

Appendix D – Reference Materials

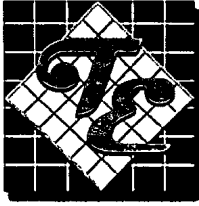
- Technical Drainage Study for Ann and Grand Canyon Residential Development. Approved October 4, 2010 (Grand Canyon Study, October 2010, PW No. 10-18993)
- Technical Drainage Study for Ann & 215 – Phase 1. Approved July 13, 2020. (215 Study, July 2020, PW No. 20-11651)

~~ADD2~~

~~10-18993~~

~~16-10~~

~~ADD-2~~



TANEY ENGINEERING

Addendum #2
TO THE
TECHNICAL DRAINAGE STUDY
FOR
Ann & Grand Canyon
Residential Development

CLARK COUNTY
NEVADA

September 15, 2010

Prepared by:

Taney Engineering
6030 S. Jones, Suite #100
Las Vegas, Nevada 89118
Telephone: (702) 362-8844
Fax: (702) 362-5233

Prepared for:

William Lyon Homes
500 Pilot Road Suite #G
Las Vegas, NV 89119
Telephone: (702) 263-8200
Fax: (702) 263-8220



Department of Public Works

500 S Grand Central Pky • Box 554000 • Las Vegas NV 89155-4000
(702) 455-6000 • Fax (702) 455-6040

Denis Cederburg, P.E., Director • E-Mail: dlc@co.clark.nv.us

LTR

Drainage Study Approval Letter **10-18993**

Date: October 4, 2010
Firm: Taney Engineering
Engineer: Edward F. Taney, P.E.
Address: 6030 S. Jones Boulevard, Suite 100, Las Vegas, NV 89118
Phone: (702) 362-8844
Fax: (702) 362-5233
E-mail:

Subject: Technical Drainage Study for Ann & Grand Canyon Residential Development (Serenity Ridge)
Location: SW of Ann Road and Grand Canyon Drive
APN: 125-31-201-003 & 125-31-101-002, -004, -008, -009, -016, -018, -019, -020, -021, -022, -026
Sec, Township, Range: S31, T19S, R60E
Flood Zone & Panel: Zone X, 1745E, Revised September 27, 2002
Application Tracking #: 10-18993



Submittals	Date Received	Date Returned	Reviewer	Miscellaneous
Technical	07/21/2010	08/11/2010	WG	
Addendum #1	08/25/2010	09/09/2010	WG	
Addendum #2	09/16/2010	09/27/2010	WG	

Concurrence Required: (Must be obtained prior to permit issuance)	Reason Concurrence is required
City of Henderson	Adjacent to or Impacts Henderson
City of Las Vegas	Adjacent to or Impacts Las Vegas
City of North Las Vegas	Adjacent to or Impacts North Las Vegas
Nevada Department of Transportation	Impacts NDOT Facility
Union Pacific Rail Road	Adjacent to or Impacts a UPRR Facility
US Army Corp of Engineers	Impacts a USACE Facility
Clark County Regional Flood Control District	Adjacent to or Impacts CCRFCD MPU Facility or in a SFHA

BOARD OF COUNTY COMMISSIONERS
RORY REID, Chairman • SUSAN BRAGER, Vice-Chair
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VIRGINIA VALENTINE, P.E., County Manager

The referenced **Technical Drainage Study** has been reviewed and is accepted as complying with minimum improvement standards. As set forth in the subject drainage study, the following measures will be taken to mitigate flood hazards.

Check appropriate conditions

	Retaining/screen wall combination may be in excess of current Clark County Unified Development Code, Chapter 30.64.050.
	A FEMA Elevation Certificate, completed by a licensed surveyor, must be submitted to and approved by CCPW Development Review Plan Check prior to the issuance of Certificates of Occupancy for those structures.
X	Mylars of the grading plan must be submitted to the CCPW Development Review Plan Check for approval signatures prior to map recordation (residential) or permit issuance (commercial).
	An administrative variance to allow the finished floor elevation(s) to be set below the current Clark County criteria must be approved. The finished floor variance must be submitted to CCPW Development Review front counter after drainage study approval and prior to offsite final review.
	The grading plan will be reviewed by the Building Office Operations Division to ensure compliance with the ADA access requirements. Revisions to the grading plan may be required if the site accessibility design does not comply with the requirements set forth in the Accessibility Chapter of the Clark County Building Code.
	The plans show work is proposed outside of the project boundary. Notarized written permission must be obtained prior to grading plan approval.
X	Right-of-way dedication must be verified.
	Any previously approved drainage easements that are not being used must be vacated.
	<i>Per Regional Flood Control District policies and Procedures manual, Section VIII. D. 13. Uniform Regulations for the Control of Drainage, the Engineer of Record shall provide As-Built plans or record drawings to the District after completion and final inspection of such privately installed flood control facilities that have regional flood control significance.</i>
X	Structural calculations are required. The structural calculations, plans, and details must be approved prior to "Offsite" submittal.
X	Plan revisions can be found on the red-lined plans and must be addressed.
X	Prepare drainage easement documents as shown on the grading plans.

The site shall be graded with respect to drainage as shown on "Ann and Grand Canyon (Serenity Ridge) Rough Grading Plan", sheets RG1, RG2, RG3, RG4, RG5 signed and sealed by Robert D. Cunningham, P.E., on September 16, 2010. "Ann and Grand Canyon – Unit 1 (Serenity Ridge)", sheet C2 signed and sealed by Robert D. Cunningham, P.E., on August 25, 2010 and sheets G1, GD1, PP1, PP2, PP3, PP4, PP5 signed and sealed by Robert D. Cunningham, P.E., on September 16, 2010. "Ann and Grand Canyon – Unit 2 (Serenity Ridge)", sheet C2 signed and sealed by Robert D. Cunningham, P.E., on August 25, 2010 and sheets G1, G2, G3, G4, GD1, GD2, PP1, PP2, PP3, PP4, PP5, PP6, PP7, PP8 signed and sealed by Robert D. Cunningham, P.E., on September 16, 2010. "Ann and Grand Canyon – Unit 3 (Serenity Ridge)", sheet C2 signed and sealed by Robert D. Cunningham, P.E., on August 25, 2010 and sheets G1, G2, G3, GD1, GD2, PP1, PP2, PP3, PP4 signed and sealed by Robert D. Cunningham, P.E., on September 16, 2010.

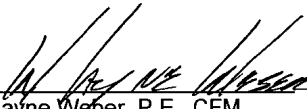
This approval letter has been revised to replace the letter dated September 27, 2010 and remove previous comment # 1 regarding excessive fill.

Additional Conditions:

1. All residential finished floor elevations must be a minimum of 8-inches above the rear lot high point, as specified on Figure 302 of the *CCRFCD Manual*. Verify all FF elevations and revise Lot 50.

The County's review is solely based on the information submitted by the Engineer of Record. The County's review is strictly limited to compliance with minimum County Codes and Standards. The Engineer of Record is responsible for researching and addressing situations that may require designs above and beyond the minimum codes for issues of public safety and impacts to upstream, downstream and adjacent properties. The County assumes no liability for information data, designs or conclusions of the Engineer of Record.

By


W. Layne Weber, P.E., CFM
Principal Engineer
Clark County Public Works
Development Review

cc: Lyon Homes

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Ann & Grand Canyon Residential Development Addendum 1 Date: Aug 24, 2010

Location of Development: a) Descriptive (Cross Streets) North/South: Grand Canyon
East/West: Ann

b) Section: 31 Township: 19S Range: 60E

c) APN : 125-31-201-003; 125-31-101-002; -004; -008; -009; -016; -018; -019; -020; -021; -022; -026

Name of Owner: William Lyon Homes

Telephone No.: (702) 263-8200 Fax No.: (702) 263-8220 E-Mail Address: _____

Address: 500 Pilot Rd Suite #G Las Vegas, NV 89119

Contact Person-Name: Barbara Brown, P.E. Telephone No.: (702) 362-8844

* E-Mail Address: Barbarab@taneycorp.com Fax No.: (702) 362-5233

Firm: Taney Engineering

Address: 6030 S. Jones, Suite 100, Las Vegas NV. 89118

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 45+/- acres Being Developed/Disturbed: 45+/- acres

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

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

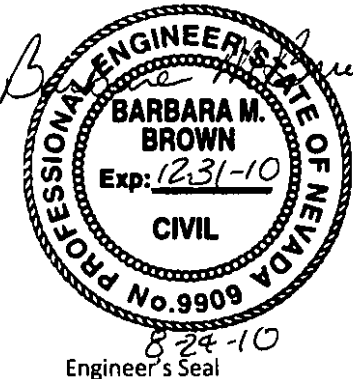
4. Proposed type of development (Residential, Commercial, Etc.): Residential

5. Approximate upstream land area which drains to the subject site: 0+/- acres

6. Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation: Document HTE #05-47575 applies to the subject site; however, was not referenced for use in the subject study.

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: The site drains to the east, discharging runoff flow into Hammer Lane and Fisher Avenue.

8. Briefly describe your proposed schedule for the subject project: A.S.A.P



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

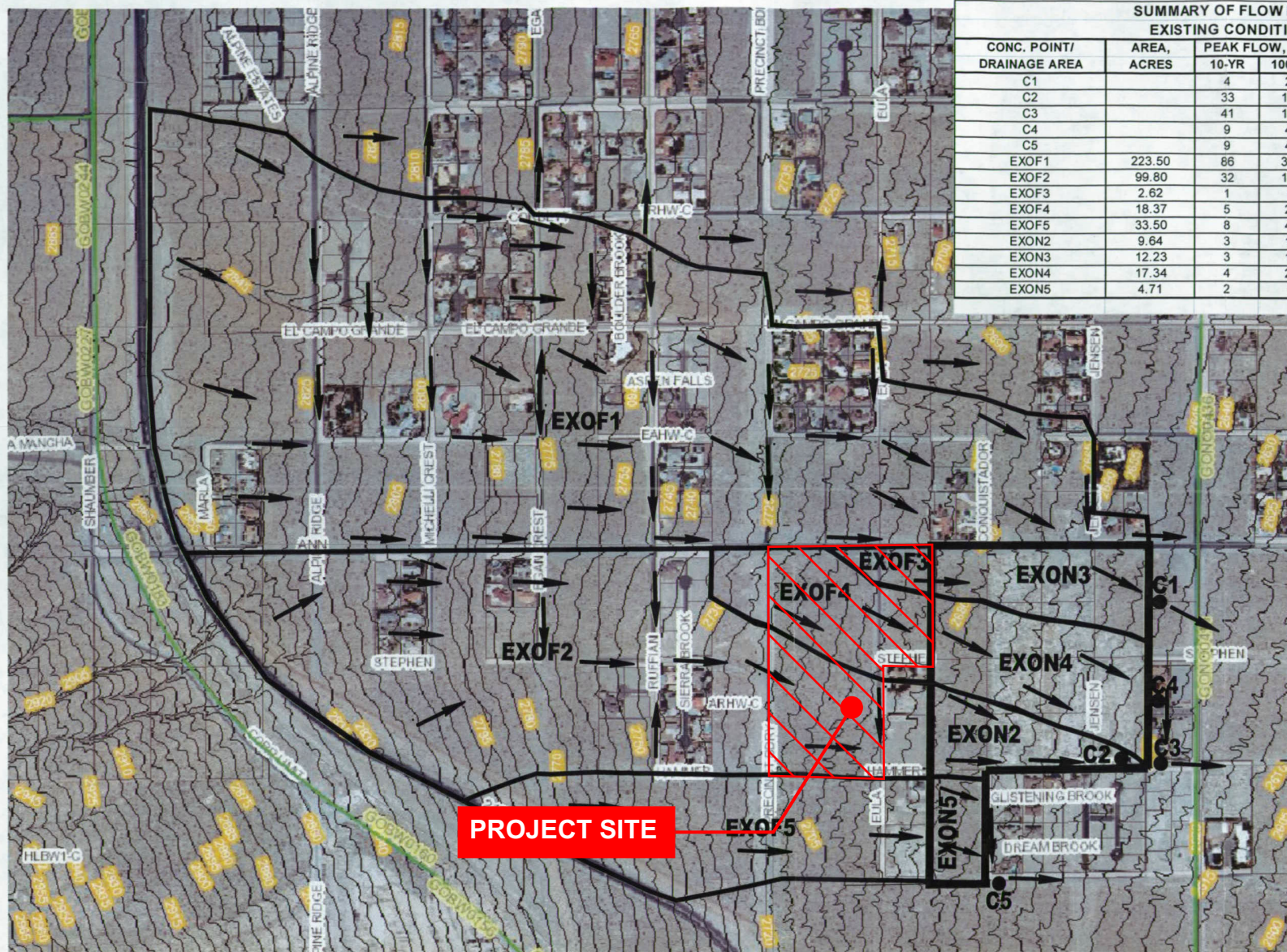
*New Required Field

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

Local Entity File No.	Revision	Date

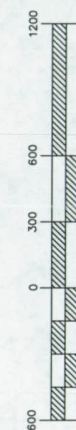
REFERENCE:

STANDARD FORM 1



SUMMARY OF FLOW RATES				
EXISTING CONDITIONS				
CONC. POINT/ DRAINAGE AREA	AREA, ACRES	PEAK FLOW, CFS		NOTES
		10-YR	100-YR	
C1		4	21	NO DARF APPLIED
C2		33	146	AREA=0.18 SQ MI; DARF=0.99
C3		41	193	AREA=0.23 SQ MI; DARF=0.99
C4		9	48	NO DARF APPLIED
C5		9	48	NO DARF APPLIED
EXOF1	223.50	86	319	AREA=.35 SQ MI; DARF=0.98
EXOF2	99.80	32	137	NO DARF APPLIED
EXOF3	2.62	1	4	NO DARF APPLIED
EXOF4	18.37	5	25	NO DARF APPLIED
EXOF5	33.50	8	43	NO DARF APPLIED
EXON2	9.64	3	13	NO DARF APPLIED
EXON3	12.23	3	17	NO DARF APPLIED
EXON4	17.34	4	23	NO DARF APPLIED
EXON5	4.71	2	8	NO DARF APPLIED

8/24/2010



PROJECT SITE

LEGEND	
EXON4	BASIN NAME
	BASIN BOUNDARY
	FLOW DIRECTION

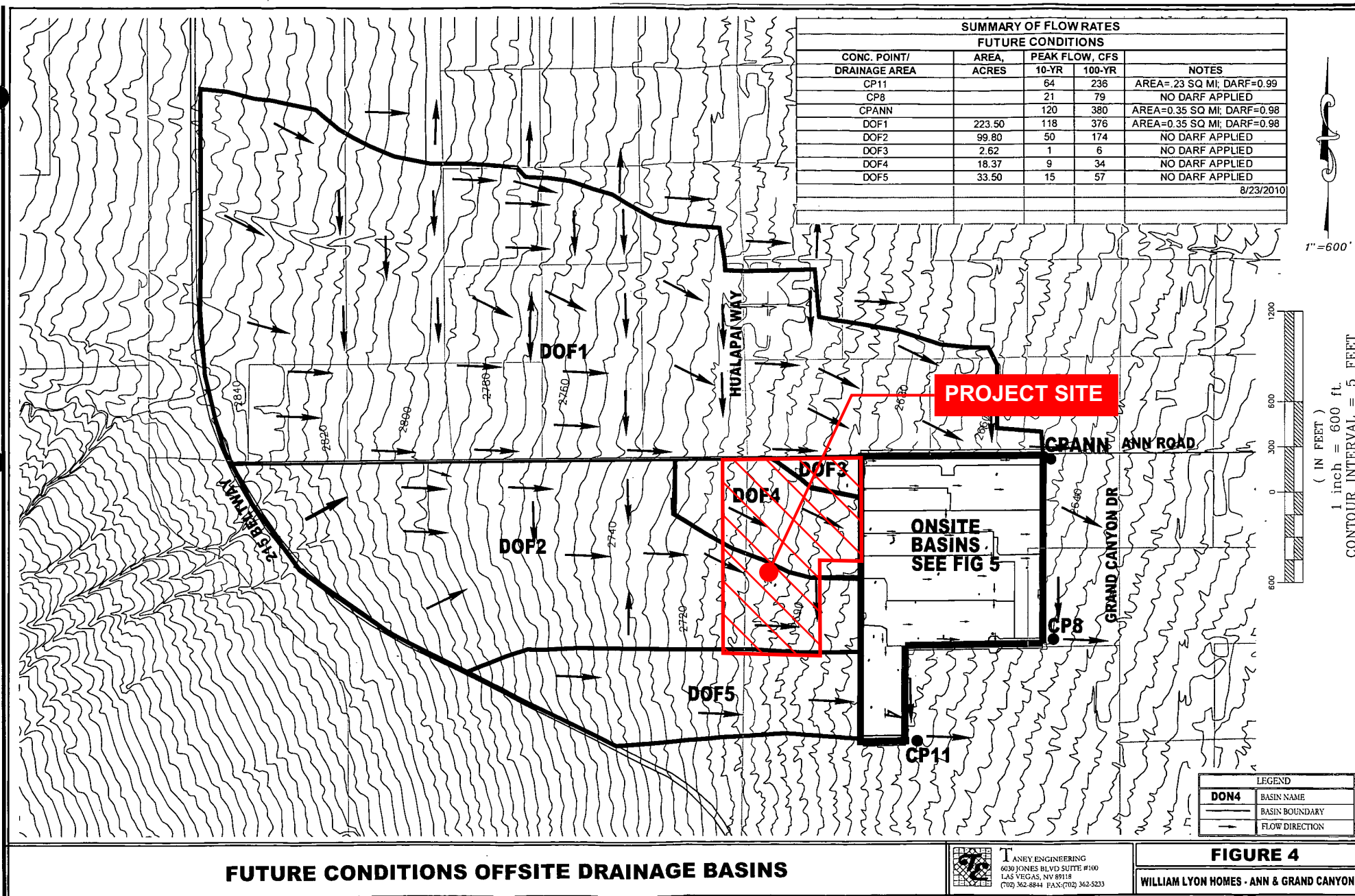
EXISTING CONDITIONS DRAINAGE BASINS



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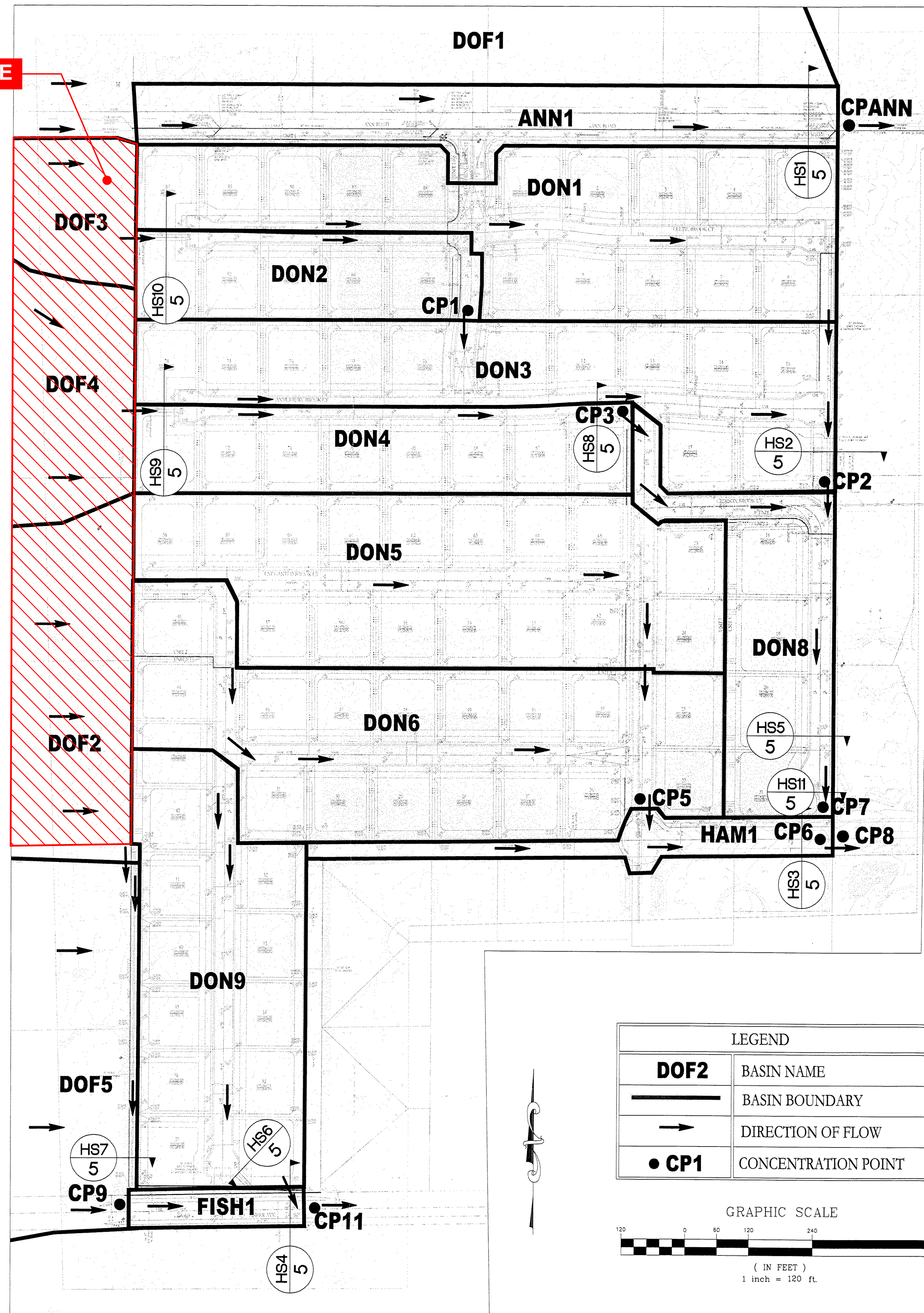
FIGURE 3

WILLIAM LYON HOMES - ANN & GRAND CANYON



PROJECT SITE

FOR EXTENTS OF OFFSITE BASINS
SEE FIGURE 4



FUTURE CONDITIONS ONSITE DRAINAGE BASINS

SUMMARY OF FLOW RATES FUTURE CONDITIONS				
CONC. POINT/ DRAINAGE AREA	AREA, ACRES	PEAK FLOW, CFS		NOTES
		10-YR	100-YR	
ANN1	3.39	7	13	NO DARF APPLIED
CP1		3	10	NO DARF APPLIED
CP11		64	236	AREA=.23 SQ MI; DARF=0.99
CP2		10	36	NO DARF APPLIED
CP3		10	41	NO DARF APPLIED
CP5		8	30	NO DARF APPLIED
CP6		9	32	NO DARF APPLIED
CP7		12	47	NO DARF APPLIED
CP8		21	79	NO DARF APPLIED
CP9		62	227	AREA=0.21; DARF=0.99
CPANN		120	380	AREA=0.35 SQ MI; DARF=0.98
DOF1	223.50	118	376	AREA=0.35 SQ MI; DARF=0.98
DOF2	99.80	50	174	NO DARF APPLIED
DOF3	2.62	1	6	NO DARF APPLIED
DOF4	18.37	9	34	NO DARF APPLIED
DOF5	33.50	15	57	NO DARF APPLIED
DON1	6.92	4	14	NO DARF APPLIED
DON2	2.29	1	5	NO DARF APPLIED
DON3	5.78	3	12	NO DARF APPLIED
DON4	3.36	2	7	NO DARF APPLIED
DON5	7.06	4	14	NO DARF APPLIED
DON6	7.56	4	15	NO DARF APPLIED
DON8	3.05	2	7	NO DARF APPLIED
DON9	5.12	3	10	NO DARF APPLIED
FISH1	0.49	1	2	NO DARF APPLIED
HAM1	1.08	2	4	NO DARF APPLIED

8/23/2010

MISCELLANEOUS FLOW CALCULATIONS 100-YEAR PEAK FLOW RATES - FUTURE CONDITIONS						
SECTION NUMBER	DESCRIPTION	SLOPE, PERCENT	Q(100) CFS	D(100) FEET	V(100) FPS	VEL. HEAD, FEET
HS2	20-FOOT PAVED EASEMENT	1.31	36	0.32	5.6	0.50
HS6	10-FOOT WEIR	WEIR	10	0.48	NA	NA
HS6	10-FOOT CONC. EASEMENT	2.97	10	0.19	5.9	0.54
HS7	15-FOOT CONC. EASEMENT	1.25	227	1.33	12.7	2.50
HS9	15-FOOT CONC. EASEMENT	1.77	34	0.35	6.9	0.73
HS10	10-FOOT CONC. EASEMENT	1.54	6	0.17	3.9	0.24
HS11	25-FOOT CONC. EASEMENT	0.97	47	0.38	5.0	0.39

8/23/2010

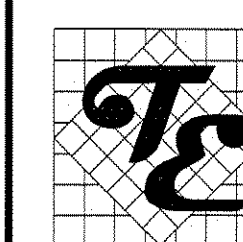
STREET CALCULATIONS BASED ON NORMAL DEPTH FUTURE CONDITIONS						
SECTION NUMBER	STREET NAME	SLOPE, PERCENT	Q(10) / Q(100) CFS	D(10) / D(100), FEET	V(10) / V(100), FPS	V(10)*D(10) / V(100)*D(100)
HS1*	ANN ROAD	2.99	48 / 308	0.57 / 0.93	5.1 / 8.6	2.9 / 8.0
HS3	HAMMER STREET	3.35	21 / 79	0.36 / 0.57	3.6 / 5.3	1.3 / 3.0
HS4	FISHER AVENUE	3.22	64 / 236	0.59 / 0.90	5.4 / 8.1	3.2 / 7.3
HS5**	ONSITE NORTH-SOUTH	0.68	8 / 30	0.52 / 0.82	2.9 / 4.0	2.5 / 3.3
HS8***	ONSITE EAST-WEST	3.33	20 / 77	0.38 / 0.56	4.7 / 7.1	1.8 / 4.0

8/23/2010

*Calculation is for surface flow; 72 cfs flows in subsurface storm drain pipe in the 10- and 100-year storm events.

**HS5 Represents the worst case scenario for all onsite north-south street normal depth calculations.

***HS8 Represents the worst case scenario for all onsite east-west street normal depth calculations (CP3+CP2=10/41+10/36=20/77)



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FIGURE 5

WILLIAM LYON HOMES
ANN + GRAND CANYON

10-18993

ADD MAP 1

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL - STANDARD FORM 4



Taney Engineering
6030 S. Jones, Suite #100
Las Vegas, NV 89118

PROJECT NO. : WLL-10-068

PROJECT: Ann & Grand Canyon

FILE : STD_FRM4

CALCULATED BY: BB

DATE : 08/23/10

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	CN	K	AREA (acres)	AREA (mi ²)	LENGTH (ft)	SLOPE (%)	T _i (min)	LENGTH (ft)	SLOPE (%)	V ₁ (fps)	V ₂ (fps)	T _t (min)	T _c =T _i +T _t (min)	TOTAL (ft)	T _c (min)	T _c (min)	T _{lag} (hrs)	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
EXISTING CONDITION																		
EXOF1	83	0.706	223.50	0.3492	300	1.0	12.3	6130	3.3	2.70	5.37	20.5	32.8	N/A	N/A	32.84	0.328	
EXOF2	80	0.666	99.80	0.1559	300	1.0	13.5	4280	3.6	2.81	5.58	14.3	27.8	N/A	N/A	27.79	0.278	
EXOF3	77	0.626	2.62	0.0041	100	1.0	8.5	540	3.3	2.69	5.34	3.2	11.7	N/A	N/A	11.75	0.117	
EXOF4	77	0.626	18.37	0.0287	300	1.0	14.8	1370	3.3	2.69	5.34	5.8	20.6	N/A	N/A	20.58	0.206	
EXOF5	77	0.626	33.50	0.0523	300	1.0	14.8	2450	3.4	2.73	5.42	9.0	23.8	N/A	N/A	23.81	0.238	
EXON2	77	0.626	9.64	0.0151	300	1.0	14.8	1050	3.4	2.73	5.42	4.7	19.5	N/A	N/A	19.51	0.195	
EXON3	77	0.626	12.23	0.0191	300	1.0	14.8	1060	3.3	2.69	5.34	4.8	19.6	N/A	N/A	19.61	0.196	
EXON4	77	0.626	17.34	0.0271	300	1.0	14.8	1230	3.3	2.69	5.34	5.4	20.1	N/A	N/A	20.14	0.201	
EXON5	77	0.626	4.71	0.0074	100	1.0	8.5	270	3.3	2.69	N/A	1.7	10.2	N/A	N/A	10.20	0.102	
DEVELOPED CONDITION																		
DON1	82	0.692	6.92	0.0108	140	1.0	8.7	1180	3.3	3.67	5.56	4.3	13.0	1320.0	17.3	13.0	0.130	
DON2	82	0.692	2.29	0.0036	140	1.0	8.7	680	2.9	3.44	5.21	3.0	11.7	820.0	14.6	11.7	0.117	
DON3	82	0.692	5.78	0.0090	140	1.0	8.7	1180	3.3	3.67	5.56	4.3	13.0	1320.0	17.3	13.0	0.130	
DON4	82	0.692	3.36	0.0053	140	1.0	8.7	940	3.2	3.61	5.47	3.6	12.3	1080.0	16.0	12.3	0.123	
DON5	82	0.692	7.06	0.0110	140	1.0	8.7	1090	3.4	3.72	5.64	4.0	12.7	1230.0	16.8	12.7	0.127	
DON6	82	0.692	7.56	0.0118	140	1.0	8.7	900	3.0	3.50	5.30	3.6	12.3	1040.0	15.8	12.3	0.123	
DON8	82	0.692	3.05	0.0048	140	1.0	8.7	1.3	1.1	2.12	N/A	0.0	8.7	141.3	10.8	8.7	0.087	
DON9	82	0.692	5.12	0.0080	140	1.0	8.7	780	0.8	1.78	2.70	6.4	15.1	920.0	15.1	15.1	0.151	
DOF1	86	0.745	223.50	0.3492	300	1.0	11.1	6130	3.3	3.67	5.56	19.2	30.2	6430.0	45.7	30.2	0.302	
DOF2	84	0.719	99.80	0.1559	300	1.0	11.9	4280	3.6	3.83	5.81	13.0	24.9	4580.0	35.4	24.9	0.249	
DOF3	82	0.692	2.62	0.0041	100	1.0	7.3	540	3.3	3.67	5.56	2.4	9.7	640.0	13.6	9.7	0.097	
DOF4	82	0.692	18.37	0.0287	300	1.0	12.7	1370	3.4	3.72	5.64	4.8	17.5	1670.0	19.3	17.5	0.175	
DOF5	82	0.692	33.50	0.0523	300	1.0	12.7	2450	3.4	3.72	5.64	8.0	20.7	2750.0	25.3	20.7	0.207	
FISH1	98	0.904	0.49	0.0008	30	2.0	1.5	305	3.6	3.83	N/A	1.3	2.9	335.0	11.9	2.9	0.050	
ANN1	98	0.904	3.39	0.0053	43	2.0	1.8	1280	3.1	3.56	5.39	4.8	6.6	1323.0	17.4	6.6	0.066	
HAM1	98	0.904	1.08	0.0017	30	2.0	1.5	390	3.1	3.56	N/A	1.8	3.4	420.0	12.3	3.4	0.050	

$$T_i = (1.8(1.1-K)L^{1/2}) / (S^{1/3})$$

$$T_c = T_i + T_t$$

$$K = 0.0132(CN) - 0.39$$

$$T_{lag} = 0.6T_c$$

For the travel time (T_i) calculations,

V₁ applies to the first 500 feet of travel distance;

V₂ applies to the remaining travel distance.

Travel Time Velocity Formulas

Existing

$$V_1 = 14.8(S/100)^{1/2}$$

$$V_2 = 29.4(S/100)^{1/2}$$

Developed

$$V_1 = 20.2(S/100)^{1/2}$$

$$V_2 = 30.6(S/100)^{1/2}$$

All basins over one square mile are calculated by the equation $T_{lag} = 20Kn(L^{1/2}/S^{0.5})^{0.33}$ and denoted by shaded gray (See Worksheet).

REFERENCE:

CCRFCD HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

STANDARD FORM 4


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1 .....
*
*   FLOOD HYDROGRAPH PACKAGE   (HEC-1)
*       JUN      1998
*       VERSION 4.1
*
*
*   RUN DATE   23AUG10   TIME   13:55:11
*
* .....

