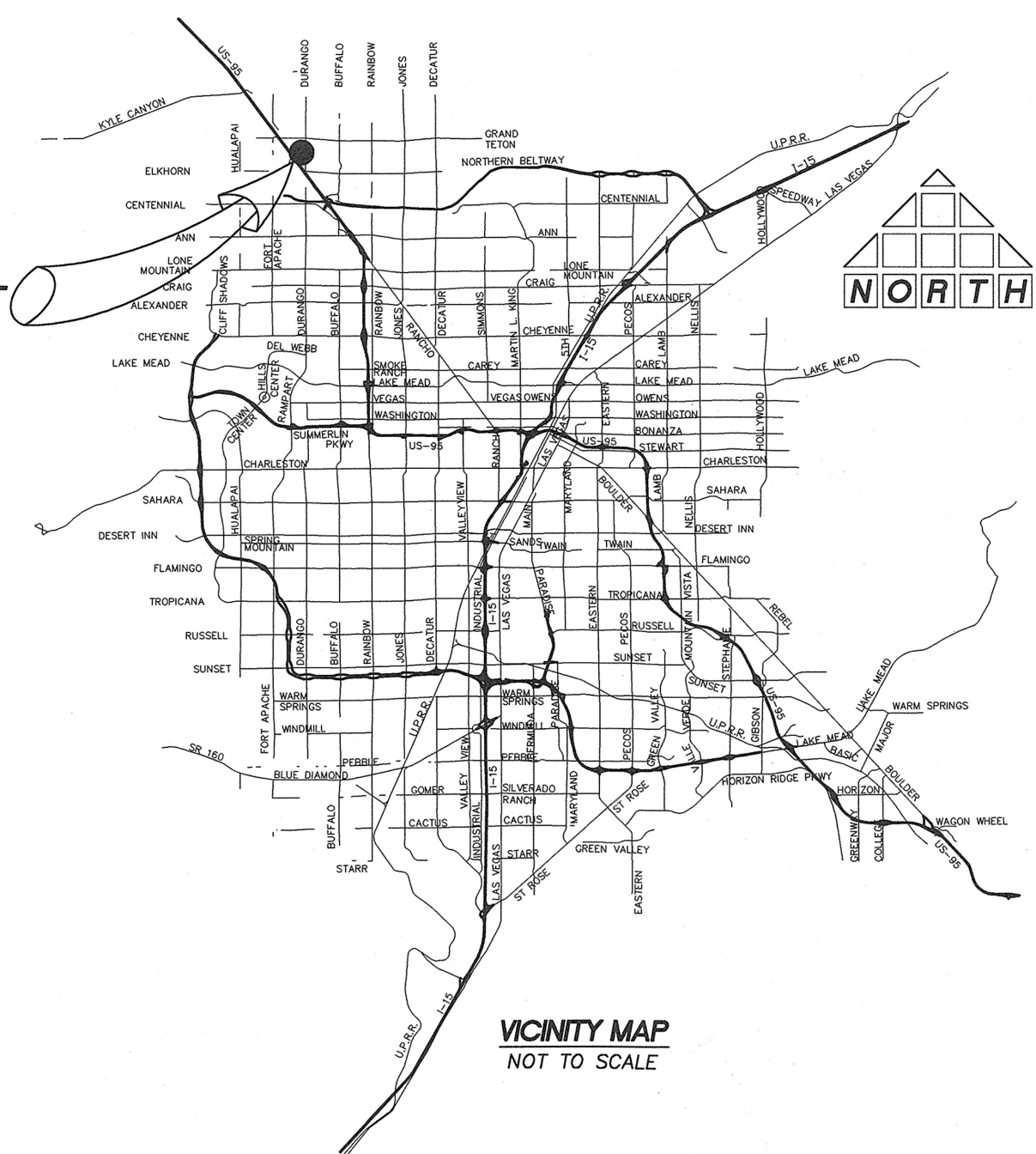
BRET G. WAHLEN
Exp. 6-30-08
CIVIL
No. 11109

30 Oct, 2006

SHEET NO.

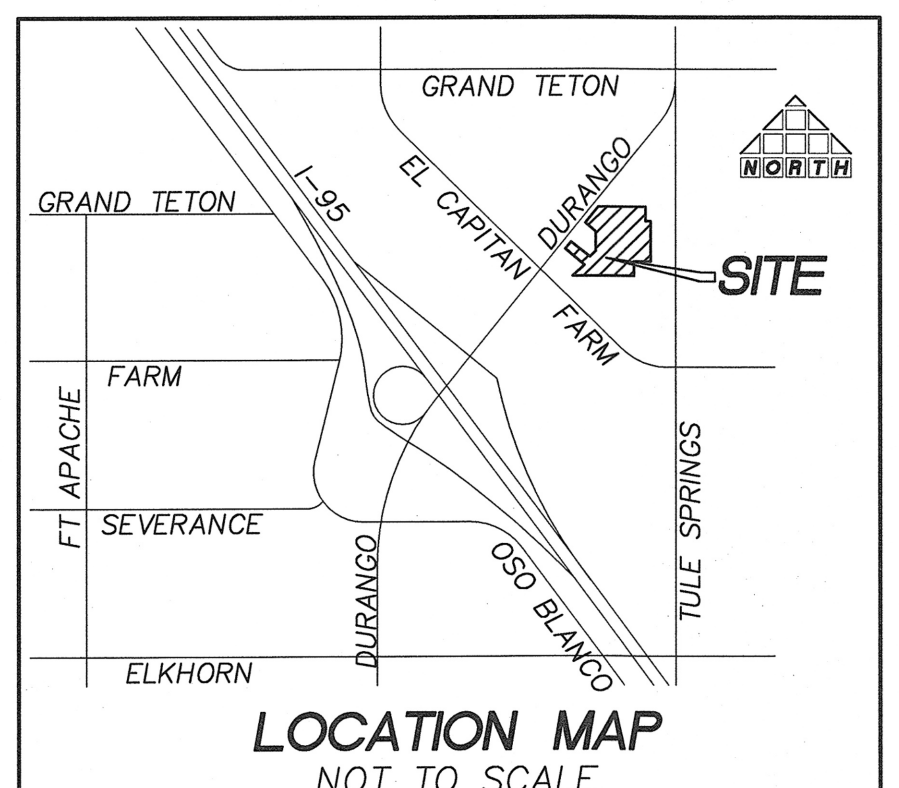
Fig. 3

PROJECT SITE



VICINITY MAP
NOT TO SCALE

T 19 S, R 60 E, SEC 17



LOCATION MAP
NOT TO SCALE

NOTE TO CONTRACTOR :
THE QUANTITIES SHOWN ARE FOR PERMITTING PURPOSE AND IS INTENDED TO ILLUSTRATE THE SCOPE OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXACT QUANTITIES INVOLVED FOR BIDDING AND CONSTRUCTION OF PROJECT.

TRAFFIC QUANTITIES

	PUBLIC	PRIVATE

WATER QUANTITIES

	PUBLIC	PRIVATE

STREET IMPROVEMENT QUANTITIES

	PUBLIC	PRIVATE

SEWER QUANTITIES

	PUBLIC	PRIVATE

NOTE TO CONTRACTOR :
THE QUANTITIES SHOWN ARE FOR PERMITTING PURPOSE AND IS INTENDED TO ILLUSTRATE THE SCOPE OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXACT QUANTITIES INVOLVED FOR BIDDING AND CONSTRUCTION OF PROJECT.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT NO. _____ DATE: _____

FIRE DEPARTMENT APPROVAL

APPROVAL BY THE FIRE DEPARTMENT HAVING JURISDICTION IS REQUIRED **PRIOR** TO OBTAINING FINAL APPROVAL FROM THE L.V.V.W.D.

