

DS #: 4804.

APN: 125.35-701-0015 More

PROJECT: Maverick Washburn Residential Development

SUBMITTAL: 1st Submittal

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		June 16, 2016
TO: Land Development Services Department of Building & Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for:	
	Maverick & Washburn Residential Development	
Cross Streets:	SEC of Maverick Street & Washburn Avenue	COPIES TO:
File Number:	F:\Depot\DSMemos\DS4804A.doc	Triton Engineering
Parcel Number:	125-35-701-001 & more	D. R. Horton Inc.
Zoning Action:	TMP-63989, ZON-63988 & ZON-63987	Bart Anderson, P.E., DevCo
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	5/24/2016	6/15/2016	See Comments Below	\$400.00	444949: \$400
			TOTAL FEES (LDDRS):	\$400.00	----

REMARKS:

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

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

1. Provide a copy of the zoning/planning conditions associated with this site (**TMP-63989; ZON-63988 & ZON-63987**) with the next submittal to verify compliance with conditions. *Flood Control* will not issue conditional approval of the drainage study without the associated zoning/planning conditions (issued by the *City Council*). Any associated conditions of approval that revise the site drainage parameters will require that the drainage study be revised and resubmitted.
2. **City of Las Vegas** does not allow interim rough grading such as rough pad and interior street grading. Obtain acceptance from **Land Development Section** (Mr. Mike Cunningham, P.E. at (702) 229-2002) for the proposed interim rough grading prior to the final approval of the subject drainage study.
3. *Clark County Regional Flood Control District* has adopted the "2013 Las Vegas Valley Flood Control Master Plan Update". The engineer must reference all the pertinent figures in the most recent *Master Plan Update*. Provide all latest figures in the next submittal. Address if there are any impacts to the subject development since the latest update.
4. Currently, the *August 2014 NRCS Soils Data* represents the latest and best available soils data. Verify in the next submittal that the latest soils data are being used in the drainage study which may change the results of all subsequent hydrologic and hydraulic calculations.

5. In Page 4 of the subject study, it was stated that because there is no valley gutter across *Maverick Street* at *Washburn Road*, therefore all flow at the intersection flows south in *Maverick Street*. This is inaccurate. The 100-year flow at the intersection may split to the east and to the south depending on the slopes of the individual streets. Provide a Pima County split flow analysis in the next submittal and revise all hydrologic (*Existing and Developed Drainage Maps*) and hydraulic calculations accordingly.
6. Comparing **Figure 3 (Existing Conditions Drainage Map)** and **Figure 4 (Developed Conditions Drainage Map)**, it is proposed to divert portions of flood flow in *Washburn Road* into the site through *Denver Street* and discharges at *La Madre Way*. This results in significant increase of flow at "LAMA2" at the intersection of *La Madre Way* and *Bronco Street* while reducing the developed flow at *Washburn* and *Bronco*.

Provide a hump in *Denver Street* to keep the developed flow in *Washburn Road* from entering the subject site. Try to reduce the impact of flow increase at "LAMA2" as much as possible.

7. An 18"-storm drain identified in the *City of Las Vegas Northwest Neighborhood Master Plan* fronting the project site in *Washburn Road* may be waived if it is proven that the regional criteria has been met without the storm drain. Otherwise, install the storm drain in *Washburn Road* accordingly.
8. Provide street improvements for *Bronco Street* in the next submittal. Review and revise the pertinent grading plans, details sheet and plan & profile sheets accordingly.
9. Show an existing storm drain system in *Washburn Road* and label with *City of Las Vegas* recorded drawing number on the grading plan.
10. Show finished floor elevations of all existing houses adjacent to the perimeter streets on the grading plans.
11. The rough graded onsite without any permanent cover such as paving, building construction or planting, is considered ongoing project under construction whereas a *Stormwater Pollution Prevention Plan* must be kept active under the NDEP Permit. In order to close out the permit, the developer must install permanent cover to the site to stabilize and control stormwater pollution to the satisfaction of NDEP.
12. Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).

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

END OF REMARKS
ays

T/R/S: T19S/R60E/35
AREA G-35

 *** FAX TX REPORT ***

TRANSMISSION OK

JOB NO. 0262
 DESTINATION ADDRESS 7022543062
 PSWD/SUBADDRESS
 DESTINATION ID
 ST. TIME 06/16 16:04
 USAGE T 00' 54
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CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM

DATE:

June 16, 2016

TO:

Land Development Services
 Department of Building & Safety

FROM:

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

SUBJECT:

Drainage Study for:

Maverick & Washburn Residential Development

COPIES TO:

Triton Engineering

Cross Streets:

SEC of Maverick Street & Washburn Avenue

D. R. Horton Inc.

File Number:

F:\Depot\DSMemos\DS4804A.doc

Bart Anderson, P.E., DevCo

Parcel Number:

125-35-701-001 & more

Zoning Action:

TMP-63989, ZON-63988 & ZON-63987

FEMA Flood Zone

YES

NO

X

Proposed Storm Drain

YES

NO

X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
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Triton

Engineering

May 25, 2016

City of Las Vegas -Building and Safety
333 North Rancho Drive
Las Vegas, Nevada 89106
Attn: Linda Hartman

Re: Difference in elevation across boundaries with existing developments
DR Horton – Maverick & Washburn Project
APN: 125-35-701-001, 002, 003, 005, 006, 007, 008, 009 & 010

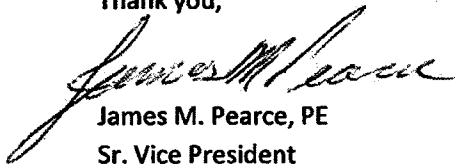
Dear Linda,

Our project is a 15.44 acre development which is bounded by existing development on virtually all sides. The elevation of our project is set basically by the natural fall of this site and the existing surrounding development. As you can see from the drainage plans that accompanied our letter we have a slope of 1.2% from the northwest corner of the site to the southeast corner of the site.

We must convey storm flows and keep them within their historic path as much as possible. Under these conditions the pad grades shown on the plans are the lowest practical elevations possible. The pads on the existing development to the east of our site were built at grade at the time which makes the difference in pads across the boundary wall about 2 to 3.3 feet. It should be noted that our site is slightly higher than this existing adjacent development. We have virtually no flexibility with the constraints we have on the project. It should also be noted that we clearly showed the worst case condition on the sections that were part of the Tentative Map (TMP-63989) that was approved on 5/10/16.

If you have any questions or need any additional information feel free to call our office.

Thank you,



James M. Pearce, PE
Sr. Vice President
Triton Engineering

CC: Albert Sung, CLV Flood Control

PLANS APPROVED
PLANNING

Building & Safety Dept.
City of Las Vegas, Nevada

2' GRADE DIFFERENCE ONLY
LHM MAY 31 2016

Conforms to the minimum requirements of
LVMC Title 19, applicable Master Plan
development standards and/or Conditions of
Approval. Make No Change Without Approval.
Plan is Not a Permit to Violate Any Ordinance.

Albert Sung

From: Linda Hartman-Maynard
Sent: Tuesday, May 31, 2016 10:24 AM
To: Albert Sung
Subject: FW: Maverick & Washburn 2' Grade Difference
Attachments: 2663_001.pdf

From: Linda Hartman-Maynard
Sent: Tuesday, May 31, 2016 9:56 AM
To: jpearce@tritoneng.com
Subject: FW:Maverick & Washburn 2' Grade Difference

Two-foot difference in elevation approved for Maverick and Washburn.

Linda Hartman-Maynard, Planner II
City of Las Vegas - Department of Building & Safety
Civil and Planning Development
Development Services Center
333 N. Rancho Dr.
Las Vegas, NV 89106
(702) 229-6899 fax (702) 382-1240
lmaynard@lasvegasnevada.gov

Building Community to Make Life Better

[City of Las Vegas Building & Safety](#)

Your opinion is important! [Click here](#) to take a short survey.

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TECHNICAL DRAINAGE STUDY

FOR

Washburn & Maverick Residential Development

City of Las Vegas, Nevada

Prepared for:

DR Horton

1081 Whitney Ranch Drive, #141

Henderson, NV 89014

Office: (702)635-3600 - Fax: (702)538.0735

Prepared by:

Triton Engineering

6757 W. Charleston Blvd., Suite B

Las Vegas, NV 89146

Office: (702) 254-1480 - Fax: (702) 254-3062

APN 125-35-701-001; -002; -003, 125-35-701-005; -006; -007; -008; -009; -010

May 2016

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Technical Drainage Study for Washburn & Maverick Date: May 2016

Location of Development: a) Descriptive (Cross Streets) North/South: Maverick
East/West: Washburn

b) Section: 35 Township: 19S Range: 60E

c) APN : 125-35-701-001; -002; -003, 125-35-701-005; -006; -007; -008; -009; -010

Name of Owner: Various Owners, - DR Horton, Developers

Telephone No.: (702)672-1939 Fax No.: (702) 538-0735 E-Mail Address: MEJones3@DRHorton.com

Address: 1081 Whitney Ranch Drive #141, Henderson, NV 89014

Contact Person-Name: Kelly J. Wittwer, P.E. Telephone No.: (702) 254-1480

* E-Mail Address: KWittwer@tritoneng.com Fax No.: (702) 254-3062

Firm: Triton Engineering, LLC

Address: 6757 West Charleston Boulevard, Suite B, Las Vegas, NV 89146

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 16.47 ac Being Developed/Disturbed: 16.47 ac.

2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ Yes** ☒ No

3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☐ Yes** ☒ No

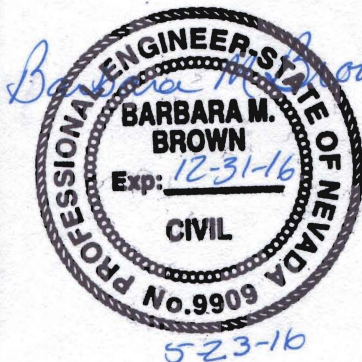
4. Proposed type of development (Residential, Commercial, Etc.): Residential

5. Approximate upstream land area which drains to the subject site: 60 acres + / -

6. Has the site drainage been evaluated in the past? ☐ YES ☒ NO If yes, please identify documentation: _____

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: _____
Discharge to the east to Bronco Street and to the south to La Madre Way

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



Engineer's Seal

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

*New Required Field

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

	Revision	Date
Local Entity File No. _____		

REFERENCE:

STANDARD FORM 1



CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

The following checklist is intended as a supplemental guide for the engineer preparing a Technical Drainage Study submittal to the City of Las Vegas. This supplement focuses on requirements specific to the City of Las Vegas. The requirements presented are in addition to the Clark County Regional Flood Control District (CCRFCDD) 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 CCRFCDD Hydrologic Criteria and Drainage Design Manual (Design Manual).

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

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

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

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

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

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

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
	X	Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.
X		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.
	X	The limits of the flood zones and the base flood elevations (BFE) must be shown on all grading plans for all developments within a Special Flood Hazard Zone A, AO, AE, etc.
X		Minimum finish floor elevation is 6 inches above highest adjacent top of curb. Finish floor calculations must include allowances for super elevations on curves and velocity head for tee intersections.
X		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	
	X	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.
	X	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.

INTRODUCTION

This Technical Drainage Study was prepared to address drainage and grading design of a project, consisting of 55 single-family residential units planned for development on a collection of parcels, totaling approximately 16.5 acres. The subject study will apply to the offsite development of the site, with onsite areas being rough graded, and considered a single lot. Subsequently, an Update study will be submitted as the onsite area is planned for improvement of the individual residential lots. The site is in the northwest portion of the Las Vegas Valley, in the City of Las Vegas, Nevada.

This Technical Drainage study was prepared in accordance with criteria specified in the Clark County Regional Flood Control District (CCRFCD) Hydrologic Criteria and Drainage Design Manual (updated 2000), which is herein referred to as the "Drainage Manual". All pertinent reference information and calculations is presented in the Appendix of this report.

LOCATION

The site of the proposed development is located in the North Half (N1/2) of the Southeast Quarter (SE1/4) of Section 35, Township 19 South (T19S), Range 60 East (R60E), M.D.M. in the City of Las Vegas, Nevada. The site is located on the southeast corner of Washburn Road and Maverick Street. See Figure 1, *Vicinity Map*, and Figure 2, *Location Map*.

SITE DESCRIPTION

The subject site is currently undeveloped and has minimal vegetal covering. The entire site appears to have been developed residentially in the past, and exhibits only minimal areas which remain as natural desert terrain. There are existing concrete slabs which remain from previous home sites at several locations on the subject site. The site is relatively flat, sloping gradually to drain to the east to the property east of the Bronco Street alignment at a slope of approximately 1%. The site is impacted by storm water runoff from offsite only on the bordering streets of Washburn Road on the north, Maverick Street on the west, and La Madre Way on the south.

The site is bound by Washburn Road (60-foot right-of-way) on the north, which is currently partially improved with rural standards. Full street improvements are planned to Washburn Road with the current project on the south half of the street.

The site is bound by Maverick Street (60-foot right-of-way) on the west which is currently improved with rural standards on the east side (site side), and full street improvements on the west side. The east half

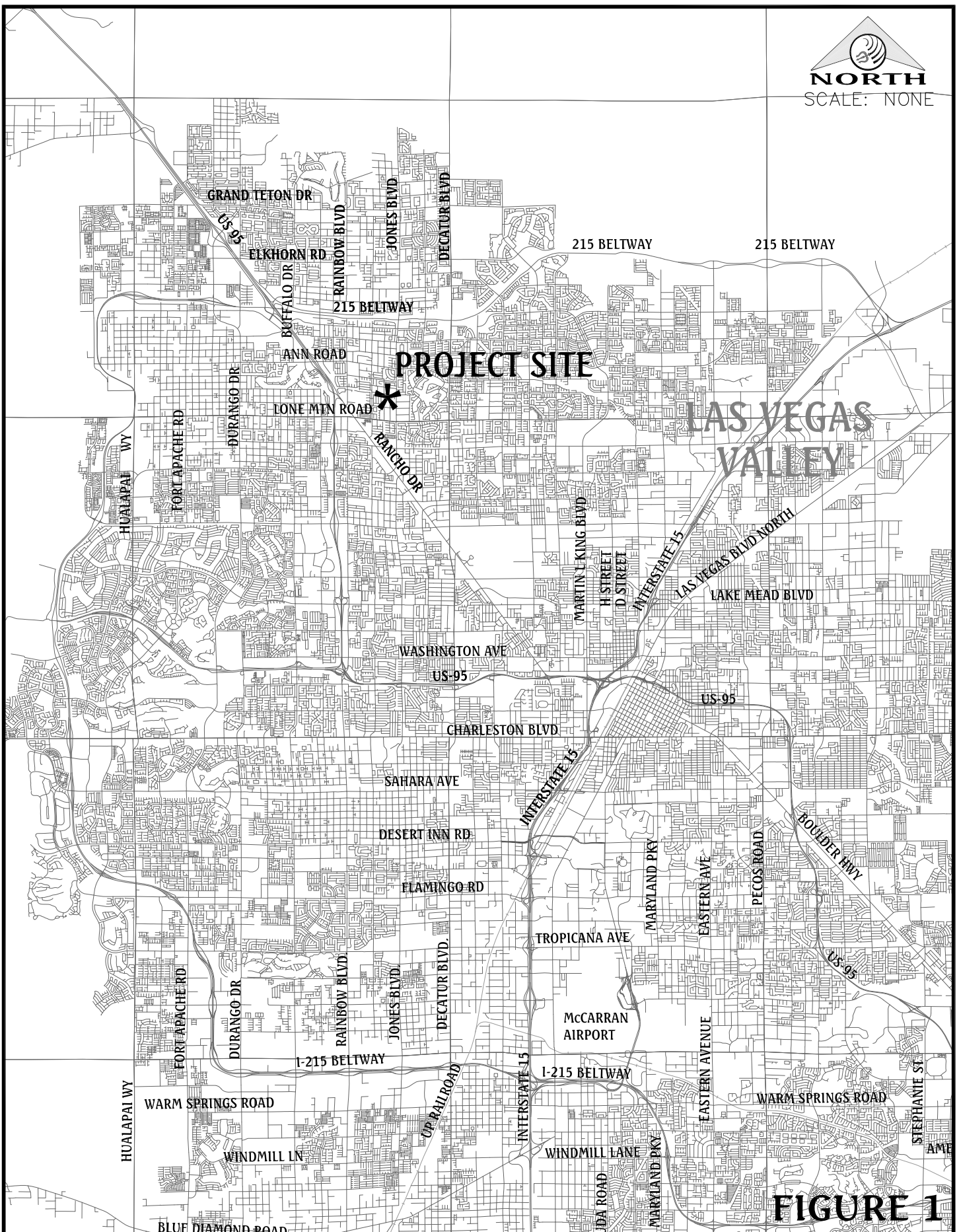


FIGURE 1



Technical Drainage Study for Washburn & Maverick

LOCATION MAP



of the street along the subject site will be fully improved with the subject project.

The site is bound by La Madre Way on the south, which is currently improved with rural standards. Full street improvements are planned to La Madre Way on the north side of the street with the current project.

The site is bound by Bronco Street on the east. Bronco Street is unimproved at the subject site, except for the northern 330 feet, extending south from Washburn Road, where full street improvements exist on the east side of the street, and rural improvements exist on the west side of the street. It is noted that the subject site does not include the single parcel at the southwest corner of Washburn Road and Bronco Street.

The site is bound by existing large-lot single-family residences along the northern and western boundaries. The site is bound by a church on the southern boundary.

The site is bound by undeveloped areas to the east.

MASTER PLANNING INFORMATION

The subject site is not located adjacent to, nor crossed by any existing or planned CCRFCD Regional Drainage Facilities, as shown on Figure F-20 of the CCRFCD MPU updated 2013. Figures F20 and H20 of the MPU have been copied, annotated and included in the appendix of this report.

FLOODPLAIN INFORMATION

The subject site is not located within a Federal Emergency Management Agency (FEMA) Special Flood Hazard Zone. According to the Flood Insurance Rate Map (FIRM) Map 32003C1765F, dated November 16, 2011, the subject site is located within "Zone X", which is described as "Areas determined to be outside the 0.2% annual chance floodplain". The FIRM panel has been annotated and included in the appendix of this report.

PREVIOUS STUDIES

Update to Technical Drainage Study for Canyon Ridge Christian Church, (by Advantage Civil Design Group, May 2013) DS 4596

The Canyon Ridge Christian Church study applies to an 34-acre parcel of land where the church facility currently exists, on the south side of La Madre Way from the subject site. The Update study is the most recent drainage study for that parcel, it applies to the most recent additions of three buildings, parking facilities, and offsite improvements to bordering streets of La Madre Way and Maverick Street. The update study did not revise the original hydrologic calculations of the original study (DS 3453). The study cites the *City of Las Vegas Northwest Neighborhood Study* for peak flow rates of 62 cfs and 200 cfs in the 10- and 100-year storm events, respectively. This is the same reference material used in the subject study, and nothing specific was referenced from the Canyon Ridge Church study.

Technical Drainage Study for Treasure Land Residential, (by Aztec Engineering, December 2003) DS 3676

The Treasure Land Residential study applies to approximately 3 acres of the actual subject site. The development was apparently never constructed, but it was intended for 6 residential lots at the southeast corner of Marverick Street and Washburn Road. The site cites the *City of Las Vegas Northwest Neighborhood Study* for peak flow rates in Washburn Road of 7 cfs and 23 cfs in the 10- and 100-year storm events, respectively. This is the same reference material used in the subject study, and nothing specific was referenced from the Treasure Land study.

Technical Drainage Study for Lorrain Parc Subdivision, (by Wright Engineering, November 2004) DS 3398

The Lorrain Parc Subdivision study applies to approximately 7 acres, located on the southeast corner of Bronco Street and Washburn Road, to the east (downstream of) the subject site. The site cites the *City of Las Vegas Northwest Neighborhood Study* for peak flow rates in Washburn Road of 7 cfs and 23 cfs in the 10- and 100-year storm events, respectively. This is the same reference material used in the subject study. An 18-inch storm drain and collection inlets, intended for nuisance flow collection, was constructed in the Washburn Road alignment, and stubbed to the west toward the subject site. In the subject study, because of lack of flow, it was found to be not feasible to extend the nuisance flow collection system. Nothing specific was referenced from the Lorrain Parc study.

City of Las Vegas Northwest Neighborhood Study (Phase I), (by PBS & J, Inc., September 1999)

The *City of Las Vegas' Northwest Neighborhood Study* (referred to as *CLVNWNS* in this report) was prepared for drainage planning in the northwest areas of the City of Las Vegas. The study gives existing conditions hydrology as well as future conditions hydrology along with planned drainage facilities. In the study, the existing conditions hydrology was created using developed conditions curve numbers, with only existing drainage facilities present. The developed conditions hydrology incorporates all upstream drainage facilities along with the developed conditions land usage. The existing conditions hydrology was found to be the most accurate for reference in the subject study.

The specific data referenced from the *CLVNWNS* are peak flow rates of 62 cfs and 200 cfs flowing east on La Madre Way from the Maverick Street intersection in the 10- and 100-year storm events, respectively; and 7 cfs and 23 cfs likewise flowing east on Washburn Road from the Maverick Street intersection. In the process of the subject study, no valley gutter was found to exist at Washburn Road and Maverick Street. Hence, all flow at that intersection flows south in Maverick Street.

The *CLVNWNS* shows a future 18" storm drain pipe in Washburn Road at the subject site. This pipe would be intended to collect nuisance flows in an area that is very flat and could become an issue for maintenance, etc. However, since there is no valley gutter at the Washburn/Maverick intersection, there was no source for nuisance flow in this area, except for flow coming from the large lots on the north side of Washburn Road. Development of the subject site does not discharge runoff flow into Washburn Road, so that the amount of flow in the south flow line of the street is minimal and no build up of flow, including nuisance flow, is expected and the collection system is therefore not necessary.

EXISTING DRAINAGE DESCRIPTION

EXISTING ONSITE DRAINAGE DESCRIPTION

Referring to *Figure 3, Existing Conditions Drainage Map*, under existing conditions, the Basin XON1 drains to the east to its boundary with an existing residential lot, where it turns north and is discharged into the Washburn Road alignment.

Onsite basin XON2 drains to the east, crossing the (undeveloped) Bronco Street alignment, passing into undeveloped areas to the east.

EXISTING OFFSITE DRAINAGE DESCRIPTION

Under existing conditions, the subject site is impacted by runoff flow in the bordering street sections of Washburn Road on the north, Maverick Street on the west, and La Madre Way on the south, as shown on *Figure 3, Existing Conditions Drainage Map*.

Runoff flow approaching from the west in the Washburn alignment is referenced from the *CLVNWNS* at the Maverick Street intersection as point WASH as 7 cfs and 23 cfs in the 10- and 100-year storm events, respectively. Since there is no valley gutter at that location, all the flow in the intersection is expected to flow southerly on the Maverick Street alignment, combining with flow from street area MAV and offsite area DOF1 at point CPMAY.

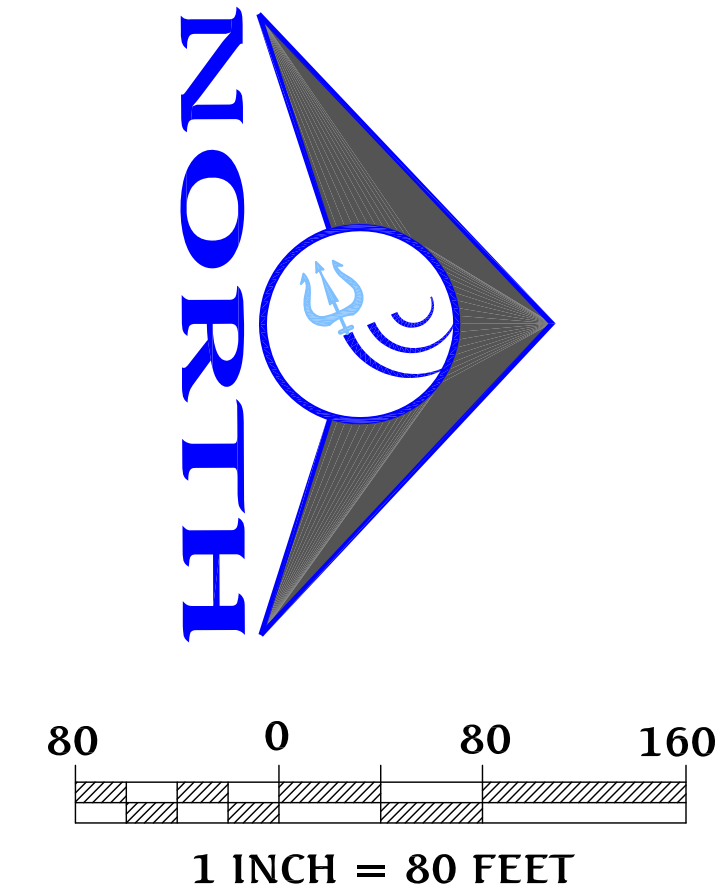
Runoff flow approaching from the west in the La Madre Way alignment is referenced from the *CLVNWNS* at the Maverick Street intersection as point LAMA as 62 cfs and 200 cfs in the 10- and 100-year storms, respectively. Flow from point CPMAY combines with LAMA in the La Madre/Maverick intersection, where it continues easterly in the La Madre Way street section, to point LAMA1 at the Bronco Street alignment.

There is an existing large-lot residential site at the southwest corner of Bronco Street and Washburn Road. The northern area of this lot (DOF3) and the adjacent street area (BR3) drain to the north into Washburn Road. Likewise, the southern area of the lot (DOF2) and the adjacent street area (BR2) drain to the south into the (partially developed) street section of Bronco Street, where flow continues southerly.



Source: Esri, DigitalGlobe, GeoEye, Earthstar
Getmapping, Aerogrid, IGN, IGP, swisstopo, a
Mapbox, and others

- NOTES: 1. FOR EXTENT OF OFFSITE BASINS, SEE REFERENCE MATERIAL.
2. HYDROLOGIC SOILS GROUPS ARE NOT MAPPED, SINCE ALL
AREAS STUDIED ARE IN THE WORST-CASE CONDITION,
SOILS GROUP "D".



DRAINAGE LEGEND	
XT32	BASIN IDENTIFICATION
—	BASIN BOUNDARY
CPT4	CONCENTRATION POINT
→	FLOW PATH

SUMMARY OF PEAK FLOW RATES				
CONC. POINT/ DRAINAGE AREA	AREA, ACRES	PEAK FLOW, CFS		NOTES
		10-YR	100-YR	
DOF1	4.26	3	8	
MAV	1.71	3	5	
CPMAV		13	36	3
XON1	2.93	3	7	
DOF3	0.49	<1	1	
BR3	0.22	<1	1	
WB	0.50	1	2	
DOF4	1.26	1	2	
CPWB		5	13	
DOF2	0.47	<1	1	
BR2	0.22	<1	1	
CPBR2		1	2	
XON2	12.80	12	28	
WASH		7	23	1
LAMA		62	200	1
LAMA1		75	236	2

Notes:
1. Referenced from City of Las Vegas, Northwest Neighborhood Study,
by PBS & J, Revised September 1999, Existing Conditions
2. Referenced peak flow rates in La Madre Way are added
directly to flows from Maverick Street LAMA+CPMAV=62/200+13/36=75/236
3. Includes peak flow rates from referenced point WASH (7/23 + 6/13 = 13/36)

FIGURE 3

DEVELOPED DRAINAGE DESCRIPTION

For the subject site, "Developed Conditions" refers to worst case conditions, which consists of offsite basins in developed condition, with onsite basins being developed as proposed.

DEVELOPED ONSITE DRAINAGE DESCRIPTION

Referring to *Figure 4, Developed Conditions Drainage Map*, the subject site becomes developed as proposed with 55 single-family residential lots. Runoff from onsite area DON1 flows westerly into Maverick Street.

Runoff flow from onsite area DON2 flows into Denver Street, where it is directed to the south for discharge into La Madre Way.

Runoff flow from onsite area DON3 flows easterly into Bronco Street.

DEVELOPED OFFSITE DRAINAGE DESCRIPTION

Under Developed conditions, the subject site is impacted by runoff flow in the bordering street sections of Washburn Road on the north, Maverick Street on the west, and La Madre Way on the south, as shown on *Figure 4, Developed Conditions Drainage Map*.

Runoff flow approaching from the west in the Washburn alignment is referenced from the *CLVNWNS* at the Maverick Street intersection as point WASH as 7 cfs and 23 cfs in the 10- and 100-year storm events, respectively. Since there is no valley gutter at that location, all the flow in the intersection is expected to flow southerly on the Maverick Street alignment, combining with flow from street area MAV, offsite area DOF1, and onsite area DON1 at point CPMAY.

Runoff flow from street area WBS flows onto the site area DON2, for combination at the southern boundary at point CPDVR.

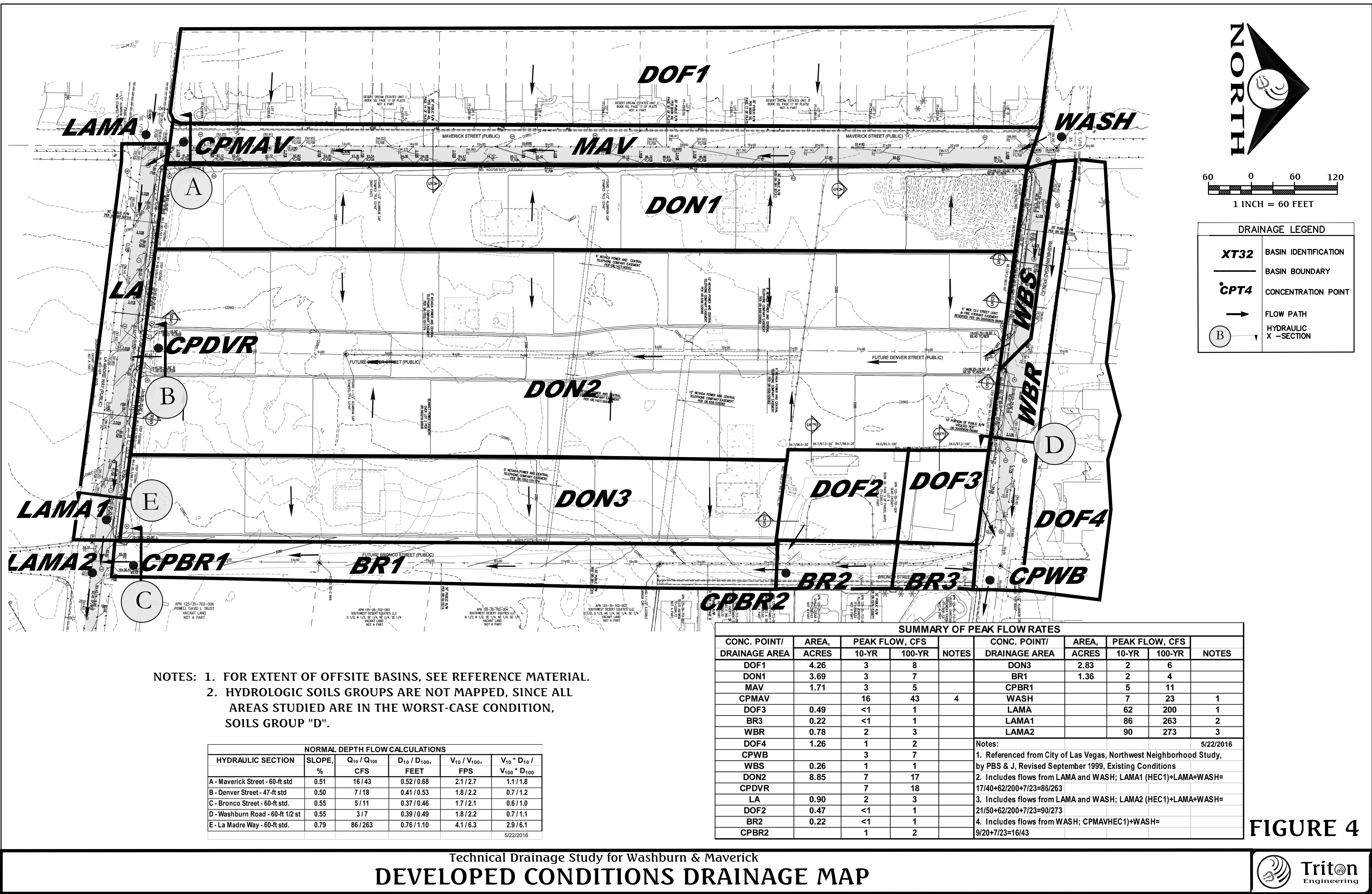
Runoff flow approaching from the west in the La Madre Way alignment is referenced from the *CLVNWNS* at the Maverick Street intersection as point LAMA as 62 cfs and 200 cfs in the 10- and 100-year storms, respectively. Flow from point CPMAY combines with LAMA in the La Madre/Maverick intersection, where it continues easterly in the La Madre Way street section, combining with flow from point CPDVR and street area LA at point LAMA1 just west of the Bronco Street alignment.

Runoff flow from area DOF2 and BR2 combine at point CPBR2 in the Bronco Street alignment, where flow

continues southerly, entering street area BR1. Flow from point CPBR2 combines with flow from street area BR1 and onsite area DON3 at point CPBR1.

Flow from point LAMA1 combines with flow from point CPBR1 at the La Madre/Bronco intersection at point LAMA2.

Runoff flow from street area WBR flows easterly, combining with flow from offsite areas DOF4, DOF3, and BR3 at point CPWB.



Technical Drainage Study for Washburn & Maverick
DEVELOPED CONDITIONS DRAINAGE MAP

HYDROLOGIC ANALYSIS

COMPUTER MODELING

The HEC-1 Flood Hydrograph Package was used to compute the storm water runoff peak flow rates for the hydrologic analysis. Standard Form 4 from the *Drainage Manual* was implemented as a spreadsheet used for tabulation of the variables for input to the HEC-1 modeling program. See appendix for hydrology calculations.

Results of the computer modeling are summarized on Figures 3 and 4 of this report.

RAINFALL

Rainfall depths were calculated based on the CCRFCD Drainage Manual Criteria, which allows application of McCarran Airport rainfall depths of 1.58" and 2.77" in the 10- and 100-year, 6-hour storm events, respectively. In the hydrologic HEC-1 model there were no losses allowed for Depth Area and no losses for hydrograph routing.

RUNOFF

The Soil Conservation Services (SCS) Curve Number methodology was used in this computation within the HEC-1 computer model. The Hydrologic Soils Group for the watershed studied was determined from the USDA Soils Conservation Service to be entirely within Hydrologic Soils Group D, which has the highest potential for precipitation runoff. Mapping of the watershed's Hydrologic Soils Group was not necessary since the entire area is within the same Group. Curve numbers were selected from the Drainage Manual for the land usage and hydrologic condition of each drainage basin.

Times of concentration were calculated on the Drainage Manual Form 4, and were input to the HEC-1 computer model as lag time.

HYDRAULIC ANALYSIS

NORMAL DEPTH STREET CALCULATIONS

Normal street flow depths were calculated using the FlowMaster computer program. All streets were found to meet *Drainage Manual* criteria. Development of the subject site does not worsen the situation in the streets either upstream or downstream of the subject site. Calculations are included in the appendix and summarized on Figure 4, *Developed Conditions Drainage Basins*.

STORM DRAIN COLLECTION

The *CLVNWNS* shows a future 18" storm drain pipe in Washburn Road at the subject site, however, it was found to be unfeasible to construct this pipe. The pipe would be intended to collect nuisance flows in an area that is very flat and could become an issue for maintenance, etc. However, since there is no valley gutter at the Washburn/Maverick intersection, and flows are expected to be minimal, there was no source for nuisance flow in this area, except for flow coming from the large lots on the north side of Washburn Road at the subject site. Development of the subject site does not discharge runoff flow into Washburn Road, so that the amount of flow in the south flow line of the street is minimal and no build up of flow, including nuisance flow, is expected and the collection system is therefore not necessary.

SUMMARY/CONCLUSION

This study and improvement drawings complies with the drainage laws and regulations set forth by the City of Las Vegas and the Clark County Regional Flood Control District.

Development of this site is not expected to have a negative drainage impact on any upstream or downstream properties.

The site is adequately protected from flood damage caused by a 100-year flood or less, as specified by the CCRFCD Hydrologic Criteria and Drainage Design Manual.

This site is not within a Special Flood Hazard Zone as designated by FEMA.

Nuisance flow is released from the site into the lined curb and gutter adjacent street section of La Madre Way.

REFERENCES

Hydrologic Criteria and Drainage Design Manual, by Clark County Regional Flood Control District, Updated 2000.

Clark County Regional Flood Control District Master Plan Update 2008, (Facility update 2013) prepared by PBS&J and VTN Nevada.

<http://websoilsurvey.sc.egov.usda.gov/>

City of Las Vegas Northwest Neighborhood Study (Phase I), (by PBS & J, Inc., September 1999)

Update to Technical Drainage Study for Canyon Ridge Christian Church, (by Advantage Civil Design Group, May 2013) DS 4596

Technical Drainage Study for Treasure Land Residential, (by Aztec Engineering, December 2003) DS 3676

Technical Drainage Study for Lorrain Parc Subdivision, (by Wright Engineering, November 2004) DS 3398

APPENDIX

NOTES

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

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

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

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

0

100

200

400

600

800

MAP LEGEND

—

PARCEL BOUNDARY

—

SUB BOUNDARY

—

PM/LD BOUNDARY

—

ROAD EASEMENT

—

MATCH / LEADER LINE

—

HISTORIC LOT LINE

—

HISTORIC SUB BOUNDARY

—

HISTORIC PM/LD BOUNDARY

—

SECTION LINE

CONDOMINIUM UNIT

AIR SPACE PCL

RIGHT OF WAY PCL

SUB-SURFACE PCL

001

ROAD PARCEL NUMBER

001

PARCEL NUMBER

1.00

ACREAGE

202

PARCEL SUB/SEQ NUMBER

PB 24-45

PLAT RECORDING NUMBER

5

BLOCK NUMBER

5

LOT NUMBER

GL5

GOV. LOT NUMBER

BOOK

T19S R60E

SEC.