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

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X      X  XXXXXXXX  XXXXX      X
X      X  X      X      X      XXX
X      X  X      X      X      X
XXXXXXXXXX  XXXX  X      XXXXXX  X
X      X  X      X      X      X
X      X  X      X      X      X
X      X  XXXXXXXX  XXXXX      XXX

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

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

PAGE 1

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
          *DIAGRAM
1         ID
2         ID      <><><><><><><><><><><><><><><><><><><><>
3         ID      ANN & GRAND CANYON
4         ID      HYDROLOGIC MODEL
5         ID      -----
6         ID      EXISTING AND FUTURE CONDITIONS
7         ID      10-YR & 100-YR STORM EVENT
8         ID      -----
9         ID      TANEY ENGINEERING
10        ID
11       ID      FILE: AGC.DAT
12       ID      PROJECT No: WLL-10-068
13       ID      DATE: JULY 2010
14       ID      <><><><><><><><><><><><><><><><><><><><>
15       ID
16       ID      ---> 6-HOUR / SDN 3 <---
17       ID
18       IT      5           0           0           300
19       IO      5
20       IN      5
21       JR      PREC      1.00      0.99      0.98      0.51      0.50

22       KK      EXOF3
23       KM      *****BEGIN EXISTING CONDITIONS ANALYSIS*****
24       BA      .0041
25       PB      3.09
26       PC      .000      .020      .057      .070      .087      .108      .124      .130      .130      .130
27       PC      .130      .130      .130      .133      .140      .142      .148      .158      .172      .181
28       PC      .190      .197      .199      .200      .201      .204      .214      .229      .241      .249
29       PC      .251      .256      .270      .278      .281      .283      .295      .322      .352      .409
30       PC      .499      .590      .710      .744      .781      .812      .819      .835      .851      .855

```

EXISTING
+
DEVELOPED

42	KK	EXOF4	
43	BA	.0287	
44	LS	0	77
45	UD	.206	
	*		

HEC-1 INPUT

PAGE 2

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

68	KK	EXON5	
69	BA	.0074	
70	LS	0	77
71	UD	.102	

72 KK C5

73 HC 2
*
74 KK EXOF1
75 BA .3492
76 LS 0 83
77 UD .328
*

HEC-1 INPUT

PAGE 3

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

78 KK DUMMY
79 HC 4
*

80 KK DOF1
81 KM *****BEGIN FUTURE CONDITIONS*****
82 BA .3492
83 LS 0 86
84 UD .302
*

85 KK ANN1
86 BA .0053
87 LS 0 98
88 UD .066
*

89 KK CPANN
90 HC 2
*

91 KK DOF3
92 BA .0041
93 LS 0 82
94 UD .097
*

95 KK DON2
96 BA .0036
97 LS 0 82
98 UD .117
*

99 KK CP1
100 HC 2
*

101 KK DON3
102 BA .0090
103 LS 0 82
104 UD .130
*

105 KK DON1
106 BA .0108
107 LS 0 82
108 UD .130
*

HEC-1 INPUT

PAGE 4

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

109 KK CP2
110 HC 3
*

111	KK	DOF4	
112	BA	.0287	
113	LS	0	82
114	UD	.175	
	*		
115	KK	DON4	
116	BA	.0053	
117	LS	0	82
118	UD	.123	
	*		
119	KK	CP3	
120	HC	2	
	*		
121	KK	DON8	
122	BA	.0048	
123	LS	0	82
124	UD	.087	
	*		
125	KK	CP7	
126	HC	2	
	*		
127	KK	DON5	
128	BA	.0110	
129	LS	0	82
130	UD	.127	
	*		
131	KK	DON6	
132	BA	.0118	
133	LS	0	82
134	UD	.123	
	*		
135	KK	CP5	
136	HC	2	
	*		
137	KK	HAM1	
138	BA	.0017	
139	LS	0	98
140	UD	.050	
	*		

1

HEC-1 INPUT

PAGE 5

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10			
141	KK	CP6		
142	HC	2		
	*			
143	KK	CP8		
144	HC	2		
	*			
145	KK	DOF2		
146	BA	.1559		
147	LS	0	84	
148	UD	.249		
	*			
149	KK	DOF5		
150	BA	.0523		
151	LS	0	82	
152	UD	.207		

153	KK	CP9	
154	HC	2	
	*		
155	KK	DON9	
156	BA	.0080	
157	LS	0	82
158	UD	.151	
	*		
159	KK	FISH1	
160	BA	.0008	
161	LS	0	98
162	UD	.050	
	*		
163	KK	CP11	
164	HC	3	
	*		
165	ZZ		

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
LINE		
NO.	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
22	EXOF3	
	.	
36	EXON3	
	.	
40	C1.....	
	.	
42	EXOF4	
	.	
46	EXON4	
	.	
50	CP4.....	
	.	
52	EXOF2	
	.	
56	EXON2	
	.	
60	C2.....	
	.	
62	C3.....	
	.	
64	EXOF5	
	.	
68	EXON5	
	.	
72	C5.....	
	.	
74	EXOF1	
	.	

78	DUMY	.	.	.		
80		DOF1	.	.		
85			ANN1	.		
89		CPANN	.	.		
91			DOF3	.		
95				DON2		
99			CP1	.		
101				DON3		
105					DON1	
109			CP2	.	.	
111				DOF4	.	
115					DON4	
119				CP3	.	
121					DON8	
125				CP7	.	
127					DON5	
131						DON6
135					CP5	.
137						HAM1
141					CP6	.
143				CP8	.	.
145					DOF2	.
149						DOF5

```

153      .      .      .      .      CP9.....
      .      .      .      .
155      .      .      .      .      DON9
      .      .      .      .
159      .      .      .      .      FISH1
      .      .      .      .
163      .      .      .      .      CP11.....

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

*****
*
*   FLOOD HYDROGRAPH PACKAGE   (HEC-1)
*       JUN   1998
*       VERSION 4.1
*
*   RUN DATE   23AUG10   TIME  13:55:11
*
*****

```

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

```

*****
ANN & GRAND CANYON
HYDROLOGIC MODEL
-----
EXISTING AND FUTURE CONDITIONS
10-YR & 100-YR STORM EVENT
-----
TANEY ENGINEERING

FILE: AGC.DAT
PROJECT No: WLL-10-068
DATE: JULY 2010
*****

```

---> 6-HOUR / SDN 3 <---

```

19 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
           NDDTIME    0055  ENDING TIME
           ICENT      19  CENTURY MARK