CITY OF LAS VEGAS FIRE DEPARTMENT DATE

SHEET INDEX

SHEET #	DESCRIPTION
1	C1 COVER SHEET
2	C2 VICINITY MAP AND QUANTITIES
3	C3 GENERAL NOTES
4	H1 HORIZONTAL CONTROL PLAN
5	G1 GRADING PLAN
6	D1 DETAIL SHEET
7	U1 UTILITY PLAN

THOMASON CONSULTING ENGINEERS

7080 LA CIENEGA STREET, SUITE 200
LAS VEGAS, NEVADA 89119
702-932-6125 FAX: 702-932-6129

FARM CAPITAL MANAGEMENT L L C

7155 S RAINBOW BLVD #200, LAS VEGAS, NV 89118-3271
PH: (702) 304-8383 FAX: (702) 304-1622

DURANGO AND FARM

VICINITY MAP AND QUANTITIES

REGISTERED PROFESSIONAL ENGINEER - CIVIL

JOHN B. McAVOY

No. 22459 EXPIRES 12-31-14

JOHN B. McAVOY, P.E.
R.P.E. NO. 22459
EXP. 12-31-15

SHEET

C2

2 OF 7

DRAWING NO.

H#

SCALE

N/A

DRAWN BY:

DESIGNED BY:

CHECKED BY:

COMMENTS ADDRESSED BY:

PROJECT NO.

007.14131

REV.

DATE

BY

REVISION

T:\Projects\00714131\00714131-COVER.dwg 12/22/2014 9:23:07 AM PST

CITY OF LAS VEGAS GENERAL NOTES

- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST REVISED EDITION; THE "SUMMER/LIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMER/LIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY, THE UNIFORM BUILDING CODE, AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
- THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
- THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
- ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
- TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
- PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
- EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
- AC PAVEMENT TO BE ONE-HALF INCH (1/2") ABOVE UP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
- CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
- SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND PREVENT EROSION AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.
- ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY THE (AMERICAN SOILS ENGINEERING, INC.) PROJECT NO. 1689-GEO, DECEMBER 26, 2013) APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
- EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
- THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.380 & CITY OF LAS VEGAS TITLE 18, APPENDIX D.
- UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.

WALL NOTES:

- ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
- ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
- CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
- MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.
- WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKER BALLS, LOCATING RIBBON, ETC. THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO OFFSITE INSPECTION AREA TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.
- SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE OFFSITE INSPECTION AREA TESTING SECTION PRIOR TO PROJECT ACCEPTANCE. THE MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, AND THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXITS THE PUBLIC RIGHT-OF-WAY. THE LOCATION SHALL BE DESCRIBED BY STATE PLANE COORDINATES WHICH SHALL BE BASED ON THE "NEVADA COORDINATE SYSTEM OF 1983, EAST ZONE" AS DEFINED BY THE NEVADA REVISED STATUTES CHAPTER 327, AND TIED TO THE CITY OF LAS VEGAS VERTICAL CONTROL BENCHMARK NETWORK. COORDINATES MUST BE CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIONAL CERTAINITIES OF +/- 0.1 METER (+/- 0.3 FEET). A SEPARATE ELECTRONIC COMMA DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).
- SANITARY SEWER SERVICE LATERALS REQUIRE THE INSTALLATION OF A MARKER BALL AT THE CONNECTION OF THE SEWER SERVICE LATERAL TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERAL EXITS THE PUBLIC RIGHT-OF-WAY. STORM DRAIN LATERALS REQUIRE THE INSTALLATION OF A MARKER BALL AT THE CONNECTION OF THE STORM DRAIN LATERAL TO THE STORM DRAIN MAIN AND WHERE THE STORM DRAIN LATERAL EXITS THE PUBLIC RIGHT-OF-WAY OR WHERE THE STORM DRAIN LATERAL CONNECTS TO A DROP INLET. THE MARKER BALL SHALL BE 3M 4" MARKER BALL 1404-XR OR APPROVED EQUAL.
- CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST ADDITION.
- A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

REVISED 04/15/10

CITY OF LAS VEGAS SEWER NOTES

- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATIONS.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY ENGINEER.
- CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.
- POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.
- ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREETS LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETROFIT IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.
- TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y" "S" SHALL BE USED ON LINES TWELVE INCHES (12") OR ABOVE.
- WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCH (18") UNDER A WATER MAIN.
- ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.
- THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.
- INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

REVISED 04/15/10

CITY OF LAS VEGAS TRAFFIC NOTES

- ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
- THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.
- BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET CLOSURES AND EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
- WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCLOSED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD" WHO WILL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.
- IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL BE FABRICATED WITH DIAMOND GRADE VIP CLASS 6 REFLECTIVE SHEETING OR APPROVED EQUAL. ALL NEW TRAFFIC SIGNS, EXCEPT STREETNAME AND SCHOOL SPEED LIMIT SIGNS, SHALL HAVE 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE OVERLAY FILM; SCHOOL ZONE SIGNS SHALL HAVE 3M SERIES 1150 ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. STREET NAME SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARDS.
- WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.
- ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
- STREET SIGNS AND STOPS SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC IN OR AROUND THE WORK AREA. THE CONTRACTOR SHALL HAVE A CERTIFIED AT-ROAD TRAFFIC CONTROL TECHNICIAN OR IMAA WORK ZONE SPECIALIST SET UP, MAINTAIN AND/OR REMOVE ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.
- WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CITIZENS AREA TRANSIT (C.A.T.) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.
- GUARDS SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 828-3442) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR THE USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.
- ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS OTHERWISE DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.
- THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAVEMENT TRANSITIONS, MARKINGS AND SIGNING THAT ARE REQUIRED TO MATCH ADJACENT ROADWAY SEGMENTS. THE CONTRACTOR SHALL PROVIDE A DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPICTING ANY ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SUCH THAT ADEQUATE TRANSITIONS AND LANE TERMINATIONS BETWEEN ADJACENT ROADWAY SEGMENTS ARE CONSTRUCTED.