35

MAP

N 2 SE 4

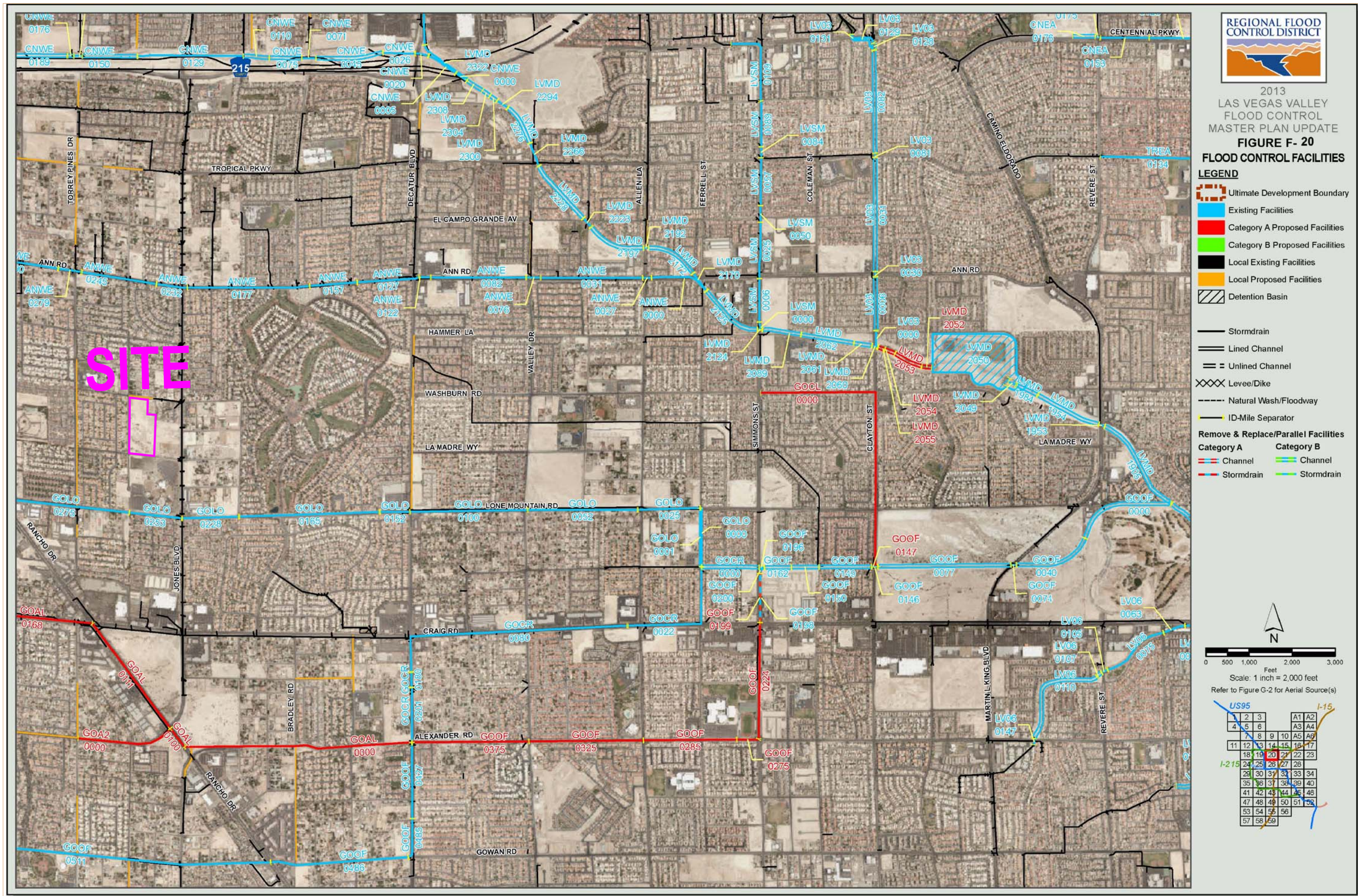
Scale: 1" = 200'

Rev: 02/09/2011

125-35-7



The map displays a grid of land parcels, each identified by a unique number (e.g., 001, 002, 003, etc.). The parcels are color-coded: light blue for general parcels, yellow for parcels with specific acreage (e.g., 0.98, 2.16, 2.15), and green for parcels with specific acreage (e.g., 0.53, 0.53, 0.53). The map also shows various roads and boundaries, including WASHBURN RD, TOPWEED AVE, CHANCE LN, TORREY PINES DR, CHAMBLISS DR, WILDRD RD, DRUMMOND RD, GOLFRIDGE DR, LA MADRE WAY, BRONCO LN, and JONES BLVD. A large area in the center is outlined in red and labeled 'SITE' in large red letters. This area is further divided into sub-sections labeled '701' and '702'. The map also includes several other labels, such as 'DESERT DREAM ESTATES UNIT 1', 'DESERT DREAM ESTATES UNIT 2', 'DESERT DREAM ESTATES UNIT 3', 'LORRYN PARC', 'RICKLEBECK AVE', 'ACKABURG CT', 'THATBOY CT', 'LORRYN PARK ST', 'PT 2', 'PT 4', 'PT 5', 'PT 6', 'PT 7', 'PT 8', 'PT 9', 'PT 10', 'PT 11', 'PT 12', 'PT 13', 'PT 14', 'PT 15', 'PT 16', 'PT 17', 'PT 18', 'PT 19', 'PT 20', 'PT 21', 'PT 22', 'PT 23', 'PT 24', 'PT 25', 'PT 26', 'PT 27', 'PT 28', 'PT 29', 'PT 30', 'PT 31', 'PT 32', 'PT 33', 'PT 34', 'PT 35', 'PT 36', 'PT 37', 'PT 38', 'PT 39', 'PT 40', 'PT 41', 'PT 42', 'PT 43', 'PT 44', 'PT 45', 'PT 46', 'PT 47', 'PT 48', 'PT 49', 'PT 50', 'PT 51', 'PT 52', 'PT 53', 'PT 54', 'PT 55', 'PT 56', 'PT 57', 'PT 58', 'PT 59', 'PT 60', 'PT 61', 'PT 62', 'PT 63', 'PT 64', 'PT 65', 'PT 66', 'PT 67', 'PT 68', 'PT 69', 'PT 70', 'PT 71', 'PT 72', 'PT 73', 'PT 74', 'PT 75', 'PT 76', 'PT 77', 'PT 78', 'PT 79', 'PT 80', 'PT 81', 'PT 82', 'PT 83', 'PT 84', 'PT 85', 'PT 86', 'PT 87', 'PT 88', 'PT 89', 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ZONING AND PLANNING CONDITIONS

*City of Las Vegas***AGENDA MEMO - PLANNING****PLANNING COMMISSION MEETING DATE: MAY 10, 2016****DEPARTMENT: PLANNING****ITEM DESCRIPTION: APPLICANT: DR HORTON - OWNER: REMARK****REVOCABLE TRUST, ET AL****** STAFF RECOMMENDATION(S) ****

CASE NUMBER	RECOMMENDATION	REQUIRED FOR APPROVAL
ZON-63987	Staff recommends APPROVAL.	
ZON-63988	Staff recommends APPROVAL.	
TMP-63989	Staff recommends APPROVAL, subject to conditions:	ZON-63987 ZON-63988

**** CONDITIONS ******TMP-63989 CONDITIONS****Planning**

1. Approval of the Tentative Map shall be for no more than four (4) years. If a Final Map is not recorded on all or a portion of the area embraced by the Tentative Map with four (4) years of the approval of the Tentative Map, this action is void.
2. In conjunction with creation, declaration and recordation of the subject common-interest community, and prior to recordation of the Covenants, Codes and Restrictions "CC&R"), or conveyance of any unit within the community, the Developer is required to record a Declaration of Private Maintenance Requirements ("DPMR") as a covenant on all associated properties, and on behalf of all current and future property owners. The DPMR is to include a listing of all privately owned and/or maintained infrastructure improvements, along with assignment of maintenance responsibility for each to the common interest community or the respective individual property owners, and is to provide a brief description of the required level of maintenance for privately maintained components. The DPMR must be reviewed and approved by the City of Las Vegas Department of Field Operations prior to recordation, and must include a statement that all properties within the community are subject to assessment for all associated costs should private maintenance obligations not be met, and the City of Las Vegas be required to provide for said maintenance. Also, the CC&R are to include a statement of obligation of compliance with the DPMR. Following recordation, the Developer is to submit copies of the recorded DPMR and CC&R documents to the City of Las Vegas Department of Field Operations.

YK

Conditions Page Two

May 10, 2016 - Planning Commission Meeting

3. All development is subject to the conditions of City Departments and State Subdivision Statutes.

Public Works

4. Dedicate a 20-foot radius on the northeast corner of La Madre Way and Maverick Street and a 20-foot radius at the northwest corner of La Madre Way and Bronco Lane on the Final Map for this site.
5. Construct half street improvements on Washburn Road, Bronco Lane, La Madre Way and Maverick Street matching adjacent public street standards including appropriate transition paving, were legally able, concurrent with the development of this site. All existing paving damaged or removed by this development shall be restored at its original location and to its original width concurrent with development of this site.
6. All public sewers not located in the public right-of-way for this site must be within a Public Sewer Easement or in a Patent Easement with a Declaration of Intent. Prior to approval of construction drawing for this site, provide documentation that a legal right to construct public sewer in La Madre Way exists. Additionally, prepare a Declaration of Utilization for any patent easements that are to be used for the off-site sewer in La Madre Way if required by the Sanitary Sewer Planning Section of the Department of Public Works.
7. A working sanitary sewer connection shall be in place prior to final inspection of any units within this development. Full permanent improvements on all major access streets, including all required landscaped areas between the perimeter wall and adjacent public street, shall be constructed and accepted by the City prior to issuance of any building permits beyond 50% of all units within this development. All off-site improvements adjacent to this site, including all required landscaped areas between the perimeter walls and adjacent public streets, shall be constructed and accepted prior to issuance of building permits beyond 75%. The above thresholds notwithstanding, all required Improvements shall be constructed in accordance with Title 19.02.130.D.
8. A Drainage Plan and Technical Drainage Study must be submitted to and approved by the Department of Public Works prior to the issuance of any building or grading permits or submittal of any construction drawings, whichever may occur first. Provide and improve all drainageways recommended in the approved drainage plan/study. The developer of this site shall be responsible to construct such neighborhood or local drainage facility improvements as are recommended by the City of Las Vegas Neighborhood Drainage Studies and approved Drainage Plan/Study concurrent with development of this site.
9. As per Unified Development Code (UDC) 19.16.060.G, all requirements must be complied with or such future compliance must be guaranteed by an approved performance security method in accordance with UDC sections 19.02.130.C and 19.02.130.E.

Conditions Page Three

May 10, 2016 - Planning Commission Meeting

10. The approval of all Public Works related improvements shown on this Tentative Map is in concept only. Specific design and construction details relating to size, type and/or alignment of improvements, including but not limited to street, sewer and drainage improvements, shall be resolved prior to approval of the construction plans by the City. No deviations from adopted City Standards shall be allowed unless specific written approval for such is received from the City Engineer prior to the recordation of a Final Map or the approval of subdivision-related construction plans, whichever may occur first. Approval of this Tentative Map does not constitute approval of any deviations. If such approval cannot be obtained, a revised Tentative Map must be submitted showing elimination of such deviations.

Staff Report Page One

May 10, 2016 - Planning Commission Meeting

**** STAFF REPORT ******PROJECT DESCRIPTION**

The applicant is requesting two Rezoning (ZON-63987 and 63988) applications to change the zoning district from U (Undeveloped) [R (Rural Density Residential) General Plan Designation] to R-D (Single Family Residential-Restricted). The land is currently undeveloped. Staff recommends approval of the request as the density of the proposal is compatible with the existing surrounding residential developments. If denied, the parcels would remain unchanged.

The applicant is also requesting a related Tentative Map (TMP-63989) for a 55-lot subdivision. The subdivision is designed to meet all Title 19 code requirements. Staff recommends approval of the Rezoning and Tentative Map applications. If denied, no permits would be issued for the project.

BACKGROUND INFORMATION

<i>Related Relevant City Actions by P&D, Fire, Bldg., etc</i>	
02/05/03	The City Council approved Annexation (A-0038-02) as part of a larger 495 acre request that included this site.

<i>Most Recent Change of Ownership</i>	
08/26/13 and 08/28/15	Deeds were recorded for a change in ownership of parcels 125-35-701-001 through 003 and 005 through 010.

<i>Related Building Permits/Business Licenses</i>	
No related permits for this project have been issued.	

<i>Pre-Application Meeting</i>	
03/23/16	Staff met with the applicant and reviewed a proposed 55-lot single family residential subdivision located at the southeast corner of Washburn Road and maverick Street. Staff determined that two zoning applications and a tentative map application would be required. No issues were noted at this meeting.

<i>Neighborhood Meeting</i>	
05/05/2016	A voluntary neighborhood meeting is scheduled for 6:00 p.m. on Thursday at the YMCA at 3521 N. Durango Drive.

Staff Report Page Two

May 10, 2016 - Planning Commission Meeting

Field Check	
03/31/2016	Staff visited the site and found undeveloped raw desert. No issues were noted.

Details of Application Request	
Site Area	
Net Acres	15.47

<i>Surrounding Property</i>	<i>Existing Land Use Per Title 19.12</i>	<i>Planned or Special Land Use Designation</i>	<i>Existing Zoning District</i>
Subject Property	Undeveloped	R (Rural Density Residential)	U(R) [Undeveloped (Rural Density Residential)]
			R-D (Single Family Residential-Restricted)
North	Single Family, Detached	R (Rural Density Residential)	R-E (Residence Estates)
South	Church/House of Worship	PF (Public Facilities)	C-V (Civic)
East	Single Family, Detached	R (Rural Density Residential)	R-PD3 (Residential Planned Development – three Units per Acre)
	Undeveloped		U(R) [Undeveloped (Rural Density Residential)]
			R-D (Single Family Residential-Restricted)
West	Single Family, Detached	L (Low Density Residential)	R-D (Single Family Residential-Restricted)

Master Plan Areas	Compliance
No Applicable Master Plan Area	N/A
Special Purpose and Overlay Districts	Compliance
A-O (Airport Overlay) District 175 - Feet	Y
Rural Preservation Overlay District	N*
Other Plans or Special Requirements	Compliance
Trails	N/A
Las Vegas Redevelopment Plan Area	N/A
Project of Significant Impact (Development Impact Notification Assessment)	N/A
Project of Regional Significance	N/A

*A small portion along the north side of the project is within the Rural Preservation Overlay District and the proposed density is more than the protected area.

DEVELOPMENT STANDARDS

Pursuant to Title 19.06.060, the following standards apply:

Standard	Required/Allowed	Provided	Compliance
Min. Lot Size	10,000 SF	10,129 SF	Y
Min. Lot Width	80 Feet	80 Feet	Y
Min. Setbacks			
• Front	25 Feet	25 Feet	Y
• Side	5 Feet	5 Feet	Y
• Corner	15 Feet	15 Feet	Y
• Rear	30 Feet	30 Feet	Y
Max. Lot Coverage	N/A	N/A	N/A
Max. Building Height	35 Feet	35 Feet	Y
Mech. Equipment	Screened	Screened	Y

The following table is based on the entire project as a whole:

Existing Zoning	Permitted Density	Units Allowed	Units Proposed
U(R) [Undeveloped (Rural Density Residential)]	3.59	55	55
Proposed Zoning	Permitted Density	Units Allowed	
R-D (Single Family Residential-Restricted)	3.59	55	55
General Plan	Permitted Density	Units Allowed	
R (Rural Density Residential)	3.59	55	55

Street Name	Functional Classification of Street(s)	Governing Document	Actual Street Width (Feet)	Compliance with Street Section
Washburn Road	Minor Collector Street	Planned Streets and Highways Map	60	Y
Maverick Street				
Bronco Street				
La Madre Way				
Denver Street	Residential Street	Title 19.04	47	Y

Streetscape Standards	Required	Provided	Compliance
Minor Collector Streets	Five-foot amenity area at back of curb and an adjacent five-foot wide sidewalk.	Five-foot sidewalk at back of curb.	Y*

Staff Report Page Four

May 10, 2016 - Planning Commission Meeting

Streetscape Standards	Required	Provided	Compliance
Residential Street (Narrow Lot)	Five-foot wide sidewalk at the back of curb.	Five-foot wide sidewalk at the back of curb.	Y

*The Department of Public Works has approved Deviations from the Complete Street Standards for this infill project in order for the project to match the existing conditions of adjacent developments.

Pursuant to Title 19.08 and 19.12, the following parking standards apply:

Parking Requirement							
<i>Use</i>	<i>Gross Floor Area or Number of Units</i>	<i>Required</i>		<i>Provided</i>		<i>Compliance</i>	
		<i>Parking Ratio</i>	<i>Parking</i>		<i>Parking</i>		
			Regular	Handi-capped	Regular	Handi-capped	
Single Family, Detached	55	Two Spaces Per Lot	110				
TOTAL SPACES REQUIRED			110		110		Y
Regular and Handicap Spaces Required			110	0	110	0	Y

ANALYSIS

The applicant is requesting two zoning applications both of which will take parcels located on the north and south of the project from U (Undeveloped) [R (Rural Density Residential) General Plan Designation] to R-D (Single Family Residential-Restricted). The intent is to bring the entire project under the same zoning designation as the parcels located between these requests. The R-D (Single Family Residential-Restricted) is an allowed designation under the R (Rural Density Residential) land use designation and will align with the surrounding zoning designations. Staff supports these applications.

The proposed 55-lot subdivision is designed to seamlessly fit in with the surrounding community. This project will not be a typically walled-in community. The homes will front onto the existing streets with one proposed new street bisecting the project from north to south. A Homeowners Association will be created to maintain the proposed 5,020 square feet of open space. This space is primarily located along La Madre Way and Washburn Road as landscape buffers. The Complete Street Standards have an approved Deviation by The Department of Public Works for Washburn Road, La Madre Way, Maverick Street and Bronco Street. The proposed local street, Denver Street, will meet the Complete Street Standards.

Staff Report Page Five

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The lot sizes of the proposed development range from 10,129 square feet up to 13,279 square feet. No proposed model homes for the development were offered by the applicant. A detailed review of the floor plans will occur during the plan check and permitting process to assure all setback and code requirements of the R-D (Single Family Residential-Restricted) are being provided and met.

The northern portion of the development, along Washburn Road, is located within the Rural Preservation Overlay Buffer Area. This requires the applicant to justify any request for an increased residential zoning development. This project, if approved, will permit smaller lots than the protected residential areas. The applicant believes that the proposed lot sizes are similar in size to other residential lots in the area and therefore, should be approved.

Public Works staff provided the following comment, “This project will add approximately 526 trips per day on La Madre Way, Maverick Street, Jones Boulevard and Washburn Road. Maverick Street is currently at nearly one percent of capacity, Jones Boulevard is at nearly 48 percent of capacity and Washburn Road is nearly five percent of capacity. After this project is completed, Maverick Street will expect to be nearly five percent of capacity, Jones Boulevard will be nearly 50 percent of capacity and Washburn Road will be nearly nine percent of capacity. Traffic counts are not available for La Madre Way but are believed to be under capacity. Based on Peak Hour use, this development will add about 56 additional vehicle trips, or about one every minute”.

The Clark County School District was sent a copy of this proposed residential project for review and comments, but staff received no comments either supporting or opposing the proposal.

The submitted east/west cross sections depict maximum natural grade less than 2% across this site. Per the Tables in Subdivision Code 19.06.050, a development with natural slopes less than 2%, is allowed a maximum four-foot retaining wall. There is one four-foot and one 1.33-foot retaining wall interior to the site.

The submitted north/south cross section depicts maximum natural grade less than 2% across this site. Per the Tables in Subdivision Code 19.06.050, a development with natural slopes less than 2%, is allowed a maximum four-foot retaining wall. There is one retaining wall interior to the site and it is less than one-foot in height.

FINDINGS (ZON-63987)

In order to approve a Rezoning application, pursuant to Title 19.16.090(L), the Planning Commission or City Council must affirm the following:

- 1. The proposal conforms to the General Plan.**

The proposed Rezoning to R-D (Single Family Residential-Restricted) conforms to the density range allowed by the existing R (Rural Density Residential) General Plan land use designation and supports Objective 2.6., that states: “to improve the amount and quality of infill development on vacant and underutilized lands within established areas of the city.”

2. **The uses which would be allowed on the subject property by approving the rezoning will be compatible with the surrounding land uses and zoning districts.**

The detached single-family residential use proposed on the subject property is proposed at an appropriate density with the surrounding properties and is therefore, compatible with the density uses and zoning designations of these surrounding properties. The average lot size for this proposed development is close to 11,000 square feet.

3. **Growth and development factors in the community indicate the need for or appropriateness of the rezoning.**

From November 2014 to November 2015 there has been an 11.4% increase in the number of housing permits requested in the City of Las Vegas. The density and size of the lots proposed for the property to be rezoned will resemble the development pattern of surrounding properties. The proposed Rezoning is therefore appropriate.

4. **Street or highway facilities providing access to the property are or will be adequate in size to meet the requirements of the proposed zoning district.**

The project is accessed from Washburn Road, Bronco Street, Maverick Street and La Madre Way all are 60-foot wide Residential Streets with sufficient capacity for the traffic needs of the proposed use. In addition, a proposed new 47-foot wide Local Street (Denver Street) will bisect the site for additional access.

FINDINGS (ZON-63988)

In order to approve a Rezoning application, pursuant to Title 19.16.090(L), the Planning Commission or City Council must affirm the following:

1. **The proposal conforms to the General Plan.**

The proposed Rezoning to R-D (Single Family Residential-Restricted) conforms to the density range allowed by the existing R (Rural Density Residential) General Plan land use designation and supports Objective 2.6., that states: “to improve the amount and quality of infill development on vacant and underutilized lands within established areas of the city.”

2. **The uses which would be allowed on the subject property by approving the rezoning will be compatible with the surrounding land uses and zoning districts.**

The detached single-family residential use proposed on the subject property is proposed at an appropriate density with the surrounding properties and is therefore, compatible with the density uses and zoning designations of these surrounding properties. The average lot size for this proposed development is close to 11,000 square feet.

3. **Growth and development factors in the community indicate the need for or appropriateness of the rezoning.**

From November 2014 to November 2015 there has been an 11.4% increase in the number of housing permits requested in the City of Las Vegas. The density and size of the lots proposed for the property to be rezoned will resemble the development pattern of surrounding properties. The proposed Rezoning is therefore appropriate.

4. **Street or highway facilities providing access to the property are or will be adequate in size to meet the requirements of the proposed zoning district.**

The project is accessed from Washburn Road, Bronco Street, Maverick Street and La Madre Way all are 60-foot wide Residential Streets with sufficient capacity for the traffic needs of the proposed use. In addition, a proposed new 47-foot wide Local Street (Denver Street) will bisect the site for additional access.

FINDINGS (TMP-63989)

The proposed Tentative Map conforms to Nevada Revised Statutes and Title 19 development standards and is compatible with the adjacent developments; therefore, staff recommends approval.

NEIGHBORHOOD ASSOCIATIONS NOTIFIED

22

NOTICES MAILED

246 - ZON-63987
216 - ZON-63988
337 - TMP-63989

APPROVALS

0 - ZON-63987
0 - ZON-63988
0 - TMP-63989

PROTESTS

1 - ZON-63987
1 - ZON-63988
1 - TMP-63989

LEGAL DESCRIPTION

(APN'S: 125-35-701-001, 002 & 003)

THAT PORTION OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., DESCRIBED AS FOLLOWS:

LOTS ONE (1), TWO (2) AND THREE (3), AS SHOWN BY MAP THEREOF ON FILE IN FILE 32 OF PARCEL MAPS, PAGE 3, IN THE OFFICE OF THE COUNTY RECORDER OF CLARK COUNTY, NEVADA.

TOGETHER WITH THAT PORTION OF WASHBURN ROAD, THAT WOULD PASS BY OPERATION OF LAW, AS VACATED BY THAT CERTAIN ORDER OF VACATION RECORDED JUNE 29, 2005 IN BOOK 0050629 AS INSTRUMENT NO. 0006068 OF OFFICIAL RECORDS.

(APN'S: 125-35-701-005 & 007)

PARCEL 1 (APN 125-35-701-005):

THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.B. & M., CLARK COUNTY, NEVADA.

EXCEPTING THAT PORTION AS CONVEYED IN DEED RECORDED AUGUST 17, 1966 IN BOOK 381 AS INSTRUMENT NO. 307317 CLARK COUNTY, NEVADA.

PARCEL 2 (125-35-701-007):

NORTHWEST QUARTER (NW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.B. & M.

EXCEPTING THAT PORTION AS CONVEYED IN DEED RECORDED AUGUST 17, 1966 IN BOOK 381 INSTRUMENT NO. 307317 CLARK COUNTY NEVADA.

(APN: 125-35-701-006)

THE EAST HALF (E 1/2) OF THE SOUTH HALF (S 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST M.D.M.

EXCEPTING THEREFROM THE EASTERLY THIRTY (30.00) FEET FOR ROAD PURPOSES AS CONVEYED TO CLARK COUNTY BY DEED RECORDED AUGUST 17, 1962 IN BOOK 381 AS DOCUMENT NO. 307314, OFFICIAL RECORDS.

(APN'S: 125-35-701-008 & 009)

THAT PORTION OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST M.D.M., MORE PARTICULARLY DESCRIBED AS FOLLOWS:

PARCELS ONE (1) AND TWO (2) AS SHOWN BY MAP THEREOF ON FILE IN FILE 14 OF PARCEL MAPS, PAGE 60 IN THE OFFICE OF THE COUNTY RECORDER OF CLARK COUNTY, NEVADA.

(APN: 125-35-701-010)

THE SOUTH HALF (S 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST M.D.M.

EXCEPTING THEREFROM THOSE PORTIONS AS CONVEYED TO CLARK COUNTY BY THOSE CERTAIN GRANT DEEDS RECORDED AUGUST 17, 1962 IN BOOK 381 AS INSTRUMENT NOS. 307314, 307316 AND 307317 OF OFFICIAL RECORDS.

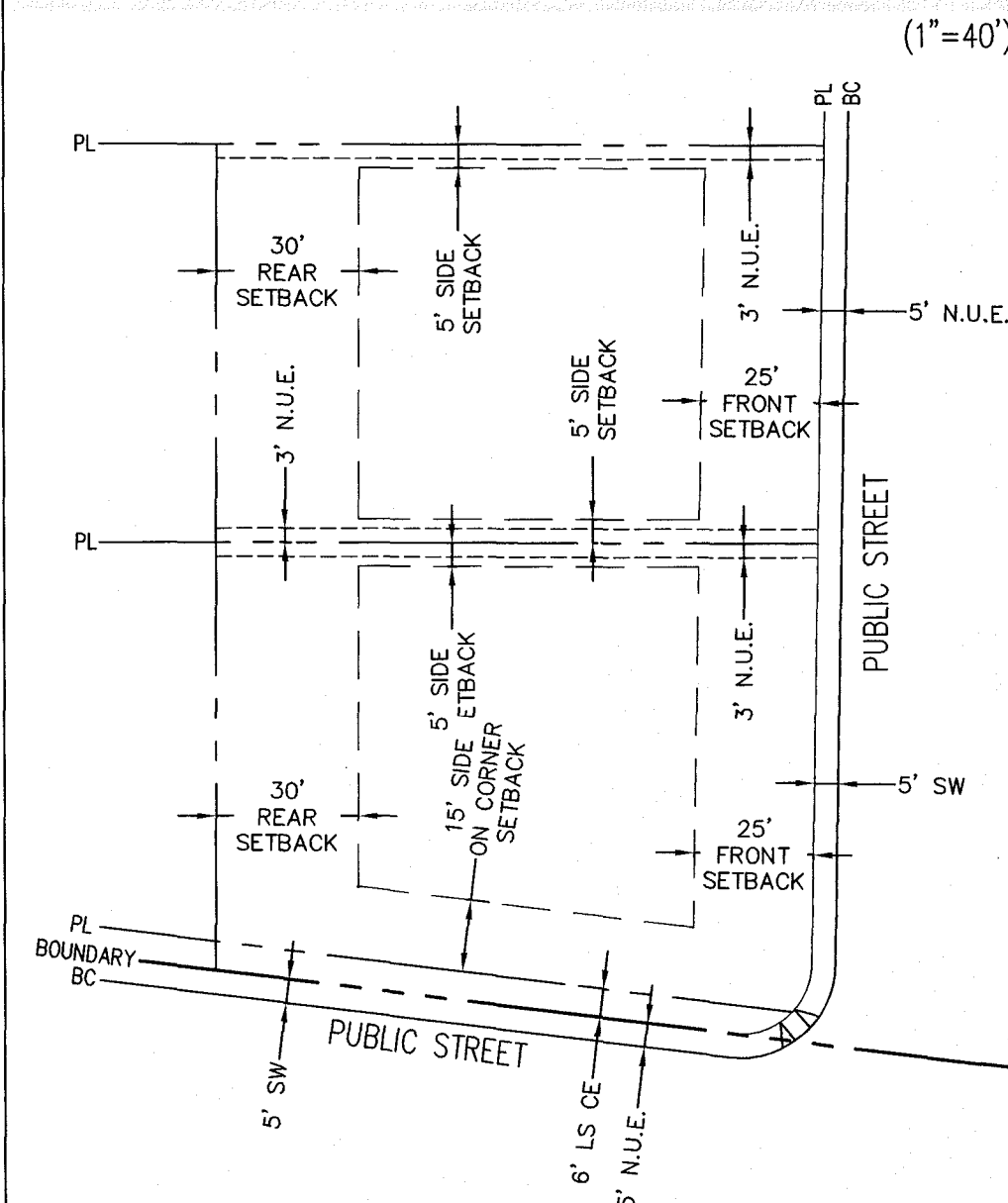
BASIS OF BEARING

NORTH 82°59'56" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 117, PAGE 9 OF PLATS.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK No. 8LV9035E6
RIVET & PLATE IN TOP OF CURB AT THE SOUTHWEST CORNER OF WASHBURN ROAD & MAVERICK STREET.
ELEVATION = 700.720 METERS (NAVD'88 2008 ADJ.)
ELEVATION = 2298.95 U.S. FEET (NAVD'88 2008 ADJ.)

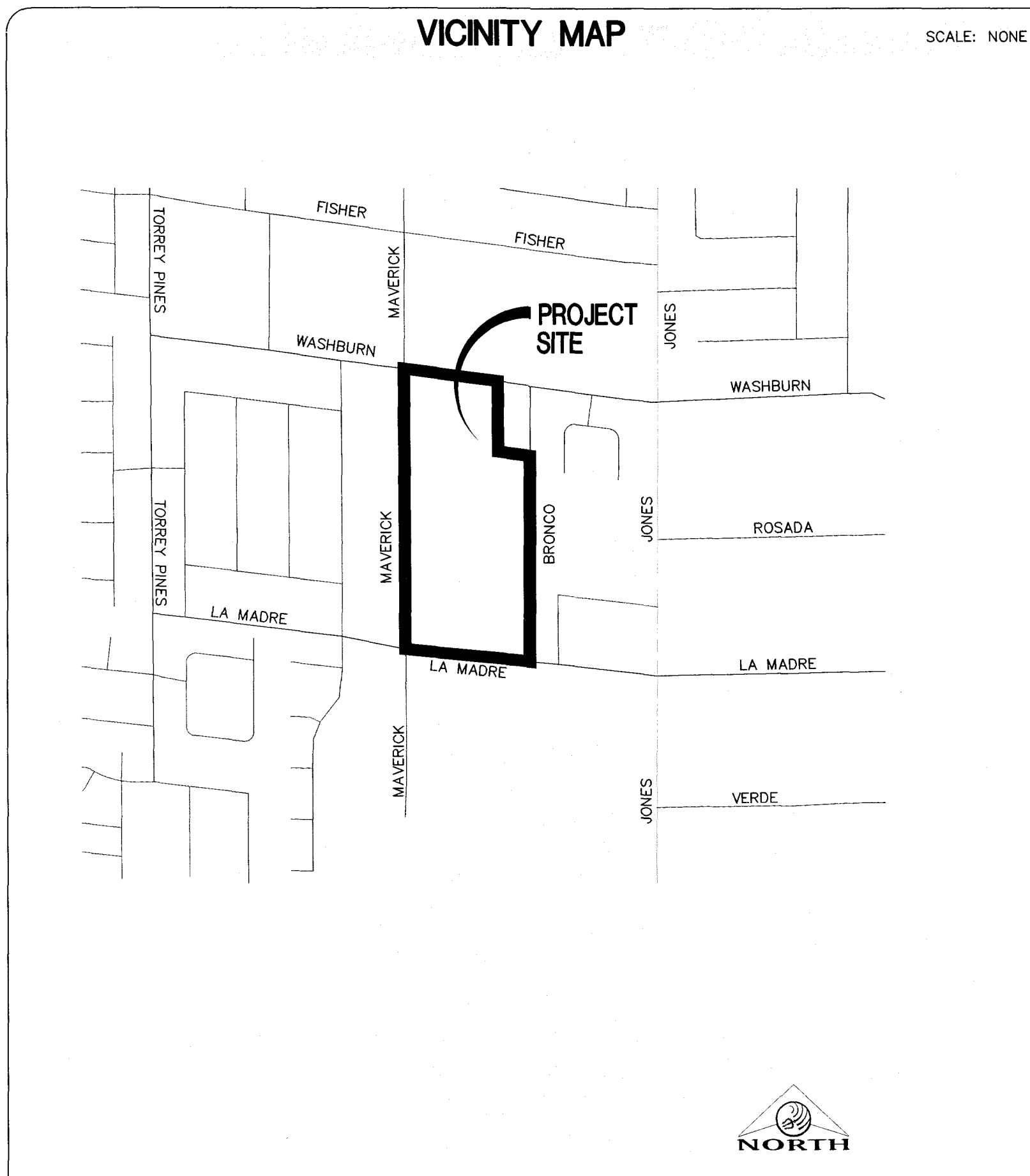
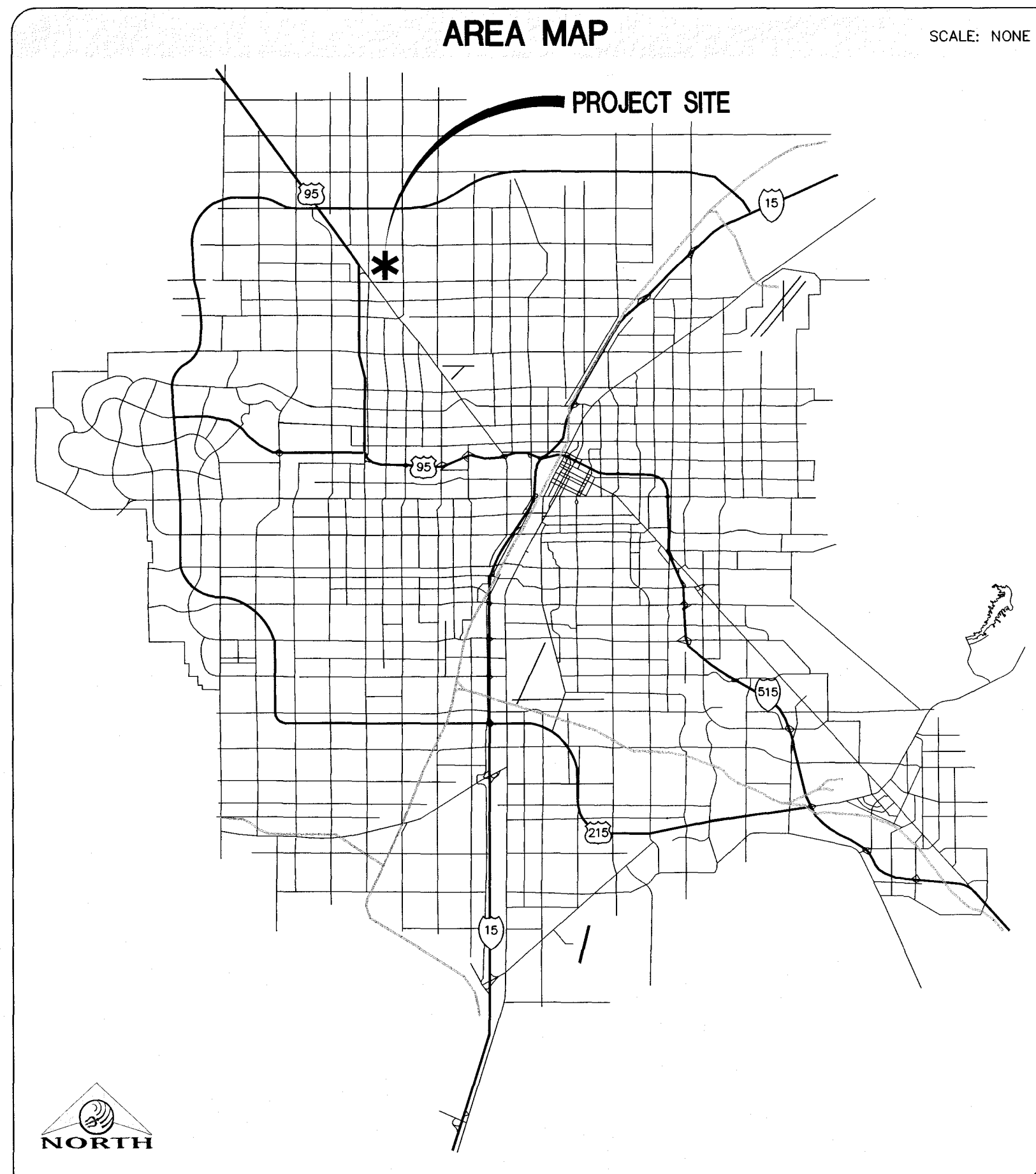
TYPICAL LOT



WASHBURN & MAVERICK

TENTATIVE MAP

A RESIDENTIAL SUBDIVISION



DEVIATIONS NOTE

NO DEVIATIONS

PARKING ANALYSIS

TOTAL LOTS:	55
REQUIRED SPACES: (2 PER HOUSE)	110
PROVIDED SPACES: (2 PER HOUSE)	110

LAND USE TABULATION

LAND USE DESIGNATION	
EXISTING CLV ZONING	U/R
PROPOSED CLV ZONING	U/R
MINIMUM LOT SIZE (SF)	10,129 SF
SITE SUMMARY	
TOTAL UNITS	55 UNITS
GROSS ACREAGE	15.44 ACRES
GROSS DENSITY	3.6 UNITS/ACRE
OPEN SPACE REQUIRED	
OPEN SPACE PROVIDED	NONE
COMMON LOT A	1,428 SF
COMMON LOT B	687 SF
COMMON LOT C	1,432 SF
COMMON LOT D	1,473 SF
TOTAL	5,020 SF

EST. SEWAGE CONTRIBUTION

AVERAGE FLOW = 0.014 MILLION GALLONS PER DAY
PEAK FLOW = 0.049 MILLION GALLONS PER DAY
WET PEAK FLOW = 0.061 MILLION GALLONS PER DAY

NOTES

- ALL EXTERIOR STREETS ARE PUBLIC. ALL INTERIOR STREETS ARE PUBLIC WITH SIDEWALK ON BOTH SIDES OF THE STREET.
- UTILITY SERVICES TO BE PROVIDED BY:
CITY OF LAS VEGAS SEWER
LAS VEGAS VALLEY WATER DISTRICT
CENTURYLINK TELEPHONE
REPUBLIC SERVICES
SOUTHWEST GAS COMPANY
NV ENERGY
- A HOME OWNERS ASSOCIATION WILL BE ESTABLISHED, AND WILL MAINTAIN LANDSCAPING. THEREFORE, CC&R'S WILL BE REQUIRED.
- THERE ARE NO OBSERVABLE FAULTS OR FISSURES LOCATED ON THIS SITE.
- AS PROPOSED, DEVELOPMENT IS CONSIDERED FEASIBLE FROM A GEOTECHNICAL STANDPOINT.
- GROUNDWATER WAS NOT OBSERVED DURING EXCAVATIONS AND IS NOT SHOWN ON MAPS OF KNOWN GROUNDWATER ELEVATIONS IN THE AREA TO BE WITHIN 20 FEET OF THE KNOWN GROUND ELEVATION.
- THIS SITE IS LOCATED IN ZONE X PER FEMA MAP #32003C1765F. ZONE X IS DETERMINED TO BE OUTSIDE THE 100-YEAR FLOODPLAIN.
- SOILS REPORT PREPARED BY:
GEOTEK RESIDENTIAL, LLC
PROJECT No. 12565-LVR
DATED: SEPTEMBER 14, 2015
- WATER SERVICE FOR LOTS 1-15 WILL BE PROVIDED BY AN EXISTING WATER MAIN RUNNING NORTH AND SOUTH ALONG MAVERICK STREET. THE REMAINING 40 LOTS WILL BE SERVICED BY A PROPOSED WATER MAIN WITH THE POC AT WASHBURN ROAD AND LA MADRE WAY.
- SEWER SERVICE WILL BE PROVIDED BY PROPOSED SEWER WITH A POC AT LA MADRE WAY AND JONES BOULEVARD.