           COMPUTATION INTERVAL      .08 HOURS
           TOTAL TIME BASE      24.92 HOURS

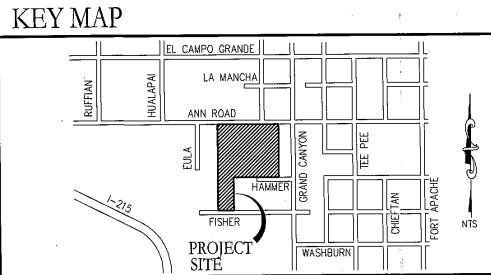
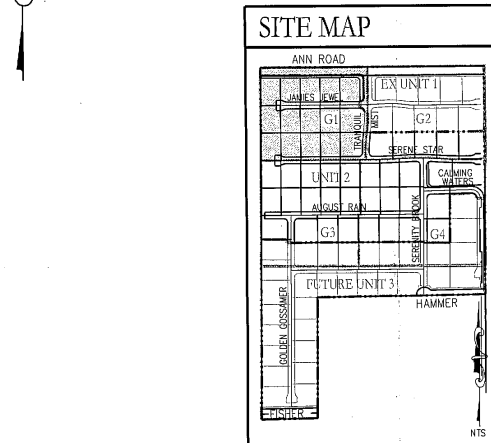
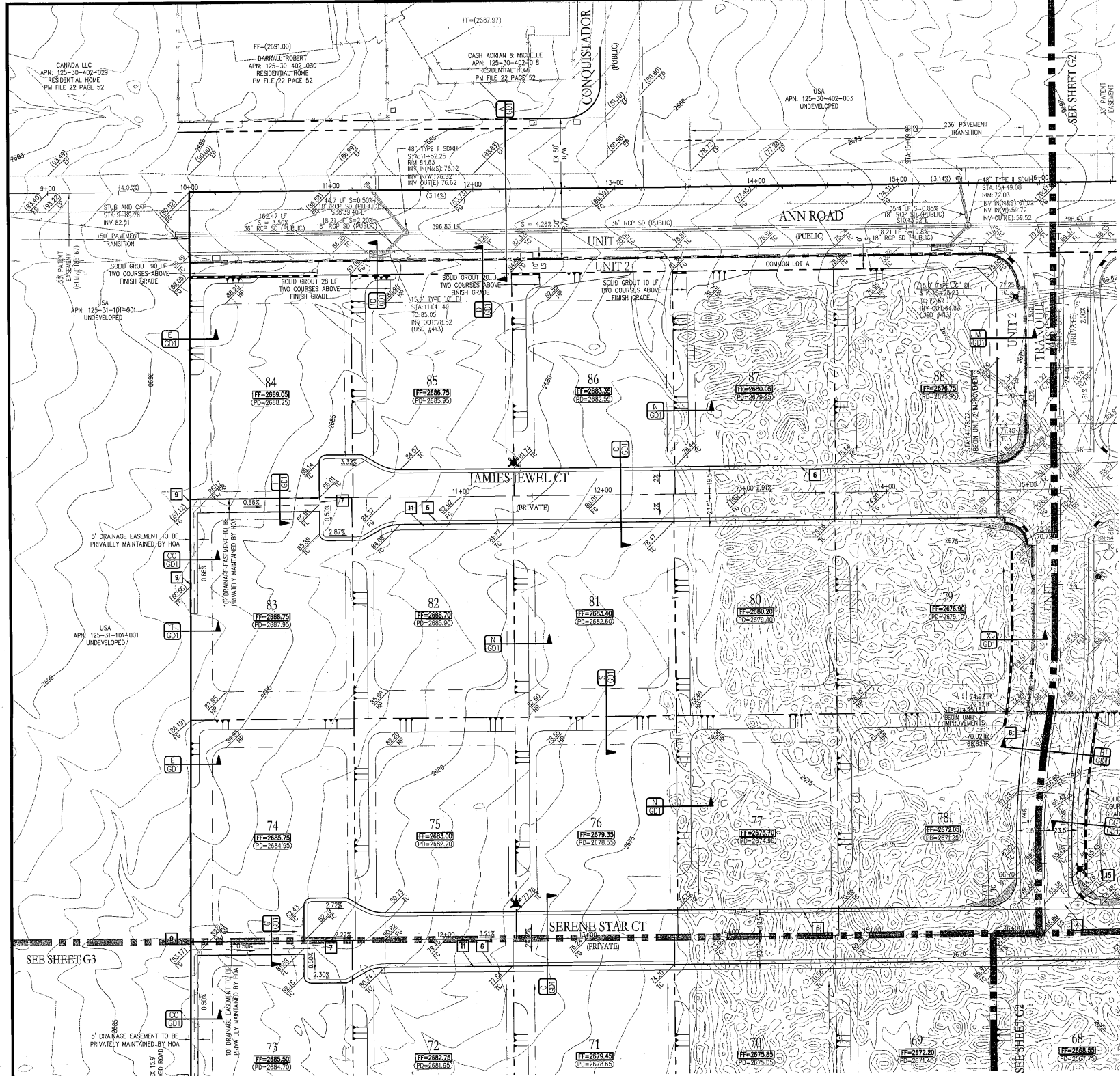
ENGLISH UNITS
DRAINAGE AREA      SQUARE MILES
PRECIPITATION DEPTH  INCHES
LENGTH, ELEVATION  FEET
FLOW              CUBIC FEET PER SECOND
STORAGE VOLUME     ACRE-FEET
SURFACE AREA       ACRES
TEMPERATURE        DEGREES FAHRENHEIT

```


+	EXOF1	.35	1	FLOW TIME	329. 3.75	324. 3.75	319. 3.75	3.83	86. 3.83
+	4 COMBINED AT DUMMY	.66	1	FLOW TIME	584. 3.75	574. 3.75	564. 3.75	148. 3.75	138. 3.75
+	HYDROGRAPH AT DOF1	.35	1	FLOW TIME	387. 3.75	381. 3.75	376. 3.75	123. 3.75	118. 3.75
+	HYDROGRAPH AT ANN1	.01	1	FLOW TIME	13. 3.50	13. 3.50	13. 3.50	7. 3.50	6. 3.50
+	2 COMBINED AT CPANN	.35	1	FLOW TIME	392. 3.75	386. 3.75	380. 3.75	125. 3.75	120. 3.75
+	HYDROGRAPH AT DOF3	.00	1	FLOW TIME	6. 3.50	5. 3.50	5. 3.50	1. 3.58	1. 3.58
+	HYDROGRAPH AT DON2	.00	1	FLOW TIME	5. 3.58	5. 3.58	5. 3.58	1. 3.58	1. 3.58
+	2 COMBINED AT CP1	.01	1	FLOW TIME	10. 3.50	10. 3.50	10. 3.50	3. 3.58	3. 3.58
+	HYDROGRAPH AT DON3	.01	1	FLOW TIME	12. 3.58	11. 3.58	11. 3.58	3. 3.58	3. 3.58
+	HYDROGRAPH AT DON1	.01	1	FLOW TIME	14. 3.58	14. 3.58	13. 3.58	4. 3.58	4. 3.58
+	3 COMBINED AT CP2	.03	1	FLOW TIME	36. 3.58	35. 3.58	34. 3.58	10. 3.58	9. 3.58
+	HYDROGRAPH AT DOF4	.03	1	FLOW TIME	34. 3.58	33. 3.58	33. 3.58	9. 3.67	8. 3.67
+	HYDROGRAPH AT DON4	.01	1	FLOW TIME	7. 3.58	7. 3.58	7. 3.58	2. 3.58	2. 3.58
+	2 COMBINED AT CP3	.03	1	FLOW TIME	41. 3.58	40. 3.58	39. 3.58	10. 3.58	10. 3.58
+	HYDROGRAPH AT DON8	.00	1	FLOW TIME	7. 3.50	7. 3.50	7. 3.50	2. 3.50	2. 3.50
+	2 COMBINED AT CP7	.04	1	FLOW TIME	47. 3.58	46. 3.58	45. 3.58	12. 3.58	12. 3.58
+	HYDROGRAPH AT DON5	.01	1	FLOW TIME	14. 3.58	14. 3.58	14. 3.58	4. 3.58	4. 3.58
+	HYDROGRAPH AT DON6	.01	1	FLOW TIME	15. 3.58	15. 3.58	15. 3.58	4. 3.58	4. 3.58

2 COMBINED AT								
+	CP5	.02	1	FLOW TIME	30. 3.58	29. 3.58	29. 3.58	8. 3.58
HYDROGRAPH AT								
+	HAM1	.00	1	FLOW TIME	4. 3.50	4. 3.50	4. 3.50	2. 3.50
2 COMBINED AT								
+	CP6	.02	1	FLOW TIME	32. 3.58	32. 3.58	31. 3.58	9. 3.58
2 COMBINED AT								
+	CP8	.06	1	FLOW TIME	79. 3.58	77. 3.58	76. 3.58	21. 3.58
HYDROGRAPH AT								
+	DOF2	.16	1	FLOW TIME	174. 3.67	171. 3.67	168. 3.67	50. 3.67
HYDROGRAPH AT								
+	DOF5	.05	1	FLOW TIME	57. 3.67	56. 3.67	55. 3.67	15. 3.67
2 COMBINED AT								
+	CP9	.21	1	FLOW TIME	231. 3.67	227. 3.67	223. 3.67	65. 3.67
HYDROGRAPH AT								
+	DON9	.01	1	FLOW TIME	10. 3.58	10. 3.58	10. 3.58	3. 3.58
HYDROGRAPH AT								
+	FISH1	.00	1	FLOW TIME	2. 3.50	2. 3.50	2. 3.50	1. 3.50
3 COMBINED AT								
+	CP11	.22	1	FLOW TIME	240. 3.67	236. 3.67	233. 3.67	68. 3.67

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



- ### CONSTRUCTION NOTES
- 24" L-TYPE CURB & GUTTER (USD #216)
 - SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=8.0')
 - THICK CONCRETE SIDEWALK (USD #234)
 - 8" GROSS GUTTER (USD #228)
 - SAW CUT & MATCH EXISTING AC PAVEMENT
 - 30" ROLL TYPE CURB & GUTTER (USD #217A)
 - CURB CUT (SEE P/G01)
 - 10" TRANSITION FROM ROLL TO DEPRESSED CURB (SEE R/G01)
 - WROUGHT IRON FENCE (SEE K/G01)
 - WROUGHT IRON FENCE W/ SCREEN AND GATE (SEE Q/G01)
 - 5" THICK CONCRETE SIDEWALK (USD #234)
 - 3.0' VALLEY GUTTER (SEE L/G01)
 - AC PAVEMENT
 - SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=9.5' B=4.5')
 - THICK CONCRETE SIDEWALK (USD #234)
 - SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=12.0' B=4.5')
 - THICK CONCRETE SIDEWALK (USD #234)
 - WROUGHT IRON FENCE W/ SCREEN AND GATE (SEE K/G02)

GRADING NOTES

COMPLETION OF SECTION II OF DRAINAGE COMPLIANCE REPORT REQUIRED.

ADD 2600 FEET TO ALL GRADE TAGS TO GET ACTUAL ELEVATION.

THE ELEVATION DIFFERENCE BETWEEN THE PAD AND FINISH FLOOR IS DETERMINED FROM THE MINIMUM THICKNESS REQUIRED FOR THE GEOTECHNICAL REPORT. FINISH FLOORS MAY INCREASE DEPENDING ON THE TYPE OF SOIL AND FOUNDATION PLAN USED. NOTE THAT THE STRUCTURAL PLANS & GEOTECHNICAL REPORT SHALL SUPERSEDE THE CIVIL IMPROVEMENT PLANS.

ALL PRIVATE STREETS AND DRAINAGE EASEMENTS ARE TO BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION (H.O.A.).

ALL WORK TO BE PERFORMED OUTSIDE OF THE PROJECT BOUNDARY AND ON PRIVATE PROPERTY SHALL NOT BE PERFORMED UNTIL WRITTEN PERMISSION AND EASEMENTS HAVE BEEN OBTAINED FROM THE OFFSITE OWNER AND GIVEN TO CLARK COUNTY.

CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

GRADING CERTIFICATION

I CERTIFY THIS GRADING PLAN COMPLIES WITH THE APPROVED DRAINAGE STUDY, HTE 10-18993, ON FILE WITH CLARK COUNTY FOR THIS PROJECT.

ROBERT D. CUNNINGHAM, P.E. DATE

APPROVAL BLOCK

ACCEPTANCE OF PLANS FOR FILING

BY: DATE

DEVELOPMENT AND FLOOD CONTROL

LEGEND

	EXISTING	PROPOSED
DESIGN ELEVATION	(10.00)	(10.00)
FUTURE ELEVATION		(10.00)
SCARP (SLOPE VARIES)		
CONTOUR (1' INTERVAL)		
CONTOUR (5' INTERVAL)		
DIRECTION OF FLOW		
RETAINING WALL		
CMU WALL		
CENTERLINE		
RIGHT-OF-WAY		
CUT LINE-ASPHALT		
CURB AND GUTTER		
POWER POLE		
SIDEWALK RAMP		
CURB DROP INLET		
STORM DRAIN W/MANHOLE		
SIDEWALK		
PROPERTY LINE		
OUT-FILL LINE		
EDGE OF PAVEMENT		
SIGHT VISIBILITY ZONE		

PRIVATE STREET EASEMENTS

ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS, AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE H.O.A.

FLOOD ZONE

THIS PROJECT IS LOCATED IN ZONE X, AN AREA OUTSIDE THE 100-YEAR FLOOD ZONE ACCORDING TO FIRM PANEL NO. 3200351745 DATED SEPT. 21, 2002.

EARTHWORK

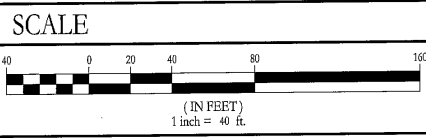
TOTAL FOR OVERALL DEVELOPMENT: 204 CY CUT
16,315 CY FILL

THIS OPINION OF THE CUT AND FILL QUANTITIES IS PROVIDED AS REQUIRED BY CLARK COUNTY BUILDING CODE REQUIREMENTS. THIS INFORMATION SHOULD NOT BE USED FOR BIDDING PURPOSES. ALL CONTRACTORS ARE RESPONSIBLE FOR THEIR OWN QUANTITIES. THESE TOTALS ARE RAW AND DO NOT ACCOUNT FOR SHRINKAGE AND SUBSIDENCE.

GEOTECHNICAL

GEOTECH, INC.
8835 S. ESCONCADO ST, STE # A
LAS VEGAS, NEVADA 89119
702-897-1424

REPORT NO: 9786-LVG
DATE 03/11/2010



LEGAL DESCRIPTION

BEING A PORTION OF THE NORTHWEST QUARTER (1/4) OF SECTION 31, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D. & M. CLARK COUNTY, NEVADA

BASIS OF BEARINGS

S 89°14'18" E, BEING THE NORTH LINE OF THE SE 1/4, NW 1/4, SECTION 31, T19S, R60E, M.D.M. AS SHOWN ON FILE 97, PAGE 85 OF PARCEL MAPS, CLARK COUNTY, NEVADA OFFICIAL RECORDS.

BENCHMARK

B.M. #190-31C4 GLV RIVET & ROUND PLATE IN CONC PAD WEST SIDE OF GRAND CANYON DR., 120 FEET SOUTH OF WASHBURN ROAD.

ELEVATION = 795.579 M (2010.16 FEET) NAVD 83

ABBREVIATIONS

AC	ASPHALTIC CONCRETE	NTS	NOT TO SCALE
BC	BACK OF CURB	OC	ON CENTER
BR	BACK OF CURB RADIUS	PB	PULL BOX
BM	BENCHMARK	PC	POINT OF CURVE
BVC	BEIGN VERTICAL CURVE	PCC	POINT OF COMPOUND CURVE
BT	BOTTOM OF EXISTING WALL	PE	POLYETHYLENE
CATV	CABLE TELEVISION	PI	POINT OF INTERSECTION
CC	CLARK COUNTY	PL	PROPERTY LINE
CL	CENTERLINE	PLC	POINT OF CONNECTION
CLV	CITY OF LAS VEGAS	PP	POWER POLE
CMP	CORRUGATED METAL PIPE	PRC	POINT OF REVERSE CURVE
CNV	CITY OF NORTH LAS VEGAS	PT	POINT OF TANGENCY
CO	CITY OF COVINGTON	PVC	POLYVINYL CHLORIDE
COH	CITY OF HENDERSON	R	RADIUS
CY	CUBIC YARD	ROB	REINFORCED CONCRETE BOX
DC	DESIGN GRADE	RCP	REINFORCED CONCRETE PIPE
DI	DRAIN INLET	R/W	RIGHT-OF-WAY
DIP	DUCTILE IRON PIPE	R	RADIUS
END	END OF CURVE	SD	STORM DRAIN
EP	EDGE OF PAVEMENT	SL	STREETLIGHT
EV	EXISTING	SNWA	SOUTHERN NEVADA WATER AUTHORITY
EV	END VERTICAL CURVE	SS	SANITARY SEWER
FF	FINISH FLOOR ELEVATION	STA	STATION
FG	FINISH GRADE	STD	STANDARD
FI	FIRE HYDRANT	SVZ	SIGHT VISIBILITY ZONE
FL	FEET	SW	SIDEWALK
FT	FEET	TC	TOP OF CURB
GB	GRADE BREAK	TF	TOP OF FOOTING
GFT	GARAGE FINISH FLOOR	TR	TOP OF RETAINING
HP	HIGH POINT	TYP	TYPICAL
INV	INVERT	USD	UNIFORM STANDARD DRAWING
LF	LINEAR FEET	VC	VERTICAL CURVE
LVWD	LAS VEGAS VALLEY WATER DISTRICT	VCP	VERTIFIED CLAY PIPE
MAX	MAXIMUM	W	WATER
MIN	MINIMUM	WG	WATER GUTTER
		ZC	ZERO UP CURB

NO.	DESCRIPTION	DATE	BY	APPR.
	REVISIONS			

WILLIAM LYON HOMES
3015 LAS VEGAS AVENUE
LAS VEGAS, NV 89109
(702) 263-8200 FAX: (702) 263-8220

TANEY ENGINEERING
609 S. JONES BLVD STE# 100
LAS VEGAS, NV 89106
(702) 363-8844 FAX: (702) 363-3333

ANN AND GRAND CANYON - UNIT 2
(SERENITY RIDGE)
A RESIDENTIAL SUBDIVISION

GRADING PLAN - NORTHWEST

ROBERT D. CUNNINGHAM
Exp. 12-31-10
No. 15726
ENGINEER'S SEAL

DATE: 09.16.10

SCALE: 1"=40'

JOB NO: WLL-10-068

DESIGNED BY: MC

CHECKED BY: RDC

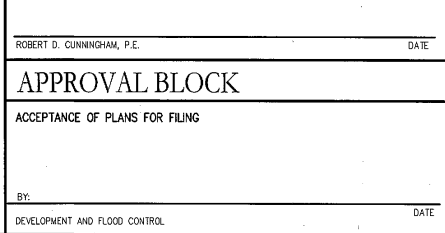
SHEET NAME: G1

SHEET: 3 OF 24

CALL BEFORE YOU DIG
1-702-227-2929

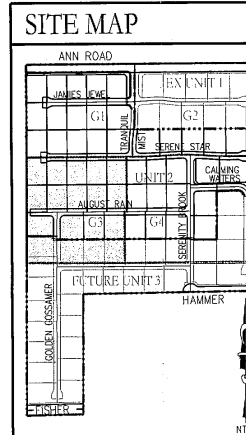
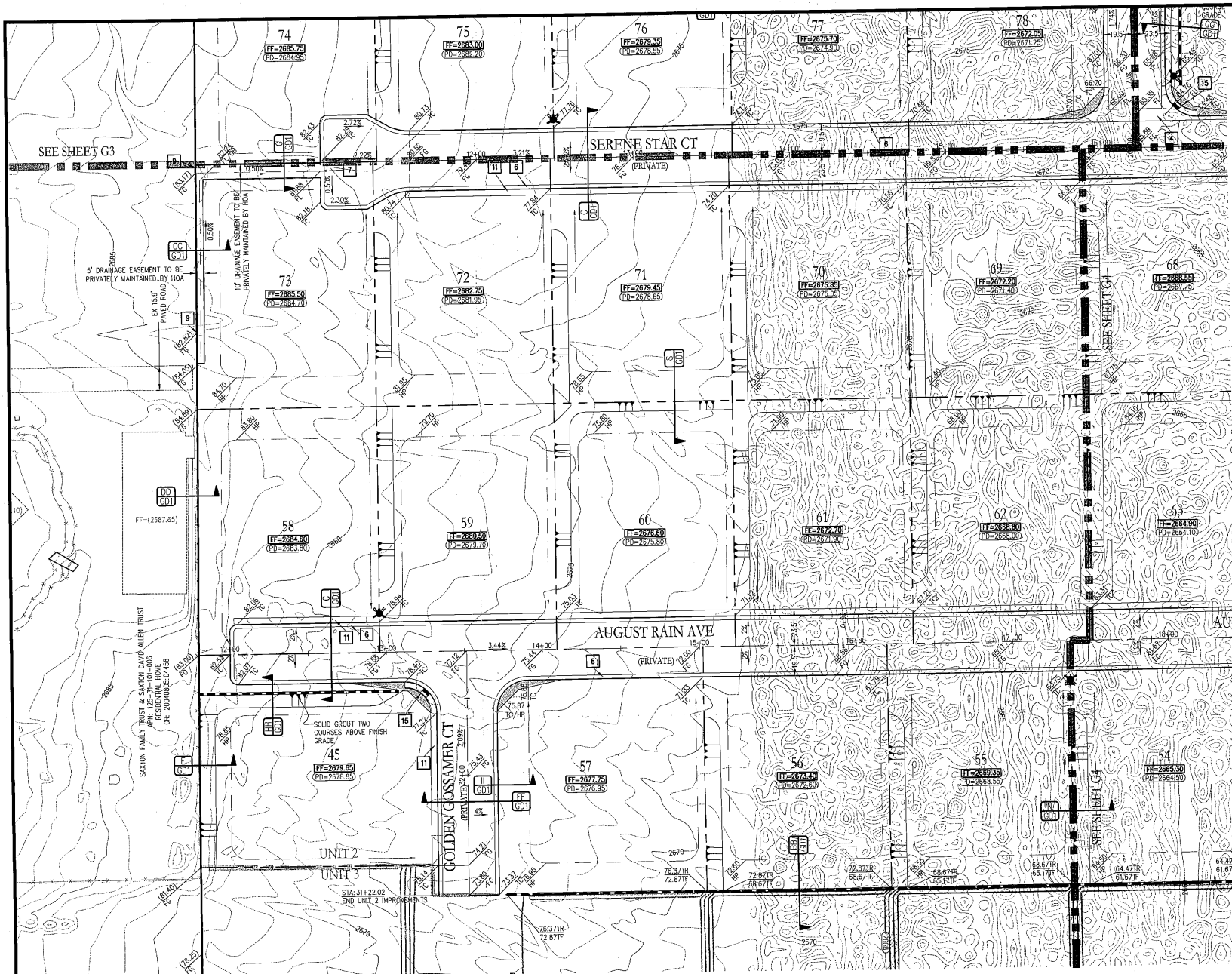
UnderGround
1-702-455-7511
1-702-229-6611

Call 811
1-800-227-2600
1-800-455-7544

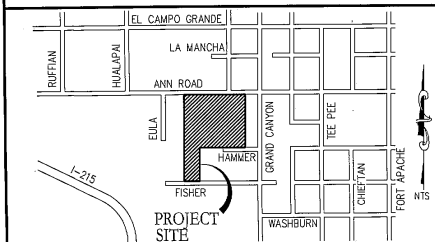


AC	ASPHALTIC CONCRETE	NTS	NOT TO SCALE
BC	BACK OF CURB	OC	ON CENTER
BOR	BACK OF CURB RADIUS	OC	ON CURB
BN	BENCH MARK	PC	POINT OF CURVE
BW	BOTTOM VERTICAL CURVE	PC	POINT OF COMPOUND CURVE
CE	CENTERLINE	PE	POLYETHYLENE
CL	CABLE TELEVISION	PI	POINT OF INTERSECTION
CTV	CLARK COUNTY	PI	PROPERTY LINE
CD	CENTERLINE	PDC	POINT OF CONNECTION
CC	CITY OF LAS VEGAS	PP	POWER POLE
CMP	COMPOUND METAL PIPE	PVC	POINT OF REVERSE CURVE
CM	CITY OF NORTH LAS VEGAS	PRC	POINT OF TANGENCY
CS	CLEAN OUT, SEWER	PRC	POLYVINYL CHLORIDE
COH	CITY OF HENDERSON	R	RADIUS
DC	DESIGN GRADE	RGR	REINFORCED CONCRETE PIPE
DI	DRIVE INLET	R/W	RIGHT-OF-WAY
DU	DUCTILE IRON PIPE	RI	RIGHT
ED	END OF CURE	SI	STORM DRAIN
EP	EDGE OF PAVEMENT	SL	STREETLIGHT
EVC	END VERTICAL CURVE	SNWA	SOUTHERN NEVADA WATER EXPLORATION
EX	EXISTING	STA	STATION
FF	FINISH FLOOR ELEVATION	STA	STATION
FI	FINISH GRADE	STD	STANDARD
FM	FIRE BREAK	SVZ	SIGHT VISIBILITY ZONE
FL	FLOOR LINE	SW	SEWER
FT	FEET	TS	TOTAL STATION
GS	GRADE CURB	TOP	TOP OF CURB
GT	GRADE	TR	TOP OF FOOTING
GF	GRADE FINISH FLOOR	TR	TOP OF RETAINING
HP	HIGH POINT	TOP	TOP OF WALL
INV	INVERT	TYPE	TYPICAL
LF	LINEAR FEET	UNF	UNIFORM STANDARD DRAWING
LV	LINEAR	VC	VERTICAL CURVE
LWVWD	LAS VEGAS WATER DISTRICT	VCP	WITRIFIED CLAY PIPE
MAX	MAXIMUM	VG	VALLEY GUTTER
MAN	MANHOLE	W	WATER
MN	MINIMUM	ZC	ZERO LO CURB

Call Before You Dig
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.
CALL
811
OR
1-800-227-2600
AND
CLARK COUNTY TRAFFIC OPERATIONS
1-800-455-7544



KEY MAP



CONSTRUCTION NOTES

1. 2" L-TYPE CURB & GUTTER (USD #216)
2. SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=8-8.0') TRUNCATED DOMES OR EQUIVALENT (USD #235)
3. 4" THICK CONCRETE SIDEWALK (USD #234)
4. 8" CROSS GUTTER (USD #228)
5. SAWCUT & MATCH EXISTING AC PAVEMENT
6. 30" ROLL TYPE CURB & GUTTER (USD #217A)
7. CURB CUT (SEE P/201)
8. 10" TRANSITION FROM ROLL TO DEPRESSED CURB (SEE R/201)
9. WROUGHT IRON FENCE (SEE K/201)
10. WROUGHT IRON FENCE W/ SCREEN AND GATE (SEE Q/201)
11. 5" THICK CONCRETE SIDEWALK (USD #234)
12. 3.0' VALLEY CUTTER (SEE L/201)
13. AC PAVEMENT
14. SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=8.5' B=4.5') TRUNCATED DOMES OR EQUIVALENT (USD #235)
15. SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=12.0' B=4.5') TRUNCATED DOMES OR EQUIVALENT (USD #235)
16. WROUGHT IRON FENCE W/ SCREEN AND GATE (SEE K/202)

GRADING NOTES

COMPLETION OF SECTION II OF DRAINAGE COMPLIANCE REPORT REQUIRED.

ADD 2600 FEET TO ALL GRADE TAGS TO GET ACTUAL ELEVATION.

THE ELEVATION DIFFERENCE BETWEEN THE PAD AND FINISH FLOOR IS DETERMINED FROM THE MINIMUM THICKNESS REQUIRED PER THE GEOTECHNICAL REPORT. FINISH FLOORS MAY INCREASE DEPENDING ON THE TYPE OF SOIL AND FOUNDATION PLAN USED. NOTE THAT THE STRUCTURAL PLANS & GEOTECHNICAL REPORT SHALL SUPERSEDE THE CIVIL IMPROVEMENT PLANS.

ALL PRIVATE STREETS AND DRAINAGE EASEMENTS ARE TO BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION (H.O.A.).

ALL WORK TO BE PERFORMED OUTSIDE OF THE PROJECT BOUNDARY AND ON PRIVATE PROPERTY SHALL NOT BE PERFORMED UNTIL WRITTEN PERMISSION AND EASEMENTS HAVE BEEN OBTAINED FROM THE OFFSITE OWNER AND GIVEN TO CLARK COUNTY.

CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

GRADING CERTIFICATION

I CERTIFY THIS GRADING PLAN COMPLIES WITH THE APPROVED DRAINAGE STUDY, HTE 10-18993, ON FILE WITH CLARK COUNTY FOR THIS PROJECT.

ROBERT D. CUNNINGHAM, P.E.

APPROVAL BLOCK

ACCEPTANCE OF PLANS FOR FILING

BY: DEVELOPMENT AND FLOOD CONTROL

LEGEND

	EXISTING (10.00)	PROPOSED (10.00)
DESIGN ELEVATION		
FUTURE ELEVATION		
SCARP (SLOPE VARIES)		
CONTOUR (1' INTERVAL)		
CONTOUR (5' INTERVAL)		
DIRECTION OF FLOW		
RETAINING WALL		
DMU WALL		
CENTERLINE		
RIGHT-OF-WAY		
CUT LINE-ASPHALT		
CURB AND GUTTER		
POWER POLE		
SIDEWALK RAMP		
CURB DROP INLET		
STORM DRAIN W/MANHOLE		
SIDEWALK		
PROPERTY LINE		
CUT-FILL LINE		
EDGE OF PAVEMENT		
SIGHT VISIBILITY ZONE		

PRIVATE STREET EASEMENTS

ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS, AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE H.O.A.

FLOOD ZONE

THIS PROJECT IS LOCATED IN ZONE X, AN AREA OUTSIDE THE 100-YEAR FLOOD ZONE ACCORDING TO FIRM PANEL NO. 32003C1745 DATED SEPT. 27, 2002.

EARTHWORK

TOTAL FOR OVERALL DEVELOPMENT: 204 CY CUT, 16,315 CY FILL

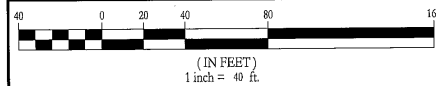
THIS OPINION OF THE CUT AND FILL QUANTITIES IS PROVIDED AS REQUIRED BY CLARK COUNTY BUILDING CODE REQUIREMENTS. THIS INFORMATION SHOULD NOT BE USED FOR BIDDING PURPOSES. ALL CONTRACTORS ARE RESPONSIBLE FOR THEIR OWN QUANTITIES. THESE TOTALS ARE RAW AND DO NOT ACCOUNT FOR SHRINKAGE AND SUBSIDENCE.

GEOTECHNICAL

GEOTEK, INC.
6835 S. ESCOBADO ST., STE# A
LAS VEGAS, NEVADA 89119
702-897-1424

REPORT NO. 9786-LV6
DATE 03/11/2010

SCALE



LEGAL DESCRIPTION

BING A PORTION OF THE NORTHWEST QUARTER (1/4) OF SECTION 31, T19S, R60E, SOUTH, RANGE 60 EAST, M.B.D. & M. CLARK COUNTY, NEVADA

BASIS OF BEARINGS

S 89°14'18" E, BEING THE NORTH LINE OF THE SE 1/4, NW 1/4, SECTION 31, T19S, R60E, M.D.M. AS SHOWN ON FILE 97, PAGE 85 OF PARCEL MAPS, CLARK COUNTY, NEVADA OFFICIAL RECORDS.

BENCHMARK

B.M. #BLV90-31C4 CLV INLET & ROUND PLAGE IN CONC. PAD, WEST SIDE OF GRAND CANYON DR., 120 FEET SOUTH OF WASHBURN ROAD.

ELEVATION = 795.579 M (2010.16 FEET) NAVD 88

ABBREVIATIONS

AC	ASPHALTIC CONCRETE	NTS	NOT TO SCALE
BC	BACK OF CURB	OC	ON CENTER
BCR	BACK OF CURB RADIUS	PC	POINT OF CURVE
BM	BENCHMARK	PCC	POINT OF COMPOUND CURVE
BVC	BEGIN VERTICAL CURVE	PE	POLYETHYLENE
BT	BOTTOM OF EXISTING WALL	PI	POINT OF INTERSECTION
CATV	CABLE TELEVISION	PIC	POINT OF CONNECTION
CC	CLARK COUNTY	PP	POWER POLE
CL	CENTERLINE	PRC	POINT OF REVERSE CURVE
CLV	CITY OF LAS VEGAS	PT	POINT OF TANGENCY
CMP	CORRUGATED METAL PIPE	PVC	POLYVINYL CHLORIDE
CNLY	CITY OF NORTH LAS VEGAS	R	RADIUS
CO	CLEAN OUT, SEWER	RCB	REINFORCED CONCRETE BOX
COH	CITY OF HENDERSON	RCP	REINFORCED CONCRETE PIPE
CY	CUBIC YARD	R/W	RIGHT-OF-WAY
DC	DESIGN GRADE	RT	RIGHT
DI	DUCTILE IRON PIPE	SD	STORM DRAIN
EC	END OF CURVE	SL	STREET LIGHT
EP	EDGE OF PAVEMENT	SNWA	SOUTHERN NEVADA WATER AUTHORITY
EX	EXISTING	SS	SANITARY SEWER
EX	EXISTING	STD	STANDARD
FG	FINISH GRADE	SVZ	SIGHT VISIBILITY ZONE
FL	FINISH FLOOR ELEVATION	SW	SIDEWALK
FT	FEET	TC	TOP OF CURB
GB	GRADE BREAK	TF	TOP OF FOOTING
GFF	GARAGE FINISH FLOOR	TR	TOP OF RETAINING
HP	HIGH POINT	TW	TYPICAL
INV	INVERT	U	UNIFORM STANDARD DRAWING
LF	LINEAR FEET	VC	VERTICAL CURVE
LVWD	LAS VEGAS VALLEY WATER DISTRICT	VCP	VERTICAL CURVE
MAX	MAXIMUM	VC	VALLEY CUTTER
MIN	MINIMUM	W	WATER
		ZC	ZERO LIP CURB

WILLIAM LYON HOMES
500 PILOT ROAD STE# G
LAS VEGAS, NV 89119
(702) 253-8200 FAX: (702) 253-8220

TANEY ENGINEERING
6005 S. ANNE STREET, SUITE 100
LAS VEGAS, NV 89118
(702) 362-8844 FAX: (702) 362-5233

ANN AND GRAND CANYON - UNIT 2
(SERENITY RIDGE)
A RESIDENTIAL SUBDIVISION

GRADING PLAN - SOUTHWEST

DESIGNED BY: MC
CHECKED BY: RDC
SHEET NAME: G3
SHEET: 5 OF 24

DATE: 09.16.10

SCALE: 1"=40'

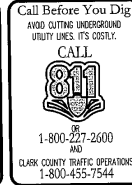
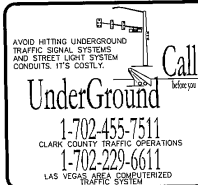
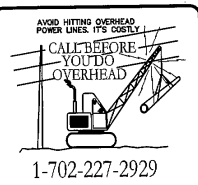
JOB NO: WLL-10-068

DESIGNED BY: MC

CHECKED BY: RDC

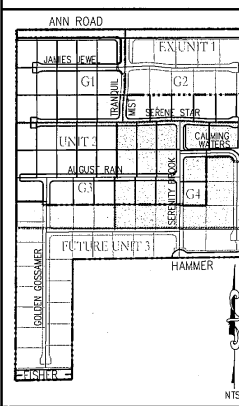
SHEET NAME: G3

SHEET: 5 OF 24

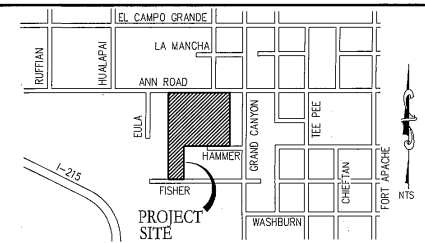




SITE MAP



KEY MAP



CONSTRUCTION NOTES

1. 24" L-TYPE CURB & GUTTER (USD #216)
2. SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=8.0') TRUNCATED DOMES OR EQUIVALENT (USD #235)
3. 4" THICK CONCRETE SIDEWALK (USD #234)
4. 8" CROSS GUTTER (USD #228)
5. SAWCUT & MATCH EXISTING AC PAVEMENT
6. 30" ROLL TYPE CURB & GUTTER (USD #217A)
7. CURB CUT (SEE P/G01)
8. 10' TRANSITION FROM ROLL TO DEPRESSURE CURB (SEE R/G01)
9. WROUGHT IRON FENCE (SEE K/G01)
10. WROUGHT IRON FENCE W/ SCREEN AND GATE (SEE Q/G01)
11. 5" THICK CONCRETE SIDEWALK (USD #234)
12. 30" VALLEY GUTTER (SEE L/G01)
13. AC PAVEMENT
14. SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=9.5' B=4.5') TRUNCATED DOMES OR EQUIVALENT (USD #235)
15. SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=12.0' B=4.5') TRUNCATED DOMES OR EQUIVALENT (USD #235)
16. WROUGHT IRON FENCE W/ SCREEN AND GATE (SEE KK/G02)

GRADING NOTES

COMPLETION OF SECTION II OF DRAINAGE COMPLIANCE REPORT REQUIRED.

ADD 2500 FEET TO ALL GRADE TAGS TO GET ACTUAL ELEVATION.

THE ELEVATION DIFFERENCE BETWEEN THE PAD AND FINISH FLOOR IS DETERMINED FROM THE MINIMUM THICKNESS REQUIRED PER THE GEOTECHNICAL REPORT. FINISH FLOORS MAY INCREASE DEPENDING ON THE TYPE OF SOIL AND FOUNDATION PLAN USED. NOTE THAT THE STRUCTURAL PLANS & GEOTECHNICAL REPORT SHALL SUPERSEDE THE CIVIL IMPROVEMENT PLANS.

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ALL WORK TO BE PERFORMED OUTSIDE OF THE PROJECT BOUNDARY AND ON PRIVATE PROPERTY SHALL NOT BE PERFORMED UNTIL WRITTEN PERMISSION AND EASEMENTS HAVE BEEN OBTAINED FROM THE OFFSITE OWNER AND GIVEN TO CLARK COUNTY.

CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

GRADING CERTIFICATION

I CERTIFY THIS GRADING PLAN COMPLIES WITH THE APPROVED DRAINAGE STUDY, HTE 10-18993, ON FILE WITH CLARK COUNTY FOR THIS PROJECT.

ROBERT D. CUNNINGHAM, P.E. DATE:

APPROVAL BLOCK

ACCEPTANCE OF PLANS FOR FILING

BY: DEVELOPMENT AND FLOOD CONTROL DATE:

LEGEND

	EXISTING (10.00)	PROPOSED [10.00]
DESIGN ELEVATION		
FUTURE ELEVATION		
SCARP (SLOPE VARIES)		
CONTOUR (1' INTERVAL)		
CONTOUR (5' INTERVAL)		
DIRECTION OF FLOW		
RETAINING WALL		
CMU WALL		
CENTERLINE		
RIGHT-OF-WAY		
CUT LINE-ASPHALT		
CURB AND GUTTER		
POWER POLE		
SIDEWALK RAMP		
CURB DROP INLET		
STORM DRAIN W/MANHOLE		
SIDEWALK		
PROPERTY LINE		
CUT-FILL LINE		
EDGE OF PAVEMENT		
SIGHT VISIBILITY ZONE		

PRIVATE STREET EASEMENTS

ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS, AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE H.O.A.

FLOOD ZONE

THIS PROJECT IS LOCATED IN ZONE X, AN AREA OUTSIDE THE 100-YEAR FLOOD ZONE ACCORDING TO FIRM PANEL NO. 32003C1745 DATED SEPT. 27, 2002.

EARTHWORK

TOTAL FOR OVERALL DEVELOPMENT: 204 CY CUT
16,315 CY FILL

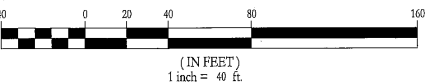
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GEOTECHNICAL

GEOTEK, INC.
6835 S. ESCONDOIDO ST., STEW A
LAS VEGAS, NEVADA 89119
702-897-1424

REPORT NO: 9796-LV6
DATE 03/11/2010

SCALE



LEGAL DESCRIPTION

BEING A PORTION OF THE NORTHWEST QUARTER (1/4) OF SECTION 31, T19S, R60E, SOUTH, RANGE 60 EAST, N.B.D. & M. CLARK COUNTY, NEVADA

BASIS OF BEARINGS

