

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		February 7, 2012
TO: Land Development Services Department of Building and Safety		FROM: Albert Sung, P.E. <i>PBJ</i> Flood Control Project Engineer <i>for</i> Department of Public Works
SUBJECT:	Conceptual Drainage Study for:	
	STOCKPILE PERMIT – Northeast corner of Horse Drive and Grand Canyon Drive	
Cross Streets:	Horse Drive & Grand Canyon	Grand Canyon Village Square
File Number:	F:\Depot\DSMemos\DS4548A.doc	Bart Anderson, P.E., DevCo
Parcel Number:	12507601005	Dispatch Transportation, LLC
Zoning Action:	N/A, CLV Permit # 201994-C-11	
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	2/06/2012	2/07/2012	See Comments Below	\$400.00	184874
TOTAL FEES (LDDRS):				\$400.00	----

REMARKS: This Approval is for the Stockpile Permit ONLY. This Drainage Study is Conceptual in nature. Clark County Dust Permit # 40686.

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 Department of Development Services concurrence.
	is conditionally approved subject to NDOT concurrence.

1. A review of the grading and stockpile plan has been completed and no apparent drainage impacts from the stockpile request are noted. Planning Department Concurrence has been provided.
2. Further development of this site will require that a Technical Drainage Study be submitted and approved prior to any further site development.

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
PBJ

T/R/S: T19S/R60E/S07
AREA G-07

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Cross Streets:	Horse Drive & Grand Canyon		Grand Canyon Village Square
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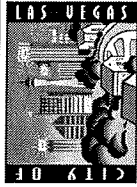
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END OF REMARKS
PBJ

T/R/S: T19S/R60E/S07
AREA G-07

MEETING ATTENDANCE SHEET



DEVELOPMENT SERVICES CENTER
731 S. Fourth Street
Las Vegas, NV 89101
702-229-6301

Date:	2/2/12
Time:	
Page:	of

NAME	COMPANY/DEPARTMENT	ADDRESS
1 Peter Jackson	CUV Food	Phone 229-5266 E-Mail Fax
2 Guy Morris	Lochsa Eng.	Phone 365-9312 E-Mail gmr@lochsa.com Fax
3 Hani Noshi	Lochsa Eng.	Phone 365-9312 E-Mail hani@lochsa.com Fax
4 Oscar Runyon	Dis Patch	Phone 702-716-4637 E-Mail oscar.runyon@dispatch.com Fax
5 EDDIE FIORE	DISPATCH	Phone 702 5919800 E-Mail EFFIORE@DISPATCH.COM Fax
6 Meeting	reviewed stockpile drainage	Phone E-Mail Fax
7 Study	requirements. Submitted meeting	Phone E-Mail Fax
8	Scheduled for Monday Feb 6th @ 4 PM.	Phone E-Mail Fax

4 PM Lochra

Email Memo to Lochra

Oscar Runyon@ yahoo.com
Σ Fiore @ dispatch trans.com

Job No.: 101070
Date: 2/6/2012



TRANSMITTAL

City of Las Vegas Department of Public Works
333 North Ranch Drive
Las Vegas, NV. 89106

T 702-365-9312 | F 702-365-9317
6345 S Jones Blvd, Suite 100
Las Vegas, NV 89118

Sent By:

Attention: Mr. Peter Jackson

- ☒ Our Messenger
☐ Your Messenger
☐ U.S. Mail
☐ Overnight Delivery

RE: Drainage Letter for N.E. Corner of Horse and Grand Canyon Proposed Stockpiling

TRANSMITTED: ☐ Prints ☐ Shop Drawings ☐ Calcs ☐ Specs ☒ Other

Copies	Sheet No.	Description
1	Copy	Drainage Letter and attachments
2	Sets	Stockpile Plans
1	Copy	\$400.00 Check (Oscar L. Runyon III Check #4658-Submittal Fee)

☒ For your use ☒ Review as noted ☐ Per your request ☐ Approved and return ____ copies

REMARKS: For your review and approval

Sent By: Hani M. Noshi, Ph.D., P.E., CFM. Received By: _____

February 6, 2012

Mr. Peter Jackson
Flood Control Section, Public Works Department
City of Las Vegas
333 N. Rancho Drive,
Las Vegas, NV 89106

Subject: **Drainage Study for Stockpile at Northeast Corner of Horse and Grand Canyon**
Lochsa Job # 121018.0

Dear Mr. Jackson,

This letter is being provided to satisfy the drainage requirement for obtaining a City of Las Vegas Stockpile Permit for the property at the Northeast Corner of Horse Drive and Grand Canyon Road. The letter provides explanation and description of the existing drainage flows and patterns to illustrate that the proposed stockpile plan for the property does not obstruct these drainage patterns. The subject parcel is identified with Assessor's Parcel Number (APN) 125-07-601-005. Please refer to a copy of the parcel map attached in the appendix.

The subject property is bordered to the east by the US 95, to the south by Horse Drive, and to the west by the alignment of Grand Canyon Road. The vicinity map (Figure 1) is attached in the appendix to illustrate the general location of the site in relation to the surrounding major streets. The site is specifically located in a portion of the southern half (S1/2) of the northeast quarter (NE1/4) of Section 7, Township 19 South, Range 60 East, of the M.D.M., in the City of Las Vegas, an incorporated portion of Clark County, Nevada.

Existing Drainage Pattern:

As shown in the 'Existing Drainage Pattern' exhibit provided in the back pocket of this study, a major wash traverses the subject property in an easterly pattern, as well as several other minor drainage washes. As part of the design efforts for the recently constructed flood control facilities for the Horse Drive/ US 95 Interchange, VTN Nevada has provided several culverts to intercept and convey runoff flows impacting the subject parcel. In a meeting held with Mr. Peter Jackson of City of Las Vegas, Flood Control Section, on February 2nd, 2012, it was agreed that flow capacity of these existing culverts along the Stockpile site (underneath US 95) will represent an

acceptable tool to estimate the existing runoff flows impacting the site. It was also agreed that when the flow capacity for any culvert is not indicated on the Interchange plans, a normal-depth full flow capacity would be utilized. The Inlet-Control Nomograph is also utilized in this report to determine the flow capacity for some culverts, as it was found to represent a more applicable value. As shown in the attached drainage exhibit, six washes are identified to traverse the site. Normal depth calculations are provided for each wash utilizing the FlowMaster program. As shown in the exhibit, the sections are generally selected to represent the most confined section of the wash, to provide a more conservative estimate of the flow depth. The determined flow depth is utilized in the provided Stockpile Plan to delineate approximate boundaries for the flow path along each wash flowline. Additional clearance was utilized to outside the flow path to start the proposed bottom of stockpile.

As shown in the attached hard copies of the FlowMaster output, six sections are provided to analyze the washes through the stockpile site, labeled as Section (1) through (6). Section (1) represents a minor onsite wash with a contributing area (unimproved) of less than 3.0 acres. For the purpose of this stockpile permit, a very conservative runoff flow distribution of 3.0 cfs per acre is assumed to the contributing area. Therefore, Section (1) utilized a flow value of 10 cfs to estimate the flow depth within this minor wash. The same approach was utilized to determine runoff flows within the minor wash at Section (5). Both minor washes at sections (1) and (5) do not directly drain into an existing culvert.

Sections (2) and (3) represent the minor washes that drain towards the existing 36-inch RCP culverts underneath US95. As shown in the attached referenced Interchange plans sheet SD28, the flow capacity for each culvert is identified to be 33 cfs. An Inlet-Control Nomograph is also utilized to examine the identified flow capacity, assuming a headwater to diameter ration (Hw/D) of 1.0. As shown in the attached copy of the Nomograph for the 36-inch RCP, the estimated runoff closely matches the 33 cfs identified. Therefore, the flow value of 33 cfs was utilized for both Sections (2) and (3).

Section (4) represents the major wash traversing the stockpile site, which drain easterly towards the existing 2:10'x4' RCBCs and 8'x6'RCBC underneath US 95. The normal depth full flow capacity for each 10'x4'RCBC (at a slope value of 0.50%) is determined to be approximately 477.50 cfs, i.e. approximately 955 cfs for both RCBCs. Due to the very steep slope value for the existing 8'x6'RCBC of more than 14%, the normal depth full flow capacity was unrealistic. Therefore, the flow capacity for the 8'x6'RCB was determined utilizing the inlet control nomograph to be 360 cfs. The normal depth calculation for the wash at Section (4) therefore utilizes a flow value of 1315 cfs (i.e. 955 + 360 cfs).

Section (6) represents the wash traversing the stockpile site towards the existing 6'x3'RCBC underneath US 95. The Interchange plans do not provide information of the slope of the existing 6'x3' RCBC. Therefore, the flow capacity for the RCBC is determined utilizing the inlet control nomograph to be 90 cfs.

Master Planning Information:

The site is covered by the “2008 Las Vegas Valley Flood Control Master Plan Update”, dated September 2002, as prepared by Post Buckley Schuh and Jernigan, Inc. (PBS&J), in association with Louis Berger Group and Parsons Brinckerhoff. Copies of figures F-13 and H-13 of the 2008 MPU are provided in the appendix to illustrate the site’s location within any master planned facilities. Review of Figure F-13 of the 2008 MPU indicates the future (now existing) regional Centennial Parkway Channel West US95 Branch (CN95) along the subject site. The facilities are identified as CN95 0259, CN95 0313, CN95 0318, and CN95 0333.

The site is also covered by the “1999 Northwest Neighborhood Study Flood Control Master Plan Phase 2”, dated June 1999, as prepared by PBS&J. Copies of figures E-7 and F-7 are provided in the appendix to illustrate the location of the site with respect to existing or future facilities.

Floodplain Information:

The subject site is covered by the Flood Insurance Rate Map (FIRM) for the Clark County, Nevada, and incorporated area, Community Panel Number: 32003C1735 E, Effective Date: September 27, 2002. The site is located entirely within an area designated by the Federal Emergency Management Agency (FEMA) as Zone “X” (unshaded), defined as “Areas determined to be outside the 0.2% annual chance floodplain”. Figure 2 in the Appendix illustrates the location of the site on a portion of the above referenced FIRM.

Conclusion:

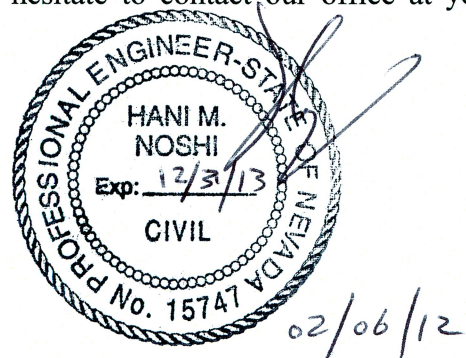
This drainage study is provided as a support document for the stockpile permit for the subject site to illustrate that the proposed Stockpile Plan does not introduce any negative impact to the existing drainage pattern through the site. Please refer to the attached Stockpile Plan for additional information.

If you have any questions or comments, please do not hesitate to contact our office at your earliest convenience.

Sincerely,

LOCHSA ENGINEERING

Hani M. Noshi, Ph.D., P.E., CFM
Principal



HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: N.E. Corner of Horse and Grand Canyon Date: February 06, 2012
 Location of Development: a) Descriptive (Cross Streets) North/South: Grand Canyon Road
 East/West: Horse Drive
 b) Section: 07 Township: 19 South Range: 60 East
 c) APN : 125-07-601-005

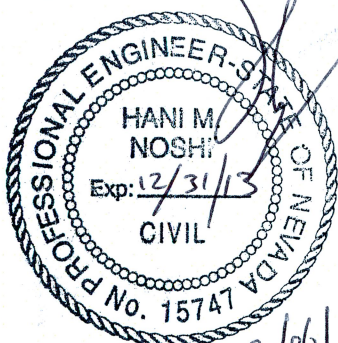
Name of Owner: Grand Canyon Village Square
 Telephone No.: 702 - 716 - 4637 Fax No.: _____ E-Mail Address: oscarlr@sbcglobal.net
 Address: 1770 North Buffalo Drive #101, Las Vegas, Nevada 89128

Contact Person-Name: Hani M. Noshi, Ph.D., P.E. Telephone No.: (702) 365-9312
 * E-Mail Address: hani@lochsa.com Fax No.: (702) 365-9317
 Firm: Lochsa Engineering
 Address: 6345 South Jones Boulevard, Suite 100, Las Vegas, Nevada 89118

Type of Land Development/Land Disturbance Process:

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

- Total Owned Land Area: At Site: 25.5 +/- Acres Being Developed/Disturbed: N/A
- Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ Yes** ☒ No
- Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☐ Yes** ☒ No
- Proposed type of development (Residential, Commercial, Etc.): Stockpiling
- Approximate upstream land area which drains to the subject site: 616 +/- Acres
- Has the site drainage been evaluated in the past? ☐ YES ☒ NO If yes, please identify documentation: _____
- If known, please briefly identify the proposed discharge point(s) of runoff from the site: Easterly towards Oso Blanco Road adjacent to the Site
- Briefly describe your proposed schedule for the subject project: ASAP



Engineer's Seal

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

***New Required Field**

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

Local Entity File No.	Revision	Date

REFERENCE:

STANDARD FORM 1

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL																	
DRAINAGE SUBMITTAL CHECKLIST																	
Project Name: Northeast Corner of Horse and Grand Canyon		Map ID:															
Firm Name: Lochsa Engineering		Engineer: Hani M. Noshi, Ph.D., P.E.															
Address: 6345 South Jones Boulevard Suite 100 City: Las Vegas State: Nevada Zip: 89118																	
Phone Number: (702) 365-9312		Fax Number: (702) 365-9317															
Property Owner: Grand Canyon Village Sqaure																	
Address: 1770 North Buffalo Drive #101 City: Las Vegas State: NV. Zip: 89128																	
Reviewed By:	Date Received:	Date Accepted for Review:															
The following checklist is intended as a guide for the engineer preparing a Technical Drainage Study to submit to the local entity and Clark County Regional Flood Control District (if necessary). The listed items are the minimum information required prior to the entity performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the Clark County Regional Flood Control District (CCRFCD) Hydrologic Criteria and Drainage Design Manual (MANUAL). This document is intended as an aid in preparing Technical Drainage Studies. Each study is reviewed for compliance with local and regional criteria. This form is not intended to be all inclusive and does not limit the extent of the information, calculations or exhibits which may be necessary to properly evaluate the intended land use. If items are not applicable for the subject site, provide N/A. I. GENERAL REQUIREMENT <table border="0"> <thead> <tr> <th>Yes</th> <th>No</th> <th></th> </tr> </thead> <tbody> <tr> <td>☒</td> <td>☐</td> <td>Design Manual Standard Form 1 with the engineer's seal and signature.</td> </tr> <tr> <td>☐</td> <td>☐ N/A</td> <td>Design Manual Standard Form 4.</td> </tr> <tr> <td>☒</td> <td>☐</td> <td>2 copies of the 24" x 36" Drainage Plan</td> </tr> <tr> <td>☐</td> <td>☐ N/A</td> <td>A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.</td> </tr> </tbody> </table>			Yes	No		☒	☐	Design Manual Standard Form 1 with the engineer's seal and signature.	☐	☐ N/A	Design Manual Standard Form 4 .	☒	☐	2 copies of the 24" x 36" Drainage Plan	☐	☐ N/A	A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.
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☒	☐	2 copies of the 24" x 36" Drainage Plan															
☐	☐ N/A	A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.															
REFERENCE:		STANDARD FORM 2															

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS

Yes No

- | | | |
|-------------------------------------|--------------------------|---|
| ☒ | ☐ | A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated. |
| ☒ | ☐ | A copy of the current CCRFCD Master Plan Update Figure, (F-x), for Flood Control Facilities and Environmental areas with the site delineated. |
| ☐ | ☐ | N/A Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs. |
| ☐ | ☐ | N/A On-site drainage basin maps for existing and proposed conditions showing the existing topography, basin boundaries, concentration points, and on-site and off-site flows in cfs. |
| ☒ | ☐ | Vicinity Map with local and major cross streets identified and a north arrow. |

III. DRAINAGE PLAN

Yes No

- | | | |
|-------------------------------------|--------------------------|---|
| ☒ | ☐ | Sheet size: 24" x 36" sealed by a registered engineer in the State of Nevada. |
| ☒ | ☐ | Minimum scale: 1" = 60'. |
| ☒ | ☐ | Project name. |
| ☒ | ☐ | Vicinity Map with local and major cross streets. |
| ☒ | ☐ | Revision box. |
| ☒ | ☐ | North arrow and bar scale. |
| ☒ | ☐ | Engineer's/consultant's address and phone number. |
| ☒ | ☐ | Elevation datum and benchmark. |
| ☒ | ☐ | Legend for symbols and abbreviations. |
| ☒ | ☐ | Cut/fill scarps, where applicable. |
| ☒ | ☐ | Street names, grades, widths. |
| ☒ | ☐ | Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street. |

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes No

✓	—	Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where appropriate.
—	N/A	Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.
—	N/A	Proposed typical street sections.
—	N/A	Streets with off-set crowns.
—	N/A	Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
✓	—	Property lines.
✓	—	Right-of-way lines with widths, existing and proposed.
✓	—	Existing improvements and their elevations.
—	N/A	Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
—	N/A	Concentration points and drainage flow directions 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., sidewalk, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, material, shape, and slope with plan and profile and HGL calculations.
—	N/A	Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
—	N/A	Location and detail of existing, proposed, and future block wall openings. Minimum size is 16" x 48". Wrought iron gate is required for flows > 10 cfs.
—	N/A	Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
	<u>N/A</u>	Perimeter retaining wall locations. All existing and proposed walls (retaining screen and flood) must be shown with adjacent ground elevations. Flood walls with 8-inch concrete masonry unit.
	<u>N/A</u>	Building and/or lot numbers.
✓		Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
	<u>N/A</u>	Limits of existing floodplain based on current FIRM of best available information; limits of proposed floodplains based on best available information.
	<u>N/A</u>	For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table.
	<u>N/A</u>	Appropriately elevated "humps" 6 inches above the 100 year water surface elevation at site accesses where the intent is to protect the site from the Q_{100} flows.
	<u>N/A</u>	Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.

IV. HYDROLOGIC ANALYSIS

Yes	No	
	<u>N/A</u>	Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
	<u>N/A</u>	Input and output information for existing conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
	<u>N/A</u>	Input and output information for future conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
	<u>N/A</u>	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.
	<u>N/A</u>	A summary table of stormwater flows showing basin area, Q_{10} and Q_{100} for both individual basins and combined basin flows, where applicable.
	<u>N/A</u>	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.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

Yes No

	<u>N/A</u>	Flow split calculations and supporting documentation or reference for the method of flow split calculations used.
	<u>N/A</u>	Normal depth street flow calculations and cross section diagrams for all interior and perimeter streets. Provide "d x v" products for the Q_{100} and Q_{10} flows representing the worst case for interior and all perimeter streets. $Q_{100} d \times v \leq 8$. $Q_{10} d \times v \leq 6$ and 12 foot dry lane for rights-of-way ≥ 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan.
	<u>N/A</u>	A summary table of interior and exterior street capacity calculations showing the street name, Q_{100} flow, slope, depth of flow, velocity and depth times velocity product and streets needing to meet 12 foot dry lane criteria.
	<u>N/A</u>	Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged).
	<u>N/A</u>	Appropriate hydraulic calculations at drainage easement entrance and discharge locations to set finish floor elevations. Hydraulic calculations must include submerged weir, superelevation and tee intersection losses, where appropriate.
	<u>N/A</u>	Provide necessary freeboard requirements to set the finished floor elevations of all proposed buildings, 2 x depth of flow of depth of flow plus 18 inches of freeboard, whichever is less. The minimum requirement is 6 inches above adjacent upstream top of curb. Buildings adjacent to drainage easements must always be provided with 18 inches of freeboard above the Q_{100} weir height of 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.
	<u>N/A</u>	• Field survey data • Input and output information • Plotted cross-sections based on survey with proper encroachments. • A map showing the locations of the cross-sections. • Analysis of both sub and super-critical flow segments. • A summary table and a discussion of the results in the text of the report.
	<u>N/A</u>	Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
	<u>N/A</u>	Hydraulic calculations for culverts and storm drains. D-Load calculations must be provided for storm drain pipes in public rights-of-way, including headwater pool inundation.
✓		The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.

REFERENCE:

STANDARD FORM 2



CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

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

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

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

I. GENERAL REQUIREMENT		
Yes	No	
	N/A	A notarized letter from the adjacent property owner(s) allowing off-site grading. (A copy of the letter must be received prior to final acceptance of the drainage study.)
	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.
✓		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. H.N. by initial here, the engineer on record acknowledges that the electronic copy is an identical replicate of the original hard copy submitted to the City of Las Vegas.

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

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

II. GRADING PLAN INFORMATION		
Yes	No	
	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.
	N/A	All existing and "to be constructed" walls with cross-sections showing wall type, (e.g. block wall, retaining wall, flood wall, etc.), with limits clearly defined, adjacent ground elevations. Wall heights must meet current ordinances and in no case exceed 14 feet above the adjacent property.
✓		Street slopes for both interior and perimeter streets. Note: The minimum slope for a roadway is 0.4 percent, a minimum 18-inch storm drain must be provided where minimum slopes cannot be met.
	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.
✓		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.
	N/A	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.

FIGURES

NOTES

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

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MAP LEGEND

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

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

MAP LEEND

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

PARCEL BOUNDARY — CONDOMINIUM UNIT

PMBL BOUNDARY — AIR SPACE PCL

RIGHT OF WAY PCL — ROAD EASEMENT

MATCH / LEADER LINE — SUB-SURFACE PCL

HISTORIC LOT LINE — HISTORIC SUB BOUNDARY

HISTORIC PMBL BOUNDARY — SECTION LINE

007 PARCEL NUMBER

001 PARCEL NUMBER

100 ACRES

202 PARCEL SUBSEQ NUMBER

PB 24-45 PLAT RECORDING NUMBER

5 BLOCK NUMBER

GLS GOV LOT NUMBER

009 088 007 086

008 099 100 101

127 128 129 134

136 137 138 139

009 088 007 086

008 099 100 101

127 128 129 134

136 137 138 139

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2 2 2 2 2 2 2 2

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4 4 4 4 4 4 4 4

5 5 5 5 5 5 5 5

6 6 6 6 6 6 6 6

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8 8 8 8 8 8 8 8

009 088 007 086

008 099 100 101

127 128 129 134

136 137 138 139

009 088 007 086

008 099 100 101

127 128 129 134

136 137 138 139

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6 6 6 6 6 6 6 6

7 7 7 7 7 7 7 7

8 8 8 8 8 8 8 8

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136 137 138 139

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136 137 138 139

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008 099 100 101

127 128 129 134

136 137 138 139

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SEC.

7

MAP

S2 NE 4

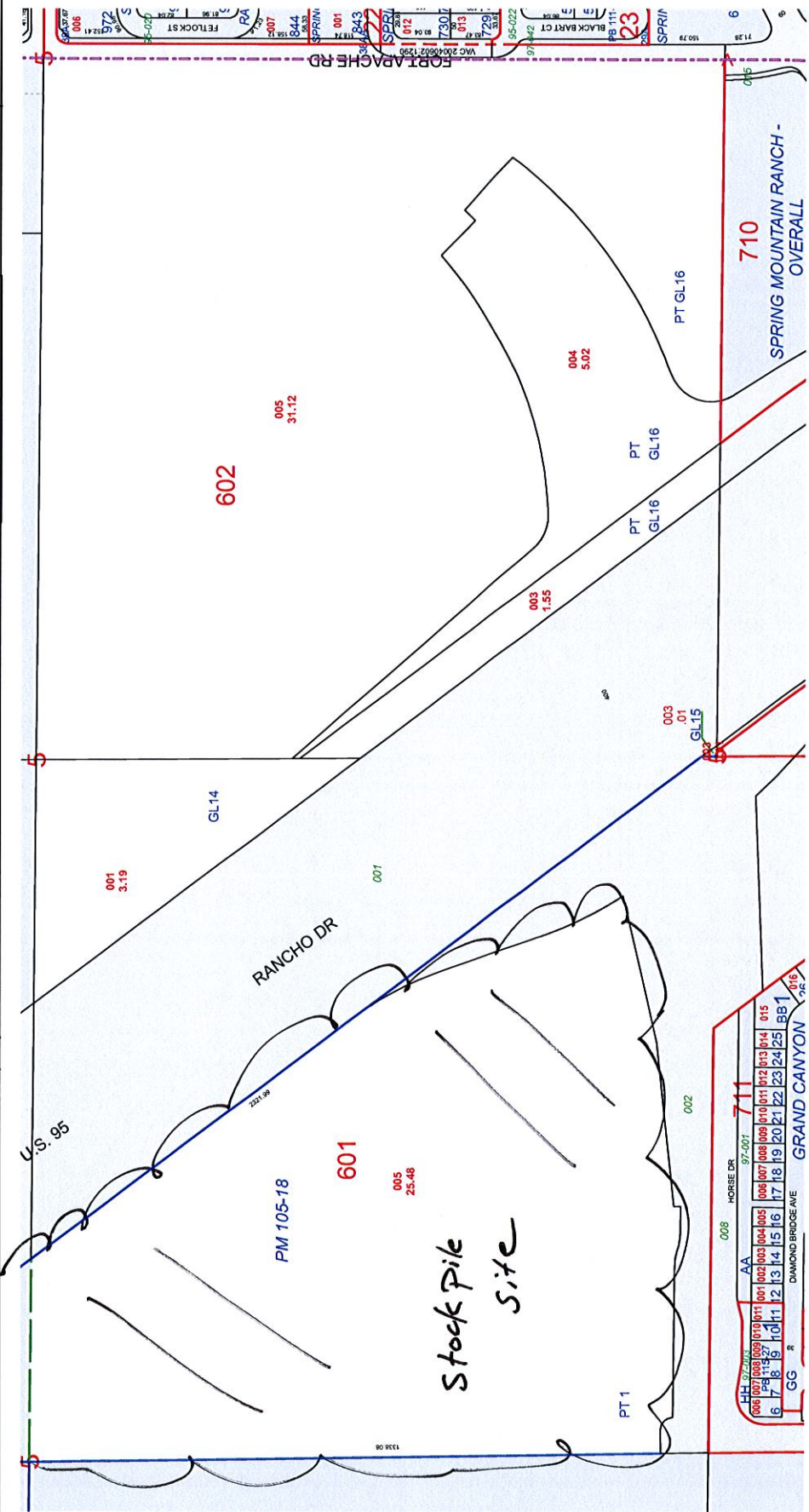
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8	4	8	4	
5	1	5	1	

BOOK	T19S R60E		
089	088	087	086
098	099	100	101
127	126	125	124
136	137	138	139

Scale: 1" = 200'

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

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	MAP LEGEND



TAX DIST 200

NOTES

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but only contains the information required for assessment. See the
recorded documents for more detailed legal information.