GENERAL LEGEND

	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	RIGHT-OF-WAY
	BOUNDARY LINE
	STREET CENTERLINE
	EDGE OF PAVEMENT
	EXISTING CURB, GUTTER, & SIDEWALK
	PROPOSED CURB, GUTTER, & SIDEWALK
	PROPOSED WATER
	EXISTING WATER
	PROPOSED SEWER WITH FLOW DIRECTION
	EXISTING SEWER
	FIRE HYDRANT
	RETAINING WALL
	PROPOSED AC PAVING
	SAWCUT LINE
	EXISTING FENCE
	EXISTING GAS
	EXISTING SEWER MAIN
	PROPOSED SEWER MAIN
	PROPOSED SEWER LATERAL
	EXISTING STORM DRAIN
	PROPOSED STORM DRAIN
	EXISTING WATER MAIN
	PROPOSED WATER MAIN
	PROPOSED FIRE HYDRANT
	LOT NUMBER
	PROPOSED STREETLIGHT
	EXISTING STREETLIGHT

ASSESSOR'S PARCEL NUMBERS

125-35-701-001 THRU 003
125-35-701-005 THRU 010

OWNERS

REMARK REVOCABLE TRUST ETAL MOSAIC FIVE L L C
9500 HILLWOOD DR #201
LAS VEGAS, NV 89134
S W D E 13009 L L C ETAL MAUPERTUIS FRED & JANICE
2056 GLENVIEW DR
LAS VEGAS, NV 89134
BIG T L P ETAL CUSUMANO SHARON
8375 W FLAMINGO RD #4200
LAS VEGAS, NV 89147
SAGUARO EQUITIES L L C
3455 CLIFF SHADOWS PKWY #220
LAS VEGAS, NV 89129-1077
SOUTHWEST DESERT EQUITIES L L C
3455 CLIFF SHADOWS PKWY #220
LAS VEGAS, NV 89129-1077
INVESTOR EQUITY HOMES L L C
AND MOSAIC LAND 2 L L C
3960 HOWARD HUGHES PKWY #150
LAS VEGAS, NV 89169

DEVELOPER

DR HORTON
1081 WHITNEY RANCH DRIVE, SUITE #141
HENDERSON, NEVADA 89014
PHONE: (702) 635-3600

ENGINEER

TRITON ENGINEERING
6757 WEST CHARLESTON BOULEVARD, SUITE B
LAS VEGAS, NV 89146
OFFICE: (702) 254-1480
FAX: (702) 254-3062

SURVEYOR

TRI-CORE SURVEYING
6755 W. CHARLESTON BLVD STE A
LAS VEGAS, NV 89146
OFFICE: (702) 524-4085

INDEX OF DRAWINGS

SHEET NUMBER	DESCRIPTION
1	COVER SHEET
2	TENTATIVE MAP
3	DETAILS
4	SECTIONS

FOR

DR HORTON

1081 WHITNEY RANCH DRIVE, SUITE #141
HENDERSON, NV 89014
PHONE: (702) 635-3600

BY



Triton

Engineering

6757 W. Charleston Boulevard
Suite B
Las Vegas, Nevada 89146

Office: (702) 254-1480
Fax: (702) 254-3062
www.tritoneng.com

Triton

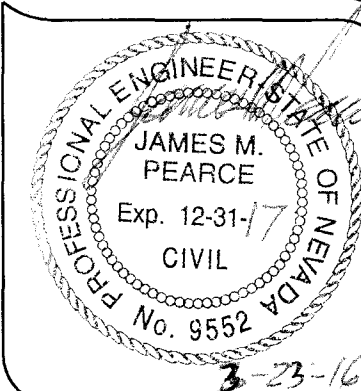
Engineering

Office: (702) 254-1480
Suite B, Charleston Blvd.
Las Vegas, Nevada 89146



DR HORTON
WASHBURN & MAVERICK

COVER SHEET



SHEET 1 OF 4
C.L.V. DWG.#

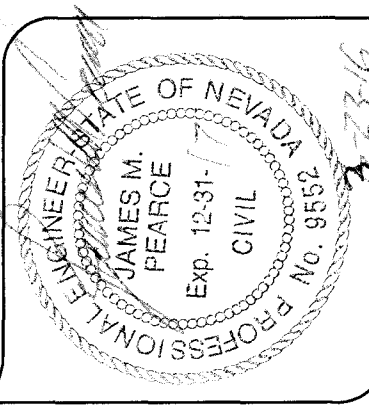
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	CHECKED BY :	
	ADP CHECKED :	
	DATE :	
	PM :	
	DRAWN BY :	
	CHECKED BY :	
	ADP CHECKED :	
	DATE :	
	DESCRIPTION :	
	NO. :	

SCALE : 1" = 50'
JOB NO. : 007.098
ADP CHECKED :
CHECKED BY :
DESIGNED BY :
DRAWN BY :
PM :
DATE :

Triton Engineering
6757 W. Charleston Blvd.
Suite B
Las Vegas, Nevada 89146
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www.tritoneng.com



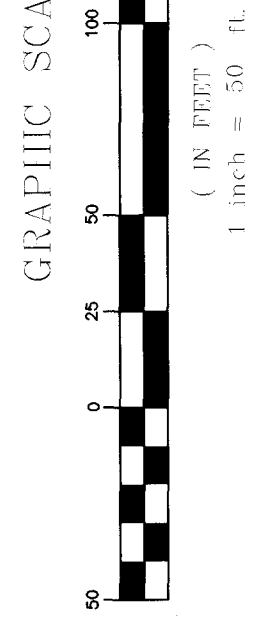
DR HORTON
WASHBURN & MAVERICK
TENTATIVE MAP

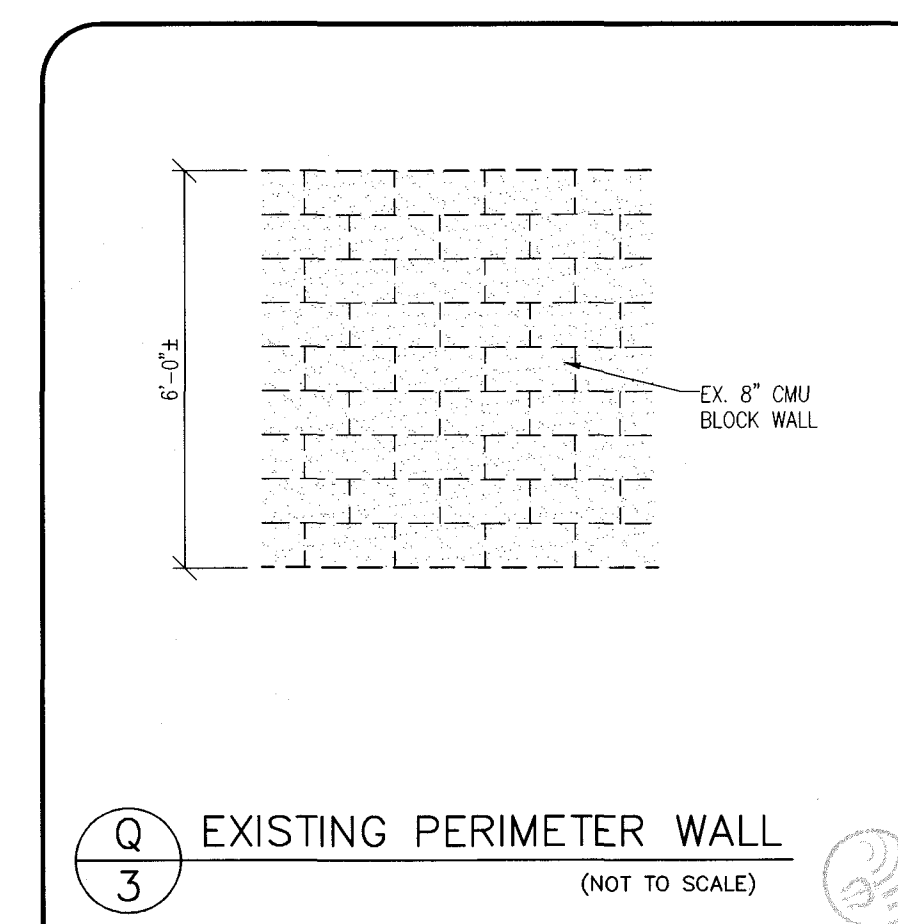
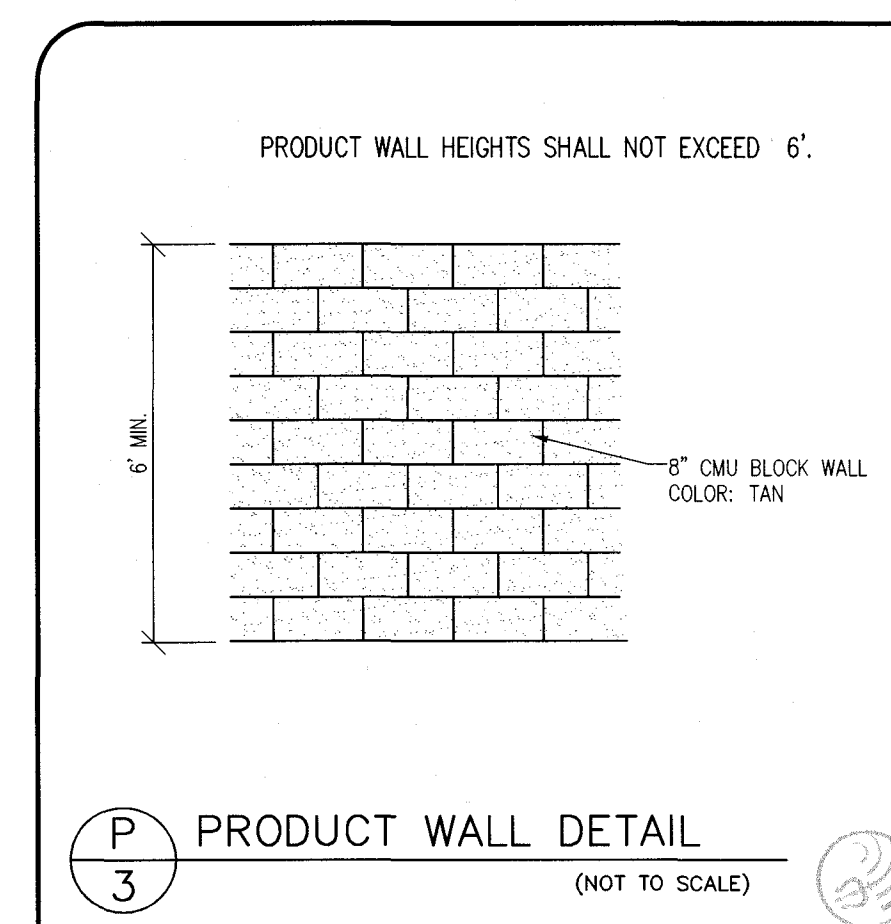
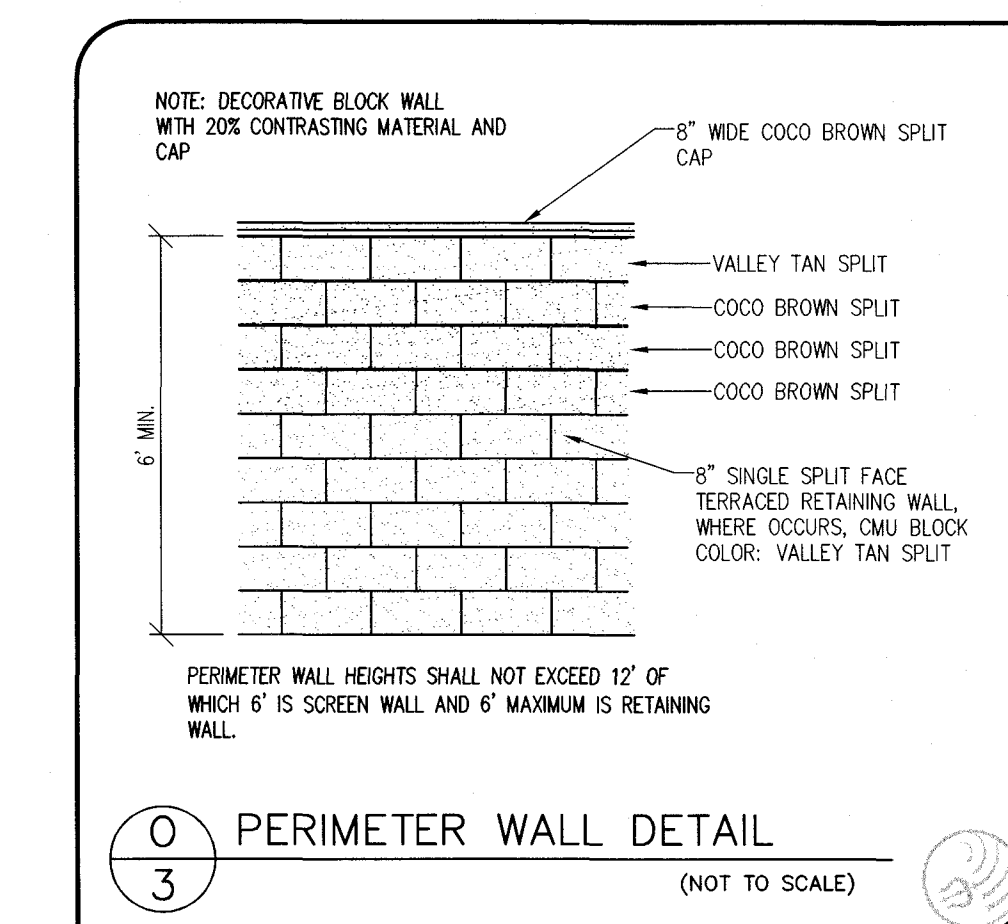
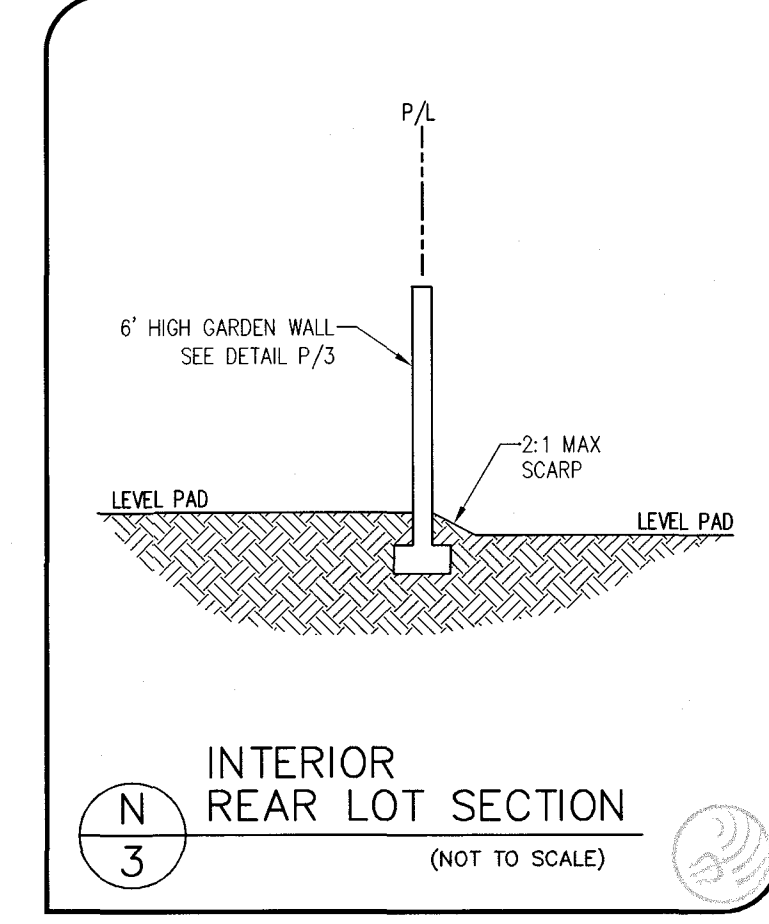
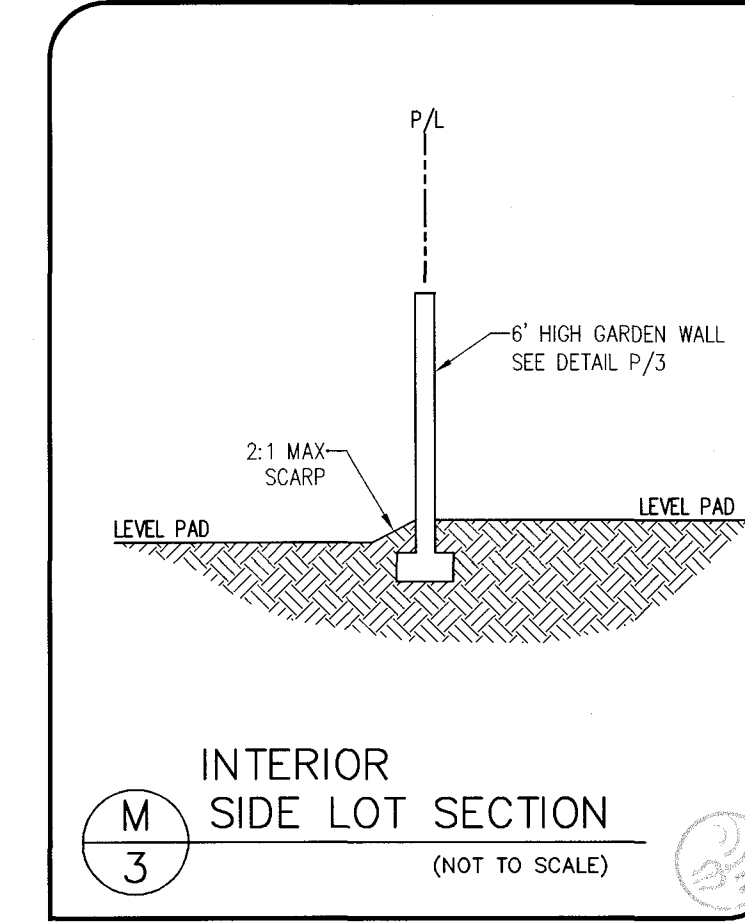
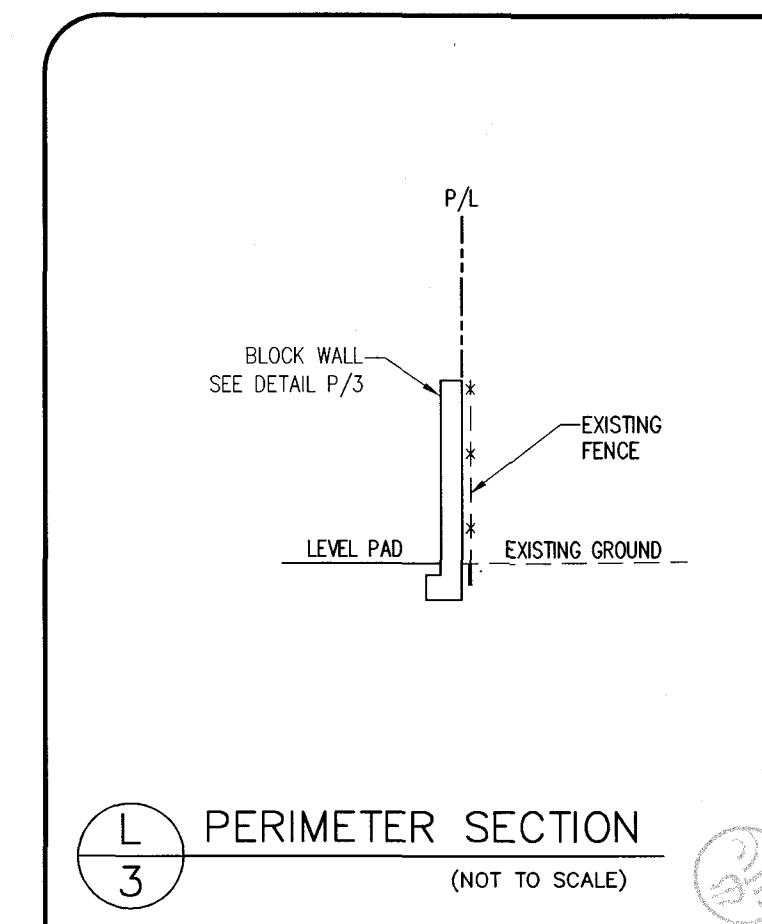
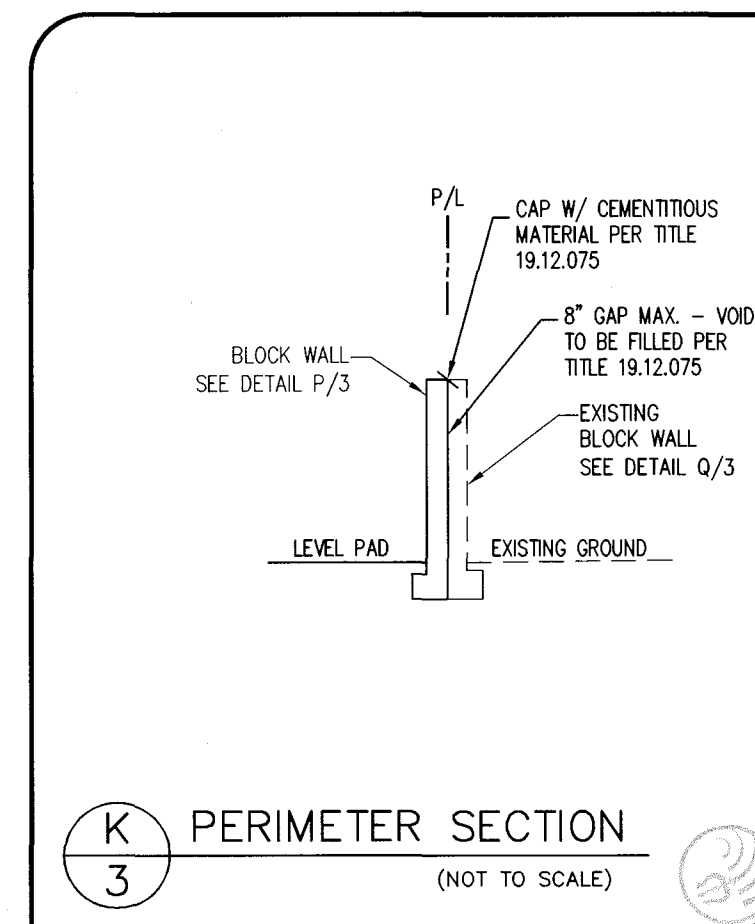
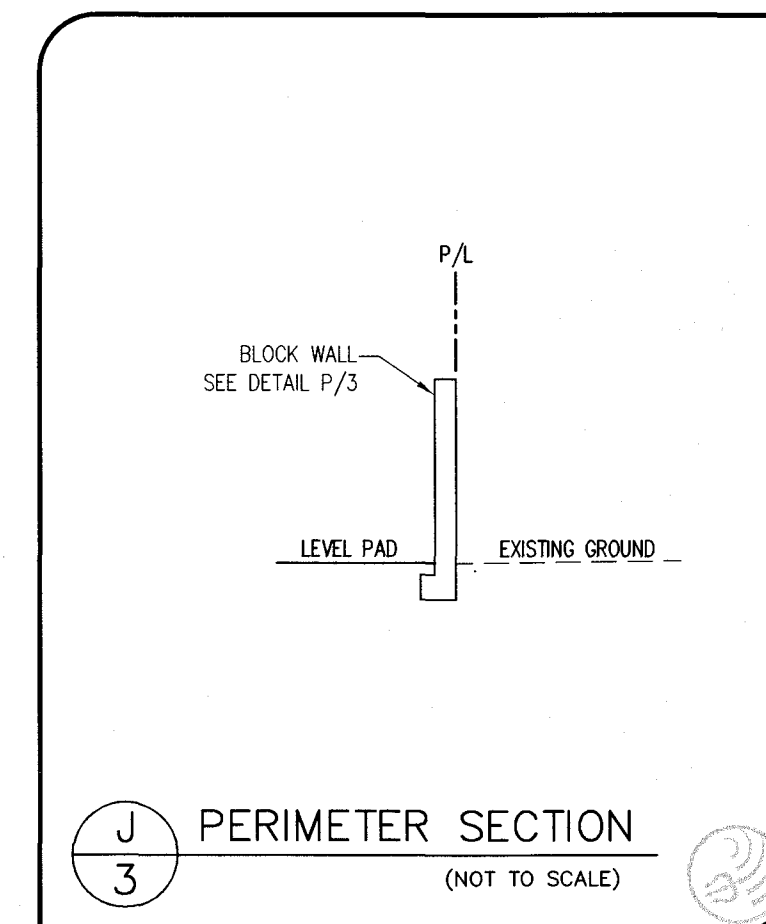
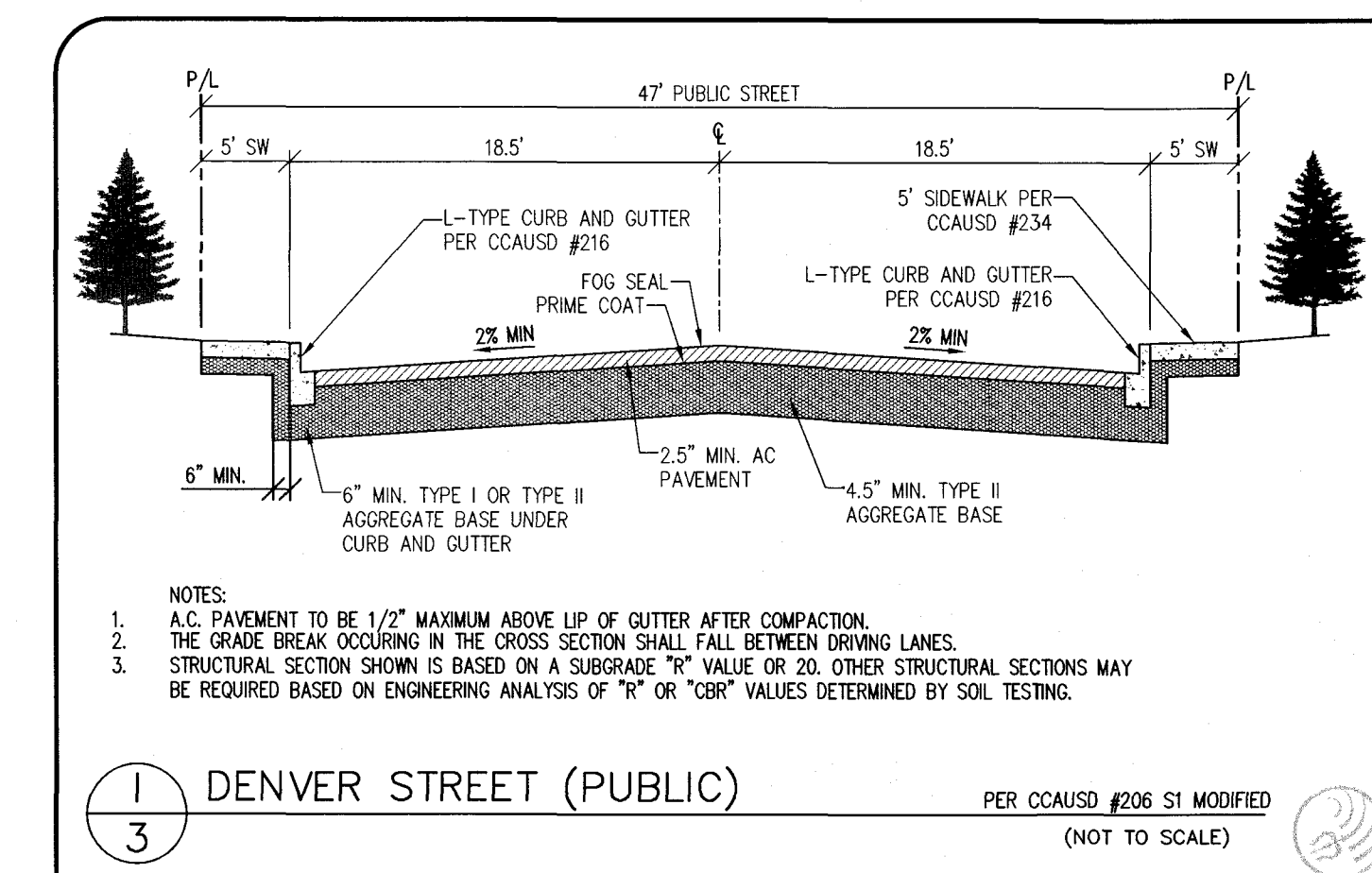
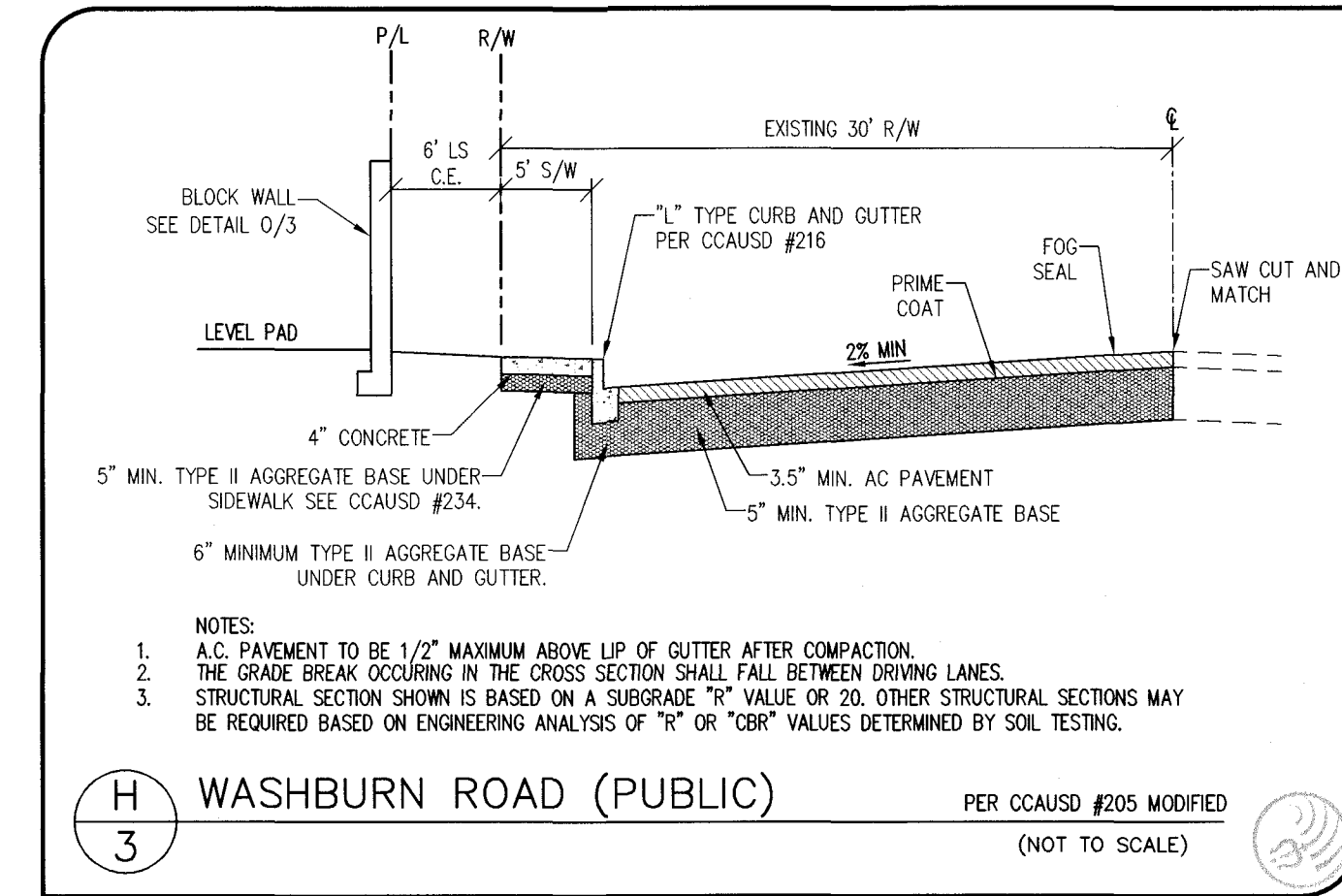
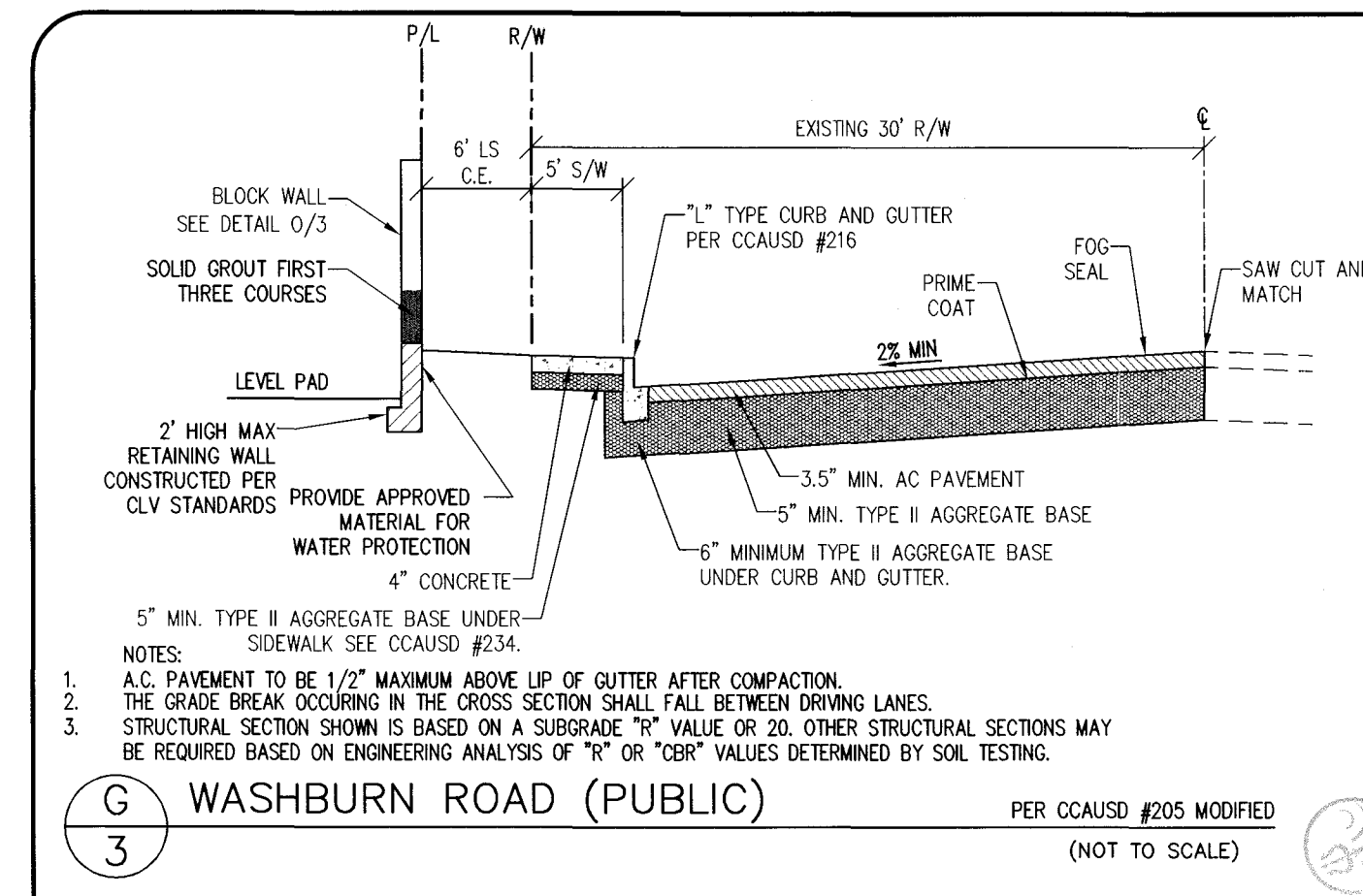
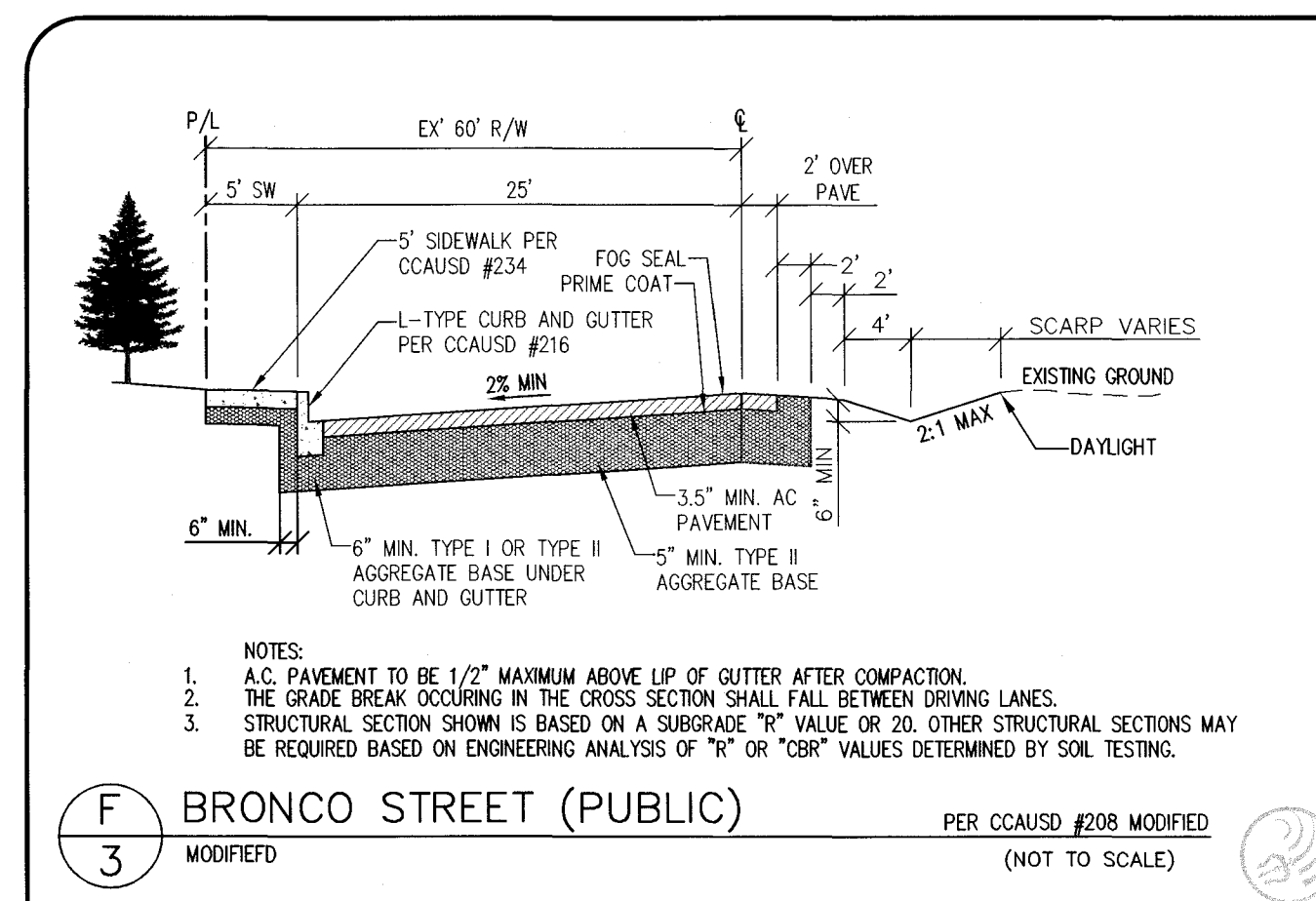
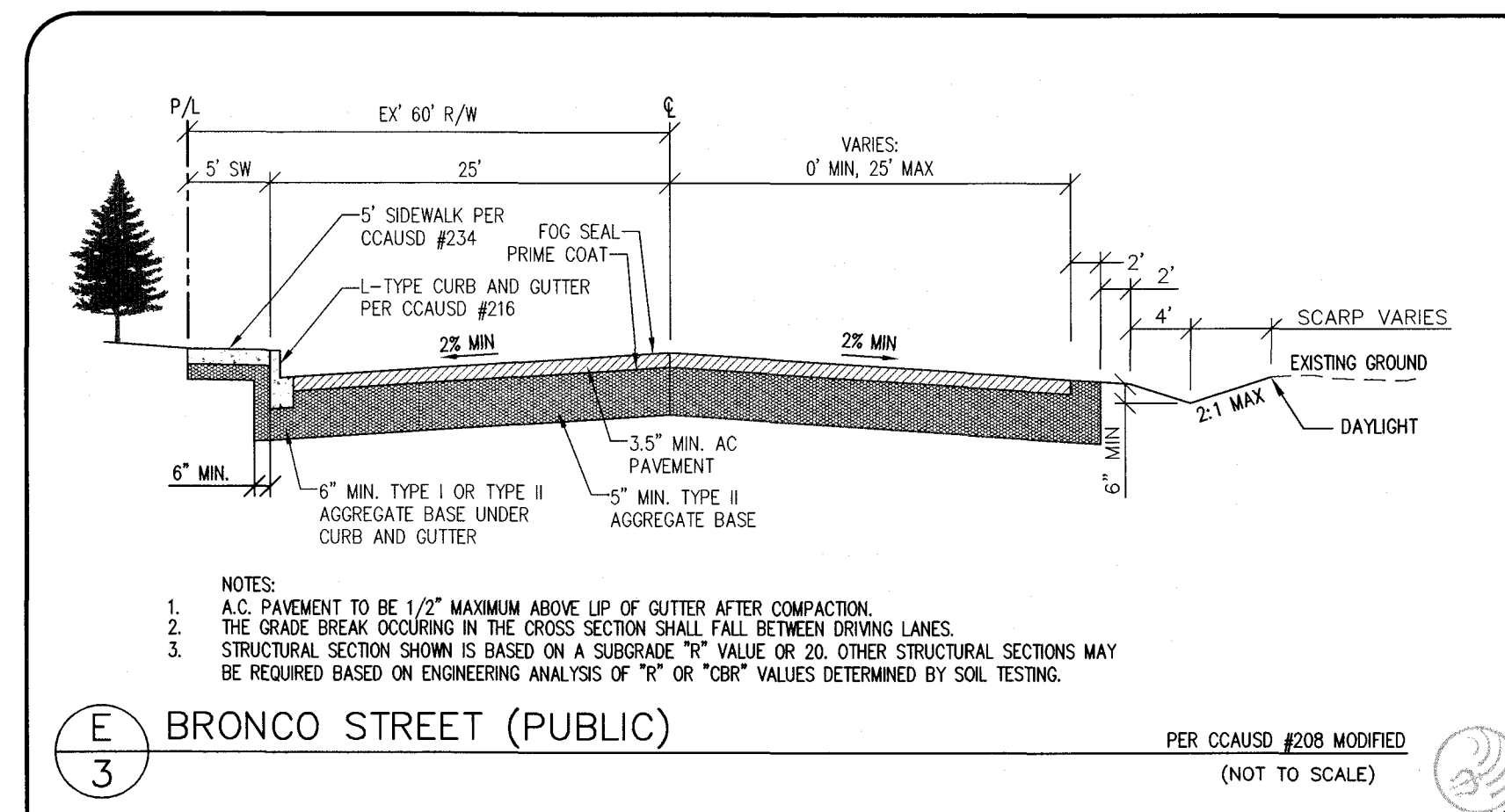
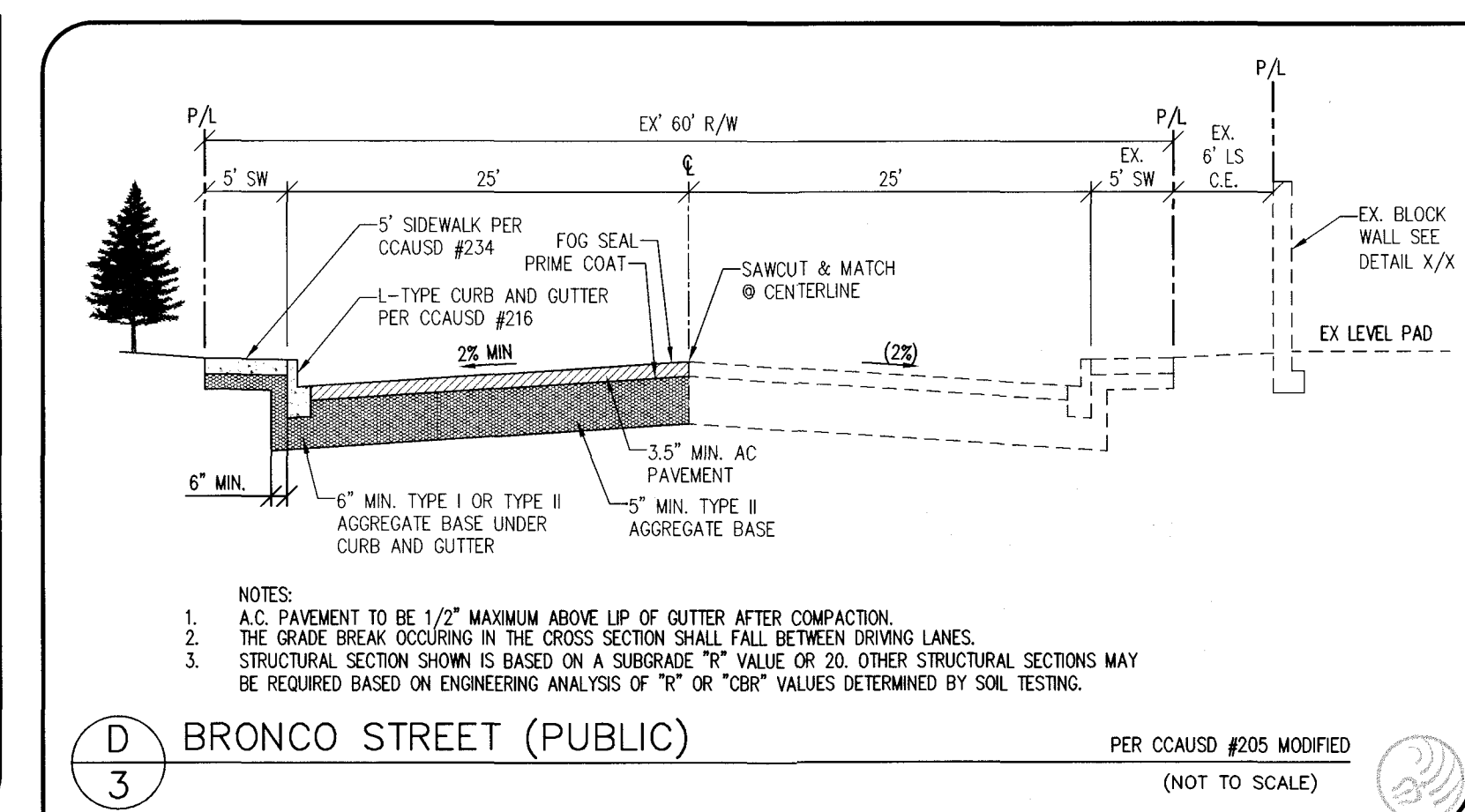
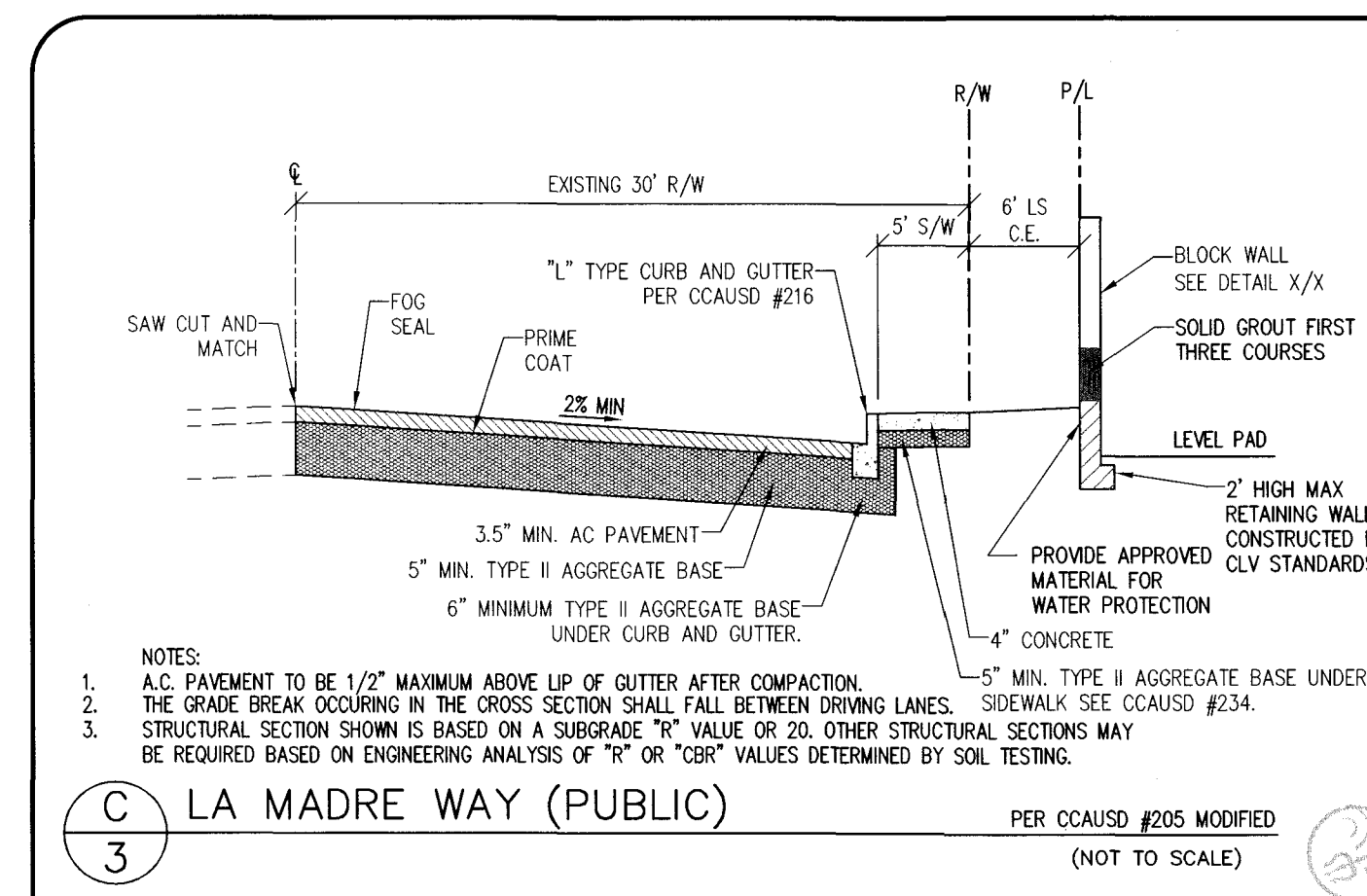
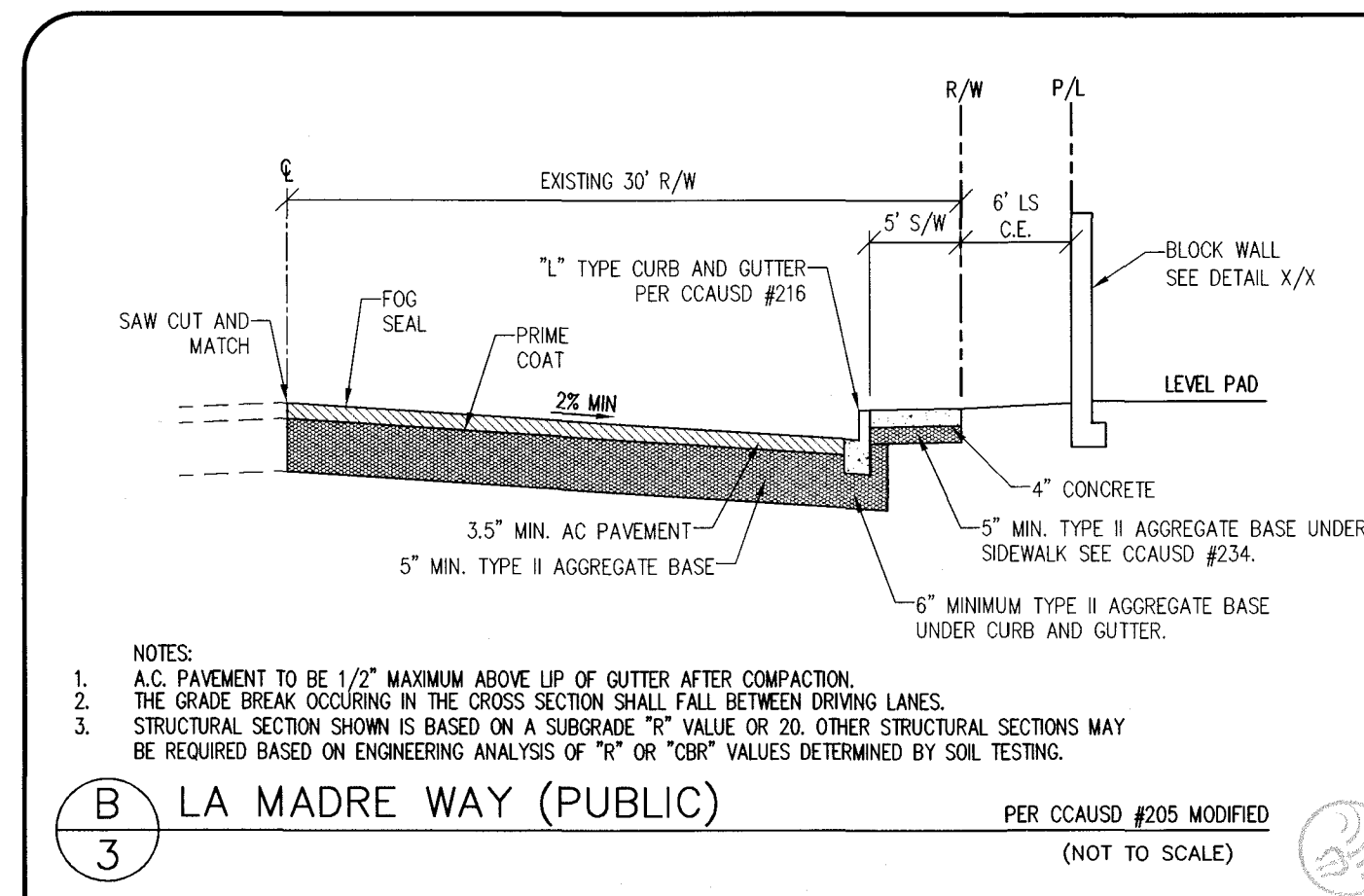
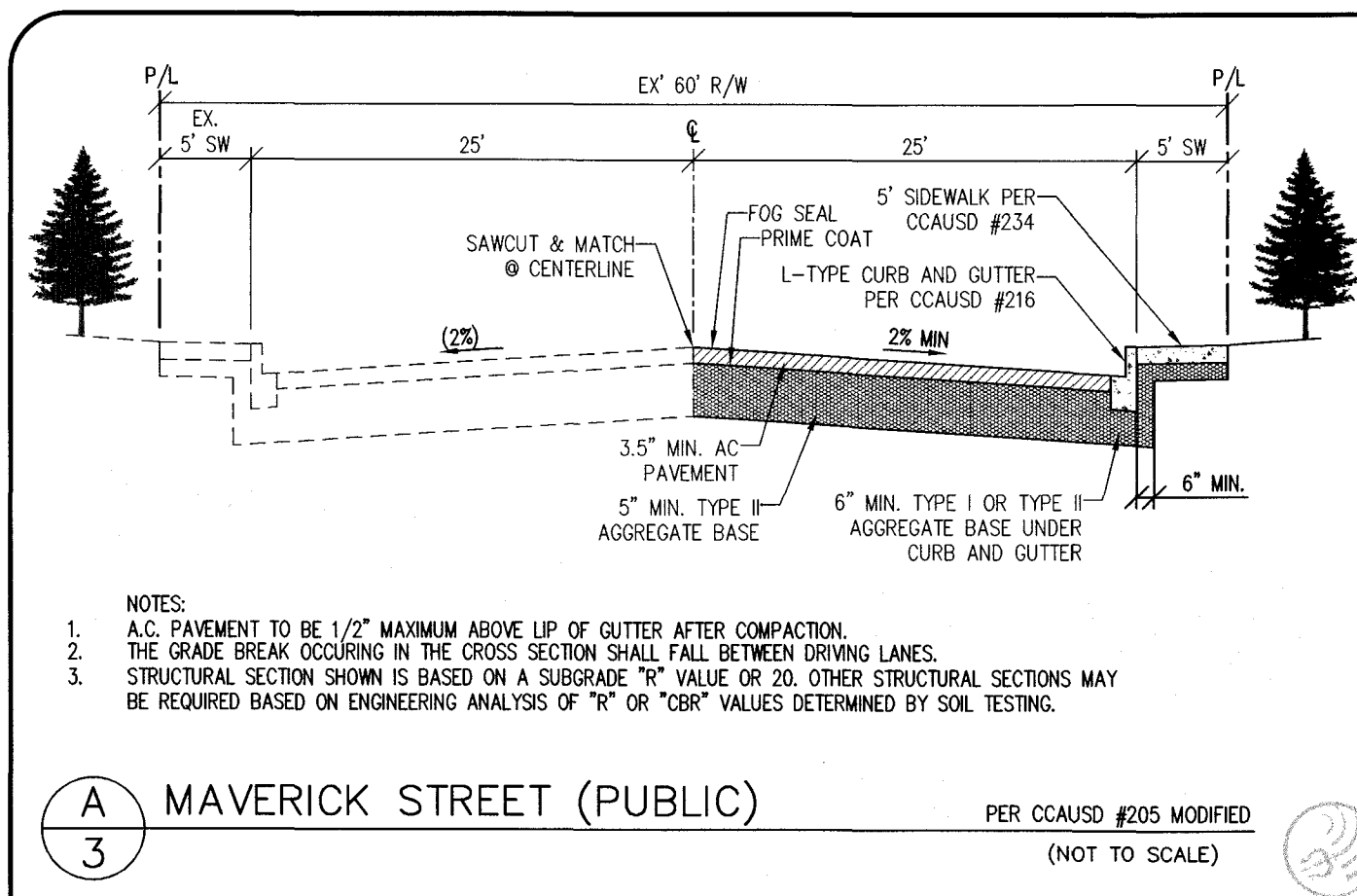