S 89°14'18" E, BEING THE NORTH LINE OF THE SE 1/4, NW 1/4, SECTION 31, T19S, R60E, M.D.M. AS SHOWN ON FILE 97, PAGE 85 OF PARCEL MAPS, CLARK COUNTY, NEVADA OFFICIAL RECORDS.

BENCHMARK

B.M. #BLV90-3124, C.V. RIVET & ROUND PLATE IN CONC PAD WEST SIDE OF GRAND CANYON DR., 120 FEET SOUTH OF WASHBURN ROAD.

ELEVATION = 795.579 M (2010.16 FEET) NAVD 88

ABBREVIATIONS

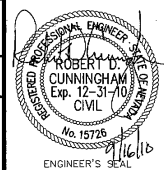
AC	ASPHALTIC CONCRETE	NTS	NOT TO SCALE
BC	BACK OF CURB	OC	ON CENTER
BCR	BACK OF CURB RADIUS	PI	PULL BOX
BM	BENCHMARK	PC	POINT OF CURVE
BVC	BEGIN VERTICAL CURVE	PCC	POINT OF COMPOUND CURVE
BTW	BOTTOM OF EXISTING WALL	PE	POLYETHYLENE
CATV	CABLE TELEVISION	PI	POINT OF INTERSECTION
CC	CLARK COUNTY	PL	PROPERTY LINE
CL	CENTERLINE	POC	POINT OF CONNECTION
CLV	CITY OF LAS VEGAS	PP	POWER POLE
CMP	CORRUGATED METAL PIPE	PRC	POINT OF REVERSE CURVE
CO	CITY OF NORTH LAS VEGAS	PT	POINT OF TANGENCY
COH	CITY OF HENDERSON	PVC	POLYVINYL CHLORIDE
CT	CURB YARD	R	RADIUS
DC	DESIGN GRADE	R2	REINFORCED CONCRETE BOX
DI	DRAINAGE INLET	RCP	REINFORCED CONCRETE PIPE
DIP	DUCTILE IRON PIPE	R/W	RIGHT-OF-WAY
EC	END OF CURVE	RT	RIGHT
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EVC	END VERTICAL CURVE	SL	STREET LIGHT
EX	EXISTING	SNWA	SOUTHERN NEVADA WATER AUTHORITY
FF	FINISH FLOOR ELEVATION	SS	SANITARY SEWER
FG	FINISH GRADE	STA	STATION
FL	FLOW LINE	STD	STANDARD
FT	FEET	SUZ	SIGHT VISIBILITY ZONE
GB	GRADE BREAK	SW	SIDEWALK
GFF	GARAGE FINISH FLOOR	TC	TOP OF CURB
HP	HIGH POINT	TF	TOP OF FOOTING
INV	INVERT	TR	TOP OF RETAINING
LZ	LEFT	TW	TOP OF WALL
LT	LEFT	TY	TYPICAL
LYWD	LAS VEGAS VALLEY WATER DISTRICT	UN	UNIFORM STANDARD DRAINING
MAK	MAXIMUM	VC	VERTICAL CURVE
MH	MANHOLE	VCP	VERTIFIED CLAY PIPE
MIN	MINIMUM	VG	VALLEY GUTTER
		W	WATER
		ZC	ZERO LIP CURB

WILLIAM LYON HOMES
5800 JONES BLVD STEF 100
LAS VEGAS, NV 89119
(702) 263-8200 FAX: (702) 263-8220

ANN AND GRAND CANYON - UNIT 2
(SERENITY RIDGE)
A RESIDENTIAL SUBDIVISION

GRADING PLAN - SOUTH EAST

TANEY ENGINEERING
600 S JONES BLVD STEF 100
LAS VEGAS, NV 89119
(702) 263-8200 FAX: (702) 263-8220



DATE: 09.16.10
SCALE: 1"=40'
JOB NO: WLL-10-068
DESIGNED BY: MC
CHECKED BY: RDC
SHEET NAME: G4
SHEET: 6 OF 24

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.

CALL BEFORE YOU DIG OVERHEAD

1-702-227-2929

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

UnderGround

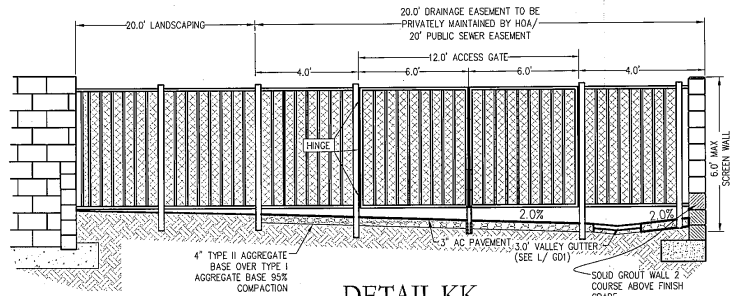
1-702-455-7511
1-702-229-6611

Call Before You Dig

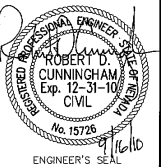
CALL

1-800-227-2600
1-800-455-7544

FILE NAME: WLL08BUP.DWG



DETAIL KK
WROUGHT IRON FENCE W/ SCREEN AND GATE



DATE: 09.16.10

SCALE: 1"=40'

JOB NO: WLL-10-068

DESIGNED BY: MC

CHECKED BY: RDC

SHEET NAME: GD2

SHEET: 8 OF 24

ANN AND GRAND CANYON - UNIT 2
(SERENITY RIDGE)
A RESIDENTIAL SUBDIVISION

GRADING DETAILS AND SECTIONS

WILLIAM LYON HOMES
500 PILOT ROAD STE# 6
LAS VEGAS, NV 89119
(702) 263-8200 FAX: (702) 263-8220



TANEY ENGINEERING
6005 JONES BLVD STE# 100
LAS VEGAS, NV 89118
(702) 362-8844 FAX: (702) 362-5233

DESCRIPTION

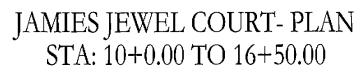
REVISIONS

NO.

BY

DATE

APPR.



COMPLETION OF SECTION II OF DRAINAGE COMPLIANCE REPORT REQUIRED:
ADD 2600 FEET TO ALL GRADE TAGS TO MEET ACTUAL ELEVATION.
THE ELEVATION DIFFERENCE BETWEEN THE PAD AND FINISH FLOOR IS DETERMINED FROM THE MINIMUM FINISH FLOOR ELEVATION. FINISH FLOOR MAY INCREASE DEPENDING ON THE TYPE OF SOIL AND FOUNDATION PLAN USED. NOTE THAT THE STRUCTURAL PLANS & GEOTECHNICAL REPORT SHALL SUPERSEDE THE CIVIL IMPROVEMENT PLANS.
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ALL WORK TO BE PERFORMED OUTSIDE OF THE PROJECT BOUNDARY AND ON PRIVATE PROPERTY SHALL NOT BE PERFORMED UNTIL WRITTEN PERMISSION AND EASEMENTS HAVE BEEN OBTAINED FROM THE OFFSITE OWNER AND GIVEN TO CLARY COUNTY.
CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

[illegible]

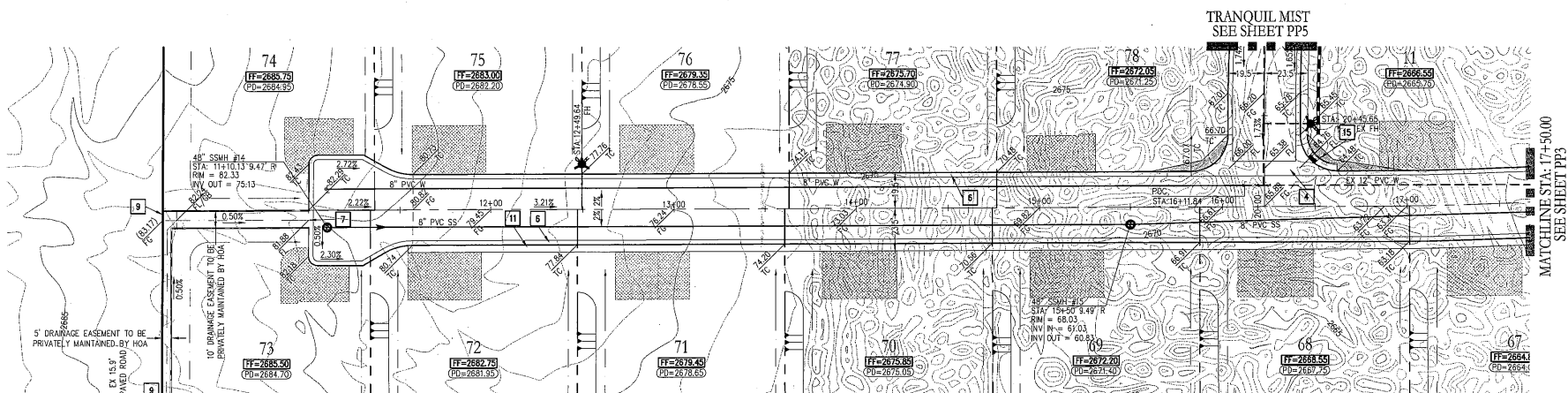
DATE:	09.16.10
SCALE:	1"=40'
JOB NO:	WLL-10-068
DESIGNED BY:	MC
CHECKED BY:	RDC
SHEET NAME:	PP1
SHEET:	13 OF 24



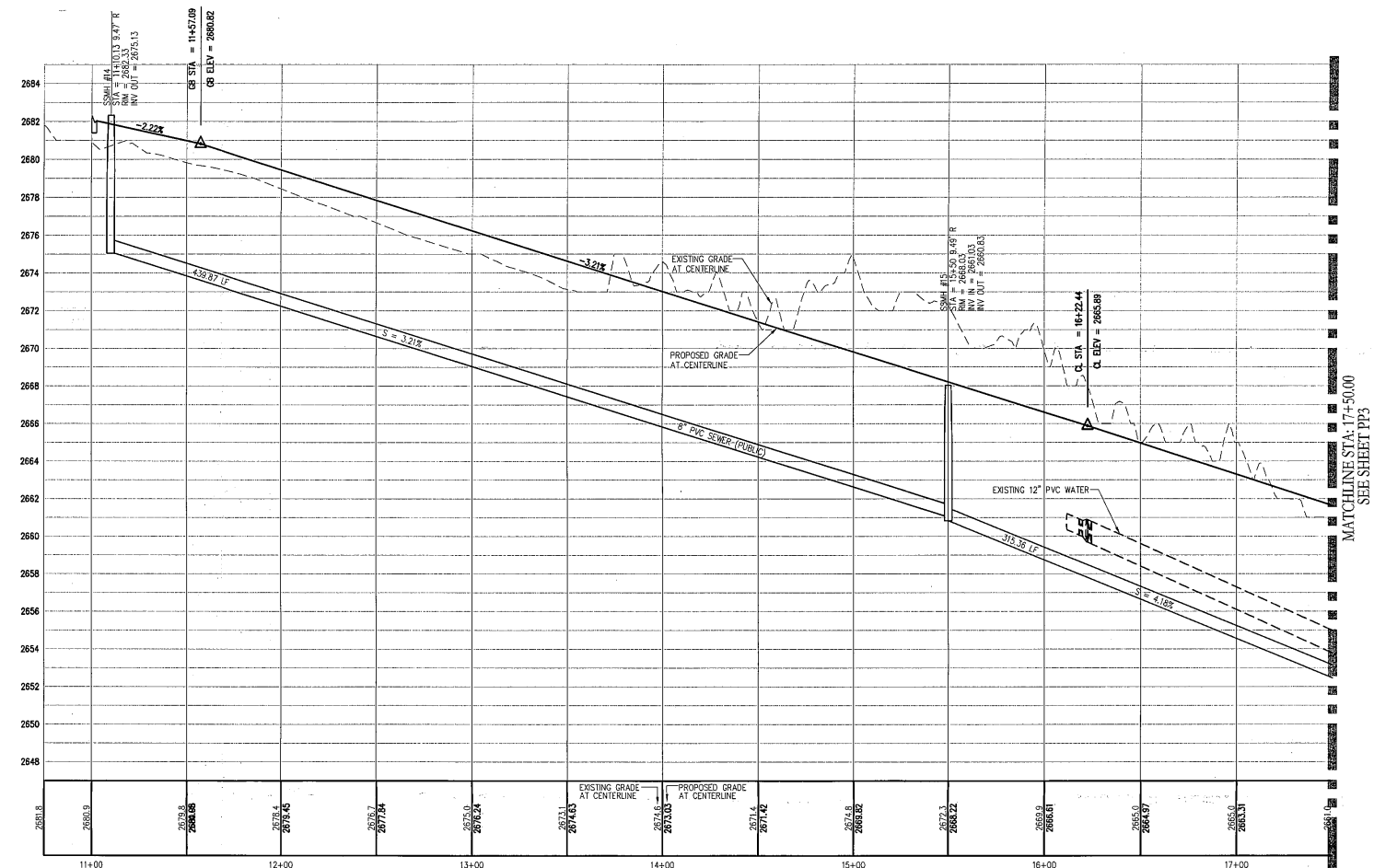
Call Before You Dig
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.

CALL

OR
1-800-227-2600
AND
CLARK COUNTY TRAFFIC OPERATIONS
1-800-455-7544



SERENE STAR COURT- PLAN
STA: 11+0.00 TO 17+50.00



SERENE STAR COURT- PROFILE
STA: 11+0.00 TO 17+50.00
SCALE: 1"=40' HORIZ., 1"=4' VERT.

GRADING NOTES

COMPLETION OF SECTION II OF DRAINAGE COMPLIANCE REPORT REQUIRED.

ADD 2600 FEET TO ALL GRADE TAGS TO CURE ACTUAL ELEVATION.

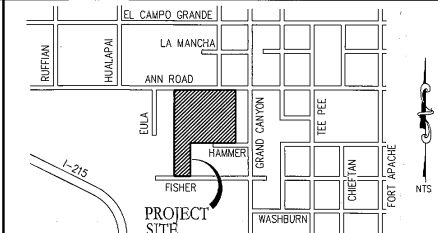
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CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES AND NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

KEY MAP



LEGEND

	EXISTING (10.00)	PROPOSED 10.00 (10.00)
DESIGN ELEVATION		
FUTURE ELEVATION		
SCARP (SLOPE VARIES)		
CONTOUR (1' INTERVAL)		
CONTOUR (5' INTERVAL)		
DIRECTION OF FLOW		
CENTERLINE		
RIGHT-OF-WAY		
CUT LINE-ASPHALT		
CURB AND GUTTER		
CURB DROP INLET		
STORM DRAIN W/MANHOLE		
SIDEWALK		
PROPERTY LINE		
EDGE OF PAVEMENT		
2" BLOW OFF VALVE		
WATERLINE FEATURES		
GATE VALVE		
FIRE HYDRANT		
PROPOSED SEWER LINE		
PROPOSED WATER LINE		

CONSTRUCTION NOTES

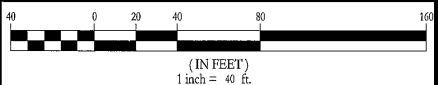
- 1 24" L-TYPE CURB & GUTTER (USD #216)
- 2 SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=8-B=0.7)
TRUNCATED DOMES OR EQUIVALENT (USD #235)
- 3 4" THICK CONCRETE SIDEWALK (USD #234)
- 4 CROSS GUTTER (USD #228)
- 5 SAWCUT & MATCH EXISTING AC PAVEMENT
- 6 30" ROLL TYPE CURB & GUTTER (USD #217A)
- 7 CURB CUT (SEE F/001)
- 8 10" TRANSITION FROM ROLL TO DEPRESSIONED CURB (SEE R/001)
- 9 WROUGHT IRON FENCE (SEE K/021)
- 10 WROUGHT IRON FENCE W/ SCREEN AND GATE (SEE Q/001)
- 11 5" THICK CONCRETE SIDEWALK (USD #234)
- 12 3.0" VALLEY GUTTER (SEE L/001)
- 13 AC PAVEMENT
- 14 SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=8.5" B=4.5")
TRUNCATED DOMES OR EQUIVALENT (USD #235)
- 15 SIDEWALK RAMPS USING ARMOR TILE (CASE 1 A=12.0" B=4.5")
TRUNCATED DOMES OR EQUIVALENT (USD #235)
- 16 WROUGHT IRON FENCE W/ SCREEN AND GATE (SEE K/022)

GEOTECHNICAL

GEOTEK, INC.
6835 S. ESCONDIDO ST, STE# A
LAS VEGAS, NEVADA 89119
702-897-1424

REPORT NO: 9786-LV6
DATE 03/11/2010

SCALE



LEGAL DESCRIPTION

BEING A PORTION OF THE NORTHWEST QUARTER (¼) OF SECTION 31, TOWNSHIP 19
SOUTH, RANGE 60 EAST, M.B.D. & M. CLARK COUNTY, NEVADA

BASIS OF BEARINGS

S 89°14'18" E, BEING THE NORTH LINE OF THE SE ¼, NW ¼, SECTION 31, T19S, R60E;
M.D.M. AS SHOWN ON FILE 97, PAGE 85 OF PARCEL MAPS, CLARK COUNTY, NEVADA
OFFICIAL RECORDS.

BENCHMARK

B.M. #9LV90-31C4 CLV RIVET & ROUND PLATE IN CONC PAD WEST SIDE OF GRAND CANYON DR., 120 FEET SOUTH OF WASHBURN ROAD.

ELEVATION = 795.579 M (2010.16 FEET) NAVD 88

ABBREVIATIONS

AC	ASPHALTIC CONCRETE	NTS	NOT TO SCALE
BC	BACK OF CURB	OC	ON CENTER
BDR	BACK OF CURB RADIUS	PH	PULL BOX
BN	BENCH MARK	PC	POINT OF CURVE
BVC	BEGIN VERTICAL CURVE	PCC	POINT OF COMPOUND CURVE
CD	CUTTING EXISTING WALL	PE	POLYETHYLENE
CATV	CABLE TELEVISION	PI	POINT OF INTERSECTION
CL	CLARITY	PII	PROPERTY LINE
CL	CENTERLINE	PP	POINT OF CONNECTION
CM	CITY OF LAS VEGAS	PP	POWER POLE
CC	CONCREGATED MENTAL PEGS	PR	POINT OF REVERSE CURVE
CNV	CITY OF NORTH LAS VEGAS	PT	POINT OF TANGENCY
CL	CLEAR OF OBSTACLE	PVC	POLYVINYL CHLORIDE
CH	CITY OF HENDERSON	R	RADIUS
CO	CORNER YARD	RCB	REINFORCED CONCRETE PIPE
DC	DESIGN GRADE	RCP	REINFORCED CONCRETE PIPE
DR	DRAIN	R/W	RIGHT-OF-WAY
DD	DUCTILE IRON PIPE	RT	RIGHT
EC	END OF CURVE	SL	STORM DRAIN
EP	END OF MOVEMENT	SL	STREET LIGHT
EV	END VERTICAL CURVE	SNWA	SOUTHERN NEVADA WATER AUTHORITY
FC	FINISH GRADE	SS	SANITARY SEWER
FF	FINISH FLOOR ELEVATION	ST	STATION
FG	FINISH GRADE	STW	STREET VISIBILITY ZONE
FL	FINISH GRADE	SW	SIDEWALK
FL	FLOW LINE	SVZ	SUBST VISIBILITY ZONE
FT	FEET	STD	STANDARD
GB	GRADE BREAK	TC	TOP OF CURB
GS	GARAGE, FINISH FLOOR	TF	TOP OF FOOTING
HP	HIGH POINT	TR	TOP OF RETAINING
IN	INVERT	TW	TOP OF WALL
INT	INTERSECTION	TY	TYPE
LV	LAS VEGAS	UD	UNIFORM STANDARD DRAINING
LV	LAS VEGAS WATER DISTRICT	VC	VERTICAL CURVE
MAX	MAXIMUM	VCP	VERTICAL CLAY PIPE
MIN	MINIMUM	VG	VALVE GUY WIRE
MAN	MANHOLE	W	WATER
		WZ	WIRE ZERO UP

WILLIAM LYON HOMES
500 PILOT ROAD STE# G
LAS VEGAS, NV 89119
(702) 263-8200 FAX: (702) 263-8220

TANEY ENGINEERING
6030 S. JONES BLVD STE# 100
LAS VEGAS, NV 89118
(702) 362-8844 FAX: (702) 362-5233

ANN AND GRAND CANYON - UNIT 2
(SERENITY RIDGE)
A RESIDENTIAL SUBDIVISION

SERENE STAR COURT
STA: 11+0.00 TO 17+50.00
PLAN AND PROFILE

Professional Engineer Seal for Robert D. Cunningham, State of New York, No. 15726, Civil Engineering.

DATE:	09.16.10
SCALE:	1"=40'
JOB NO:	WLL-10-068
DESIGNED BY:	MC
CHECKED BY:	RDC
SHEET NAME:	PP2
SHEET:	14 OF 24



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

Call
before you

UnderGround

1-702-455-7511

CLARK COUNTY TRAFFIC OPERATIONS

1-702-229-6611

LAS VEGAS AREA COMPUTERIZED
TRAFFIC SIGNALS

Call Before You Dig
AVOID CUTTING UNDERGROUND
UTILITY LINES. IT'S COSTLY.
CALL
811
OR
1-800-227-2600
AND
CLARK COUNTY TRAFFIC OPERATIONS
1-800-455-7544

ADD 3 PW 20-11651
6/29/20
Add 43
Westwood

ADDENDUM NO.3 TO THE TECHNICAL DRAINAGE STUDY

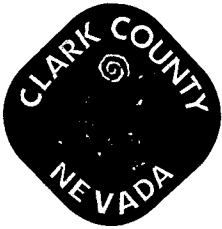
Ann & 215 – Phase 1

City of Las Vegas, Nevada

June 2020

Prepared For:

UpGrowth NV Partners, LLC
11411 Southern Highlands Parkway, Suite 300
Las Vegas, NV 89141
Phone: 702-220-6565 – Fax: 702-220-6566



LTR PW 20-11651
Department of Public Works

500 S Grand Central Pky • Box 554000 • Las Vegas NV 89155-4000
(702) 455-6000 • Fax (702) 455-6040

Denis Cederburg, P.E., Director • E-Mail: dlc@ClarkCountyNV.gov

Drainage Study Concurrence Letter

Date: July 13, 2020
Firm: Westwood PS
Engineer: Kellin Collins, P.E.
Address: 5740 South Arville Street, Suite 216, Las Vegas, NV 89118
Phone: (702) 284-5300
Fax: (702) 284-5399
E-mail: Kellin.Collins@westwoodps.com

Subject: Technical Drainage Study for Ann/Hualapai (BLM 120) Phase I
Location: SWC of Ann and Hualapai
APN: 126-36-601-011 thru -013 and 126-36-501-043
Sec, Township, Range: S36, T19S, R59E
Flood Zone & Panel: Zone X, 1750E, Dated September 27, 2002
Application Number: PW20-11651

Submittals	Date Received	Date Returned	Reviewer	Miscellaneous
Technical/Add1/Add2	02/19/2020	03/04/2020	BC	
Addendum 3	06/29/2020	07/02/2020	BC	
Supplement	07/10/2020	07/13/2020	BC	

The above-referenced project is located within the City of Las Vegas adjacent to Clark County unincorporated areas. The drainage study was submitted to the County for concurrence on February 19, 2020. In addition, the County has received the City of Las Vegas acceptance letter dated February 18, 2020 for the Technical Drainage Study (DS5211C).

The County concurs with the acceptance of this Drainage Study by the City of Las Vegas. Please note that the County's review of this development is limited to drainage issues significant to Clark County unincorporated areas.

BOARD OF COUNTY COMMISSIONERS
MARILYN KIRKPATRICK, Chair • LAWRENCE WEEKLY, Vice Chair
LARRY BROWN • JAMES B. GIBSON • JUSTIN C. JONES • MICHAEL NAFT • TICK SEGERBLOM
YOLANDA T. KING, County Manager

The referenced **Technical Drainage Study** has been reviewed and is accepted as complying with minimum improvement standards. As set forth in the subject drainage study, the following measures will be taken to mitigate flood hazards.

The site shall be graded with respect to drainage as shown on "**Ann and Hualapai – Phase 1**", grading plan sheets C-1 thru C-3, G-1 thru G-16, D-1 thru D-5, and PP-1 thru PP-32 signed and sealed by Todd J. Steadham, P.E., on July 8, 2020.

Check appropriate conditions

	Retaining/screen wall combination may be in excess of current Clark County Unified Development Code, Chapter 30.64.050.
	A FEMA Elevation Certificate, completed by a licensed surveyor, must be submitted to and approved by CCPW Development Review Plan Check prior to the issuance of Certificates of Occupancy for those structures.
X	Mylars of the grading plan must be submitted to the CCPW Development Review Plan Check for approval signatures prior to map recordation (residential) or permit issuance (commercial).
	An administrative variance to allow the finished floor elevation(s) to be set below the current Clark County criteria must be approved. The finished floor variance must be submitted to CCPW Development Review front counter after drainage study approval and prior to offsite final review.
	The grading plan will be reviewed by the Building Office Operations Division to ensure compliance with the ADA access requirements. Revisions to the grading plan may be required if the site accessibility design does not comply with the requirements set forth in the Accessibility Chapter of the Clark County Building Code.
X	The plans show work is proposed outside of the project boundary. Notarized written permission must be obtained prior to grading plan approval.
X	Right-of-way dedication must be verified.
	Any previously approved drainage easements that are not being used must be vacated.
	Per <i>Regional Flood Control District policies and Procedures manual, Section VIII. D. 13. Uniform Regulations for the Control of Drainage</i> , the Engineer of Record shall provide As-Built plans or record drawings to the District after completion and final inspection of such privately installed flood control facilities that have regional flood control significance.
	Structural calculations are required. The structural calculations, plans, and details must be approved prior to "Offsite" submittal and prior to CCRFCD submittal, if applicable.
X	Plan revisions can be found on the red-lined plans and must be addressed.
X	Prepare drainage easement documents as shown on the grading plans.

Additional Conditions:

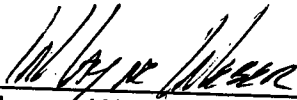
1. Offsite flow is conveyed thru the rough graded portion of the site. Dedicate easements to perpetuate offsite flows thru the site.
2. Any improvements within Clark county jurisdiction not depicted on the above mentioned grading plans may require an Update to this Technical Drainage Study.

The drainage/grading plans have been red-lined and require modifications prior to the next submittal. Failure to resubmit the red-lined grading plan will require an additional \$400 review fee.

The County's review is solely based on the information submitted by the Engineer of Record. The County's review is strictly limited to compliance with minimum County Codes and Standards. The Engineer of Record is responsible for researching and addressing situations that may require designs above and beyond the minimum codes for issues of public safety and impacts to upstream, downstream and adjacent properties. The County assumes no liability for information data, designs or conclusions of the Engineer of Record.



Brian Churchill, P.E., CFM
Senior Civil Engineer
Development Review
Brian.Churchill@ClarkCountyNV.gov



W. Layne Weber, P.E., CFM
Principal Engineer
Development Review
wlweber@ClarkCountyNV.gov

cc: Albert Sung, P.E., City of Las Vegas

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Ann and 215 Phase 1 (Addendum No. 3) Date: June 2020
 Location of Development: a) Descriptive (Cross Streets): North/South: Hualapai Way
East/West: Ann Road
 b) Section: 36 Township: 19S Range: 59E
 c) APN: 126-36-601-011, Portion of 126-36-601-012, Portion of 126-36-601-013

Name of Owner: Uppgrowth NV Partners, LLC
 Telephone No.: 702-220-6565 Fax No.: 702-220-6566 E-mail Address: mbolduc@olympiacompanies.com
 Address: 11411 Southern Highlands Parkway, Suite 300 Las Vegas NV 89141

Contact Person – Name: Kellin Collins, P.E. Telephone No.: (702) 284-5300
 *E-mail Address: kellin.collins@westwoodps.com Fax No.: (702) 284-5399
 Firm: Slater Hanifan Group, A Westwood Team
 Address: 5740 S. Arville #216 Las Vegas NV 89118

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 88.5 +/- acres Being Developed/Disturbed: 53.2 +/- acres

2. Is a portion or all of the subject property located in a 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.): single- family residential

5. Approximate upstream land area which drains to the subject site: 64 +/- acres

6. Has the site drainage been evaluated in the past? ☒ Yes** ☐ No If yes, please identify documentation: Conceptual Drainage Study for Ann and 215 (DS 5138)

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

8. Briefly describe your proposed schedule for the subject project: Phase 1: ASAP, Phase 2: TBD



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.

*Newly Required Field

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

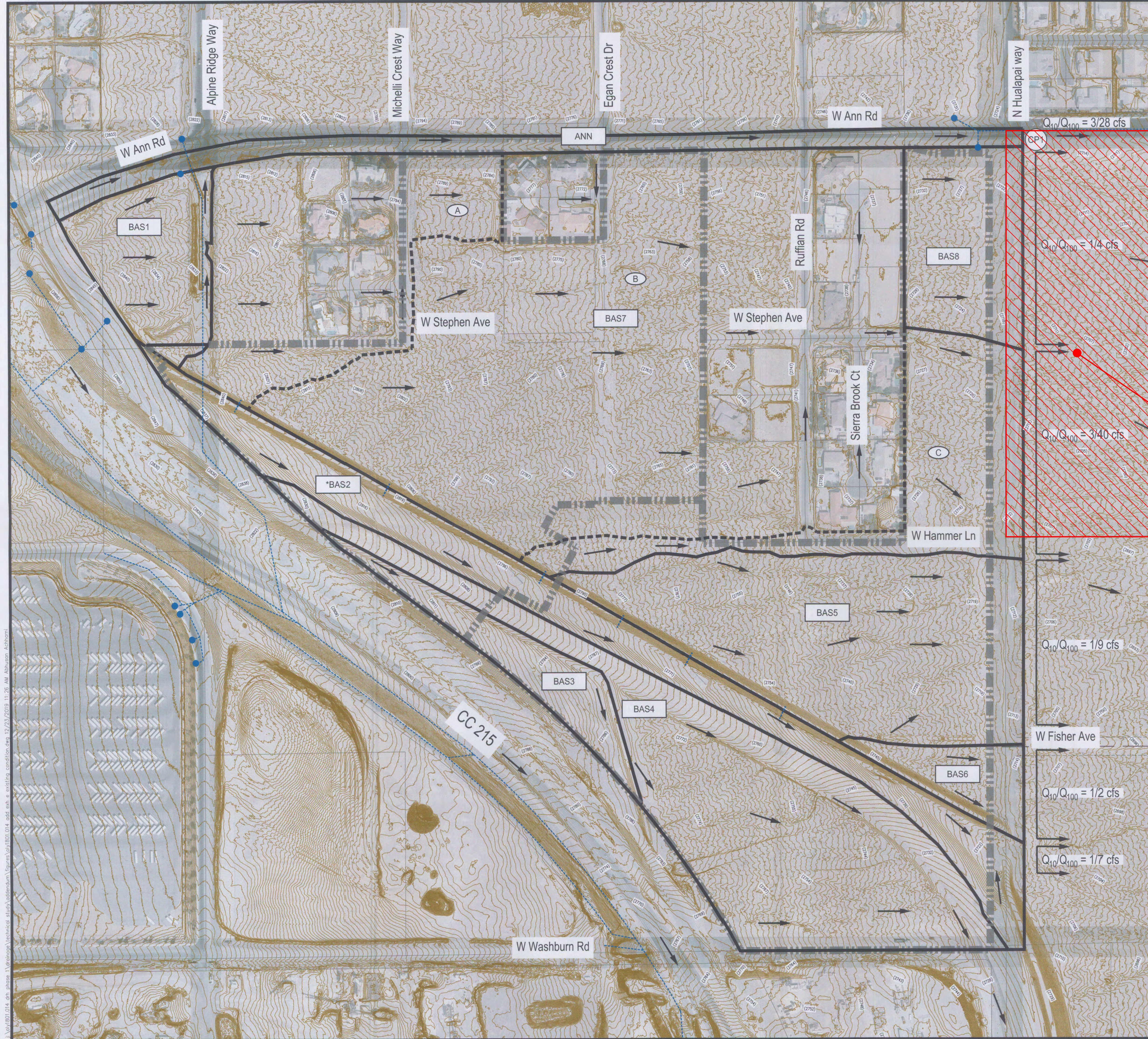
Revision	Date

Local Entity File No. _____

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008



LEGEND

- BASIN BOUNDARY
- PHASE BOUNDARY
- EXISTING FACILITY
- SUBBASIN BOUNDARY
- ID BASIN ID
- ID SUBBASIN ID
- ID CONCENTRATION POINT ID
- FLOW DIRECTION

Existing Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
BAS1	5.0	13	5
*BAS2	10.1	7	1
BAS3	3.3	2	<1
BAS4	17.1	9	1
BAS5	16.2	9	1
BAS6	2.3	2	<1
BAS7	72.0	40	3
BAS8	5.7	4	<1
ANN	4.5	15	8
CP1			
Q = BAS1 + ANN	N/A	28	13

Prorated Flow Summary

Basin ID	Q ₁₀₀ (cfs)	Area (acres)	100-yr Unit Flow (cfs/acre)
BAS7	40	72.00	0.6
Subbasin ID	Q ₁₀₀ (cfs)	Area (acres)	100-yr Unit Flow (cfs/acre)
BAS7(A)	7	13.46	0.6
BAS7(B)	28	49.70	0.6
BAS7(C)	5	8.84	0.6
TOTAL	40	72.00	

PROJECT SITE

NOTES:

* Review of the topography shows that no defined flow line directs flows into the culverts along the north edge of drainage basin and the culverts are not aligned in a manner that is effective in intercepting any approaching watershed. Therefore, flows crossing the existing culverts are not reflected in the existing condition hydrology.

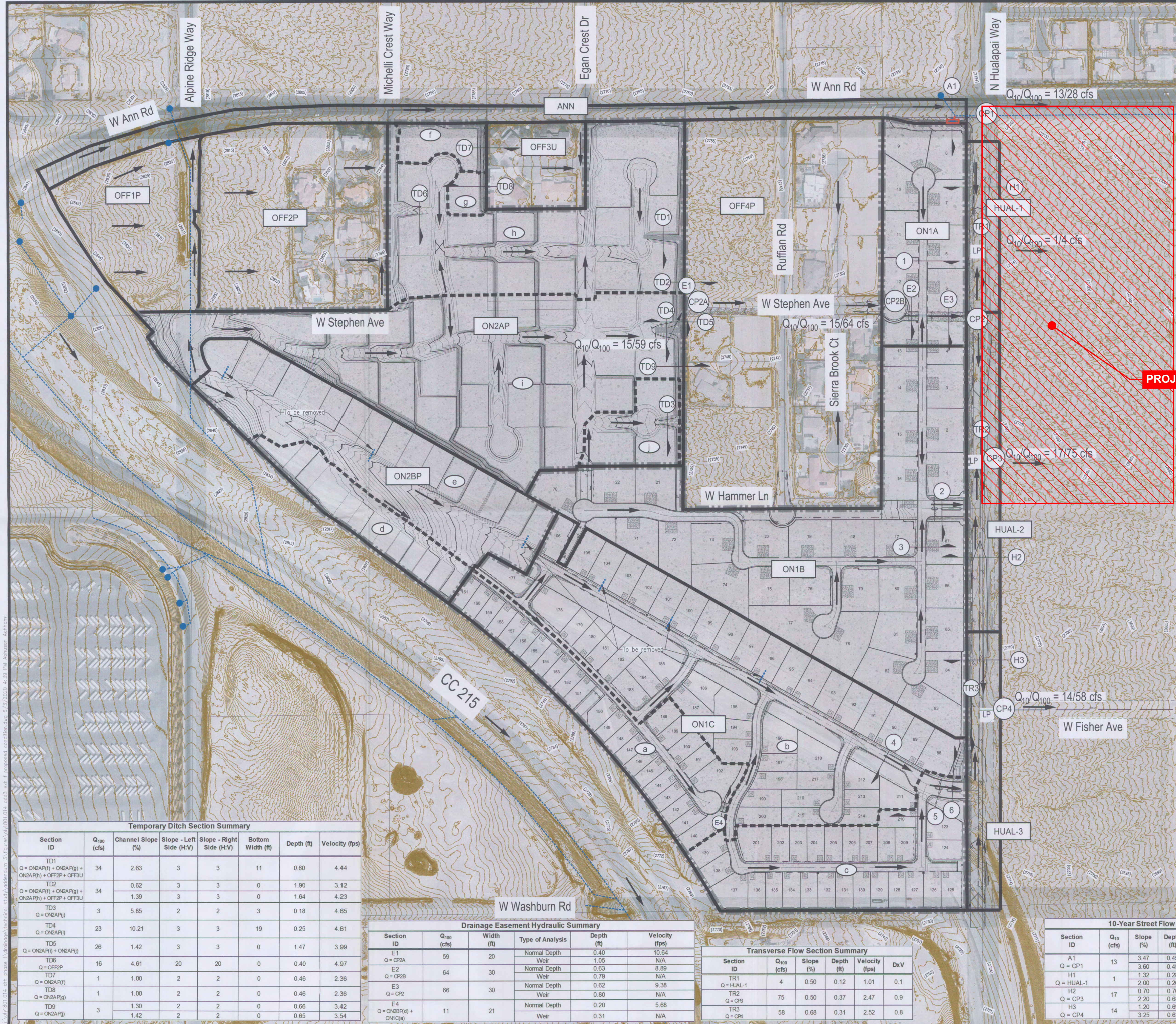


SLATER HANIFAN GROUP
a Westwood team
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 284-5300 FAX (702) 284-5399

DATE: DEC 2019
DRAFTER: AA
DESIGNER: AA
CHECKED: KC
PROJECT NO. OLY1801.014

EXHIBIT E
SHEET 1 OF 1

UPGROWTH NV PARTNERS, LLC
ANN & 215 PHASE 1
EXISTING CONDITION DRAINAGE MAP



LEGEND

- BASIN BOUNDARY
- PHASE BOUNDARY
- EXISTING FACILITY
- SUBBASIN BOUNDARY
- PROPOSED DRAINAGE FACILITY
- BASIN ID
- SUBBASIN ID
- CONCENTRATION POINT ID
- FLOW DIRECTION
- FLOWMASTER SECTION

Proposed Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
OFF1P	4.8	13	5
OFF2P	9.1	16	4
OFF3U	2.2	<1	<1
OFF4P	20.1	6	<1
ON2AP	27.6	43	11
ON2BP	10.3	18	5
ON1A	4.9	1	<1
ON1B	18.1	5	<1
ON1C	27.5	36	8
HUAL-1	1.5	4	1
HUAL-2	3.0	7	2
HUAL-3	2.2	6	2
ANN	4.5	15	8
CP1 Q = OFF1P + ANN	N/A	28	13
CP2A Q = OFF2P + OFF3U + ON2AP	N/A	59	15
CP2B Q = CP2A + OFF4P	N/A	64	15
CP2 Q = CP2B + ON1A	N/A	66	15
CP3 Q = CP2 + ON1B + HUAL-1	N/A	75	17
CP4 Q = ON1C + ON2BP + HUAL-2	N/A	58	14

Prorated Flow Summary

Basin ID	Q ₁₀₀ (cfs)	Area (acres)	100-yr Unit Flow (cfs/acre)
ON1C	36	27.51	1.3
ON2BP	18	10.28	1.8
ON2AP	43	27.64	1.6
Subbasin ID	Q₁₀₀ (cfs)	Area (acres)	100-yr Unit Flow (cfs/acre)
ON1C(a)	7	5.20	1.3
ON1C(b)	20	15.69	1.3
ON1C(c)	9	6.62	1.3
TOTAL	36	27.51	
ON2BP(d)	4	2.54	1.8
ON2BP(e)	14	7.74	1.8
TOTAL	18	10.28	
ON2AP(f)	1	0.93	1.6