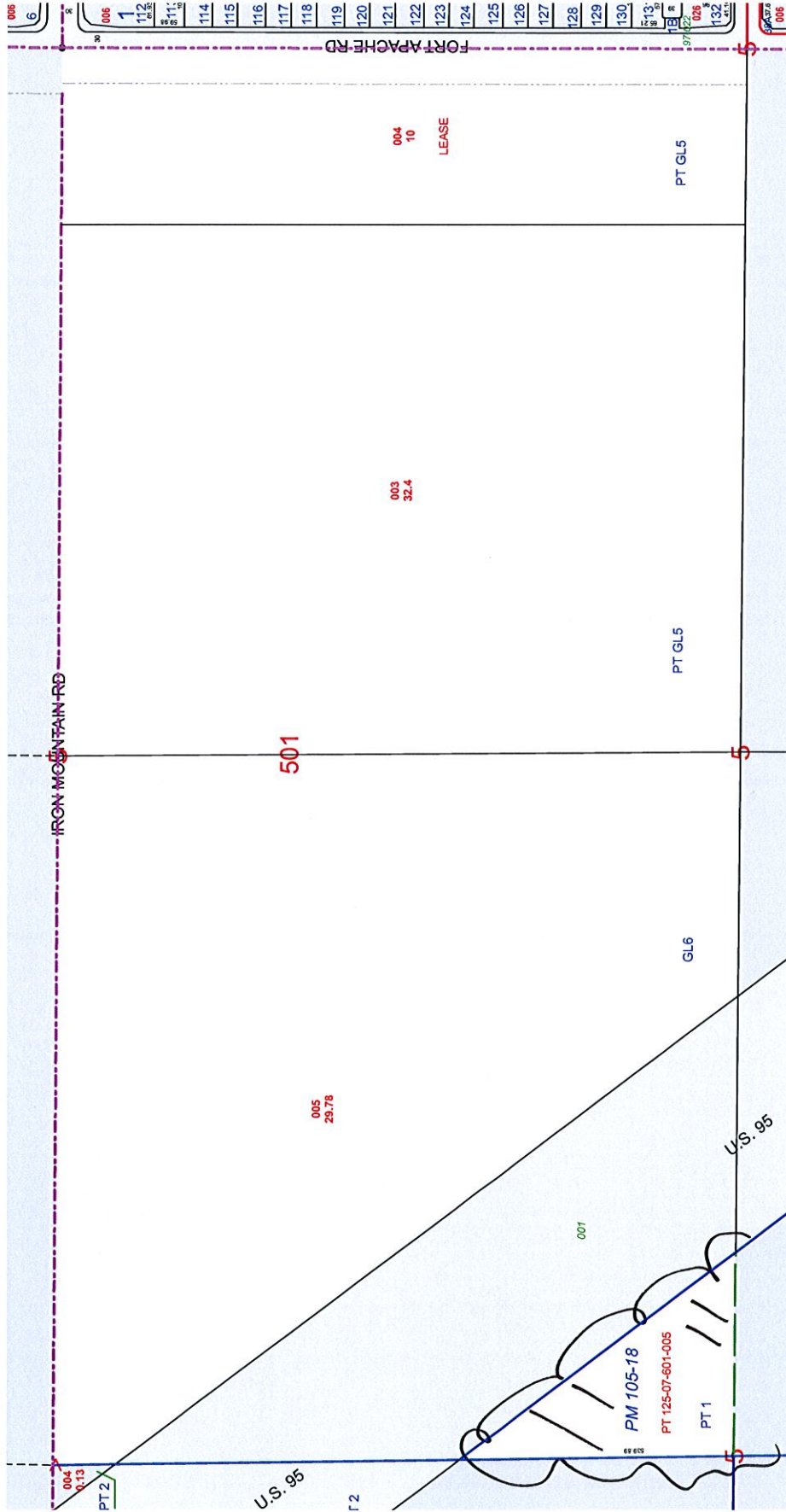
MAP LEGEND

	PAREL BOUNDARY		CONDOMINIUM UNIT
	SUB BOUNDARY		AIR SPACE PCL
	PAULD BOUNDARY		RIGHT OF WAY PCL
	MATCH / LEADER LINE		SUB-SURFACE PCL
	HISTORIC LOT LINE		
	HISTORIC SUB BOUNDARY		
	HISTORIC PAULD BOUNDARY		
	SECTION LINE		

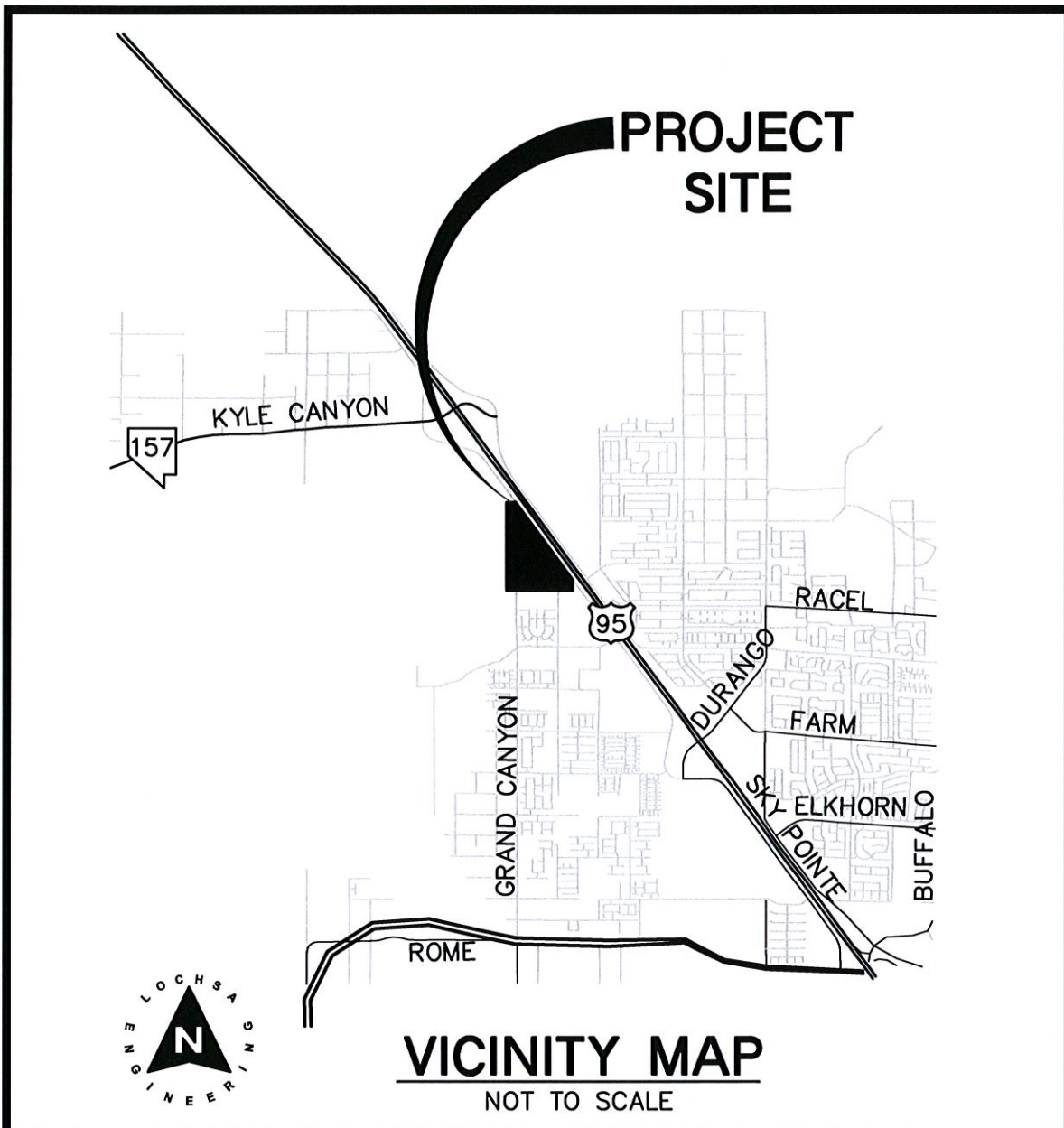
USE THIS SCALE(FEET) WHEN MAP REDUCED FROM 11X17 ORIGINAL

Scale: 1" = 200'

Rev: 02/09/2011

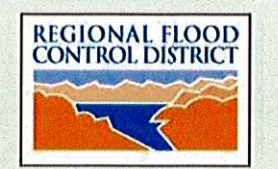
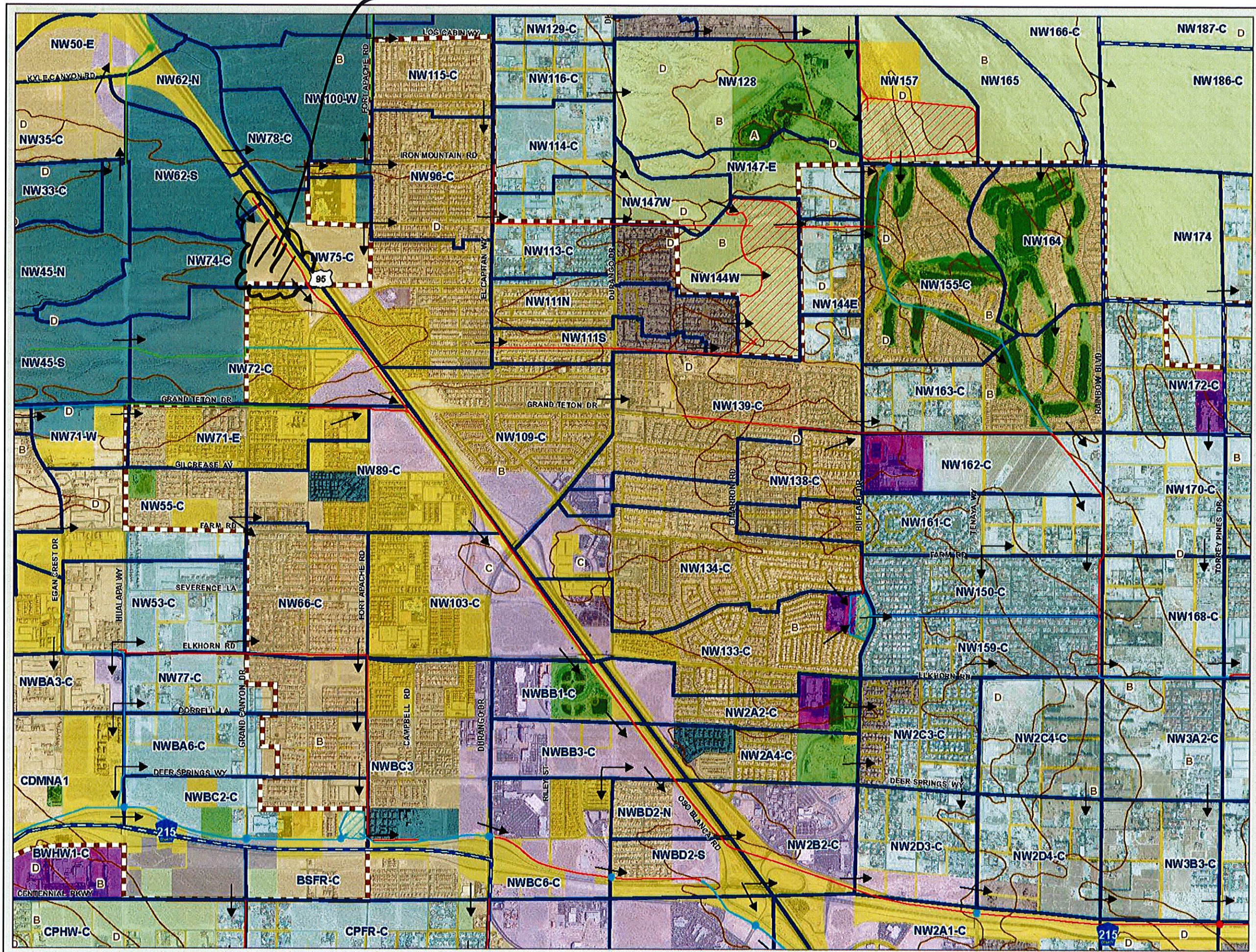


TAX DIST 200



LEGEND FOUND MONUMENTATION		FILE NAME: C-VIC Map.dwg	
CENTER LINE _____		SECTION LINE _____	
ROW LINE _____		PROPERTY LINE _____	
EASEMENT LINE _____		ADJACENT PROPERTY LINE _____	
DRAWN BY: SOA	SCALE: N.T.S.	VICINITY MAP (FIGURE 1)	PROJECT No.: 101070
CHECKED BY: HMN	DATE: 02/06/12		SHEET No.
Lochsa <i>engineering</i> 6345 South Jones Blvd. Suite 100 Las Vegas, NV 89118 Phone (702) 365-9312 - Fax (702) 365-9317		NE CORNER OF HORSE & GRAND CANYON	VIC SHEET 1 OF 1

PROJECT SITE



2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

**FIGURE H-13
HYDROLOGIC SUMMARY**

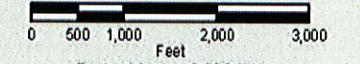
LEGEND

- Ultimate Development Boundary
- Watershed Boundary
- Subbasin Boundary
- Drought Ordinance Boundary
- Flow Arrows
- Flood Control Facilities**
 - Existing Facilities
 - Category A Proposed Facilities
 - Category B Proposed Facilities
 - Category A Remove & Replace/Parallel Facilities
 - Category B Remove & Replace/Parallel Facilities
- Type Hydrologic Soil Groups**
 - A Low Runoff Potential
 - B Moderately Low Runoff Potential
 - C Moderately High Runoff Potential
 - D High Runoff Potential/Rock Outcrops

Typical Land Use

- 1 Undeveloped Land, Open Desert
- 2 Parks, Golf Courses
- 3 Rural
- 4 / 14* Low Density Residential
- 5 / 15* Medium Density Residential
- 6 / 16* High Density Residential
- 7 / 17* Public Facility, Residential
- 8 / 18* Very High Density Residential
- 9 / 19* Commercial, Retail, Casino, High Rise Condominiums
- 10 / 20* Light Industrial
- 11 / 21* Heavy Industrial
- 12 / 22* Schools
- 13 Lakes

* Drought Ordinance Applied



Scale: 1 Inch = 2,000 feet
Refer to Figure G-2 for Aerial Source(s)





2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

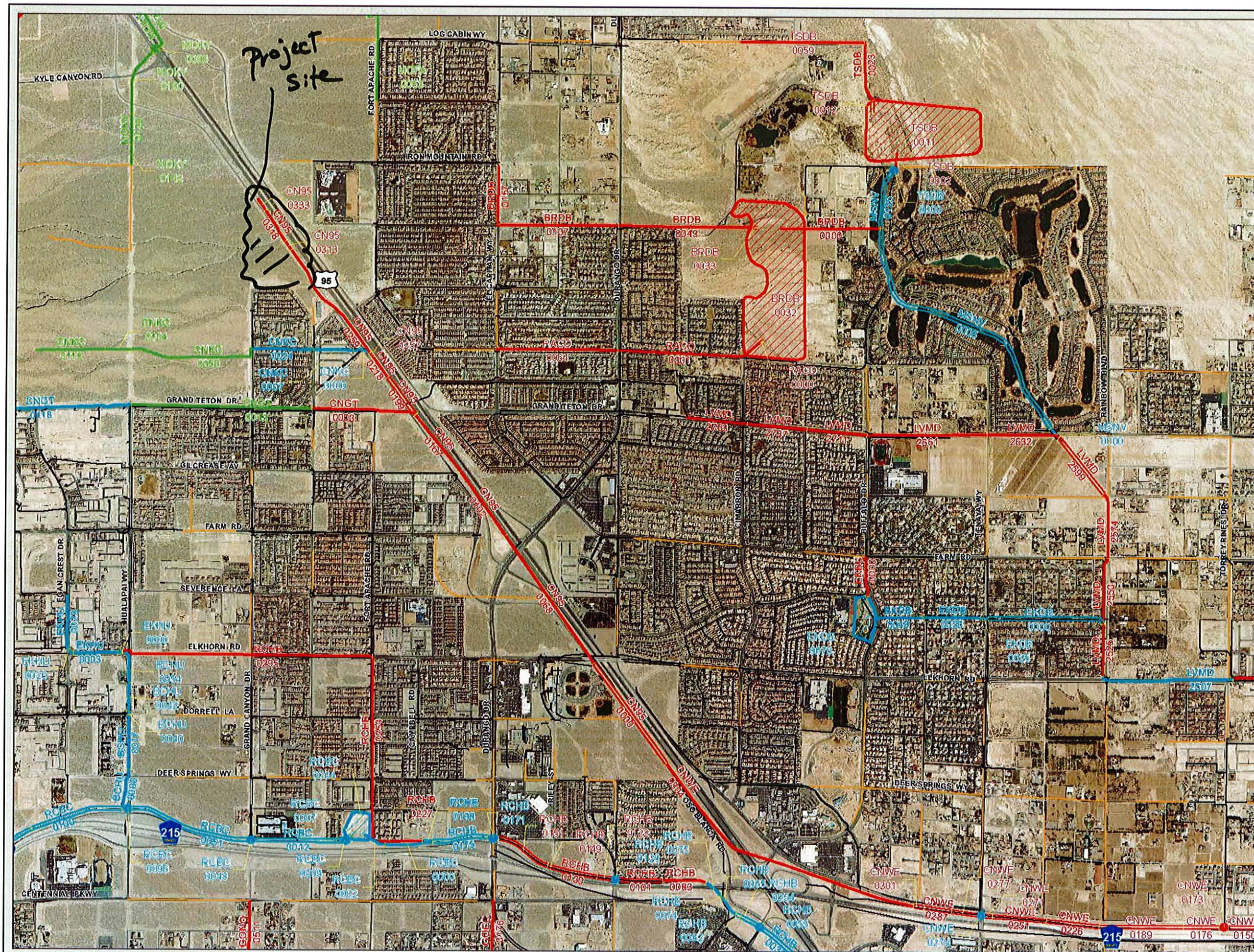
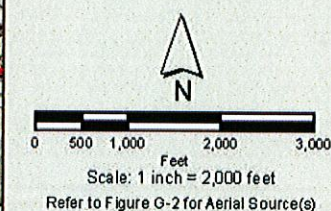
**FIGURE F-13
FLOOD CONTROL FACILITIES**

LEGEND

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

Remove & Replace/Parallel Facilities

- | Category A | Category B |
|------------|------------|
| Channel | Channel |
| Stormdrain | Stormdrain |
| Crossing | Crossing |



ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%)**
BCHU		BELTWAY CHANNEL - HUALAPAI						
0000	E	12' X 5' RCAP	853	501	CBA3-C	WEST3	0.84	1.11
0017	E	8' X 5' RCAP	1216	501	CBA3-C	WEST3	0.84	1.33
0040	E	66" RCP	60	222	DNW26-C	WEST3	0.51	1.04
0042	E	60" RCP	615	222	DNW26-C	WEST3	0.51	1.42
0054	E	54" RCP	770	222	DNW26-C	WEST3	0.51	1.23
BRDB		BRENT DRAINAGE SYSTEM						
0000	P3	36" RCP with 18" Orifice Plate	2170	37	BRDB	WEST3	2.48	0.40
0031	P3	45,080 cfs PMF Spillway		45080	CBRDB	WEST3	2.48	
0032	P3	450 ac-ft South Environmental Enhancement Area		1902	CBRDB	WEST3	2.48	
0033	P3	Energy Dissipator	100	957	CNW113-C	WEST3	1.58	
0043	P1	8' X 6' RCB	2920	957	CNW113-C	WEST3	1.58	2.10
0107	P1	8' X 6' RCB	2660	957	CNW113-C	WEST3	1.58	2.40
0157	P1	12' X 6' RCB	1260	741	CNW96-C	WEST3	0.95	0.25
CN95		CENTENNIAL PKWY CHANNEL WEST / U.S 95 BRANCH						
0000	P2	Conc Chnl 22W 10'D 0:1 SS	2690	3340	CNWBB3-C	WEST3	3.36	2.17
0068	P1	3' 8' X 7' RCB	3380	3216	CNW103-C	WEST3	3.05	2.12
0102	P1	3' 8' X 6' RCB	1710	2888	2CNW89-C	WEST3	2.66	2.09
0167	P1	2' 10' X 6' RCB	1580	2160	2CNW71-E	WEST3	1.64	1.50
0199	P3	Conc Chnl 15W 11'D 0:1 SS	1015	1609	2CNW72-C	WEST3	1.17	0.82
0218	P3	16' X 8' RCB	556	1609	2CNW72-C	WEST3	1.17	0.77
0257	P3	Transition Structure	100	1609	2CNW72-C	WEST3	1.17	0.77
0259	P3	16' X 8' RCB	2848	674	CNW74-C	WEST3	0.45	2.06
0313	P3	Transition Structure	240	674	CNW74-C	WEST3	0.45	1.50
0318	P3	14' X 6' RCB	797	333	NW62-S	WEST3	0.21	1.47
0333	P3	12' X 6' RCB	300	333	NW62-S	WEST3	0.21	5.50
CNGT		CENTENNIAL PKWY CHANNEL WEST / GRAND TETON BRANCH						
0000	P3	10' X 5' RCB	2290	600	CNW71-E	WEST3	0.47	2.63
0043	P0	6' X 6' RCB	3980	600	CNW71-E	WEST3	0.47	3.00
0118	E	6' X 5' RCAP	5472	363	KYLEDET*	KYLEDDB	57.73	3.72
CNKC		CENTENNIAL PKWY CHANNEL WEST / KYLE CANYON BRANCH						
0000	E	12' X 4' RCB	377	999	CNW72-C	WEST3	0.71	4.58
0007	E	10' X 5' RCB	874	999	CNW72-C	WEST3	0.71	3.28
0024	E	8' X 5' RCB	1385	999	CNW72-C	WEST3	0.71	2.40
0050	P0	6' X 6' RCB	2830	999	CNW72-C	WEST3	0.71	3.00
0104	P0	6' X 5' RCB	565	452	NW45-S	WEST3	0.27	3.00
0115	P0	72" RCP	1513	452	NW45-S	WEST3	0.27	3.00
CNWE		CENTENNIAL PKWY CHANNEL WEST						
0150	P2	Conc Chnl 42W 10'D 0:1 SS	720	4233	CNW3B3-C	WEST3	5.64	0.40
0173	P2	42' X 10' RCBC @ Torrey Pines	190	4233	CNW3B3-C	WEST3	5.64	0.40
0176	P2	Conc Chnl 32W 12'D 0:1 SS	795	4233	CNW3B3-C	WEST3	5.64	0.40
0189	P2	Conc Chnl 32W 10'D 0:1 SS	1845	4067	CNW2D4-C	WEST3	5.15	0.54
0226	P2	Conc Chnl 12W 12'D 2:1 SS	1165	4067	CNW2D4-C	WEST3	5.15	1.00
0251	P2	Conc Chnl 12W 12'D 2:1 SS	1135	3951	CNW2D3-C	WEST3	4.65	0.59
0271	P2	Conc Chnl 32W 10'D 0:1 SS	185	3951	CNW2D3-C	WEST3	4.65	0.59
0274	E	32' X 10' RCBC @ Tenaya	130	3951	CNW2D3-C	WEST3	4.65	0.45
0277	P2	Conc Chnl 13W 10'D 2:1 SS	590	3951	CNW2D3-C	WEST3	4.65	0.45
0287	P2	Conc Chnl 13W 10'D 2:1 SS	605	3593	CNW2B2-C	WEST3	3.84	1.19
0301	P2	Conc Chnl 32W 10'D 0:1 SS	235	3593	CNW2B2-C	WEST3	3.84	1.19
0304	P2	32' X 10' RCB	6510	3593	CNW2B2-C	WEST3	3.84	1.75
EKBU		ELKHORN SPRINGS AND BUFFALO						
0000	P1	78" RCP	860	375	NW134-C	WEST3	0.46	1.00
EKDB		ELKHORN SPRINGS DETENTION BASIN						
0000	E	Grass Chnl 15W 5.8'D 3.5:1 SS	2575	238	CNW150-C	WEST3	1.41	0.39
0025	E	4' X 3' RCB	160	120	ELKBASIN	WEST3	0.84	0.50
0026	E	48" RCP	1270	120	ELKBASIN	WEST3	0.84	1.23
0049	E	60" RCP	1095	120	ELKBASIN	WEST3	0.84	0.13
0070	E	48 ac-ft Elkhorn Springs Detention Basin		629	CNW133-C	WEST3	0.84	
EKHU		ELKHORN AND HUALAPAI						
0000	E	6' X 5' RCB Overflow Structure	48	638	CNW26-C	WEST3	0.51	0.91
0001	E	6' X 5' RCAP	72	638	CNW26-C	WEST3	0.51	0.91
EKHU		ELKHORN AND HUALAPAI						
0003	E	6' X 4' RCAP	980	638	CNW26-C	WEST3	0.51	3.61
0020	E	6' X 5' RCAP	150	638	CNW26-C	WEST3	0.51	3.61
0023	E	8' X 5' RCAP	1200	638	CNW26-C	WEST3	0.51	0.90
GOEC		GOWAN NORTH - EL CAPITAN BRANCH						
0176	P1	78" RCP	1320	363	CCPFR-C	ALLGOW3	0.46	1.15
GONO		GOWAN NORTH SYSTEM						
0511	P1	7' X 6' RCB	1320	546	CCPHW-C	ALLGOW3	0.60	1.14
LVMD		LAS VEGAS WASH - MIDDLE						
2490	P2	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	P1	21' X 6' RCB	1140	1913	CNW159-C	CWEST3	3.91	0.40
2550	P1	21' X 6' RCB	1445	1664	CD161-C	CWEST3	3.41	0.40
2574	P1	21' X 6' RCB	1430	1664	CD161-C	CWEST3	3.41	0.60
2599	P1	Conc Chnl 30W 5'D 2:1 SS	1577	1585	CNW162-C	CWEST3	3.08	0.40
2632	P1	13' X 5' RCB	1580	968	CNW138-C	WEST3	1.16	0.59
2661	P1	11' X 5' RCB	2640	968	CNW138-C	WEST3	1.16	1.00
2711	P1	8' X 5' RCB	1320	968	CNW138-C	WEST3	1.16	1.80
2737	P1	8' X 5' RCB	1320	818	CNW139-C	WEST3	0.93	1.81
2763	P1	78" RCP	1320	818	CNW139-C	WEST3	0.93	2.40
MOFA		MOCCASIN - FORT APACHE						
0024	P0	12' X 6' RCB	1520	394	DNW100-W	LOWER3	0.46	0.25
0053	P0	10' X 6' RCB	1345	258	DNW78-C	LOWER3	0.24	0.25
MOKY		MOCCASIN - KYLE CANYON BRANCH						
0078	P0	2' 13' X 7' RCB	965	1205	CNW50-E	LOWER3	1.06	0.40
0096	P0	2' 13' X 7' RCBC @ US 95	210	1066	CNW35-C	LOWER3	0.89	1.70
0100	P0	2' 13' X 7' RCB	1515	1066	CNW35-C	LOWER3	0.89	0.40
0129	P0	2' 11' X 7' RCB	675	779	CNW33-C	LOWER3	0.64	0.40
0142	P0	2' 9' X 7' RCB	430	779	CNW33-C	LOWER3	0.64	0.40
MSNV		MOUNTAIN SPAMISTA RANCH						
0000	E	6' 12' X 5' RCBC @ Grand Teton	273	679	CNW163-C	CWEST3	1.67	0.40
0005	E	Grass Chnl 100W 4.5'D 10:1 SS	6325	679	CNW163-C	CWEST3	1.67	0.40
0125	E	Grass Chnl 100W 4.5'D 10:1 SS	1300	116	CNW147E	WEST3	1.54	0.40
RACO		RACEL STREET COLLECTOR						
0000	P3	96" RCP Baffled Energy Dissipator	54	497	CNW111S	WEST3	0.55	4.20
0001	P3	78" RCP	3245	497	CNW111S	WEST3	0.55	2.46
0064	P3	78" RCP	2650	423	DNW111S	WEST3	0.44	2.09
RCBC		RANCHO ROAD SYSTEM - BELTWAY CHANNEL						
0000	E	6' X 5' RCB	1062	222	FADB	WEST3	1.60	1.04
0002	E	54" RCP Outlet with 41" Orifice	503	222	FADB	WEST3	1.60	2.38
0003	E	2,341 cfs PMF Spillway		2341	FADBIN	WEST3	1.60	
0004	E	76 ac-ft Fort Apache Detention Basin		1255	FADBIN	WEST3	1.60	
0007	E	Energy Dissipator	100	1255	FADBIN	WEST3	1.60	
0009	E	12' X 6' RCBC @ Fort Apache Detention Basin	133	1255	FADBIN	WEST3	1.60	1.79
0012	E	Conc Chnl 12W 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 12W 6'-8'D 0:1 SS	2660	1040	CMNA1	WEST3	1.32	3.44
0096	E	1' 10' X 6' and 1' 6' X 6' RCBC @ Hualapai Way	190	1040	CMNA1	WEST3	1.32	1.93
0100	E	Conc Chnl 12W 5.5'D 0:1 SS	2085	598	CDMNA1	WEST3	0.48	2.88
0140	E	Conc Chnl 10W 5'D 0:1 SS	2155	598	CDMNA1	WEST3	0.48	1.65
RCHB		RANCHO ROAD SYSTEM - BELTWAY						
0034	E	Conc Chnl 21W 8'D 0:1 SS	1000	2631	CNW1C-W	WEST3	4.68	1.19
0053	E	2' 12' X 8' RCBC @ South Ramp Connector	85	2304	CDW1C1	WEST3	4.31	1.40
0054	E	Conc Chnl 21W 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	P2	20' X 6' RCB	950	2226	CNWBC6-C	WEST3	4.17	2.49
0101	P2	Conc Chnl 20W 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
RCHB		RANCHO ROAD SYSTEM - BELTWAY						
0122	P2	Conc Chnl 16'-20W 6'D 0:1 SS	350	2226	CNWBC6-C	WEST3	4.17	1.84
0130	P2	Conc Chnl 16'W 6'D 0:1 SS	1012	2226	CNWBC6-C	WEST3	4.17	2.67
0149	P2	Conc Chnl 16'W 6'-7'D 0:1 SS	87	1888	CNWBC3	WEST3	3.75	2.27
0151	P2	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	P1	11' X 8' RCB	1885	1402	CNWBA6-C	WEST3	3.61	2.17
0250	P1	11' X 8' RCB	3200	1402	CNWBA6-C	WEST3	3.61	1.06
0295	P1	7' X 6' RCB	5525	973	CNW66-C	WEST3	1.75	3.30
TSDB		TULE SPRINGS DRAINAGE SYSTEM						
0000	E	2' 10' X 4' RCBC @ Echo Grande	100	26	TULEDB	WEST3	1.35	1.04
0002	P3	36" RCP with 22" Orifice Plate	320	26	TULEDB	WEST3	1.35	0.33
0010	P3	14,013 cfs PMF Spillway		14013	CTULEDB	WEST3	1.35	
0011	P3	117 ac-ft North Environmental Enhancement Area		804	CTULEDB	WEST3	1.35	
0012	P3	Energy Dissipator	260	376	CNW148-C	WEST3	0.52	
0023	P1	84" RCP	1320	376	CNW148-C	WEST3	0.52	0.80
0059	P1	78" RCP	2640	376	CNW148-C	WEST3	0.52	1.03

* The HEC-1 node shown identifies the controlling concentration point for the associated facility and is located upstream of this facility due to decreasing peak flow with increasing tributary area caused by storm distribution transitions, depth area reduction factors, or attenuation of flow from routing.
** As-built or design slopes were used when available. All other slopes are based on existing topography. The user should verify the facility slope listed prior to performing any facility specific analysis.
* For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e., HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).