REVISED 04/15/10

CITY OF LAS VEGAS STREETLIGHT NOTES

- ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND ANY ADOPTED SPECIAL AREA STANDARDS.
- NO DEVIATION OF STREET LIGHT, PULL BOX, CONDUITS (ETC.) LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF TRAFFIC ENGINEERING AND THE CITY ENGINEER.
- ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.
- ALL STREET LIGHTING CONDUITS STUB SHALL HAVE AT LEAST ONE GREEN #8 THW WIRE INSTALLED, AS TRACER WIRE. WHEN "EMPTY" CONDUIT IS COMPLETELY INSTALLED FROM PG TO PG, IT SHALL HAVE MINIMUM OF 2 #4 AND 1 #8 THW WIRE WITH THE ENDS TAPED OR "SAFE OFF" PRIOR TO FINAL INSPECTION.
- ANY STRUCTURE SUCH AS BLOCK WALLS, CHAIN LINK FENCES, RETAINING WALLS, ETC., SHALL LEAVE A MINIMUM CLEARANCE IN ACCORDANCE WITH THE USD NO. 320A.
- AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TEF0 PRIOR TO ANY PRE-FINAL INSPECTION. THE AS-BUILT DRAWING NEEDS TO BE STAMPED AS-BUILT AND SIGNED BY THE PREPARER.
- SERVICE POINT SHALL BE COORDINATED WITH NV ENERGY COMPANY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICE POINTS SHALL BE SHOWN ON THE CIVIL PLANS.
- IT SHALL BE ASSUMED THAT IN THE ABSENCE OF AN EXISTING, WORKABLE CIRCUIT TO ATTACH TO, ALL INSTALLATIONS SHALL REQUIRE A NEW SERVICE FOR OPERATION OF THE CIRCUIT.
- WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREET LIGHTING ORBITS AND/OR POLES, THE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED, AT NO EXPENSE TO THE CITY OF LAS VEGAS, BEFORE STREETLIGHT BASES ARE INSTALLED.
- THE CONTRACTOR SHALL FURNISH COMPLETE SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON PLANS.
- THE DEVELOPER/OWNER WILL BE REQUIRED TO SUPPLY POWER TO ALL NEW PUBLIC STREET LIGHTS INSTALLED UNDER THIS DESIGN PRIOR TO BOND RELEASE OR PROJECT COMPLETION. THE DEVELOPER/OWNER WILL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH THE INSTALLATION, CONSTRUCTION, ENERGIZING, MAINTENANCE AND OPERATIONAL COST OF SAID STREET LIGHTS PRIOR TO PROJECT COMPLETION. REFER TO THE PLAN FOR ANY NEW SERVICE REQUIREMENTS. THE TRANSFER OF OWNERSHIP FROM THE DEVELOPER/OWNER TO THE CITY OF LAS VEGAS FOR ALL NEW PUBLIC STREET LIGHT'S AND/OR SERVICE/S INSTALLED UNDER THIS PLAN DESIGN WILL BE IN CONJUNCTION WITH THIS PROJECT COMPLETION. COORDINATE ALL MAINTENANCE AND OPERATIONAL TRANSFERS WITH THE CITY OF LAS VEGAS TRAFFIC ENGINEERING DEPARTMENT (TEF0) AT (702) 229-6331.

REVISED 04/15/10

REFERENCE DRAWINGS

- NONE

DEVIATION FROM STANDARDS

- NONE

BENCHMARK

CITY OF LAS VEGAS BENCHMARK NO. 5LV9016NWNW BEING A RIVET & PLATE IN THE TOP OF CURB, EAST SIDE OF TULE SPRINGS ROAD, 1/4 MILE SOUTH OF GRAND TETON DRIVE

ELEVATION = 2540.69 FEET OR 774.403 METERS (NAVD 88)

BASE OF BEARING

NORTH 00°00'50" WEST - BEING THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 17, TOWNSHIP 19 SOUTH, RANGE 60 EAST, MDN, CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN BOOK 104, PAGE 57 OF PLATS IN THE CLARK COUNTY RECORDERS OFFICE, CLARK COUNTY, NEVADA

FLOOD ZONE

THIS SITE IS LOCATED WITHIN FLOOD ZONE X, WHICH IS SPECIFIED AS "AREAS TO BE DETERMINED 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."

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



Avoid overhead power line contact.



CITY OF LAS VEGAS FIRE AND RESCUE GENERAL NOTES

- ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE # 6325 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
- AUTHORIZED FIRE HYDRANTS ARE AS FOLLOWS;
KENNEDY - GUARDIAN MODELS KB1A AND KB1D
MUELLER - SUPER CENTURION 250, MODEL A-423
CLOW - MEDALLION MODEL F-2546LDV
U.S. PIPE - METROFLOW/M-03
- A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTING. THE CONTRACTOR SHALL OBTAIN A PERMIT AND CERTIFICATE OF UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. [IFC 105.7.12]
- ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. [IFC # 3310, IFC 3312]
- TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. [IFC 507.5.7.3]
- ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. [IFC 106.3]
- ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. [IFC 507.2.1, NFPA 24]
- PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. [IFC 507]
- PRIVATE HYDRANTS SHALL BE PAINTED RED. [IFC 507.5.7.1]
- PRIOR TO FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. [IFC 507]
- FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: [IFC C102]
RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
- WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. [IFC C102.8]
- NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
- NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. [IFC C102.12]
- A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. [IFC C102.4]
- THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. [IFC C102.7]
- THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. [IFC C102.6]
- TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS CAN BE OUT OF SERVICE DUE TO A BREAK IN A WATER MAIN. [IFC C104]
- ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. [IFC 503.2.3]
- THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12% ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%. [IFC 503.2.7, 503.2.8]
- THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS. [IFC 503.2.4]
- VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13 FT 6 INS. [IFC 503.2.1]
- FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS 40 FT WITH PARALLEL PARKING PERMITTED ON BOTH SIDES. NOT LESS THAN 32 FT WIDE, FLOW-LINE TO FLOW-LINE. WHERE PARKING IS PERMITTED ONLY ON ONE SIDE OF THE FIRE APPARATUS ACCESS ROAD, NOT LESS THAN 24 FT WIDE, FLOW-LINE TO FLOW-LINE, WHERE NO PARKING IS PERMITTED ON EITHER SIDE, FIRE LANES THROUGH PARKING LOTS SHALL BE NOT LESS THAN 24 FT. [IFC 503.2.1.1]
- A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. THIS DISTANCE COULD BE INCREASED TO 250 FT IF THE BUILDING IS SPRINKLERED. [IFC 503.1.1]
- APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 100 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS OR WITH A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT, COMMERCIAL AND INDUSTRIAL DEVELOPMENTS WHERE BUILDINGS EXCEED 2 STORY OR 30 FT IN HEIGHT, OR EXCEEDING 62,000 SQUARE FEET IN AREA. [IFC 503.1.2]
- ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. [IFC 503.2.5]
- ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE AND AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. [IFC 503.3]
- ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. SAID SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH IFC 503.6 AND IFC APPENDIX M.

REVISED 7/1/2014

STORMWATER MANAGEMENT NOTES

- 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, ACCUMULATED IN, THE PUBLIC RIGHT-OF-WAY OF THE CITY OF LAS VEGAS, AS A RESULT OF CONSTRUCTION ACTIVITIES. ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM DRAIN SYSTEM.
- ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE TITLE 24.40 AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
- TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICAL AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS APPLY: REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00000, SECTION III.A.5.
- 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 AND MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS ANY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES, REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00000, SECTION III.A.12.
- ACCUMULATED SEDIMENT IN BMPs SHALL BE REMOVED WITHIN SEVEN (7) 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.