ON2AP(g)	1	0.41	1.6
ON2AP(h)	15	9.86	1.6
ON2AP(i)	23	14.74	1.6
ON2AP(j)	3	1.70	1.6
TOTAL	43	27.64	

100-Year Street Flow Summary (Proposed)

Section ID	Q ₁₀₀ (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	DxV
1 Q = ON1A	1	1.29	0.22	1.85	0.4
2 Q = ON1B	5	2.00	0.34	2.78	0.9
3 Q = ON1B	5	5.24	0.30	4.07	1.2
4 Q = ON1B	5	1.14	0.33	2.30	0.8
5 Q = ON2BP + ON1C(a) + ON1C(b)	45	5.61	0.27	4.32	1.2
6 Q = ON2BP + ON1C	9	1.89	0.55	5.41	3.0
7 Q = ON2BP + ON1C	9	6.41	0.47	7.81	3.7
8 Q = ON2BP + ON1C	9	2.00	0.36	3.25	1.2
9 Q = ON2BP + ON1C	9	7.25	0.31	5.38	1.7
10 Q = ON2BP + ON1C	54	3.20	0.59	6.21	3.7
11 Q = CP1	28	3.47	0.58	5.42	3.1
12 Q = CP1	28	3.60	0.58	5.50	3.2
13 Q = HUAL-1	4	1.32	0.48	2.95	1.4
14 Q = HUAL-1	4	2.20	0.43	3.58	1.5
15 Q = CP3	75	0.70	1.07	4.30	4.6
16 Q = CP3	75	2.20	0.93	6.29	5.8
17 Q = CP4	58	1.20	0.95	4.70	4.5
18 Q = CP4	58	3.25	0.84	6.73	5.7

10-Year Street Flow Summary

Section ID	Q ₁₀ (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	DxV	Dry Lane (ft)
A1 Q = CP1	13	3.47	0.45	5.15	2.32	42.00
H1 Q = HUAL-1	1	3.60	0.45	5.22	2.35	42.00
H2 Q = HUAL-1	1	1.32	0.28	2.08	0.58	25.00
H3 Q = CP3	17	2.00	0.26	2.52	0.66	25.00
H3 Q = CP3	17	0.70	0.76	2.73	2.07	12.00
H3 Q = CP3	17	2.20	0.68	4.09	2.78	16.00
H3 Q = CP3	17	1.20	0.69	3.12	2.15	15.50
H3 Q = CP3	17	3.25	0.63	4.61	2.90	18.50

Temporary Ditch Section Summary

Section ID	Q ₁₀₀ (cfs)	Channel Slope (%)	Slope - Left Side (H:V)	Slope - Right Side (H:V)	Bottom Width (ft)	Depth (ft)	Velocity (fps)
TD1 Q = ON2AP(f) + ON2AP(g) + ON2AP(h) + OFF2P + OFF3U	34	2.63	3	3	11	0.60	4.44
TD2 Q = ON2AP(f) + ON2AP(g) + ON2AP(h) + OFF2P + OFF3U	34	0.62	3	3	0	1.90	3.12
TD3 Q = ON2AP(i)	3	1.39	3	3	0	1.64	4.23
TD4 Q = ON2AP(j)	3	5.85	2	2	3	0.18	4.85
TD5 Q = ON2AP(k)	23	10.21	3	3	19	0.25	4.61
TD6 Q = OFF2P	16	1.42	3	3	0	1.47	3.99
TD7 Q = ON2AP(l)	1	4.61	20	20	0	0.40	4.97
TD8 Q = ON2AP(m)	1	1.00	2	2	0	0.46	2.36
TD9 Q = ON2AP(n)	1	1.00	2	2	0	0.46	2.36
TD10 Q = ON2AP(o)	3	1.30	2	2	0	0.66	3.42
TD11 Q = ON2AP(p)	3	1.42	2	2	0	0.65	3.54

Drainage Easement Hydraulic Summary

Section ID	Q ₁₀₀ (cfs)	Width (ft)	Type of Analysis	Depth (ft)	Velocity (fps)
E1 Q = CP2A	59	20	Normal Depth	0.40	10.64
E2 Q = CP2B	64	30	Weir	1.05	N/A
E3 Q = CP2	66	30	Normal Depth	0.63	8.89
E4 Q = ON2BP(d) + ON1C(a)	11	21	Weir	0.79	N/A
E5 Q = ON2BP(d) + ON1C(a)	11	21	Normal Depth	0.62	9.38
E6 Q = ON2BP(d) + ON1C(a)	11	21	Weir	0.80	N/A
E7 Q = ON2BP(d) + ON1C(a)	11	21	Normal Depth	0.20	5.68
E8 Q = ON2BP(d) + ON1C(a)	11	21	Weir	0.31	N/A

Transverse Flow Section Summary

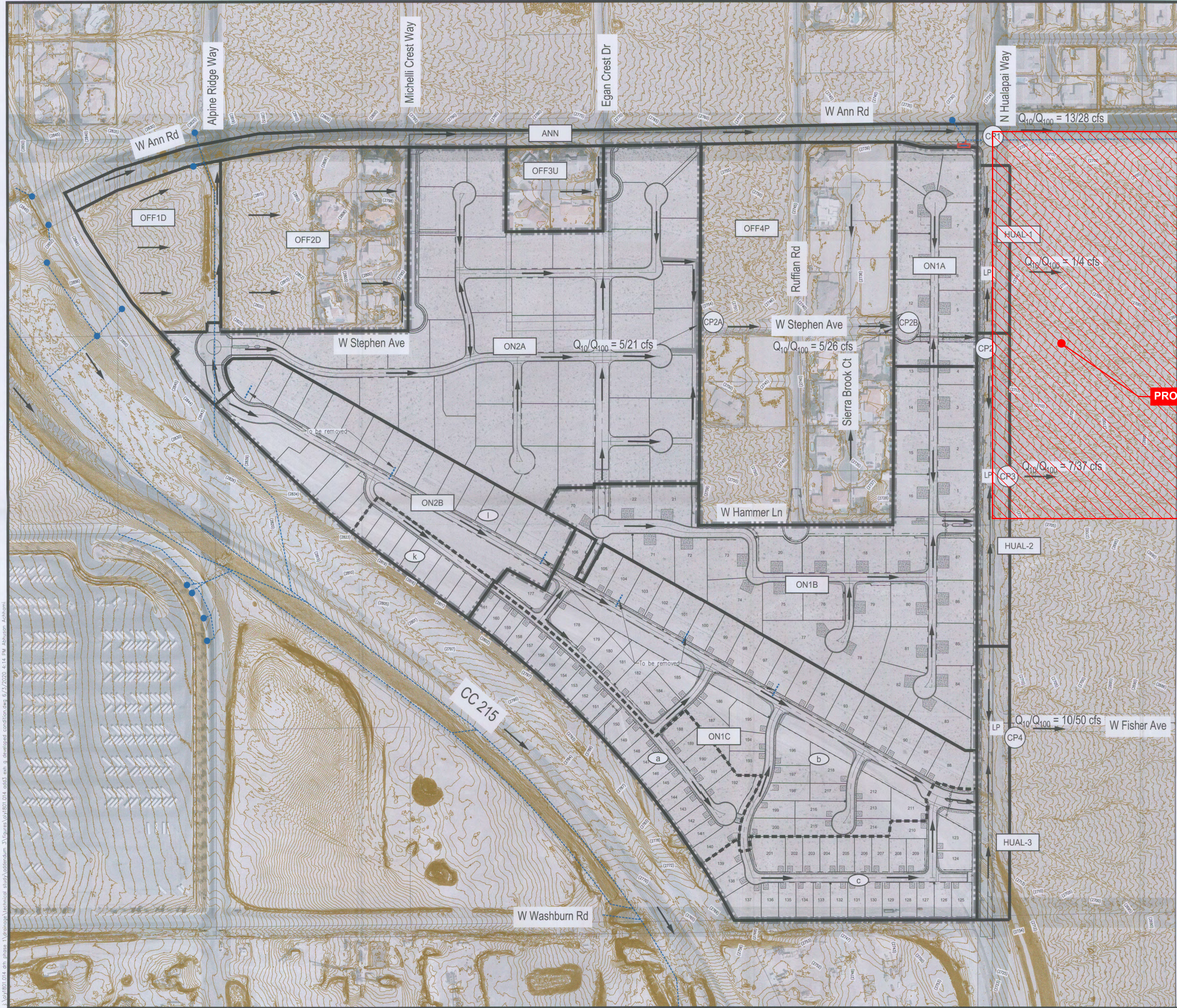
Section ID	Q ₁₀₀ (cfs)	Slope (%)	Depth (ft)	Velocity (fps)	DxV
TR1 Q = HUAL-1	4	0.50	0.12	1.01	0.1
TR2 Q = CP3	75	0.50	0.37	2.47	0.9
TR3 Q = CP4	58	0.68	0.31	2.52	0.8

SLATER HANIFAN GROUP
a Westwood team
5740 S. ARVILLE STREET #216, LAS VEGAS, NV 89118
PHONE (702) 264-5300 FAX (702) 264-5399

UPGROWTH NV PARTNERS, LLC
ANN & 215 PHASE 1
PROPOSED CONDITION DRAINAGE MAP

DATE: JUNE 2020
DRAFTER: AA
DESIGNER: AA
CHECKED: KC
PROJECT NO.
OLY1801.014

EXHIBIT F
SHEET 1 OF 1



LEGEND

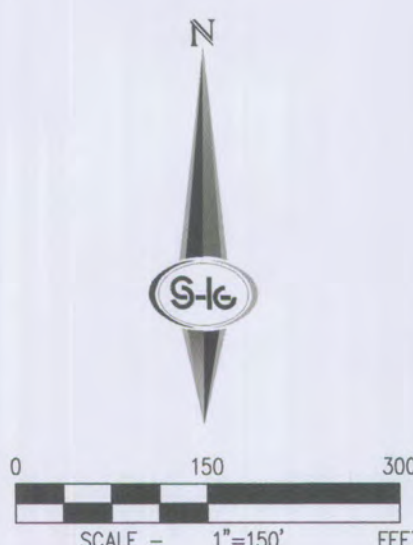
- BASIN BOUNDARY
- PHASE BOUNDARY
- EXISTING FACILITY
- SUBBASIN BOUNDARY
- PROPOSED DRAINAGE FACILITY
- ID BASIN ID
- ID SUBBASIN ID
- ID CONCENTRATION POINT ID
- FLOW DIRECTION

Developed Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
OFF1D	4.7	13	5
OFF2D	9.2	17	5
OFF3U	2.2	<1	<1
OFF4P	20.1	6	<1
ON2A	28.2	7	<1
ON2B	10.3	10	2
ON1A	4.9	1	<1
ON1B	18.1	5	<1
ON1C	27.5	36	8
HUAL-1	1.5	4	1
HUAL-2	3.0	7	2
HUAL-3	2.2	6	2
CP1	4.5	15	8
Q = OFF1D + ANN	N/A	28	13
CP2A	N/A	21	5
Q = OFF2D + OFF3U + ON2A	N/A	26	5
CP2B	N/A	26	5
Q = CP2A + OFF4P	N/A	27	5
CP2	N/A	27	5
Q = CP2B + ON1A	N/A	37	7
CP3	N/A	37	7
Q = CP2 + ON1B + HUAL-2	N/A	50	10
CP4	N/A	50	10
Q = ON1C + ON2B + HUAL-3	N/A		

Prorated Flow Summary

Basin ID	Q ₁₀₀ (cfs)	Area (acres)	100-yr Unit Flow (cfs/acre)
ON1C	36	27.51	1.3
ON2B	10	10.28	1.0
Subbasin ID	Q ₁₀₀ (cfs)	Area (acres)	100-yr Unit Flow (cfs/acre)
ON1C(a)	7	5.20	1.3
ON1C(b)	21	15.69	1.3
ON1C(c)	9	6.62	1.3
TOTAL	36	27.51	
ON2B(k)	2	1.79	1.0
ON2B(l)	8	8.49	1.0
TOTAL	10	10.28	



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a Westwood team
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PHONE (702) 284-5300 FAX (702) 284-5399

UPGROWTH NV PARTNERS, LLC

ANN & 215 PHASE 1

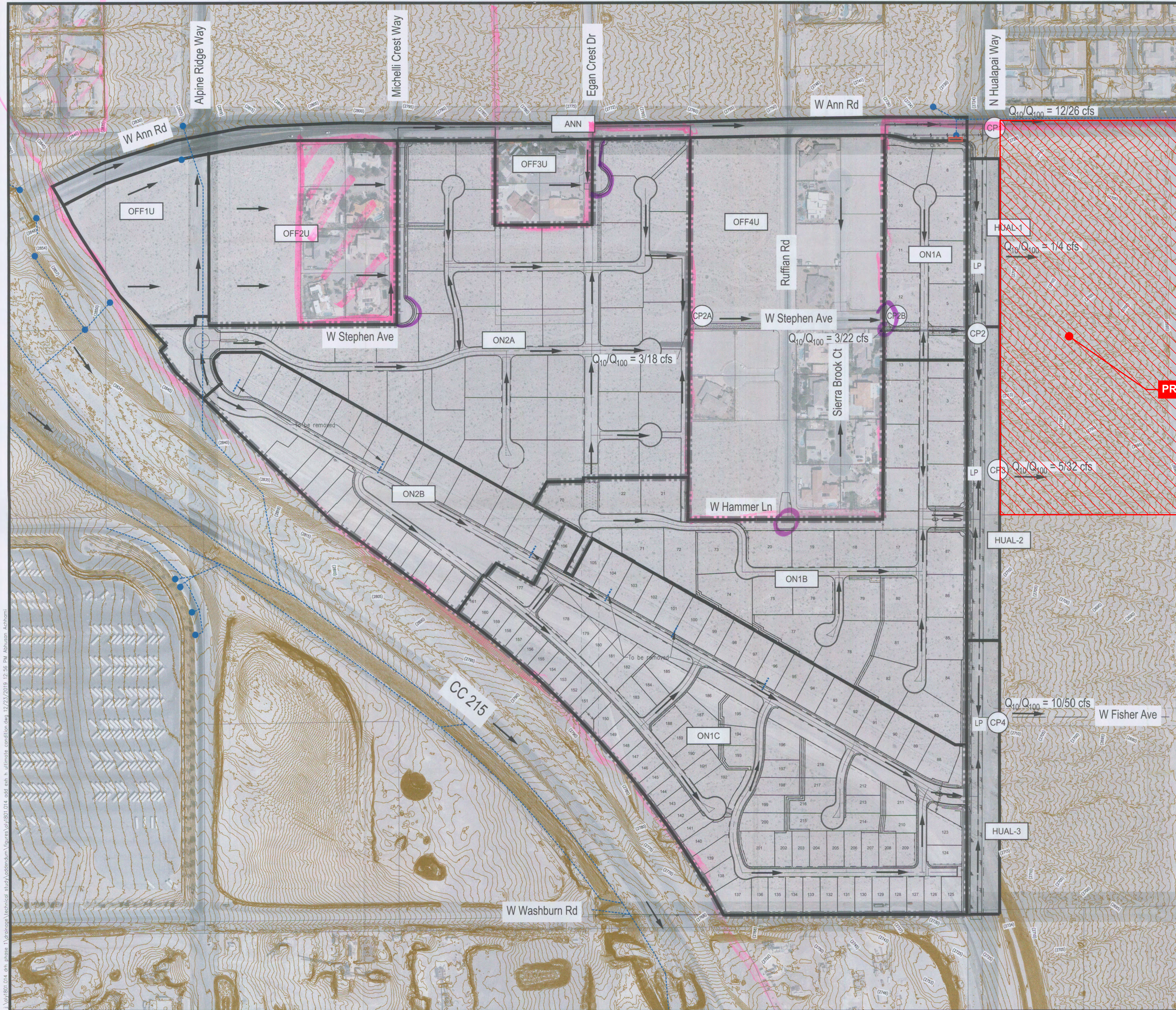
DEVELOPED CONDITION DRAINAGE MAP

DATE: JUNE 2020
DRAFTER: AA
DESIGNER: AA
CHECKED: KC
PROJECT NO.
OLY1801.014

EXHIBIT G
SHEET 1 OF 1

I:\oly1801\014.dwg phase 1\drainage\technical study\addendum 3\figures\oly1801.014 add3 ena g developed condition.dwg 6/3/2020 4:14 PM Abhishek Acharya

ADD MAP 3 PW 20-11651



LEGEND

- BASIN BOUNDARY
- PHASE BOUNDARY
- EXISTING FACILITY
- PROPOSED DRAINAGE FACILITY
- ID BASIN ID
- ID CONCENTRATION POINT ID
- FLOW DIRECTION

Ultimate Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)
OFF1U	4.7	11	4
OFF2U	9.2	17	5
OFF3U	2.2	<1	<1
OFF4U	20.1	4	<1
ON2A	28.2	7	<1
ON2B	10.3	10	2
ON1A	4.9	1	<1
ON1B	18.1	5	<1
ON1C	27.5	36	8
HUAL-1	1.5	4	1
HUAL-2	3.0	7	2
HUAL-3	2.2	6	2
ANN	4.5	15	8
1 U + ANN	N/A	26	12
Q = OFF2U + OFF3U + ON2A	N/A	18	3
Q = CP2A + OFF4U	N/A	22	3
Q = CP2B + ON1A	N/A	23	3
Q = CP2 + ON1B + HUAL-2	N/A	32	5
Q = ON1C + ON2B + HUAL-3	N/A	50	10

SLATER HANIFAN GROUP
a Westwood team
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UPGROWTH NV PARTNERS, LLC
ANN & 215 PHASE 1
ULTIMATE CONDITION DRAINAGE MAP

DATE: DEC 2019
DRAFTER: AA
DESIGNER: AA
CHECKED: KC
PROJECT NO.
OLY1801.014

EXHIBIT H
SHEET 1 OF 1



**SLATER
HANIFAN
GROUP**
a Westwood team

Soil Data & Curve Number Computation

Project Name & Number: Ann & 215 Phase 1, OLY1801.014

Date: 10/14/2019

By: AA

Data:

Reference:

Exhibit D
NRCS Soil Data

Soil Type - Soil Survey Area & Version, Soil Description

LV	190	Las Vegas Valley 2016	Dalian very gravelly fine sandy loam, 2 to 4 percent slopes	A	B	C	D
LV	400	Las Vegas Valley 2016	Tencee very gravelly fine sandy loam, 2 to 8 percent slopes	100%	0%	0%	0%
LV	400	Las Vegas Valley 2016	Tencee very gravelly fine sandy loam, 2 to 8 percent slopes	0%	0%	0%	100%

Note: The basins which are composed entirely of roadway utilize the 98 curve number for roadway regardless of soil type. Therefore, no curve number computations are provided for these basins. This applies to all conditions.

Land Use	A	B	C	D
Residential(8,000,sf)	73	82	88	90
Residential(14,000,sf)	57	72	81	86
Residential(20,000,sf)	54	70	80	85
Desert Shrub(poor)	63	77	85	88
Roadway	98	98	98	98
Paved Open Ditches	83	89	92	93
Newly Graded	77	86	91	94

*Commercial land use per Note 3

EXISTING CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
BAS1	LV	400	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	5.02	88.00
			TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								5.02	88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
BAS2	LV	190	88.4%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	8.93	55.70
	LV	400	11.6%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	1.17	10.19
			TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								10.10	65.9

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
BAS3	LV	190	100.0%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	3.31	63.00
			TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								3.31	63.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
BAS4	LV	190	100.0%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	17.13	63.00
			TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								17.13	63.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
BAS5	LV	190	100.0%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	16.19	63.00
			TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								16.19	63.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
BAS6	LV	190	100.0%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	2.34	63.00
			TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								2.34	63.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
BAS7	LV	190	24.4%	Residential(20,000,sf)	100%	0%	0%	0%	54	70	80	85	17.59	13.19
	LV	400	3.3%	Residential(20,000,sf)	0%	0%	0%	100%	54	70	80	85	2.41	2.85
	LV	190	61.6%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	44.31	38.78
	LV	400	10.7%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	7.68	9.39
			TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								71.99	64.2

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
BAS8	LV	190	100.0%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	5.72	63.00
			TOTAL PERCENT	100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:								5.72	63.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ANN	LV	190	100.0%	Roadway	100%	0%	0%	0%	98	98	98	98	4.47	98.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										4.47 98.0

PROPOSED CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF1P	LV	400	100.0%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	4.79	88.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										4.79 88.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF2P	LV	190	10.9%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	0.99	6.84
	LV	400	39.9%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	3.64	35.12
	LV	190	21.1%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	1.92	11.37
	LV	400	28.2%	Residential (20,000 sf)	0%	0%	0%	100%	54	70	80	85	2.57	23.95
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										9.12 77.3

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF3U	LV	190	100.0%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	2.21	54.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										2.21 54.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON2AP	LV	190	93.2%	Newly Graded	100%	0%	0%	0%	77	86	91	94	25.75	71.73
	LV	400	6.8%	Newly Graded	0%	0%	0%	100%	77	86	91	94	1.89	6.43
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										27.64 78.2

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON2BP	LV	190	85.9%	Newly Graded	100%	0%	0%	0%	77	86	91	94	8.83	66.14
	LV	400	14.1%	Newly Graded	0%	0%	0%	100%	77	86	91	94	1.45	13.26
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										10.28 79.4

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF4P	LV	190	34.4%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	6.91	21.67
	LV	190	65.6%	Residential (20,000 sf)	100%	0%	0%	0%	54	70	80	85	13.18	35.43
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										20.09 57.1

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON1A	LV	190	100.0%	Residential (14,000 sf)	100%	0%	0%	0%	57	72	81	86	4.91	57.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										4.91 57.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON1B	LV	190	100.0%	Residential (14,000 sf)	100%	0%	0%	0%	57	72	81	86	18.08	57.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										18.08 57.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON1C	LV	190	77.1%	Residential (6,000 sf)	100%	0%	0%	0%	80	87	90	92	21.21	61.68
	LV	190	22.9%	Residential (14,000 sf)	100%	0%	0%	0%	57	72	81	86	6.30	13.05
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										27.51 74.7

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
HUAL-12	LV	190	100.0%	Paved Open Ditches	100%	0%	0%	0%	83	89	92	93	1.48	83.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:										1.48 83.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
HUAL-2	LV	190	100.0%	Paved Open Ditches	100%	0%	0%	0%	83	89	92	93	3.01	83.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									3.01	83.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
HUAL-3	LV	190	100.0%	Paved Open Ditches	100%	0%	0%	0%	83	89	92	93	2.19	83.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									2.19	83.0

DEVELOPED CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF1D	LV	400	87.1%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	4.06	76.67
	LV	400	12.9%	Paved Open Ditches	0%	0%	0%	100%	83	89	92	93	0.60	11.97
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									4.66	88.6

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF2D	LV	190	12.1%	Desert Shrub (poor)	100%	0%	0%	0%	63	77	85	88	1.10	7.60
	LV	400	39.9%	Desert Shrub (poor)	0%	0%	0%	100%	63	77	85	88	3.64	35.12
	LV	190	21.1%	Residential (20,000'sf)	100%	0%	0%	0%	54	70	80	85	1.92	11.37
	LV	400	28.2%	Residential (20,000'sf)	0%	0%	0%	100%	54	70	80	85	2.57	23.95
TOTAL PERCENT			101.2%	TOTAL AREA & COMPOSITE CURVE NUMBER:									9.23	78.0

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON2A	LV	190	91.3%	Residential (20,000'sf)	100%	0%	0%	0%	54	70	80	85	25.75	49.31
	LV	400	8.7%	Residential (20,000'sf)	0%	0%	0%	100%	54	70	80	85	2.45	7.38
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									28.20	56.7

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
ON2B	LV	190	42.9%	Residential (6,000'sf)	100%	0%	0%	0%	80	87	90	92	4.42	34.36
	LV	190	42.9%	Residential (14,000'sf)	100%	0%	0%	0%	57	72	81	86	4.42	24.48
	LV	400	14.1%	Residential (20,000'sf)	0%	0%	0%	100%	54	70	80	85	1.45	11.99
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									10.28	70.8

ULTIMATE CONDITION

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF1U	LV	400	87.1%	Residential (20,000'sf)	0%	0%	0%	100%	54	70	80	85	4.06	74.06
	LV	400	12.9%	Roadway	0%	0%	0%	100%	98	98	98	98	0.60	12.62
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									4.66	86.7

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF2U	LV	190	32.7%	Residential (20,000'sf)	100%	0%	0%	0%	54	70	80	85	3.02	17.67
	LV	400	67.3%	Residential (20,000'sf)	0%	0%	0%	100%	54	70	80	85	6.21	57.19
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									9.23	74.9

BASIN ID	SURVEY AREA	SOIL TYPE	SUBAREA PERCENT	LAND USE	HYDROLOGIC SOIL GROUP PERCENTS				LAND USE CN				SUBAREA ACRES	CURVE NUMBER
					A	B	C	D	A	B	C	D		
OFF4U	LV	190	100.0%	Residential (20,000'sf)	100%	0%	0%	0%	54	70	80	85	20.09	54.00
TOTAL PERCENT			100.0%	TOTAL AREA & COMPOSITE CURVE NUMBER:									20.09	54.0

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**SLATER
HANIFAN
GROUP**

a **Westwood** team

Rainfall and Precipitation Computation

Project Name: ANN & 215 PHASE 1

Date: 10/17/2019

File Name: OLY1801.014 TDS Precipitation Calcs.xls

By: AA

Data:

Project is located in: Township: 19 S. Range: 59 E. Section: 36

Reference:

APN Map

Site is NOT located in the McCarran Airport Rainfall Area

Figure 513*

Rainfall Depth-Duration-Frequency 10-Year, 6-Hour: 1.40 inches

Figure 503*

Rainfall Depth-Duration-Frequency 100-Year, 6-Hour: 2.20 inches

Figure 506*

Precipitation Adjustment Ratios:

10-Year: 1.24

Table 501*

100-Year: 1.43

Table 501*

Six Hour Depth Area Reduction Factors (DARF):

Area (gross acres): 88.5 = 0.1383 square miles

Table 502*

DARF = 1.00

Calculations:

$P_{10} = 1.74$ 10-Year Precipitation (in)

$P_{100} = 3.15$ 100-Year Precipitation (in)

$P_{10}/P_{100} = 0.55$ HEC-1 Multiple Ratio Value

Equations:

$$P = (\text{Rainfall}) * (\text{Precipitation Adjustment Ratio}) * (\text{Depth Area Reduction Factor})$$

* Equations taken from the Clark County Regional Flood Control District - Hydrologic Criteria and Drainage Design

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HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

Project Name & Number: Ann & 215 Phase 1, OLY1801.014

Description: Existing, Proposed, Developed, and Ultimate Condition

By: AA

Date: 10/14/2019

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc Check Urbanized Basins		Tlag
DESIG:	DEV./EX. (D or E)	CN	K [1]	AREA Ac	AREA Mi^2 [2]	INITIAL LENGTH Feet	SLOPE %	Ti Min [3]	TRAVEL LENGTH Feet	SLOPE %	V1 VELOCITY FPS [4]	V2 VELOCITY FPS [5]	Tt Min [6]	Tc Calc. [7]	Total Length Feet [8]	Tc Check [9]	Tlag Hours [10]
EXISTING CONDITION																	
BAS1	E	88.0	0.772	5.02	0.0078	400	6.0	6.51	600	2.0	2.09	4.16	4.38	10.89			0.109
BAS2	E	65.9	0.480	10.10	0.0158	275	7.0	9.68	3310	4.0	2.96	5.88	10.78	20.46			0.205
BAS3	E	63.0	0.442	3.31	0.0052	140	8.0	7.01	1445	9.0	4.44	8.82	3.66	10.67			0.107
BAS4	E	63.0	0.442	17.13	0.0268	400	6.0	13.04	1560	4.0	2.96	5.88	5.82	18.86			0.189
BAS5	E	63.0	0.442	16.19	0.0253	380	8.0	11.55	1535	5.0	3.31	6.57	5.14	16.69			0.167
BAS6	E	63.0	0.442	2.34	0.0037	100	15.0	4.81	545	5.0	3.31	6.57	2.63	7.44			0.100
BAS7	E	64.2	0.457	71.99	0.1125	470	5.0	14.66	3055	5.0	3.31	6.57	9.00	23.66			0.237
BAS8	E	63.0	0.442	5.72	0.0089	230	6.0	9.89	460	4.0	2.96	5.88	2.59	12.48			0.125
ANN	D	98.0	0.904	4.47	0.0070	50	2.0	1.98	3295	4.0	4.04	6.12	9.67	11.66	3345	28.583	0.117
PROPOSED CONDITION																	
OFF1P	E	88.0	0.772	4.79	0.0075	400	6.0	6.51	585	2.0	2.09	4.16	4.32	10.83			0.108
OFF2P	E	77.3	0.630	9.12	0.0143	250	7.0	6.99	775	4.0	2.96	5.88	3.59	10.58			0.106
OFF3U	D	54.0	0.323	2.21	0.0035	160	1.0	17.70	290	2.0	2.86	4.33	1.69	19.39	450	12.500	0.125
ON2AP	D	78.2	0.642	27.64	0.0432	210	1.0	11.94	2000	4.0	4.04	6.12	6.15	18.09	2210	22.278	0.181
ON2BP	D	79.4	0.658	10.28	0.0161	195	1.0	11.11	1300	3.0	3.50	5.30	4.90	16.01	1495	18.306	0.160
OFF4P	E	57.1	0.364	20.09	0.0314	135	3.0	10.68	665	2.0	2.09	4.16	4.64	15.32			0.153
ON1A	D	57.0	0.362	4.91	0.0077	205	1.0	19.01	610	2.0	2.86	4.33	3.34	22.35	815	14.528	0.145
ON1B	D	57.0	0.362	18.08	0.0283	195	1.0	18.54	1620	4.0	4.04	6.12	5.11	23.65	1815	20.083	0.201
ON1C	D	74.7	0.596	27.51	0.0430	150	1.0	11.11	2105	4.0	4.04	6.12	6.43	17.54	2255	22.528	0.175
HUAL-1	D	83.0	0.706	1.48	0.0023	40	2.0	3.56	365	3.0	3.50	5.30	1.74	5.30	405	12.250	0.053
HUAL-2	D	83.0	0.706	3.01	0.0047	40	2.0	3.56	655	1.0	2.02	3.06	4.97	8.53	695	13.861	0.085
HUAL-3	D	83.0	0.706	2.19	0.0034	40	2.0	3.56	550	2.0	2.86	4.33	3.11	6.67	590	13.278	0.067
DEVELOPED CONDITION																	
OFF1D	D	88.6	0.780	4.66	0.0073	400	6.00	6.35	550	2.00	2.86	4.33	3.11	9.46	950	15.278	0.095
OFF2D	D	78.0	0.640	9.23	0.0144	250	7.00	6.85	775	4.0	4.04	6.12	2.81	9.66	1025	15.694	0.097
ON2A	D	56.7	0.358	28.20	0.0441	210	1.00	19.34	2000	4.00	4.04	6.12	6.15	25.49	2210	22.278	0.223
ON2B	D	70.8	0.545	10.28	0.0161	195	1.00	13.96	1300	3.00	3.50	5.30	4.90	18.86	1495	18.306	0.183

ULTIMATE CONDITION																		
OFF1U	D	86.7	0.754	4.66	0.0073	375	1.00	12:05	545	2.00	2:86	4:33	3:09	15:14	920	15:11	0:15	
OFF2U	D	74.9	0.599	9.23	0.0144	160	1.00	11:41	805	4.00	4:04	6:12	2:89	14:31	965	15:36	0:14	
OFF4U	D	54.0	0.323	20.09	0.0314	155	1.00	17:42	960	2.00	2:86	4:33	4:69	22:11	1:15	16:19	0:16	
[1]	K = 0.0132 (CN) - 0.39					[5]	For Existing Conditions: $V2 = 29.4 * (S/100)^{0.5}$					[9]	$Tc = (L/180) + 10$					
[2]	A = Area/640						For Developed Conditions: $V2 = 30.6 * (S/100)^{0.5}$					[10]	$Tlag = (0.6 * Tc)/60$					
[3]	$Ti = (1.8 (1.1-K) L^{0.5})/S^{0.33}$					[6]	$Tt = L/(60 * V)$					[11]	Min Tlag = 0.05					
[4]	For Existing Conditions: $V1 = 14.8 * (S/100)^{0.5}$					[7]	$Tc = Ti + Tt$					Note: For Travel Time Calcs: V1 applies to first 500 feet and V2 applies to remaining distance.						
	For Developed Conditions: $V1 = 20.2 * (S/100)^{0.5}$					[8]	Total L = Initial L + Travel L											
REFERENCE :														STANDARD FORM 4				

Proposed Condition HEC-1 Model