2008 LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FACILITY INVENTORY
FIGURE F - 13

L
E
G
E
N
D

ID (Facility Identifier)
Parent Stream Name
Stream Name
River Mile
Distance Above Confluence
with Parent Stream (Miles)
Miles in Hundredths

AABB
0000

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

Bottom Width..... W
Depth..... D
Side Slope, H:V..... SS

Construction Features

Cast in Place Concrete Pipe..... CIPCP
Corrugated Metal Arch Pipe Culvert..... CMAP
Corrugated Metal Pipe Culvert..... CMPC
High Density Polyethylene..... HDPE
Horizontal Elliptical Reinforced Concrete Pipe..... HERCP
Reinforced Concrete Arch Pipe..... RCAP

Reinforced Concrete Arch Culvert..... RCAC
Reinforced Concrete Box..... RCB
Reinforced Concrete Box Culvert..... RCBC
Reinforced Concrete Pipe..... RCP
Reinforced Concrete Pipe Culvert..... RCP
Storm Sewer Pipe..... SSP





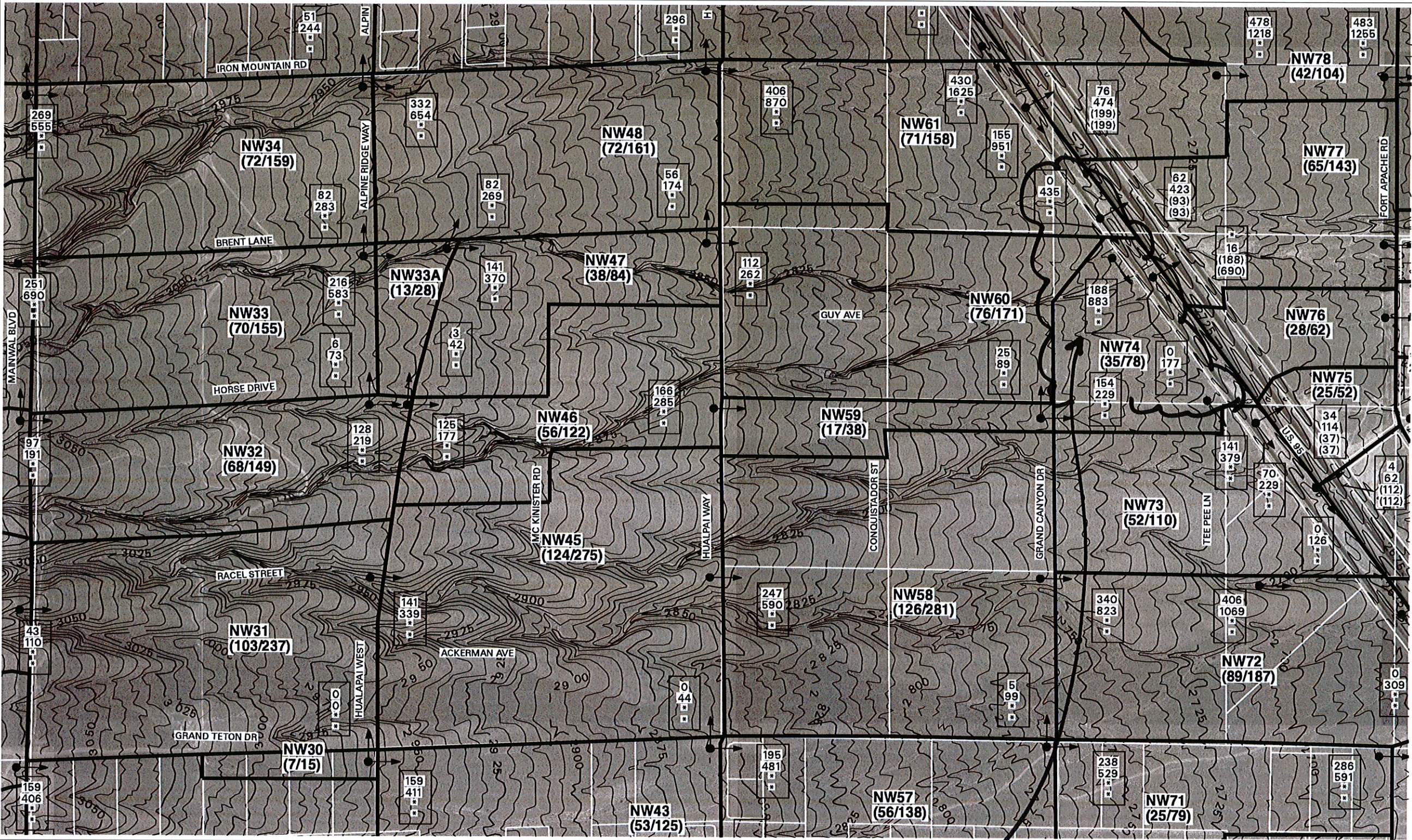
NORTHWEST
NEIGHBORHOOD
STUDY
PHASE 2

- LEGEND
- SUB-BASIN BOUNDARY
 - FLOW ARROW
 - 250 10-YEAR STREET FLOW
 - 500 100-YEAR STREET FLOW
 - 300 10-YEAR FACILITY FLOW
 - 800 100-YEAR FACILITY FLOW
 - (FLOWS IN CFS)

BWJS Basin-ID
(13 / 59) Contributing flow
(10-Year / 100-Year)
from the basin (cfs)

PHOTO DATE: SEPTEMBER 1998

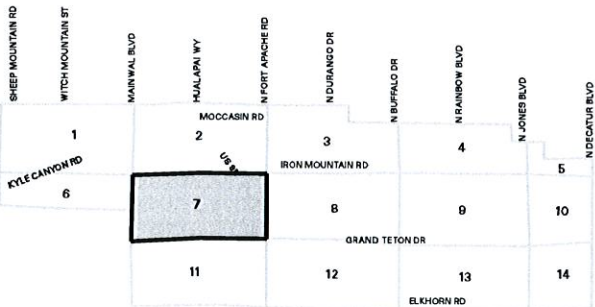
FIGURE E-7



EXISTING DRAINAGE CONDITIONS

PBSJ
ENGINEERING PLANNING GIS SURVEYING CONSTRUCTION SERVICES

901 North Green Valley Parkway, Suite 100
Henderson, Nevada 89014-6138
Phone: 702/263-7275
Fax: 702/263-7200



stockpile site

NOTE:
Existing conditions are based on future
CN values with only existing local and
CCRFCD facilities in place



(IN FEET)
SCALE: 1 INCH = 800 FEET

**1999 CITY OF LAS VEGAS
NORTHWEST NEIGHBORHOOD
FLOOD CONTROL MASTER PLAN
PHASE 2**

LEGEND

REGIONAL STREAM NAME DESIGNATOR	AABB
PARENT STREAM NAME	
STREAM NAME	
REGIONAL ID / RIVER MILE	0000
DISTANCE ABOVE	
CONFLUENCE WITH PARENT STREAM	
MILES	
TENTHS OF A MILE	
LOCAL STREAM NAME DESIGNATOR	AAB
LOCAL ID NUMBER	000
EXISTING FACILITY	E
PROPOSED OR MODIFIED FACILITY	P
CONTINGENCY LEVEL:	
MASTER PLAN	P1
FACILITY PLAN	P2
PRELIMINARY DESIGN	P3
DESIGN	P4
BOTTOM WIDTH	W
DEPTH	D
SIDE SLOPE, H:V	SS
CORRUGATED METAL PIPE	CMP
CULVERT	
CORRUGATED METAL ARCH	CMAF
PIPE CULVERT	
REINFORCED CONCRETE BOX	RCB
RCB CULVERT	RCBC
REINFORCED CONCRETE PIPE	RCP
RCP CULVERT	RCPC
REINFORCED CONCRETE	RCACP
ARCH PIPE CULVERT	
GENERAL COMMENT	G1
FACILITY SPECIFIC COMMENT	S1
PUBLIC DRAINAGE EASEMENT	PDE

NOTES:

FLOW = 100 YEAR DESIGN FLOW
(REGIONAL FACILITIES)
FLOW = FACILITY CAPACITY
(LOCAL FACILITIES)

**FLOOD CONTROL FACILITIES
INVENTORY**



ID	ID No.	E/P	Plan No.	Facility Description	Facility Length	Slope (%)	Flow (cfs)
F-7							
LOCAL FACILITIES							
RAN	794	E	HWY BK E-10	2: 10' x 4' RCBC	45	1.11	468
RAN	804	E	HWY BK E-10	2: 42" CMP	98		140
RAN	806	E	HWY BK E-10	2: 42" CMP	108		140
RAN	808	E	HWY BK E-10	2: 42" CMP	106	1.70	140
RAN	810	E	HWY BK E-10	6' x 4' RCBC	50		111
RAN	812	E	HWY BK E-10	6' x 4' RCBC	45		111
RAN	814	E	HWY BK E-10	6' x 3' RCBC	59	3.22	111
RAN	816	E	HWY BK E-10	36" CMP	58	3.27	36
RAN	818	E	HWY BK E-10	36" CMP	80		36
RAN	820	E	HWY BK E-10	6' x 3' RCBC	74	2.43	111
RAN	822	E	HWY BK E-10	36" CMP	94		36
RAN	824	E	HWY BK E-10	36" CMP	60	2.43	36
RAN	834	E	HWY BK E-10	2: 10' x 4' RCBC	56	2.98	618
RAN	836	E	HWY BK E-10	2: 10' x 4' RCBC	65		618
RAN	838	E	HWY BK E-10	2: 10' x 4' RCBC	70		618
RAN	840	E	HWY BK E-10	2: 10' x 4' RCBC	59	2.54	618
RAN	842	E	HWY BK E-10	6' x 3' RCBC	98	2.25	111
RAN	844	E	HWY BK E-10	6' x 4' RCBC	58		111
RAN	846	E	HWY BK E-10	6' x 4' RCBC	57		111
RAN	848	E	HWY BK E-10	6' x 3' RCBC	61	3.28	111
RAN	850	E	HWY BK E-10	2: 10' x 4' RCBC	67	2.42	424
RAN	852	E	HWY BK E-10	3: 42" CMP	56		168
RAN	854	E	HWY BK E-10	3: 42" CMP	52		168
RAN	856	E	HWY BK E-10	3: 42" CMP	44	2.50	168
SMR	205	E	107Y-4518	24" RCP	85	1.78	32
F-7							
REGIONAL FACILITIES							
HUBR	0000	P1	1999 NN Phase 2	HUALAPAI AND BRENT 54" RCP	700	4.70	376
HUHO	0000	P1	1999 NN Phase 2	HUALAPAI AND HORSE 48" RCP	2,640	3.95	248
KCHU	0034	P1	1999 NN Phase 2	KYLE CANYON AND HUALAPAI 78" RCP	1,500	2.12	720
KCHU	0048	P1	1999 NN Phase 2	60" RCP	1,200	2.21	335
LVMR	0030	P1	1996 Master Plan Update/1999 NN Phase 2	LAS VEGAS WASH RANCHO 96" RCP	1,900	1.53	904
LVMR	0062	P1	1996 Master Plan Update/1999 NN Phase 2	90" RCP	1,800	1.55	763
LVMR	0092	P1	1996 Master Plan Update/1999 NN Phase 2	66" RCP	1,700	1.56	308
RCLV	0000	P1	1996 Master Plan Update/1999 NN Phase 2	RANCHO AND LAS VEGAS WASH 78" RCP	3,640	3.09	761
RCLV	0067	P1	1996 Master Plan Update/1999 NN Phase 2	72" RCP	2,640	3.41	594
RCLV	0118	P1	1996 Master Plan Update/1999 NN Phase 2	66" RCP	2,640	3.94	494
RCLV	0168	P1	1996 Master Plan Update/1999 NN Phase 2	60" RCP	2,640	4.09	488

Note: Flows for culverts crossing U.S. 95/Rancho (RAN facilities) between Kyle Canyon Road and Durango Drive are based on headwater to the crown of U.S. 95 and do not include flows overtopping U.S. 95. These flows were taken from the "U.S. 95 - Frontage Roads, Phase III Durango Interchange to Kyle Canyon Road, Draft Final Drainage Report" by Louis Berger & Associates, Inc., Dated: May 17, 1994.

ID	ID No.	E/P	Plan No.	Facility Description	Facility Length	Slope (%)	Flow (cfs)
F-8							
LOCAL FACILITIES							
GND	150	E	107Y-4513	36" RCP	108	0.5	47
GND	160	E	107Y-4513	36" RCP	62	3.73	129
PMD	200	E	107Y-4513	36" RCP	71	0.5	47
RAN	780	E	HWY BK E-10	24" CMP	47	3.13	11
RAN	782	E	HWY BK E-10	24" CMP	66		11
RAN	784	E	HWY BK E-10	24" CMP	54		11
RAN	786	E	HWY BK E-10	10' x 10' RCBC	62	4.35	1,498
RAN	788	E	HWY BK E-10	10' x 10' RCBC	67	2.99	1,498
RAN	790	E	HWY BK E-10	10' x 10' RCBC	67	3.41	1,498
RAN	792	E	HWY BK E-10	10' x 10' RCBC	47	3.19	1,498
RAN	794	E	HWY BK E-10	2: 10' x 4' RCBC	45	1.11	468
RAN	796	E	HWY BK E-10	10' x 4' RCBC	51		272
RAN	798	E	HWY BK E-10	10' x 4' RCBC	44		272
RAN	800	E	HWY BK E-10	10' x 4' RCBC	55	1.87	272
RAN	802	E	HWY BK E-10	2: 42" CMP	107		140
RAN	804	E	HWY BK E-10	2: 42" CMP	98		140
RAN	806	E	HWY BK E-10	2: 42" CMP	108		140
SMR	150	E	327Y-4518	24" RCP	50	1.56	28
SMR	160	E	327Y-5418	24" RCP	70	2.29	34
SMR	170	E	327Y-4518	24" RCP	70	1.21	25
SMR	180	E	327Y-4518	24" RCP	60	1.78	30
SMR	190	E	327Y-4518	24" RCP	178	2.00	32
SMR	200	E	327Y-4518	24" RCP	115	3.30	41
SMR	210	E	107Y-4518	2:24" RCP	60	0.50	32
SMR	220	E	107Y-4518	54" RCP	71	1.00	197
F-8							
REGIONAL FACILITIES							
CERC	2204	P1	1996 Master Plan Update/1999 NN Phase 2	CENTENNIAL AND RANCHO 10'x10' RCBC	1,700	1.50	2,469
IMDU	0000	P1	1999 NN Phase 2	IRON MTN AND DURANGO 84" RCP	1,320	0.30	310
LVDU	0000	P1	1999 NN Phase 2	LAS VEGAS WASH AND DURANGO 10'x8' RCBC	1,320	0.30	790
LVEL	0000	P1	1999 NN Phase 2	LAS VEGAS WASH AND EL CAPITAN 90" RCP	660	0.30	373
LVEL	0012	P1	1999 NN Phase 2	78" RCP	660	0.30	256
LVEL	0037	P1	1999 NN Phase 2	60" RCP	660	0.30	116
LVMD	2711	P1	1996 Master Plan Update/1999 NN Phase 2	LAS VEGAS WASH MIDDLE 9'x7' RCBC	1,320	1.80	1,406
LVMD	2737	P1	1996 Master Plan Update/1999 NN Phase 2	8'x7' RCBC	1,320	1.81	1,188
LVMD	2763	P1	1996 Master Plan Update/1999 NN Phase 2	90" RCP	2,640	2.40	1,038
LVMR	0000	P1	1996 Master Plan Update/1999 NN Phase 2	LAS VEGAS WASH AND RANCHO 10'x10' RCBC	1,700	1.18	1,719
LVRA	0000	P1	1999 NN Phase 2	LAS VEGAS WASH AND RACEL 72" RCP	2,640	2.35	523
MSIM	0004	P1	1999 NN Phase 2	MTN SPA AND IRON MTN 90" RCP	5,280	2.27	952
MSIM	0106	P1	1999 NN Phase 2	66" RCP	1,320	2.27	466
RCLV	0000	P1	1996 Master Plan Update/1999 NN Phase 2	RANCHO AND LAS VEGAS WASH 78" RCP	1,000	2.90	2,408

Normal Depth Calculations (FlowMaster) and Inlet Nomograph Calculations
for the Flow Existing Flow Routes through the Site

Section (1)

Worksheet for Irregular Channel

Project Description	
Worksheet	Section (1)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.038000 ft/ft
Discharge	10.00 cfs

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

Results	
Mannings Coefficient	0.030
Water Surface Elevation	35.44 ft
Elevation Range	35.00 to 36.00
Flow Area	2.8 ft ²
Wetted Perimeter	12.88 ft
Top Width	12.83 ft
Actual Depth	0.44 ft
Critical Elevation	35.49 ft
Critical Slope	0.020996 ft/ft
Velocity	3.52 ft/s
Velocity Head	0.19 ft
Specific Energy	35.64 ft
Froude Number	1.32
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+29	0.030

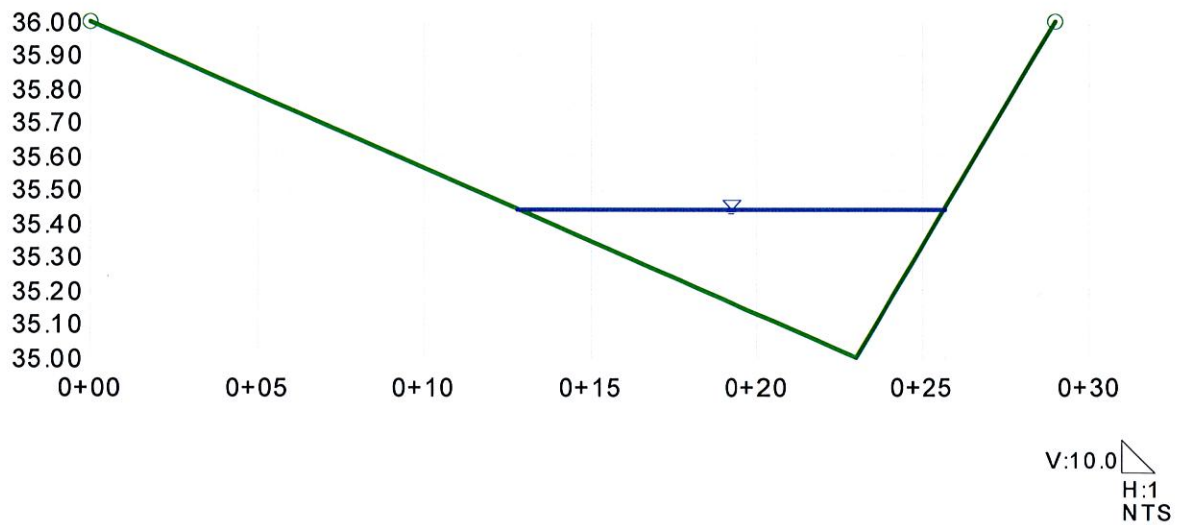
Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	36.00
0+23	35.00
0+29	36.00

Notes: * Only approximately 3acres drain towards this minor wash, mainly generated through the site. Q is conservatively assumed as 3cfs/acre = approximately 10cfs

Section (1) Cross Section for Irregular Channel

Project Description	
Worksheet	Section (1)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.030
Slope	0.038000 ft/ft
Water Surface Elevation	35.44 ft
Elevation Range	35.00 to 36.00
Discharge	10.00 cfs



Section (2)

Worksheet for Irregular Channel

Project Description	
Worksheet	Section (2)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.032000 ft/ft
Discharge	33.00 cfs

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

Results	
Mannings Coefficient	0.030
Water Surface Elevation	42.71 ft
Elevation Range	42.00 to 44.00
Flow Area	7.5 ft ²
Wetted Perimeter	21.22 ft
Top Width	21.17 ft
Actual Depth	0.71 ft
Critical Elevation	42.79 ft
Critical Slope	0.017954 ft/ft
Velocity	4.42 ft/s
Velocity Head	0.30 ft
Specific Energy	43.01 ft
Froude Number	1.31
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+60	0.030

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	44.00
0+19	43.00
0+33	42.00
0+49	43.00
0+60	44.00

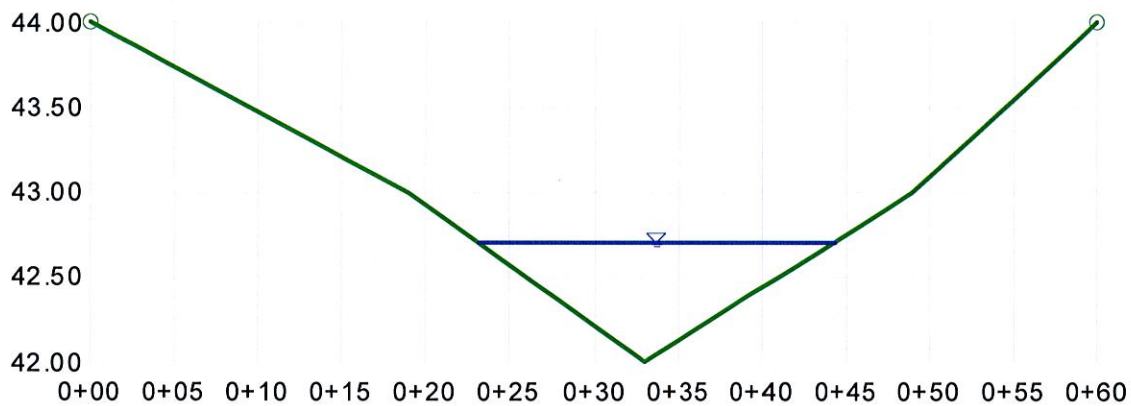
Notes: * Q100 =33cfs, utilizing the design flow value for the 36-inch RCP from the Horse Drive/US95 Interchange Plans, Sheet SD28 @ MPU Sta:43+97.29

* The provided Inlet-Control Nomograph for the 36"RCP also suggested 33cfs, utilizing a Hw/D value of 1.0. (please see attached)

Section (2) Cross Section for Irregular Channel

Project Description	
Worksheet	Section (2)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.030
Slope	0.032000 ft/ft
Water Surface Elevation	42.71 ft
Elevation Range	42.00 to 44.00
Discharge	33.00 cfs



V:10.0
H:1
NTS

Section (3)

Worksheet for Irregular Channel

Project Description	
Worksheet	Section (3)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.025000 ft/ft
Discharge	33.00 cfs

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

Results	
Mannings Coefficient	0.030
Water Surface Elevation	38.94 ft
Elevation Range	38.00 to 40.00
Flow Area	7.0 ft ²
Wetted Perimeter	15.11 ft
Top Width	14.99 ft
Actual Depth	0.94 ft
Critical Elevation	39.01 ft
Critical Slope	0.016625 ft/ft
Velocity	4.70 ft/s
Velocity Head	0.34 ft
Specific Energy	39.28 ft
Froude Number	1.21
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+28	0.030

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	40.00
0+05	39.00
0+12	38.00
0+21	39.00
0+28	40.00

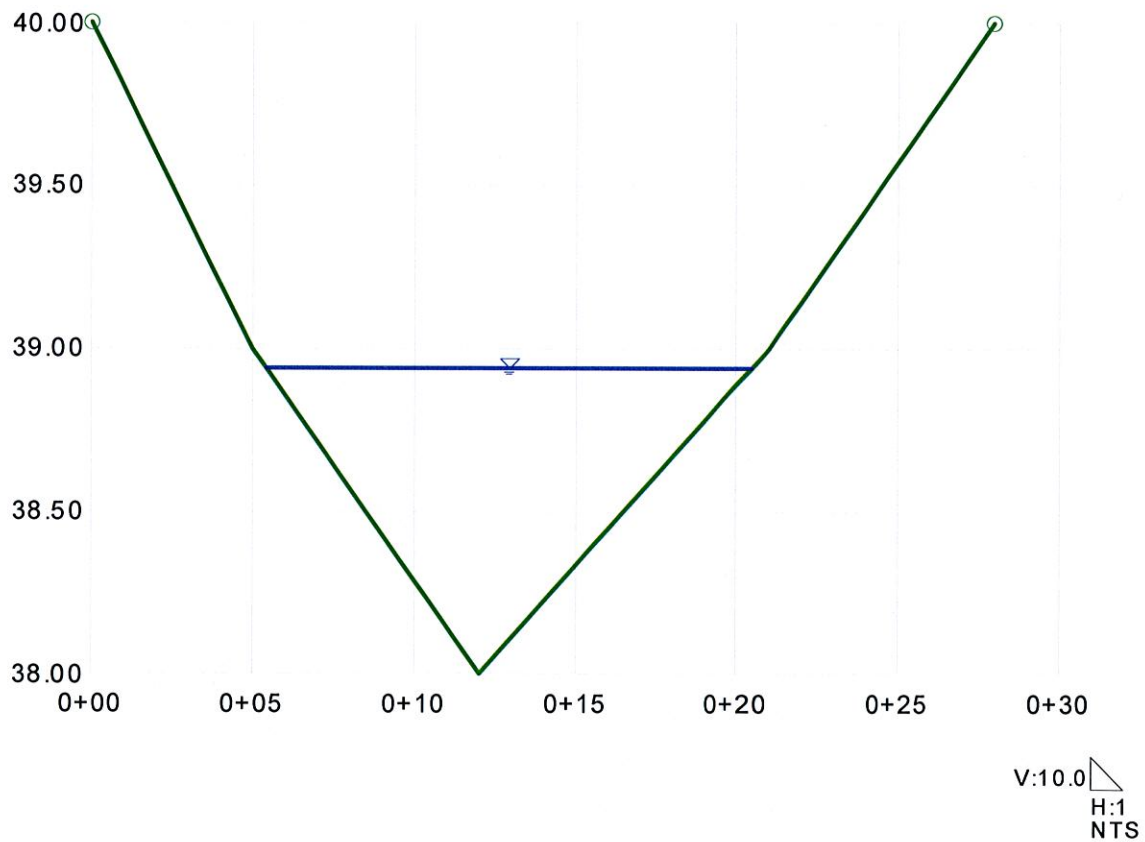
Notes: * Q100 =33cfs, utilizing the design flow value for the 36-inch RCP from the Horse Drive/US95 Interchange Plans, Sheet SD28 @ MPU Sta:43+97.29

* The provided Inlet-Control Nomograph for the 36"RCP also suggested 33cfs, utilizing a Hw/D value of 1.0. (please see attached)