SHEET 2 OF 4
CLV. DWG.#



- CONSTRUCTION NOTES**
- EXISTING CONCRETE BUILDING FOUNDATION TO BE REMOVED.
 - EXISTING CONCRETE PAD TO BE REMOVED.
 - EXISTING CONCRETE PAD WITH WELL CASING TO BE REMOVED.
 - EXISTING CONCRETE SLAB TO BE REMOVED.
 - EXISTING POWER POLE AND GUY TO BE REMOVED.
 - EXISTING POWER POLE TO BE REMOVED.
 - EXISTING POWER POLE TO BE REMOVED.
 - EXISTING 8" METAL PIPE TO BE REMOVED.
 - EXISTING 4"x4" METAL POST TO BE REMOVED.
 - EXISTING FENCE TO BE REMOVED.







HYDROLOGY

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

SIX-HOUR STORM DISTRIBUTIONS

Percent of Total Storm Depth				Percent of Total Storm Depth			
Storm Time (In Minutes)	SDN3	SDN4	SDN5	Storm Time (In Minutes)	SDN3	SDN4	SDN5
0	0.0	0.0	0.0	185	32.2	37.6	43.0
5	2.0	2.0	2.0	190	35.2	41.5	47.7
10	5.7	5.8	5.9	195	40.9	46.2	51.4
15	7.0	7.5	8.0	200	49.9	53.0	56.1
20	8.7	9.9	11.0	205	59.0	61.0	63.0
25	10.8	12.6	14.4	210	71.0	71.0	71.0
30	12.4	13.7	15.0	215	74.4	73.2	72.0
35	13.0	14.5	16.0	220	78.1	75.6	73.1
40	13.0	14.9	16.8	225	81.2	78.2	75.2
45	13.0	15.1	17.1	230	81.9	79.9	77.9
50	13.0	15.5	18.0	235	83.5	81.3	79.0
55	13.0	15.6	18.2	240	85.1	82.3	79.5
60	13.0	15.9	18.7	245	85.6	83.0	80.4
65	13.3	16.2	19.0	250	86.0	83.5	81.0
70	14.0	16.9	19.7	255	86.8	84.4	82.0
75	14.2	17.2	20.2	260	87.6	85.1	82.6
80	14.8	17.9	21.0	265	88.8	86.4	84.0
85	15.8	18.9	22.0	270	91.0	88.5	85.9
90	17.2	20.1	23.0	275	92.6	90.8	88.9
95	18.1	21.1	24.1	280	93.7	92.4	91.0
100	19.0	22.0	25.0	285	95.0	94.4	93.8
105	19.7	22.8	25.9	290	97.0	96.8	96.6
110	19.9	23.2	26.5	295	97.6	97.3	97.0
115	20.0	24.0	28.0	300	98.2	97.8	97.4
120	20.1	24.6	29.0	305	98.5	98.2	97.9
125	20.4	25.2	30.0	310	98.7	98.4	98.1
130	21.4	26.0	30.5	315	98.9	98.6	98.3
135	22.9	26.9	30.9	320	99.0	98.8	98.5
140	24.1	27.6	31.0	325	99.3	99.1	98.9
145	24.9	28.3	31.7	330	99.3	99.2	99.0
150	25.1	28.6	32.1	335	99.4	99.3	99.2
155	25.6	29.2	32.7	340	99.5	99.4	99.3
160	27.0	30.2	33.3	345	99.8	99.7	99.6
165	27.8	31.2	34.6	350	99.8	99.8	99.7
170	28.1	32.1	36.1	355	99.9	99.9	99.9
175	28.3	33.2	38.1	360	100.0	100.0	100.0
180	29.5	35.2	40.8				

- Notes: 1. For drainage areas less than 8 square miles in size, use SDN 3.
 2. For drainage areas greater than or equal to 8 square miles and less than 12 square miles in size, use SDN 4.
 3. For drainage areas greater than or equal to 12 square miles, use SDN 5.
 4. A graphical representation of these values is presented on **Figure 515**.

Revision	Date

REFERENCE:

TABLE 503

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DEPTH-DURATION-FREQUENCY VALUES FOR McCARRAN AIRPORT RAINFALL AREA (IN INCHES)

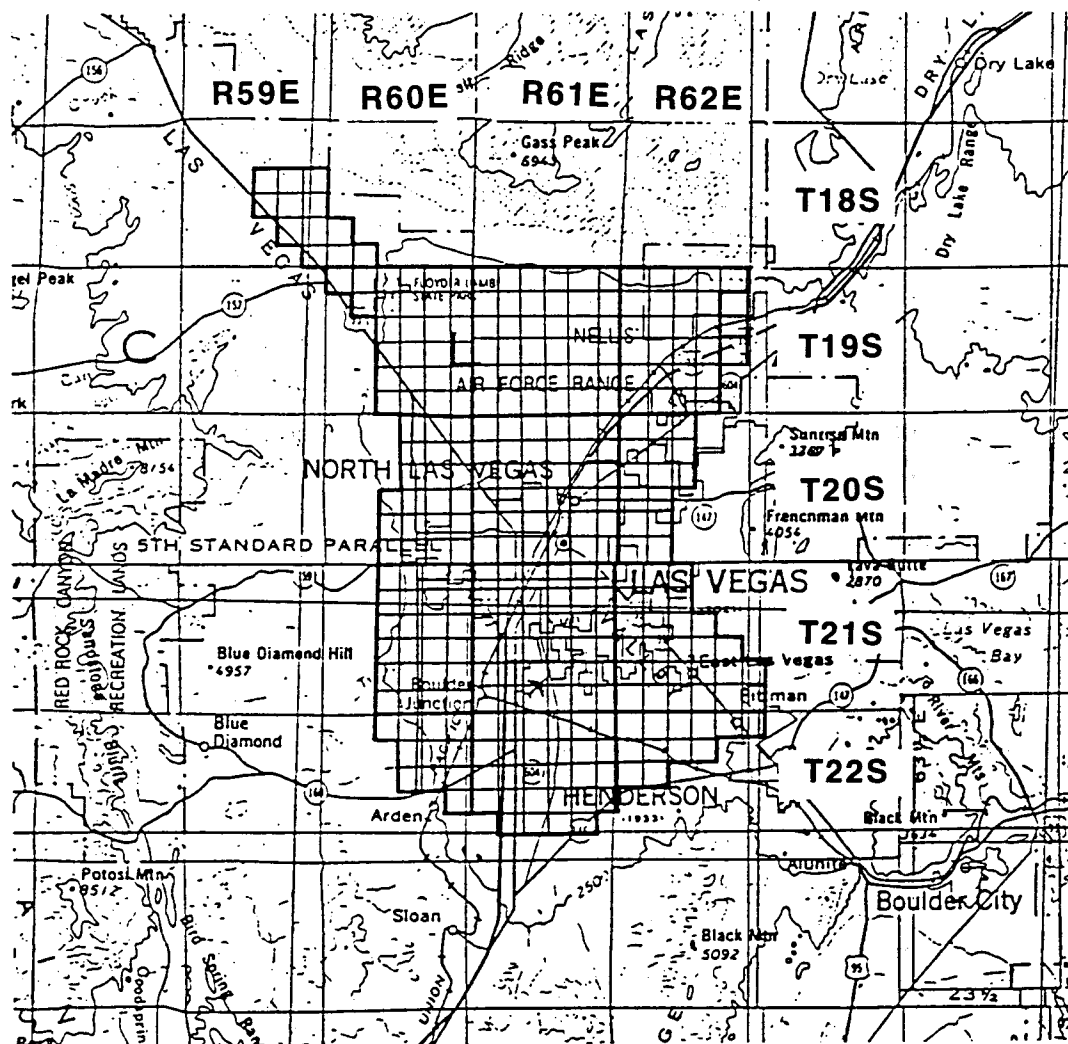
TIME	RECURRENCE INTERVAL					
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
5 min.	0.15	0.27	0.35	0.46	0.54	0.63
10 min.	0.25	0.44	0.57	0.74	0.89	1.02
15 min.	0.33	0.57	0.74	0.97	1.15	1.32
30 min.	0.44	0.78	1.01	1.31	1.55	1.79
1 hour	0.52	0.89	1.15	1.50	1.78	2.06
2 hour	0.59	1.01	1.30	1.70	2.01	2.30
3 hour	0.64	1.08	1.39	1.82	2.15	2.48
6 hour	0.72	1.22	1.58	2.05	2.41	2.77
24 hour (TR-55)	1.20	1.60	1.80	2.40	2.70	2.96

- NOTE: 1. Refer to Figure 513 for a description and drawing of the area included in the McCarran Airport Rainfall Area.
2. The 24 hour values presented above are for use with TR-55 only.
3. Table 501 adjustments not required.

Revision	Date

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

McCARRAN AIRPORT RAINFALL AREA



TOWNSHIP RANGE SECTIONS

18 South 59 East 13-15, 22-26, 36

18 South 60 East 30-32

19 South 60 East 1-6, 8-16, 21-28, 33-36

19 South 61 East ALL SECTIONS

19 South 62 East 2-11, 14-23, 27-34

20 South 60 East 1-3, 10-15, 21-28, 33-36

20 South 61 East ALL SECTIONS

TOWNSHIP RANGE SECTIONS

20 South 62 East 4-9, 16-20, 29-32

21 South 60 East 1-4, 9-16, 21-28, 33-36

21 South 61 East ALL SECTIONS

21 South 62 East 4-9, 15-23, 25-36

22 South 60 East 1-4, 10-15, 24

22 South 61 East 1-24, 26-29

22 South 62 East 1-10, 17-18

Notes:

1. Refer to Table 505 and Figure 516 Depth-Duration-Frequency values in the McCarran Airport Rainfall Area.
2. Refer to Table 506 and Figure 517 for Time-Intensity-Frequency values on the McCarran Airport Rainfall Area.

Revision	Date

WRC
ENGINEERING

REFERENCE:

USACE, Los Angeles District, 1988

FIGURE 513

RUNOFF CURVE NUMBERS (URBAN AREAS¹)

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area ²	A	B	C	D
<i>Fully developed urban areas (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.): ³					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved: curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved: open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ⁴ ...		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					

See Table 602A

Developing urban areas

Newly graded areas (pervious areas only, no vegetation) ⁵	77	86	91	94
--	----	----	----	----

1 Average runoff condition, and $I_p = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system. Impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using Figure 603.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using Figure 603 based on the impervious area percentage (CN #98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using Figure 603 based on the degree of development impervious area percentage) and the CN's for the newly graded pervious areas.

Revision	Date

RUNOFF CURVE NUMBERS (SEMIARID RANGELANDS¹)

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition ²	A ³	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

¹Average runoff condition, and $I_a = 0.2S$.

²Poor: <30% ground cover (litter, grass, and brush overstory).

Fair: 30 to 70% ground cover.

Good: >70% ground cover.

³Curve numbers for group A have been developed only for desert shrub.

Revision	Date

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

RUNOFF CURVE NUMBERS - RESIDENTIAL DISTRICTS

Average Lot Size or Usage ¹	Percent Impervious ²	Curve Number for Hydrologic Soil Groups			
		A	B	C	D
Apartments/Condos	72	81	88	91	93
Townhouses/6,000 sq ft lots or less ³	69	80	87	90	92
7,000 sq ft lots	63	76	84	89	91
8,000 sq ft lots	58	73	82	88	90
10,000 sq ft lots	38	61	75	83	87
14,000 sq ft lots	30	57	72	81	86
20,000 sq ft lots	25	54	70	80	85
40,000 sq ft lots	20	51	68	79	84
80,000 sq ft lots	12	46	65	77	82

1 Lot size should represent the size of the average lot and not the gross acreage divided by the number of lots.

2 Actual percent impervious value should be compared to selected land use type.

3 In cases where average residential lots are smaller than 6,000 sq ft, commercial/business/industrial land use should be used.

Revision	Date

REFERENCE:

TABLE 602A

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL - STANDARD FORM 4

Momentum Engineers, Ltd.

6101 Kings Brook Cl.
Las Vegas NV 89149

Sub-Basin Data					Initial/Overland Time (T _i)			Travel Time (T _t)					T _c	T _c Check (Urbanized Basins)		Final T _c	T _{lag}	Remarks
DESIG (1)	CN (2)	K (3)	AREA (acres) (4)	AREA (mi ²) (5)	LENGTH (ft) (6)	SLOPE (%) (7)	T _i (min) (8)	LENGTH (ft) (9)	SLOPE (%) (10)	V ₁ (fps) (11)	V ₂ (fps) (12)	T _t (min) (13)	T _c =T _i +T _t (min) (14)	TOTAL (ft) (15)	T _c (min) (16)	T _c (min) (17)	T _{lag} (hrs) (18)	Remarks (19)
DEVELOPED CONDITION																		
DOF1	86	0.75	4.26	0.0067	120	1.0	7.0	1200	0.6	1.6	2.4	10.2	17.2	1320	17.3	17.2	0.172	
DOF2	84	0.72	0.47	0.0007	50	1.0	4.9	50	1.0	2.0	N/A	0.4	5.3	100	10.6	5.3	0.053	
DOF3	84	0.72	0.49	0.0008	50	1.0	4.9	50	1.0	2.0	N/A	0.4	5.3	100	10.6	5.3	0.053	
DOF4	84	0.72	1.26	0.0020	50	1.0	4.9	650	1.1	2.1	3.2	4.7	9.6	700	13.9	9.6	0.096	
DON1	87	0.76	3.69	0.0058	125	1.0	6.9	1200	0.6	1.6	2.4	10.2	17.1	1325	17.4	17.1	0.171	
DON2	87	0.76	8.85	0.0138	120	1.0	6.7	1200	0.5	1.4	2.2	11.2	18.0	1320	17.3	17.3	0.173	
DON3	87	0.76	2.83	0.0044	125	1.0	6.9	970	0.7	1.7	2.6	8.0	14.9	1095	16.1	14.9	0.149	
WB	98	0.9	0.50	0.0008	23	2.0	1.3	650	1.1	2.1	3.2	4.7	6.1	673	13.7	6.1	0.061	
WBR	98	0.9	0.78	0.0012	23	2.0	1.3	640	1.1	2.1	3.2	4.7	6.0	663	13.7	6.0	0.060	
WBS	98	0.9	0.26	0.0004	23	2.0	1.3	260	1.1	2.1	N/A	2.0	3.4	283	11.6	3.4	0.050	
MAV	98	0.9	1.71	0.0027	23	2.0	1.3	1200	0.6	1.6	2.4	10.2	11.6	1223	16.8	11.6	0.116	
BR1	98	0.9	1.36	0.0021	23	2.0	1.3	970	0.7	1.7	2.6	8.0	9.3	993	15.5	9.3	0.093	
BR2	98	0.9	0.22	0.0003	23	2.0	1.3	120	0.5	1.4	N/A	1.4	2.7	143	10.8	2.7	0.050	
BR3	98	0.9	0.22	0.0003	23	2.0	1.3	120	0.5	1.4	N/A	1.4	2.7	143	10.8	2.7	0.050	
LA	98	0.9	0.90	0.0014	23	2.0	1.3	650	0.8	1.8	2.7	5.5	6.9	673	13.7	6.9	0.069	
UNDEVELOPED CONDITION																		
XON1	88	0.77	2.93	0.0046	100	0.6	7.0	160	0.9	1.4	N/A	1.9	8.9	N/A	N/A	8.9	0.100	
XON2	88	0.77	12.80	0.0200	100	0.9	6.1	780	1.6	1.9	3.7	5.7	11.8	N/A	N/A	11.8	0.118	
$T_i = (1.48(1-K)L^{0.76}) / (S^{0.48})$ For the travel time (T _i) calculations, T _c = T _i + T _t K = 0.0132(CN) - 0.39 T _{lag} = 0.6T _c										Travel Time Velocity Formulas Existing $V_1 = 14.8(S/100)^{1/2}$ $V_2 = 29.4(S/100)^{1/2}$				All basins over one square mile are calculated by the equation $T_{lag} = 20Kn(L \cdot L_e / S^{0.5})^{0.33}$				
REFERENCE:									CCRFCD HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL									
STANDARD FORM 4																		

18	BA	.0067									
19	PB	2.77									
20	KM		SDN #3								
21	PC	0.000	0.020	0.057	0.070	0.087	0.108	0.124	0.130	0.130	0.130
22	PC	0.130	0.130	0.130	0.133	0.140	0.142	0.148	0.158	0.172	0.181
23	PC	0.190	0.197	0.199	0.200	0.201	0.204	0.214	0.229	0.241	0.249
24	PC	0.251	0.256	0.270	0.278	0.281	0.283	0.295	0.322	0.352	0.409
25	PC	0.499	0.590	0.710	0.744	0.781	0.812	0.819	0.835	0.851	0.856
26	PC	0.860	0.868	0.876	0.888	0.910	0.926	0.937	0.950	0.970	0.976
27	PC	0.982	0.985	0.987	0.989	0.990	0.993	0.993	0.994	0.995	0.998
28	PC	0.998	0.999	1.000							
29	LS	0	86								
30	UD	0.1720									
	*										
31	KK	MAV									
32	BA	.0027									
33	LS	0	98								
34	UD	0.1160									
	*										
35	KK	CPMAV									
36	HC	2									
	*										
37	KK	XON1									
38	BA	.0046									
39	LS	0	88								
40	UD	0.1000									
	*										

1

HEC-1 INPUT

PAGE 2

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
41	KK DOF3
42	BA .0008
43	LS 0 84
44	UD 0.0530
	*
45	KK BR3
46	BA .0003
47	LS 0 98
48	UD 0.0500
	*
49	KK WB
50	BA .0008
51	LS 0 98
52	UD 0.0610
	*
53	KK DOF4
54	BA .0020
55	LS 0 84
56	UD 0.0960

KK	CPWB
HC	5
*	

59	KK	D0F2	
60	BA	.0007	
61	LS	0	84
62	UD	0.0530	
	*		

63	KK	BR2	
64	BA	.0003	
65	LS	0	98
66	UD	0.0500	
	*		

67	KK	CPBR2
68	HC	2
	*	

69	KK	XON2	
70	BA	.0200	
71	LS	0	88
72	UD	0.1180	
	*		

HEC-1 INPUT

PAGE 3

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

73	KK	DUMMY
74	HC	4
	*	

```

75      KK      DOF1
76      KM
77      BA      .0067
78      LS      0      86
79      UD      0.1720
      *

```

80	KK	DON1	
81	BA	.0058	
82	LS	0	87
83	UD	0.1710	
	*		

84	KK	MAV	
85	BA	.0027	
86	LS	0	98
87	UD	0.1160	
	*		

88	KK	CPMAV
89	HC	3

```

*
90      KK      WBS
91      BA      .0004
92      LS      0      98
93      UD      0.0500
*
94      KK      DON2
95      BA      0.0138
96      LS      0      87
97      UD      0.1730
*
98      KK      CPDVR
99      HC      2
*
100     KK      LA
101     BA      .0014
102     LS      0      98
103     UD      0.0690
*

```

1

HEC-1 INPUT

PAGE 4

```

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

104      KK      LAMA1
105      HC      3
*
106      KK      DOF2
107      BA      .0007
108      LS      0      84
109      UD      0.0530
*
110      KK      BR2
111      BA      .0003
112      LS      0      98
113      UD      0.0500
*
114      KK      CPBR2
115      HC      2
*
116      KK      DON3
117      BA      .0044
118      LS      0      87
119      UD      0.1490
*
120      KK      BR1
121      BA      .0021
122      LS      0      98

```


123	UD	0.0930	
	*		
124	KK	CPBR1	
125	HC	3	
	*		
126	KK	LAMA2	
127	HC	2	
	*		
128	KK	DOF3	
129	BA	.0008	
130	LS	0	84
131	UD	0.0530	
	*		
132	KK	BR3	
133	BA	.0003	
134	LS	0	98
135	UD	0.0500	
	*		

1

HEC-1 INPUT

PAGE 5

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

136	KK	WBR	
137	BA	.0012	
138	LS	0	98
139	UD	0.0600	
	*		
140	KK	DOF4	
141	BA	.0020	
142	LS	0	84
143	UD	0.0960	
	*		
144	KK	CPWB	
145	HC	4	
	*		
146	ZZ		

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
LINE	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
NO.		
16	DOF1	
	.	
	.	
31	.	MAV
	.	.
	.	.
35	CPMAV.....	

37	.	XON1	.	.	.	.
41	.	.	DOF3	.	.	.
45	.	.	.	BR3	.	.
49	.	.	.	.	WB	.
53	.	.	.	.	.	DOF4
57	.	CPWB	.	.	.	.
59	.	.	DOF2	.	.	.
63	.	.	.	BR2	.	.
67	.	.	CPBR2	.	.	.
69	.	.	.	XON2	.	.
73	DUMMY	.	.	.	.	.
75	.	DOF1	.	.	.	.
80	.	.	DON1	.	.	.
84	.	.	.	MAV	.	.
88	.	CPMAV	.	.	.	.
90	.	.	WBS	.	.	.
94	.	.	.	DON2	.	.
98	.	.	CPDVR	.	.	.
100	.	.	.	LA	.	.

```

(*** RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 19MAY16 TIME 16:44:51
*
*****

```

EXISTING AND DEVELOPED CONDITIONS MODEL

WASHBURN & MAVERICK
MOMENTUM ENGINEERS FOR TRITON ENGINEERING - B BROWN

6-HOUR STORM DISTRIBUTION #3
10- AND 100-YEAR STORM EVENTS
NO REDUCTION FOR DEPTH AREA
NO HYDROGRAPH ROUTING LOSSES

13 IO OUTPUT CONTROL VARIABLES

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

IT HYDROGRAPH TIME DATA

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

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS

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

JP MULTI-PLAN OPTION

NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION

RATIOS OF PRECIPITATION
.57 1.00

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1	RATIO 2
				.57	1.00
HYDROGRAPH AT					
+	DOF1	.01	1	FLOW	3. 8.
				TIME	3.58 3.58

HYDROGRAPH AT +	MAV	.00	1	FLOW TIME	3. 3.50	5. 3.50
2 COMBINED AT +	CPMAV	.01	1	FLOW TIME	6. 3.58	13. 3.58
HYDROGRAPH AT +	XON1	.00	1	FLOW TIME	3. 3.50	7. 3.50
HYDROGRAPH AT +	DOF3	.00	1	FLOW TIME	0. 3.50	1. 3.50
HYDROGRAPH AT +	BR3	.00	1	FLOW TIME	0. 3.50	1. 3.50
HYDROGRAPH AT +	WB	.00	1	FLOW TIME	1. 3.50	2. 3.50
HYDROGRAPH AT +	DOF4	.00	1	FLOW TIME	1. 3.50	2. 3.50
5 COMBINED AT +	CPWB	.01	1	FLOW TIME	5. 3.50	13. 3.50
HYDROGRAPH AT +	DOF2	.00	1	FLOW TIME	0. 3.50	1. 3.50
HYDROGRAPH AT +	BR2	.00	1	FLOW TIME	0. 3.50	1. 3.50
2 COMBINED AT +	CPBR2	.00	1	FLOW TIME	1. 3.50	2. 3.50
HYDROGRAPH AT +	XON2	.02	1	FLOW TIME	12. 3.58	28. 3.58
4 COMBINED AT +	DUMMY	.04	1	FLOW TIME	23. 3.58	53. 3.50
HYDROGRAPH AT +	DOF1	.01	1	FLOW TIME	3. 3.58	8. 3.58
HYDROGRAPH AT						

+	DON1	.01	1	FLOW TIME	3. 3.58	7. 3.58
---	------	-----	---	--------------	------------	------------

HYDROGRAPH AT +	MAV	.00	1	FLOW TIME	3. 3.50	5. 3.50
--------------------	-----	-----	---	--------------	------------	------------

3 COMBINED AT +	CPMAV	.02	1	FLOW TIME	9. 3.58	20. 3.58
--------------------	-------	-----	---	--------------	------------	-------------

+ WASH (7 / 23) = 16 / 43

HYDROGRAPH AT +	WBS	.00	1	FLOW TIME	1. 3.50	1. 3.50
--------------------	-----	-----	---	--------------	------------	------------

HYDROGRAPH AT +	DON2	.01	1	FLOW TIME	7. 3.58	17. 3.58
--------------------	------	-----	---	--------------	------------	-------------

2 COMBINED AT +	CPDVR	.01	1	FLOW TIME	7. 3.58	18. 3.58
--------------------	-------	-----	---	--------------	------------	-------------

HYDROGRAPH AT +	LA	.00	1	FLOW TIME	2. 3.50	3. 3.50
--------------------	----	-----	---	--------------	------------	------------

3 COMBINED AT +	LAMA1	.03	1	FLOW TIME	17. 3.58	40. 3.58
--------------------	-------	-----	---	--------------	-------------	-------------

+ LAMA (62 / 200) + WASH (7 / 23) = 86 / 263

HYDROGRAPH AT +	DOF2	.00	1	FLOW TIME	0. 3.50	1. 3.50
--------------------	------	-----	---	--------------	------------	------------

HYDROGRAPH AT +	BR2	.00	1	FLOW TIME	0. 3.50	1. 3.50
--------------------	-----	-----	---	--------------	------------	------------

2 COMBINED AT +	CPBR2	.00	1	FLOW TIME	1. 3.50	2. 3.50
--------------------	-------	-----	---	--------------	------------	------------

HYDROGRAPH AT +	DON3	.00	1	FLOW TIME	2. 3.58	6. 3.58
--------------------	------	-----	---	--------------	------------	------------

HYDROGRAPH AT +	BR1	.00	1	FLOW TIME	2. 3.50	4. 3.50
--------------------	-----	-----	---	--------------	------------	------------

3 COMBINED AT +	CPBR1	.01	1	FLOW TIME	5. 3.50	11. 3.50
--------------------	-------	-----	---	--------------	------------	-------------

2 COMBINED AT +	LAMA2	.04	1	FLOW	21.	50.
--------------------	-------	-----	---	------	-----	-----

+ LAMA (62 / 200) + WASH (7 / 23) = 90 / 273

HYDRAULICS

Cross Section for A - Maverick Street - 10yr

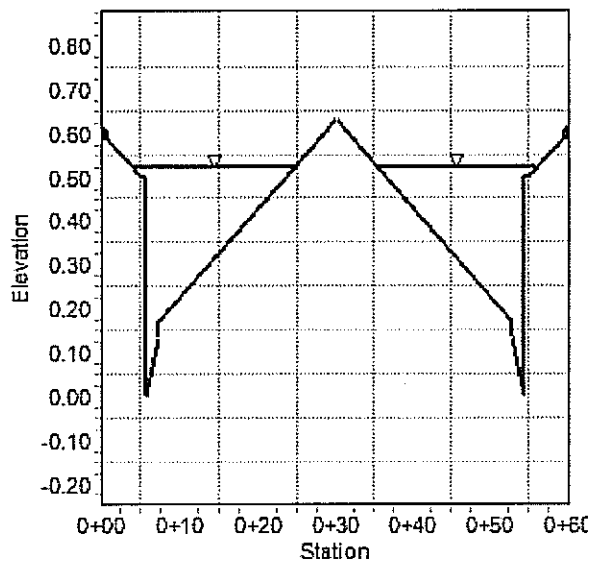
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00510 ft/ft
Normal Depth 0.52 ft
Discharge 16 ft³/s