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT # ###

- NO WORK SHALL BEGIN UNTIL THE WATER PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE LVVWD. FOLLOWING WATER PLAN APPROVAL, NOTICE SHALL BE GIVEN TO THE LVVWD COMMUNICATION SUPPORT CENTER (771) 263-2633 TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION. FOR FUTURE INSPECTIONS, NOTICE MUST BE GIVEN BY 2:00 P.M. THE BUSINESS DAY PRIOR TO THE REQUESTED LVVWD INSPECTION. WHEN REQUESTING INSPECTIONS, PLEASE REFER TO THE PROJECT # IDENTIFIED ABOVE.
- ALL WORK SHALL CONFORM TO LVVWD STANDARD PLATES, DRAWINGS, AND SPECIFICATIONS, AND TO THE 2010 EDITION OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS), THE LATEST EDITION OF UDACS SHALL SUPERCEDE ANY CONFLICTS CONTAINED IN THE APPROVED DRAWINGS AND/OR SPECIFICATIONS.
- ALL WORK, EXCEPT AS MODIFIED BY THESE PLANS OR BY NOTE 2, SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT DRAFT OR EDITION OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENT, CLARK COUNTY AREA.
- A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE LVVWD.
- ALL SERVICE LATERALS TWO (2) INCHES DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING WITH LVVWD APPROVED SERVICE SADDLES.
- ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS.
- ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB GUTTERS.
- ALL WATER AND STORM DRAIN OR SANITARY SEWER CROSSINGS SHALL CONFORM TO SECTION 2.22 OF THE 2010 EDITION OF THE UDACS.
- ALL WATER FACILITIES SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO CONNECTION TO THE LVVWD'S DISTRIBUTION SYSTEM
- THE CONTRACTOR MUST OBTAIN ALL METERS TWO INCHES (2") AND SMALLER FROM THE LVVWD CENTRAL STORES. TELEPHONE 258-3152 OR 258-3802, TWO (2) WORKING DAYS PRIOR TO METER PICKUP.
- ANY INTERRUPTION OF SERVICE MUST BE PERFORMED IN ACCORDANCE WITH UDACS SECTION 3.14.01, AND APPROVED BY THE LVVWD INSPECTION DIVISION PRIOR TO SHUTDOWN. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.
- ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE AS LISTED ON THE LVVWD'S PRE-APPROVED MATERIALS AND MANUFACTURER'S LISTING FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS.
- TELEPHONE "CALL BEFORE YOU DIG" AT "811" OR 1-800-227-2800.

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

REVISED 08/30/12

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT NO. _____ DATE: _____

ABBREVIATIONS

AC_____ASPHALTIC CONCRETE	MH_____MANHOLE
ACP_____ASBESTOS CEMENT PIPE	MIN_____MINIMUM
ADJ_____ADJUST	MVC_____MIDDLE OF VERTICAL CURVE
BC_____BEGINNING OF CURB OR BACK OF CURB	NO_____NUMBER
BCR_____BEGINNING OF CURB RETURN OR BACK OF CURVE RADIUS	OC_____ON CENTER
BDRY_____BOUNDARY	OD_____OUTSIDE DIAMETER
BEG_____BEGIN	P_____POWELINE
BM_____BENCHMARK	PC_____POINT OF CURVATURE
BSW_____BACK OF SIDEWALK	PCC_____POINT OF COMPOUND CURVE
BVC_____BEGINNING OF VERTICAL CURVE	PG_____PAD GRADE
C & G_____CURB AND GUTTER	PHP_____PLASTIC HIGH PRESSURE
CF_____CURB FACE	PL_____POINT OF INTERSECTION
CIP_____CAST IRON PIPE	PL_____PROPERTY LINE
CL_____CENTERLINE	PP_____POWER POLE
CMP_____CORROGATED METAL PIPE	PRC_____POINT OF REVERSED CURVE
CO_____CLEAN OUT-SEWER	PROP_____PROPOSED
CONC_____CONCRETE	PT_____POINT OF TANGENT
CONST_____CONSTRUCT	PVC_____POLY VINYL CHLORIDE PIPE
DC_____DEPRESSED CURB	PVI_____POINT OF VERTICAL INTERSECTION
DI_____DROP INLET	PWMT_____PAVEMENT
DIA_____DIAMETER	Q_____RATE OF FLOW
DIP_____DUCTILE IRON PIPE	RCP_____REINFORCED CONCRETE PIPE
DMH_____DROP MANHOLE	RT_____RIGHT
EC_____END OF CURB	R/W, ROW, RIGHT-OF-WAY
EOR_____END OF CURB RETURN	SA_____SAWITARY
EL_____ELEVATION	SD_____STORM DRAIN
EP_____EDGE OF PAVEMENT	SHP_____STEEL HIGH PRESSURE
EV_____END OF VERTICAL CURVE	SHT_____SHEET
EX_____EXISTING	SNWA_____SOUTHERN NEVADA WATER AUTHORITY
F.A.S.T._____FREWAY ARTERIAL SYSTEM	SP MH_____SPECIAL MANHOLE
FC_____FACE OF CURB	STA_____STATION
FF_____FINISHED FLOOR	STD_____STANDARD
FG_____FINISH GRADE	STL_____STEEL
FH_____FIRE HYDRANT	SW_____SIDEWALK
FL_____FLOW LINE	T_____TANGENT DISTANCE
G_____GAS	TC_____TOP OF CURB
GB_____GRADE BREAK	TF_____TOP OF FOOTING
GF_____GARAGE FINISHED FLOOR	TOC_____TOP OF CHANNEL
HOT_____HIGH OR HEIGHT	TMH_____TOP OF MANHOLE
HOR_____HORIZONTAL	TRANS_____TRANSITION
HP_____HIGH POINT	TRC_____TOP OF ROLL CURB
ID_____INSIDE DIAMETER	TSC_____TRAFFIC SIGNAL CONDUIT
INT_____INTERSECTION	TSW_____TOP OF SIDEWALK
INV_____INVERT	TH_____TOP OF WALL
LAT_____LATERAL	TR_____TOP OF RETAINING WALL
LF_____LINEAL FEET	VC_____VERTICAL CURVE
LT_____LEFT	VOP_____VITRIFIED CLAY PIPE
LP_____LOW POINT	VERT_____VERTICAL
MAX_____MAXIMUM	VG_____VALLEY GUTTER
	W_____WATER

SOILS REPORT

LAS VEGAS FIRE DEPARTMENT APPROVAL

BY _____ DATE _____
APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR, OR AN APPROVAL OF, ANY VIOLATION OF ANY OF THE PROVISIONS OF THE STATE OR COUNTY LAWS.
FIRE FLOW 1,750 GPM AT 20 PSI RESIDUAL

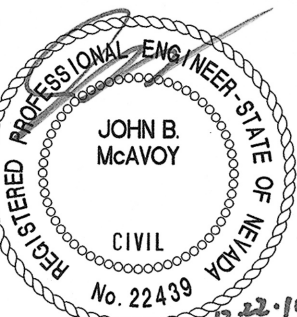
THOMASON CONSULTING ENGINEERS

7080 LA CIENEGA STREET, SUITE 200
LAS VEGAS, NEVADA 89119
702-932-6179 FAX: 702-932-6175

FARM CAPITAL MANAGEMENT L L C

DURANGO AND FARM GENERAL NOTES

7155 S RAINBOW BLVD #200 , LAS VEGAS, NV 89118-3271
PH: (702) 304-8393 FAX: (702) 304-1622



JOHN B. MCAVOY, P.E.
R.P.E. NO. 22439
EXP. 12-31-15

SHEET
3 OF 7
DRAWING



LOT 2
FILE 122, PAGE 08
OF SURVEYS
APN 125-17-610-011
OR: 20120221:01631

SIDEWALK RAMP DATA

PER STD. DWG. 235

	A	B	Table 1
A	8'	8'	1
B	4.5'	15'	1

FLOOD ZONE

THIS SITE IS LOCATED WITHIN FLOOD ZONE X, WHICH IS SPECIFIED AS "AREAS TO BE DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN" FIRM MAP NUMBER 32003C1745 E DATED SEPTEMBER 27, 2002.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK NO. 5LV8018NWB, BEING A RIVET & PLATE IN THE TOP OF CURB, EAST SIDE OF TULE SPRINGS ROAD, 1/4 MILE SOUTH OF GRAND TETON DRIVE

ELEVATION = 2540.69 FEET OR 774.403 METERS (NAVD 88)

BASIS OF BEARING

NORTH 00°00'50" WEST - BEING THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 17, TOWNSHIP 19 SOUTH, RANGE 60 EAST, MDM, CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN BOOK 104, PAGE 57 OF PLATS IN THE CLARK COUNTY RECORDERS OFFICE, CLARK COUNTY, NEVADA

NOTES:

1.) EASEMENTS FOR PRIVATE UTILITIES, PRIVATE DRAINAGE, TOGETHER WITH RIGHTS OF PRIVATE VEHICULAR AND PEDESTRIAN INGRESS/EGRESS ON ALL AREAS NOT OCCUPIED BY BUILDINGS TO BE RESERVED AND GRANTED WITH COMMERCIAL SUBDIVISION MAP.