Section (3) Cross Section for Irregular Channel

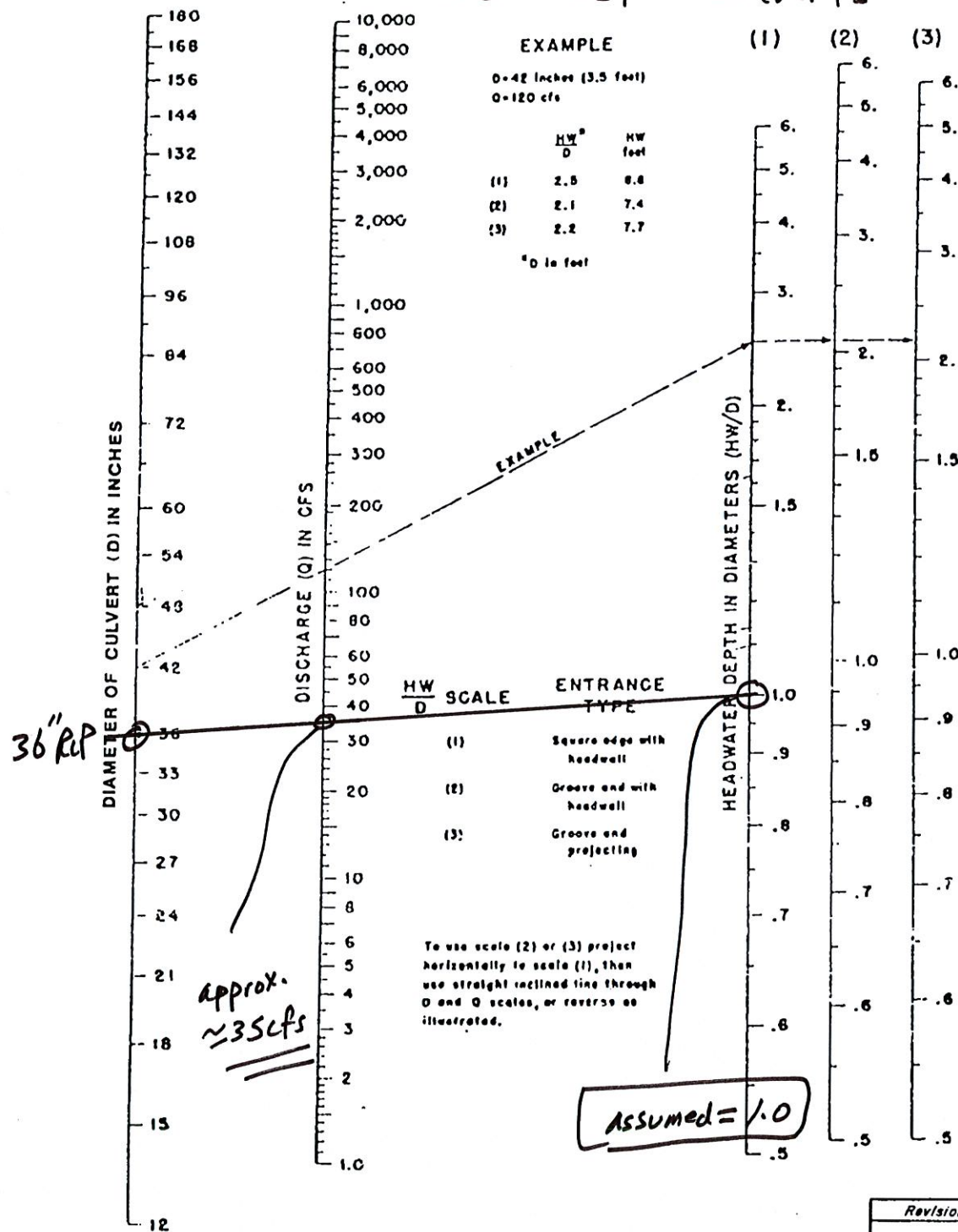
Project Description	
Worksheet	Section (3)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.030
Slope	0.025000 ft/ft
Water Surface Elevation	38.94 ft
Elevation Range	38.00 to 40.00
Discharge	33.00 cfs



HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

NOMOGRAPH - INLET CONTROL RCP 36" RCP culverts



Revision	Date

WRC
ENGINEERING

REFERENCE:

USDOT, FHWA, HDS, No. 5, 1985

FIGURE 1005

Section (4)

Worksheet for Irregular Channel

Project Description	
Worksheet	Section (4)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.018000 ft/ft
Discharge	1,315.00 cfs

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

Results	
Mannings Coefficient	0.030
Water Surface Elevation	48.24 ft
Elevation Range	45.00 to 50.00
Flow Area	120.0 ft ²
Wetted Perimeter	56.68 ft
Top Width	56.10 ft
Actual Depth	3.24 ft
Critical Elevation	48.74 ft
Critical Slope	0.009947 ft/ft
Velocity	10.96 ft/s
Velocity Head	1.87 ft
Specific Energy	50.10 ft
Froude Number	1.32
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+79	0.030

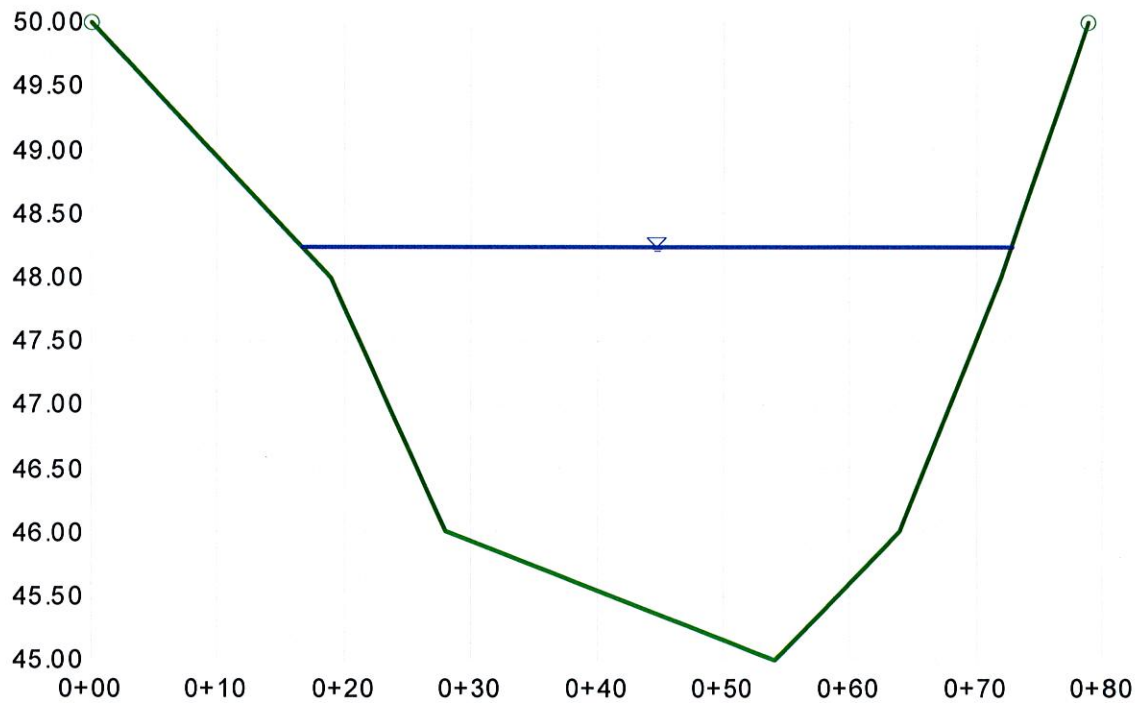
Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	50.00
0+19	48.00
0+28	46.00
0+54	45.00
0+64	46.00
0+72	48.00
0+79	50.00

Notes: * Q100 =1315cfs, determined as the full flow capacity for the 2:10'x4' RCBs from the attached FlowMaster (i.e. 2 x 477.5cfs= 955cfs) + Inlet-Control Nomograph flow capacity for the 8'x6' RCB (i.e. 360cfs)

Section (4) Cross Section for Irregular Channel

Project Description	
Worksheet	Section (4)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.030
Slope	0.018000 ft/ft
Water Surface Elevation	48.24 ft
Elevation Range	45.00 to 50.00
Discharge	1,315.00 cfs



V:10.0
H:1
NTS

10'x4' RCB Full Flow Capacity Worksheet for Rectangular Channel

Project Description	
Worksheet	10'x4' RCB Full Flow Capacity
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Mannings Coefficient	0.015
Slope	0.005000 ft/ft
Depth	4.00 ft
Bottom Width	10.00 ft

Results	
Discharge	477.13 cfs
Flow Area	40.0 ft ²
Wetted Perimeter	18.00 ft
Top Width	10.00 ft
Critical Depth	4.14 ft
Critical Slope	0.004563 ft/ft
Velocity	11.93 ft/s
Velocity Head	2.21 ft
Specific Energy	6.21 ft
Froude Number	1.05
Flow Type	Supercritical

Notes: * To determine the Full Flow Capacity for the 2:10'x4'RCBs.

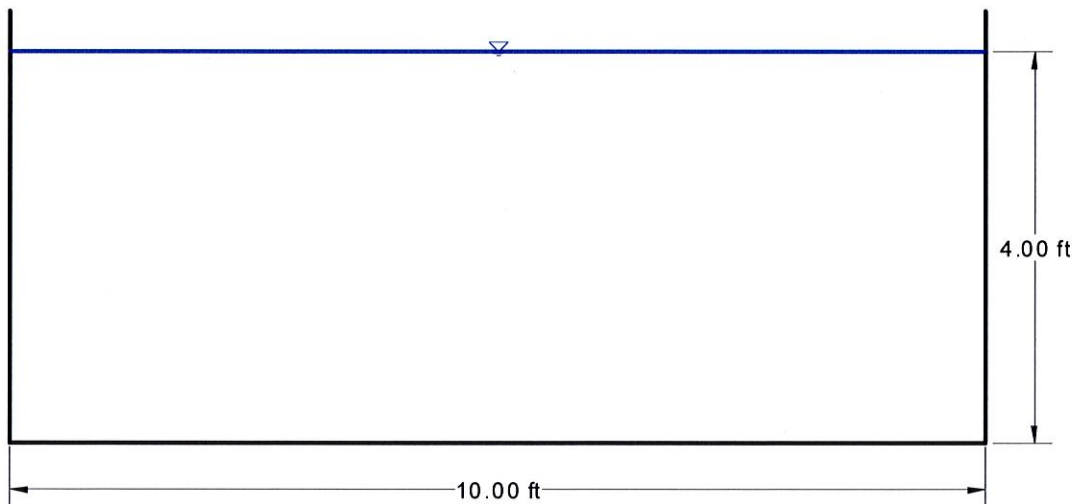
* The Longitudinal Slope of 0.50% is obtained from the Horse Drive/US95 Interchange Plans, Sheet SD34 @ FRW Sta:111+34.02

10'x4' RCB Full Flow Capacity ←
Cross Section for Rectangular Channel

Project Description	
Worksheet	10'x4' RCB Full Flow Capacity
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data	
Mannings Coefficient	0.015
Slope	0.005000 ft/ft
Depth	4.00 ft
Bottom Width	10.00 ft
Discharge	477.13 cfs

≈ 477.5 cfs per RCB



V:1
H:1
NTS

8'x6' RCB Full Flow Capacity Worksheet for Rectangular Channel

Project Description	
Worksheet	8'x6' RCB Full Flow Capacity
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Mannings Coefficient	0.015
Slope	0.140000 ft/ft
Depth	6.00 ft
Bottom Width	8.00 ft

very steep slope

Results	
Discharge	3,189.21 cfs
Flow Area	48.0 ft ²
Wetted Perimeter	20.00 ft
Top Width	8.00 ft
Critical Depth	17.03 ft
Critical Slope	0.011650 ft/ft
Velocity	66.44 ft/s
Velocity Head	68.60 ft
Specific Energy	74.60 ft
Froude Number	4.78
Flow Type	Supercritical

unrealistic

Notes: * To determine the Full Flow Capacity for the 8'x6' RCB.

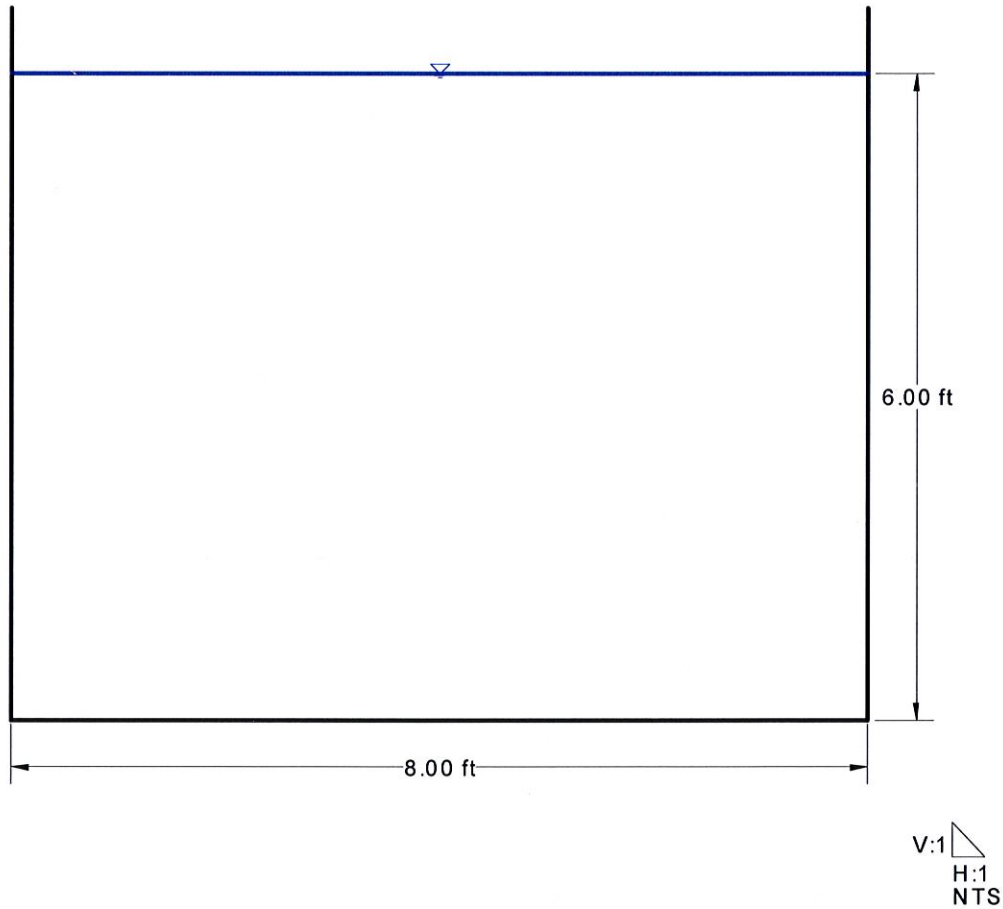
* However, the very steep Longitudinal Slope value of 14.18% (obtained from the Horse Drive/US95 Interchange Plans, Sheet SD29 @ MPU Sta:49+03.02) suggested very large flow capacity.

* Therefore, a more realistic flow capacity for this 8'x6' RCB is determined through the Inlet-Control Nomograph to be 360cfs, utilizing a Hw/D value of 1.0. (please see attached)

8'x6' RCB Full Flow Capacity
Cross Section for Rectangular Channel

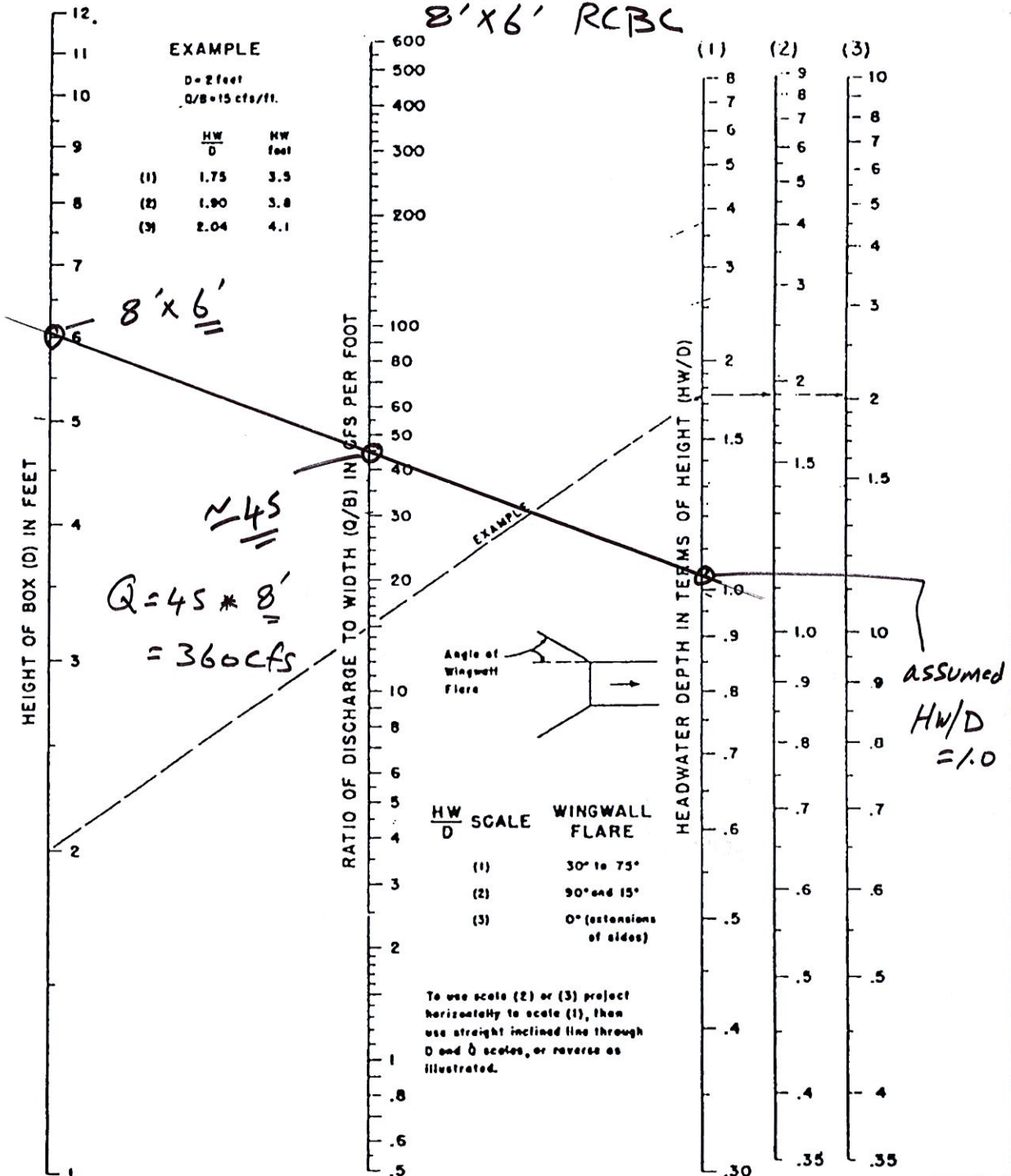
Project Description	
Worksheet	8'x6' RCB Full Flow Capacity
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data	
Mannings Coefficient	0.015
Slope	0.140000 ft/ft
Depth	6.00 ft
Bottom Width	8.00 ft
Discharge	3,189.21 cfs



HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

NOMOGRAPH - INLET CONTROL BOX CULVERT



Revision	Date

WRC
ENGINEERING

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

FIGURE 1004

Section (5)

Worksheet for Irregular Channel

Project Description	
Worksheet	Section (5)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.034000 ft/ft
Discharge	10.00 cfs

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

Results	
Mannings Coefficient	0.030
Water Surface Elevation	49.48 ft
Elevation Range	49.00 to 50.00
Flow Area	2.9 ft ²
Wetted Perimeter	11.98 ft
Top Width	11.94 ft
Actual Depth	0.48 ft
Critical Elevation	49.52 ft
Critical Slope	0.020575 ft/ft
Velocity	3.51 ft/s
Velocity Head	0.19 ft
Specific Energy	49.67 ft
Froude Number	1.27
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+25	0.030

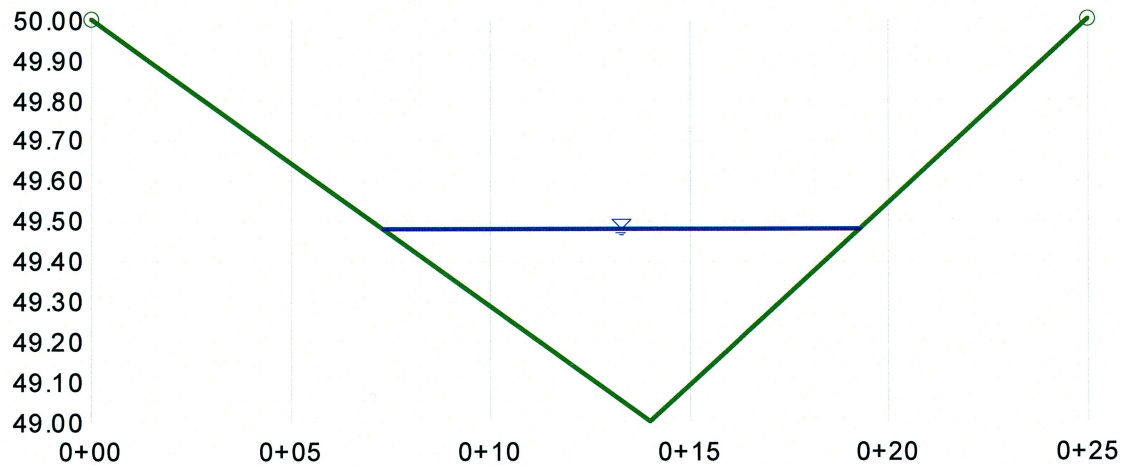
Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	50.00
0+14	49.00
0+25	50.00

Notes: * Only approximately 3acres drain towards this minor wash, mainly generated through the site. Q is conservatively assumed as 3cfs/acre = approximately 10cfs

Section (5) Cross Section for Irregular Channel

Project Description	
Worksheet	Section (5)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.030
Slope	0.034000 ft/ft
Water Surface Elevation	49.48 ft
Elevation Range	49.00 to 50.00
Discharge	10.00 cfs



V:10.0
H:1
NTS

Section (6)

Worksheet for Irregular Channel

Project Description	
Worksheet	Section (6)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.025000 ft/ft
Discharge	90.00 cfs

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

Results	
Mannings Coefficient	0.030
Water Surface Elevation	49.66 ft
Elevation Range	49.00 to 51.00
Flow Area	16.3 ft ²
Wetted Perimeter	27.45 ft
Top Width	27.29 ft
Actual Depth	0.66 ft
Critical Elevation	49.77 ft
Critical Slope	0.015028 ft/ft
Velocity	5.53 ft/s
Velocity Head	0.47 ft
Specific Energy	50.14 ft
Froude Number	1.26
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+38	0.030

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	51.00
0+08	49.00
0+30	49.00
0+38	51.00

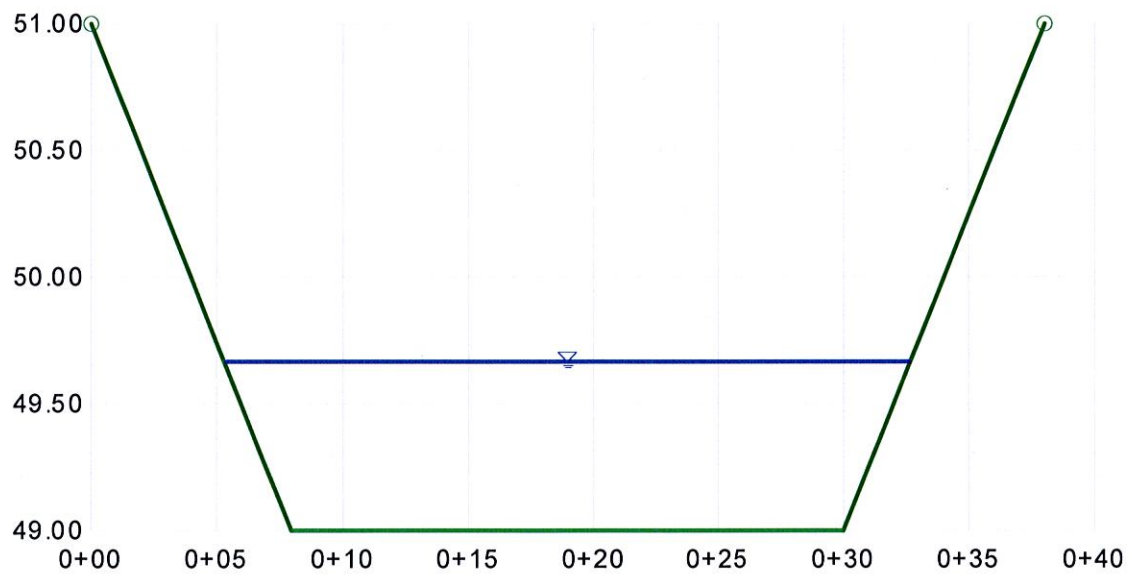
Notes: * Q100 = 90cfs = determined through Inlet-Control Nomograph flow capacity for the 6'x3' RCB @ Hw/D=1.0. (Please see attached)

Section (6)

Cross Section for Irregular Channel

Project Description	
Worksheet	Section (6)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

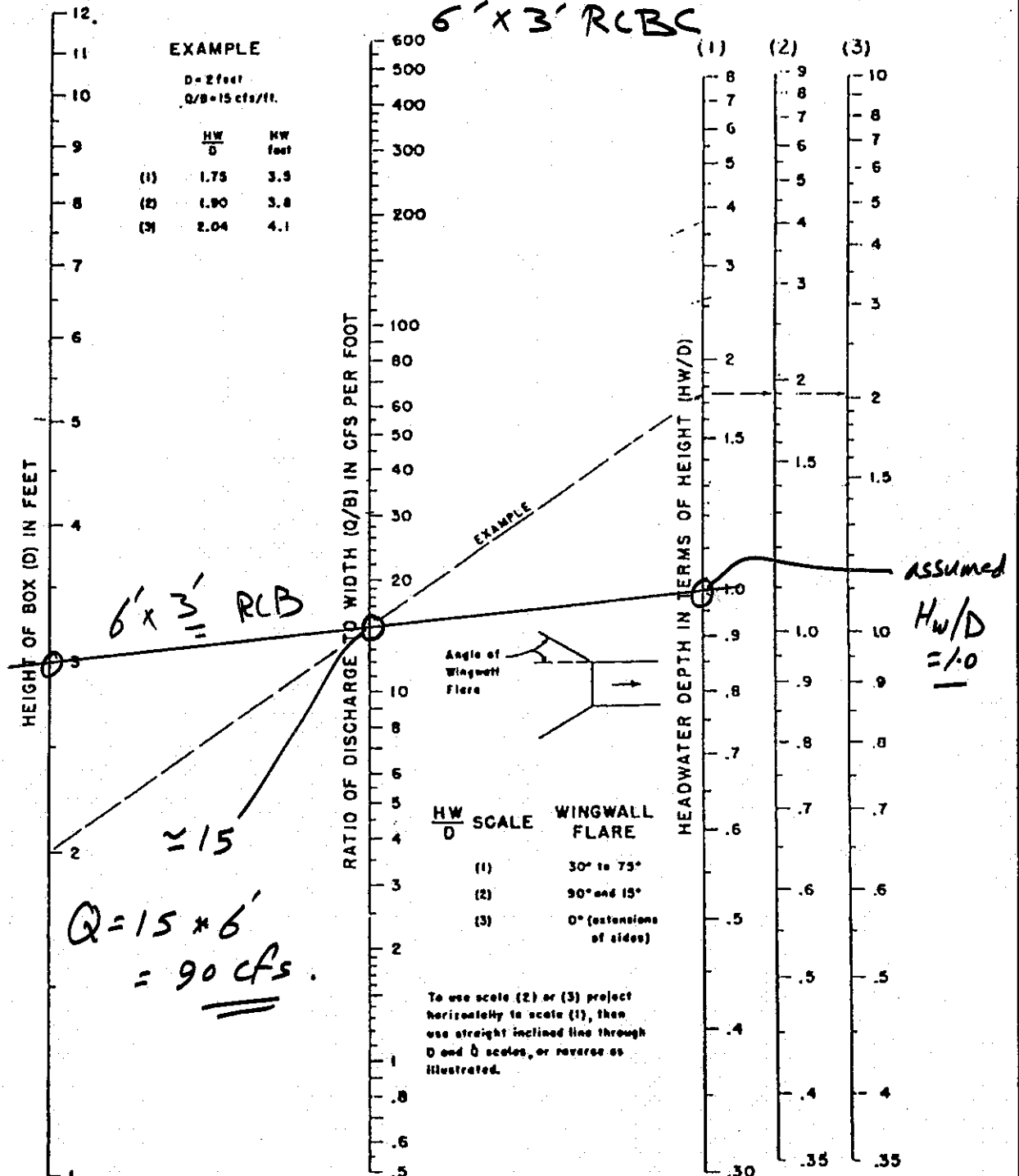
Section Data	
Mannings Coefficient	0.030
Slope	0.025000 ft/ft
Water Surface Elevation	49.66 ft
Elevation Range	49.00 to 51.00
Discharge	90.00 cfs