Cross Section Image



Worksheet for A - Maverick Street - 100yr

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00510 ft/ft
Discharge 43 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.50
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+30.00	0.63
0+53.00	0.17
0+53.00	0.13
0+54.50	0.00
0+54.50	0.50
0+55.00	0.50
0+60.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.60)	(0+60.00, 0.60)	0.016

Options

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

Worksheet for A - Maverick Street - 100yr

Results

Normal Depth	0.68	ft
Elevation Range	0.00 to 0.63 ft	
Flow Area	15.91	ft²
Wetted Perimeter	61.25	ft
Hydraulic Radius	0.26	ft
Top Width	60.00	ft
Normal Depth	0.68	ft
Critical Depth	0.66	ft
Critical Slope	0.00607	ft/ft
Velocity	2.70	ft/s
Velocity Head	0.11	ft
Specific Energy	0.79	ft
Froude Number	0.93	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.68	ft
Critical Depth	0.66	ft
Channel Slope	0.00510	ft/ft
Critical Slope	0.00607	ft/ft

Cross Section for A - Maverick Street - 100yr

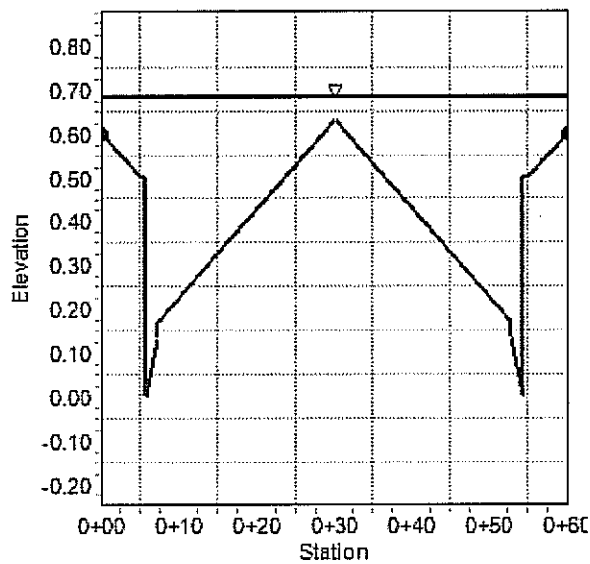
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00510 ft/ft
Normal Depth 0.68 ft
Discharge 43 ft³/s

Cross Section Image



Worksheet for B - Denver 10yr

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00500 ft/ft
Discharge 7 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	0.60
0+00.00	0.50
0+00.50	0.50
0+00.50	0.00
0+02.00	0.13
0+02.00	0.17
0+18.50	0.50
0+34.50	0.17
0+34.50	0.13
0+36.50	0.00
0+36.50	0.50
0+37.00	0.50
0+42.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 0.60)	(0+42.00, 0.60)	0.016

Options

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

Worksheet for B - Denver 10yr

Results

Normal Depth	0.41	ft
Elevation Range	0.00 to 0.60 ft	
Flow Area	3.92	ft ²
Wetted Perimeter	27.58	ft
Hydraulic Radius	0.14	ft
Top Width	26.68	ft
Normal Depth	0.41	ft
Critical Depth	0.38	ft
Critical Slope	0.00759	ft/ft
Velocity	1.79	ft/s
Velocity Head	0.05	ft
Specific Energy	0.45	ft
Froude Number	0.82	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.41	ft
Critical Depth	0.38	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00759	ft/ft

Cross Section for B - Denver 10yr

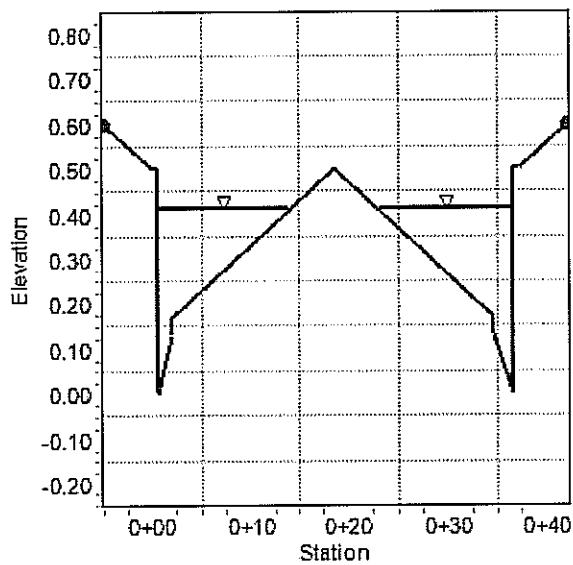
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00500 ft/ft
Normal Depth 0.41 ft
Discharge 7 ft³/s

Cross Section Image



Worksheet for B - Denver 100yr

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00500 ft/ft
Discharge 18 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
-0+05.00	0.60
0+00.00	0.50
0+00.50	0.50
0+00.50	0.00
0+02.00	0.13
0+02.00	0.17
0+18.50	0.50
0+34.50	0.17
0+34.50	0.13
0+36.50	0.00
0+36.50	0.50
0+37.00	0.50
0+42.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+05.00, 0.60)	(0+42.00, 0.60)	0.016

Options

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

Worksheet for B - Denver 100yr

Results

Normal Depth	0.53	ft
Elevation Range	0.00 to 0.60 ft	
Flow Area	8.12	ft ²
Wetted Perimeter	41.29	ft
Hydraulic Radius	0.20	ft
Top Width	40.20	ft
Normal Depth	0.53	ft
Critical Depth	0.51	ft
Critical Slope	0.00673	ft/ft
Velocity	2.22	ft/s
Velocity Head	0.08	ft
Specific Energy	0.61	ft
Froude Number	0.87	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.53	ft
Critical Depth	0.51	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00673	ft/ft

Cross Section for B - Denver 100yr

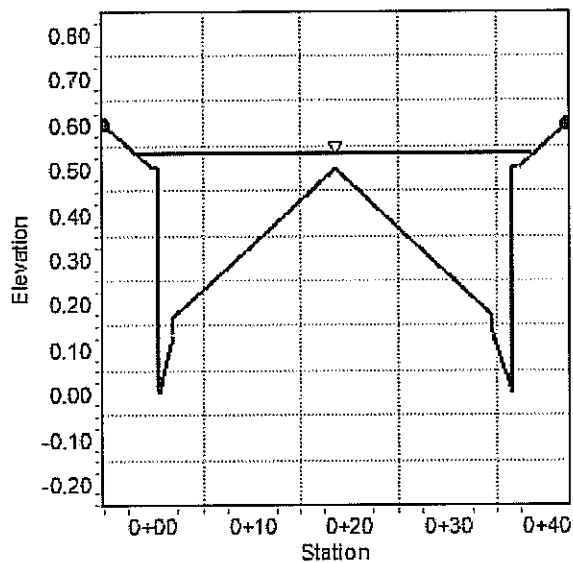
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.53	ft
Discharge	18	ft ³ /s

Cross Section Image



Project Description

Input Data

Station (ft)	Elevation (ft)
0+00.00	0.66
0+05.00	0.56
0+05.50	0.56
0+05.50	0.06
0+07.00	0.13
0+07.00	0.13
0+30.00	0.63
0+53.00	0.13
0+53.00	0.13
0+54.50	0.06
0+54.50	0.56
0+55.00	0.56
0+60.00	0.66

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.60)	(0+60.00, 0.60)	0.016

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

Worksheet for C - Bronco Street - 10yr

Results

Normal Depth	0.37	ft
Elevation Range	0.00 to 0.63 ft	
Flow Area	2.94	ft ²
Wetted Perimeter	23.96	ft
Hydraulic Radius	0.12	ft
Top Width	23.12	ft
Normal Depth	0.37	ft
Critical Depth	0.35	ft
Critical Slope	0.00796	ft/ft
Velocity	1.70	ft/s
Velocity Head	0.04	ft
Specific Energy	0.42	ft
Froude Number	0.84	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.37	ft
Critical Depth	0.35	ft
Channel Slope	0.00550	ft/ft
Critical Slope	0.00796	ft/ft

Cross Section for C - Bronco Street - 10yr

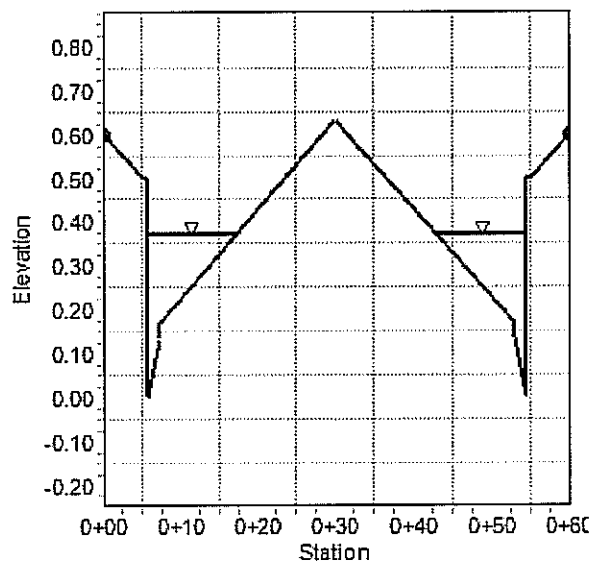
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00550 ft/ft
Normal Depth 0.37 ft
Discharge 5 ft³/s

Cross Section Image



Worksheet for C - Bronco Street - 100yr

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00550 ft/ft
Discharge 11 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.50
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+30.00	0.63
0+53.00	0.17
0+53.00	0.13
0+54.50	0.00
0+54.50	0.50
0+55.00	0.50
0+60.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.60)	(0+60.00, 0.60)	0.016

Options

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

Worksheet for C - Bronco Street - 100yr

Results

Normal Depth	0.46	ft
Elevation Range	0.00 to 0.63 ft	
Flow Area	5.36	ft ²
Wetted Perimeter	32.93	ft
Hydraulic Radius	0.16	ft
Top Width	31.91	ft
Normal Depth	0.46	ft
Critical Depth	0.44	ft
Critical Slope	0.00717	ft/ft
Velocity	2.05	ft/s
Velocity Head	0.07	ft
Specific Energy	0.52	ft
Froude Number	0.88	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.46	ft
Critical Depth	0.44	ft
Channel Slope	0.00550	ft/ft
Critical Slope	0.00717	ft/ft

Cross Section for C - Bronco Street - 100yr

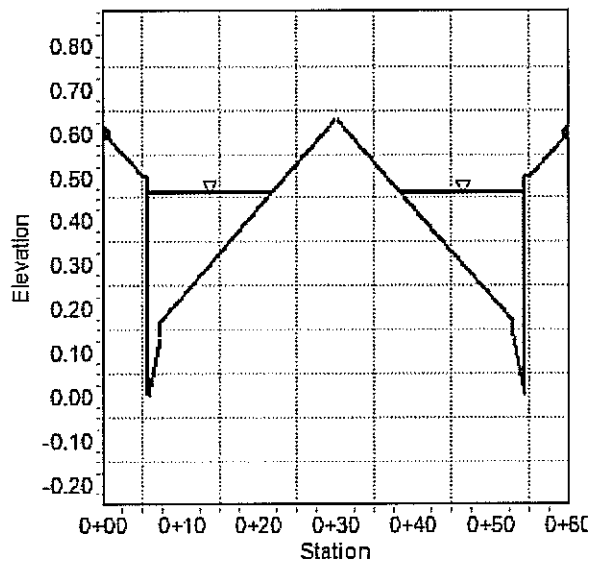
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00550 ft/ft
Normal Depth 0.46 ft
Discharge 11 ft³/s

Cross Section Image



Worksheet for D - Washburn Road 1/2 st 10 yr

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00550 ft/ft
Discharge 3 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.50
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+30.00	0.63

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.60)	(0+30.00, 0.63)	0.016

Options

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

Results

Normal Depth 0.39 ft
Elevation Range 0.00 to 0.63 ft
Flow Area 1.69 ft²
Wetted Perimeter 12.90 ft
Hydraulic Radius 0.13 ft
Top Width 12.46 ft

Worksheet for D - Washburn Road 1/2 st 10 yr

Results

Normal Depth	0.39	ft
Critical Depth	0.37	ft
Critical Slope	0.00777	ft/ft
Velocity	1.78	ft/s
Velocity Head	0.05	ft
Specific Energy	0.44	ft
Froude Number	0.85	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.39	ft
Critical Depth	0.37	ft
Channel Slope	0.00550	ft/ft
Critical Slope	0.00777	ft/ft

Cross Section for D - Washburn Road 1/2 st 10 yr

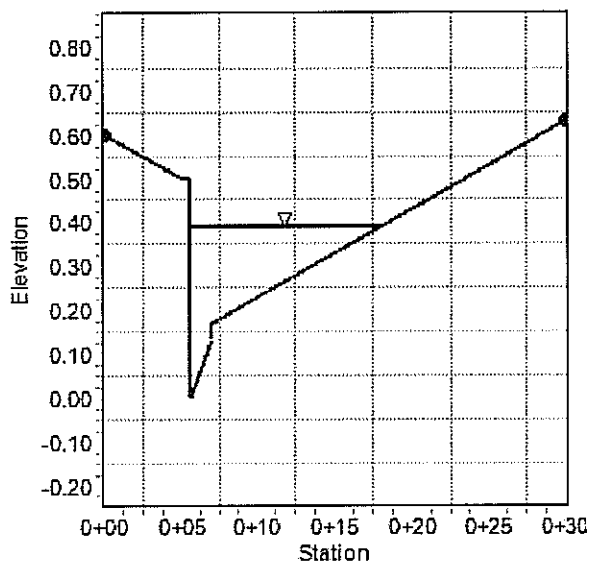
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00550 ft/ft
Normal Depth 0.39 ft
Discharge 3 ft³/s

Cross Section Image



Worksheet for D - Washburn Road 1/2 st 100 yr

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00550 ft/ft
Discharge 7 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.50
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+30.00	0.63

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.60)	(0+30.00, 0.63)	0.016

Options

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

Results

Normal Depth 0.49 ft
Elevation Range 0.00 to 0.63 ft
Flow Area 3.21 ft²
Wetted Perimeter 18.08 ft
Hydraulic Radius 0.18 ft
Top Width 17.55 ft

Worksheet for D - Washburn Road 1/2 st 100 yr

Results

Normal Depth	0.49	ft
Critical Depth	0.48	ft
Critical Slope	0.00694	ft/ft
Velocity	2.18	ft/s
Velocity Head	0.07	ft
Specific Energy	0.56	ft
Froude Number	0.90	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.49	ft
Critical Depth	0.48	ft
Channel Slope	0.00550	ft/ft
Critical Slope	0.00694	ft/ft

Cross Section for D - Washburn Road 1/2 st 100 yr

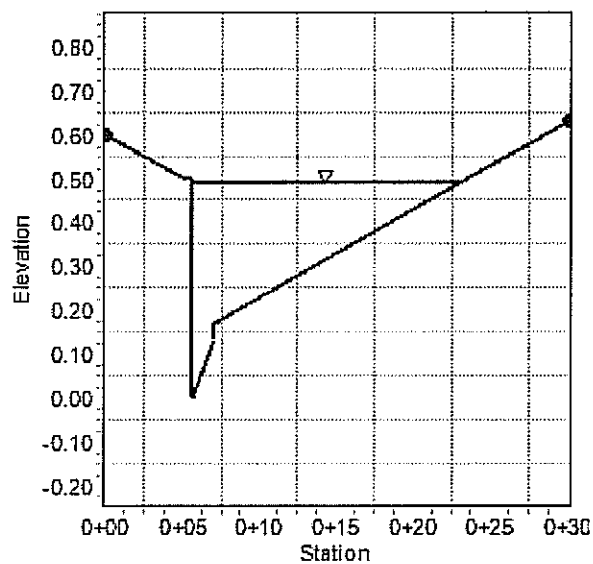
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00550 ft/ft
Normal Depth 0.49 ft
Discharge 7 ft³/s

Cross Section Image



Worksheet for E - La Madre Way - 10yr

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00790 ft/ft
Discharge 86 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.50
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+30.00	0.63
0+53.00	0.17
0+53.00	0.13
0+54.50	0.00
0+54.50	0.50
0+55.00	0.50
0+60.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.60)	(0+60.00, 0.60)	0.016

Options

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

Worksheet for E - La Madre Way - 10yr

Results

Normal Depth	0.76	ft
Elevation Range	0.00 to 0.63 ft	
Flow Area	21.18	ft ²
Wetted Perimeter	61.43	ft
Hydraulic Radius	0.34	ft
Top Width	60.00	ft
Normal Depth	0.76	ft
Critical Depth	0.81	ft
Critical Slope	0.00524	ft/ft
Velocity	4.06	ft/s
Velocity Head	0.26	ft
Specific Energy	1.02	ft
Froude Number	1.20	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.76	ft
Critical Depth	0.81	ft
Channel Slope	0.00790	ft/ft
Critical Slope	0.00524	ft/ft

Cross Section for E - La Madre Way - 10yr

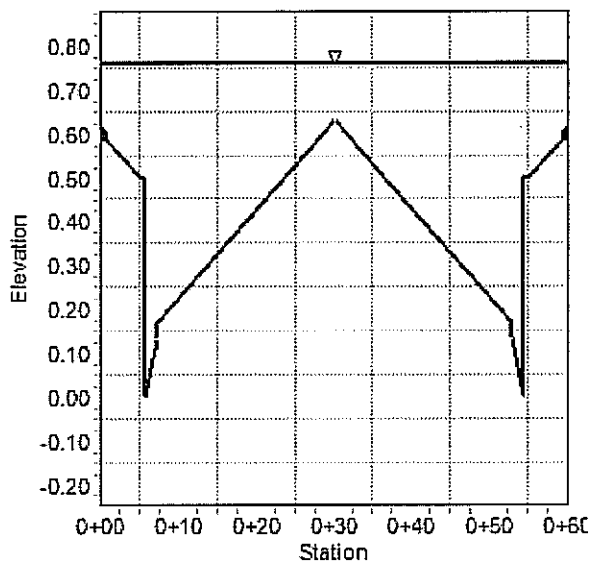
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00790 ft/ft
Normal Depth 0.76 ft
Discharge 86 ft³/s

Cross Section Image



Worksheet for E - La Madre Way - 100yr

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00790 ft/ft
Discharge 263 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00.00	0.60
0+05.00	0.50
0+05.50	0.50
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+30.00	0.63
0+53.00	0.17
0+53.00	0.13
0+54.50	0.00
0+54.50	0.50
0+55.00	0.50
0+60.00	0.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 0.60)	(0+60.00, 0.60)	0.016

Options

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

Worksheet for E - La Madre Way - 100yr

Results

Normal Depth	1.10	ft
Elevation Range	0.00 to 0.63	ft
Flow Area	41.62	ft ²
Wetted Perimeter	62.11	ft
Hydraulic Radius	0.67	ft
Top Width	60.00	ft
Normal Depth	1.10	ft
Critical Depth	1.25	ft
Critical Slope	0.00416	ft/ft
Velocity	6.32	ft/s
Velocity Head	0.62	ft
Specific Energy	1.72	ft
Froude Number	1.34	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.10	ft
Critical Depth	1.25	ft
Channel Slope	0.00790	ft/ft
Critical Slope	0.00416	ft/ft

Cross Section for E - La Madre Way - 100yr

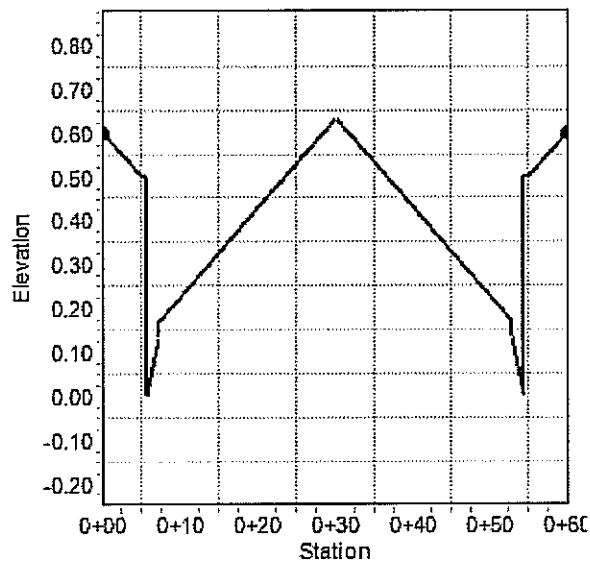
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00790 ft/ft
Normal Depth 1.10 ft
Discharge 263 ft³/s

Cross Section Image



REFERENCE MATERIAL

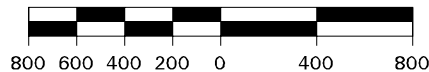
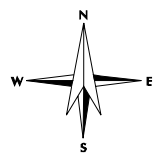
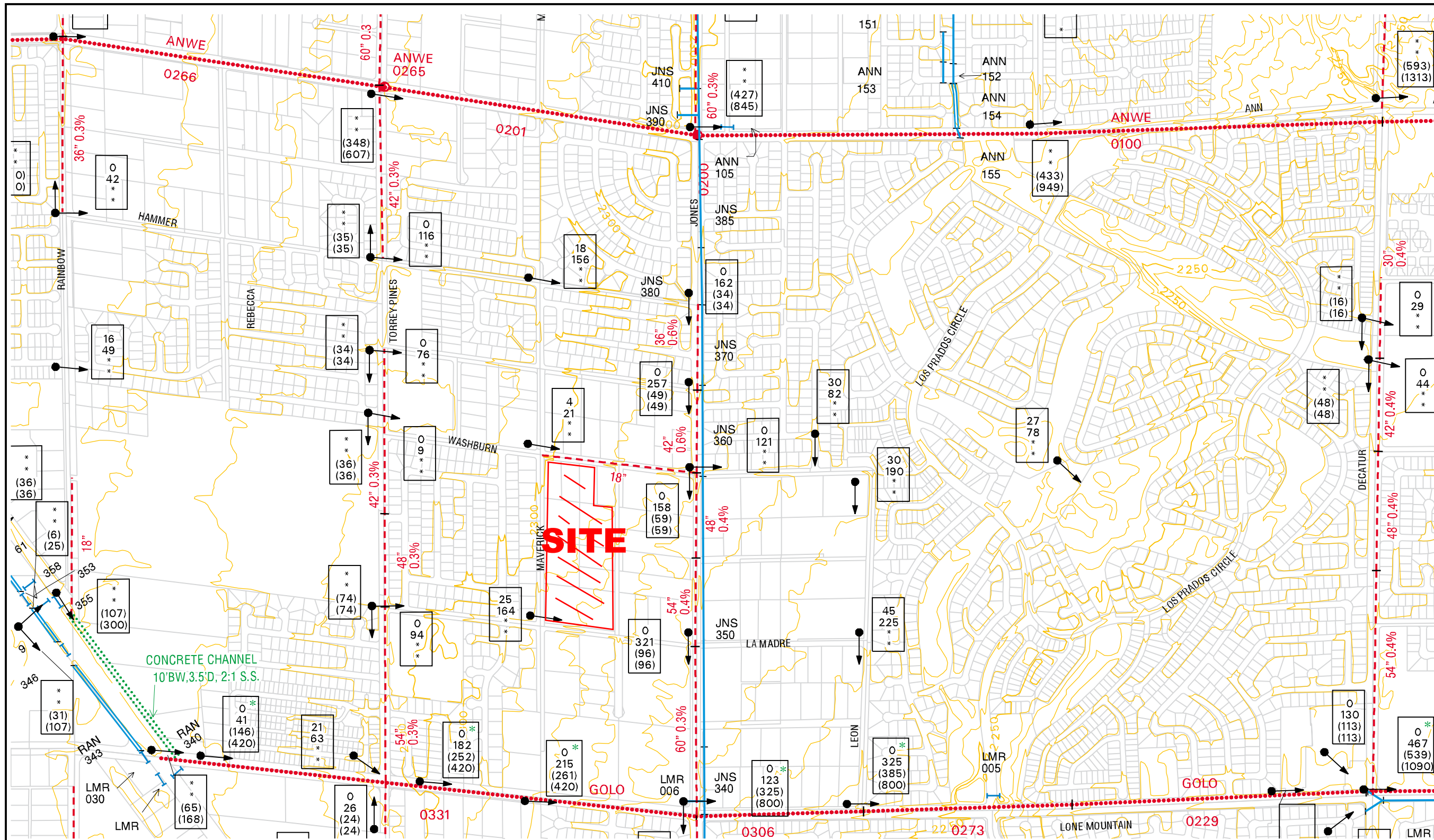


NORTHWEST NEIGHBORHOOD STUDY

LEGEND

- EXISTING REGIONAL DETENTION BASINS
- PROPOSED REGIONAL DETENTION BASINS
- EXISTING LOCAL DETENTION BASINS
- EXISTING REGIONAL BRIDGES
- PROPOSED REGIONAL BRIDGES
- EXISTING LOCAL BRIDGES
- EXISTING REGIONAL CULVERT
- PROPOSED REGIONAL CULVERT
- EXISTING LOCAL CULVERT
- EXISTING REGIONAL PIPELINE
- PROPOSED REGIONAL PIPELINE
- EXISTING LOCAL PIPELINE
- PROPOSED LOCAL PIPELINE
- EXISTING REGIONAL CHANNEL
- PROPOSED REGIONAL CHANNEL
- EXISTING LOCAL CHANNEL
- PROPOSED REGIONAL PIPELINE (Not Included In 1996 MPU)
- PROPOSED REGIONAL CHANNEL (Not Included In 1996 MPU)
- EXISTING REGIONAL DIKE/LEVEE
- PROPOSED REGIONAL DIKE/LEVEE
- EXISTING LOCAL DIKE/LEVEE
- EXISTING STORM WATER PUMPING STATION
- PROPOSED BELTWAY ALIGNMENT

FIGURE F-9



SCALE: 1 INCH = 800 FEET

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)

NOTE:

Ultimate drainage conditions are based on future CN values with all flood control facilities in place

See the "September 1999 City of Las Vegas Northwest Neighborhood Study Phase 2" for proposed facilities in and north of Elkhorn.

* The capacity of the proposed regional facility is based on the "1996 Clark County Regional Flood Control Master Plan Update for the Las Vegas Valley." The facility may need to be enlarged in final design, see Chapter 6 of Volume I.

HUALPAIN	FT. APACHE	DURANGO	BUFFALO	RAINBOW	JONES	DECATUR	ELKHORN
1	2	3					CENTENNIAL
4	5	6					ANN
7	8	9					LONE MOUNTAIN
10	11	12					ALEXANDER
			13	14			CHEYENNE
			15	16			SMOKE RANCH
			17	18			

FUTURE DRAINAGE CONDITIONS



901 North Green Valley Parkway, Suite 100
Henderson, Nevada 89014-6139
Phone: 702/263-7275
Fax: 702/263-7200

ENGINEERING PLANNING GIS SURVEYING CONSTRUCTION SERVICES

REVISED SEPTEMBER 1999



NORTHWEST
NEIGHBORHOOD
STUDY

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: APRIL 1996

FIGURE E-9



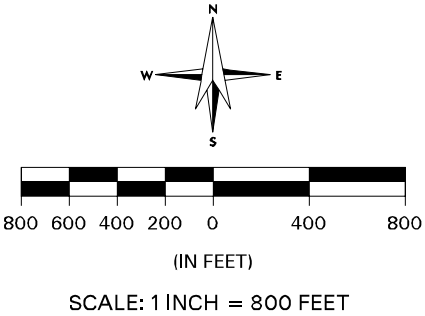
EXISTING DRAINAGE CONDITIONS

PBS&I POST, BUCKLEY, SCHUH & JERNIGAN, INC.
ENGINEERING PLANNING SURVEYING GIS
901, N. Green Valley Pkwy, Ste 100, Henderson NV 89014
Phone: (702) 263-7275 Fax: (702) 263-7200

HUALAPAI	FT. APACHE	DURANGO	BUFFALO	RAINBOW	JONES	DECATUR	ELKHORN
1	2	3					
4	5	6					CENTENNIAL
7	8	9					ANN
10	11	12					LONE MOUNTAIN
			13	14			ALEXANDER
			15	16			CHEYENNE
			17	18			SMOKE RANCH

REVISED SEPTEMBER 1999

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



GRADING PLANS

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA, NEVADA", LATEST REVISED EDITION; THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE "UNIFORM BUILDING CODE", AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".

2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CIVIL PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.

3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORILY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.

4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.

5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.

6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.

7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.

8. AC PAVEMENT TO BE ONE-HALF INCH (1/2") ABOVE ULT OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.

9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.

10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.

11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.

12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY THE (COMPANY, _ REPORT #, DATE) APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.

13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.

14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.380 & CITY OF LAS VEGAS TITLE 18, APPENDIX D.

15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.

WALL NOTES:

16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. ALL WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.

17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.

18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.

19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.

20. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKER BALLS, LOCATING RIBBON, ETC., THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO OFFSITE INSPECTION AND TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.

21. SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION. THE MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES, AND TRANSITION STRUCTURES; STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY, AND STORM DRAIN MAIN ALIGNMENT, INCLUDING DEFLECTION POINTS. THE LOCATION SHALL BE DESCRIBED BY COORDINATES WHICH SHALL BE BASED ON THE OFFICIAL HORIZONTAL AND VERTICAL CONTROL NETWORK OF THE CITY OF LAS VEGAS. FINAL LOCATION MAPS MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIONAL CERTAINITIES OF ± 0.09 METERS (± 0.3 FEET) HORIZONTALLY AND VERTICALLY. A SEPARATE ELECTRONIC COMMA DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).

OR

SANITARY SEWER AND STORM DRAIN FACILITIES SHOWN ON THESE PLANS SHALL BE USED TO MEET THE REQUIREMENTS OF NRS 455 AND SHALL SHOW AT A MINIMUM THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, AND THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY. ANY DEVIATIONS FROM THE INFORMATION SHOWN SHALL BE NOTED AND SUBMITTED AS A REVISION TO THE PLANS AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION.

22. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.

23. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

REVISED 02/03/15

CITY OF LAS VEGAS FIRE DEPARTMENT NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE # 6325 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.

2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICT'S - APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.

3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. [IFC § 105.7.12]

4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. [IFC § 5310, § 5312]

5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. [IFC § 507.5.7.3]

6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. [IFC 106.3]

7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A. APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. [IFC § 507.2.1, NFPA 24]

8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. [IFC § 507]

9. PRIVATE HYDRANTS SHALL BE PAINTED RED. [IFC § 507.5.7.1]

10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. [IFC § 507]

11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: [IFC § C102]

- RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
- COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.

12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. [IFC § C102.8]

13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.

14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. [IFC § C102.12]

15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. [IFC § C102.4]

16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. [IFC § C102.7]

17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. [IFC § C102.6]

18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS CAN BE OUT OF SERVICE DUE TO A BREAK IN A WATER MAIN. [IFC § C104]

19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. [IFC § 503.2.3]

20. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12% ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 8% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%. [IFC § 503.2.7, § 503.2.8]

21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS. IFC § 503.2.4]

22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13FT 6 INS. [IFC § 503.2.1]

23. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 40 FT FLOW LINE TO FLOW LINE WITH PARALLEL PARKING PERMITTED ON BOTH SIDES, NOT LESS THAN 32 FT WIDE, FLOW-LINE TO FLOW-LINE, WHERE PARKING IS PERMITTED ONLY ON ONE SIDE OF THE FIRE APPARATUS ACCESS ROAD, NOT LESS THAN 24 FT WIDE, FLOW-LINE TO FLOW-LINE, WHERE NO PARKING IS PERMITTED ON EITHER SIDE, FIRE LANES THROUGH PARKING LOTS SHALL BE NOT LESS THAN 24 FT. [IFC § 503.2.1.1]

24. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. THIS DISTANCE COULD BE INCREASED TO 250 FT IF THE BUILDING IS SPRINKLERED. [IFC § 503.1.1]

25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 100 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS OR WITH A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. COMMERCIAL AND INDUSTRIAL DEVELOPMENTS WHERE BUILDINGS EXCEED 2 STORIES OR 30 FEET IN HEIGHT, OR EXCEEDING 62,000 SQUARE FEET IN AREA. [IFC § 503.1.2]

26. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. [IFC § 503.2.5]

27. ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE BEGINNING OF THE DESIGNATED FIRE LANE. ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. [IFC § 503.3]

28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. SAID SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE IFC § 503.6 AND IFC APPENDIX M.

EFFECTIVE 03/01/16

CITY OF LAS VEGAS SEWER NOTES

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

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

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

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

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

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

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

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

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

10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PVC PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

ABBREVIATIONS

ABAN - ABANDON	IN - INCH	S - SOUTH/SLOPE
AC - ASPHALTIC CONCRETE	INST - INSTALL	S/C - SAW CUT
AGR - AGGREGATE	INT - INTERIOR	SCOP - STEEL CYLINDER CONCRETE
R - AND	INV - INVERT	PIPE
APN - ASSESSOR PARCEL NUMBER	IRR - IRRIGATION	
APPROX - APPROXIMATE		
ASSY - ASSEMBLY	LB OR # - POUND	
AVE - AVENUE	LEN OR L - LENGTH OF CURVATURE	
	LF - LINEAR FOOT	
BC - BACK OF CURB	LG - LONG	
BCR - BACK OF CURVE RETURN	LN - LINE	
BK - BOOK/BACK	LT - LEFT/LIGHT	
BLDG - BUILDING	LVVWD - LAS VEGAS VALLEY	
BLK - BLOCK	WD - WATER DISTRICT	
BLM - BUREAU OF LAND MANAGEMENT	LWR - LOWER	
BLVD - BOULEVARD		
BM - BENCHMARK	M - METER	
BO - BLOW OFF ASSEMBLY	MATL - MATERIAL	
BOC - BACK OF CURB	MAX - MAXIMUM	
BOT - BOTTOM	MECH - MECHANICAL	
BOW - BACK OF WALK	MFR - MANUFACTURER	
BKR - BEARING	MG - MILLION GALLONS	
BVC - BEGIN VERTICAL CURVE	MGD - MILLION GALLONS PER DAY	
BW - BACK OF WALK	MH - MANHOLE	
BWV - BACK WATER VALVE	MIN - MINIMUM	
	MISC - MISCELLANEOUS	
C/C - CENTER TO CENTER	MJ - MECHANICAL JOINT	
C&G - CURB & GUTTER	MKR - MARKER	
CC - CLARK COUNTY	ML - MORTAR LINED	
CE - COMMON ELEMENT	MLC - MORTAR LINED & COATED	
CD - CAST IRON	MVC - MIDDLE OF VERTICAL CURVE	
CIP - CAST IRON PIPE/CAST IN PLACE		
CL OR C - CENTERLINE	N - NORTH	
CLV - CITY OF NORTH LAS VEGAS	N/A - NOT APPLICABLE	
CO - COUNTY	NOT - NOT A PART	
COH - CITY OF HENDERSON	NAD - NEVADA DEPARTMENT OF TRANSPORTATION	
CONC - CONCRETE	NE - NORTHEAST	
CONC - CONCRETE	NF - NORTH FACE	
COORD - COORDINATE	NO - NATURAL GRASS	
CTR - CENTER	NO OR # - NUMBER	
CV - CONTROL VALVE	NTS - NOT TO SCALE	
Δ - DELTA ANGLE	NW - NORTHWEST	
DY OR DWT - DRIVEWAY DEPT - DEPARTMENT		
DET - DETAIL	O/O - OUT TO OUT	
DEV - DEVELOPMENT	OC - ON CENTER	
DG - DESIGN GRADE	OD - OUTSIDE DIAMETER	
DI - DROP INLET/DUCTILE IRON DIA OR Ø - DIAMETER	OF - OUTSIDE FACE	
DIM - DIMENSION	OHP - OVER HEAD POWER	
DIP - DUCTILE IRON PIPE DIR - DIRECTION	ORIG - ORIGINAL	
DIST - DISTANCE	OVEL - OVERFLOW	
DWR - DROP MANHOLE		
DN - DOWN		
DR - DRIVE		
DWC - DRAWING		
E - EAST/EDGE	PL OR P - PROPERTY LINE	
EA - EACH	PAVMT - PAVEMENT	
EG - EXISTING GROUND	PB - PULL BOX	
ELEV - ELEVATION	PC - POINT OF CURVE	
EOP - EDGE OF PAVEMENT	PCC - POINT OF COMPOUND CURVE	
EOS - EDGE OF SHOULDER	PE - POLYETHYLENE	
EQ - EQUAL OR EQUATION	PE - PEDESTAL	
EQ SP - EQUALLY SPACED	PERM - PERMANENT	
ESMT - EASEMENT	PERP - PERPENDICULAR	
EST - ESTIMATE	PH - PHASE	
END - END OF VERTICAL CURVE	PI - POINT OF INTERSECTION	
EW - EACH WAY	PKG - PACKAGE	
EXIST - EXISTING	PKWY - PARKWAY	
	PL - PLACE/PLATE/PARCEL LINE	
F/F - FACE TO FACE	PLT - PLATE (DRAWING)	
FC - FACE OF CURB	POLY - POLYETHYLENE	
FF - FINISHED FLOOR	PP - POWER POLE	
FG - FINISHED GRADE	PR - PAR	
FH - FIRE HYDRANT	PREC - PRECAST REINFORCED CONCRETE	
FIG - FIGURE	PRELIM - PRELIMINARY	
FL OR F - FLOW LINE	PROP - PROPOSED	
FLR - FLOOR	PRV - PRESSURE REGULATING VALVE	
FN - FENCE	PS - PUMP STATION	
FND - FOUND	PSF - POUNDS PER SQUARE FOOT	
FDC - FACE OF CURB	PSI - POUNDS PER SQUARE INCH	
FDW - FACE OF WALL	PT - POINT/POINT OF TANGENT	
FPM - FEET PER MINUTE	PUE - PUBLIC UTILITY EASEMENT	
FPS - FEET PER SECOND	PV - POINT OF VERTICAL INTERSECTION	
FT - FOOT OR FEET	PVC - POLYVINYL CHLORIDE PIPE	
FUT - FUTURE	QTR - QUARTER	
	QTY - QUANTITY	
G/B - GRADE BREAK		
GALV - GALVANIZED	R - RADIUS	
GB - GRADE BREAK	(R) - RADIAL	
GND - GROUND	R/W - RIGHT OF WAY	
GPD - GALLONS PER DAY	RCB - REINFORCED CONCRETE BOX	
GPH - GALLONS PER HOUR	ROC - REINFORCED CONCRETE PIPE	
GNW - GALLONS PER MINUTE	RD - ROAD	
GRD - GRADE	RED - REDUCER	
GRT - GRATE	REQD - REQUIRED	
GV - GATE VALVE	RET - RETURN	
	REV - REVISION OR REVERSE	
HORIZ - HORIZONTAL	ROW - RIGHT OF WAY	
HP - HIGH POINT	RPPA - REDUCED PRESSURE	
HPO - HIGH PRESSURE GAS	RR - RAILROAD	
HT - HEIGHT	RT - RIGHT	
HWY - HIGHWAY		

PUBLIC DRAINAGE QUANTITIES

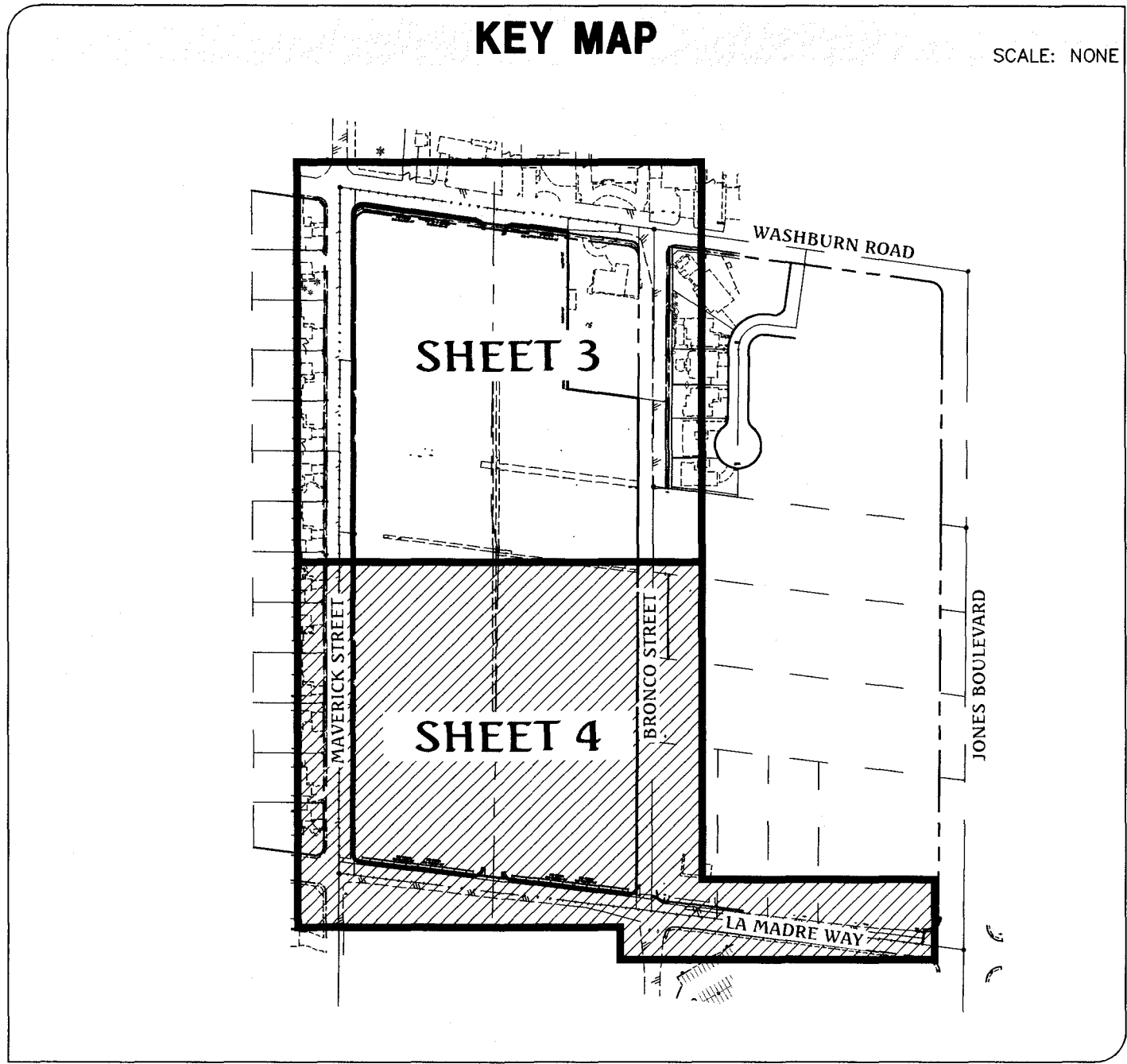
WITHIN PUBLIC DRAINAGE EASEMENTS

1. 2" ASPHALTIC CONCRETE PAVEMENT	7,416 SY
2. TYPE II GRAVEL	1,319 CY
3. "L" TYPE CURB AND GUTTER (24")	2,037 LF
4. 6" THICK 3000 PSI CONCRETE	1,327 SF
5. SIDEWALK	11,158 SF

GENERAL LEGEND

	CENTERLINE
	UNIT BOUNDARY
	PROPOSED 1' GRADE CONTOUR
	PROPOSED 5' GRADE CONTOUR
	EXISTING 1' GRADE CONTOUR
	EXISTING 5' GRADE CONTOUR
	PROPOSED PROPERTY LINE
	PROPOSED SETBACK LINE
	PROPOSED HINGE LINE
	PROPOSED SWALE
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	RETAINING WALL
	GARDEN WALL WITH SOLID GROUT
	8" WIDE CMU FLOOD WALL
	EXISTING FENCE
	EXISTING EDGE OF PAVEMENT
	PROPOSED EDGE OF PAVEMENT
	PROPOSED STREETLIGHT CONDUIT
	PROPOSED NO. 3 1/2 CONCRETE PULL BOX W/ METAL COVER
	EXISTING GAS
	EXISTING SEWER MAIN
	PROPOSED SEWER MAIN
	PROPOSED SEWER LATERAL
	EXISTING STORM DRAIN
	PROPOSED STORM DRAIN
	EXISTING WATER MAIN
	PROPOSED WATER MAIN
	PROPOSED FIRE HYDRANT
	LOT NUMBER
	PROPOSED FINISH FLOOR
	PROPOSED PAD ELEVATION
	EXISTING STREET LIGHT
	PROPOSED 100w HPS STREET LIGHT
	PROPOSED 150w HPS STREET LIGHT
	PROPOSED 200w HPS STREET LIGHT
	PROPOSED 250w HPS STREET LIGHT
	PROPOSED 400w HPS STREET LIGHT
	PROPOSED HANDICAP RAMP
	PROPOSED CONCRETE DRIVEWAY
	0" LIP DRIVEWAY
	2:1 SCARP
	COURSES OF 8" CMU NUMBER OF COURSES
	CUL-DE-SAC BACK OF CURB STATION
	KNUCKLE BACK OF CURB STATION
	SIGHT VISIBILITY ZONE

Q:\Triton Drawings\007-098 Maverick\Drawings\DRAINAGE\03_drainage grading-detailed.dwg drawn Mon, 23 May 2016 - 11:00am



BASIS OF BEARING

NORTH 82°59'56" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST, N.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 117, PAGE 9 OF PLATS.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK No. 8LV903566
RIVET & PLATE IN TOP OF CURB AT THE SOUTHWEST CORNER OF WASHBURN ROAD & MAVERICK STREET.
ELEVATION = 700.720 METERS (NAVD'88 2008 ADJ.)
ELEVATION = 2298.95 U.S. FEET (NAVD'88 2008 ADJ.)