2.) DRIVE AISLES TO BE USED AS CONVEYANCE FOR OFFSITE FLOWS FROM ADJACENT PROPERTIES.

FOR ALL GRADING AND STREET SECTIONS
SEE DETAIL SHEET D1. FOR ALL NOTES SEE
GENERAL NOTES SHEET C3.

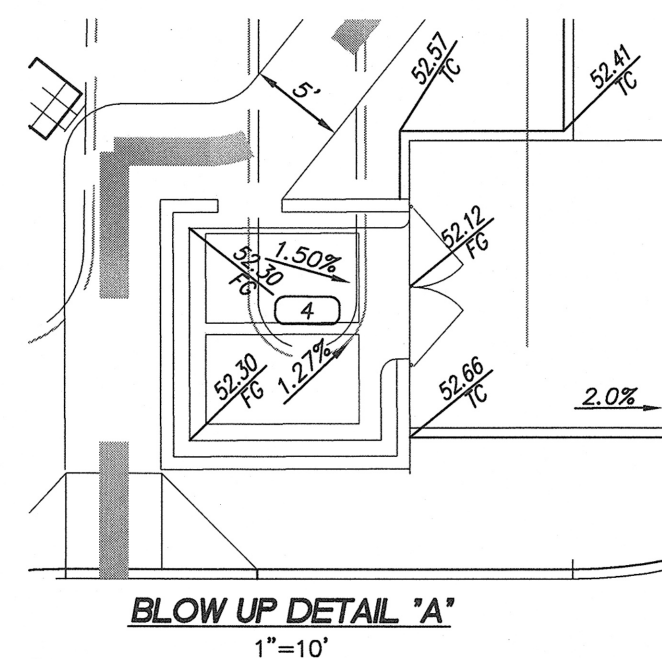
DISCLAIMER NOTE

EXISTING 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 LOCATIONS.

NOTIFY ENGINEER IMMEDIATELY IF DISCREPANCIES ARE ENCOUNTERED.

STORMWATER MANAGEMENT NOTES

- 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, ACCUMULATED IN, THE PUBLIC RIGHTS OF WAY OF THE CITY OF LAS VEGAS. AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT, SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM DRAIN SYSTEM.
- ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE TITLE 24.40 AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
- TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICAL AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS APPLY; REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.5.
- 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 AND MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS ANY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.12.
- 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

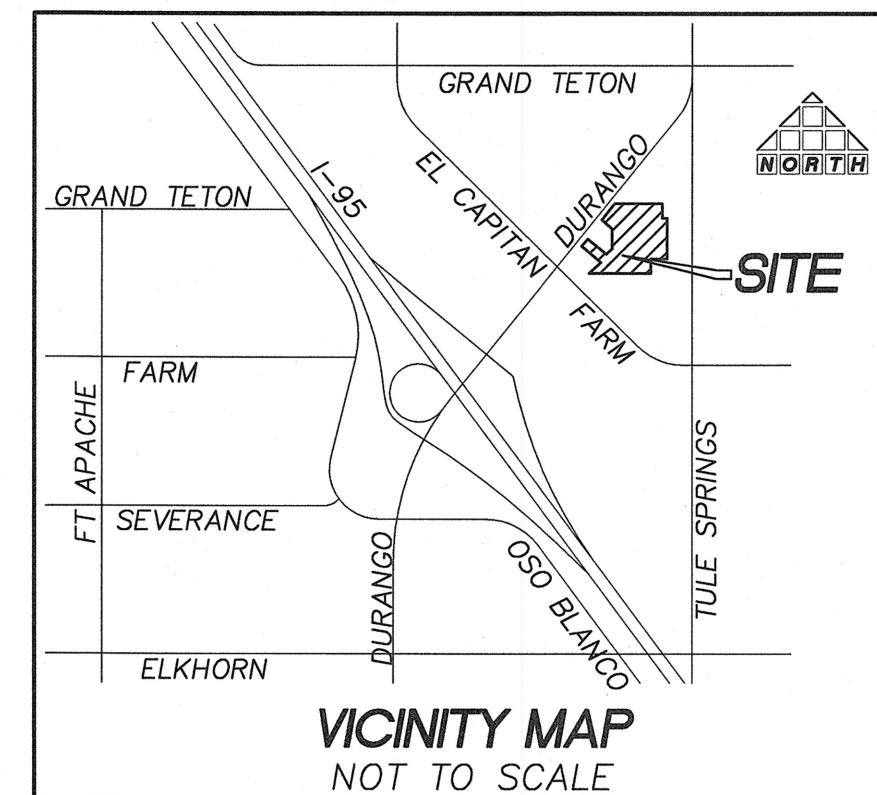
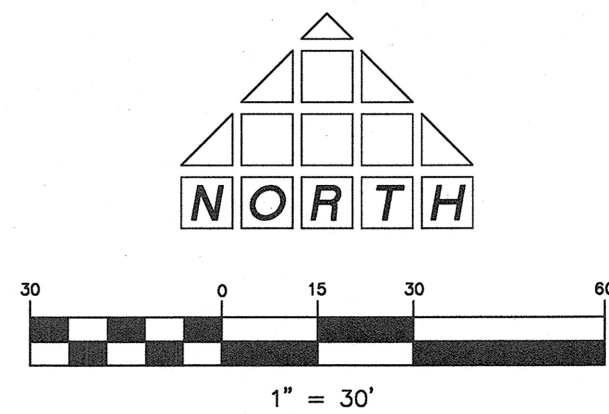
- CONSTRUCT MODIFIED TYPE "A" CURB PER DETAIL A/D1
- CONSTRUCT 4" CROSS GUTTER PER CCAUSD 228
- CONSTRUCT "L" TYPE CURB AND GUTTER PER CCAUSD 216
- CONSTRUCT TRASH ENCLOSURE
- CONSTRUCT HANDICAP RAMPS
- CONSTRUCT CONCRETE DRIVE THRU
- LIMITS OF AC CUT
- REMOVE EXISTING AC AND STRIPING
- REMOVE EXISTING CURB AND GUTTER
- 2" ASPHALT CONCRETE
- 3" ASPHALT CONCRETE
- 4" CONCRETE
- REMOVE EXISTING CURB AND GUTTER WHERE NEW RETAINING WALL OCCURS

CERTIFICATION

I HEREBY CERTIFY THAT THE GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE WITH CITY OF LAS VEGAS PUBLIC WORKS FOR THIS PROJECT. - DS H#