```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*   JUN 1998
*   VERSION 4.1
*
* RUN DATE 14OCT19 TIME 14:51:39
*
*****

```

pro.out

```

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

```

```

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

```

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

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

1

HEC-1 INPUT

PAGE 1

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

*** FREE ***

```

*DIAGRAM
1 ID SLATER HANIFAN GROUP, A WESTWOOD TEAM
2 ID ANN AND 215, PHASE 1
3 ID TECHNICAL DRAINAGE STUDY
4 ID OCTOBER 2019
5 ID PROPOSED DRAINAGE CONDITION
6 ID
7 ID RETURN PERIOD ----- 100-YR AND 10-YR
8 ID DISTRIBUTION ----- 6-HOUR SDN3
9 ID PROJECT NO. ----- OLY1001.014
10 ID FILENAME ----- PRO.H1
11 ID DATE ----- 10/11
12 ID MODELED BY ----- AA
13 ID
14 ID PRECIPITATION STORM EVENT RATIOS
15 ID STORM EVENT RATIO
16 ID 100-YR 1.00
17 ID 10-YR 0.55
18 ID
19 IT 5 0 0 300
20 IO 5 0 0
21 IN 5 0 0
22 JR PREC 1.00 .55
*
23 KK ANN
24 BA 0.0070
25 PC 0 0.020 0.057 0.070 0.087 0.108 0.124 0.130 0.130 0.130
26 PC 0.130 0.130 0.130 0.133 0.140 0.142 0.148 0.158 0.172 0.181
27 PC 0.190 0.197 0.199 0.200 0.201 0.204 0.214 0.229 0.241 0.249
28 PC 0.251 0.256 0.270 0.278 0.281 0.283 0.295 0.322 0.352 0.409
29 PC 0.499 0.590 0.710 0.744 0.781 0.812 0.819 0.835 0.851 0.856
30 PC 0.860 0.868 0.876 0.888 0.910 0.926 0.937 0.950 0.970 0.976
31 PC 0.982 0.985 0.987 0.989 0.990 0.993 0.993 0.994 0.995 0.998
32 PC 0.998 0.999 1
33 PB 3.15
34 LS 0 98.0
35 UD 0.120
*
36 KK OFF1P
37 BA 0.0075
38 LS 0 88.0
39 UD 0.108
*
40 KK CP1
41 HC 2
*

```

1

HEC-1 INPUT

PAGE 2

pro.out

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

42 KK ON2AP
43 BA 0.0432
44 LS 0 78.2
45 UD 0.181
*

46 KK OFF3U
47 BA 0.0035
48 LS 0 54.0
49 UD 0.125
*

50 KK OFF2P
51 BA 0.0143
52 LS 0 77.3
53 UD 0.106
*

54 KK CP2A
55 HC 3
*

56 KK OFF4P
57 BA 0.0314
58 LS 0 57.1
59 UD 0.153
*

60 KK CP2B
61 HC 2
*

62 KK ON1A
63 BA 0.0077
64 LS 0 57.0
65 UD 0.145
*

66 KK CP2
67 HC 2
*

68 KK ON1B
69 BA 0.0283
70 LS 0 57.0
71 UD 0.201
*

72 KK HUAL-2
73 BA 0.0047
74 LS 0 83.0
75 UD 0.085
*

1

HEC-1 INPUT

PAGE 3

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

76 KK CP3
77 HC 3
*

78 KK HUAL-3
79 BA 0.0034
80 LS 0 83.0
81 UD 0.067
*

82 KK ON1C
83 BA 0.0430
84 LS 0 74.7
85 UD 0.175
*

86 KK ON2BP
87 BA 0.0161
88 LS 0 79.4
89 UD 0.160
*

90 KK CP4
91 HC 3
*

92 KK HUAL-1

pro.out

93 BA 0.0023
94 LS 0 83.0
95 UD 0.053
*
96 ZZ

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

```
23 ANN
   .
   .
36 . OFF1P
   .
40 CP1.....

42 .
   .
46 . OFF3U
   .
50 . OFF2P
   .
54 CP2A.....
   .
56 . OFF4P
   .
60 CP2B.....
   .
62 . ON1A
   .
66 CP2.....
   .
68 . ON1B
   .
72 . HUAL-2
   .
76 CP3.....

78 . HUAL-3
   .
82 . ON1C
   .
86 . ON2BP
   .
90 CP4.....
   .
92 . HUAL-1
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
* RUN DATE 14OCT19 TIME 14:51:39 *
*
*****
```

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

SLATER HANIFAN GROUP, A WESTWOOD TEAM
ANN AND 215, PHASE 1
TECHNICAL DRAINAGE STUDY
OCTOBER 2019
PROPOSED DRAINAGE CONDITION

pro.out

RETURN PERIOD ----- 100-YR AND 10-YR
 DISTRIBUTION ----- 6-HOUR SDN3
 PROJECT NO. ----- OLY1801.014
 FILENAME ----- PRO.H1
 DATE ----- 10/11
 MODELED BY ----- AA

PRECIPITATION STORM EVENT RATIOS
 STORM EVENT RATIO
 100-YR 1.00
 10-YR 0.55

20 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
 1.00 .55

1

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1 1.00	RATIO 2 .55
HYDROGRAPH AT					
+	ANN	.01	1 FLOW TIME	15. 3.50	8. 3.58
HYDROGRAPH AT					
+	OFF1P	.01	1 FLOW TIME	13. 3.50	5. 3.58
2 COMBINED AT					
+	CP1	.01	1 FLOW TIME	28. 3.50	13. 3.58
HYDROGRAPH AT					
+	ON2AP	.04	1 FLOW TIME	43. 3.58	11. 3.67
HYDROGRAPH AT					
+	OFF3U	.00	1 FLOW TIME	0. 3.75	0. .00
HYDROGRAPH AT					
+	OFF2P	.01	1 FLOW TIME	16. 3.58	4. 3.58
3 COMBINED AT					
+	CP2A	.06	1 FLOW TIME	59. 3.58	15. 3.58
HYDROGRAPH AT					
+	OFF4P	.03	1 FLOW TIME	6. 3.67	0. 4.92
2 COMBINED AT					

							pro.out
+	CP2B	.09	1	FLOW TIME	64. 3.58	15. 3.58	
HYDROGRAPH AT							
+	ON1A	.01	1	FLOW TIME	1. 3.67	0. 4.92	
2 COMBINED AT							
+	CP2	.10	1	FLOW TIME	66. 3.58	15. 3.58	
HYDROGRAPH AT							
+	ON1B	.03	1	FLOW TIME	5. 3.75	0. 5.00	
HYDROGRAPH AT							
+	HUAL-2	.00	1	FLOW TIME	7. 3.50	2. 3.50	
3 COMBINED AT							
+	CP3	.13	1	FLOW TIME	75. 3.58	17. 3.58	
HYDROGRAPH AT							
+	HUAL-3	.00	1	FLOW TIME	6. 3.50	2. 3.50	
HYDROGRAPH AT							
+	ON1C	.04	1	FLOW TIME	36. 3.58	8. 3.67	
HYDROGRAPH AT							
+	ON2BP	.02	1	FLOW TIME	18. 3.58	5. 3.58	
3 COMBINED AT							
+	CP4	.06	1	FLOW TIME	58. 3.58	14. 3.67	
HYDROGRAPH AT							
+	HUAL-1	.00	1	FLOW TIME	4. 3.50	1. 3.50	

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

Developed Condition HEC-1 Model

1*****	DEV.OUT	*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1)		* U.S. ARMY CORPS OF ENGINEERS
* JUN 1998		* HYDROLOGIC ENGINEERING CENTER
* VERSION 4.1		* 609 SECOND STREET
* RUN DATE 14OCT19 TIME 14:56:19		* DAVIS, CALIFORNIA 95616
*****		* (916) 756-1104

```

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

```

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

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

1 HEC-1 INPUT PAGE 1

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

*** FREE ***

```

*DIAGRAM
1 ID SLATER HANIFAN GROUP, A WESTWOOD TEAM
2 ID ANN AND 215, PHASE 1
3 ID TECHNICAL DRAINAGE STUDY
4 ID OCTOBER 2019
5 ID DEVELOPED DRAINAGE CONDITION
6 ID
7 ID RETURN PERIOD ----- 100-YR AND 10-YR
8 ID DISTRIBUTION ----- 6-HOUR SDN3
9 ID PROJECT NO. ----- OLY1801.014
10 ID FILENAME ----- DEV.H1
11 ID DATE ----- 10/11
12 ID MODELED BY ----- AA
13 ID
14 ID PRECIPITATION STORM EVENT RATIOS
15 ID STORM EVENT RATIO
16 ID 100-YR 1.00
17 ID 10-YR 0.55
18 ID
19 IT 5 0 0 300
20 IO 5 0 0
21 IN 5 0 0
22 JR PREC 1.00 .55
*
23 KK ANN
24 BA 0.0070
25 PC 0 0.020 0.057 0.070 0.087 0.108 0.124 0.130 0.130 0.130
26 PC 0.130 0.130 0.130 0.133 0.140 0.142 0.148 0.158 0.172 0.181
27 PC 0.190 0.197 0.199 0.200 0.201 0.204 0.214 0.229 0.241 0.249
28 PC 0.251 0.256 0.270 0.278 0.281 0.283 0.295 0.322 0.352 0.409
29 PC 0.499 0.590 0.710 0.744 0.781 0.812 0.819 0.835 0.851 0.856
30 PC 0.860 0.868 0.876 0.888 0.910 0.926 0.937 0.950 0.970 0.976
31 PC 0.982 0.985 0.987 0.989 0.990 0.993 0.993 0.994 0.995 0.998
32 PC 0.998 0.999 1
33 PB 3.15
34 LS 0 98.0
35 UD 0.120
*
36 KK OFF1D
37 BA 0.0073
38 LS 0 88.6
39 UD 0.095
*
40 KK CP1
41 HC 2
*

```

1 HEC-1 INPUT PAGE 2

DEV.OUT

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

42 KK ON2A
43 BA 0.0441
44 LS 0 56.7
45 UD 0.223
*

46 KK OFF3U
47 BA 0.0035
48 LS 0 54.0
49 UD 0.125
*

50 KK OFF2D
51 BA 0.0144
52 LS 0 78.0
53 UD 0.097
*

54 KK CP2A
55 HC 3
*

56 KK OFF4P
57 BA 0.0314
58 LS 0 57.1
59 UD 0.153
*

60 KK CP2B
61 HC 2
*

62 KK ON1A
63 BA 0.0077
64 LS 0 57.0
65 UD 0.145
*

66 KK CP2
67 HC 2
*

68 KK ON1B
69 BA 0.0283
70 LS 0 57.0
71 UD 0.201
*

72 KK HUAL-2
73 BA 0.0047
74 LS 0 83.0
75 UD 0.085
*

1

HEC-1 INPUT

PAGE 3

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

76 KK CP3
77 HC 3
*

78 KK HUAL-3
79 BA 0.0034
80 LS 0 83.0
81 UD 0.067
*

82 KK ON1C
83 BA 0.0430
84 LS 0 74.7
85 UD 0.175
*

86 KK ON2B
87 BA 0.0161
88 LS 0 70.8
89 UD 0.183
*

90 KK CP4
91 HC 3
*

92 KK HUAL-1

DEV.OUT

93 BA 0.0023
94 LS 0 83.0
95 UD 0.053
*
96 ZZ

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

23 ANN
.
36 OFF1D
.
40 CP1.....
.
42 ON2A
.
46 OFF3U
.
50 OFF2D
.
54 CP2A.....
.
56 OFF4P
.
60 CP2B.....
.
62 ON1A
.
66 CP2.....
.
68 ON1B
.
72 HUAL-2
.
76 CP3.....
.
78 HUAL-3
.
82 ON1C
.
86 ON2B
.
90 CP4.....
.
92 HUAL-1

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
*
* RUN DATE 14OCT19 TIME 14:56:19 *
*

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

SLATER HANIFAN GROUP, A WESTWOOD TEAM
ANN AND 215, PHASE 1
TECHNICAL DRAINAGE STUDY
OCTOBER 2019
DEVELOPED DRAINAGE CONDITION

DEV.OUT

RETURN PERIOD ----- 100-YR AND 10-YR
 DISTRIBUTION ----- 6-HOUR SDN3
 PROJECT NO. ----- OLY1801.014
 FILENAME ----- DEV.H1
 DATE ----- 10/11
 MODELED BY ----- AA

PRECIPITATION STORM EVENT RATIOS
 STORM EVENT RATIO
 100-YR 1.00
 10-YR 0.55

20 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
 1.00 .55

1

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1 1.00	RATIO 2 .55
HYDROGRAPH AT					
+	ANN	.01	1 FLOW TIME	15. 3.50	8. 3.58
HYDROGRAPH AT					
+	OFF1D	.01	1 FLOW TIME	13. 3.50	5. 3.50
2 COMBINED AT					
+	CP1	.01	1 FLOW TIME	28. 3.50	13. 3.50
HYDROGRAPH AT					
+	ON2A	.04	1 FLOW TIME	7. 3.75	0. 5.00
HYDROGRAPH AT					
+	OFF3U	.00	1 FLOW TIME	0. 3.75	0. .00
HYDROGRAPH AT					
+	OFF2D	.01	1 FLOW TIME	17. 3.50	5. 3.58
3 COMBINED AT					
+	CP2A	.06	1 FLOW TIME	21. 3.58	5. 3.58
HYDROGRAPH AT					
+	OFF4P	.03	1 FLOW TIME	6. 3.67	0. 4.92
2 COMBINED AT					

						DEV.OUT
+	CP2B	.09	1	FLOW TIME	26. 3.58	5. 3.58
HYDROGRAPH AT						
+	ON1A	.01	1	FLOW TIME	1. 3.67	0. 4.92
2 COMBINED AT						
+	CP2	.10	1	FLOW TIME	27. 3.58	5. 3.58
HYDROGRAPH AT						
+	ON1B	.03	1	FLOW TIME	5. 3.75	0. 5.00
HYDROGRAPH AT						
+	HUAL-2	.00	1	FLOW TIME	7. 3.50	2. 3.50
3 COMBINED AT						
+	CP3	.13	1	FLOW TIME	37. 3.58	7. 3.58
HYDROGRAPH AT						
+	HUAL-3	.00	1	FLOW TIME	6. 3.50	2. 3.50
HYDROGRAPH AT						
+	ON1C	.04	1	FLOW TIME	36. 3.58	8. 3.67
HYDROGRAPH AT						
+	ON2B	.02	1	FLOW TIME	10. 3.67	2. 3.75
3 COMBINED AT						
+	CP4	.06	1	FLOW TIME	50. 3.58	10. 3.67
HYDROGRAPH AT						
+	HUAL-1	.00	1	FLOW TIME	4. 3.50	1. 3.50

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

Ultimate Condition HEC-1 Model

ult.out

```
1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 14OCT19 TIME 15:04:06
*
*****
```

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*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****
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X X XXXXXX XXXX X
X X X X X XX
X X X X X X
XXXXXX XXXX X XXXX X
X X X X X X
X X X X X X
X X XXXXXX XXXX XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

1 HEC-1 INPUT PAGE 1

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

*** FREE ***