FLOOD ZONE NOTE

THE PROJECT SITE IS LOCATED ON FEMA FLOOD INSURANCE RATE MAP #32003C1765F. THE SITE IS LOCATED WITHIN DESIGNATED FLOOD HAZARD ZONE X BEING AN AREA DETERMINED TO BE OUTSIDE THE 100 YEAR FLOOD PLAIN.

SOILS INFORMATION

1. SOILS REPORT BY: GEOTEK RESIDENTIAL, LLC
PROJECT No. 12565-LVR
DATED: SEPTEMBER 14, 2015

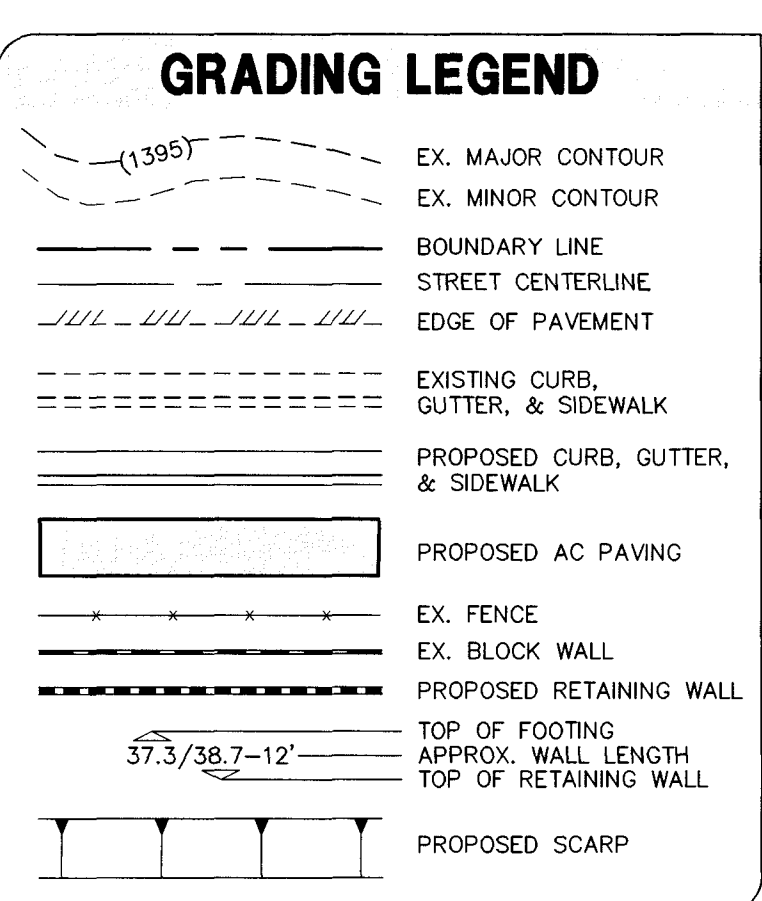
2. CUT TOTAL: 19,866 C.Y.
FILL TOTAL: 19,839 C.Y.
NET: 27 C.Y. (CUT)

PUBLIC DRAINAGE QUANTITIES
WITHIN PUBLIC DRAINAGE EASEMENTS

1. 2" ASPHALTIC CONCRETE PAVEMENT	7,416 SY
2. TYPE II GRAVEL	1,319 CY
3. "L" TYPE CURB AND GUTTER (24")	2,037 LF
4. 6" THICK 3000 PSI CONCRETE	1,327 SF
5. SIDEWALK	11,158 SF

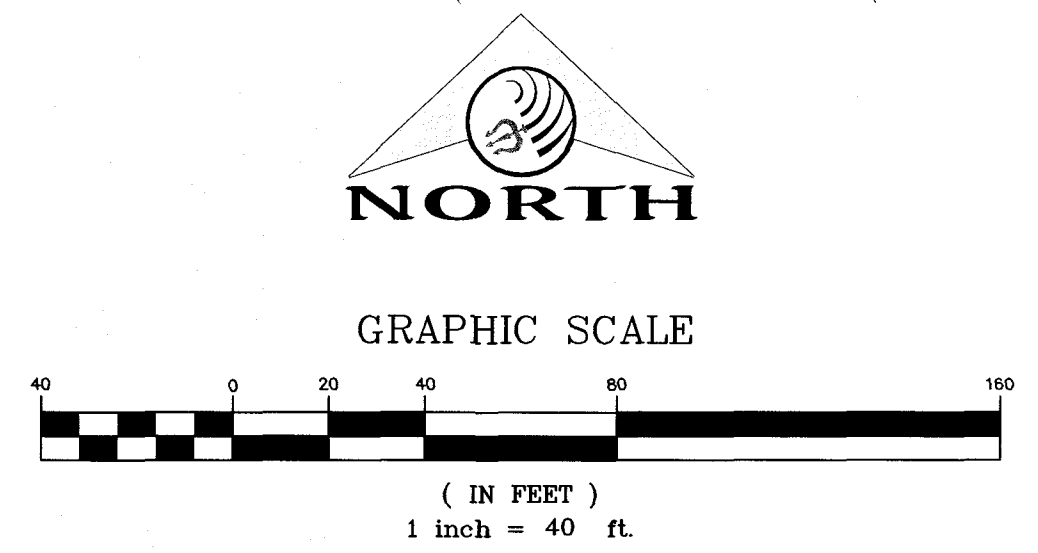
GRADING NOTES

1. ALL PROPOSED PAD ELEVATIONS AND SWALE ELEVATIONS ARE ROUGH GRADES. ALL OTHER PROPOSED ELEVATIONS ARE FINISHED GRADES.
2. THE GRADING PLANS SHALL BE AT THE PROJECT SITE THROUGHOUT THE COURSE OF CONSTRUCTION.
3. ALL GRADING SHALL BE PERFORMED IN CONFORMANCE WITH THE LINES, GRADES AND DETAILS AS SHOWN ON THESE PLANS. ANY DEVIATION FROM THESE PLANS WILL ONLY BE PERMITTED UPON WRITTEN APPROVAL FROM THE ENGINEER.
4. ALL PADS ARE TO BE GRADED WITHIN ±0.3' OF THE ELEVATIONS AS SHOWN ON THE PLANS. GRADING IS NOT COMPLETE UNTIL THE ENGINEER HAS CERTIFIED THAT THE PADS HAVE BEEN GRADED IN SUBSTANTIAL CONFORMANCE TO THE PLANS.
5. ALL PLACEMENT OF OVERSIZED MATERIALS AND/OR FILL MATERIALS SHALL BE PER THE SOILS REPORT REFERENCED ON THIS PLAN.
6. ADD 2200 TO ALL SPOT GRADES AND TOP OF CURB, FLOW LINE AND FINISH GRADE ELEVATIONS.
7. ANY CURVED CURB LESS THAN 1% MUST BE WATER TESTED BY CONTRACTOR AS REQUIRED BY CITY INSPECTOR.



CONSTRUCTION NOTES

1. CONSTRUCT "L" TYPE CURB & GUTTER PER CCAUSD #216.
2. CONSTRUCT 5' WIDE SIDEWALK PER CCAUSD #234.
3. CONSTRUCT 8' WIDE VALLEY GUTTER PER CCAUSD #228.
4. CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235, CASE I.
5. SAWCUT AND MATCH EXISTING ASPHALT.



FAST

Call before you dig

Underground

1-702-432-5300

FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION

Avoid overhead power line contact. It's costly.

Call before you dig

Overhead

1-702-227-2929

Call before you dig

Avoid cutting underground utility lines. It's costly.

CALL 811

OR 1-800-227-2600

DATE: 05/23/2016
PM: J. PEARCE
DRAWN BY: D.L.
DESIGNED BY: D.L.
CHECKED BY:
JOB NO.: 007098
JOB NO.: 007098
SCALE: 1" = 40'

Triton Engineering

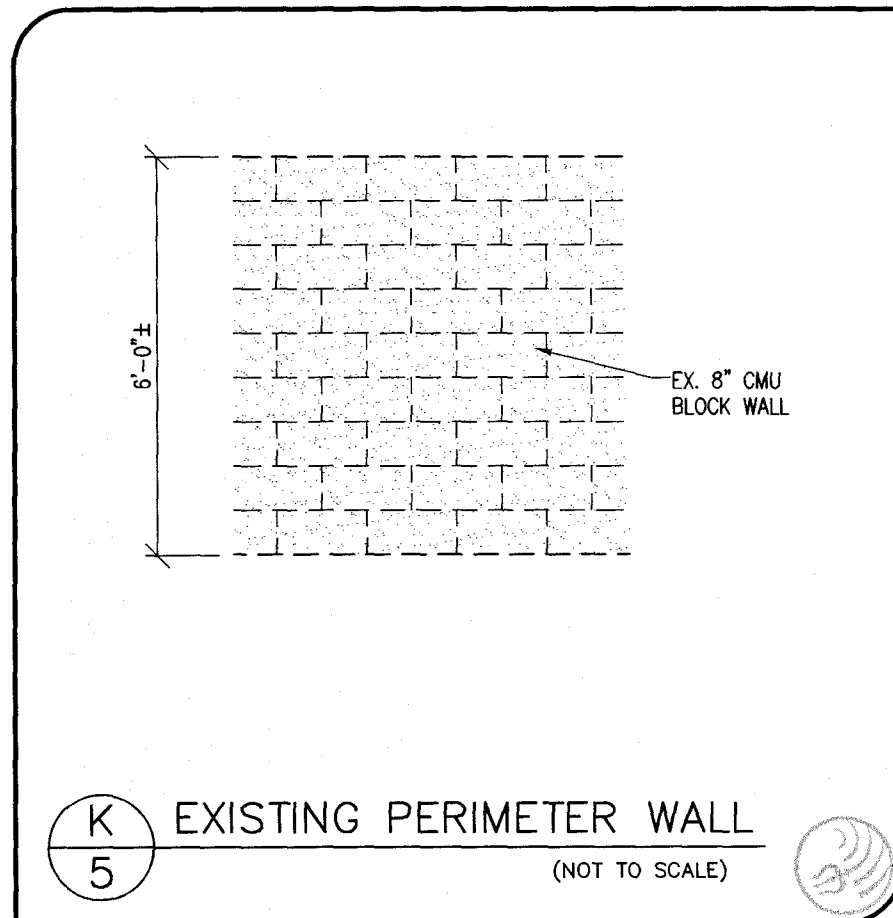
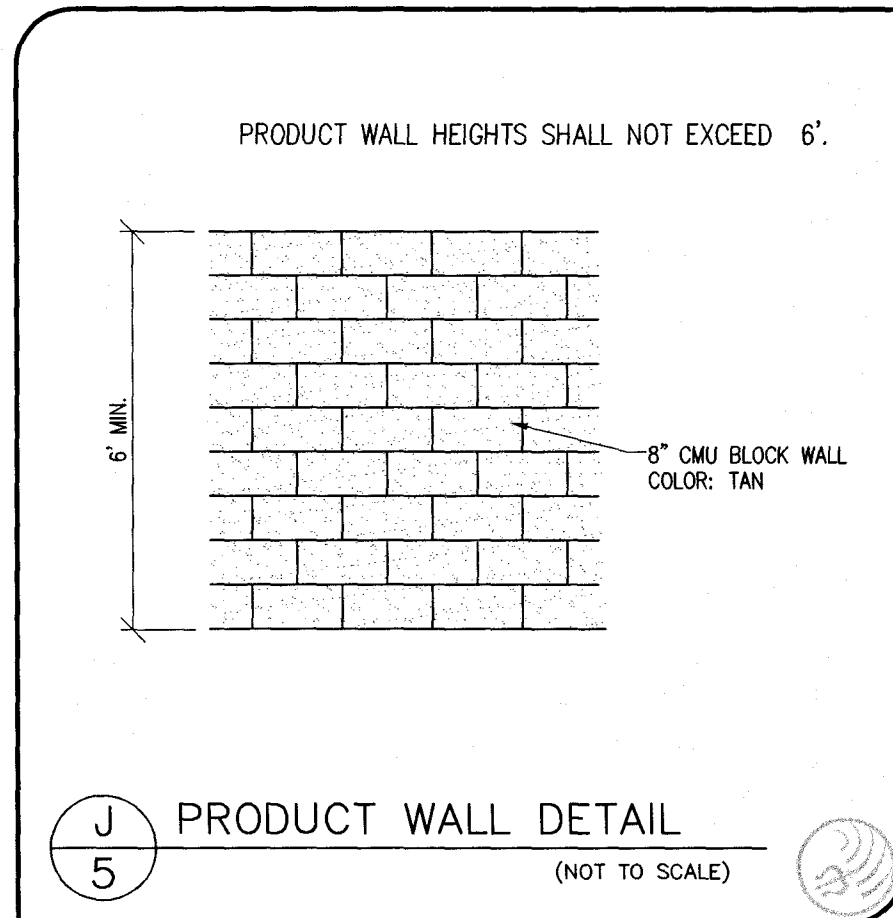
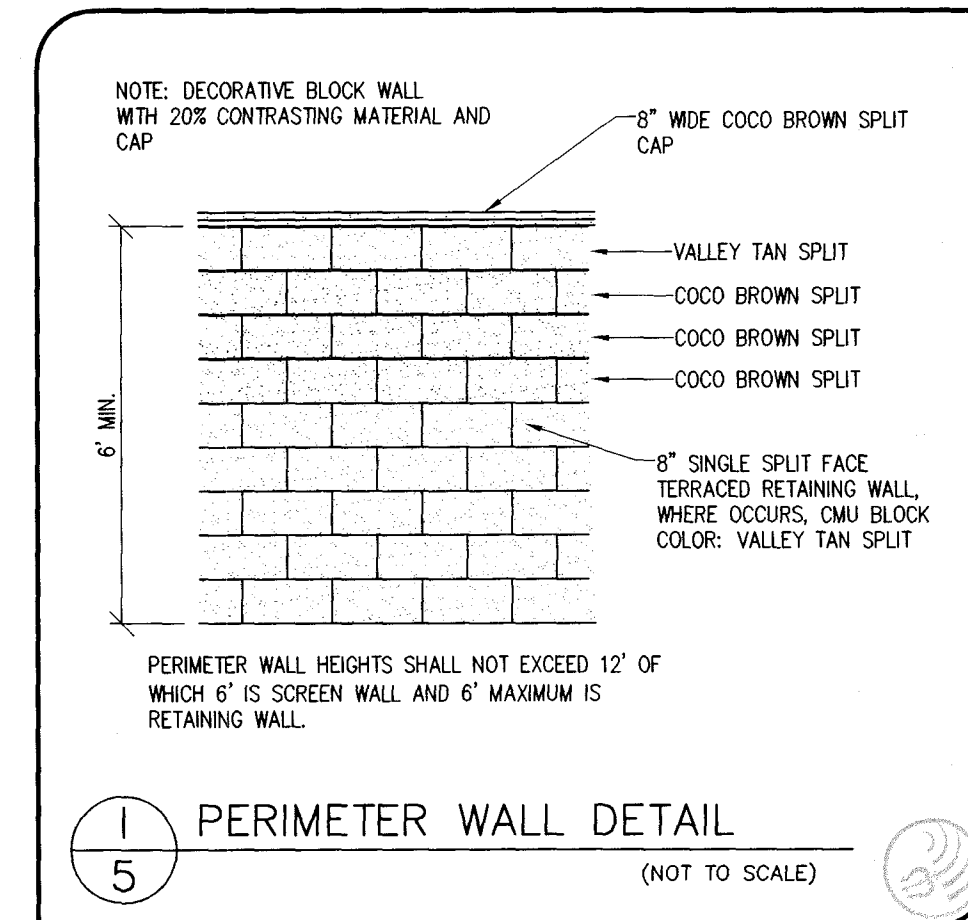
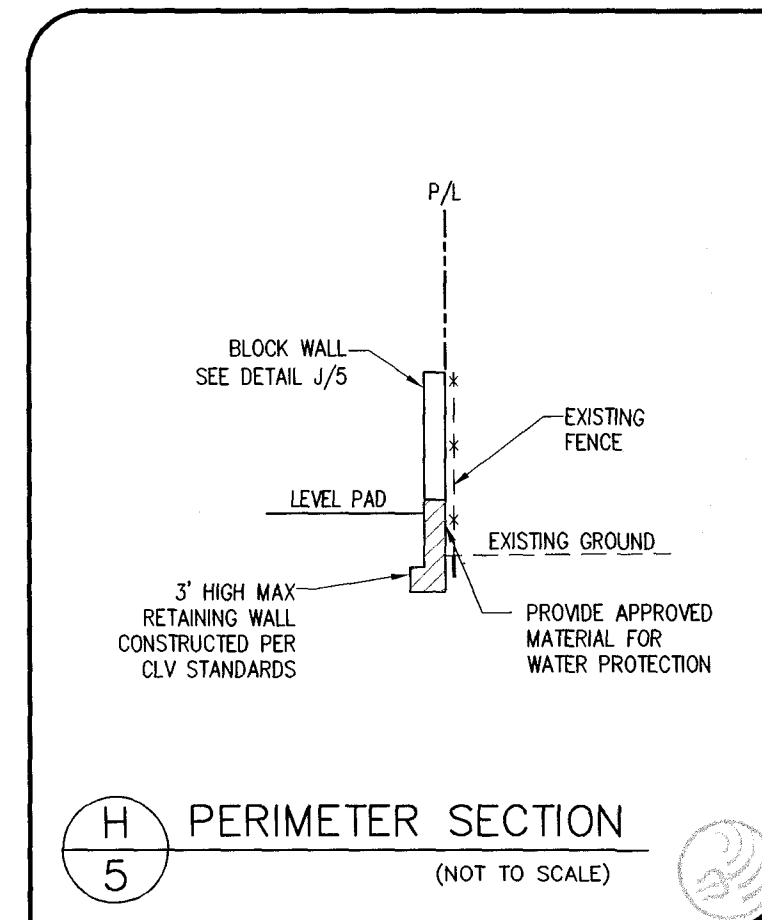
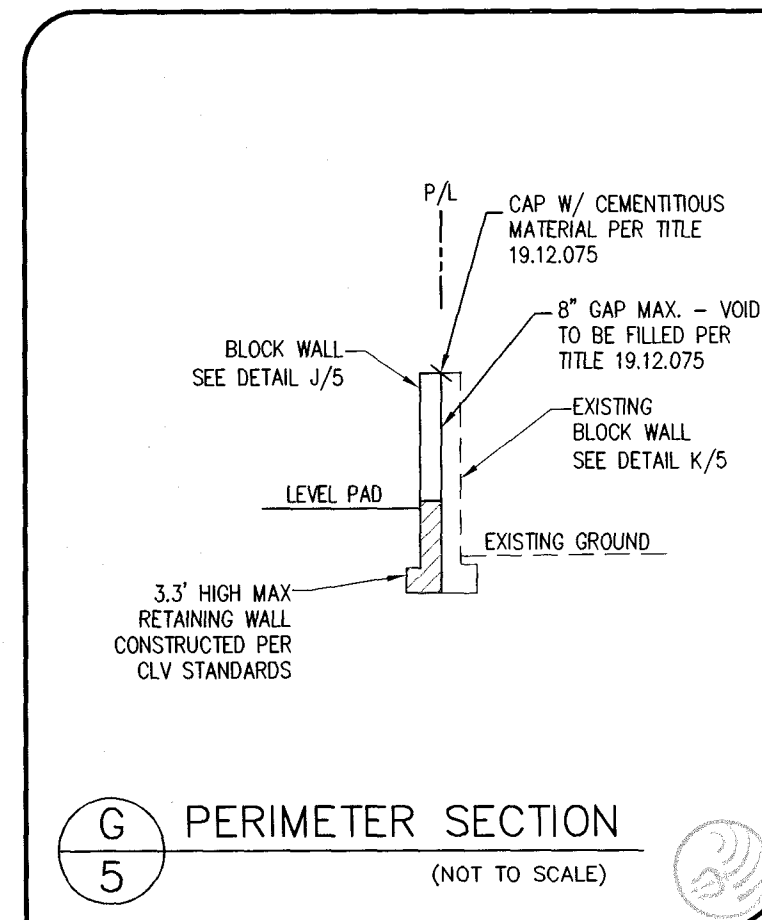
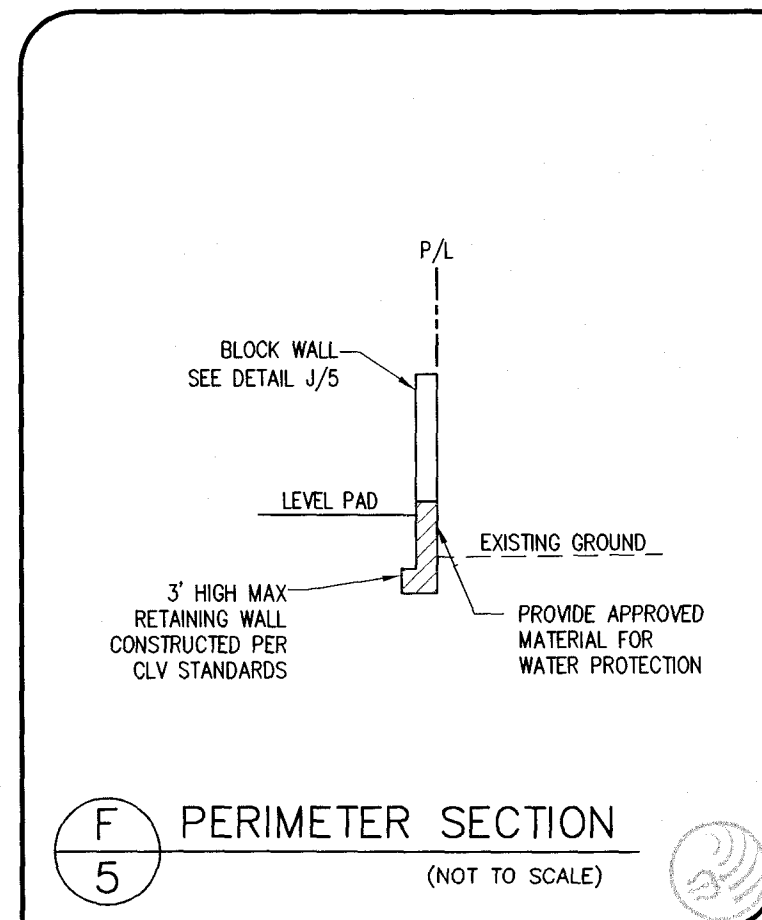
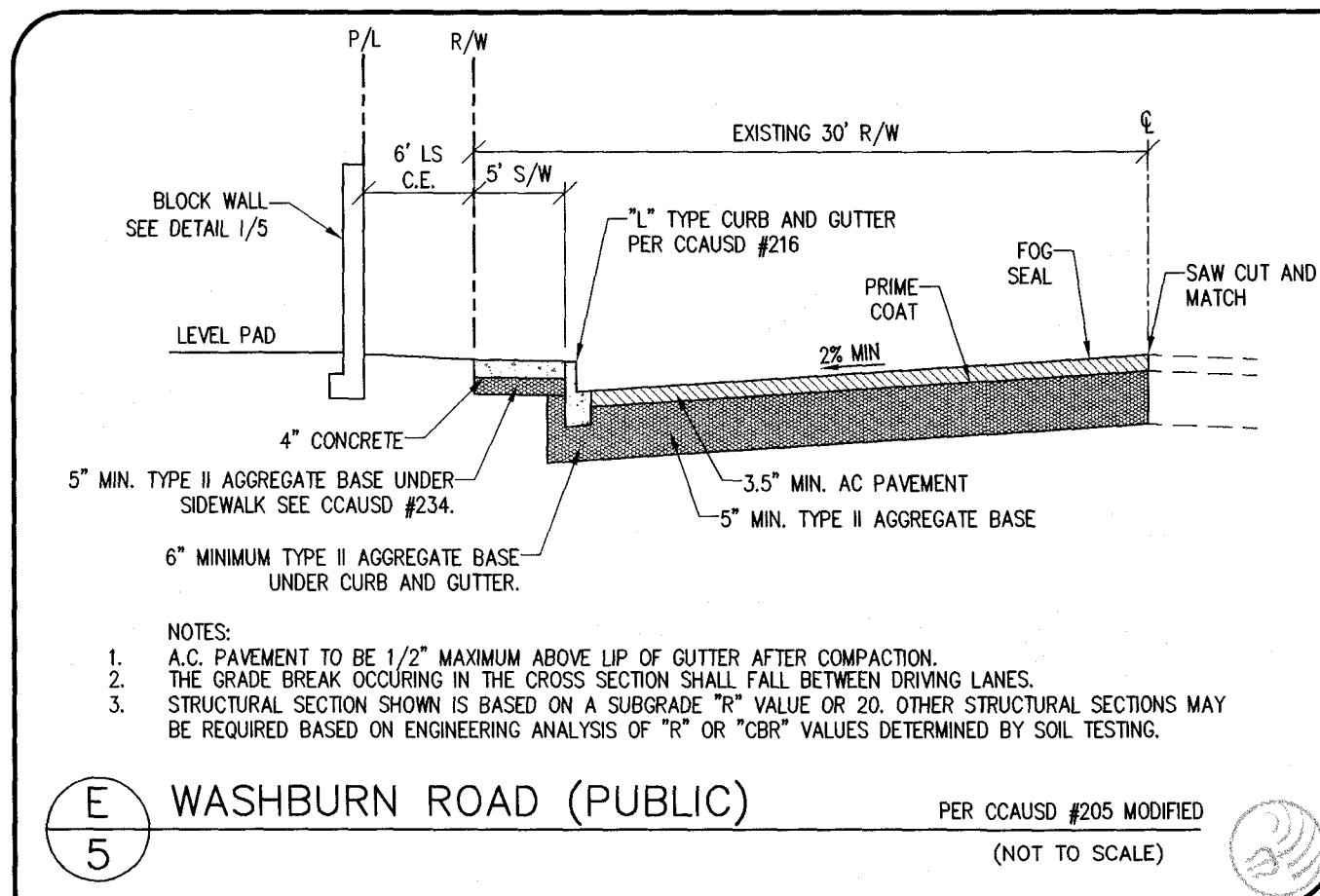
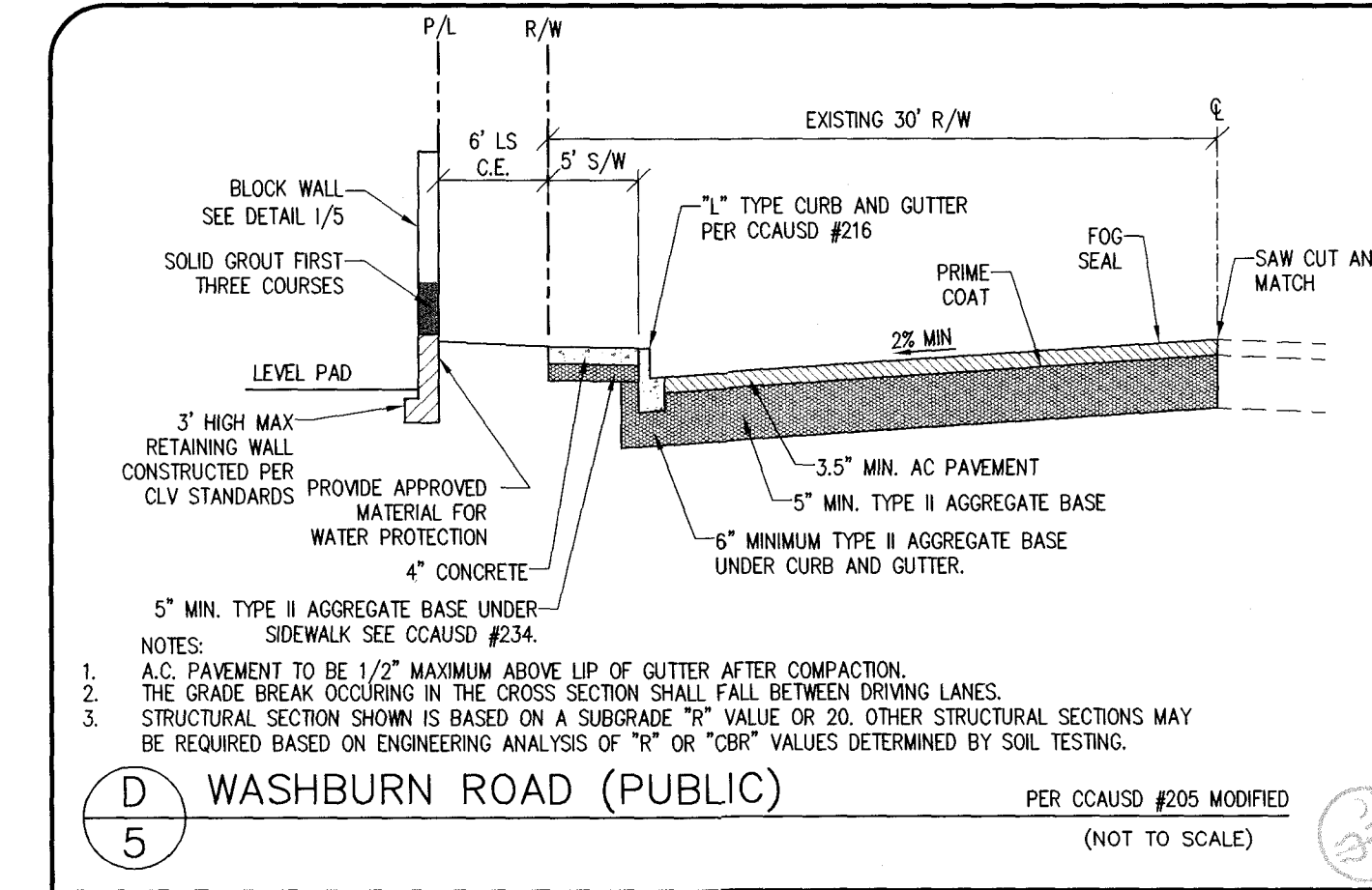
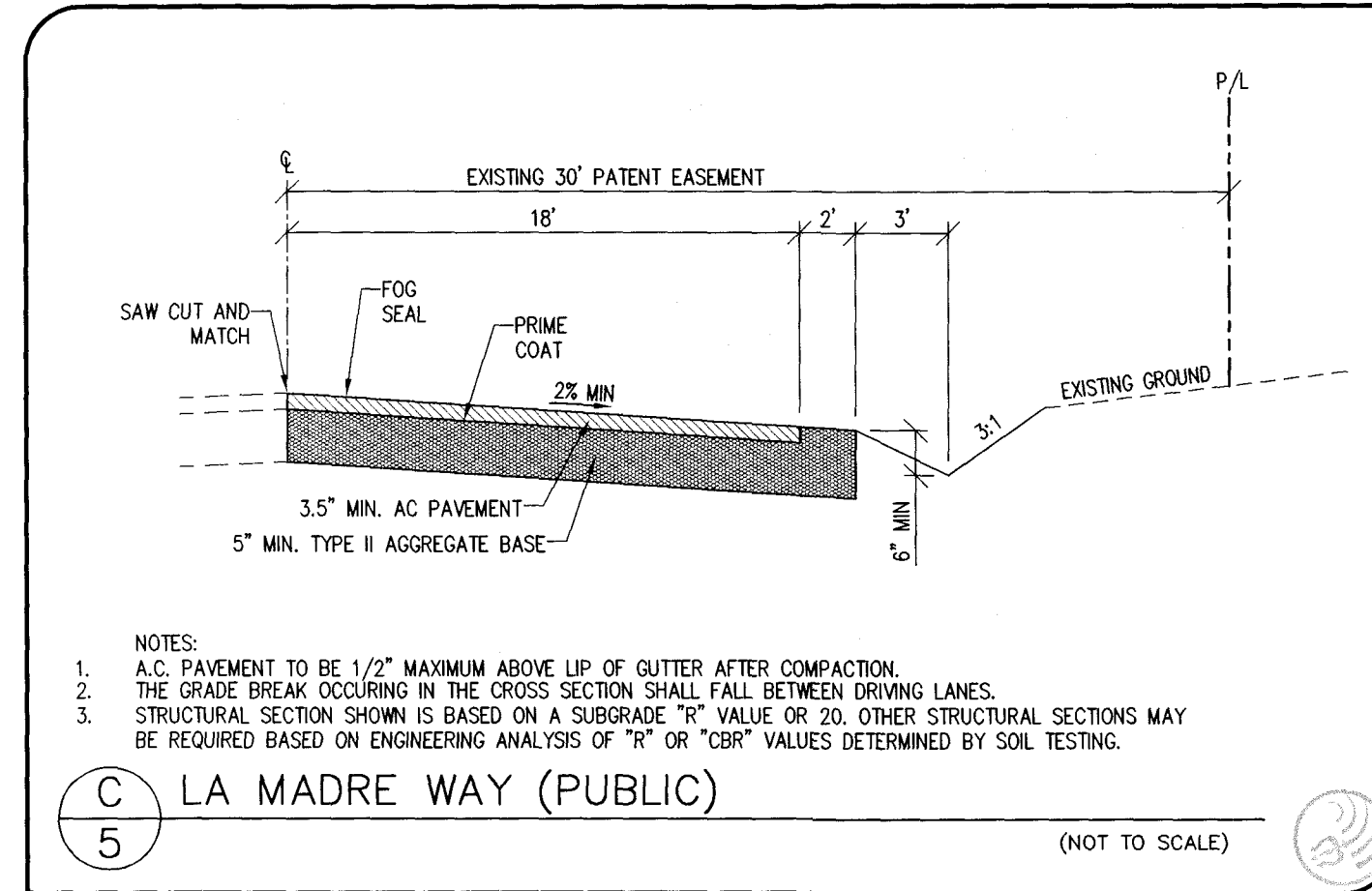
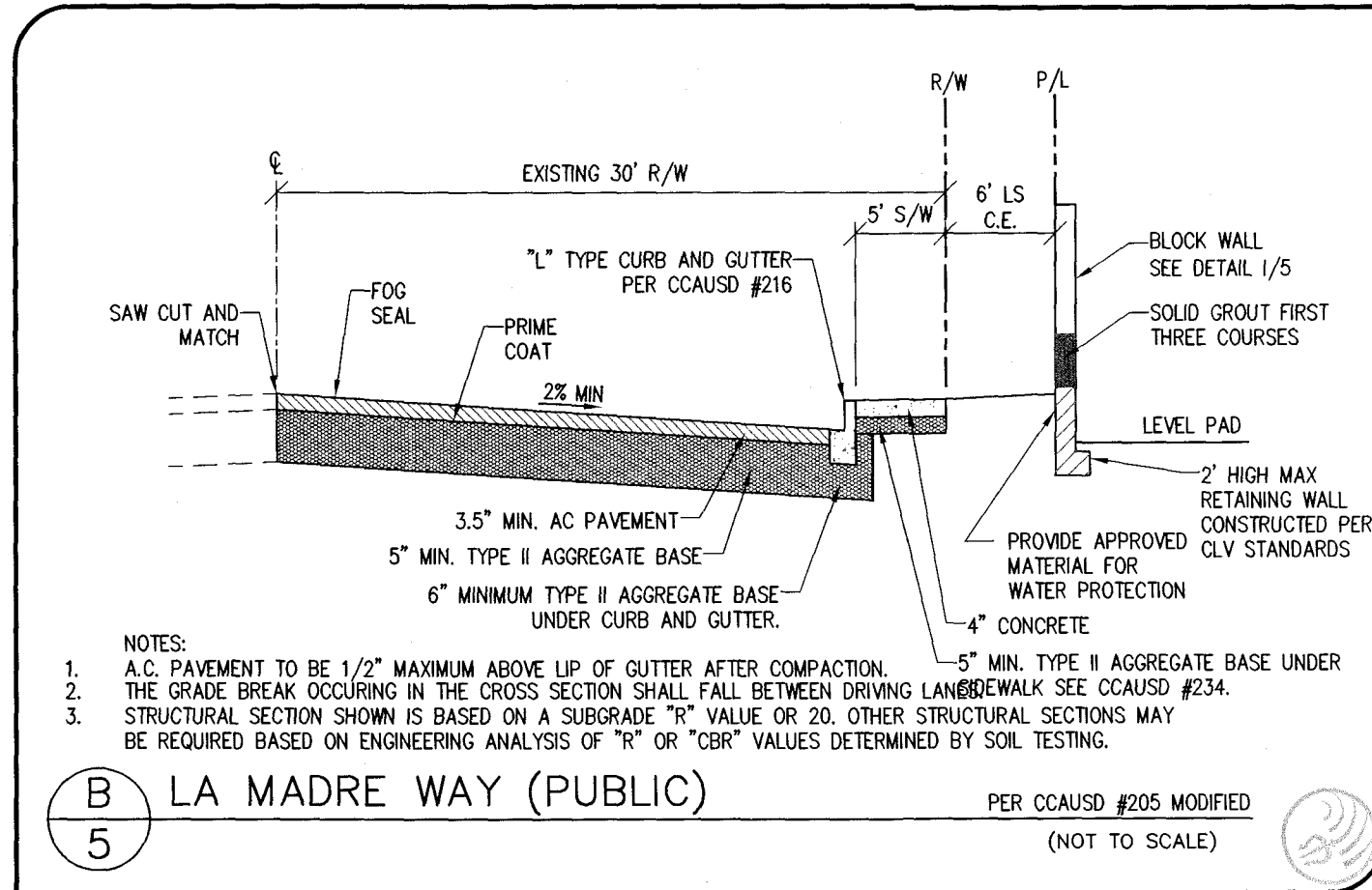
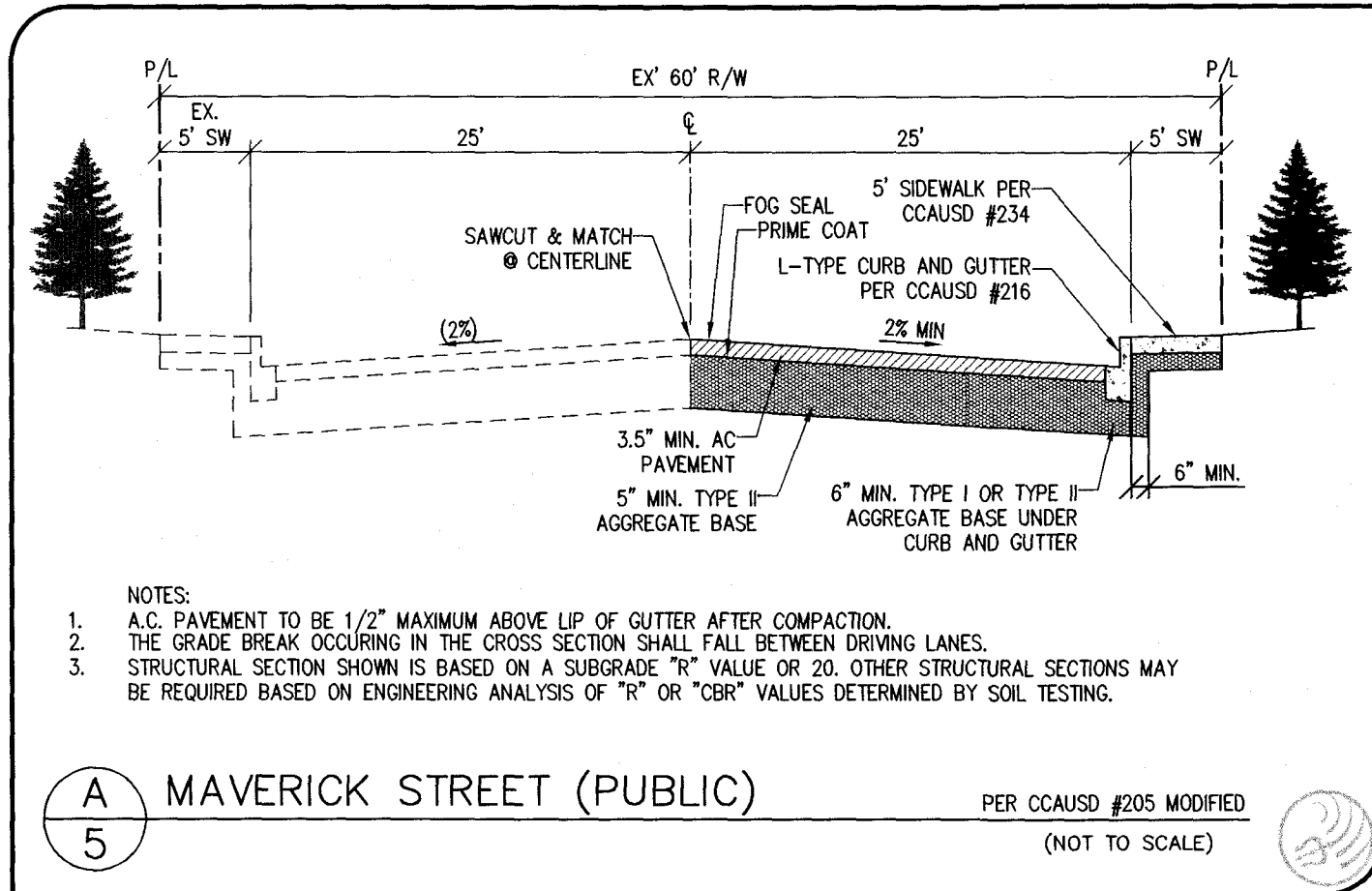
Office: (702) 254-1480
Fax: (702) 254-1482
6957 W. Charleston Blvd.
Suite B
Las Vegas, Nevada 89146
www.tritoneng.com