V:10.0
H:1
NTS

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

NOMOGRAPH - INLET CONTROL BOX CULVERT



Revision	Date

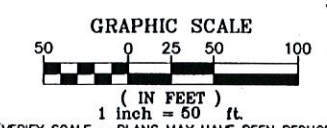
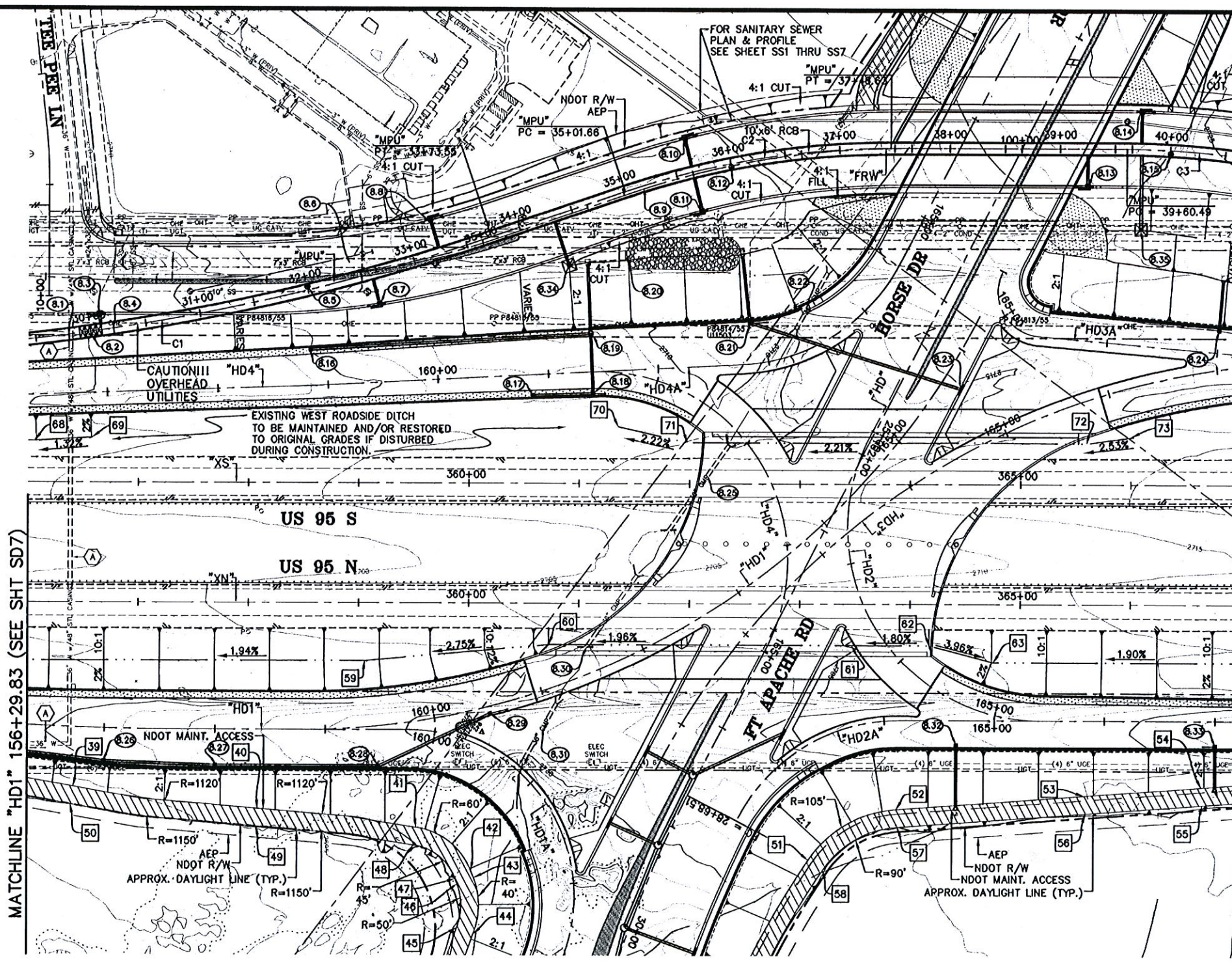
WRC
ENGINEERING

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

FIGURE 1004

REFERENCE

Excerpts from the Storm Drain and Grading Plans from the "Horse Drive /
US 95 Interchange", by VTN Nevada



- LEGEND:**
- [Pattern] DENOTES PBS (PLANT MIX BITUMINOUS SURFACE)
 - [Pattern] DENOTES CONCRETE PAVEMENT
 - [Pattern] 16' WIDE NDOT MAINT. ACCESS SEE DETAIL ON SHEET SD1
 - [Pattern] RIPRAP
 - [Symbol] GRADING KEYNOTE SEE SHEET SD8A

CURVE TABLE

CURVE	LENGTH	RADIUS	TANGENT	DELTA
C1	614.38'	2000'	309.63'	17°36'03"
C2	244.97'	750'	123.59'	18°42'51"
C3	230.25'	750'	116.04'	17°35'24"

- NOTE:**
- [Symbol] PROTECT IN PLACE
 - [Symbol] PROTECT EXISTING LVVWD 36" WATER LINE WITH 48" STEEL CASING IN PLACE

- NOTE:**
- FOR DRAINAGE & GRADING CONSTRUCTION NOTES SEE SHEET SD8A
 - FOR UTILITY ADJUSTMENT & RELOCATION SEE SHEET U1 THRU U13
 - FOR SANITARY SEWER INFORMATION SEE SHEET SS1 THRU SS8
 - FOR LANDSCAPING INFORMATION SEE LANDSCAPE PLANS
 - FOR DRAINAGE & GRADING IMPROVEMENTS NOT REFERENCED ON THIS SHEET SEE SHEET SD12

NOTE TO CONTRACTOR REGARDING FINISHED GRADES:
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ADJUST THE CONCRETE INLET APRON AND/OR GRATE TO THE FINISHED GROUND SURFACE OR TO THE FINISHED GRADE OF THE ROADWAY SURFACE (WHICHEVER IS APPLICABLE). IF THE APRON AND/OR GRATE IS CONSTRUCTED PRIOR TO FINALIZING THE FINISHED GRADE, AND THE APRON EDGES AND CORNERS AND/OR GRATE IS BEYOND 0.02' VERTICAL TOLERANCE TO THE FINISHED GRADE, THE CONTRACTOR SHALL REMOVE AND REPLACE THE APRONS AND/OR GRATE AT HIS OWN EXPENSE TO WITH IN THIS TOLERANCE IF THIS CONDITION OCCURS.

APPROVED
[Signature]
LAS VEGAS VALLEY WATER DISTRICT
LVVWD PROJECT # H80315
DATE 7/14/08

Call before you Dig
1-702-227-2929
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

Call before you Dig
1-800-227-2800
OR
1-702-455-7544

PUBLIC WORKS DEPARTMENT
CITY OF LAS VEGAS, NV
400 E. STEWART AVE.
LAS VEGAS, NV 89101
TEL: (702) 575-7000 FAX: (702) 305-3587

STORM DRAIN AND GRADING PLAN
"HDT" 156+29.83 TO "HD2" 167+22.39

HORSE DRIVE / US 95 INTERCHANGE

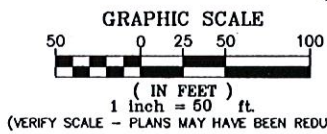
DRAWN BY: 06/20/2008
DESIGNED BY: 06/20/2008
CHECKED BY: 06/20/2008
PROJECT NO: SCALE: 1"=50' HORIZ. VERT. N/A

ENGINEER
LANT K. LEAVITT
EXP. 07/20/04
CIVIL
NO. 18137
7/14/08

SHEET
SD8
120 OF 433 SHEETS
DRAWING NO.
107V3769

114292

stockpile 3/4



LEGEND:

- DENOTES PBS (PLANT MIX BITUMINOUS SURFACE)
- DENOTES CONCRETE PAVEMENT
- 16' WIDE NDOT MAINT. ACCESS SEE DETAIL ON SHEET SD1
- RIPRAP

GRADING KEYNOTE SEE SHEET SD9A

NOTE:
PROTECT IN PLACE

CURVE TABLE				
CURVE	LENGTH	RADIUS	TANGENT	DELTA
C1	230.25	750'	116.04'	17°35'24"
C2	230.20	750'	116.01'	17°35'24"
C3	94.46'	95.46'	51.50'	56°41'54"
C4	120.10'	500'	60.34'	13°45'45"

NOTE:
FOR DRAINAGE & GRADING CONSTRUCTION NOTES SEE SHEET SD9A
FOR UTILITY ADJUSTMENT & RELOCATION SEE SHEET U1 THRU U15
FOR SANITARY SEWER INFORMATION SEE SHEET SS1 THRU SS8
FOR LANDSCAPING INFORMATION SEE LANDSCAPE PLANS
FOR DRAINAGE & GRADING IMPROVEMENTS NOT REFERENCED ON THIS SHEET SEE SHEET SD15

NOTE TO CONTRACTOR REGARDING FINISHED GRADES:

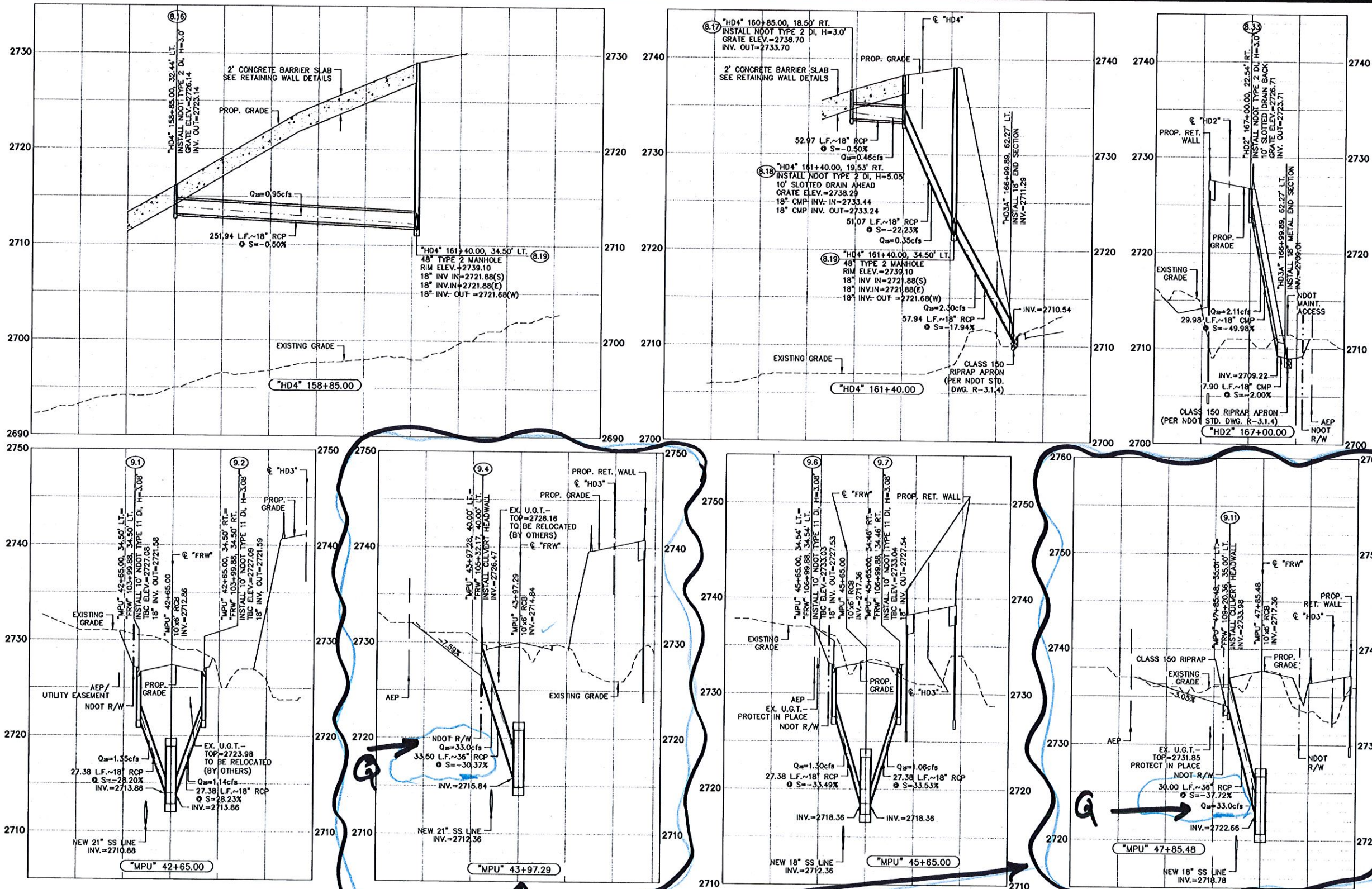
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ADJUST THE CONCRETE INLET APRON AND/OR GRATE TO THE FINISHED GROUND SURFACE OR TO THE FINISHED GRADE OF THE ROADWAY SURFACE (WHICHEVER IS APPLICABLE). IF THE APRON AND/OR GRATE IS CONSTRUCTED PRIOR TO FINALIZING THE FINISHED GRADE, AND THE APRON EDGES AND CORNERS AND/OR GRATE IS BEYOND 0.02' VERTICAL TOLERANCE TO THE FINISHED GRADE, THE CONTRACTOR SHALL REMOVE AND REPLACE THE APRONS AND/OR GRATE AT HIS OWN EXPENSE TO WITHIN THIS TOLERANCE IF THIS CONDITION OCCURS.

1000 OVERHEAD POWER LINE CONTACT IS COSTLY
Call before you Overhead
1-702-227-2929
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

Call before you Dig
811
1-800-227-2800
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

PROFESSIONAL ENGINEER
LANT K. LEAVITT
EXP. 02/08
CIVIL
#18181
8/1/08

SHEET
SD9
122 OF 453 SHEETS
DRAWING NO.
107V3769



- NOTES:**
1. CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITY CROSSINGS AND/OR CONFLICTS PRIOR TO EXCAVATION.
 2. CONTRACTOR TO PROTECT EXISTING UTILITIES IN PLACE, UNLESS NOTED OTHERWISE.
 3. SEE SHEET SD39 FOR TYPICAL EXCAVATION & TRENCH DETAILS.

Call before you Dig
 1-702-227-2929
 NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

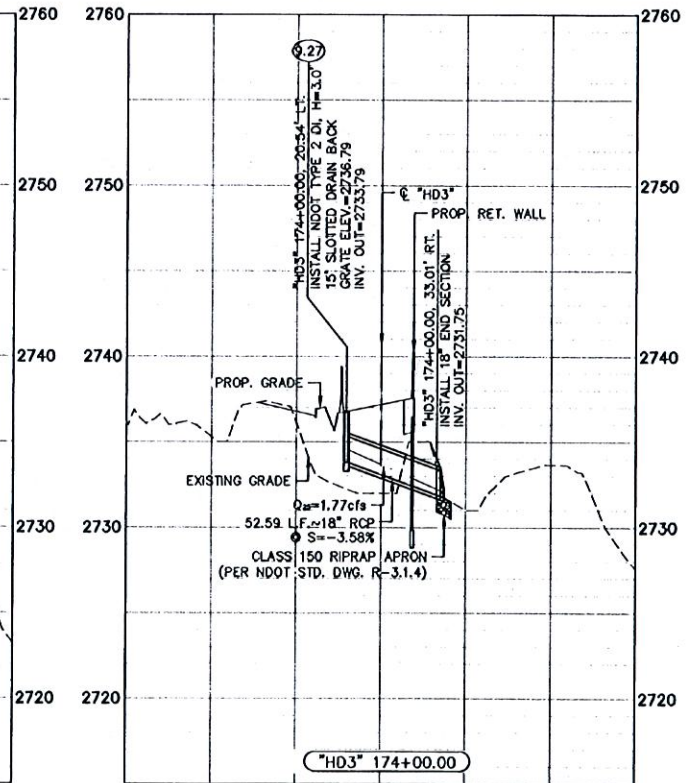
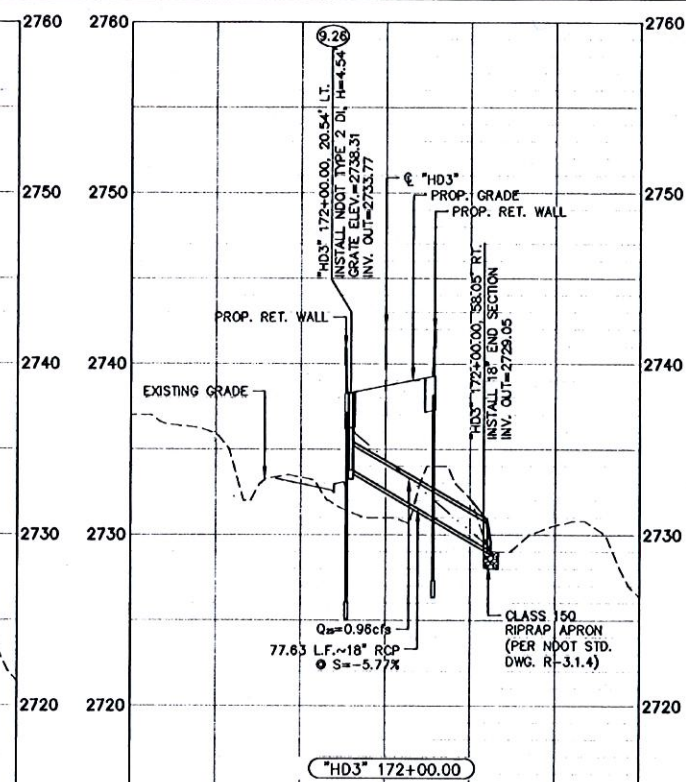
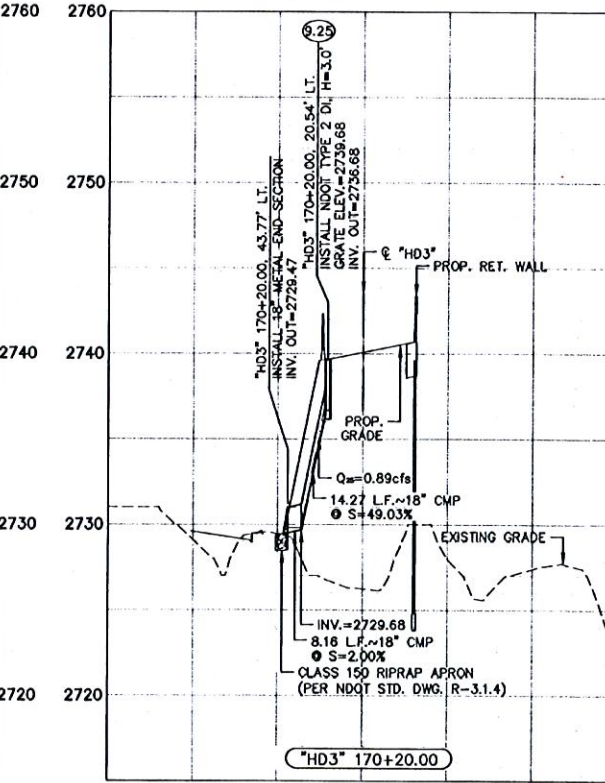
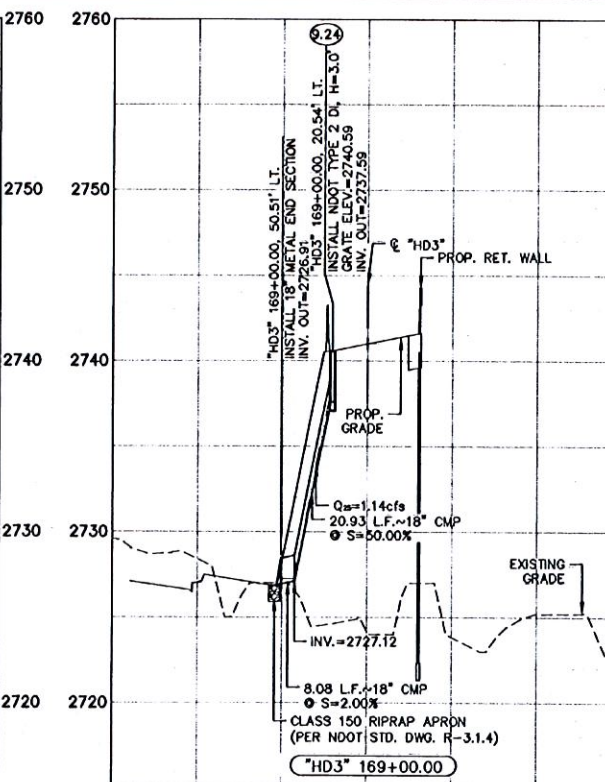
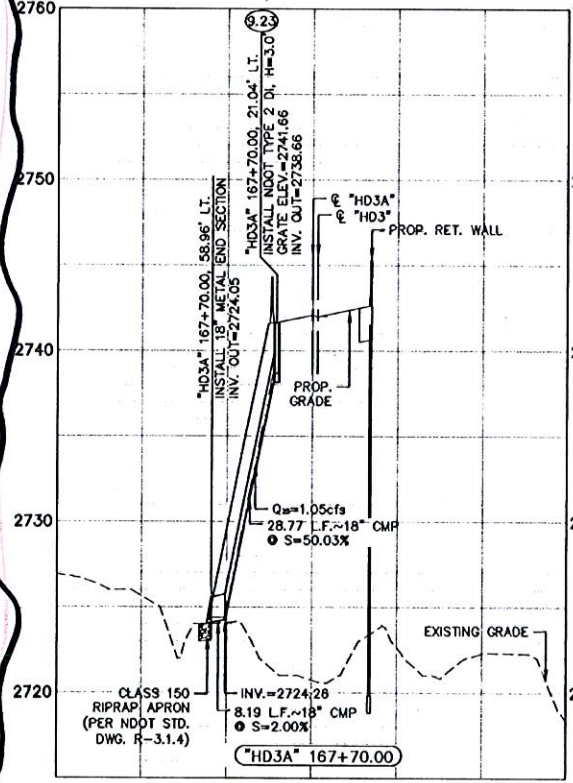
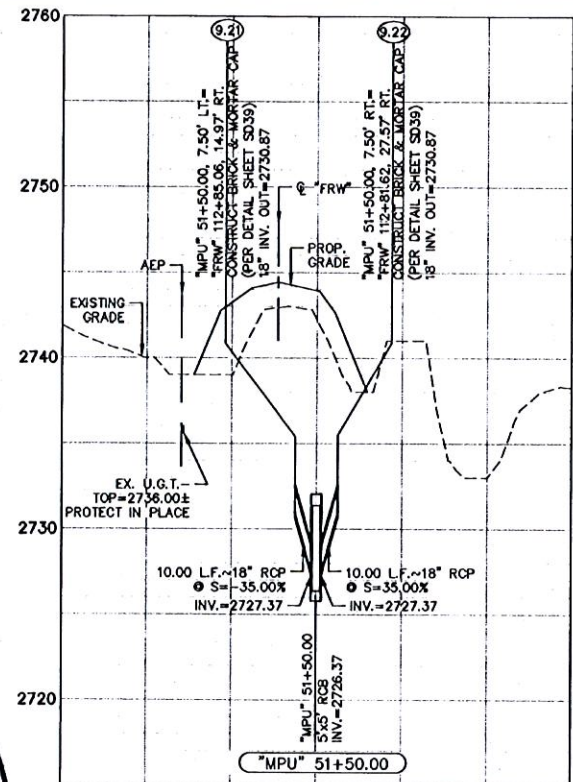
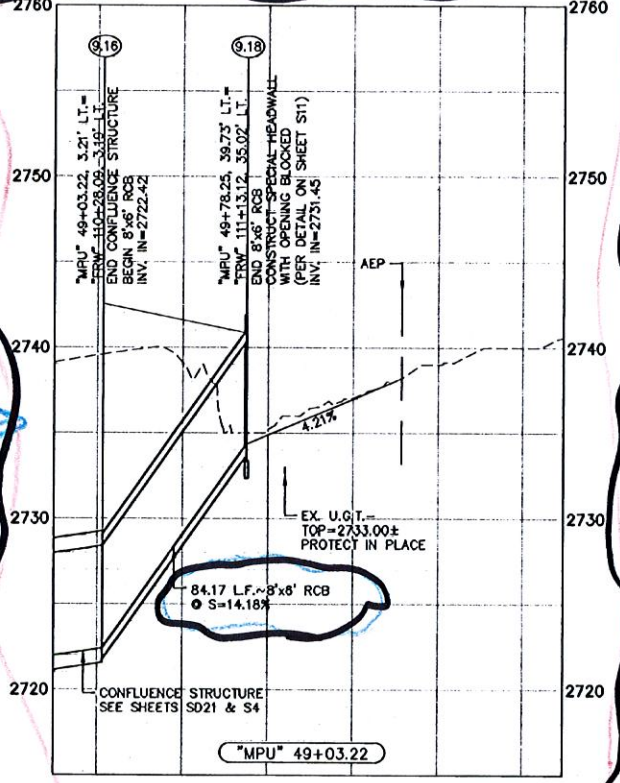
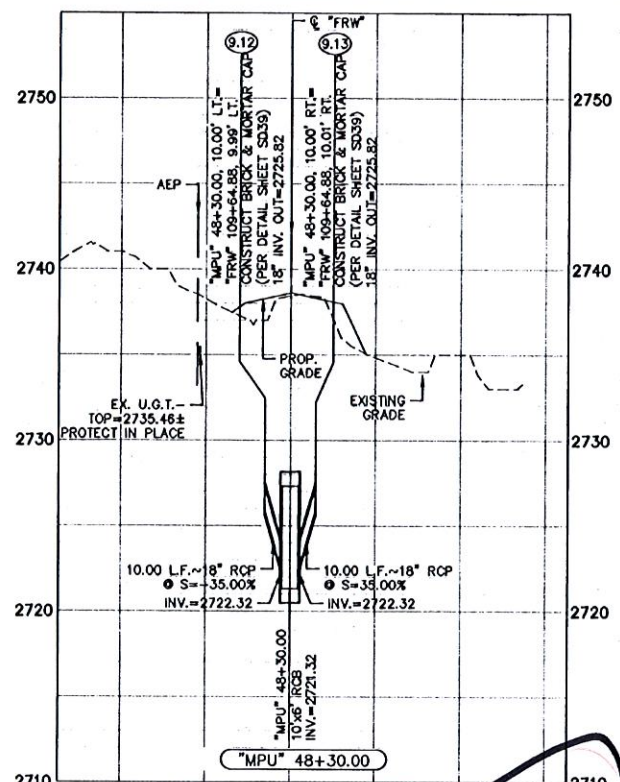
Call before you Dig
 1-800-227-2600
 1-702-455-7544

PUBLIC WORKS DEPARTMENT CITY OF LAS VEGAS, NV 400 E. STEWART AVE. LAS VEGAS, NV 89101 702-223-8272		277 SOUTH RAMPART BOULEVARD LAS VEGAS, NEVADA 89146-3148 PL. (702) 601-7558 FAX (702) 362-2587 Nevada ONLINE DIRECTOR • PLANNING • LAND SURVEYING
STORM DRAIN PROFILES HORSE DRIVE / US 95 INTERCHANGE		SHEET SD28 142 OF 153 SHEETS DRAWING NO. 107V3769
DRAWN BY: JLB DESIGNED BY: JLB CHECKED BY: JLB PROJECT NO: 6500	DATE: 8/29/2007 SCALE: 1"=40' HORIZ. 1"=5' VERT.	REVISION BY DATE

114314

114315

8'x6'