```
*DIAGRAM
ID SLATER HANIFAN GROUP, A WESTWOOD TEAM
ID ANN AND 215, PHASE 1
ID TECHNICAL DRAINAGE STUDY
ID OCTOBER 2019
ID ULTIMATE DRAINAGE CONDITION
ID
ID RETURN PERIOD ----- 100-YR AND 10-YR
ID DISTRIBUTION ----- 6-HOUR SDN3
ID PROJECT NO. ----- OLY1801.014
ID FILENAME ----- ULT.H1
ID DATE ----- 10/11
ID MODELED BY ----- AA
ID
ID PRECIPITATION STORM EVENT RATIOS
ID STORM EVENT RATIO
ID 100-YR 1.00
ID 10-YR 0.55
ID
IT 5 0 0 300
IO 5 0 0
IN 5 0 0
JR PREC 1.00 .55
*
23 KK ANN
24 BA 0.0070
25 PC 0 0.020 0.057 0.070 0.087 0.108 0.124 0.130 0.130 0.130
26 PC 0.130 0.130 0.130 0.133 0.140 0.142 0.148 0.158 0.172 0.181
27 PC 0.190 0.197 0.199 0.200 0.201 0.204 0.214 0.229 0.241 0.249
28 PC 0.251 0.256 0.270 0.278 0.281 0.283 0.295 0.322 0.352 0.409
29 PC 0.499 0.590 0.710 0.744 0.781 0.812 0.819 0.835 0.851 0.856
30 PC 0.860 0.868 0.876 0.888 0.910 0.926 0.937 0.950 0.970 0.976
31 PC 0.982 0.985 0.987 0.989 0.990 0.993 0.993 0.994 0.995 0.998
32 PC 0.998 0.999 1
33 PB 3.15
34 LS 0 98.0
35 UD 0.120
*
36 KK OFF1U
37 BA 0.0073
38 LS 0 86.7
39 UD 0.151
*
40 KK CP1
41 HC 2
*
```

1 HEC-1 INPUT PAGE 2

LINE	ID	1	2	3	4	5	6	7	8	9	10
42	KK	ON2A									
43	BA	0.0441									
44	LS	0	56.7								
45	UD	0.223									
	*										
46	KK	OFF3U									
47	BA	0.0035									
48	LS	0	54.0								
49	UD	0.125									
	*										
50	KK	OFF2U									
51	BA	0.0144									
52	LS	0	74.9								
53	UD	0.143									
	*										
54	KK	CP2A									
55	HC	3									
	*										
56	KK	OFF4U									
57	BA	0.0314									
58	LS	0	54.0								
59	UD	0.162									
	*										
60	KK	CP2B									
61	HC	2									
	*										
62	KK	ON1A									
63	BA	0.0077									
64	LS	0	57.0								
65	UD	0.145									
	*										
66	KK	CP2									
67	HC	2									
	*										
68	KK	ON1B									
69	BA	0.0283									
70	LS	0	57.0								
71	UD	0.201									
	*										
72	KK	HUAL-2									
73	BA	0.0047									
74	LS	0	83.0								
75	UD	0.085									
	*										

1

HEC-1 INPUT

PAGE 3

LINE	ID	1	2	3	4	5	6	7	8	9	10
76	KK	CP3									
77	HC	3									
	*										
78	KK	HUAL-3									
79	BA	0.0034									
80	LS	0	83.0								
81	UD	0.067									
	*										
82	KK	ON1C									
83	BA	0.0430									
84	LS	0	74.7								
85	UD	0.175									
	*										
86	KK	ON2B									
87	BA	0.0161									
88	LS	0	70.8								
89	UD	0.183									
	*										
90	KK	CP4									
91	HC	3									
	*										
92	KK	HUAL-1									

ult.out

93 BA 0.0023
94 LS 0 83.0
95 UD 0.053
*
96 ZZ

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

23 ANN
.
36 OFF1U
.
40 CP1.....
.
42 ON2A
.
46 OFF3U
.
50 OFF2U
.
54 CP2A.....
.
56 OFF4U
.
60 CP2B.....
.
62 ON1A
.
66 CP2.....
.
68 ON1B
.
72 HUAL-2
.
76 CP3.....
.
78 HUAL-3
.
82 ON1C
.
86 ON2B
.
90 CP4.....
.
92 HUAL-1

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
* RUN DATE 14OCT19 TIME 15:04:06 *

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

SLATER HANIFAN GROUP, A WESTWOOD TEAM
ANN AND 215, PHASE 1
TECHNICAL DRAINAGE STUDY
OCTOBER 2019
ULTIMATE DRAINAGE CONDITION

ult.out

RETURN PERIOD ----- 100-YR AND 10-YR
 DISTRIBUTION ----- 6-HOUR SDN3
 PROJECT NO. ----- OLY1801.014
 FILENAME ----- ULT.H1
 DATE ----- 10/11
 MODELED BY ----- AA

PRECIPITATION STORM EVENT RATIOS
 STORM EVENT RATIO
 100-YR 1.00
 10-YR 0.55

20 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
 1.00 .55

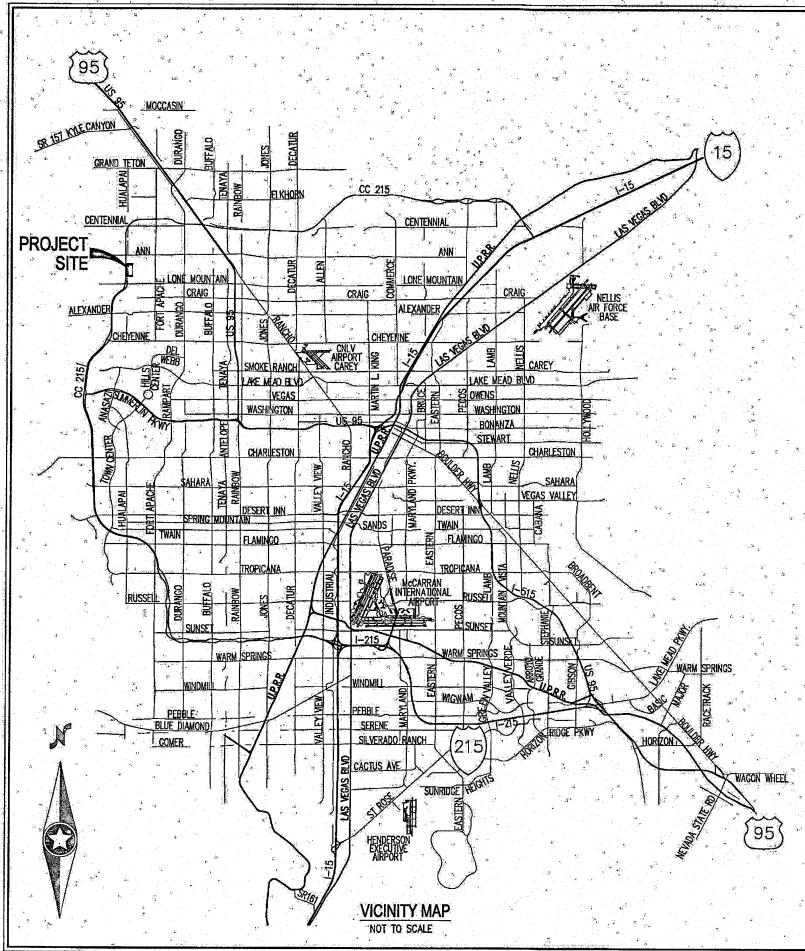
1

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1 1.00	RATIO 2 .55
HYDROGRAPH AT					
+	ANN	.01	1 FLOW	15.	8.
			TIME	3.50	3.58
HYDROGRAPH AT					
+	OFF1U	.01	1 FLOW	11.	4.
			TIME	3.58	3.58
2 COMBINED AT					
+	CP1	.01	1 FLOW	26.	12.
			TIME	3.58	3.58
HYDROGRAPH AT					
+	ON2A	.04	1 FLOW	7.	0.
			TIME	3.75	5.00
HYDROGRAPH AT					
+	OFF3U	.00	1 FLOW	0.	0.
			TIME	3.75	.00
HYDROGRAPH AT					
+	OFF2U	.01	1 FLOW	13.	3.
			TIME	3.58	3.58
3 COMBINED AT					
+	CP2A	.06	1 FLOW	18.	3.
			TIME	3.67	3.58
HYDROGRAPH AT					
+	OFF4U	.03	1 FLOW	4.	0.
			TIME	3.75	5.83
2 COMBINED AT					

							ult.out
+	CP28	.09	1	FLOW TIME	22. 3.67	3. 3.58	
HYDROGRAPH AT							
+	ON1A	.01	1	FLOW TIME	1. 3.67	0. 4.92	
2 COMBINED AT							
+	CP2	.10	1	FLOW TIME	23. 3.67	3. 3.58	
HYDROGRAPH AT							
+	ON1B	.03	1	FLOW TIME	5. 3.75	0. 5.00	
HYDROGRAPH AT							
+	HUAL-2	.00	1	FLOW TIME	7. 3.50	2. 3.50	
3 COMBINED AT							
+	CP3	.13	1	FLOW TIME	32. 3.67	5. 3.58	
HYDROGRAPH AT							
+	HUAL-3	.00	1	FLOW TIME	6. 3.50	2. 3.50	
HYDROGRAPH AT							
+	ON1C	.04	1	FLOW TIME	36. 3.58	8. 3.67	
HYDROGRAPH AT							
+	ON2B	.02	1	FLOW TIME	10. 3.67	2. 3.75	
3 COMBINED AT							
+	CP4	.06	1	FLOW TIME	50. 3.58	10. 3.67	
HYDROGRAPH AT							
+	HUAL-1	.00	1	FLOW TIME	4. 3.50	1. 3.50	

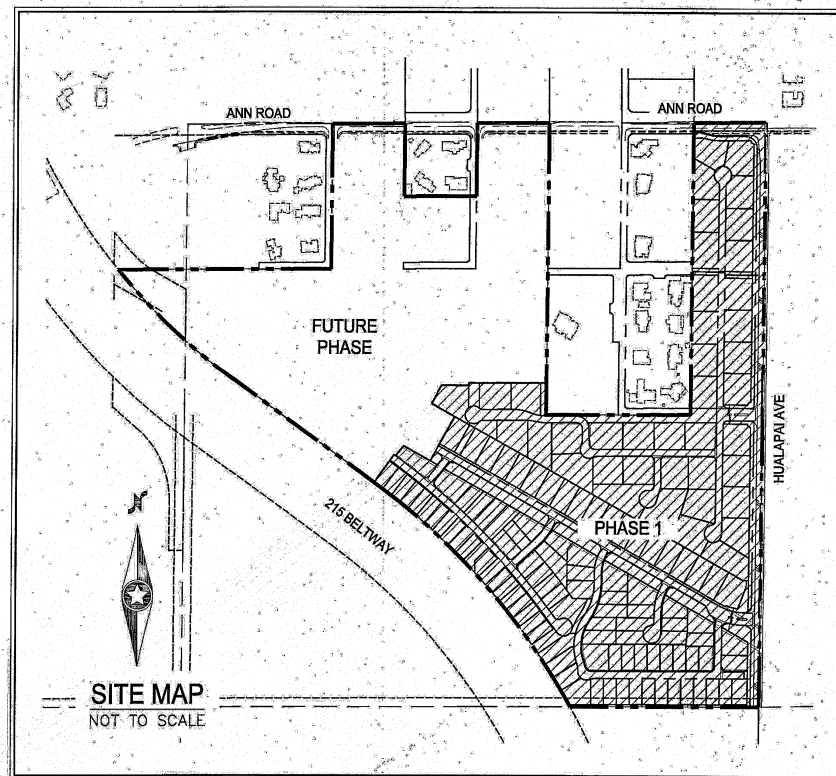
*** NORMAL END OF HEC-1 ***



D.R. HORTON

IMPROVEMENT PLANS FOR ANN AND HUALAPAI - PHASE 1

CITY OF LAS VEGAS, NEVADA
RESIDENTIAL SUBDIVISION
A PORTION OF APN: 126-36-601-011, 126-36-601-012,
126-36-601-013, 126-36-501-043, 126-36-699-002,
126-36-599-014, 126-36-599-015, & 126-36-599-016



DEVIATIONS FROM STANDARDS

NONE

SWPPP NOTE

NOTE: ALL LAND SURFACE AREA DISTURBANCES OVER 1 ACRE REQUIRE A STORMWATER DISCHARGE PERMIT ISSUED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP). A PHASED CONSTRUCTION UNIT IN A CONTIGUOUS SUBDIVISION IS CONSIDERED UNDER CONSTRUCTION UNTIL ALL STRIPPED SURFACE AREAS HAVE BEEN COVERED BY PAVING, BUILDING CONSTRUCTION OR PLANTING. A STORMWATER DISCHARGE PERMIT APPLICATION AND ASSOCIATED INFORMATION MAY BE DOWNLOADED FROM THE WEB SITE: <http://www.state.nv.us/nvdeq/stormwater/projects> THAT DISTURB MORE THAN ONE ACRE OF LAND MUST SUBMIT TO NDEP A "NOTICE OF INTENT" FOR INCLUSION UNDER STORMWATER PERMIT NO. NVRT00000 ALONG WITH THE APPROPRIATE FILING FEE.

PROJECT INFORMATION - PHASE 1

ACREAGE (GROSS): 53.68 AC
ACREAGE (NET): 35.90 AC
ACREAGE (NET-NET): 31.98 AC
DENSITY (LOTS/NET ACRE): 6.82 DU/NET ACRE
ZONING: R-E & R-1
TOTAL NO. OF RESIDENTIAL LOTS: 218
TOTAL NO. OF COMMON ELEMENTS: 15
MINIMUM LOT SIZE: 6,157 SF±
MAXIMUM LOT SIZE: 29,276 SF±
PROVIDED OPEN SPACE: 170,755 SF±

EARTHWORK SUMMARY (UNADJUSTED)

CUT: 181,783 CY
FILL: 348,005 CY
NET: 166,222 CY (FILL)

GEOTECHNICAL ENGINEER

PREPARED BY: SOUTHWEST GEOTECHNICAL
ADDRESS: 5275 ARVILLE ST, SUITE 108, LAS VEGAS, NV 89118
PHONE: (702) 323-6000
PROJECT NO. 182116
DATED: 03/02/2018

Sheet List Table		
#	SHEET	DESCRIPTION
1	C-1	COVER SHEET
2	C-2	GENERAL NOTES SHEET
3	C-3	ABBREVIATIONS AND QUANTITIES
4	G-1	GRADING SHEET I
5	G-2	GRADING SHEET II
6	G-3	GRADING SHEET III
7	G-4	GRADING SHEET IV
8	G-5	GRADING SHEET V
9	G-6	GRADING SHEET VI
10	G-7	GRADING SHEET VII
11	G-8	GRADING SHEET VIII
12	G-9	GRADING SHEET IX
13	G-10	GRADING SHEET X
14	G-11	GRADING SHEET XI
15	G-12	GRADING SHEET XII
16	G-13	GRADING SHEET XIII
17	G-14	GRADING SHEET XIV
18	G-15	GRADING SHEET XV
19	G-16	GRADING SHEET XVI
20	D-1	DETAIL SHEET I
21	D-2	DETAIL SHEET II
22	D-3	DETAIL SHEET III
23	D-4	DETAIL SHEET IV
24	D-5	DETAIL SHEET V
25	PP-1	PLAN AND PROFILE - ANN ROAD
26	PP-2	PLAN AND PROFILE - ANN ROAD STORM LATERALS
27	PP-3	PLAN AND PROFILE - HUALAPAI AVE STA 10+00 TO 15+50
28	PP-4	PLAN AND PROFILE - HUALAPAI AVE STA 15+50 TO 21+50
29	PP-5	PLAN AND PROFILE - HUALAPAI AVE STA 21+50 TO 27+50
30	PP-6	PLAN AND PROFILE - HUALAPAI AVE STA 27+50 TO 33+50
31	PP-7	PLAN AND PROFILE - HUALAPAI AVE STA 33+50 TO 37+00
32	PP-8	PLAN AND PROFILE - HICKORY TREE ST STA 10+00 TO 15+00
33	PP-9	PLAN AND PROFILE - HICKORY TREE ST STA 15+00 TO 21+50
34	PP-10	PLAN AND PROFILE - HICKORY TREE ST STA 21+50 TO 26+50
35	PP-11	PLAN AND PROFILE - ARBOR VIEW AVE
36	PP-12	PLAN AND PROFILE - CASCADIA VALLEY CT
37	PP-13	PLAN AND PROFILE - WHITE ROCK RUN ST & BALSAM FIR CT
38	PP-14	PLAN AND PROFILE - REDWOOD CANYON STA 10+00 TO 13+00
39	PP-15	PLAN AND PROFILE - REDWOOD CANYON STA 13+00 TO 16+50
40	PP-16	PLAN AND PROFILE - SWEET HOLLY PL STA 27+00 TO 21+50
41	PP-17	PLAN AND PROFILE - SWEET HOLLY PL STA 21+50 TO 15+50
42	PP-18	PLAN AND PROFILE - SWEET HOLLY PL STA 15+50 TO 10+00
43	PP-19	PLAN AND PROFILE - SEQUOIA FALLS PL STA 22+00 TO 16+00
44	PP-20	PLAN AND PROFILE - SEQUOIA FALLS PL STA 16+00 TO 13+00
45	PP-21	PLAN AND PROFILE - SEQUOIA FALLS PL STA 13+00 TO 10+00
46	PP-22	PLAN AND PROFILE - CLEAVING BAY & BLUE BELL GROVE
47	PP-23	PLAN AND PROFILE - AURORA LAKE LN
48	PP-24	PLAN AND PROFILE - MYSTIC IVY DR STA 10+00 TO 13+00
49	PP-25	PLAN AND PROFILE - MYSTIC IVY DR STA 13+00 TO 16+00
50	PP-26	PLAN AND PROFILE - SWEET CLEANDER STA 10+00 TO 15+00
51	PP-27	PLAN AND PROFILE - SWEET CLEANDER & SAVANNAH ROSE
52	PP-28	PLAN AND PROFILE - SAVANNAH ROSE
53	PP-29	PLAN AND PROFILE - WASHBURN SEWER
54	PP-30	PLAN AND PROFILE - 12 INCH WATERLINE EASEMENT
55	PP-31	PLAN AND PROFILE - STEPHEN AVE & FUTURE PHASE SEWER
56	PP-32	PLAN AND PROFILE - CE H
57	MUT-1	MASTER UTILITY PLAN
58	U-1	UTILITY PLAN I
59	U-2	UTILITY PLAN II
60	U-3	UTILITY PLAN III
61	U-4	UTILITY PLAN IV
62	U-5	UTILITY PLAN V
63	U-6	UTILITY PLAN VI
64	U-7	UTILITY PLAN VII
65	U-8	UTILITY PLAN VIII
66	U-9	UTILITY PLAN IX
67	U-10	UTILITY PLAN X
68	PRV-1	PRV STATION SITE PLAN
69	PRV-2	PRV STATION DETAILS I
70	PRV-3	PRV STATION DETAILS II
71	PRV-4	PRV STATION DETAILS III
72	T-1	TRAFFIC PLAN I
73	T-2	TRAFFIC SHEET II
74	T-3	TRAFFIC SHEET III
75	T-4	TRAFFIC SHEET IV
76	T-5	TRAFFIC SHEET V
77	T-6	TRAFFIC SHEET VI
78	T-7	TRAFFIC SHEET VII
79	T-8	TRAFFIC SHEET VIII
80	T-9	TRAFFIC SHEET IX
81	T-10	TRAFFIC PLAN X

APPROVALS

LAS VEGAS FIRE AND RESCUE DATE

CENTRAL TELEPHONE CO. DBA CENTURYLINK DATE

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

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. 137430 FIRST APPROVED DATE:
LWMV APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 20 GPM
SHEETS: C-1, C-2, C-3, PP-1 THROUGH PP-32, MUT-1, U-1 THROUGH U-10,
PRV-1 THROUGH PRV-4

NV ENERGY DATE

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

SOUTHWEST GAS CORPORATION DATE

COX COMMUNICATIONS LAS VEGAS, INC. DATE

DEVELOPER

DR HORTON INC.
1081 WHITNEY RANCH DR, SUITE 141
HENDERSON, NV 89014
PH: 702-432-3000
FX: 702-435-8008

ENGINEER

WESTWOOD
5740 S. ARVILLE STREET, SUITE 216
LAS VEGAS, NV 89118
PH: (702) 324-5300
CONTACT: TRACY STRATTON

OWNER

FORESTAR (USA) REAL ESTATE
2221 E. LAMAR BLVD SUITE 750
ARLINGTON, TX 76010

UPGROWTH NV PARTNERS, LLC
11411 SOUTHERN HIGHLANDS PKWY
LAS VEGAS, NV 89141
PH: 702-220-6595

LEGAL DESCRIPTION

BEING A PORTION OF SECTION 36, TOWNSHIP 19 SOUTH, RANGE 30 EAST
M.D.M., CLARK COUNTY, NEVADA.

BENCHMARK

BENCHMARK #BLV90-3104, CLV RIVET & ROUND PLATE IN CONC PAD WEST SIDE
OF GRAND CANYON DR., 120 FEET SOUTH OF WASHBURN ROAD.
ELEVATION = 795.579 METERS (2010.16 FEET) NAVD 88

BASIS OF BEARINGS

S 89°41'18" E, BEING THE NORTH LINE OF THE SE 1/4, NW 1/4 OF SECTION 31
TOWNSHIP 19 SOUTH, RANGE 30 EAST, M.D.M. AS SHOWN ON FILE 97, PAGE 85
OF PARCEL MAPS ON FILE AT THE RECORDERS OFFICE OF CLARK COUNTY, NV
OPTICAL RECORDS.

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X" (AREA
OUTSIDE THE 500 YEAR FLOODPLAIN AND 0.2% CHANCE ANNUAL FLOODING), PER
THE FEMA FIRM PANELS MAP NUMBER 22003C1750 E, DATED SEPTEMBER 27,
2002.



Westwood

5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
Phone Fax
(702) 324-5300
(702) 284-5399
westwoodps.com
Westwood Professional Services, Inc.

CITY OF LAS VEGAS, NV

D.R. HORTON

ANN AND HUALAPAI - PHASE 1
COVER SHEET

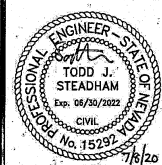
DATE: 6/29/20

DRAFTER: AJY

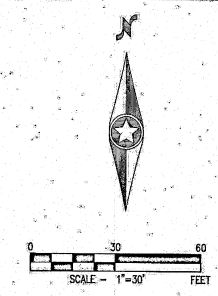
DESIGNER: AJY

CHECKED: STS

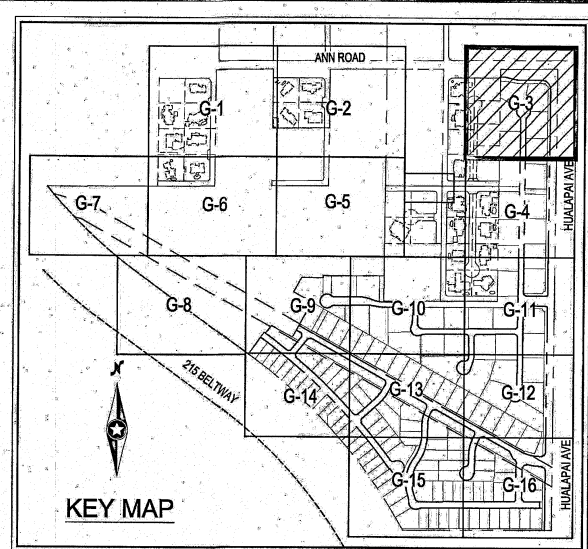
PROJECT NO.
OLY1801-014



C-1
SHEET 1 OF 81
L20-00818
107Y5138



SOILS REPORT
PROJECT GEOTECH # HTE ##-####
REF: 232
SOUTHWEST GEOTECHNICAL
PROJECT NO. 182116
DATE: 03/02/2018
ADDENDUM DATE:
EARTHWORKS
APN: 126-36-601-0011
126-36-601-012, 126-36-601-013, &
126-36-601-043
EARTHWORK QUANTITIES (RAW):
CUT= 181,783 CU YDS
FILL= 346,005 CU YDS
EXPORTED MATERIAL TO BE DISPOSED OF
AT AN APPROVED LICENSED DISPOSAL
FACILITY OR AT A SITE WITH AN
APPROVED AND ACTIVE GRADING PERMIT.



BENCHMARK

BENCHMARK: 9BLV90-31C4 CLY RIVET & ROUND PLATE IN CONC PAD
WEST SIDE OF GRAND CANYON DR., 120 FEET SOUTH OF WASHBURN
ROAD.

ELEVATION = 795.579 METERS (2010.16 FEET) NAVD 88

BASIS OF BEARINGS

S 89°14'18" E, BEING THE NORTH LINE OF THE SE 1/4, NW 1/4 OF SECTION 31, TOWNSHIP 19 SOUTH, RANGE 60 EAST; M.O.M. AS SHOWN ON FILE 97, PAGE 85 OF PARCEL MAPS ON FILE AT THE RECORDERS OFFICE OF CLARK COUNTY, NV OFFICIAL RECORDS.

CONSTRUCTION NOTES

- 1 INSTALL 2.0" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE, PER SOils REPORT
- 2 INSTALL 4.5" ASPHALT PAVEMENT OVER 8" TYPE I AGGREGATE BASE, PER SOils REPORT H# -####
- 3 SARCOT AND REMOVE, EXISTING ASPHALT DRIVE, LEAN CLOSER, AND MATCH TO EXISTING PAVEMENT SECTION
- 4 INSTALL 30" ROLL CURB PER CCAUSD NO. 217.2.51
- 5 INSTALL 24" L-TYPE CURB PER CCAUSD NO. 216
- 6 INSTALL A-TYPE ISLAND CURB PER CCAUSD NO. 218
- 7 CONSTRUCT 6" WIDE CROSS GUTTER PER CCAUSD NO. 229
- 8 CONSTRUCT TRANSITION FROM ROLL-CURB TO L-CURB PER DETAIL ON SHEET D-5
- 9 INSTALL 5" WIDE SIDEWALK PER CCAUSD NO. 234
- 10 INSTALL 6" WIDE SIDEWALK PER CCAUSD NO. 234
- 11 CONSTRUCT ROLL CURB TRANSITION TO SIDEWALK UNDERDRAIN PER DETAIL ON SHEET D-5
- 12 CONSTRUCT 10.0" WIDE TRAIL PER DETAIL ON SHEET D-5
- 13 INSTALL 6" WROUGHT IRON FENCE PER CCAUSD NO. #25.51
- 14 CONSTRUCT CASE 1 ADA SIDEWALK RAMP PER CCAUSD NO. 235
- 15 AS 5" OF RIP-RAP D50=6" THICK=12" AT END OF CROWN PAVEMENT FULL WIDTH OF ROAD IMPROVEMENTS
- 16 CONSTRUCT DEPRESSION CURB TRANSITION PER DETAIL ON SHEET D-5, WITH 3 LF DEPRESSION CURB SECTION
- 17 CONSTRUCT 24" WIDE GATE FOR EMERGENCY, UTILITY AND MAINTENANCE ACCESS PURPOSES
- 18 CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD NO. 236
- 19 INSTALL 5" TYPE "OAZ" STORM DRAIN DRAIN INLET PER DETAIL CCAUSD #12.1
- 20 INSTALL STORM DRAIN CONCRETE COLLAR PER DETAIL ON SHEET D-5
- 21 INSTALL RIP-RAP EROSION PROTECTION D50=12" DEPTH=0.5'
- 22 INSTALL RIP-RAP EROSION PROTECTION D50=6" DEPTH=1.0'
- 23 INSTALL RIP-RAP EROSION PROTECTION D50=6" DEPTH=1.5'
- 24 INSTALL RIP-RAP EROSION PROTECTION D50=6" DEPTH=2.0'
- 25 CONSTRUCT 3" WIDE VALLEY GUTTER PER DETAIL ON SHEET D-5
- 26 CONSTRUCT 3" DEEP CUT-OUT WALL AT EDGE OF EASEMENT PER DETAIL ON SHEET D-5

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE "X"
(AREA OUTSIDE THE 500 YEAR FLOODPLAIN AND 0.2% CHANCE ANNUAL
FLOODING), PER THE FEMA FIRM PANELS MAP NUMBER 32003C1750 E,
DATED SEPTEMBER 27, 2002

SURVEY NOTE
OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN
AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED,
DESTROYED, OR OBSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE

- 1) EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREIN. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.
- 2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SHOTGUN LINE TO PROPOSED EDGE OF PAVEMENT OR CENTERLINE OF CURB OR SIDEWALK. THE CONTRACTOR AND CONSTRUCTION OF PROPOSED CURB LINE, IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
- 3) CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY INTERFERENCES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLACING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.

SVZ RESTRICTION NOTE

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL, OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

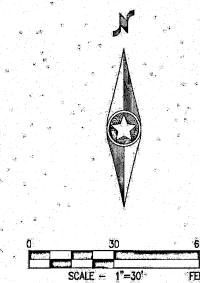
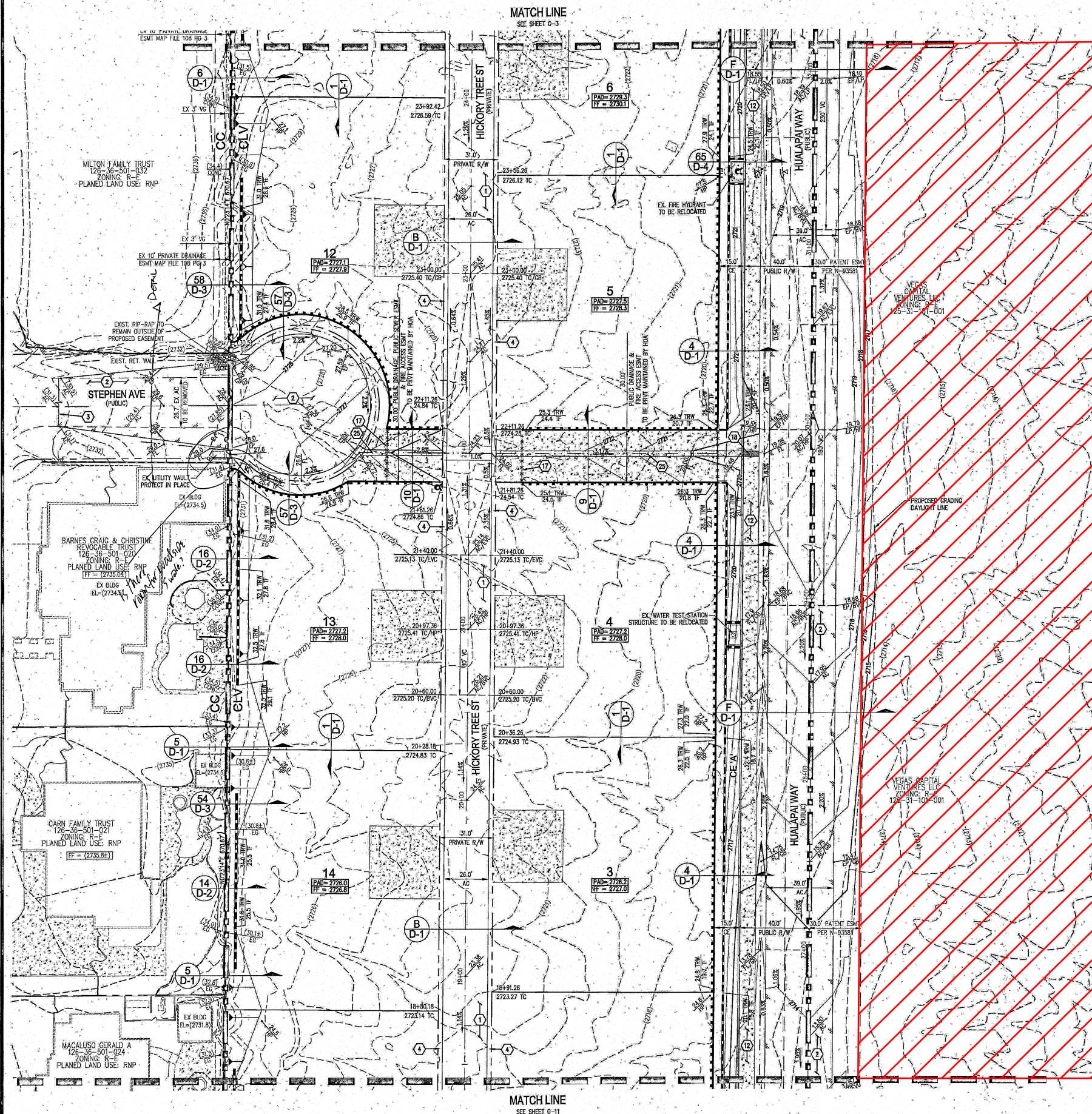
GRADING NOTES

1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH 2018 IBC.
2. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
3. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
4. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
5. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
6. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
7. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY BUILDING DEPARTMENT.
8. NOTE: ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY HOA.

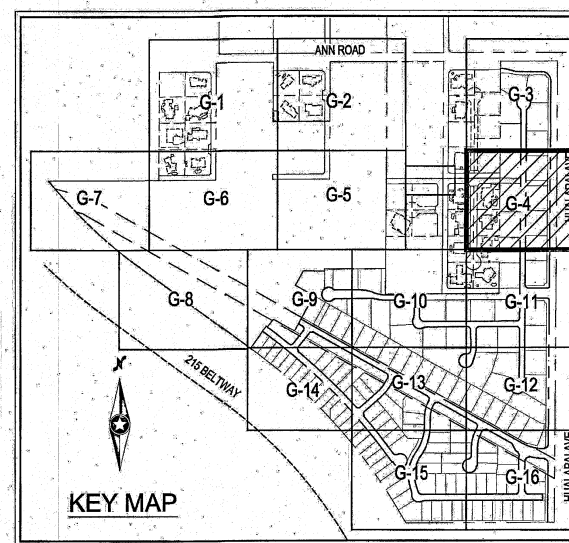
DRAINAGE CERTIFICATION I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED FLOOD STUDY DSS211 ON FILE AT CITY OF LAS VEGAS FOR THE SUBJECT PROJECT, ALSO AND PW20-11651 ON FILE AT CLARK COUNTY.  7/8/20 TOTO & SUTABRAM, PC #15-0299 CLC	
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ELEVATION NOTE
 ADD 2700 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 01.00 REPRESENTS 2701.00)

[illegible]



SOILS REPORT
PROJECT GEOTECH # HTE ##-####
REPORT BY:
SOUTHWEST GEOTECHNICAL
PROJECT NO. 182116
DATE: 03/02/2018
ADDENDUM DATE:
EARTHWORKS
APN: 126-361-001-0011
126-361-001-012, 126-361-601-013, &
126-361-501-043
EARTHWORK QUANTITIES (RAW):
CUT= 181,783 CU YDS
FILL= 348,005 CU YDS
EXPORTED MATERIAL TO BE DISPOSED OF
AT AN APPROVED LICENSED DISPOSAL
FACILITY OR AT A SITE WITH AN
APPROVED AND ACTIVE GRADING PERMIT.



BENCHMARK

BENCHMARK #BLV90-31C4 CLV RIVET & ROUND PLATE IN CONC PA
WEST SIDE OF GRAND CANYON DR., 120 FEET SOUTH OF WASHBURN
ROAD.
ELEVATION = 795.579 METERS (2010.16 FEET) NAVD 88

BASIS OF BEARINGS

S. 89°14'18" E, BEING THE NORTH LINE OF THE SE $\frac{1}{4}$ NW $\frac{1}{4}$ OF SECTION 31 TOWNSHIP 19 SOUTH, RANGE 60 EAST; M.D.M. AS SHOWN ON FILE 97, PAGE 85 OF PARCEL MAPS ON FILE AT THE RECORDER'S OFFICE OF CLARK COUNTY, NV OFFICIAL RECORDS.

CONSTRUCTION NOTES

- (1) INSTALL 2" O' ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE PER SOLS REPORT
- (2) INSTALL 4.5" ASPHALT PAVEMENT OVER 5" TYPE II AGGREGATE BASE, PER SOLS REPORT HAVE #FF-#####
- (3) SAWCUT AND REMOVE 1' EXISTING ASPHALT FOR CLEAN EDGE MATCH TO EXISTING PAVEMENT
- (4) INSTALL 30" ROLL CURB PER CAUSAD NO. 217.2.51
- (5) INSTALL 24" L-TYPE CURB PER CAUSAD NO. 216
- (6) INSTALL A-TYPE ISLAND CURB PER CAUSAD NO. 219
- (7) CONSTRUCT 6" WIDE CROSS GUTTER PER CAUSAD NO. 228
- (8) CONSTRUCT TRANSITION FROM ROLL-CURB TO L-CURB PER DETAIL ON SHEET D-5
- (9) INSTALL 5' WIDE SIDEWALK PER CAUSAD NO. 234
- (10) INSTALL 6' WIDE SIDEWALK PER CAUSAD NO. 234
- (11) CONSTRUCT ROLL CURB TRANSITION TO SIDEWALK UNDERDRAP PER DETAIL ON SHEET D-5
- (12) CONSTRUCT 10.0' WIDE TRAIL PER DETAIL ON SHEET D-5
- (13) INSTALL 6" WROUGHT IRON FENCE PER CAUSAD NO. 425.51
- (14) CONSTRUCT CASE J. A.D.A. SIDEWALK RAMP PER CAUSAD NO. 235
- (15) INSTALL 5' OF RIP-RAP 50# D=6" THICK-12" AT END OF SIDEWALK AND FULL WIDTH OF ROAD IMPROVEMENTS AS SHOWN ON PLANS
- (16) CONSTRUCT DEPRESSION CURB TRANSITION PER DETAIL ON SHEET D-5, WITH 3' DEPRESSION CURB SECTION
- (17) CONSTRUCT 24" W/4" CURB FOR EMERGENCY, UTILITY AND MAINTENANCE ACCESS PURPOSES
- (18) CONSTRUCT SIDEWALK UNDERDRAIN PER CAUSAD NO. 236
- (19) INSTALL 5" TYPE "CM2" STORM DRAIN DROP INLET PER DETAIL CAUSAD 212.1
- (20) INSTALL STORM DRAIN CONCRETE COLLAR PER DETAIL ON SHEET D-5
- (21) INSTALL RIP-RAP EROSION PROTECTION D50=12" DEPTH=0.5'
- (22) INSTALL RIP-RAP EROSION PROTECTION D50=6" DEPTH=1.0'
- (23) INSTALL RIP-RAP EROSION PROTECTION D50=6" DEPTH=1.5'
- (24) INSTALL RIP-RAP EROSION PROTECTION D50=6" DEPTH=2.0'
- (25) CONSTRUCT 3' DEEP CUT-OFF WALL AT EDGE OF EASEMENT PER DETAIL ON SHEET D-5

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 1
(AREA OUTSIDE THE 500 YEAR FLOODPLAIN AND 0.2% CHANCE ANNUAL
FLOODING), PER THE FEMA FIRM PANELS MAP NUMBER 32003C1750
DATED SEPTEMBER 27, 2002

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN
AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED,
DESTROYED, OR OBTSCURED DURING CONSTRUCTION.

DISCLAIMER NOTE

- 1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.
- 2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR CURB OR UP OF EXISTING PAVEMENT. FOR EXCAVATION AND CONSTRUCTION OF PROPOSED CURB LINE, IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
- 3) CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT ALL PLACES WHERE EXISTING UTILITIES ARE SHOWN. IN THE EVENT OF PRIOR DAMAGE TO EXISTING UTILITIES PRIOR TO CONSTRUCTION, CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLACING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION. COMMENCEMENT