DR HORTON
MAVERICK & WASHBURN

GRADING PLAN II

PROFESSIONAL ENGINEER-STATE OF NEVADA
JAMES M. PEARCE
Exp. 12-31-
CIVIL
Professional No. 9552

SHEET 4 OF 10
C.L.V. DWG.#



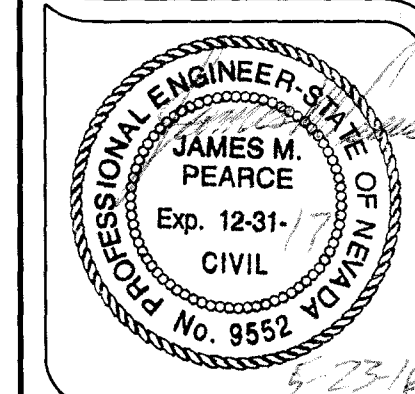
NO.	DESCRIPTION	DATE	APP'D

DATE: 05/20/2016	PM: J. PEARCE	D.L.
DRAWN BY: J. PEARCE	DESIGNED BY: D.L.	CHECKED BY: D.L.
ADA CHECKED: 007.098	JOB NO.: 007.098	SCALE: NONE

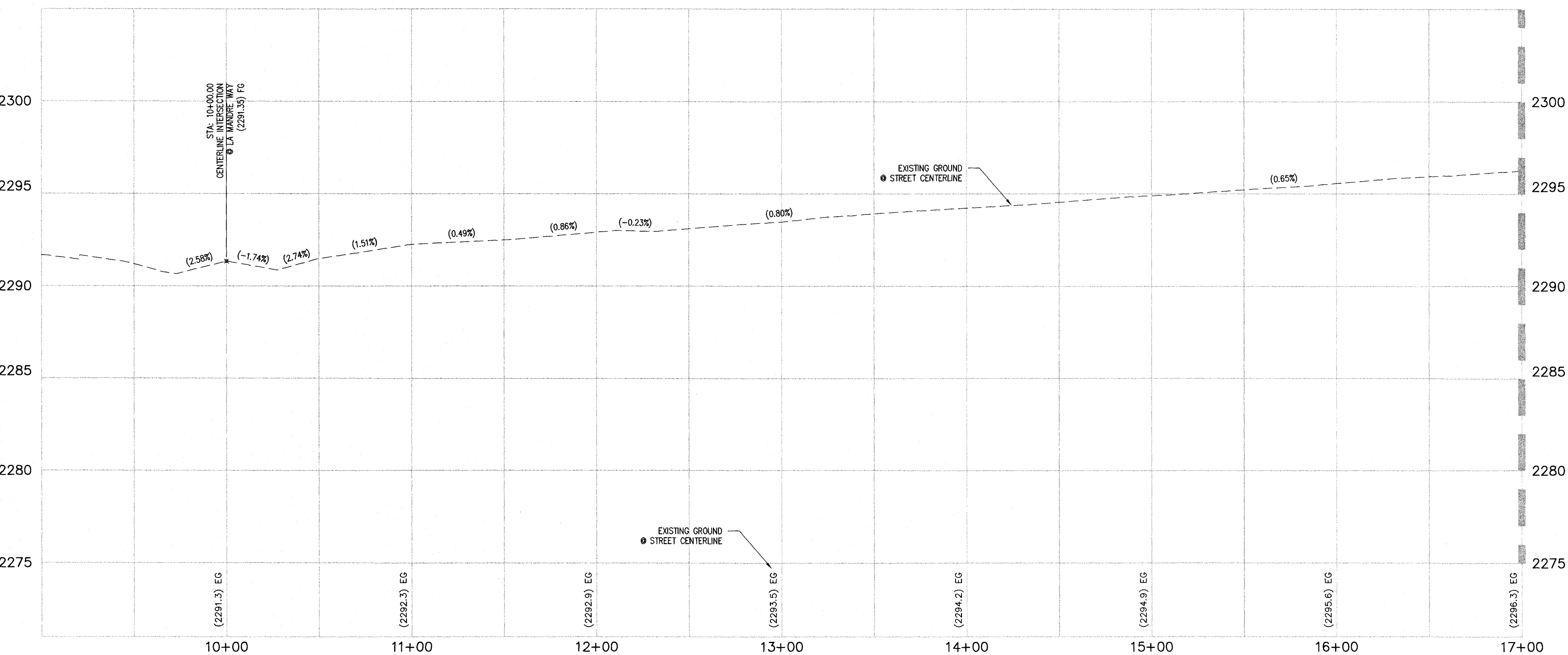
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6757 W. Charleston Blvd.
Suite B
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Office: (702) 254-1480
Fax: (702) 254-3062
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MAVERICK & WASHBURN
GRADING DETAILS



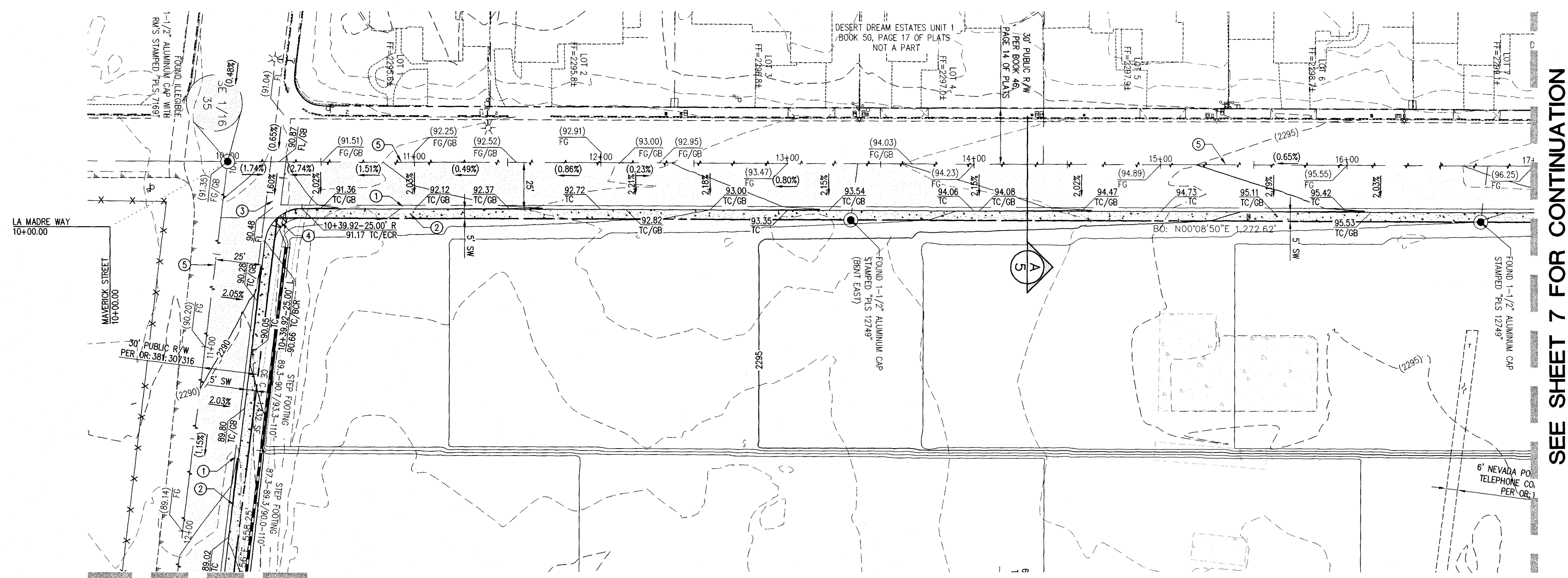
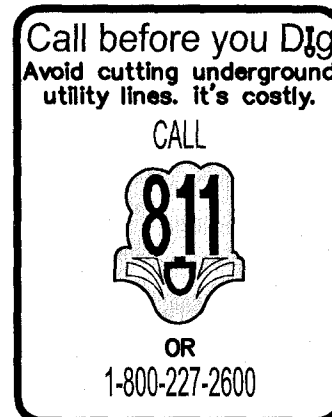
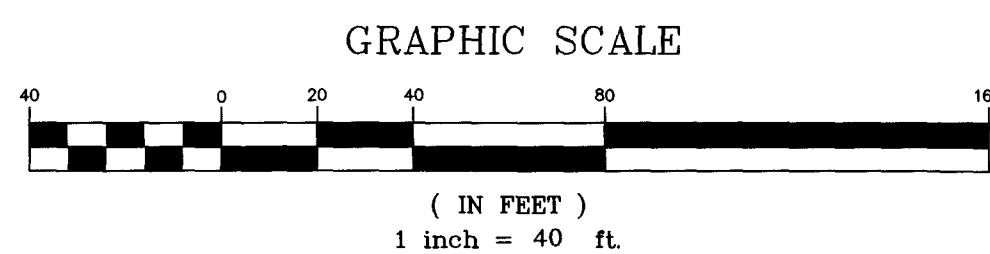
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MAVERICK STREET (PUBLIC)

PROFILE

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



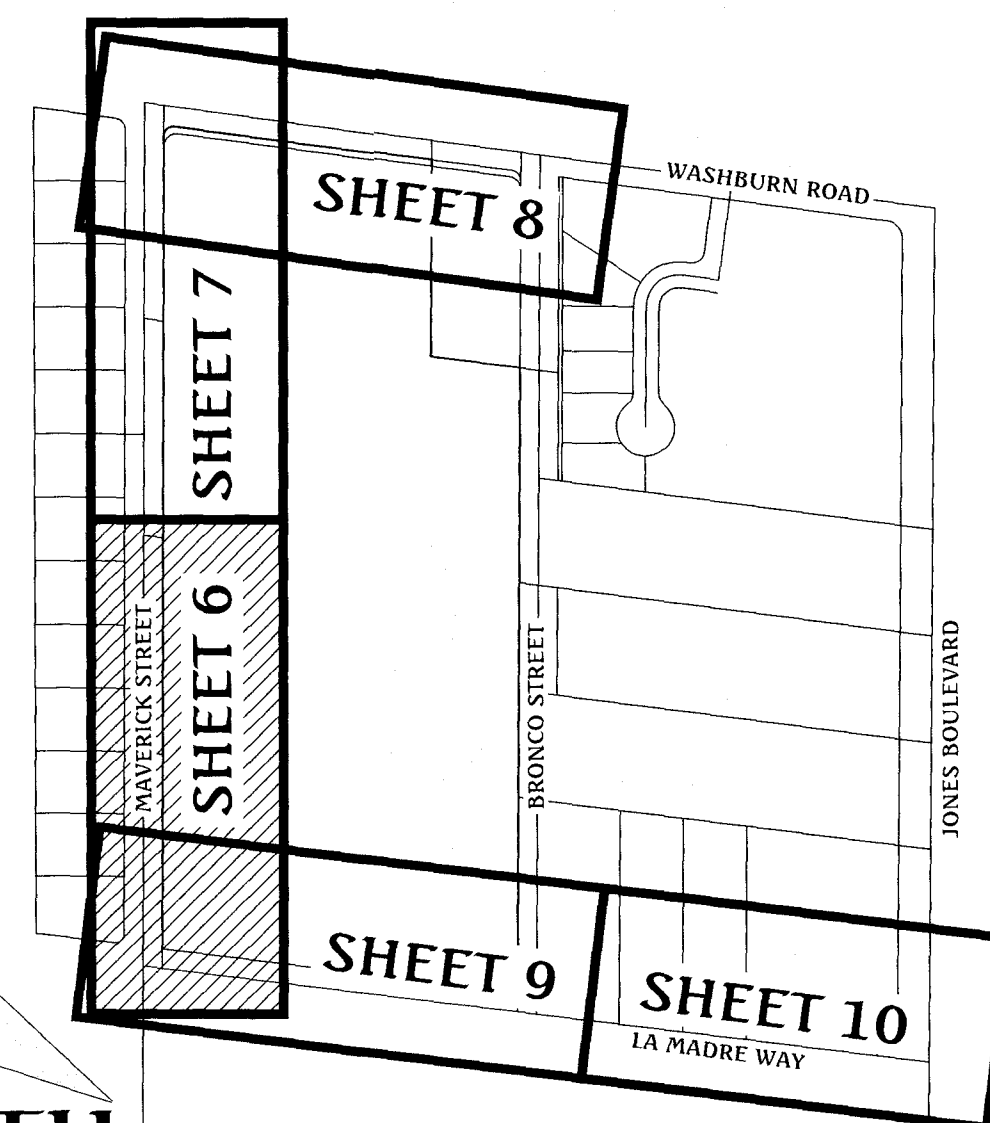
MAVERICK STREET (PUBLIC)

PLAN

SCALE: HORIZ. 1" = 40'

KEY MAP

SCALE: 1" = 300'



BASIS OF BEARING

NORTH 82°59'56" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, AS SHOWN ON THAT CERTAIN MAP ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 117, PAGE 9 OF PLATS.

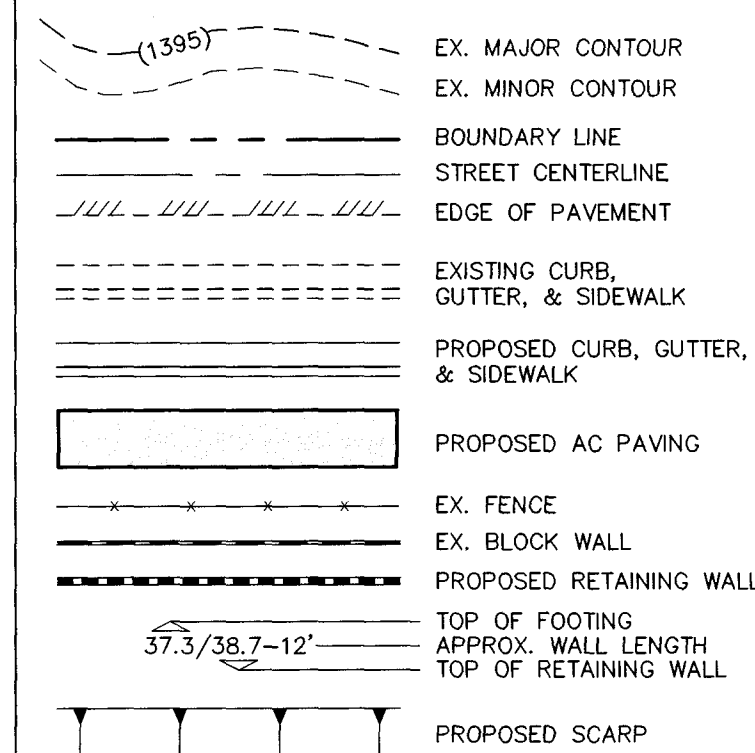
BENCHMARK

CITY OF LAS VEGAS BENCHMARK No. 8LV9035E6
RIVET & PLATE IN TOP OF CURB AT THE SOUTHWEST CORNER OF WASHBURN ROAD & MAVERICK STREET.
ELEVATION = 700.720 METERS (NAVD'88 2008 ADJ.)
ELEVATION = 2298.95 U.S. FEET (NAVD'88 2008 ADJ.)

FLOOD ZONE NOTE

THE PROJECT SITE IS LOCATED ON FEMA FLOOD INSURANCE RATE MAP #32003C1765F. THE SITE IS LOCATED WITHIN DESIGNATED FLOOD HAZARD ZONE X BEING AN AREA DETERMINED TO BE OUTSIDE THE 100 YEAR FLOOD PLAIN.

GRADING LEGEND



CONSTRUCTION NOTES

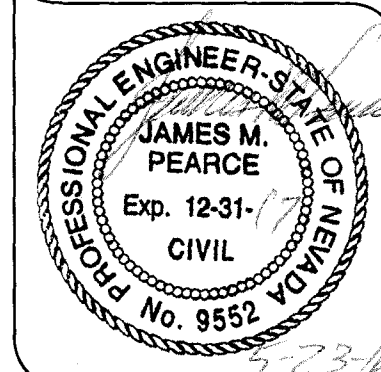
1. CONSTRUCT "L" TYPE CURB & GUTTER PER CCAUSD #215.
2. CONSTRUCT 5' WIDE SIDEWALK PER CCAUSD #234.
3. CONSTRUCT 8' WIDE VALLEY GUTTER PER CCAUSD #226.
4. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOWNS OR EQUIVALENT PER CCAUSD #235, CASE 1.
5. SAWCUT AND MATCH EXISTING ASPHALT.

DATE :	05/20/2016
PM :	J. PEARCE
DRAWN BY :	D.L.
DESIGNED BY :	D.L.
CHECKED BY :	
ADA CHECKED :	
JOB NO. :	007098
SCALE :	1" = 40'

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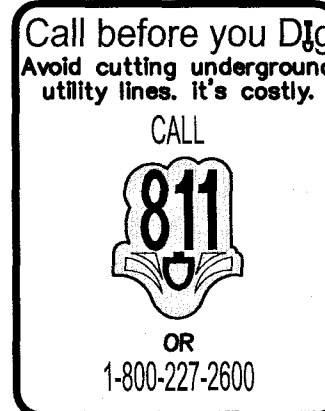
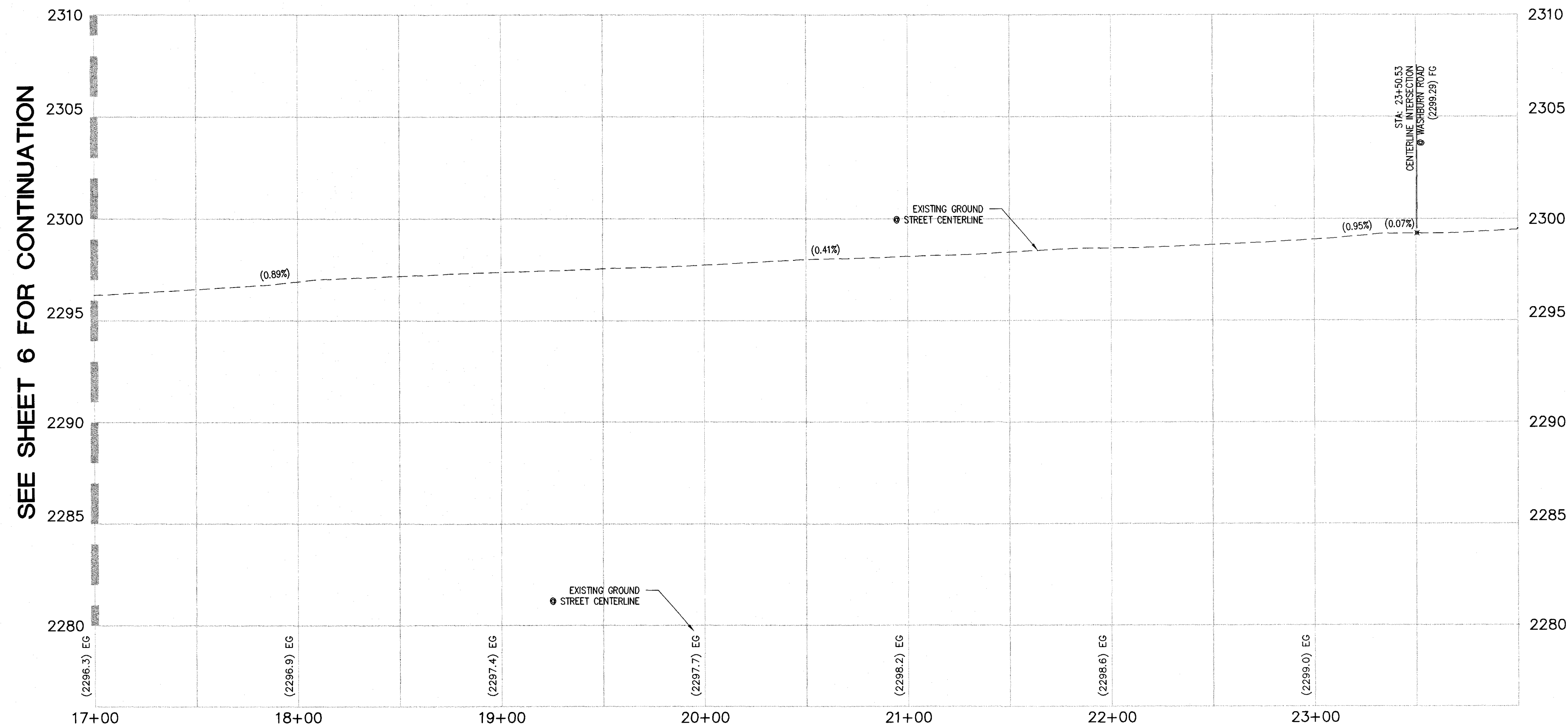
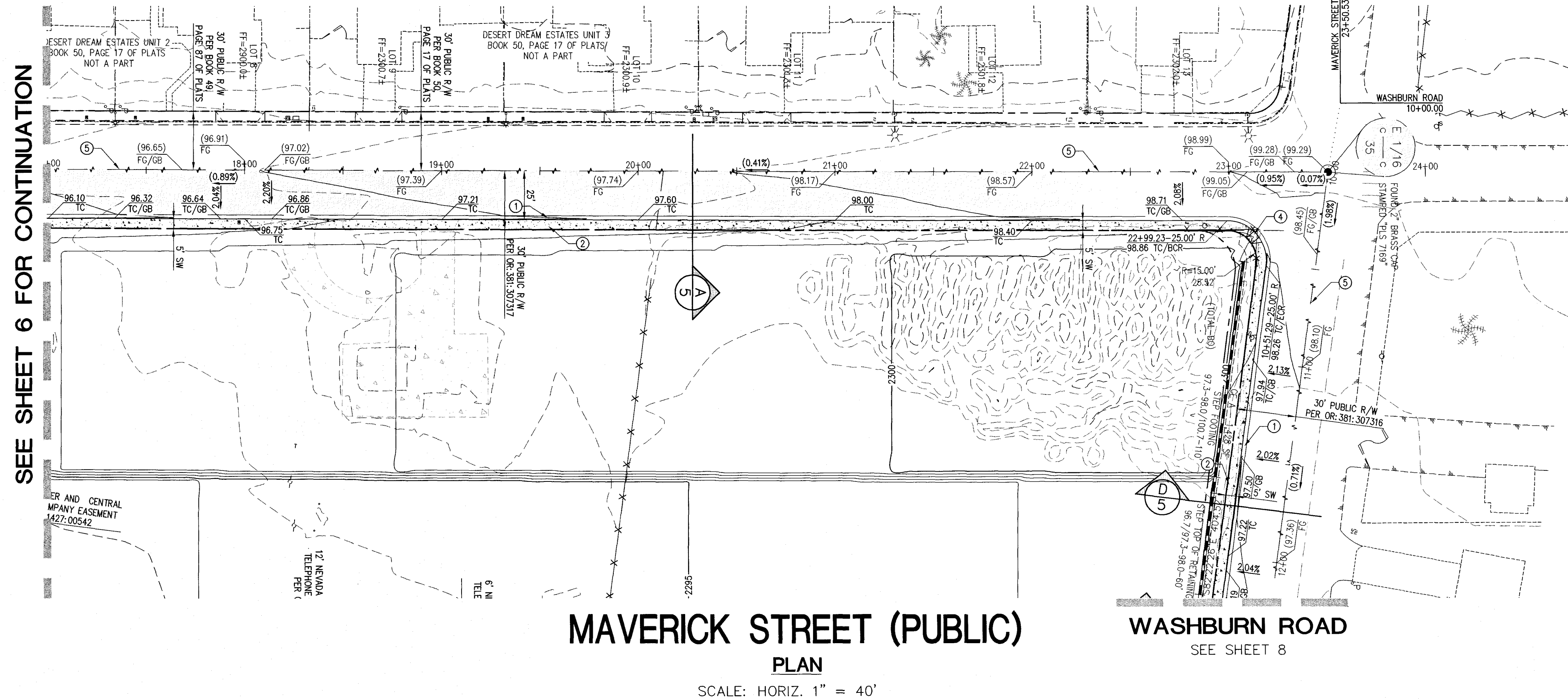


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MAVERICK STREET
PLAN AND PROFILE
STA 10+00 TO STA 17+00



SHEET **6** OF 10
C.L.V. DWG.#

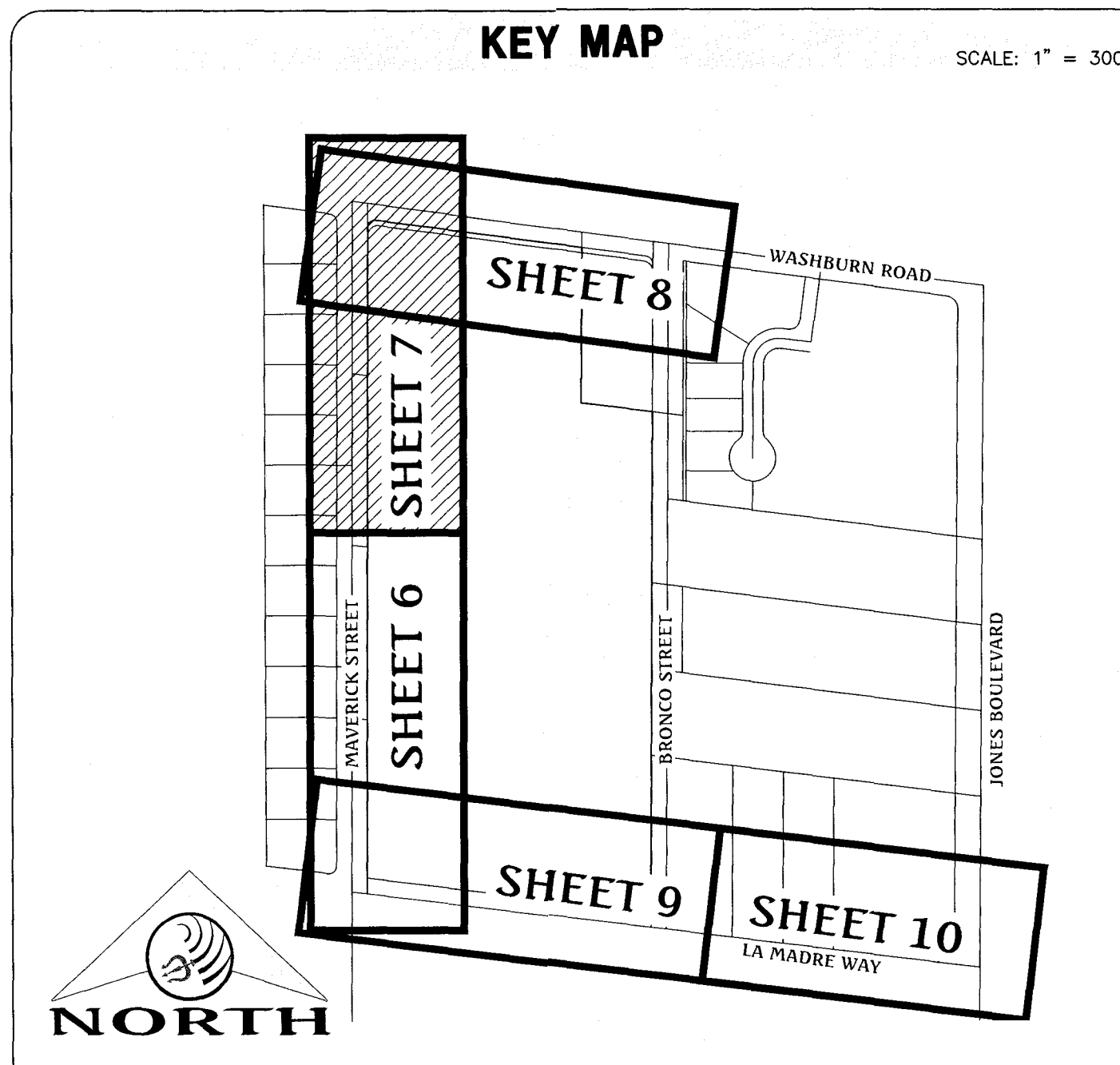
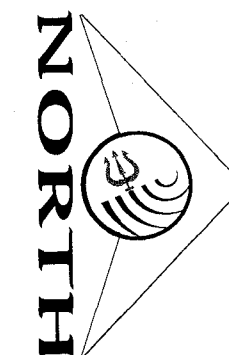
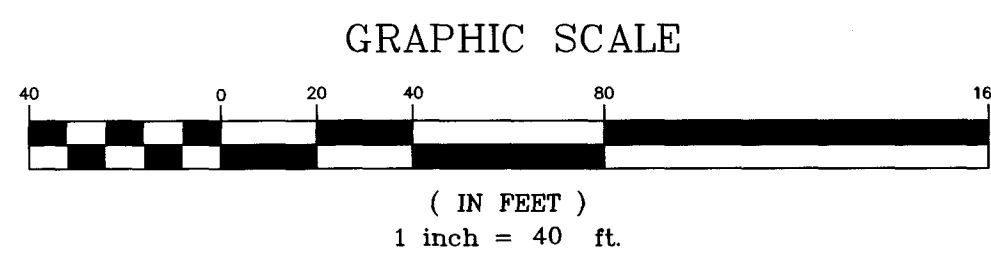
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MAVERICK STREET (PUBLIC)

PROFILE

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



BASIS OF BEARING

NORTH 82°59'56" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 117, PAGE 9 OF PLATS.

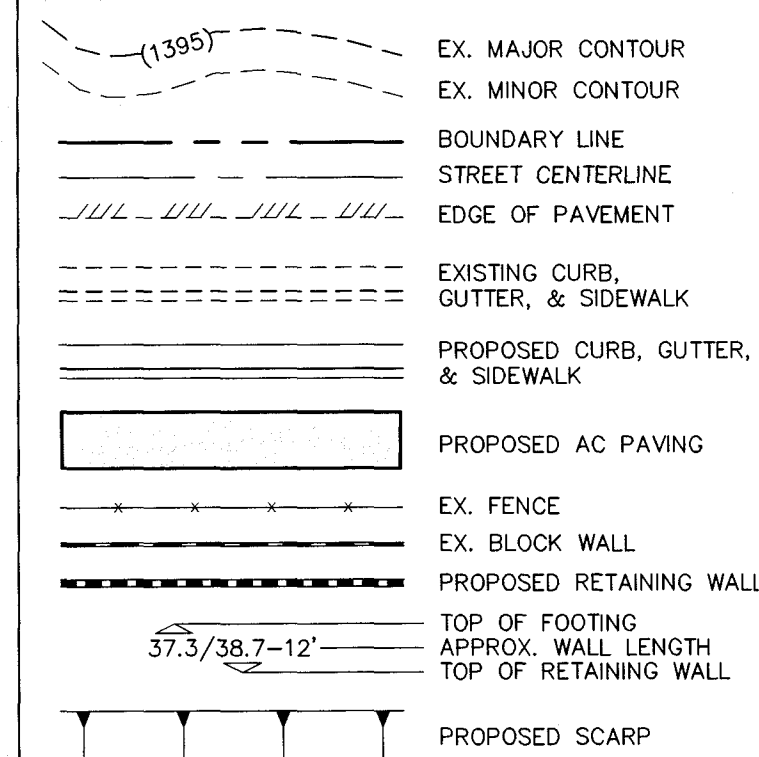
BENCHMARK

CITY OF LAS VEGAS BENCHMARK No. 8LV903566
RIVET & PLATE IN TOP OF CURB AT THE SOUTHWEST CORNER OF WASHBURN ROAD & MAVERICK STREET.
ELEVATION = 700.720 METERS (NAVD'88 2008 ADJ.)
ELEVATION = 2298.95 U.S. FEET (NAVD'88 2008 ADJ.)

FLOOD ZONE NOTE

THE PROJECT SITE IS LOCATED ON FEMA FLOOD INSURANCE RATE MAP #32003C1765F. THE SITE IS LOCATED WITHIN DESIGNATED FLOOD HAZARD ZONE X BEING AN AREA DETERMINED TO BE OUTSIDE THE 100 YEAR FLOOD PLAIN.

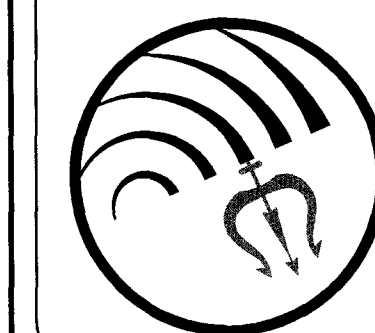
GRADING LEGEND



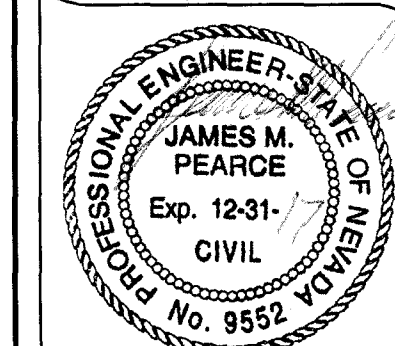
CONSTRUCTION NOTES

1. CONSTRUCT "L" TYPE CURB & GUTTER PER CCAUSD #216.
2. CONSTRUCT 5' WIDE SIDEWALK PER CCAUSD #234.
3. CONSTRUCT 8' WIDE VALLEY GUTTER PER CCAUSD #228.
4. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235, CASE 1.
5. SAWCUT AND MATCH EXISTING ASPHALT.