JOHN B. MCAVOY, P.E. # 22439

DATE



LEGEND

- PROPERTY LINE / RIGHT-OF-WAY
- "L" TYPE CURB AND GUTTER
- "A" TYPE CURB
- EXISTING CURB AND GUTTER
- EXISTING UTILITY (AS SHOWN)
- CROSS GUTTER
- WHEELCHAIR RAMP
- CUT OR FILL SLOPE
- PROPOSED PAVEMENT AREA
- EXISTING PAVEMENT TO BE REMOVED AND REPLACED
- PROPOSED ELEVATION (DESCRIPTION AS SHOWN)
- EXISTING ELEVATION (DESCRIPTION AS SHOWN)
- EDGE OF PAVEMENT
- TOP OF FOOTING
- TOP OF WALL
- TOP OF RETAINING WALL
- TOP OF SIDEWALK
- BUILDING NUMBER
- PAD ELEVATION
- FINISHED FLOOR ELEVATION
- WHEELCHAIR ACCESS ROUTE
- SIGHT VISIBILITY RESTRICTION ZONES PER STD. DWG. 201.1 (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 ZONE.
- SCREEN WALL
- STEM WALL
- RETAINING WALL
- EXISTING WALL
- A.C. SAWCUT LINE
- CUT / FILL LINES
- CONCRETE

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call before you Dig
CLARK COUNTY TRAFFIC OPERATIONS
1-800-227-2600
1-702-445-7544

Call before you Overhead
Avoid overhead power line contact.
Call before you Overhead
NEVADA POWER ENVIRONMENT
SAFETY SERVICES DEPARTMENT
1-702-227-2929
1-702-445-7544

Call before you UnderGround
Avoid hitting underground utility lines. It's costly.
Call before you UnderGround
CLARK COUNTY TRAFFIC OPERATIONS
1-800-227-2600
1-702-445-7544

THOMASON
CONSULTING
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7080 LA CENEGA STREET, SUITE 200
LAS VEGAS, NEVADA 89119
702-932-6125 FAX: 702-932-6129