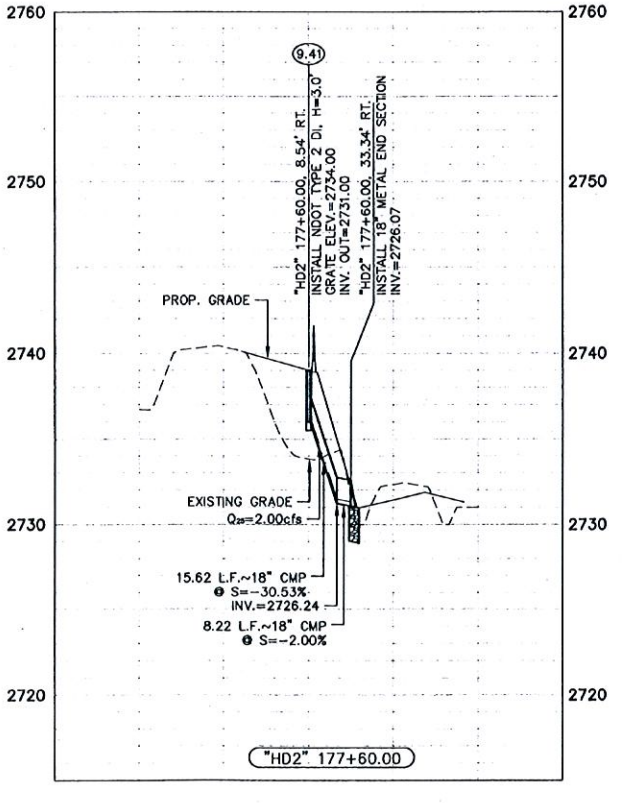
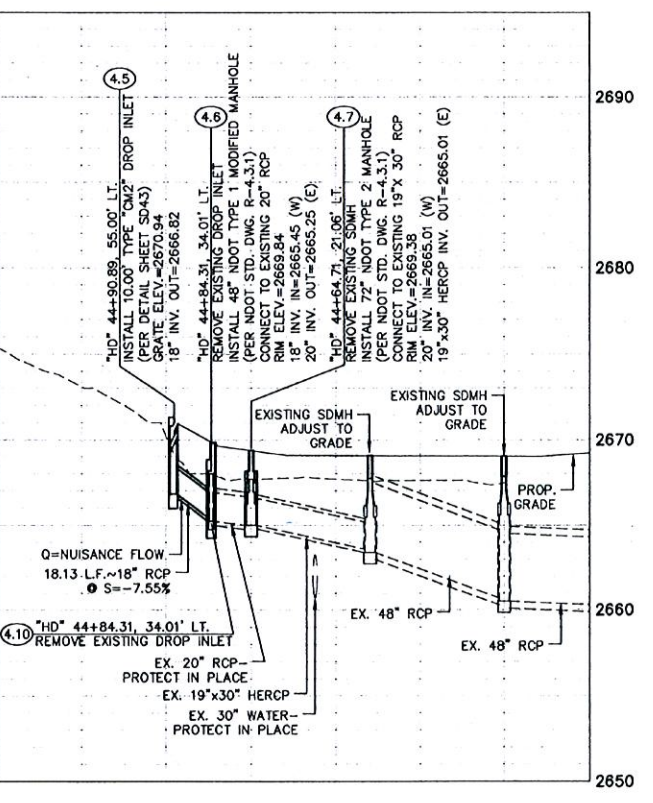
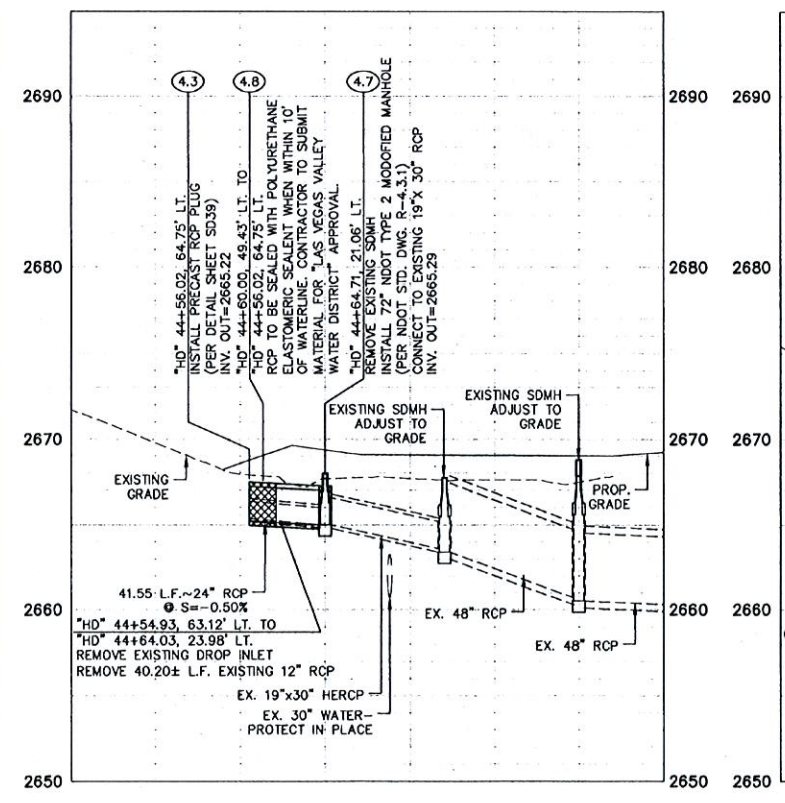
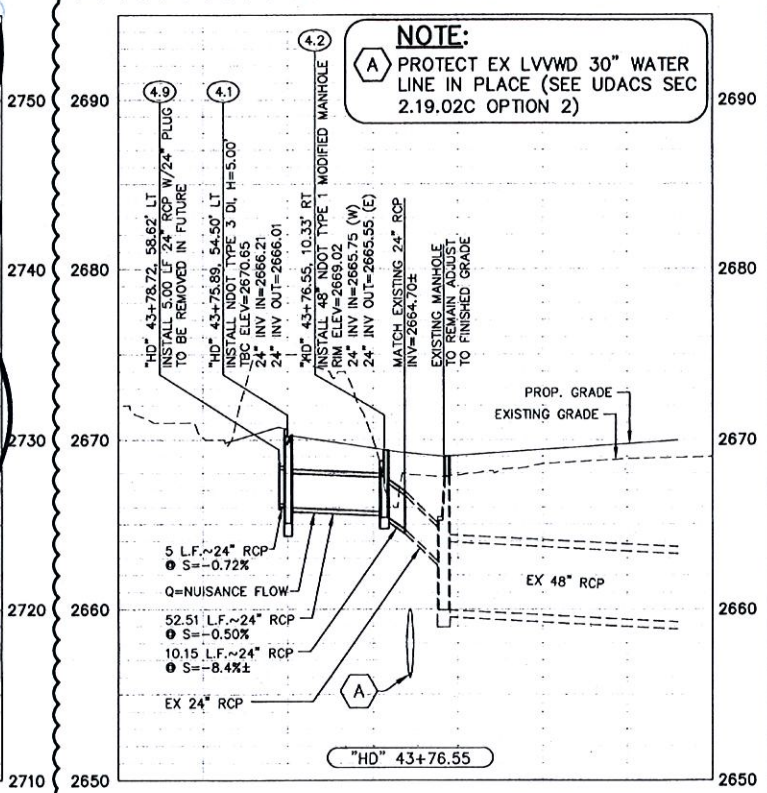
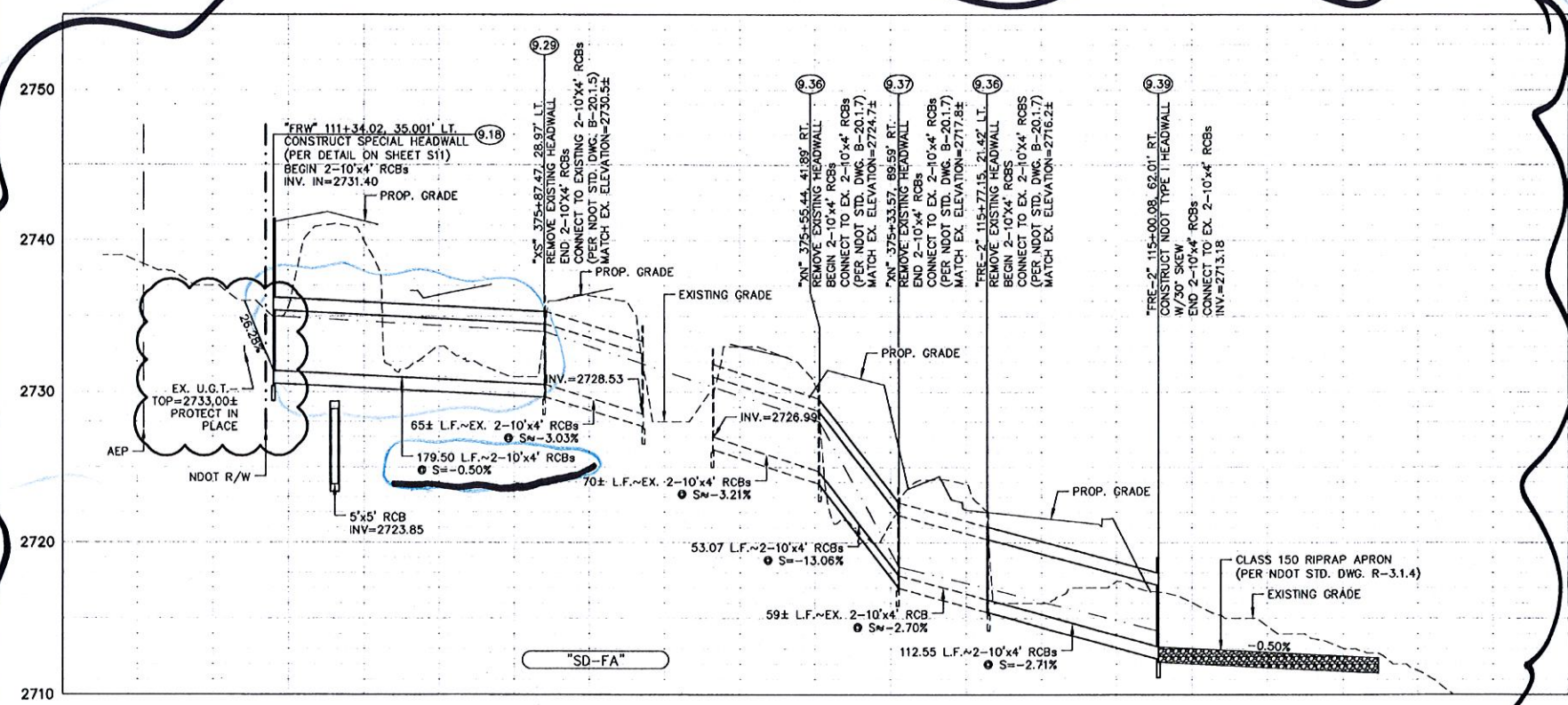
- NOTES:**
1. CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITY CROSSINGS AND/OR CONFLICTS PRIOR TO EXCAVATION.
 2. CONTRACTOR TO PROTECT EXISTING UTILITIES IN PLACE, UNLESS NOTED OTHERWISE.
 3. SEE SHEET SD39 FOR TYPICAL EXCAVATION & TRENCH DETAILS.

Call before you Dig
1-800-227-2929
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

Call 811
1-800-227-2600
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

PUBLIC WORKS DEPARTMENT 400 E. STEWART AVE. LAS VEGAS, NV 89001 702-257-6272		CITY OF LAS VEGAS, NV 2727 SOUTH RAMPART BUILDING LAS VEGAS, NEVADA 89146 PH: 702-257-7500 FAX: 702-257-6272	
STORM DRAIN PROFILES		HORSE DRIVE / US 95 INTERCHANGE	
DRAWN BY: 9/29/2007	DESIGNED BY: 9/29/2007	CHECKED BY: 9/29/2007	PROJECT NO: SCALE: 1"=50' HORIZ. VERT. 1"=5'
SHEET 8D29		SHEET 8D29	
1-702-227-2929		1-702-227-2929	
DRAWING NO. 107V3769		DRAWING NO. 107V3769	

2:10'x4' RCB



APPROVED
Revisions to design during construction do not affect LVVWD facilities. See original for approval signature.
LAS VEGAS VALLEY WATER DISTRICT
LVVWD PROJECT # H80315
DATE

NOTES:
1. CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITY CROSSINGS AND/OR CONFLICTS PRIOR TO EXCAVATION.
2. CONTRACTOR TO PROTECT EXISTING UTILITIES IN PLACE, UNLESS NOTED OTHERWISE.
3. SEE SHEET SD39 FOR TYPICAL EXCAVATION & TRENCH DETAILS.

Call before you Dig
1-702-227-2929
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

Call before you Dig
1-800-227-2600
CLARK COUNTY PUBLIC UTILITIES DEPARTMENT

PUBLIC WORKS DEPARTMENT
CITY OF LAS VEGAS, NV
400 L. STEWART AVE.
LAS VEGAS, NV 89101
702-229-8272

STORM DRAIN PROFILES
HORSE DRIVE / US 95 INTERCHANGE

DRAWN BY: 6/29/2007
DESIGNED BY: 6/29/2007
CHECKED BY: 6/29/2007
PROJECT NO: 6500
SCALE: 1"=50' HORIZ. 1"=5' VERT.

ENGINEER
LANT K. LEAVITT
EXP. 12/27/04
NO. 10257

SHEET
SD34
OF SHEETS
DRAWING NO.

Copies of the Clark County Dust Control Permit

CLARK COUNTY DESERT CONSERVATION PROGRAMLAND DISTURBANCE / MITIGATION FEE FORM- OFFICIAL USE ONLY -

All project proponents in the permit area are required to complete this form and submit it to the appropriate local agency. Authorization to develop property will not be granted by the local agency until this form has been submitted and is accepted as complete. The project proponent is responsible for securing all signatures required below and for accurately providing all required information.

Receipt #: _____

Project #: 201994-G-11City / County: LV#4543PROPERTY SITE DESCRIPTIONAssessor's Parcel Number(s): 125-07-001-005

OR

Legal Description (Attach Separate Sheet If Required): _____

Legal Description includes: Township 19; Range 40; 17 $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ of Section _____ (This will provide a property description to the nearest ten acres: 340 ac./sec. $\div$ 1/64 sec. = ten acres). This information is available on County or City plat maps for the subject property. Provide property address and nearest major street intersection if existing. Also describe landmarks (e.g., shopping centers, railroad tracks, power lines or other unique features) with directions and distances to or from said landmarks.

Type of Development Permit Being Sought: STOCKPILE PERMITTOTAL ACREAGE IN PARCEL: 25.8 NUMBER OF ACRES WITHIN PARCEL TO BE DISTURBED: 5CITY OR TOWN LOCATION: LAS VEGASGRAND CANYON VILLAGE SQUARE Bunk & Co 1-31-2012

PROPERTY OWNER - PRINT NAME SIGNATURE DATE

9001 OSO BLANCA ROAD LAS VEGAS, NV 89166

ADDRESS, CITY, STATE, ZIP TELEPHONE NUMBER

WHITEFORD GRADING AND PAVING INC Bunk & Co 1-31-2012

PROJECT PROponent - PRINT NAME SIGNATURE DATE

6935 ALIANTE PARKWAY 104350 LAS VEGAS, NV 89084 702-592-4716

ADDRESS, CITY, STATE, ZIP TELEPHONE NUMBER

- FOR OFFICIAL USE ONLY -

Acres within Parcel to be developed verified by:

- ☐ a. Building Department
☐ b. Public Works
☐ c. Zoning
☐ d. Health District

Mitigation Fee Assessed: 5 ac. $\times$ \$550 = \$ 2750.Compliance Report Fee (Administrative Fee) \$ 50.TOTAL FEES PAID \$ 2800.

If exemption or reduction of fee applies, please explain below:

- Tortoise Mitigation Fee Previously Paid: Permit No. _____ (Attach Documentation)
- Property Previously Developed, Fee Not Applicable. Explain: _____
- Property Subject to Governmental Exemption _____ Explain Type of Project and Purpose: _____
- Other. Explain: _____

Received By: James S. Stahl
Date: 2-1-12CALCULATION OF ACRES DEVELOPED
AND FEES PAID WILL BE AUDITED

(Rev. 06/03)



DEPARTMENT OF BUILDING & SAFETY

ROUGH GRADING, CLEAR AND GRUBB STOCKPILE

333 North Rancho Drive, Las Vegas NV 89106-3703

Phone: (702) 229-6251 Fax: (702) 382-1240

A/P NUMBER (For Official Use Only): 201994-C-11 VALUATION: 10000

ADDRESS: 9001 Oso Blanca Road

OWNERS NAME: Grand Canyon Square LLC

PROJECT/BUSINESS NAME: Dispatch Transportation - Stockpile Site

RECORDED SUBDIVISION: NA

CONTRACTOR: Dispatch Transportation LLC

WORK DESCRIPTION: ☐ ROUGH GRADING ☐ CLEAR AND GRUBB ☒ STOCKPILE

TOTAL CUBIC YARDS MOVED (cut and import): 100600

TOTAL ACRES BEING DISTURBED: 5.0 Acres

CLARK COUNTY DUST CONTROL PERMIT NUMBER: 40686
(Required 1/4 acre or more disturbed)

☒ COMMERCIAL ☐ SINGLE FAMILY RESIDENCE

CONTACT PHONE #: (702)716-4637

CONTACT FAX #: _____

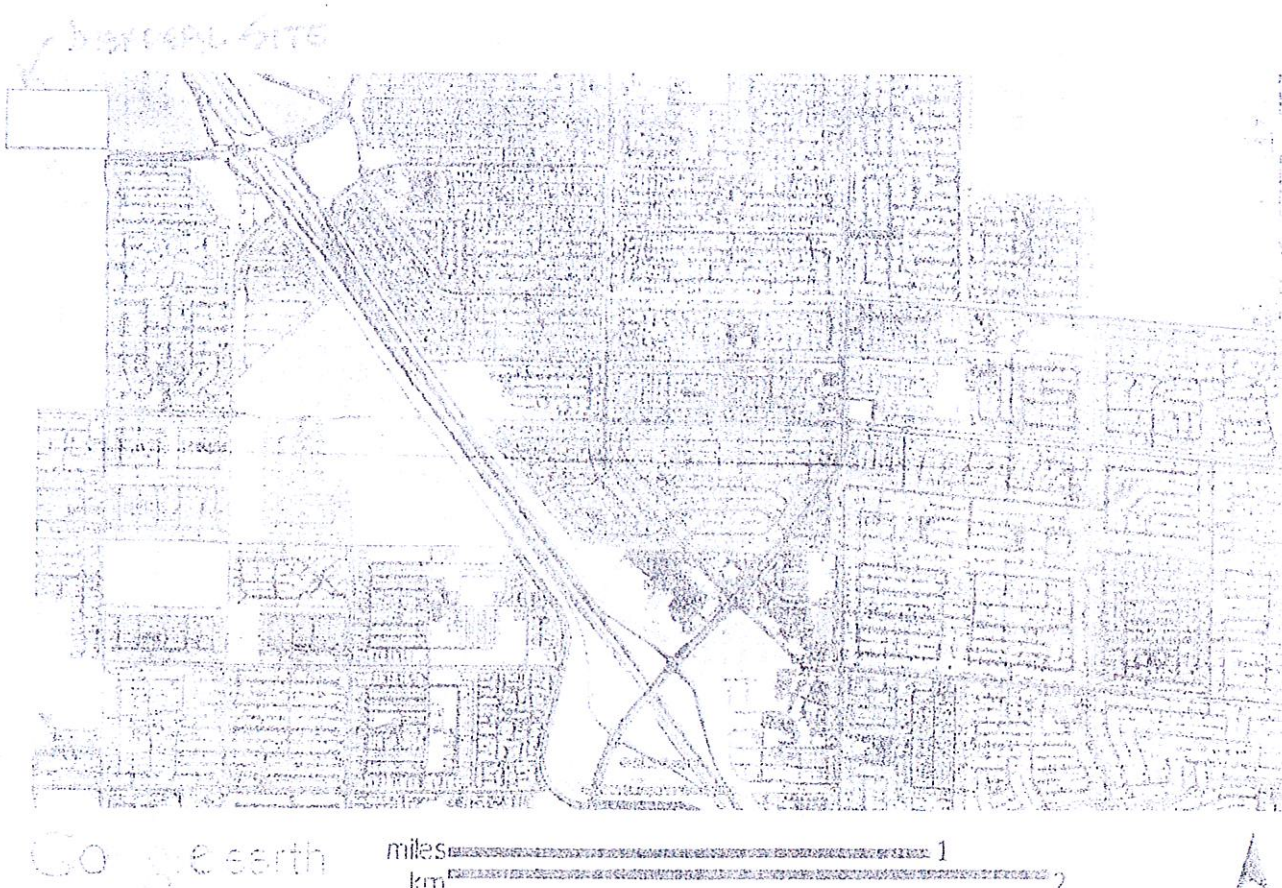
CONTACT E-MAIL: oscarlr@sbcglobal.net

CLARK COUNTY AIR QUALITY

PHONE: (702) 455-5942

FAX: (702) 383-9994

E-MAIL: airquality@clarkcountynv.gov



Access to RACEL
from COKE

OPTION #1

1. Take Racel St. west to Durango Dr.
2. Take Durango Dr. south to US 95.
3. Merge onto US 95 North.
4. Exit at Horse Dr.
5. Turn Left onto Horse Dr.
6. End at NE corner of Horse Dr. and Grand Canyon Dr.

SUBMITTAL # 1	
CITY OF LAS VEGAS	
CITY ENGINEER DIVISION	
FOR REVIEW OF THE CITY ENGINEER DIVISION IN CONNECTION WITH THE SUBMITTAL OF A CONSTRUCTION PERMIT TO THE CITY OF LAS VEGAS.	
REVIEWED BY: [Signature]	DATE: [Date]
APPROVED BY: [Signature]	DATE: [Date]
RECEIVED BY: [Signature]	DATE: [Date]

Note:
 Re: Material Disposal Site:
 The Contractor shall submit a copy of the Clark County Assessor's map showing the location of the disposed material (map attached) and as per USS 107.14 (attached) the Contractor shall submit a copy of the CLV Construction Permit, Clark County Dust Control Permit and written release from the property owner absolving the City of any and all responsibility in connection with the disposal of material on said property.

Approved in SDR-39453

190,553 YARD CAPACITY

March 21/2017



SECRETARY OF STATE



NEVADA STATE BUSINESS LICENSE

WHITEFORD GRADING AND PAVING, INC.

Nevada Business Identification # NV20061053835

Expiration Date: June 30, 2012

In accordance with Title 7 of Nevada Revised Statutes, pursuant to proper application duly filed and payment of appropriate prescribed fees, the above named is hereby granted a Nevada State Business License for business activities conducted within the State of Nevada.

This license shall be considered valid until the expiration date listed above unless suspended or revoked in accordance with Title 7 of Nevada Revised Statutes.

IN WITNESS WHEREOF, I have hereunto
set my hand and affixed the Great Seal of State,
at my office on June 29, 2011

ROSS MILLER
Secretary of State

This document is not transferable and is not issued in lieu of any locally-required business license, permit or registration.

**You may verify this Nevada State Business License
online at www.nvsos.gov under the Nevada Business Search.**

BUSINESS LICENSE

City of Las Vegas • Las Vegas, Nevada

IN ACCORDANCE WITH THE PROVISIONS OF THE LAS VEGAS MUNICIPAL CODE, AS AMENDED, LICENSE IS HEREBY GRANTED TO OPERATE THE BUSINESS REFERENCED BELOW.

LICENSE #: C11-09573-J-137533

DATE ISSUED: 12/04/11

TYPE OF LICENSE: CONTRACTOR

BUSINESS LOCATION: 3611 LINDELL RD 203

ISSUED TO: WHITEFORD GRADING AND PAVING I

DBA:
WHITEFORD GRADING AND PAVING
6935 ALIANTE PK 104 350
NORTH LAS VEGAS NV 89084

PRINCIPAL(S)

KILEN. BRUCE A. PRES 75%



Planning Director

*Failure to maintain an active state license or SNHD health permit,
if required, renders this business license invalid.*

Post in a conspicuous place.

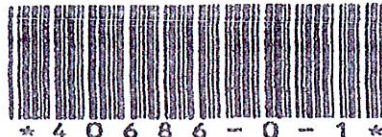


201994-0411



Air Quality & Environmental Management

500 S. Grand Central Parkway, 1st floor
Las Vegas NV • 89155-1776
(702) 455-5942 • Fax (702) 383-9994



* 4 0 6 8 6 - 0 - 1 *

CLARK COUNTY • LAS VEGAS • NORTH LAS VEGAS • BOULDER CITY • HENDERSON • MESQUITE

DUST CONTROL PERMIT FOR CONSTRUCTION ACTIVITIES INCLUDING SURFACE GRADING AND TRENCHING

THIS PERMIT DOES NOT EXEMPT THE PERMITTEE FROM COMPLIANCE WITH THE ENDANGERED SPECIES ACT

Permit Number:

PAYMENT INFORMATION:

20115893

40686

Mod: 0

Fee: \$700.00

Balance Due: \$

Permittee and Project Information

Permittee: Dispatch Transportation LLC

Permittee Address: 6576 Golden Creek Way

City, State, Zip: Las Vegas NV 89108

Fax No.: 0000000000

Project Name: Horse Drive Stockpile Area

Project Address: 9001 Oso Blanca Road

Located In: Township: 19 Range: 60 Section: 7 EO Area: NW

Acreage This Mod: 5 Total Acreage: 5

Cross Streets: NWC of Horse Drive & US 95

Project Contact(s)

Normal Hours: Jason Jensen

Company: Dispatch Transportation LLC

Phone: (702)449-0114

After Hours: Oscar Runyon

Company: Dispatch Transportation LLC

Phone: (702)716-4637

Issue Date: 28-Dec-2011

Expiration Date:

28-Dec-2012

Effective Date:

Notes

- ☐ Request Of Sign Waiver
- ☐ Public Works Agreement
- ☐ Closure Plan
- ☐ Conditional Renewal

DUST CONTROL MEASURES MUST OCCUR 24 HOURS A DAY, 7 DAYS A WEEK

THIS PERMIT IS NOT VALID UNTIL ALL FEES ARE PAID IN FULL AND A COMPLETE COPY IS ON THE PROJECT SITE, INCLUDING CONDITIONS OF PERMIT AND DUST MITIGATION PLAN

It is a condition of the issuance of any operating permit required by the commission or pursuant to any local ordinance for the control of air pollution that the holder of the operating permit agrees to permit inspection of the premises to which the permit relates by any authorized officer of the department at any time during the holder's hours of operation without prior notice. This condition must be stated on each application form and operating permit. NRS 445B.580.

The issuance of this PERMIT does not relieve the PERMITTEE from compliance with all other applicable federal, state, county and local ordinances and regulations. Issuance of this PERMIT shall not be a defense to violations of any applicable ordinances or regulations.



201994-C-11

Air Quality & Environmental Management

500 S. Grand Central Parkway, 1st floor
Las Vegas NV • 89155-1776
(702) 455-5942 • Fax (702) 383-9994



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DAQEM

DEPARTMENT OF AIR QUALITY &
ENVIRONMENTAL MANAGEMENT

CONSTRUCTION ACTIVITIES DUST CONTROL PERMIT SUPPLEMENTAL PERMITS/APPROVALS CHECKLIST

The following construction activities require permits or approval in addition to a Dust Control Permit. Permits or approvals must be obtained prior to conducting the activity. This form must be submitted with every Dust Mitigation Plan. Check all activities that apply to the construction project.

Activities requiring a Portable Source Permit:

(Comply with Portable Source requirements prior to installing this equipment on the project site.)

Operation of a:

List Name of Company and/or Permit #

- | | | |
|--------------------------|--|-------|
| ☐ | powered crusher at temporary locations. | _____ |
| ☐ | powered screen at temporary locations. | _____ |
| ☐ | concrete batch plant at temporary locations. | _____ |
| ☐ | asphalt batch plant at temporary locations. | _____ |

Activities requiring Supplemental Permit:

(Submit applicable supplemental forms. Asbestos survey is required for any size demo/remodel. NESHAP notification is required for ANY size demolition or for remodel if RACM is found.)

- | | |
|--------------------------|---|
| ☐ | Blasting to fracture rock, hardpan, or caliche. |
| ☐ | Blasting to implode a structure. |
| ☐ | Demolition of a structure greater than 1,000 square feet. |
| ☐ | Structural remodeling |
| ☐ | Structure relocation |

Activities requiring Authority to Construct (ATC) Certificate and Operating Permit:

(An ATC must be obtained prior to installation of this equipment/facility.)