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Las Vegas, Nevada 89146



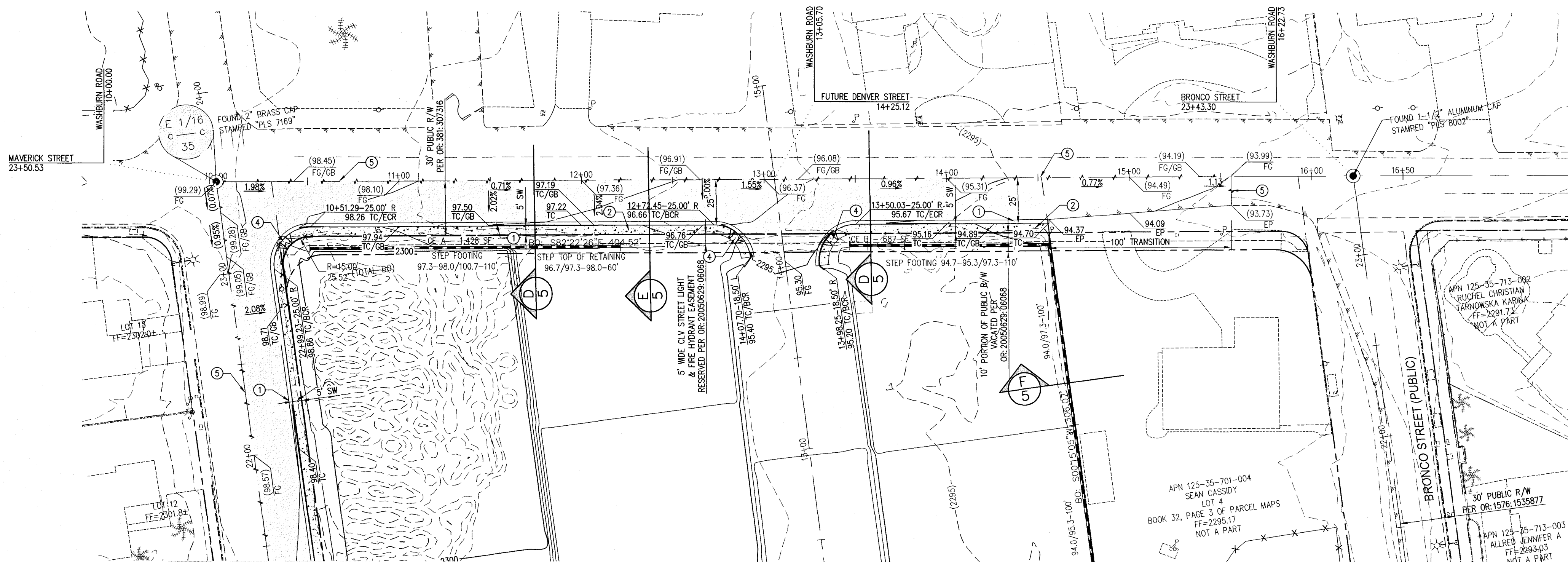
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MAVERICK & WASHBURN
MAVERICK STREET
PLAN AND PROFILE
STA 17+00 TO STA 24+00



SHEET **7** OF 10
C.L.V. DWG.#

DATE	NO.	DESCRIPTION	DATE
05/20/2016			
PM: J. PEARCE			
DRAWN BY: D.L.			
DESIGNED BY: D.L.			
CHECKED BY: ADA			
ADA CHECKED: ADA			
JOB NO.: 007-098			
SCALE: 1" = 40'			

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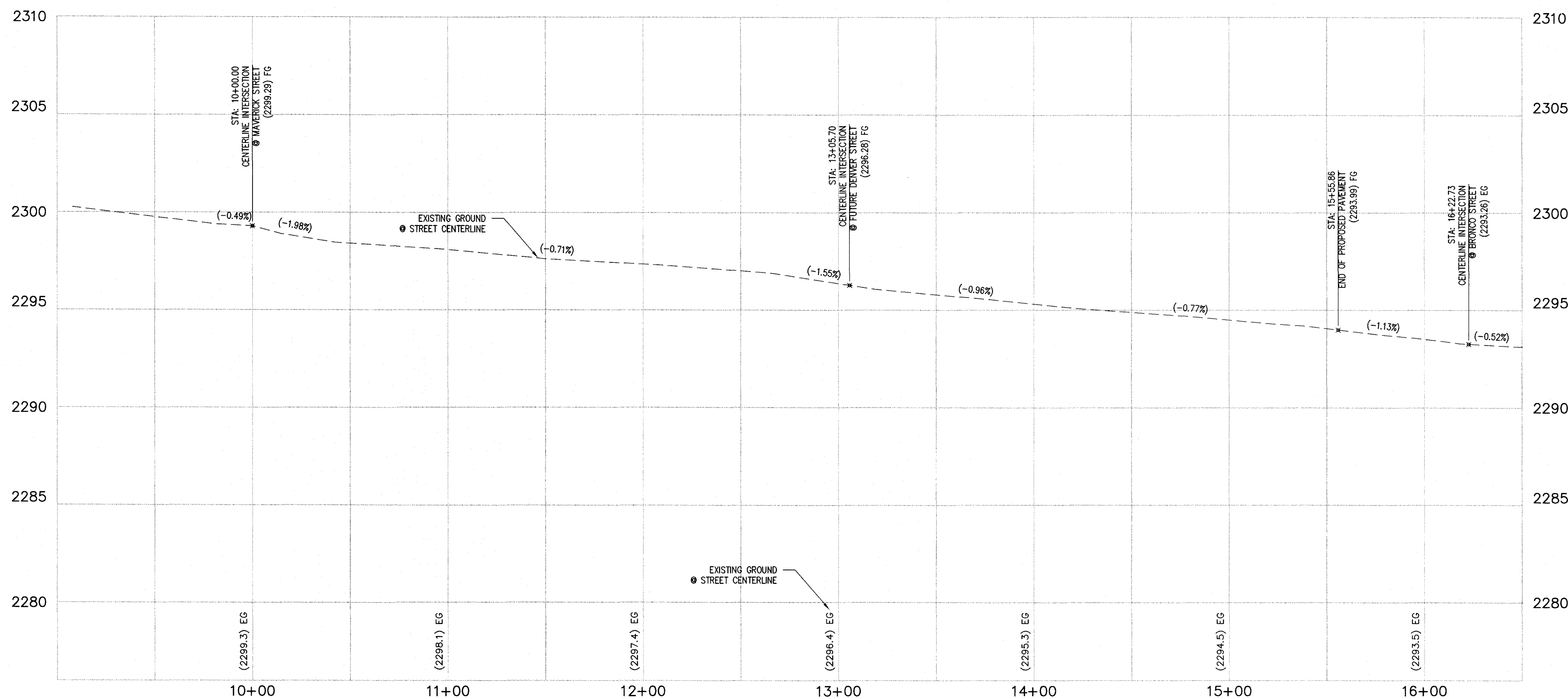
MAVERICK STREET
SEE SHEET 7

FUTURE DENVER STREET
FUTURE ONSITE IMPROVEMENTS

BRONCO STREET

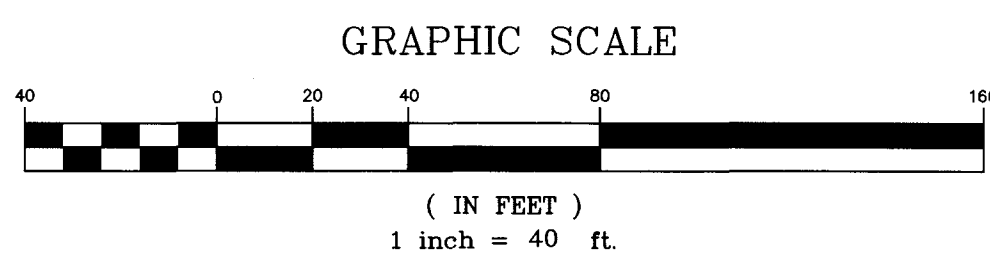
WASHBURN ROAD (PUBLIC) PLAN

SCALE: HORIZ. 1" = 40'



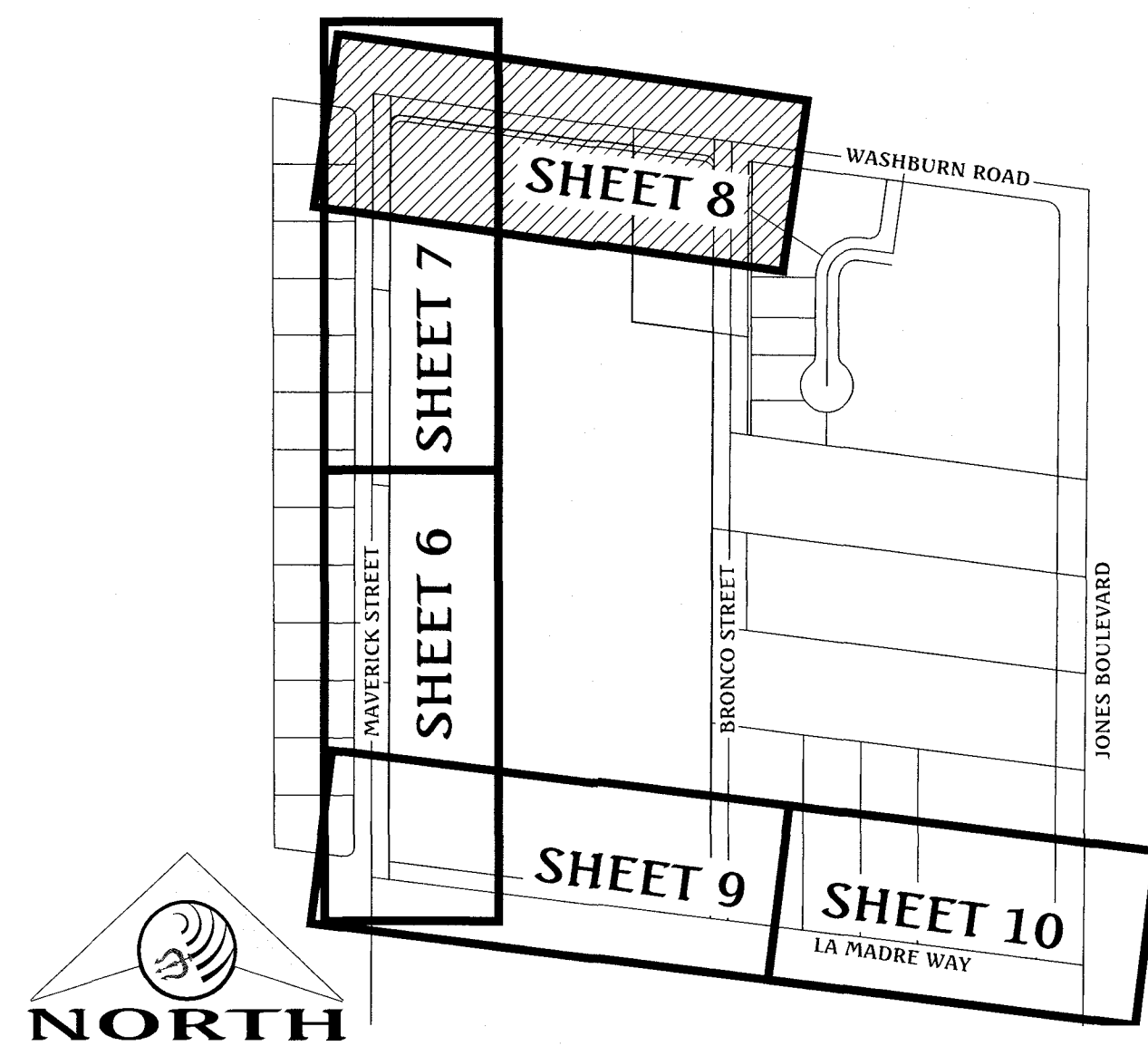
WASHBURN ROAD (PUBLIC) PROFILE

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



KEY MAP

SCALE: 1" = 300'



BASIS OF BEARING

NORTH 82°59'56" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 117, PAGE 9 OF PLATS.

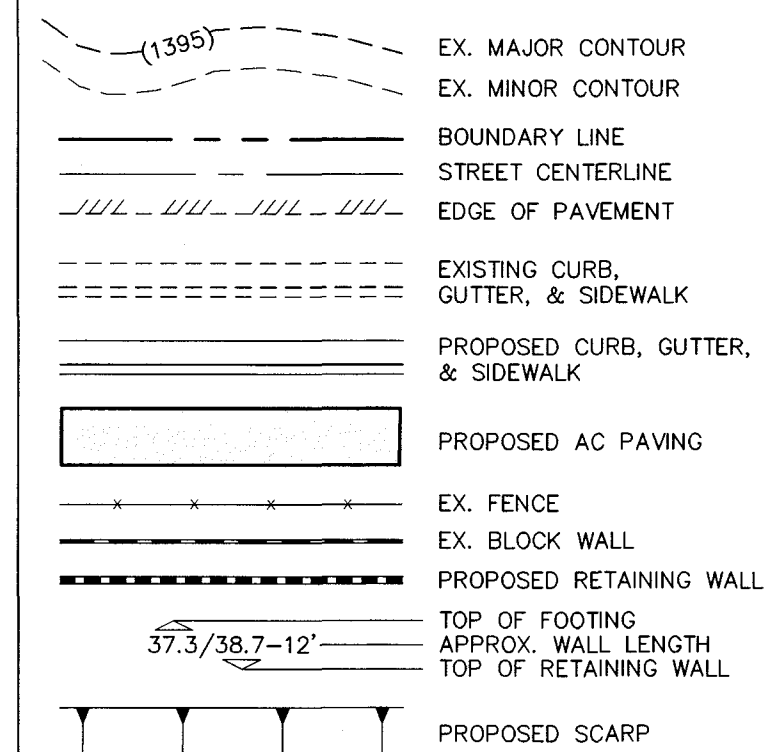
BENCHMARK

CITY OF LAS VEGAS BENCHMARK No. 8LV9035E6
RIVET & PLATE IN TOP OF CURB AT THE SOUTHWEST CORNER OF WASHBURN ROAD & MAVERICK STREET.
ELEVATION = 700.720 METERS (NAVD'88 2008 ADJ.)
ELEVATION = 2296.95 U.S. FEET (NAVD'88 2008 ADJ.)

FLOOD ZONE NOTE

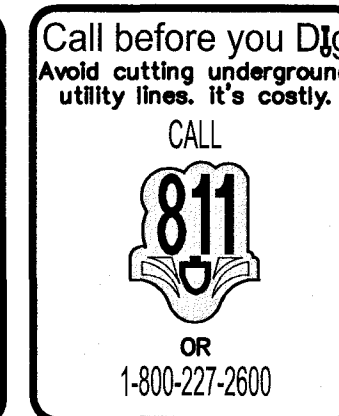
THE PROJECT SITE IS LOCATED ON FEMA FLOOD INSURANCE RATE MAP #22003C1765P. THE SITE IS LOCATED WITHIN DESIGNATED FLOOD HAZARD ZONE X BEING AN AREA DETERMINED TO BE OUTSIDE THE 100 YEAR FLOOD PLAIN.

GRADING LEGEND



CONSTRUCTION NOTES

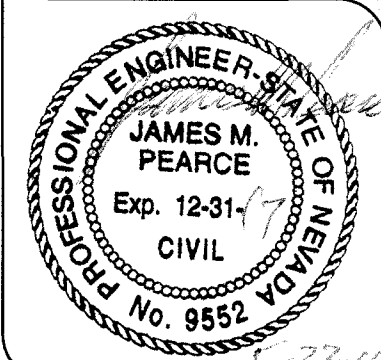
1. CONSTRUCT "L" TYPE CURB & GUTTER PER CCAUSD #216.
2. CONSTRUCT 5' WIDE SIDEWALK PER CCAUSD #234.
3. CONSTRUCT 8' WIDE VALLEY GUTTER PER CCAUSD #228.
4. CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235, CASE I.
5. SAWCUT AND MATCH EXISTING ASPHALT.



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Engineering

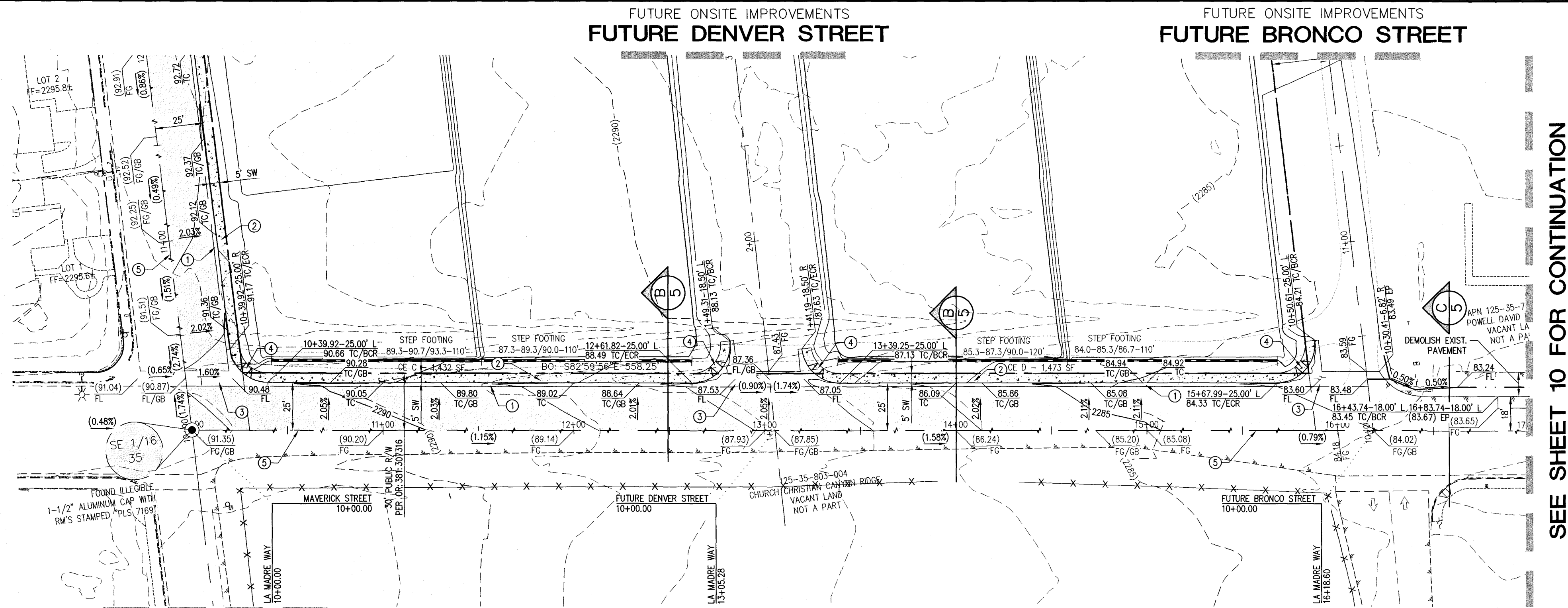


DR HORTON
MAVERICK & WASHBURN
WASHBURN ROAD
PLAN AND PROFILE
STA 10+00 TO STA 16+50



SHEET 8 OF 10
C.L.V. DWG.#

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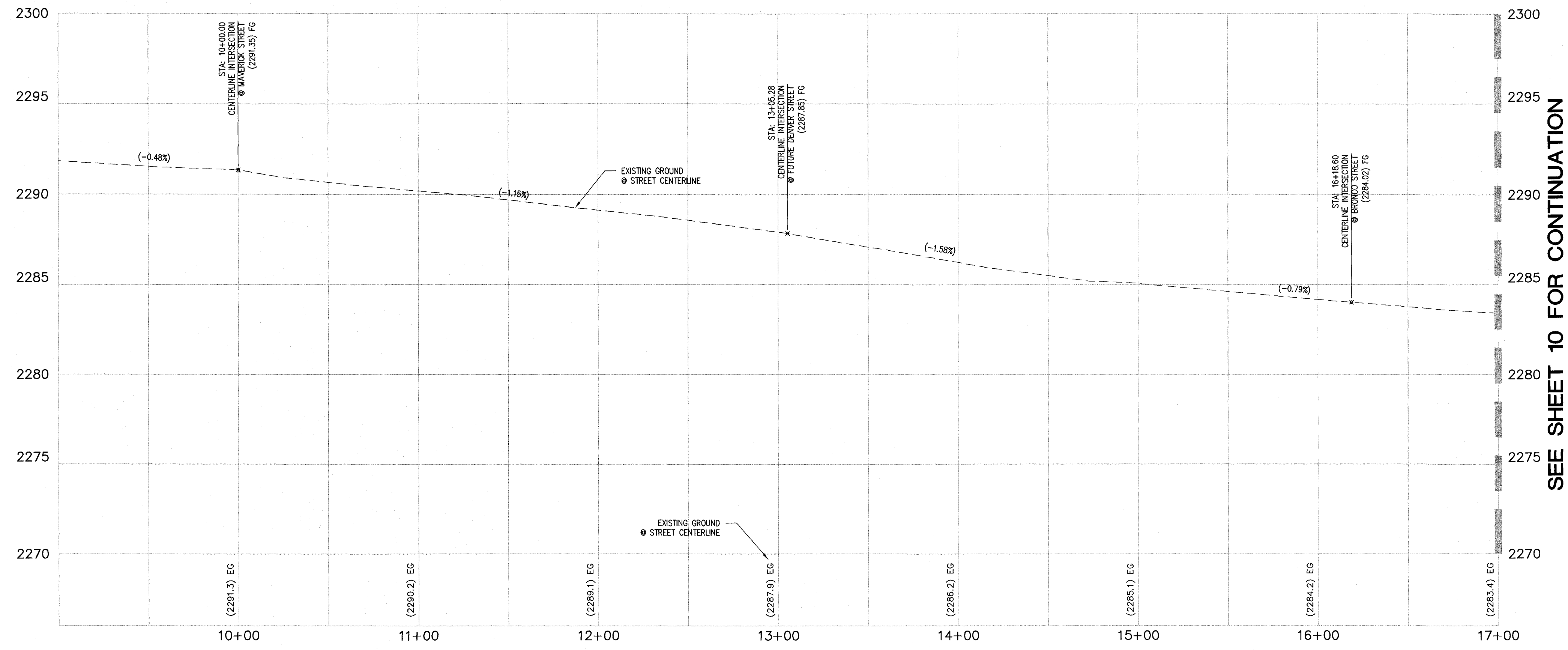


MAVERICK STREET
SEE SHEET 7

LA MADRE WAY (PUBLIC)

PLAN

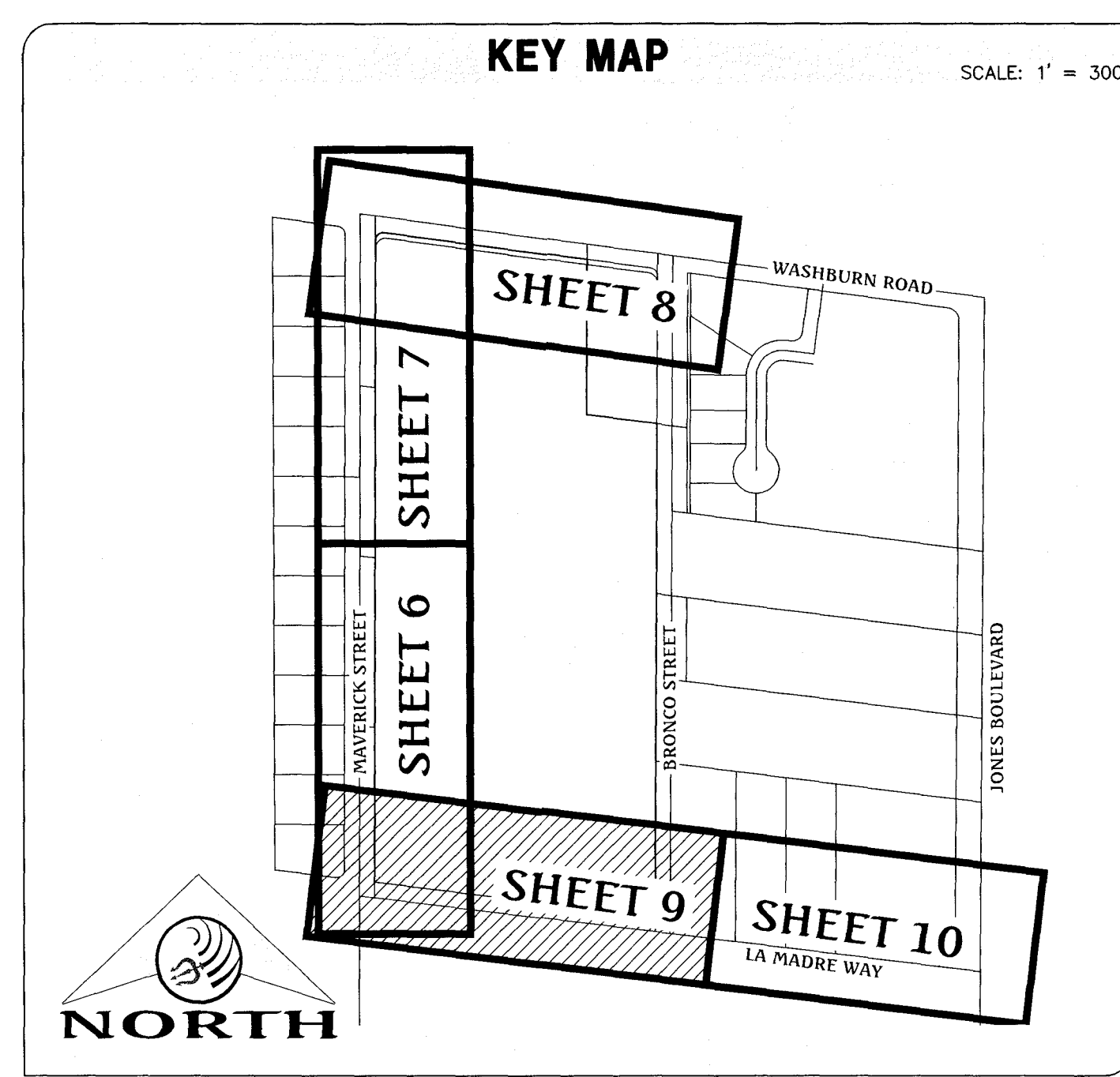
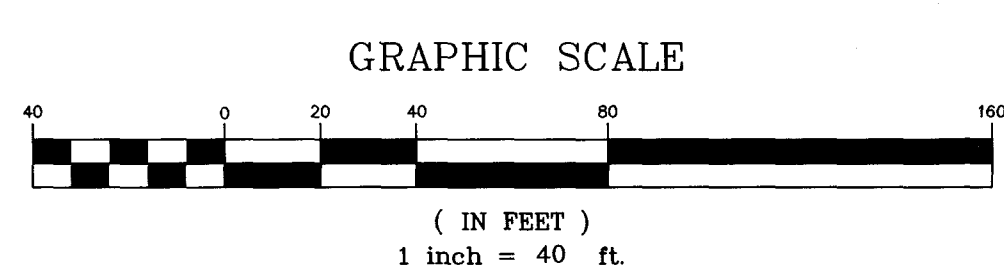
SCALE: HORIZ. 1" = 40'



LA MADRE WAY (PUBLIC)

PROFILE

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



BASIS OF BEARING

NORTH 82°58'56" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 117, PAGE 9 OF PLATS.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK No. BLV9035E6
RIVET & PLATE IN TOP OF CURB AT THE SOUTHWEST CORNER OF WASHBURN ROAD & MAVERICK STREET.
ELEVATION = 700.720 METERS (NAVD'88 2008 ADJ.)
ELEVATION = 2298.95 U.S. FEET (NAVD'88 2008 ADJ.)

FLOOD ZONE NOTE

THE PROJECT SITE IS LOCATED ON FEMA FLOOD INSURANCE RATE MAP #3200301765F. THE SITE IS LOCATED WITHIN DESIGNATED FLOOD HAZARD ZONE X BEING AN AREA DETERMINED TO BE OUTSIDE THE 100 YEAR FLOOD PLAIN.

GRADING LEGEND

- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- BOUNDARY LINE
- STREET CENTERLINE
- EDGE OF PAVEMENT
- EXISTING CURB, GUTTER, & SIDEWALK
- PROPOSED CURB, GUTTER, & SIDEWALK
- PROPOSED AC PAVING
- EX. FENCE
- EX. BLOCK WALL
- PROPOSED RETAINING WALL
- TOP OF FOOTING
- APPROX. WALL LENGTH
- TOP OF RETAINING WALL
- PROPOSED SCARP

CONSTRUCTION NOTES

- CONSTRUCT "L" TYPE CURB & GUTTER PER CCAUSD #216.
- CONSTRUCT 5' WIDE SIDEWALK PER CCAUSD #234.
- CONSTRUCT 8' WIDE VALLEY GUTTER PER CCAUSD #228.
- CONSTRUCT SIDEWALK RAMPS USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235, CASE 1.
- SAWCUT AND MATCH EXISTING ASPHALT.

DATE	NO.	DESCRIPTION	DATE	APP'D
05/23/2016				
PM: J. PEARCE				
DRAWN BY: D.L.				
DESIGNED BY: D.L.				
CHECKED BY: ADA				
ADA CHECKED: 007.098				
JOB NO.: 007.098				
SCALE: 1" = 40'				

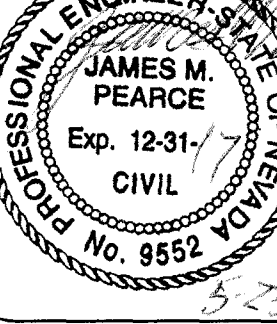


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Fax: (702) 254-3062
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MAVERICK & WASHBURN
LA MADRE WAY
PLAN AND PROFILE
STA 10+00 TO STA 17+00



SHEET **9** OF 10
C.L.V. DWG.#



FAST
Call before you Dig
Underground
1-702-432-5300

Avoid overhead power line contact. It's costly.

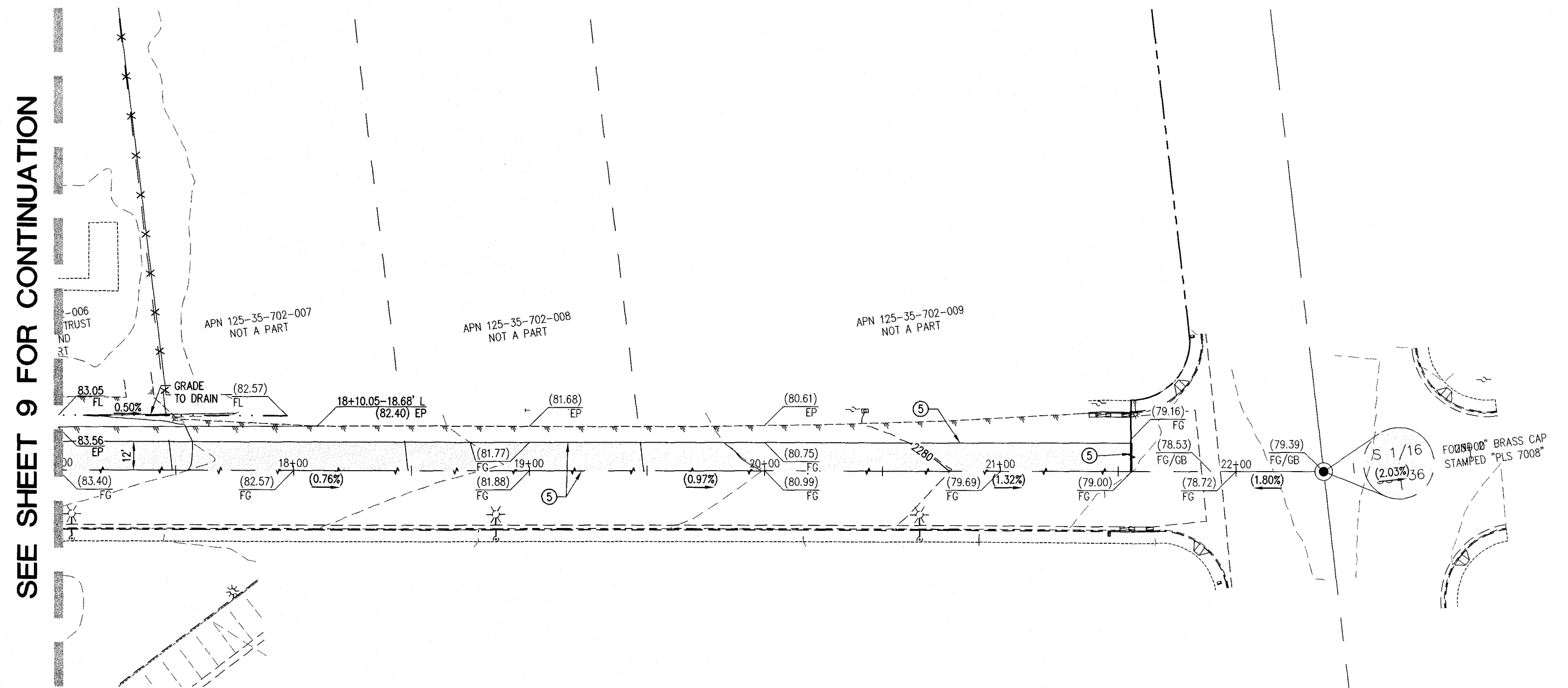
Call before you Overhead
1-702-227-2929

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

811
OR
1-800-227-2600

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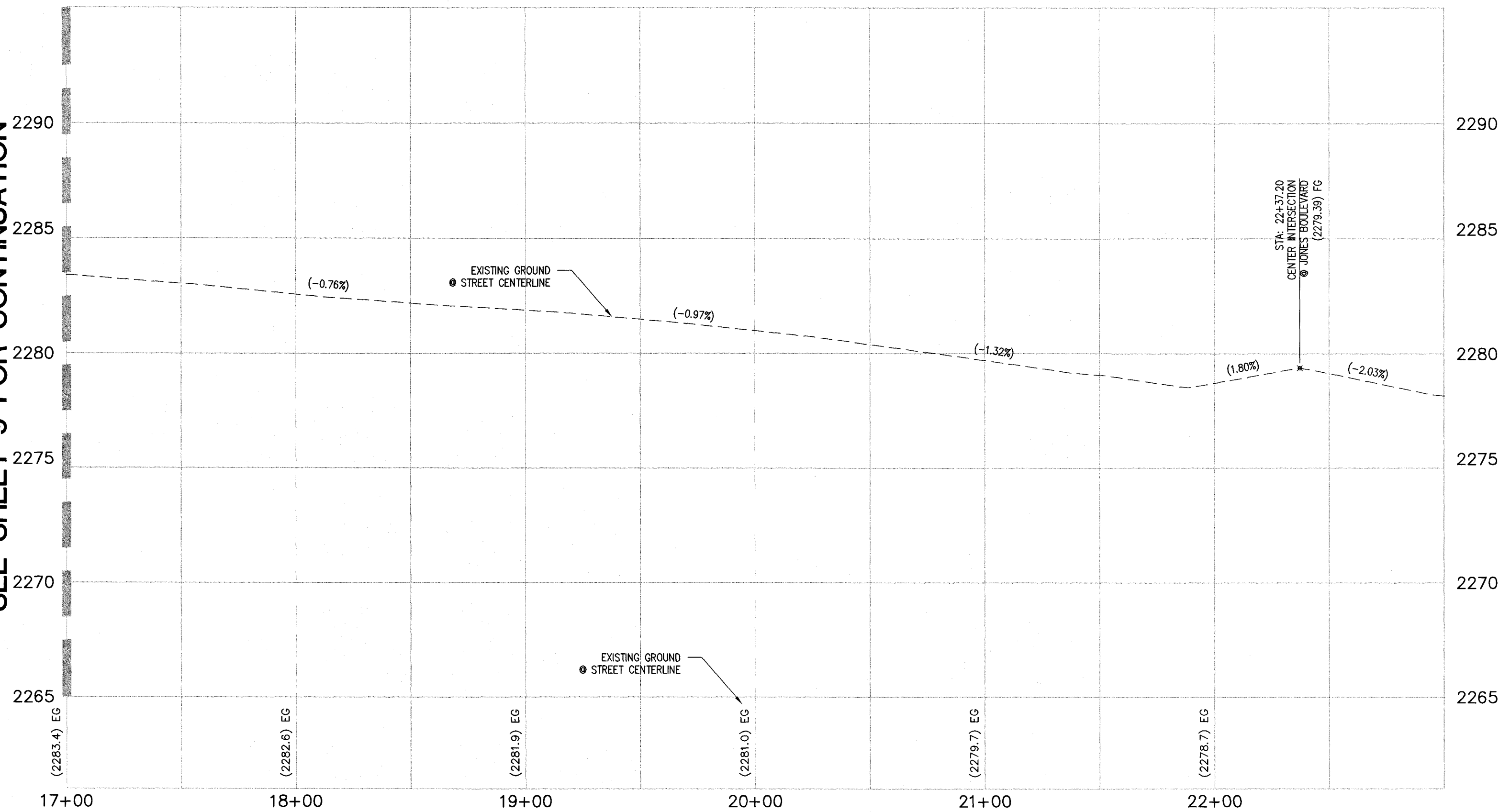
SEE SHEET 9 FOR CONTINUATION



LA MADRE WAY (PUBLIC) PLAN

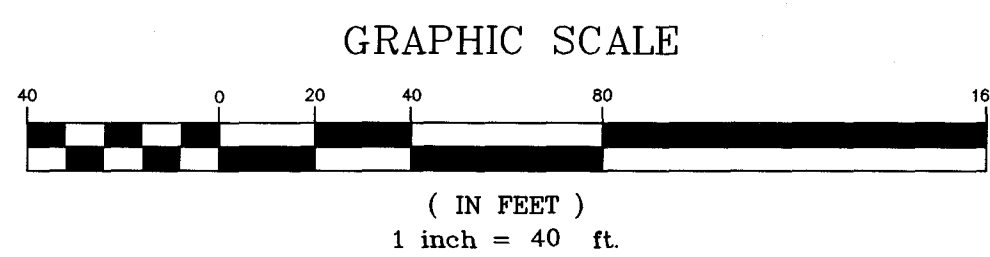
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SEE SHEET 9 FOR CONTINUATION



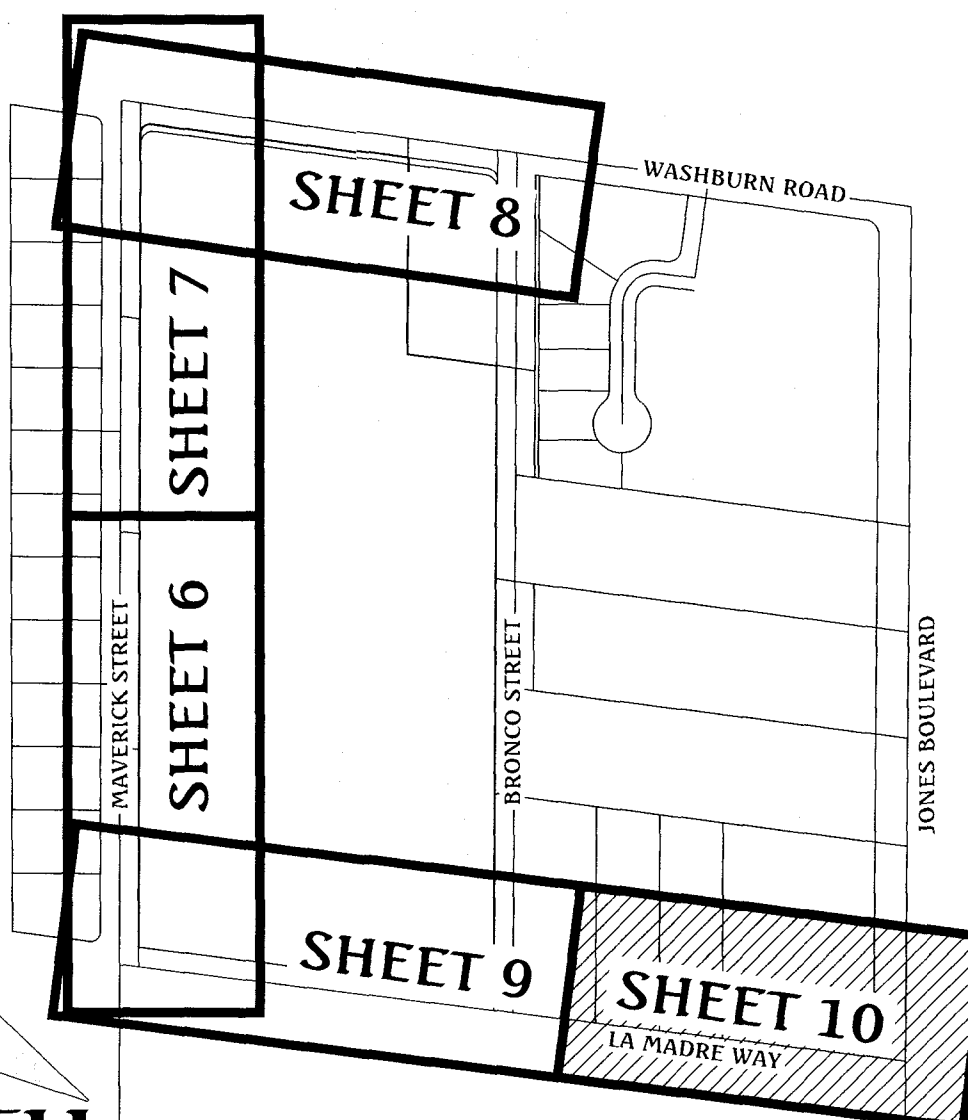
LA MADRE WAY (PUBLIC) PROFILE

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



KEY MAP

SCALE: 1" = 300'



BASIS OF BEARING

NORTH 82°59'56" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 35, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN BOOK 117, PAGE 9 OF PLATS.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK No. 8LV9035E6
RIVET & PLATE IN TOP OF CURB AT THE SOUTHWEST CORNER OF WASHBURN ROAD & MAVERICK STREET.
ELEVATION = 700.720 METERS (NAVD'88 2008 ADJ.)
ELEVATION = 2298.95 U.S. FEET (NAVD'88 2008 ADJ.)

FLOOD ZONE NOTE

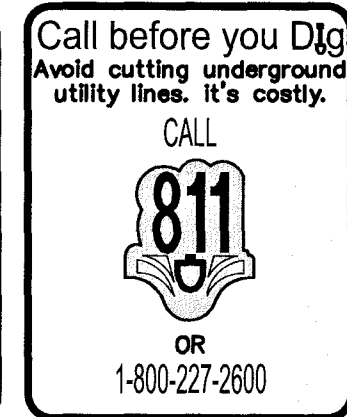
THE PROJECT SITE IS LOCATED ON FEMA FLOOD INSURANCE RATE MAP #32003C1785F. THE SITE IS LOCATED WITHIN DESIGNATED FLOOD HAZARD ZONE X BEING AN AREA DETERMINED TO BE OUTSIDE THE 100 YEAR FLOOD PLAIN.

GRADING LEGEND

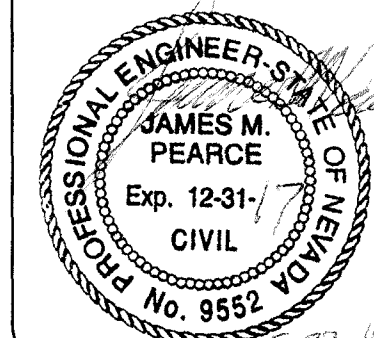
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- BOUNDARY LINE
- STREET CENTERLINE
- EDGE OF PAVEMENT
- EXISTING CURB, GUTTER, & SIDEWALK
- PROPOSED CURB, GUTTER, & SIDEWALK
- PROPOSED AC PAVING
- EX. FENCE
- EX. BLOCK WALL
- PROPOSED RETAINING WALL
- TOP OF FOOTING
- APPROX. WALL LENGTH
- TOP OF RETAINING WALL
- PROPOSED SCARP

CONSTRUCTION NOTES

- CONSTRUCT "L" TYPE CURB & GUTTER PER CCAUSD #216.
- CONSTRUCT 5' WIDE SIDEWALK PER CCAUSD #234.
- CONSTRUCT 6' WIDE VALLEY GUTTER PER CCAUSD #228.
- CONSTRUCT SIDEWALK RAMP USING ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD #235, CASE 1.
- SAWCUT AND MATCH EXISTING ASPHALT.



DR HORTON
MAVERICK & WASHBURN
LA MADRE WAY
PLAN AND PROFILE
STA 17+00 TO STA 24+00



SHEET 10 OF 10
C.L.V. DWG.#