FARM CAPITAL MANAGEMENT L L C
7155 S RAINBOW BLVD #200 . LAS VEGAS, NV 89118-3271
PH: (702) 304-8383 FAX: (702) 304-6622

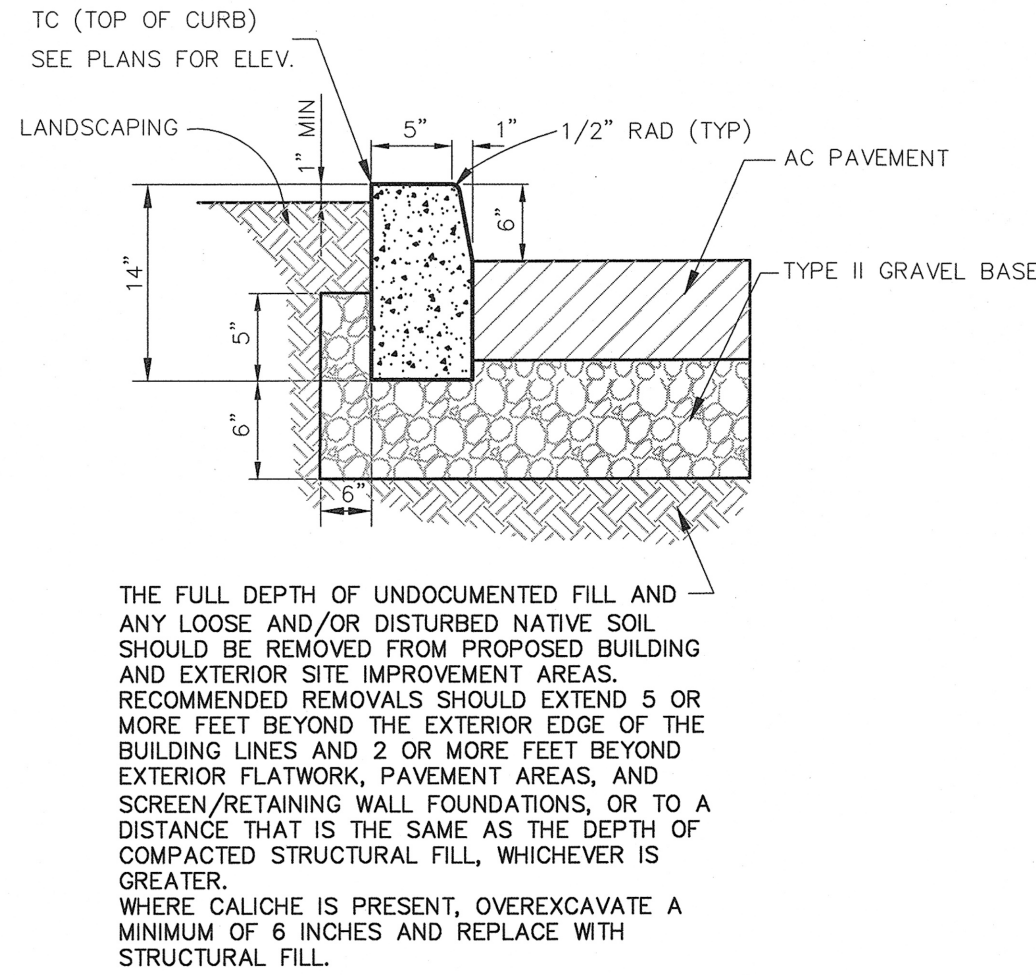
DURANGO AND FARM
GRADING PLAN 1

PROFESSIONAL ENGINEER - STATE OF NEVADA
JOHN B. MCAVOY, P.E.
No. 22439
R.P.E. NO. 22439
EXP. 12-31-15

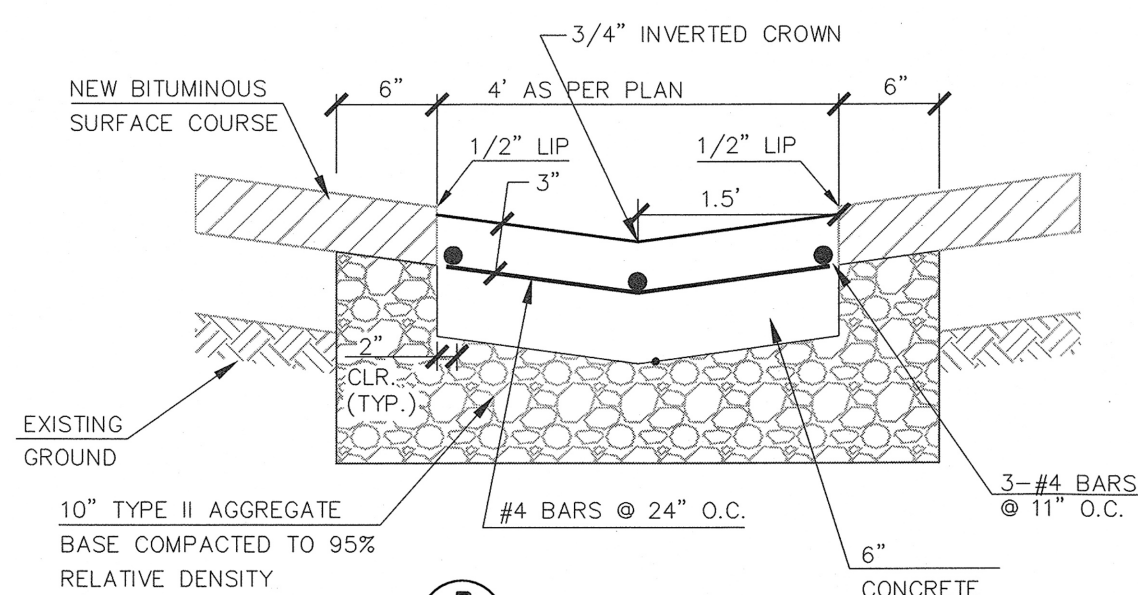
SHEET
G1
5 OF 7
DRAWING NO.
H#

PROJECT NO.
007.14131

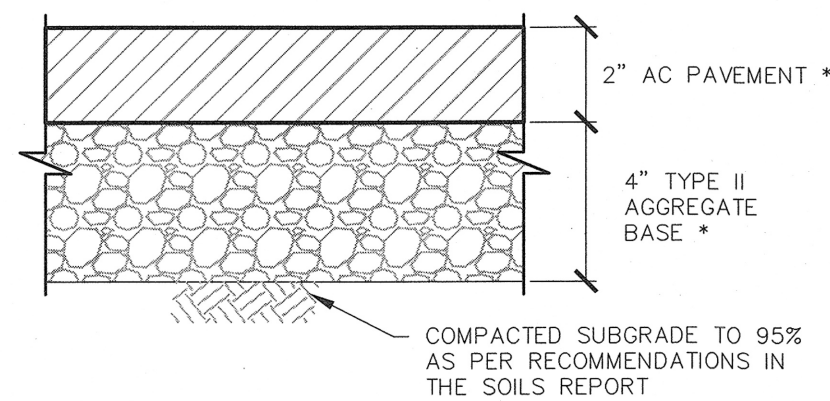
REVISION
12.22.2014 9:25:20 AM PST



A
DI **MODIFIED TYPE 'A' CURB**
NOT TO SCALE

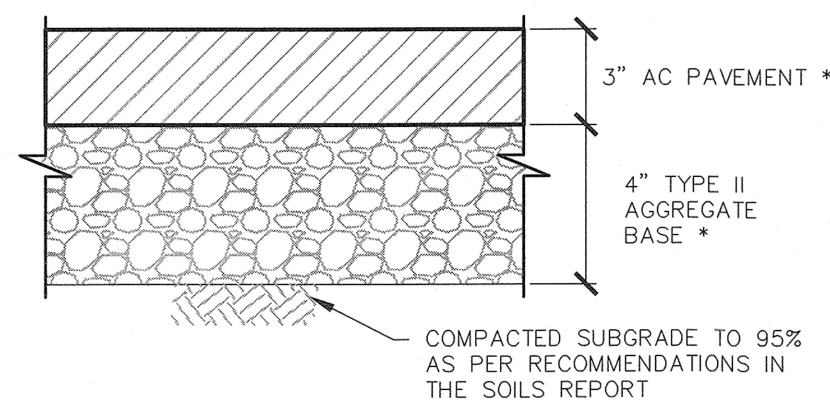


B
DI **4" VALLEY GUTTER**
NOT TO SCALE



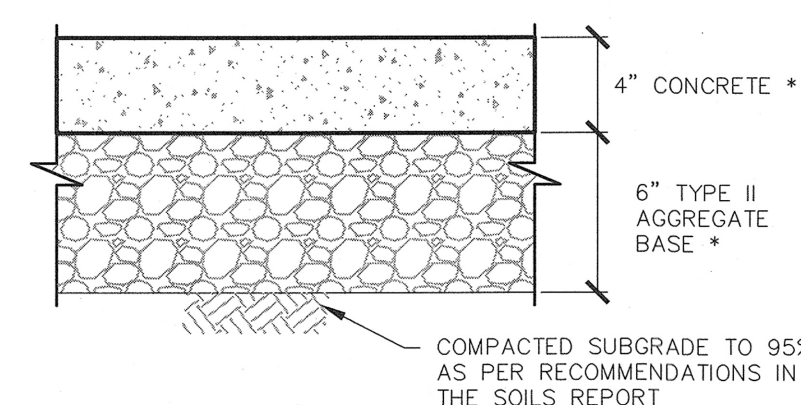
* (CONTRACTOR TO VERIFY PAVEMENT SECTIONS WITH SOILS ENGINEER PRIOR TO CONSTRUCTION.)

C
DI **LIGHT TRAFFIC PAVT-PARKING DETAIL**
NOT TO SCALE



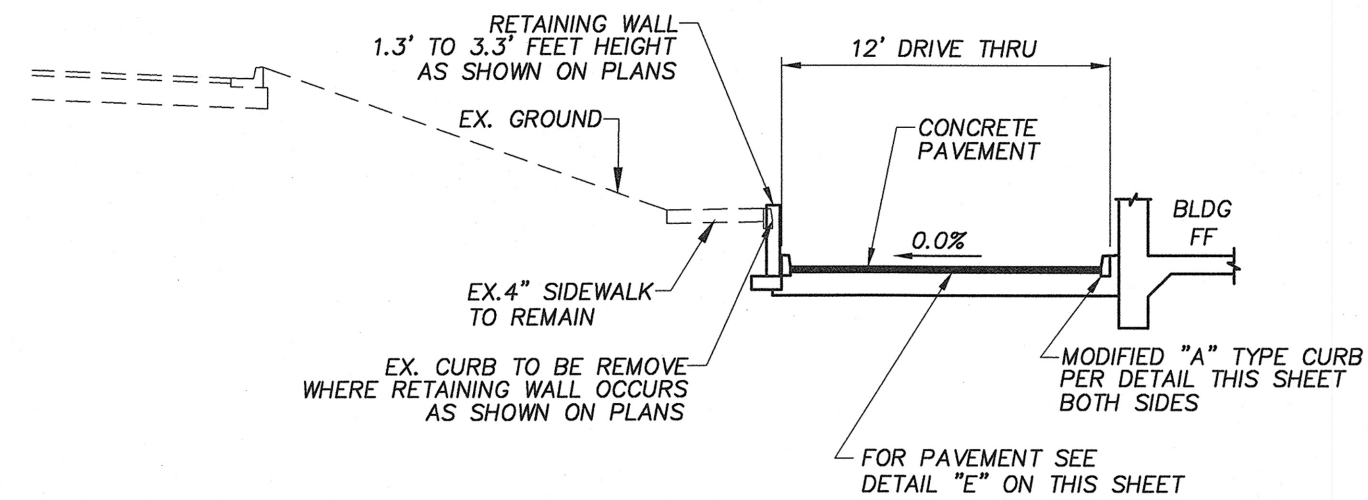
* (CONTRACTOR TO VERIFY PAVEMENT SECTIONS WITH SOILS ENGINEER PRIOR TO CONSTRUCTION.)