- | | | | |
|--------------------------|--|--------------------------|--------------|
| ☐ | Construction of or installation of any Emission Unit | | |
| ☐ | Gasoline Dispensing Facility | ☐ | Plating Shop |
| ☐ | Cooling Tower | ☐ | Incinerator |
| ☐ | Dry Cleaning Equipment | ☐ | Boiler |
| ☐ | Emergency Standby Generator or Other Internal Combustion Engine | | |
| ☐ | Woodworking Process Equipment | | |
| ☐ | Power Generation Facility or Equipment | | |
| ☐ | Crushing or Screening Stationary Source | | |
| ☐ | Concrete or Asphalt Plant Stationary Source | | |
| ☐ | Commercial Surface Coating Equipment including Paint Spray Booth | | |
| ☐ | Other Source of PM ₁₀ , CO, VOC, NO _x , SO ₂ , Lead, Hazardous Air Pollutant, or Toxic Chemical Substance | | |

☒ Activities Listed Above Do Not Apply to this Construction Project:



**Western
Technologies
Inc.**
The Quality People
Since 1953

6631 West Post Road
Las Vegas, Nevada 89118
(702) 796-3050 • Fax (702) 796-3051

PHYSICAL PROPERTIES OF SOILS & AGGREGATES

Client: DISPATCH TRANSPORTATION
3555 LOSER ROAD
NORTH LAS VEGAS, NV 89031

Date of Report: 11/21/11

Job No. 4141XW096

Event: Invoice No. 002

Authorized by: OSCAR RIMYON

Sampled by: WT/M. MICELI

Submitted by: WT/M. MICELI

Lab No. 1545

Date 12/12/11

Date 12/13/11

Date 12/13/11

Project: IMPORT SAMPLING & TESTING

Contract: --

Type: Use of Material --

Sample Source: Location: FLOYD LANE

Testing Authorized: SIEVE, MINUS 200, PL. SULFATE, SOLUBILITY OF SOIL

Special Instructions: --

Location: US 95 & HORSE

Area: Eng. --

Supplier: Source CLIENT

Source: Location Desc: By CLIENT

Date 12/13/11

TEST RESULTS

SIEVE ANALYSIS		ASTM C136	LABORATORY COMPACTION CHARACTERISTICS		METHOD	
FINER THAN NO. 200		ASTM C117				
SIEVE	ACCUMULATED %	SPECIFICATION				
4	100					
20	97					
40	95					
60	92					
100	89					
200	86					
400	80					
600	73					
800	70					
1000	65					
1200	63					
1400	59					
1600	57					
1800	55					
2000	54					
2200	53					
2400	50					
2600	40					
			MOISTURE, % DRY WEIGHT			
TEST PROCEDURE			RESULT	SPEC.	TEST PROCEDURE	RESULT
LIQUID & PLASTIC PROPERTIES - ASTM D4328			RESISTANCE TO DEGRADATION OF SMALL SIZE COARSE AGGREGATES BY ABRASION -			
LIQUID LIMIT - A			27		GRADING - PER REV. 10/1/02	
PLASTIC LIMIT - B			17		GRADING - PER REV. 10/1/02	
PLASTICITY INDEX - C			10			
MOISTURE CONTENT - ASTM D2216			2.2		SPECIFIC GRAVITY -	
EXPANSION - COMPRESSION PROPERTIES OF COHESIVE SOIL -			MAX. PARTICLE SIZE, IN. - SPECIFIC GRAVITY - 2.65			
EXPANSION - COMPRESSION -			pH DETERMINATION -			
MAXIMUM SWELL PRESSURE, PSI -			SOLUBLE SALTS -			
MINIMUM RESISTIVITY -			MINIMUM RESISTIVITY -			
SOIL CLASSIFICATION - ASTM D2487			ORDER NUMBER - GC			
			NAME - CLAYEY GRAVEL WITH SAND			

Comments: SULFATE - 5M4500E = 0.04% SOLUBILITY - 5M2140C 0.14%
PROVIDED BY SILVER STATE ANALYTICAL LABORATORY

Client: CLIENT (1)

REVIEWED BY: *[Signature]*



**Western
Technologies
Inc.**
The Quality People
Since 1953

6633 West Post Road
Las Vegas, Nevada 89118
(702) 798-8050 • fax 798-7664

AUTHORIZATION FOR SERVICE

CLIENT NO. P.O. OR W.O. NO. ^
CLIENT DISPATCH TRANSPORTATION LLC
3568 LOSEE ROAD
NORTH LAS VEGAS, NV 89030
ATTN: MR. OSCAR RUNYON

WT JOB NO.
EVENT / INVOICE NO.
AUTHORIZED BY ^

LAB NO.
DATE 12/28/11
FUNCTION CODE

TELEPHONE NO. 702-389-0571

FAX NO.

PROJECT NAME IMPORT MATERIAL MONITORING

PROJECT LOCATION US 95 AND HORSE

COPIES OF REPORT TO: KEVIN NOVAK

VERBAL REPORTS TO:

WT PAY CODE	SCOPE OF WORK	
	WESTERN TECHNOLOGIES INC. WILL FURNISH THE MATERIALS AND LABOR NECESSARY TO PERFORM THE FOLLOWING SERVICES PERTAINING TO THE ABOVE PROJECT	
1	PROVIDE THE SERVICES OF A SOILS TECHNICIAN OR GEOLOGIST TO OBSERVE AND PERIODICALLY SAMPLE MATERIALS FROM 4 DIFFERENT SOURCES. MATERIALS WILL BE SAMPLED IN THE EVENT THAT THE IMPORT VARIES SIGNIFICANTLY IN COLOR, TEXTURE, CONSISTENCY AND/OR CONTENT FROM THE ORIGINAL MATERIALS SAMPLED AND LABORATORY ANALYZED. WT WILL ALSO BE MONITORING THE STOCKPILE LOCATIONS OF THE IMPORT MATERIALS AS THEY ARRIVE.	
2	ADDITIONAL TESTS REQUIRED FOR THIS MATERIAL ARE EXPANSION POTENTIAL AND SOIL CHEMISTRY. THE FOLLOWING FEE SCHEDULE INDICATES COSTS ASSOCIATED WITH THIS WORK.	
3	SOILS TECHNICIAN	\$72.00/HR
	PROJECT MANAGER	\$110.00/HR
	<u>MATERIALS TESTING RATES WILL BE AS PREVIOUSLY PROPOSED:</u>	
4	EXPANSION POTENTIAL (REMOLDED)- 2 SAMPLES AT \$90 EA.	\$180
	SOLUBLE SULFATE (SM 4500)- 2 SAMPLES AT \$65 EA.	\$130
	SOLUBILITY OF SOIL (SM 2540)- 2 SAMPLES AT \$80 EA.	\$160
	MODIFIED PROCTOR ANALYSIS (D 1557)- 2 AT \$165 EA.	\$330
5	WT ASSUMES THE WORK WILL OCCUR OVER A TWO TO THREE WEEK PERIOD. WT ALSO ASSUMES THAT COORDINATION WILL OCCUR BETWEEN WT AND DISPATCH.	
THE DEFINED WORK ASSIGNMENT WILL BE COMPLETED BY (DATE):		
FEES FOR SERVICES		
FEES FOR THESE SERVICES WILL BE: (A) LUMP SUM OF		
(B) IN ACCORDANCE WITH ATTACHED FEE SCHEDULE WITH AN ESTIMATED MAXIMUM OF		
PAYMENT FOR SERVICES WILL BE PAID: ☐ IN ADVANCE ☐ DUE IN FULL UPON INVOICING		

SPECIAL INSTRUCTIONS:

☐ RECEIVED BY DATE ☒ PROPOSED BY CHRISTOPHER L. WHITE DATE 12/28/11

THE "STANDARD TERMS AND CONDITIONS" ATTACHED TO THIS FORM ARE AN INTEGRAL PART OF THIS CONTRACTUAL AGREEMENT. AMONG OTHER THINGS, THE STANDARD TERMS AND CONDITIONS LIMIT THE LIABILITY OF WESTERN TECHNOLOGIES INC. ("WT") TO CLIENT. TOGETHER WITH THE FOREGOING SCOPE OF WORK AND THE RELATED FEES AND CHARGES, THE STANDARD TERMS AND CONDITIONS COMPRISE THE ENTIRE AGREEMENT (THE "AGREEMENT") BETWEEN CLIENT AND WT WITH RESPECT TO THE SCOPE OF WORK.	THE UNDERSIGNED, ACTING AS A DULY AUTHORIZED REPRESENTATIVE OF CLIENT, HAS REVIEWED THE ABOVE SCOPE OF WORK AND RELATED FEES AND CHARGES AND ALL OTHER PARTS OF THE AGREEMENT, AND HEREBY ACCEPTS THE AGREEMENT AND AUTHORIZES WT TO PROCEED.
IN THE EVENT A WRITTEN MASTER AGREEMENT, SIGNED BY BOTH CLIENT AND WT, IS PRESENTLY IN EFFECT THAT BY ITS TERMS IS INTENDED TO GOVERN THE SCOPE OF WORK DESCRIBED ABOVE, THEN THE TERMS AND CONDITIONS OF SUCH AGREEMENT SHALL CONTROL IF IN CONFLICT WITH THE STANDARD TERMS AND CONDITIONS ATTACHED TO THIS FORM.	CLIENT:
BY (SIGNATURE)	DATE
PRINT NAME	TITLE

COMMENTS:

COMPLETED / APPROVED BY WT PROJECT MANAGER DATE 12/28/11

STANDARD TERMS AND CONDITIONS

The Agreement between Western Technologies Inc. ("WT") and Client shall include and be subject to WT's Proposal and these Standard Terms and Conditions. The terms of the Agreement shall prevail over any different or additional terms contained in any document to which WT's work relates. WT's commencement of work shall constitute Client's acceptance of the Agreement.

1. SERVICES

1.1 WT agrees to render such services requested in writing by Client that are stated in the Scope of Services or similar written agreement. WT shall have no responsibility to perform services beyond such requests, and none shall be imputed or implied.

1.2 The services rendered by WT are for the benefit of Client alone and relate only to conditions observed at specified locations at the time WT's work is performed. There are no intended third-party beneficiaries to this Agreement, and nothing herein shall create a contractual relationship with or claim or cause of action in favor of a third party against WT.

1.3 The presence of WT's field technicians or representatives, if called for in the Agreement, is for the provision of services hereunder, and does not include supervision or direction of the work of Client or its subcontractors. Neither the presence of, nor any observation or testing by WT personnel shall excuse Client or its subcontractors from any deficiencies in their work.

1.4 When performing its work, WT will take reasonable precautions to avoid damage or injury to subterranean structures or utilities. Client shall indemnify, defend, and hold WT harmless from and against any damages to such structures and utilities that are not called to WT's attention and correctly shown on the plans furnished to WT. It is Client's obligation to contact appropriate utility companies and/or private utility locators for information regarding buried utilities, mark such utilities, and take other precautions to prevent damage or injury.

1.5 Client agrees that if Client commences litigation, mediation, arbitration, or any such proceeding against WT, WT shall have the right to withdraw and terminate ongoing work and services conducted for Client on any contract and project, in which event Client shall pay WT for work and services performed up to the time of termination.

2. PAYMENT

2.1 WT will invoice Client monthly for services performed. Client shall pay such invoices upon receipt without deduction for retention or offset. Failure to pay within 60 days of invoice shall operate to release WT from any and all claims that Client may have; Client further shall have no right to use or rely on any report prepared by WT, and shall return all such reporting to WT. Furthermore, WT shall have the right to immediately terminate and cease performance of all services then being performed for Client on any contract and project until all amounts owed are received by WT. Interest shall accrue on the unpaid balance of any invoice not paid in full within 30 days at the rate of 1.5% per month.

2.2 Estimates of fees are only estimates and shall not be regarded as "lump sum" or "fixed price" or "guaranteed maximum" compensation. Client remains obligated to pay WT's invoices for actual work performed, whether or not the fee estimate is exceeded. For work requested by Client that is additional to or outside the written Scope of Services and/or written service request, Client shall sign such documentation requesting such work or services and process and pay WT's invoices.

3. STANDARD OF CARE

3.1 The services referred to herein will be performed in accordance with the general standard of care practiced locally by providers of such services, and relate only to the conditions observed at samples tested at the time and place reported. WT makes and intends no other warranty or representation, express or implied. WT shall not be responsible for any consequences due to changed conditions or for the failure of any person or entity to perform or install work in accordance with the plans and specifications.

3.2 Soil, subsurface, and groundwater conditions can vary between and among sampling points and with time. WT makes no representation that the points selected for sampling are in any way representative of the entire site or project. Unless circumstances have changed justifying an earlier expiration of validity, geotechnical and earthwork reports are valid for a period of one year from the date of issuance; all other reports, including Phase I reports, are valid for a period of 180 days from the date of issuance.

3.3 Where WT's services involve geotechnical evaluations or field observation of earthwork, grading, filling, or compaction, Client agrees:

3.3.1 WT is not responsible for the manner in which such work is performed;

3.3.2 WT is not responsible for any work performed at any time when WT was not physically present and observing that specific work; and

3.3.3 For continuous observations, Client shall not allow grading, filling, or compaction to be performed at any time that WT is not physically present at the site, and shall restrict the amount and extent of such grading, filling and compaction to that which can be observed by WT at the site.

3.4 WT has no right, duty, or obligation to stop Client's or any of Client's subcontractor's work.

3.5 Client agrees and acknowledges that WT makes no recommendation or opinion other than those set forth in writing and contained in WT's reporting; WT makes no oral recommendations or opinions. Field and lab technicians are not engineers. Client acknowledges and agrees that there will be no express or implied recommendations or opinions of any sort from field or lab technicians.

3.6 Client is obligated to, and shall, directly and specifically notify WT as and when Client wants WT to perform services hereunder. WT shall be subject to no implied duty to observe or test, or to provide reports, other than the actual observation, testing, and reporting performed.

3.7 "Certification" means and implies the expression of professional opinion. It is not a warranty or guaranty.

4. INDEMNITY AND INSURANCE

4.1 NOTWITHSTANDING ANY OTHER PROVISION IN THE PARTIES' AGREEMENT, WT PROVIDES NO INDEMNITY, WARRANTY, OR GUARANTEE, EXPRESS OR IMPLIED, TO CLIENT OR TO ANY OTHER PERSON OR ENTITY.

4.2 Client shall be adequately insured. Client and its insurers jointly and severally waive subrogation against WT and its insurers.

5. LIMITATIONS OF LIABILITY

Client and WT recognize the relative risks and benefits of this Agreement, and agree to the fair allocation of risk between them as follows:

5.1 NOTWITHSTANDING ANY OTHER PROVISION OF THIS AGREEMENT, WT'S TOTAL AGGREGATE LIABILITY TO ANY PERSON OR ENTITY, INCLUDING CLIENT, ON ANY CLAIM, ACTION OR LIABILITY OF ANY KIND OR NATURE WHATSOEVER, IN ANY MANNER ARISING OUT OF THE WORK DONE BY WT SHALL BE STRICTLY LIMITED TO THE GREATER OF \$50,000 OR THE FEE CHARGED FOR WT'S SERVICES HEREUNDER.

5.2 WT shall not be liable for loss of profit, delay, or for any special, incidental, indirect, or consequential damages of any kind, nature or description, from any cause whatsoever.

5.3 No proceeding, action or claim of any kind whatsoever, whether in law or equity, may be brought against WT regarding any work performed by WT, more than four years after the cessation of WT's work.

5.4 EXCEPT FOR ENVIRONMENTAL SERVICES THAT SPECIFICALLY INCLUDE ARE INDOOR MOLE SURVEY, NO ACTION OR CLAIM OF ANY KIND WHATSOEVER MAY BE BROUGHT AGAINST WT ARISING OUT OF THE PRESENCE OR EXISTENCE OF MOLE. ALL SUCH ACTIONS ARE ABSOLUTELY BARRED AND CLIENT ABSOLUTELY AND IRREVOCABLY RELEASES WT FROM ALL SUCH CLAIMS AND LIABILITIES.

5.5 No officer, director, principal, employee, or agent of WT shall ever be personally sued, joined, liable, or responsible regarding any claim whatsoever. ALL SUCH ACTIONS ARE ABSOLUTELY BARRED AND CLIENT ABSOLUTELY AND IRREVOCABLY RELEASES SUCH INDIVIDUALS FROM ALL ACTIONS, CLAIMS, LIABILITIES, AND RESPONSIBILITY.

6. HAZARDOUS MATERIALS AND OTHER SITE CONDITIONS

WT does not create, generate, arrange for or transport, dispose, own, or store hazardous materials or operate any such facility in the performance of its work. Client shall maintain possession of and be responsible for the removal and disposal of all hazardous materials including, but not limited to, samples, drilling mud, fluids and cuttings, decontamination and well development fluids, and used protective gear and equipment. Client assumes full responsibility for compliance with the provisions of RCRA and any other federal or state statute or regulation governing the handling, treatment, or storage and disposal of hazardous wastes and pollutants. Client shall be solely responsible for notifying all appropriate agencies and prospective buyers of the existence of any hazardous or dangerous materials located on or in the project site, or discovered during the performance of the Agreement, as may be required or advised by such agencies and buyers.

7. PROPERTY

7.1 All work papers (including reports, field notes, laboratory notes, laboratory test data, calculations and other documents prepared by WT), electronic data files and other work product generated by or for WT in connection with the Scope of Work are the property of WT. Samples obtained shall remain the property of Client.

7.2 Client has the right to use the reports, recommendations, design criteria and similar information submitted to it by WT, provided that Client pays WT's invoices. Client expressly agrees that no information produced or provided by WT shall be used for or at any location or for any project or project extension that is not expressly set forth in this Agreement without WT's prior written permission.

7.3 Because data stored on electronic media can deteriorate or be modified without WT's knowledge or control, Client assumes all responsibility for the completeness, correctness, and/or readability of electronic data. Client will indemnify, defend, and hold WT harmless of and from the use of and any reliance upon any part of said electronic data and/or anything generated from them. The controlling document regarding any document prepared by WT shall remain and always be the signed hard-copy paper document, and not any electronic form or format of such document.

7.4 Client shall not assign this Agreement, or any of WT's reporting or work product, without the prior express written consent of WT. Any purported assignment without the prior express written consent of WT shall be null and void.

8. TERMINATION

In addition to termination otherwise authorized by law and equity, this Agreement may be terminated by either party upon providing written notice of termination.

9. WT NOT BOUND

WT shall not be bound by: any provision incorporating by reference any contract or term of any contract unless the term or terms incorporated by reference are specifically furnished to WT and are expressly agreed to in a writing signed by WT; any provision or agreement providing for or imposing liquidated damages however described or denominated; any provision waiving any right to a mechanic's lien; any provision conditioning WT's payment for its services upon payment to Client by any third party; or any provision permitting Client to take possession of any property of WT.

10. MEDIATION AND ARBITRATION; FEES AND COSTS

Except for WT's claims for collection of unpaid invoices, which WT may file in any appropriate court, all disputes arising out of the work, including the Agreement, shall first be mediated, and if not so resolved shall be submitted to binding arbitration under the Construction Industry Rules of the AAA. Except for WT's claims for collection of unpaid invoices, concerning which WT shall be entitled to an award of its attorneys' fees and costs, in the event of any claim or dispute resolution proceeding arising out of the work, including the Agreement, each party shall bear its own attorneys' fees, expert and consultant fees, and costs, and each party expressly waives the application of any statute, rule or law entitling the prevailing party to any award of attorneys' fees, expert or consultant fees, or costs.

DISPATCH

TRANSPORTATION LLC

Corporate: 14032 Santa Ana Ave., Fontana, CA 92337 (909) 355-5531
Las Vegas Division: 3568 Losee Road, North Las Vegas, NV 89030 (702) 399-0571

December 6, 2011

Mr. Kevin Novak
KMPN, LLC
12586 Pierce Road
Wakarusa, IN 46573
(574) 633-4687
(702) 326-2381 cell
Kevin@KMPN.net

CLV

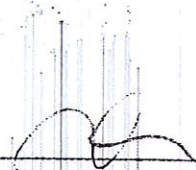
Re: Grand Canyon Village Square, LLC (GCVS, LLC)
NWC I95/ Horse
Las Vegas, NV
Import Material Agreement

This correspondence is to authorize Dispatch Transportation (DT, LLC) for the delivery and placement of approximately 100,000 cubic yards of "controlled fill" material from the Floyd Lamb project to be delivered and placed at the above referenced site over the duration of 12 months (the "Delivery Period") from February 1, 2012 to January 31, 2013. Such placement shall be in accordance with elevations and locations as depicted on the Stockpile Plan (Exhibit A) as prepared by Lochsa Engineering and dated 9/30/11 with the exception of placement within the "Property Swap Areas" (Exhibit B) as prepared by Lochsa Engineering dated 12/5/11 and as further describing those areas as "Property Swap 1" and "Property Swap 2" in Exhibit B".

Dispatch shall provide, at their full cost and expense; source loading, native soil material from the Floyd Lamb Project (as determined acceptable by Western Technologies, Inc. (see Exhibit E), transport, delivery, misc. onsite equipment including but not limited to a water truck (as necessary and required by CCDH) for the placement and dust control of the delivered material as well as any portion of the property disturbed by DT, LLC's operations. Any remedial work, fines or penalties required by the governing authorities or GCVS, LLC shall be performed in a timely manner and at no expense to GCVS, LLC.

Dispatch agrees to obtain and pay all costs of:

- Clark County Dust Control Permits (Exhibit C)



- Las Vegas Stockpile Permit (Exhibit D)
- Source Soil Analysis (Exhibit E)
- Monitoring Contract (Exhibit F)

as may be required and to ensure the material is documented to GCVS, LLC as "controlled" fill.

Dispatch shall provide worker's compensation, liability and auto insurance certificates naming Grand Canyon Village, LLC (GCVS, LLC) as additional insured for the duration of the Delivery Period. Dispatch shall defend, indemnify and hold all concerned Parties free and harmless from any and all liability from loss, damage or injury to property or persons, including wrongful death, in any manner arising out of or incident to any acts, omissions or willful misconduct by DT, LLC and/or their vendors, contractors or subcontractors.

Sincerely,

Oscar Runyon
Project Manager

Authorized by:

Grand Canyon Village Square, LLC,
a Nevada limited liability company

By: Laurich Holdings

By:

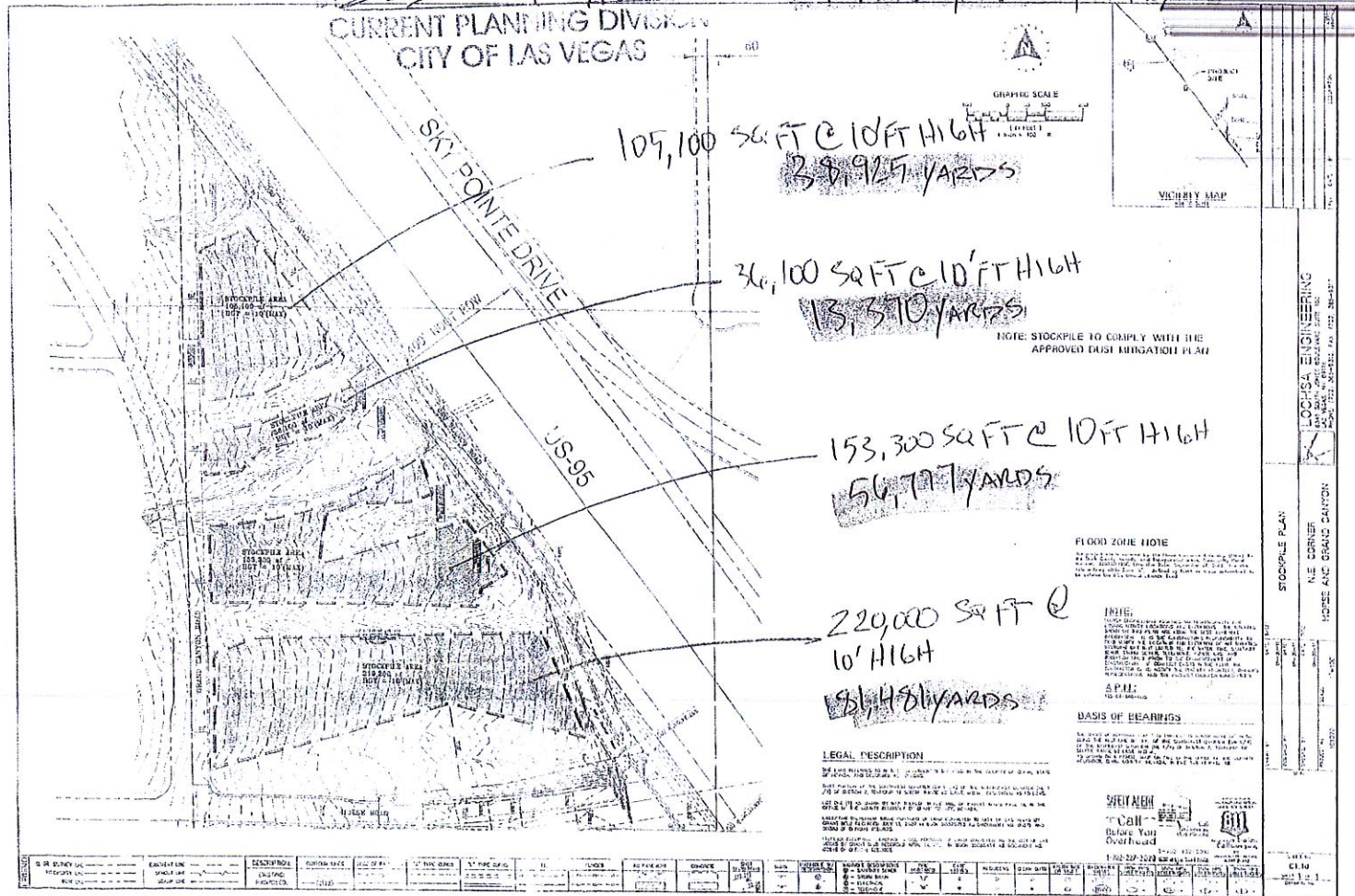
Date: January 30, 2012

Richard Gordon, Member
1770 N. Buffalo Drive, Suite 101
Las Vegas, NV 89128

APPROVED
 APPROVED IN JUNCTION WITH SDA-39453
 2/21/2012

190,553 YARD CAPACITY

CURRENT PLANTING DIVISION
 CITY OF LAS VEGAS



Protecting the air we share

Air Quality

DUST MITIGATION PLAN FOR ALL PROJECTS

Project Name: Horse Drive Stockpile Area

Permittee Name: Dispatch Transportation LLC

Identify the Project Soil "Particulate Emission Potential" (check all that apply):

Using silt and optimum moisture content to determine the particulate emission potential (PEP) is the preferred method.

☒ PEP determined using generalized PEP determination maps included in the Dust Control Handbook.

☐ PEP determined using silt vs. optimum moisture table in Figure 2 of the Dust Control Handbook.

Percentage of silt through a #200 sieve: % Optimum moisture content: %

PEP for this project is determined to be:

☐ High ☐ Moderate High ☒ Moderate Low ☐ Low

Water source: ☐ Hydrant with Jones Valve ☐ Fire hose ☒ Water trucks/pulls ☐ Well
☐ Stand tanks ☐ Ponds ☐ Other:

PROJECT ACTIVITIES CHECKLIST

Instructions:

Place a check mark in the box to the right of each Project Activity that will occur on your project. If additional soil disturbing activities that are not on the checklist are to be included in the project, list them on a separate page and provide a description. For a more complete description of the listed activities, see the Control Measures Selection Pages (Form DCP03) that follow or refer to the Best Management Practices for dust control in the Dust Control Handbook.

BMP 10 Disturbed Soil and BMP 20 Trackout Prevention and Cleanup must be marked for every Dust Mitigation Plan.

CONTROL MEASURES SELECTION PAGES

Instructions:

For each project activity that you have selected on the Project Activities Checklist you must include the corresponding Control Measures Selection Page. Read and understand each item listed as a "Requirement" on these included pages. Where control measure options are listed, place a check in the box in front of the control measure you will use to meet that requirement. You must select at least one control measure where a choice is listed. In addition you must select the control measure that corresponds to your PEP as listed above, if applicable.

NOTE: PROJECTS 10 ACRES AND LARGER MUST COMPLETE A SUPPLEMENT TO THE DUST MITIGATION PLAN (APPENDIX B-1 AND B-2).



PROJECT ACTIVITIES CHECKLIST

Project Name: Horse Drive Stockpile Area

Permittee Name: Dispatch Transportation LLC

PLACE A CHECK MARK NEXT TO EVERY ACTIVITY THAT WILL BE CONDUCTED ON THIS SITE. FOR EACH CHECKED ACTIVITY COMPLETE THE CORRESPONDING CONTROL MEASURE SELECTION PAGE AND INCLUDE WITH APPLICATION.

BMP	Project Activity	Check All That Apply
01	Backfilling Filling area previously excavated or trenched.	☐
02	Blasting - Abrasive Sandblasting and/or abrasive blasting.	☐
03	Blasting Soil & Rock Explosive blasting of soil and rock.	☐
04	Clearing & Grubbing Clearing and grubbing for site preparation and vacant land cleanup.	☒
05	Clearing Forms, Foundations and Slabs Clearing and cleaning of forms, foundations and slabs prior to pouring concrete.	☐
06	Crushing Crushing of construction and demolition debris, rock and soil.	☐
07	Cut and/or Fill Cut and/or fill soils for site grade preparation.	☐
08	Demolition - Implosion Implosive demolition of a structure, using explosives.	☐
09	Demolition - Mechanical/Manual Mechanical and manual demolition of walls, stucco, concrete, freestanding structures, buildings, load-bearing walls and/or removal of transit pipe.	☐
10	Disturbed Soil THIS ACTIVITY MUST BE SELECTED FOR ALL PROJECTS Disturbed soil throughout project including between structures.	☒
11	Disturbed Land - Long Term Stabilization Large tracts of disturbed land that will not have continuing activity for more than 30 days.	☒
12	Dust Suppressants - Selection and Use Selection and use of chemical and organic dust suppressing agents and other dust palliatives.	☐
13	Importing/Exporting Materials Importing or exporting of soil, aggregate, decorative rock, debris, Type II and other bulk material.	☒
14	Landscaping Installation of sod, decorative rock, desert or other landscape material.	☐
15	Paving/Subgrade Preparation Subgrade preparation for paving streets, parking lots, etc.	☐
16	Sawing/Cutting Materials Sawing or cutting materials such as concrete, asphalt, block or pipe.	☐
17	Screening Screening of rock, soil or construction debris.	☐
18	Staging Areas Staging areas, equipment storage, vehicle parking lots, and material storage areas.	☒
19	Stockpiles Stockpiling of materials, such as Type II, other soils, rock or debris, for future use or export.	☒
20	Trackout Prevention and Cleanup THIS ACTIVITY MUST BE SELECTED FOR ALL PROJECTS Prevention and cleanup of mud, silt and soil tracked out onto paved roads.	☒
21	Traffic - Unpaved Routes and Parking Construction related traffic on unpaved interior and/or access roads and unpaved employee/worker parking areas.	☒
22	Trenching Trenching with track or wheel mounted excavator, shovel, backhoe or trencher.	☐
23	Truck Loading Loading trucks with materials including construction and demolition debris, rock and soil.	☒



DAQEM
DEPARTMENT OF AIR QUALITY &
ENVIRONMENTAL MANAGEMENT

RECEIVED
CC-DAQEM

2011 DEC 14 PM 3:44

APPLICATION
DUST CONTROL PERMIT FOR CONSTRUCTION ACTIVITIES

Blank spaces must be completed for the application to be processed. If not applicable, enter N/A.

1. Applicant/Permittee:

☐ Property Owner ☒ Developer ☐ Prime Contractor ☐ Other _____

Name: Dispatch Transportation LLC

Address: 6578 Golden Creek Way

City: Las Vegas State: NV Zip: 89108

Telephone: (702) 716-4637 Ext: _____ Fax: _____

E-mail Address: oscarlr@sbcglobal.net

2. Project:

LR

Name: Horse Drive Stockpile Area

Address: 9001 Oso Blanca Road City: Las Vegas

Nearest major cross-streets: NWCth Horse Drive & US 95

Township(s): 19 Range(s): 60 Section(s): 7

Assessor's Parcel number(s) (Attach map): 125-07-601-005

Project Description: Stockpile Area

Project Acreage: 5.0 acres (rounded to the nearest 0.1 acre, all land that will be disturbed must be included in project acreage)

Permit fees: If the project acreage listed above contains a fraction, the project acreage will be rounded up to the next whole number for fee purposes. The rounded up acreage (quantity) value will be used to assess the acreage fee for this permitting action.

Submit the total permit fee, with this application. Permit fees are non-refundable.

You must select one of the following three choices.

☒ This project does not require any offsite street or utility development.

☐ This project requires offsite street/utility development that is not included in this application, and will be added at a later date by modification or additional permit.

☐ This application includes offsite street/utility development. (Area must be marked on the accompanying parcel map. Check all that apply)

Utility Lateral ☐ less than 100 ft. ☐ greater than 100 ft. ☐ Half Street ☐ Full Street

☐ Curb / Entrances ☐ Entity Name and Number of Approved Offsite Plan / Permit /

Easement: _____ ☐ Plan Pending ☐ Other

3. Property Owner (if not applicant):

Name: Grand Canyon Village Square LLC

4. Point of Contact for dust control matters and to whom a NOTICE OF VIOLATION should be sent if necessary:

Name: OSCAR RUNYON Company: DISPATCH TRANSPORTATION LLC
Address: 105716 GOLDEN CROSS HWY
City: LAS VEGAS State: NV Zip: 89108
Telephone: 702 716 4637 Ext: _____ Fax: _____
Cellular/Pager: 702 716 4637 After Hours Phone: 702 246 4637

5. On-site Superintendent/Supervisor/Foreman or Agent:

Name: JASON JENSEN Company: BOWEN SMITH & GOWEN
On-site phone: 702 716 4637 Cellular/Pager: 702 449 0114
DAQEM Dust Class Certification/Card #: DC000240 Expiration date: 4-27-2012

Have all other on-site supervisory personnel attended the DAQEM Dust Class? ☒ Yes ☐ No

If no, all on-site supervisory personnel must attend a DAQEM Dust Class within 30 days.

7. By signing this permit application I certify that:

- A. I am authorized, on behalf of the individual or company listed in Section 1, as Applicant/Permittee, to apply for their Dust Control Permit and to commit to all of the terms and conditions of the requested permit.
- B. Construction activities will be limited to lands that the applicant/permittee either owns or is authorized to use for construction activities. The permit issued subsequent to this application is not a substitute for obtaining the property owners permission to use his land. Issuance of a Dust Control Permit is intended only for the purpose of controlling emissions of air pollutants and assuring compliance with Air Quality Regulations. The applicant/permittee agrees to hold harmless, indemnify, and defend Clark County, its employees and assigns from any claims that may arise due to any unauthorized use of land for construction activities.
- C. The permittee accepts responsibility for assuring that all contractors, subcontractors, and all other persons on the construction site covered by this permit, comply with the terms and conditions of the permit, the dust mitigation plan and all applicable Air Quality Regulations.
- D. The applicant/permittee understands that it is a condition of the permit that the permittee agrees to allow the inspection of the site for compliance with the terms and conditions of the permit and Air Quality Regulations at any time during the permittee's hours of operation by a DAQEM officer without prior notice or at any time pursuant to the investigation of a complaint or upon direct observation of emission and/or failure to maintain Best Management Practices.
- E. I understand that any material misrepresentation made in this application may invalidate the permit and that Clark County may pursue enforcement action against me. In addition, I understand any willful misrepresentation may result in criminal penalties. I declare under penalty of perjury that the foregoing is true and correct.

Executed on:

DECEMBER 13, 2011
DATE

[Signature]
SIGNATURE

OSCAR L RUNYON III
PRINTED NAME

Jim - Dispatch LLC
TITLE AND COMPANY NAME

Application completed by, if not completed by signatory (Please Print):

Julie Walker - GWE Consulting Inc

(702) 370-6890

Est.

Name

Phone Number

PAYMENT INFORMATION TO BE COMPLETED BY THE APPLICANT

PAYING BY

(Please Print)

☐ CASH

☒ CHECK

CHECK # 1772

NAME AND ADDRESS AS IT APPEARS ON CHECK:

Oscar L Runyon III

635 Marina Dr

Boulder City, NV 89005

Telephone #: (702) 716-4637

☐ CREDIT CARD

LAST FOUR DIGITS OF CREDIT CARD NUMBER:

EXACT NAME AS IT APPEARS ON CREDIT CARD:

FOR DAQEM USE ONLY

ISSUE DATE

12/28/2011

ISSUED BY

2045873

POS #

DATE PAID

12/14/11

RECEIVED BY

212

DAQEM REVIEW:

[Signature]

DATE: 12-27-11

BLASTING APPROVAL (if applicable):

DATE:

DEMOLITION APPROVAL (if applicable):

DATE:

COMPLIANCE AREA ASSIGNMENT:

NW

Hydrographic Area: 212

☐ Airport ☐ Blasting ☐ Commercial ☐ Demo-Structure ☐ Demo-Other ☒ Staging/Stockpiling
☐ Highway ☐ Schools ☐ Residential ☐ Public Works ☐ Flood Detention ☐ Utilities ☐ Misc.

DISPATCH

TRANSPORTATION LLC

Corporate: 14032 Santa Ana Ave., Fontana, CA 92337 (909) 355-5531
Las Vegas Division: 3568 Losee Road, North Las Vegas, NV 89030 (702) 399-0571

December 6, 2011

Mr. Kevin Novak
KMPN, LLC
12586 Pierce Road
Wakarusa, IN 46573
(574) 633-4687
(702) 326-2381 cell
Kevin@KMPN.net

CLV

Re: Grand Canyon Village Square, LLC (GCVS, LLC)
NWC 195/ Horse
Las Vegas, NV
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Sincerely,

Oscar Runyon
Project Manager

Authorized by:

Grand Canyon Village Square, LLC,
a Nevada limited liability company

By: Laurich Holdings

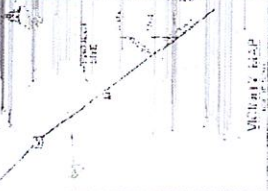
By:

Date: January 30, 2012

Richard Gordon, Member
1770 N. Buffalo Drive, Suite 101
Las Vegas, NV 89128

190.553 VARD CAPACITY

APPROPRIATELY MARKED



available online

105,100 S.F. @ 10¢ H.B.T.
38,925 YARDS

36, 100 sq ft @ 10' FT H x 11' W
13,370 yards

ROLES: STOCKPILE TO COMPLY WITH THE APPLIED DUST LIMITATION PLAN

153,300 sq ft @ 10 ft high
56,777 yds

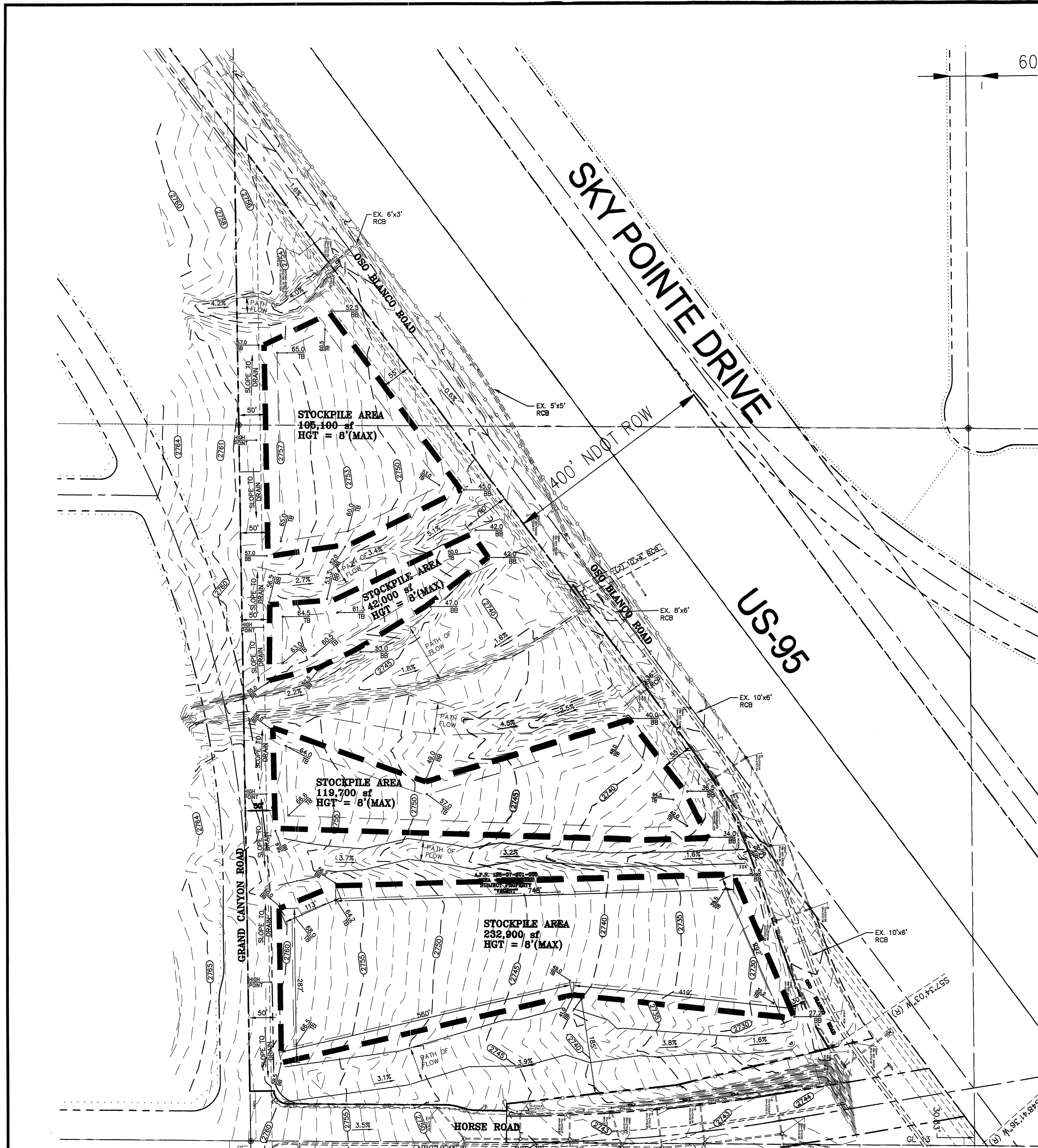
ALCOHOL 2014-10-15

22000 3217-2
4914 01
81481 yards

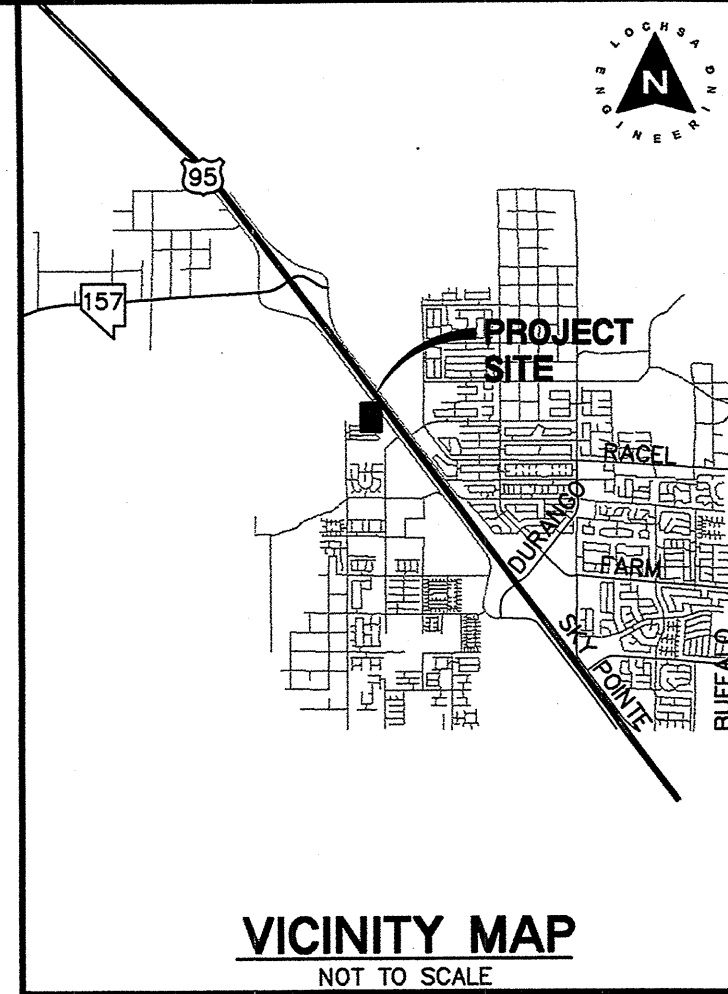
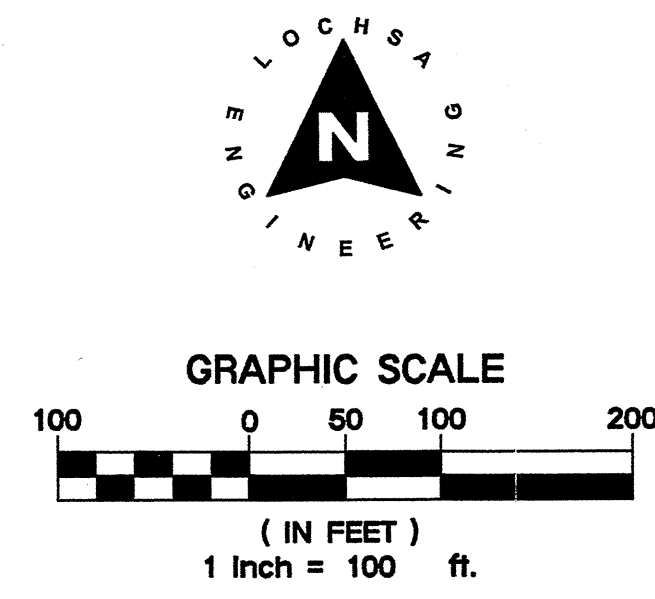
[illegible]

THESE THINGS ARE NOT THE ONLY THINGS THAT ARE GOING ON IN THE WORLD. THERE ARE MANY OTHER THINGS THAT ARE GOING ON, AND WE ARE GOING TO TALK ABOUT THEM IN THE NEXT CHAPTER.

[illegible][illegible]



60



NOTE: STOCKPILE TO COMPLY WITH THE APPROVED DUST MITIGATION PLAN

FLOOD ZONE NOTE

The project site is covered by the Flood Insurance Rate Map (FIRM) for the Clark County, Nevada, and incorporated areas, Community Panel Number: 3200301735E, Effective Date: September 27, 2002. The site falls entirely within Zone "X", defined by FEMA as Areas determined to be outside the 0.2% annual chance flood.

NOTE:

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

A.P.N.:
125-07-601-005

BASIS OF BEARINGS

LEGAL DESCRIPTION

THE LAND REFERRED TO IN THIS COMMITMENT IS SITUATED IN THE COUNTY OF CLARK, STATE OF NEVADA, AND DESCRIBED AS FOLLOWS:

THAT PORTION OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 7, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., DESCRIBED AS FOLLOWS:

LOT ONE (1) AS SHOWN BY MAP THEREOF IN FILE 105, OF PARCEL MAPS PAGE 18, IN THE OFFICE OF THE COUNTY RECORDER OF CLARK COUNTY, NEVADA.

EXCEPTING THEREFROM THOSE PORTIONS OF LAND CONVEYED TO CITY OF LAS VEGAS BY GRANT DEED RECORDED JULY 13, 2007 IN BOOK 20070713 AS DOCUMENT NO. 00379 AND 00380 OF OFFICIAL RECORDS.

FURTHER EXCEPTING THEREFROM THOSE PORTIONS OF LAND CONVEYED TO THE CITY OF LAS VEGAS BY GRANT DEED RECORDED APRIL 14, 2008 IN BOOK 20080414 AS DOCUMENT NO. 02846 OF OFFICIAL RECORDS.

LEGEND	CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS	200w HPS STREETLIGHTS	250w HPS STREETLIGHTS
	PROPERTY LINE	SAWTOOTH LINE	EXISTING:	(2210)								(12.34) BC		⑤	⑤ = SANITARY SEWER ⑤ = STORM DRAIN ⑤ = ELECTRICAL ⑤ = TELEPHONE						(BWV)				
	ROW LINE	SCARP LINE	PROPOSED:	(2122)								12.34 BC		⑥											

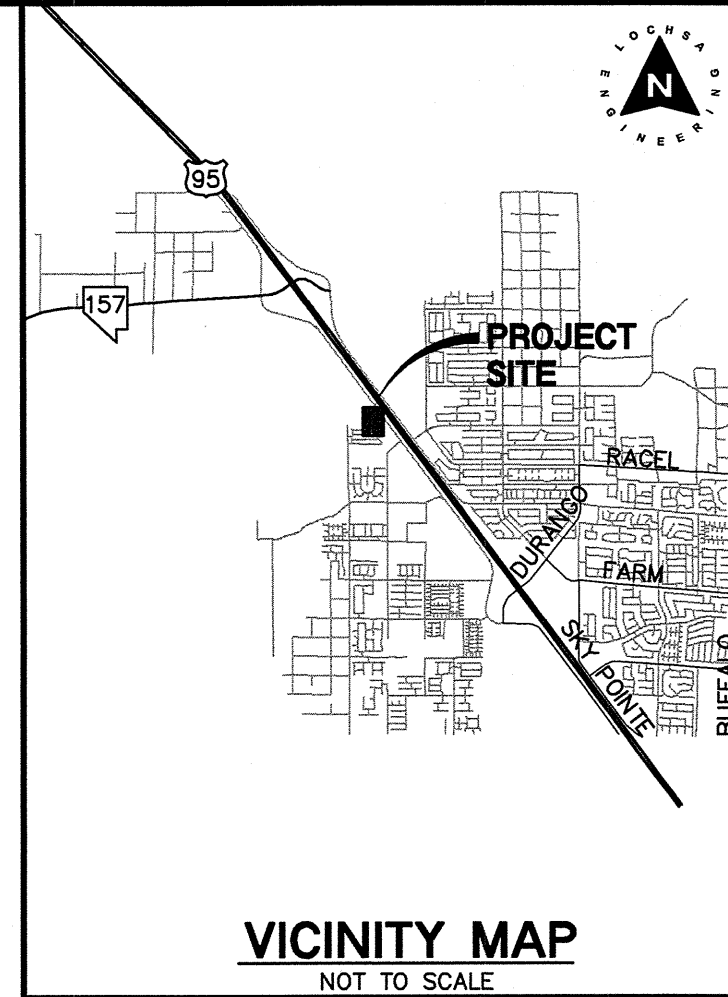
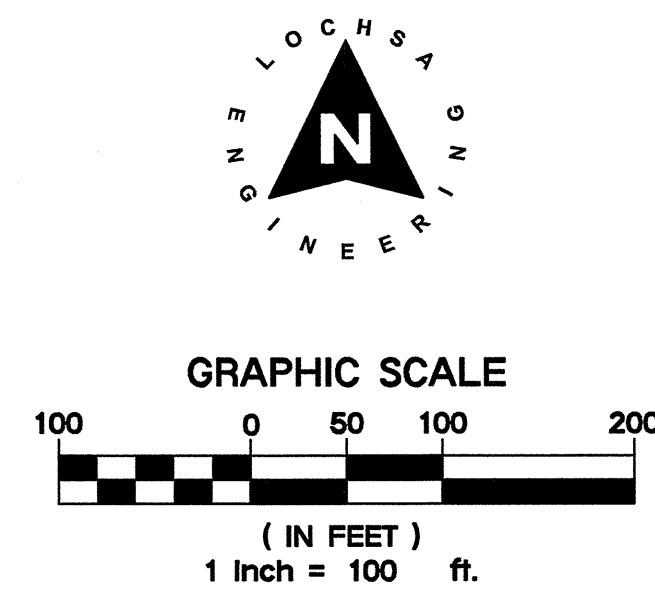
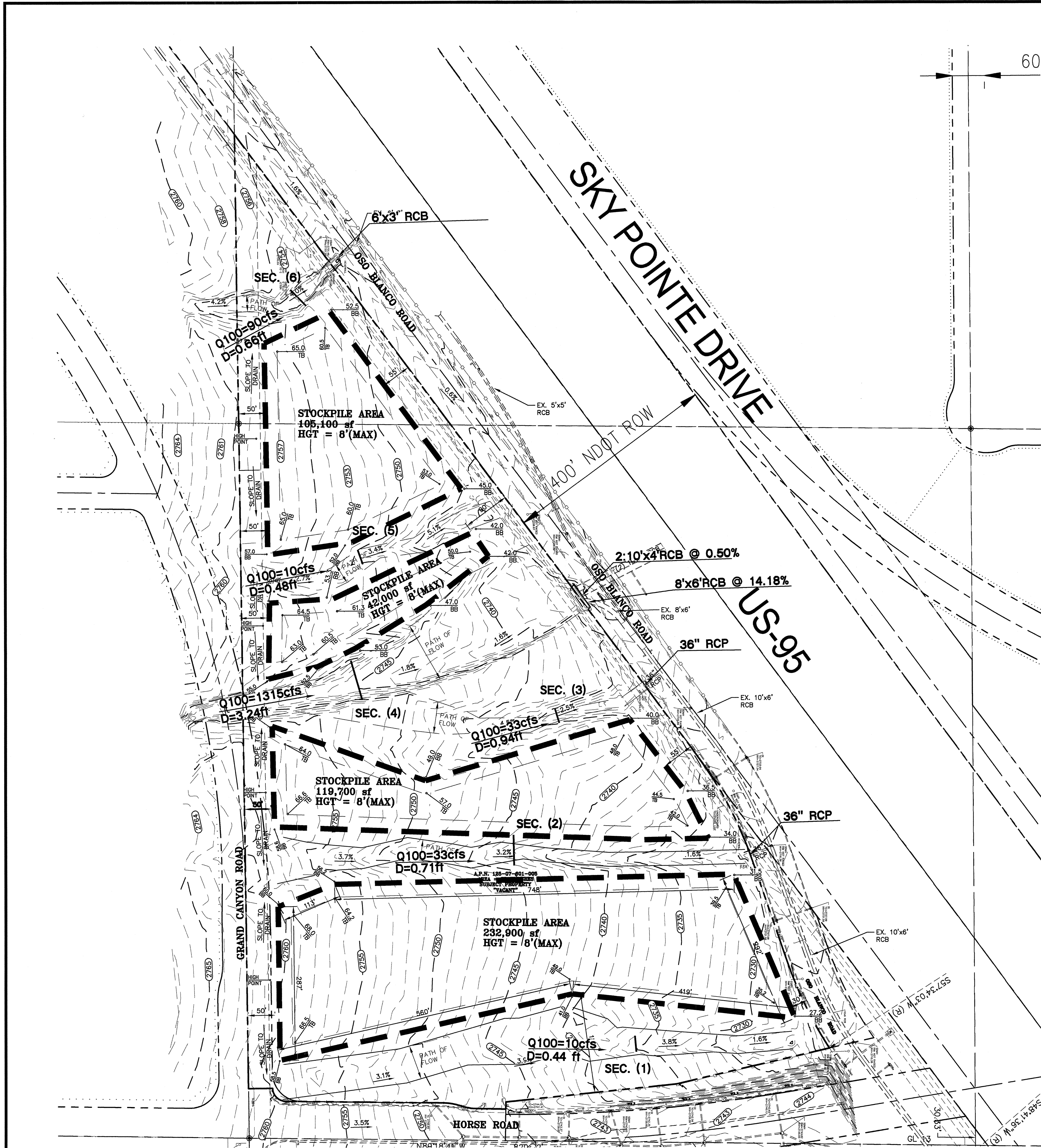
LOCHSA ENGINEERING
6345 SOUTH JONES BOULEVARD SUITE 100
LAS VEGAS, NV 89118
PHONE: (702) 365-9312, FAX: (702) 365-9317

STOCKPILE PLAN

N.E. CORNER
HORSE AND GRAND CANYON

DATE: 02-06-12
DESIGNED BY: [Signature]
CHECKED BY: [Signature]
PROJECT NO.: 101070
SCALE: 1"=100'

SHEET 1 OF 1
DRAWING NO.



NOTE: STOCKPILE TO COMPLY WITH THE APPROVED DUST MITIGATION PLAN

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A.P.N.: 125-07-601-005

BASIS OF BEARINGS

LEGAL DESCRIPTION

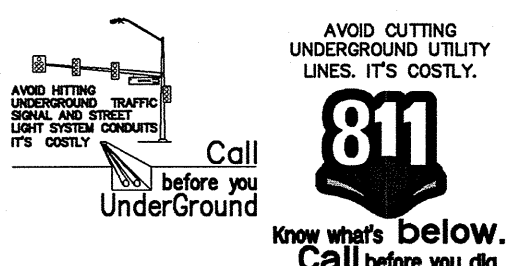
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	PROPERTY LINE	SAWCUT LINE	EXISTING:	(2210)								(12.34) BC		⊙	⊙ = SANITARY SEWER	⊙	⊙	▷	○	□	⊙	⊙	⊙	⊙	⊙
	ROW LINE	SCARP LINE	PROPOSED:	(2122)								12.34 BC		⊙	⊙ = STORM DRAIN	⊙	⊙	▷	○	□	⊙	⊙	⊙	⊙	⊙
														⊙	⊙ = ELECTRICAL	⊙	⊙	▷	○	□	⊙	⊙	⊙	⊙	⊙
														⊙	⊙ = TELEPHONE	⊙	⊙	▷	○	□	⊙	⊙	⊙	⊙	⊙

DATE: 02-05-12	DATE: 02-05-12	DATE: 02-05-12	DATE: 02-05-12	SCALE: 1"=100'	PROJECT NO.: 101070	SHEET NO. DR1	SHEET 1 OF 1	DRAWING NO.
EXISTING DRAINAGE PATTERN								LOCHSA ENGINEERING 6345 SOUTH JONES BOULEVARD SUITE 100 LAS VEGAS, NV 89118 PHONE: (702) 365-9312, FAX: (702) 365-9317
N.E. CORNER HORSE AND GRAND CANYON								