D
DI **HEAVY TRAFFIC PAVT-DRIVE ISLE DETAIL**
NOT TO SCALE

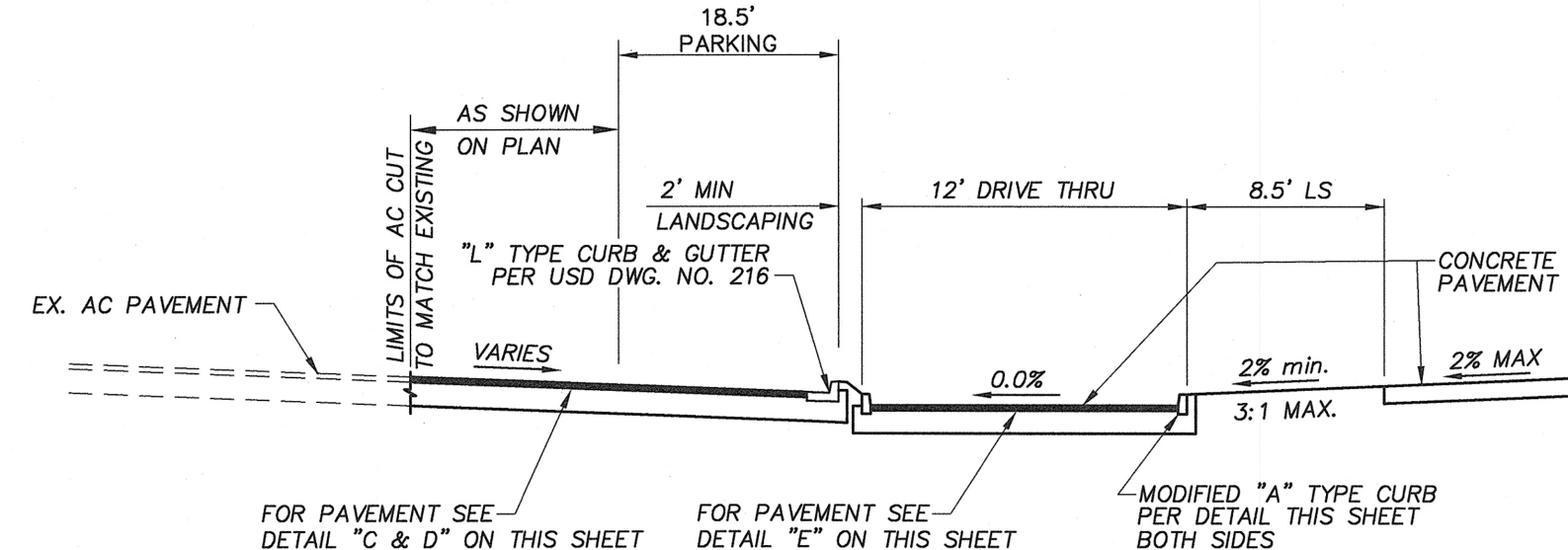


* (CONTRACTOR TO VERIFY PAVEMENT SECTIONS WITH SOILS ENGINEER PRIOR TO CONSTRUCTION.)

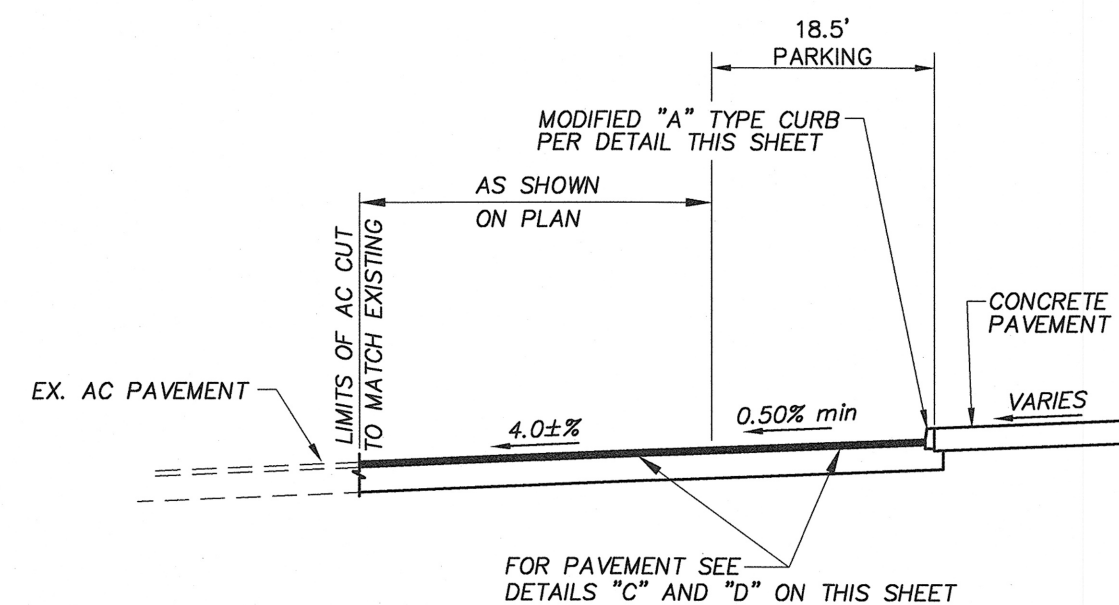
E
DI **DRIVE THRU DETAIL**
NOT TO SCALE



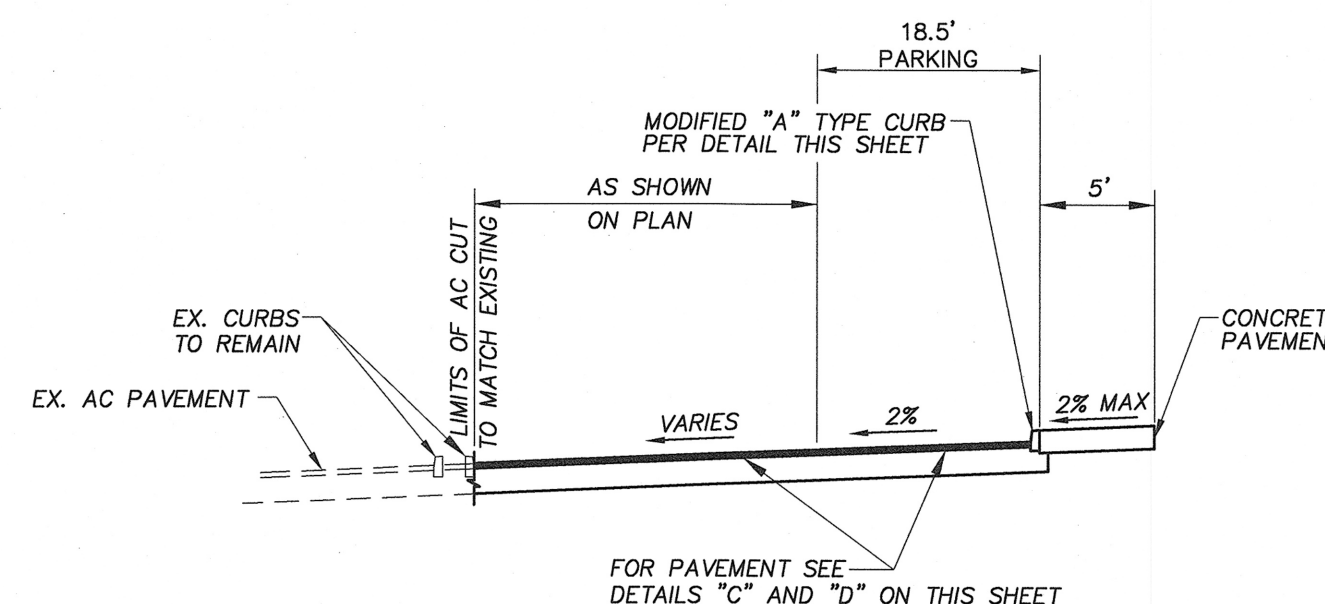
1
DI **SECTION**
NOT TO SCALE



2
DI **SECTION**
NOT TO SCALE



3
DI **SECTION**
NOT TO SCALE



4
DI **SECTION**
NOT TO SCALE

DRAWN BY: _____				SCALE: _____			
DESIGNED BY: _____				N/A			
CHECKED BY: _____							
COMMENTS ADDRESSED BY: _____							
PROJECT NO. _____							
007.14131							
REV.		DATE		BY		REVISION	

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DURANGO AND FARM
DETAILS SHEET

REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA
JOHN B. McAVOY
CIVIL
No. 22439
R.P.E. NO. 22439
EXP. 12-31-15

SHEET **D1** OF 7
DRAWING NO.

H#