SVZ RESTRICTION NOTE

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL, OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

GRADING NOTES

1. FINAL GRADES ADJACENT TO STRUCTURES SHALL BE IN CONFORMANCE WITH 2018 IBC.
2. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
3. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
4. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
5. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
6. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
7. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY BUILDING DEPARTMENT.
8. NOTE: ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENT AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE ADJACENT PROPERTY OWNER.

DRAINAGE CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED FLOOD STUDY DS5211 ON FILE AT CITY OF LAS VEGAS FOR THE SUBJECT PROJECT. ALSO AND PW20-11651 ON FILE AT CLARK COUNTY.

TOOD, J. STEADHAM RE A

ELEVATION NOTE

ADD 2700 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E., 01.00 REPRESENTS 2701.00)

Westwood

Phone (702) 284-5300
Fax (702) 284-5399
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
westwoodps.com

CITY OF LAS VEGAS, NV	NO.	DESCRIPTION

M. R. HORTON

ANN AND HUALAPAI - PHASE 1

GRADING SHEET IV

36
10

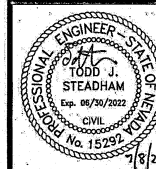
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DA

[illegible]

DR

DE:

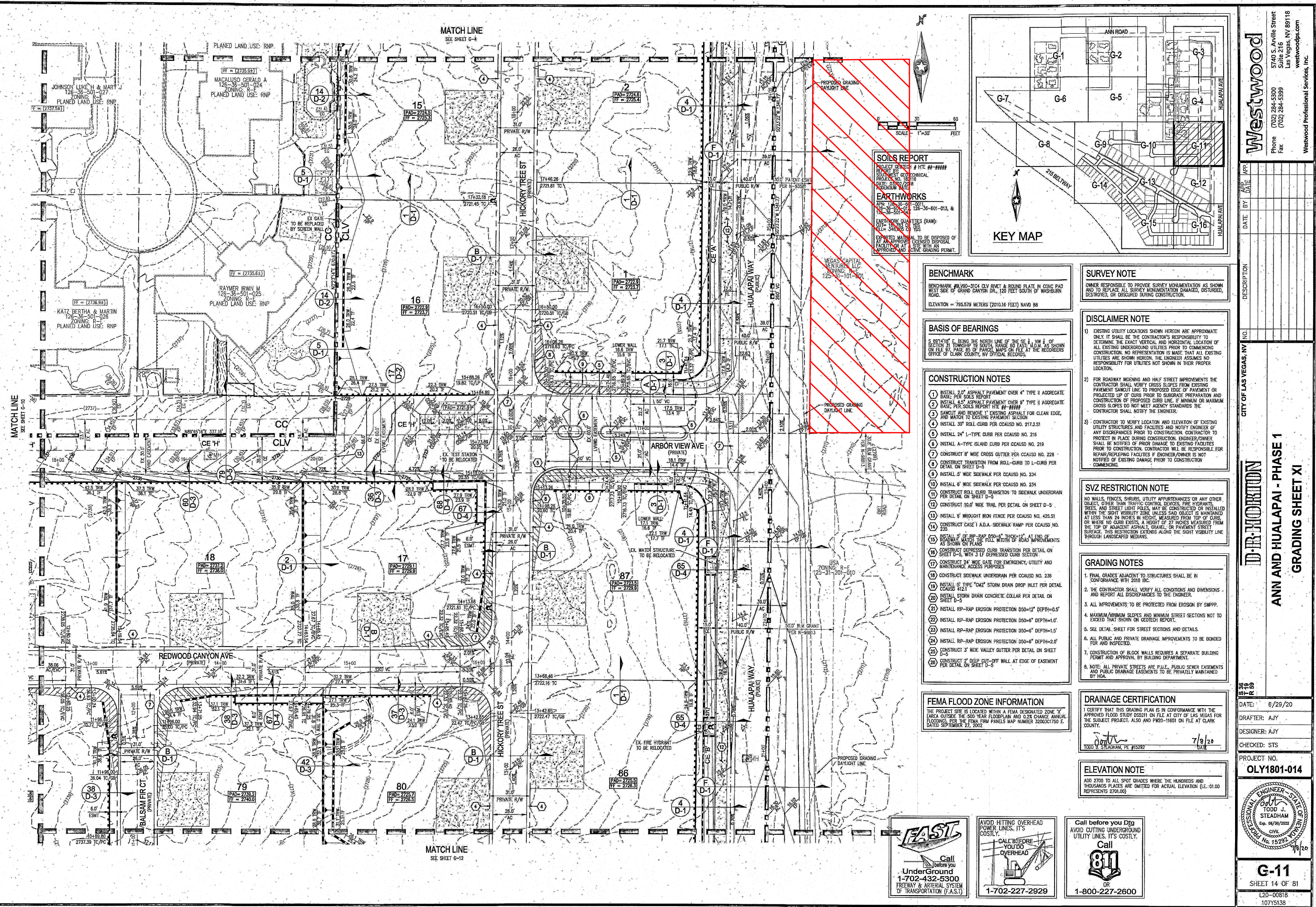


G-

GR

SHEET 7

L20-000



SOILS REPORT
PROJECT: G-11
DATE: 08/20/2022
EARTHWORKS
EARTHWORK QUANTITIES (RAW):
EXISTING: 12,500.00 CY
IMPORT: 12,500.00 CY
EXPORT: 0.00 CY
EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LANDFILL WITH AN APPROVED AND ACTIVE GRADING PERMIT.

BENCHMARK
BENCHMARK: 10104-CLV RIVET & ROUND PLATE IN CONC PAD WEST SIDE OF GRAND CANYON DR., 120 FEET SOUTH OF WASHBURN ROAD
ELEVATION = 795.579 METERS (2010.16 FEET) NAVD 88

BASIS OF BEARINGS
S 88°14'16" E BEING THE NORTH LINE OF THE SE 1/4, NW 1/4 OF SECTION 31 TOWNSHIP 19 SOUTH, RANGE 60 EAST, ALDM, AS SHOWN ON FILE # 125-36-601-013, & RECORDS OF CLARK COUNTY, NV OFFICIAL RECORDS.

- CONSTRUCTION NOTES**
1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE, PER SOILS REPORT
 2. INSTALL 4.5" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE, PER SOILS REPORT
 3. SAWCUT AND REMOVE 1" EXISTING ASPHALT FOR CLEAN EDGE, AND MATCH TO EXISTING PAVEMENT SECTION
 4. INSTALL 30" ROLL CURB PER CAUSAL NO. 217.2.S1
 5. INSTALL 24" L-TYPE CURB PER CAUSAL NO. 216
 6. INSTALL A-TYPE ISLAND CURB PER CAUSAL NO. 219
 7. CONSTRUCT 8" WIDE CROSS GUTTER PER CAUSAL NO. 228
 8. CONSTRUCT TRANSITION FROM ROLL-CURB TO L-CURB PER CAUSAL NO. 216
 9. INSTALL 5" WIDE SIDEWALK PER CAUSAL NO. 234
 10. INSTALL 6" WIDE SIDEWALK PER CAUSAL NO. 234
 11. CONSTRUCT ROLL CURB TRANSITION TO SIDEWALK UNDERDRAIN PER DETAIL ON SHEET D-5
 12. CONSTRUCT 10.0' WIDE TRAIL PER DETAIL ON SHEET D-5
 13. INSTALL 6" WROUGHT IRON FENCE PER CAUSAL NO. 425.S1
 14. CONSTRUCT CASE 1 A.B.A. SIDEWALK RAMP PER CAUSAL NO. 235
 15. INSTALL 5" OF RP-RAP D50-6" THICK-12" AT END OF SIDEWALK RAMP FULL WIDTH OF ROAD IMPROVEMENTS AS SHOWN ON PLANS
 16. CONSTRUCT DEPRESSIONED CURB TRANSITION PER DETAIL ON SHEET D-5, WITH 1" DEPRESSIONED CURB SECTION
 17. CONSTRUCT 24" WIDE GATE FOR EMERGENCY, UTILITY AND MAINTENANCE ACCESS PURPOSES
 18. CONSTRUCT SIDEWALK UNDERDRAIN PER CAUSAL NO. 235
 19. INSTALL 5" TYPE "CM2" STORM DRAIN DROP INLET PER DETAIL CAUSAL 412.1
 20. INSTALL STORM DRAIN CONCRETE COLLAR PER DETAIL ON SHEET D-5
 21. INSTALL RP-RAP EROSION PROTECTION D50-6" DEPTH=0.5'
 22. INSTALL RP-RAP EROSION PROTECTION D50-6" DEPTH=1.0'
 23. INSTALL RP-RAP EROSION PROTECTION D50-6" DEPTH=1.5'
 24. INSTALL RP-RAP EROSION PROTECTION D50-6" DEPTH=2.0'
 25. CONSTRUCT 3" WIDE VALLEY GUTTER PER DETAIL ON SHEET D-5
 26. CONSTRUCT 2' DEEP CUT-OFF WALL AT EDGE OF EASEMENT PER DETAIL ON SHEET D-5

FEMA FLOOD ZONE INFORMATION
THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (AREA OUTSIDE THE 500-YEAR FLOODPLAIN AND 0.2% CHANCE ANNUAL FLOODING). PER THE FEMA FIRM PANELS MAP NUMBER 32003C1750 E. DATED SEPTEMBER 27, 2002.

DRAINAGE CERTIFICATION
I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED FLOOD STUDY D52211 ON FILE AT CITY OF LAS VEGAS FOR THE SUBJECT PROJECT. ALSO AND PWD-11651 ON FILE AT CLARK COUNTY.
TODD J. STEADHAM, PE #15292
7/8/20
DATE

ELEVATION NOTE
ADD 2700 TO ALL SPOT GRADES WHERE THE HUNDREDS AND THOUSANDS PLACES ARE OMITTED FOR ACTUAL ELEVATION (I.E. 01.00 REPRESENTS 2701.00)

SURVEY NOTE
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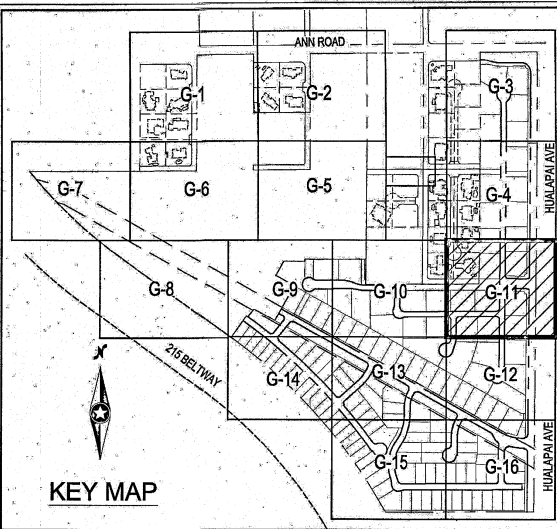
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2. FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
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SVZ RESTRICTION NOTE
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GRADING NOTES

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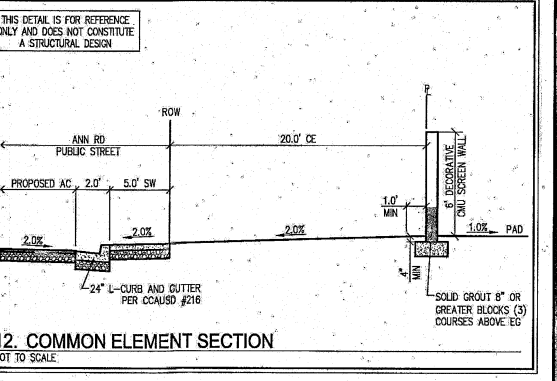
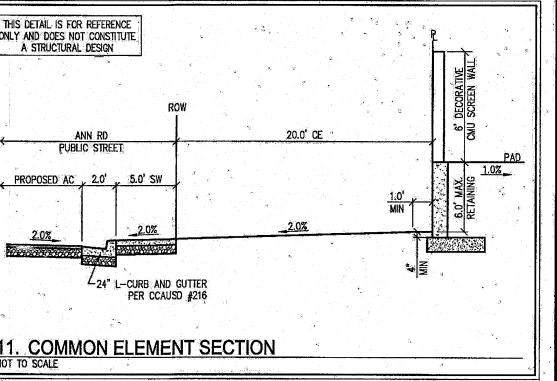
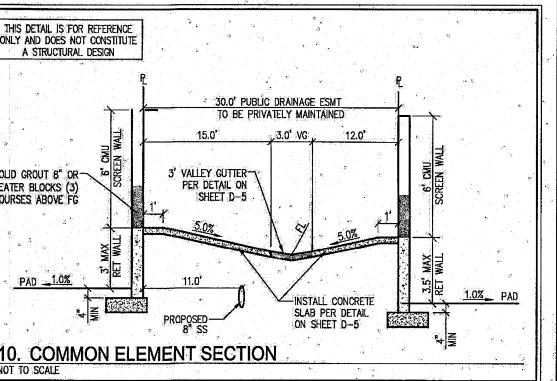
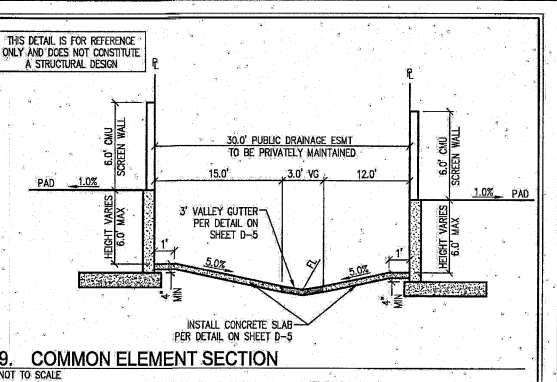
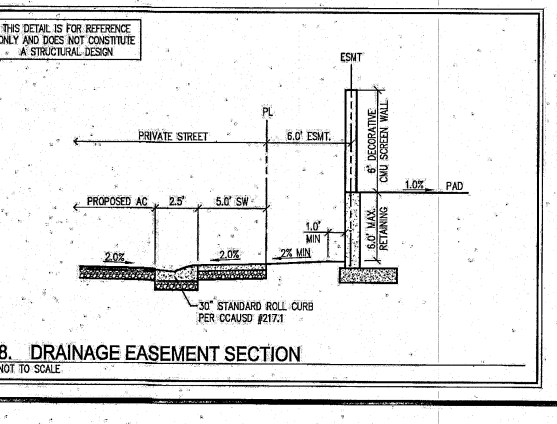
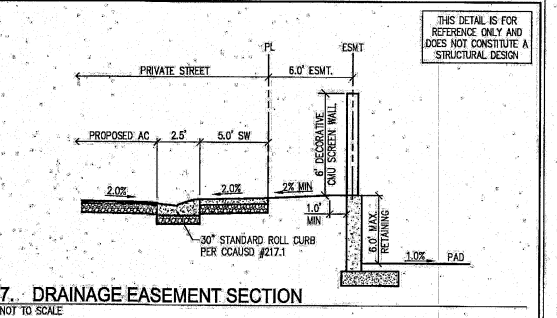
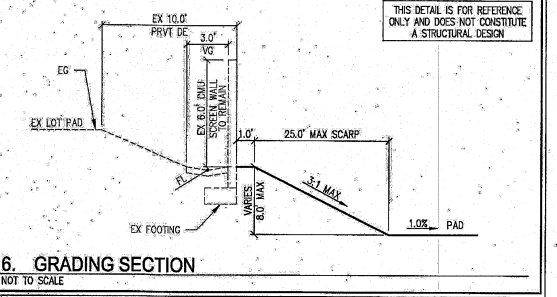
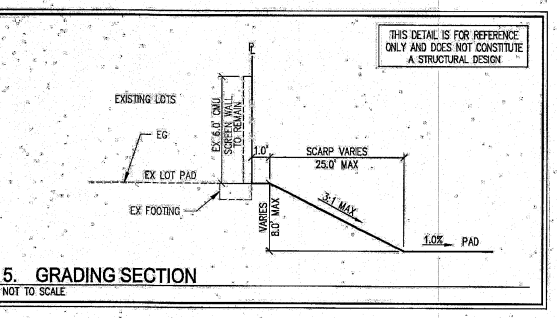
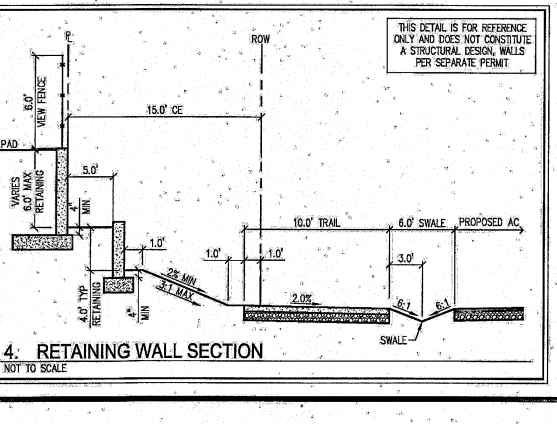
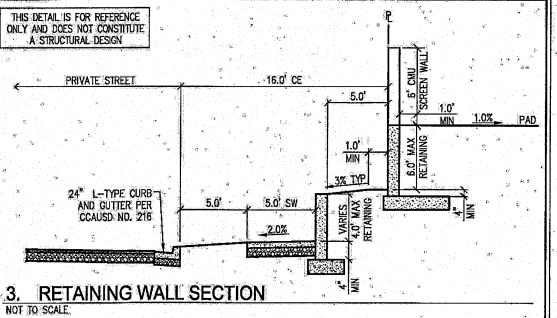
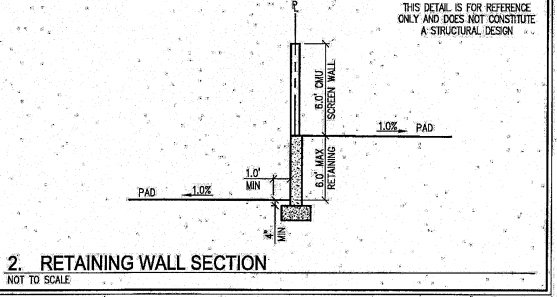
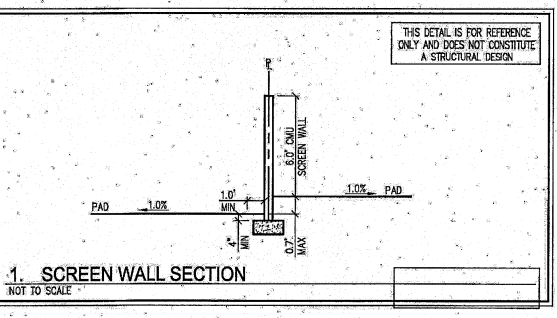
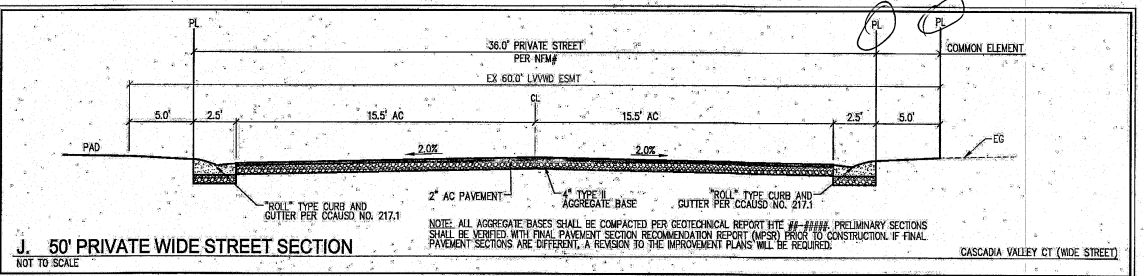
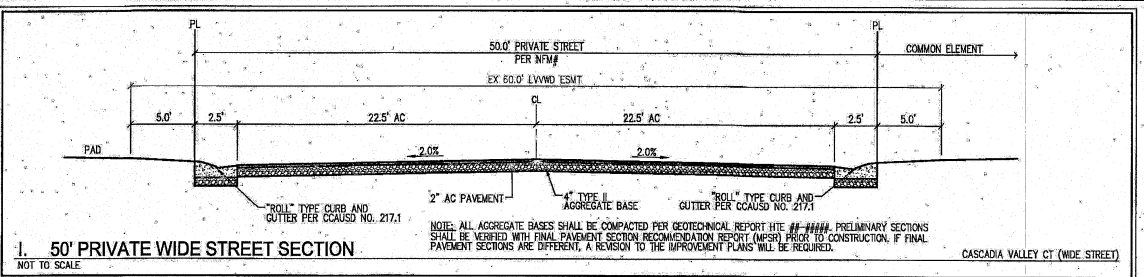
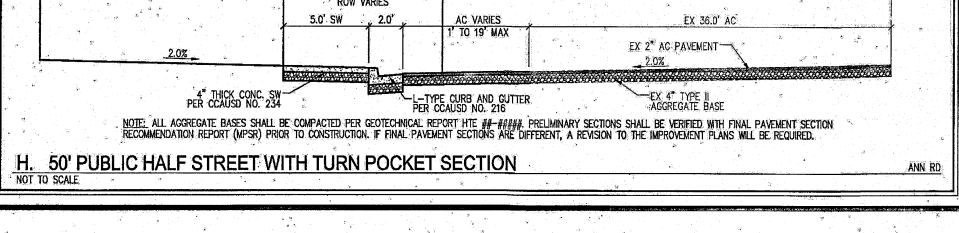
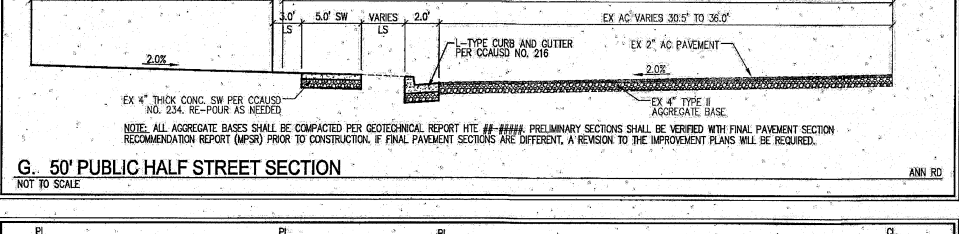
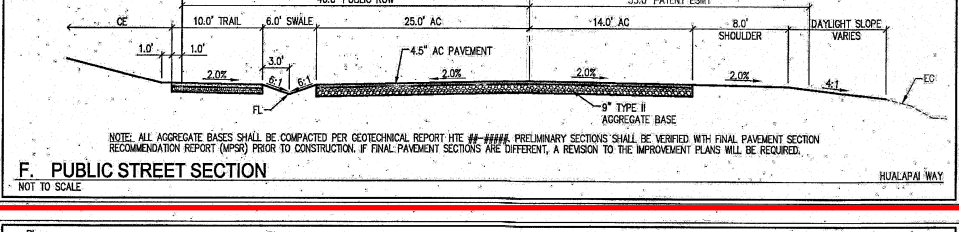
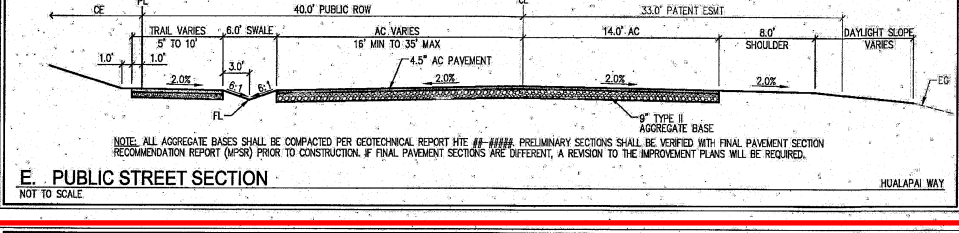
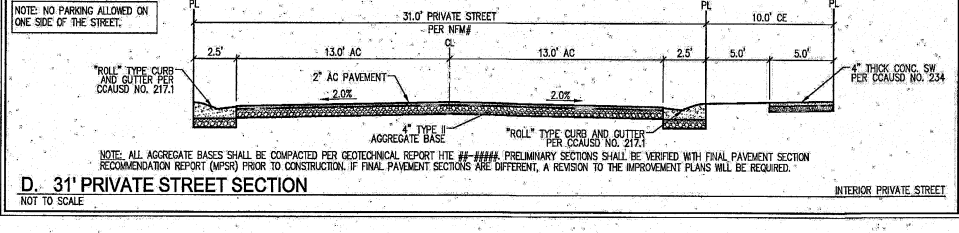
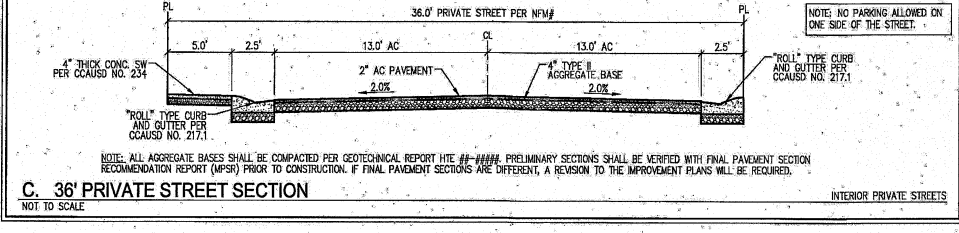
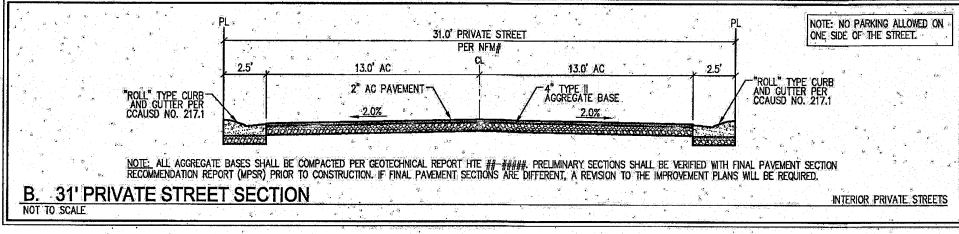
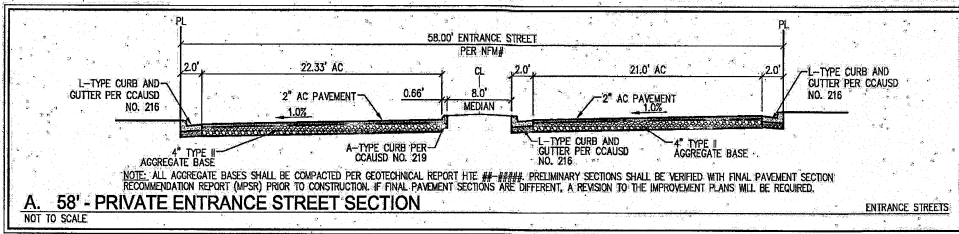
Westwood
5740 S. Anville Street
Suite 216
Las Vegas, NV 89118
Phone (702) 284-5300
Fax (702) 284-5399
westwoodps.com

CITY OF LAS VEGAS, NV
ANN AND HUALAPAI - PHASE 1
GRADING SHEET XI

DATE: 6/29/20
DRAFTER: AJY
DESIGNER: AJY
CHECKED: STS
PROJECT NO.
OLY1801-014

PROFESSIONAL ENGINEER - STATE OF NV
TODD J. STEADHAM
Exp. 06/30/2022
CIVIL
No. 15292

G-11
SHEET 14 OF 81
L20-00618
1075138



FEMA ZONE INFO

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (UNSHARED) AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. PER FEMA FIRM PANELS 22000C2185P DATED NOVEMBER 16, 2011, REVISED TO REFLECT LOWR EFFECTIVE SEPTEMBER 22, 2016.

FAST

Call before you Dig

UnderGround

1-702-432-5300

FREELWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

AVOID HITTING OVERHEAD POWER LINES. 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

Westwood

5740 S. Arville Street
Suite 216
Las Vegas, NV 89116

Phone (702) 284-5300
Fax (702) 284-5399

westwoodps.com
Westwood Professional Services, Inc.

ANN AND HUALAPAI - PHASE 1

DETAIL SHEET I

DATE: 6/29/20

DRAFTER: AJY

DESIGNER: AJY

CHECKED: STS

PROJECT NO. OLY1801-014

ENGINEER - STATE OF NV

1000 J. STEADHAM

Exp. 06/30/2022

CIVIL

Exp. No. 15292

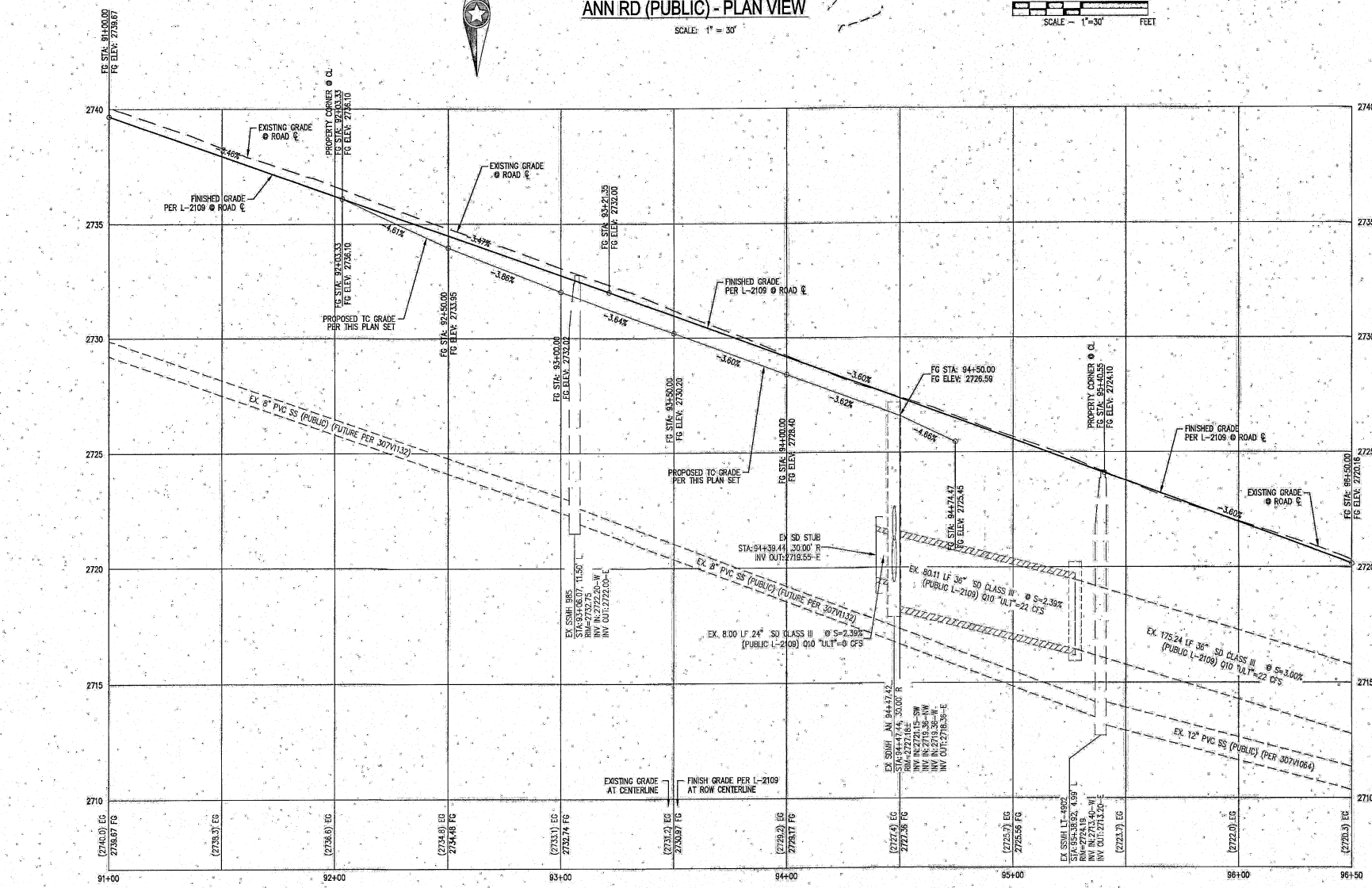
6/29/20

D-1

SHEET 20 OF 81

120-00818

1075138



SCALE: 1" = 30'

HORIZ: 1" = 30'
VERT: 1" = 3'



BENCHMARK #9LV90-31C4 CLV RIVET & ROUND PLATE IN CONC PA
WEST SIDE OF GRAND CANYON DR., 120 FEET SOUTH OF WASHBUR
ROAD.

ELEVATION = 795.579 METERS (2610.16 FEET) NAVD 88

S. 89°14'18" E, BEING THE NORTH LINE OF THE SE $\frac{1}{4}$, NW $\frac{1}{4}$ OF SECTION 31 TOWNSHIP 19 SOUTH, RANGE 60 EAST; M.D.M. AS SHOWN ON FILE 97, PAGE 85 OF PARCEL MAPS ON FILE AT THE RECORDER'S OFFICE OF CLARK COUNTY, NV OFFICIAL RECORDS.

- 1 INSTALL 2.0" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE PER SOILS REPORT
- 2 INSTALL 4.5" ASPHALT PAVEMENT OVER 5" TYPE II AGGREGATE BASE PER SOILS REPORT H# ~~00000~~
- 3 SAWCUT AND REMOVE 1' EXISTING ASPHALT FOR CLEAN EDGE, SET ADJACENT TO EXISTING PAVEMENT SECTION
- 4 INSTALL .30" ROLL CURB CURB PER CAUS. NO. 217.2.51
- 5 INSTALL 24" L-TYPE CURB PER CAUS. NO. 216
- 6 INSTALL A-TYPE ISLAND CURB PER CAUS. NO. 219
- 7 CONSTRUCT 8" WIDE CROSS BUTTER PER CAUS. NO. 228
- 8 CONSTRUCT TRANSITION FROM ROLL-CURB TO L-CURB PER DETAIL ON SHEET D-5
- 9 INSTALL 5" WIDE SIDEWALK PER CAUS. NO. 234
- 10 INSTALL 6" WIDE SIDEWALK PER CAUS. NO. 234
- 11 CONSTRUCT ROLL CURB TRANSITION TO SIDEWALK UNDERDRAIN SET ADJACENT TO EXISTING SIDEWALK SECTION
- 12 CONSTRUCT 10.0' WIDE TRAIL PER DETAIL ON SHEET D-5
- 13 INSTALL 6" WROUGHT IRON FENCE PER CAUS. NO. 425.51
- 14 CONSTRUCT CASE 1 A.B.S. SIDEWALK RAMP PER CAUS. NO. 235
- 15 INSTALL 5" OF RIP-RAP 150-MPH THICKNESS AT END OF SIDEWALK TO FULL WIDTH OF ROAD IMPROVEMENTS AS SHOWN ON PLANS
- 16 CONSTRUCT DEPRESSIONED CURB TRANSITION PER DETAIL ON SHEET D-5, WITH 1' DEPRESSIONED CURB SECTION
- 17 CONSTRUCT 24" WIDE GATE FOR EMERGENCY, UTILITY AND MAINTENANCE ACCESS PURPOSES
- 18 CONSTRUCT SIDEWALK UNDERDRAIN PER CAUS. NO. 236
- 19 INSTALL 5" TYPE "OMZ" STORM DRAIN DRAIN INLET PER DETAIL CAUS. 412.1
- 20 INSTALL STORM DRAIN CONCRETE COLLAR PER DETAIL ON SHEET D-5
- 21 INSTALL RIP-RAP EROSION PROTECTION D50-12" DEPTH=0.5'
- 22 INSTALL RIP-RAP EROSION PROTECTION D50-6" DEPTH=1.0'
- 23 INSTALL RIP-RAP EROSION PROTECTION D50-6" DEPTH=1.5'
- 24 INSTALL RIP-RAP EROSION PROTECTION D50-6" DEPTH=2.0'
- 25 CONSTRUCT 3' WIDE WALKWAY GUTTER PER DETAIL ON SHEET D-5
- 26 CONSTRUCT 2" DEEP DUT-OFF WALL AT EDGE OF EASEMENT SET ADJACENT TO SHEET D-5
- 27 INSTALL STEEL SLEEVE FOR WATER MAIN PER IWDACS P.LT 22

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND/OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS, ANY WORKDONE ON THIS PROJECT PRIOR TO THE COMPLETION AND/OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE, OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

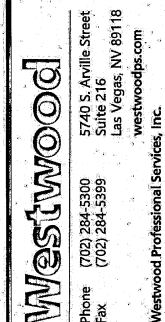
OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN
AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED,
DESTROYED, OR OBSCURED DURING CONSTRUCTION.

- 1) EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION SHALL BE MADE AS TO THE UTILITY LOCATIONS SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.
- 2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROPOSED CURB LINE OF CURB AND GUTTER. SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE, IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
- 3) CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO BE RESPONSIBLE FOR DAMAGE TO EXISTING UTILITIES. CONTRACTOR SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REMEDY/REPAIRING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION.

NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL, OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

1	INSTALL 48" DIAMETER SANITARY SEWER MANHOLE WITH WATERIGHT JOINTS & SINGLE 24" LID PER DCSWCS 10-1, 50-19 AND 50-19
2	REMOVE EXISTING SSMH INVERT ELEVATION & CONNECT PER DCSWCS STANDARDS
3	INSTALL SDR-35 PVC SANITARY SEWER PIPE (PUBLIC)
4	INSTALL C900 PVC SANITARY SEWER PIPE (PUBLIC)
5	INSTALL SEWER STUB AND CAP W/ 1.0 CURB FOOT OF CONCRETE FOR FUTURE CONNECTION
6	REMOVED OR ADD GRADE RINGS AS NEEDED TO BRING EXISTING MANHOLE COVER TO PROPOSED GRIDS SHOWN ON PLANS
7	INSTALL 72" DIAMETER SANITARY SEWER MANHOLE WITH DUAL COVERS PER DCSWCS 10-2
8	INSTALL CORROSION PROTECTION PER DCSWCS 2.13.19H AND 3.16.8
9	INSTALL C900 SS LATERAL PROTECTION PER 50-19 AND

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES



NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
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CITY OF LAS VEGAS, NV

D. R. HORTON

ANN AND HUALAPAI - PHASE 1
PLAN AND PROFILE - ANN ROAD

S 36
T 19
R 59

DATE: 6/29/20

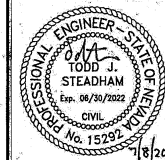
DRAFTER: AJY

DESIGNER: A.I.Y.

CHECKED: STS

PROJECT NO.

OLY1801-014

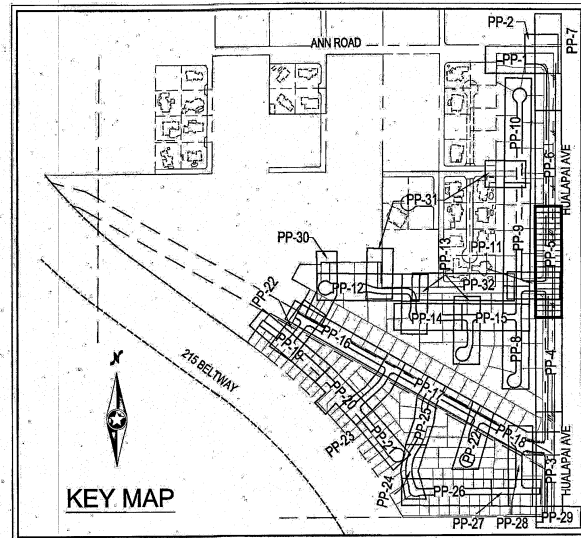
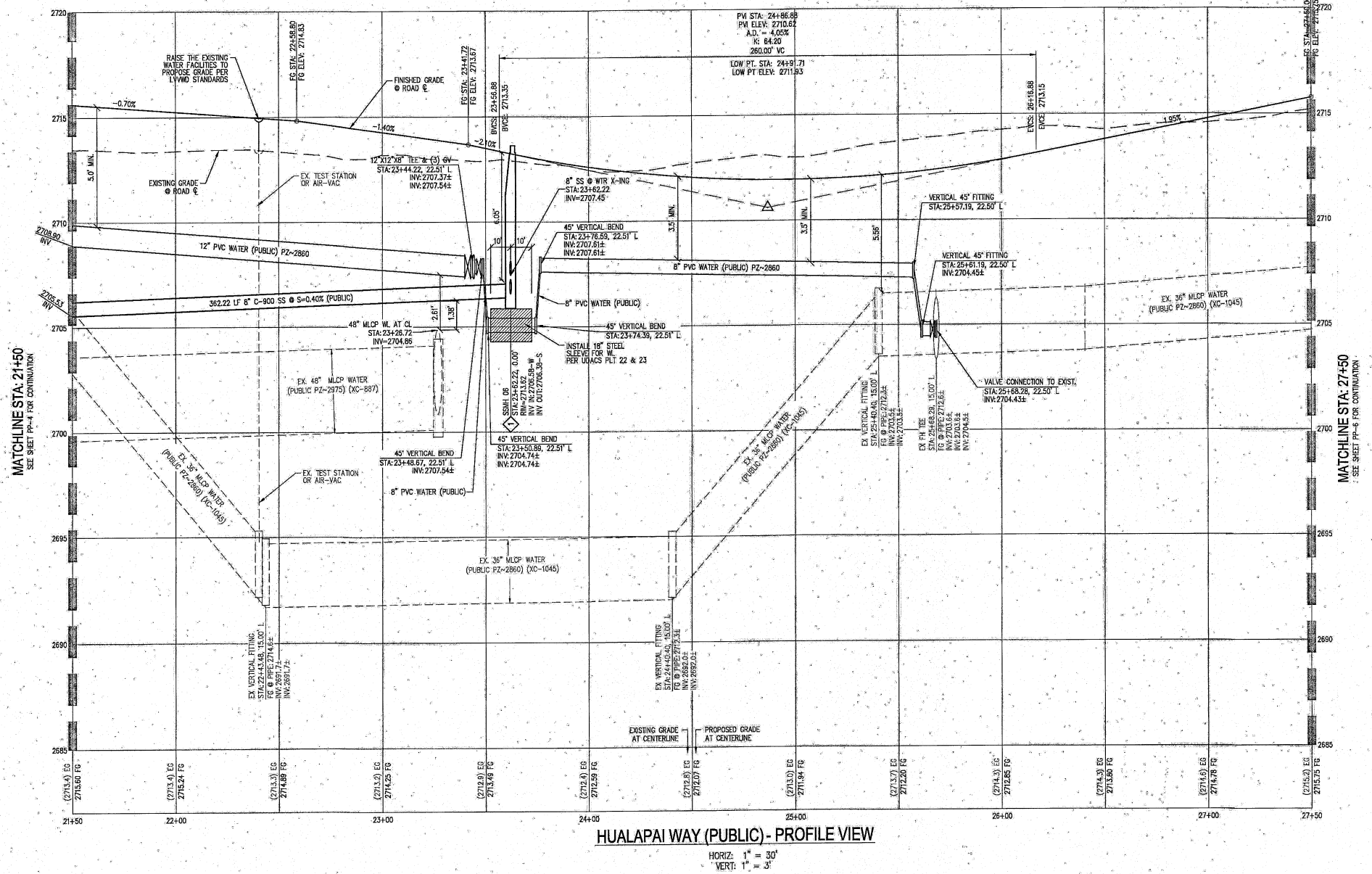
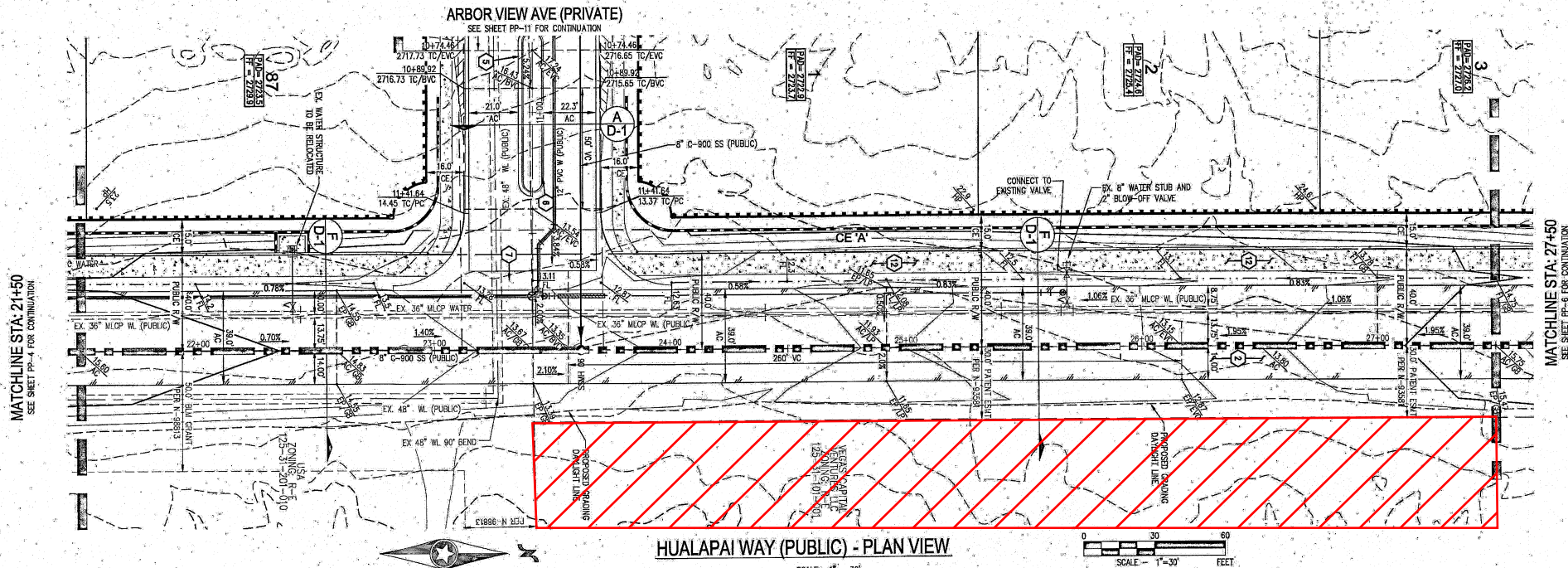


PP-1

SHEET 25 OF 25

L20-00818

Vol 1801 D14 Hb of the "Admiral" d 1801-014 in one June 7/8/1900 3-11 PM Adam Young



BENCHMARK

BENCHMARK #8190-3104 OLV RIVET & ROUND PLATE IN CONC PAD WEST SIDE OF GRAND CANYON DR. 120 FEET SOUTH OF WASHINGTON ROAD.
ELEVATION = 755.579 METERS (2010.16 FEET) NAVD 88

BASIS OF BEARINGS

S. 88°14'18\"/>

CONSTRUCTION NOTES

1. INSTALL 2\"/>
- 2. INSTALL 4\"/>
- 3. SAWCUT AND REMOVE 1\"/>
- 4. INSTALL 30\"/>
- 5. INSTALL 24\"/>
- 6. INSTALL A-TYPE ISLAND CURB PER CCAUSD NO. 219
- 7. CONSTRUCT 8\"/>
- 8. CONSTRUCT TRANSITION FROM ROLL-CURB TO L-CURB PER DETAIL ON SHEET D-5
- 9. INSTALL 6\"/>
- 10. INSTALL 6\"/>
- 11. CONSTRUCT ROLL CURB TRANSITION TO SIDEWALK UNDERDRAIN PER DETAIL ON SHEET D-5
- 12. CONSTRUCT 10\"/>
- 13. INSTALL 6\"/>
- 14. CONSTRUCT CASE 1 A.D.A. SIDEWALK RAMP PER CCAUSD NO. 235
- 15. INSTALL 5\"/>
- 16. CONSTRUCT DEPRESSIONED CURB TRANSITION PER DETAIL ON SHEET D-5, WITH A 1\"/>
- 17. CONSTRUCT 24\"/>
- 18. CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD NO. 235
- 19. INSTALL 5\"/>
- 20. INSTALL STORM DRAIN CONCRETE COLLAR PER DETAIL ON SHEET D-5
- 21. INSTALL RIP-RAP EROSION PROTECTION D50-12\"/>
- 22. INSTALL RIP-RAP EROSION PROTECTION D50-6\"/>
- 23. INSTALL RIP-RAP EROSION PROTECTION D50-6\"/>
- 24. INSTALL RIP-RAP EROSION PROTECTION D50-6\"/>
- 25. CONSTRUCT 3\"/>
- 26. CONSTRUCT 2\"/>
- 27. INSTALL STEEL SLEEVE FOR WATER MAIN PER UDACS PLT 22 & 23

SEWER CONNECTION NOTE

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND/OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND/OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEMS SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE, OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSOLETE DURING CONSTRUCTION.

DISCLAIMER NOTE

1. EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.
2. FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED UP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
3. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLACING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.

SVZ RESTRICTION NOTE

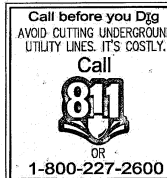
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SVZ UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL, OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SIGHT VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

SEWER CONSTRUCTION NOTES

1. INSTALL 48\"/>
- 2. FIELD VERIFY EXISTING SSMH INVERT ELEVATION & CONNECT PER DCSWCS STANDARDS
- 3. INSTALL SDR-35 PVC SANITARY SEWER PIPE (PUBLIC)
- 4. INSTALL C900 PVC SANITARY SEWER PIPE (PUBLIC)
- 5. INSTALL SEWER STUB AND CAP W/ 1.0 CUBIC FOOT OF CONCRETE FOR FUTURE CONNECTION
- 6. REMOVED OR ADD GRADE RINGS AS NEEDED TO BRING EXISTING MANHOLE COVER TO PROPOSED GRADES SHOWN ON PLANS
- 7. INSTALL 72\"/>
- 8. INSTALL CORROSION PROTECTION PER DCSWCS 2.13.10H AND 3.16.8
- 9. INSTALL C900 SS LATERAL PROTECTION PER SD-19 AND SD-21

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT No. 137430, FIRST APPROVED DATE



Westwood
5740 S. Anville Street
Suite 216
Las Vegas, NV 89118
Phone (702) 284-5300
Fax (702) 284-5399
westwoodps.com
Westwood Professional Services, Inc.

DATE: 6/29/20
BY: AJY
APP: SJS
DATE: 6/29/20
BY: SJS
APP: SJS

DESCRIPTION: ANN AND HUALAPAI - PHASE 1
NO. 1
CITY OF LAS VEGAS, NV

ANN AND HUALAPAI - PHASE 1
PLAN AND PROFILE - HUALAPAI AVE STA 21+50 TO 27+50

DATE: 6/29/20
DRAFTER: AJY
DESIGNER: AJY
CHECKED: SJS
PROJECT NO. OLY1801-014

DATE: 6/29/20
DRAFTER: AJY
DESIGNER: AJY
CHECKED: SJS
PROJECT NO. OLY1801-014

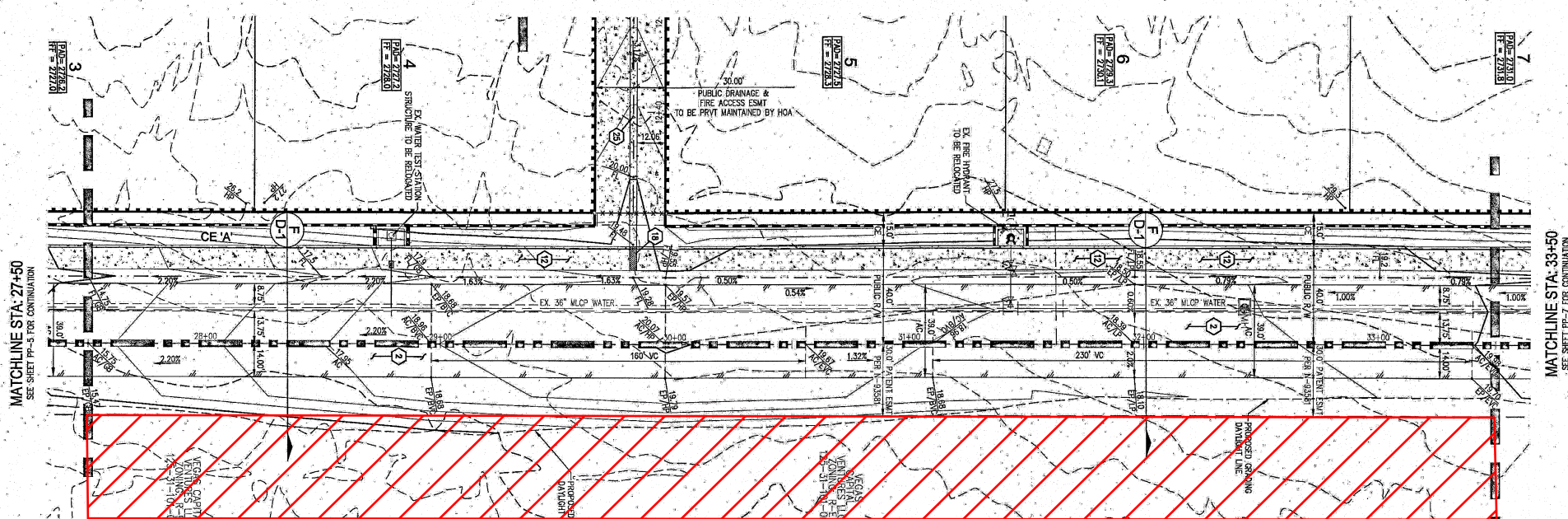
DATE: 6/29/20
DRAFTER: AJY
DESIGNER: AJY
CHECKED: SJS
PROJECT NO. OLY1801-014

DATE: 6/29/20
DRAFTER: AJY
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DATE: 6/29/20
DRAFTER: AJY
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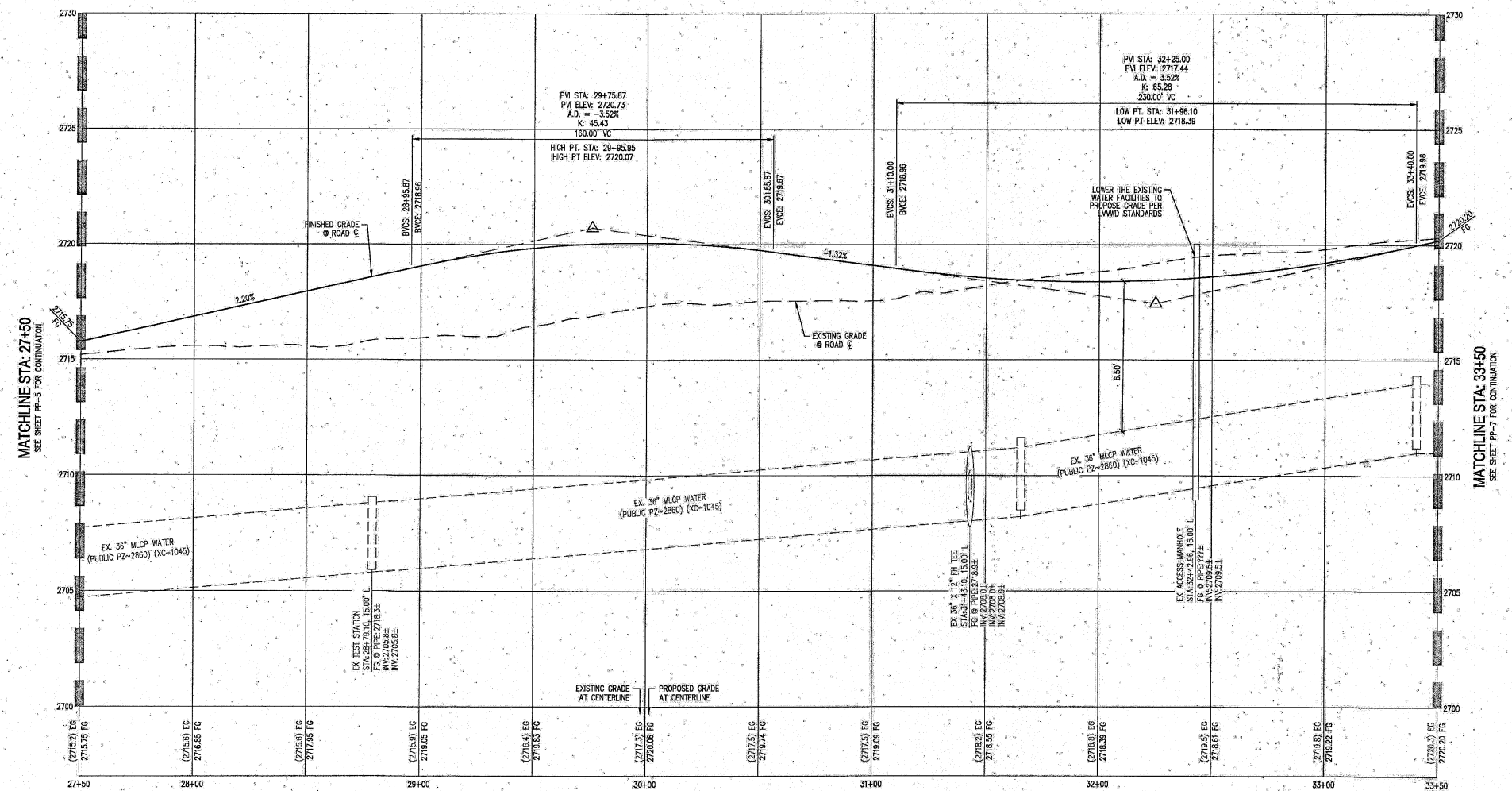
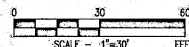
DATE: 6/29/20
DRAFTER: AJY
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PROJECT NO. OLY1801-014

DATE: 6/29/20
DRAFTER: AJY
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PROJECT NO. OLY1801-014



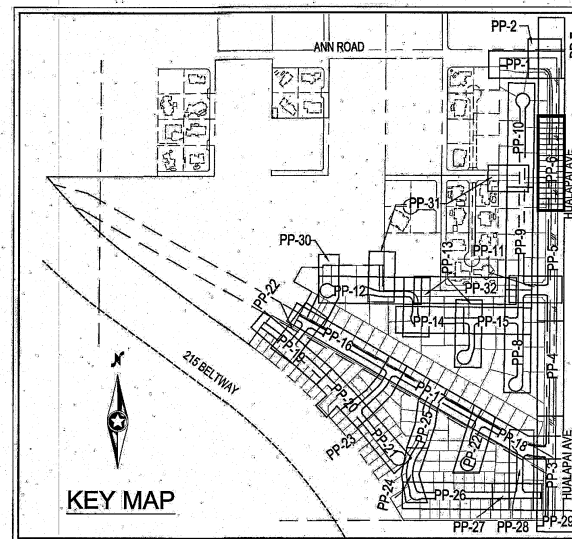
HUALAPAI WAY (PUBLIC) - PLAN VIEW

SCALE: 1" = 30'



HUALAPAI WAY (PUBLIC) - PROFILE VIEW

HORIZ: 1" = 30'
VERT: 1" = 3'



KEY MAP

BENCHMARK

BENCHMARK 89190-3104 CLV RIVET & ROUND PLATE IN CONC PAD
WEST SIDE OF GRAND CANYON DR, 120 FEET SOUTH OF WASHBURN
ROAD.
ELEVATION = 795.578 METERS (2610.16 FEET) NAVD 88

BASIS OF BEARINGS

S 89°14'18" E, BEING THE NORTH LINE OF THE SE 1/4, NW 1/4 OF
SECTION 31 TOWNSHIP 19 SOUTH, RANGE 60 EAST, ALDM, AS SHOWN
ON THE 67, PAGE 85 OF PARCEL MAPS ON FILE AT THE RECORDERS
OFFICE OF CLARK COUNTY, NV OFFICIAL RECORDS.

CONSTRUCTION NOTES

1. INSTALL 2" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE, PER SOILS REPORT
2. INSTALL 4" ASPHALT PAVEMENT OVER 8" TYPE II AGGREGATE BASE, PER SOILS REPORT
3. SAWCUT AND REMOVE 1' EXISTING ASPHALT FOR CLEAN EDGE, AND MATCH TO EXISTING PAVEMENT SECTION
4. INSTALL 30" ROLL CURB PER CCAUSD NO. 217.2.51
5. INSTALL 24" L-TYPE CURB PER CCAUSD NO. 216
6. INSTALL A-TYPE ISLAND CURB PER CCAUSD NO. 219
7. CONSTRUCT 8" WIDE CROSS GUTTER PER CCAUSD NO. 228
8. CONSTRUCT TRANSITION FROM ROLL-CURB TO L-CURB PER DETAIL ON SHEET D-5
9. INSTALL 5" WIDE SIDEWALK PER CCAUSD NO. 234
10. INSTALL 6" WIDE SIDEWALK PER CCAUSD NO. 234
11. CONSTRUCT ROLL CURB TRANSITION TO SIDEWALK UNDERDRAIN PER DETAIL ON SHEET D-5
12. CONSTRUCT 10.0' WIDE TRAIL PER DETAIL ON SHEET D-5
13. INSTALL 6" WROUGHT IRON FENCE PER CCAUSD NO. 425.51
14. CONSTRUCT CASE 1 A.D.A. SIDEWALK RAMP PER CCAUSD NO. 235
15. INSTALL 5' OF RIP-RAP D50-6" THICK-12" AT END OF ROADWAY MATCH THE FULL WIDTH OF ROAD IMPROVEMENTS AS SHOWN ON PLANS
16. CONSTRUCT DEPRESSIONED CURB TRANSITION PER DETAIL ON SHEET D-5, WITH 3" LIP DEPRESSIONED CURB SECTION
17. CONSTRUCT 24" WIDE GATE FOR EMERGENCY, UTILITY AND MAINTENANCE ACCESS PURPOSES
18. CONSTRUCT SIDEWALK UNDERDRAIN PER CCAUSD NO. 238
19. INSTALL 5" TYPE "CMZ" STORM DRAIN DROP INLET PER DETAIL CCAUSD 412.1
20. INSTALL STORM DRAIN CONCRETE COLLAR PER DETAIL ON SHEET D-5
21. INSTALL RIP-RAP EROSION PROTECTION D50-6" DEPTH=0.5'
22. INSTALL RIP-RAP EROSION PROTECTION D50-6" DEPTH=1.0'
23. INSTALL RIP-RAP EROSION PROTECTION D50-6" DEPTH=1.5'
24. INSTALL RIP-RAP EROSION PROTECTION D50-6" DEPTH=2.0'
25. CONSTRUCT 3' WIDE VALLEY GUTTER PER DETAIL ON SHEET D-5
26. CONSTRUCT 2' DEEP CHUTE-OFF WALL AT EDGE OF EASEMENT PER DETAIL ON SHEET D-5
27. INSTALL STEEL SLEEVE FOR WATER MAIN PER UDACS PLT 22 & 23

SEWER CONNECTION NOTE

ONE OR MORE SEGMENTS OF THE DOWNSIDE SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND/OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND/OR ACCEPTANCE OF THE DOWNSIDE SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSIDE SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE, OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR DISOCCURRED DURING CONSTRUCTION.

DISCLAIMER NOTE

1. EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.
2. FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED TOP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
3. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLENISHING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.

SVZ RESTRICTION NOTE

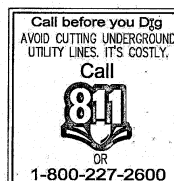
NO WALLS, FENCES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT, OTHER THAN TRAFFIC CONTROL DEVICES, FIRE HYDRANTS, TREES, AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SVZ UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL, OR PAVEMENT STREET SURFACE. THIS RESTRICTION EXTENDS ALONG THE SVZ VISIBILITY LINE THROUGH LANDSCAPED MEDIANS.

SEWER CONSTRUCTION NOTES

1. INSTALL 48" DIAMETER SANITARY SEWER MANHOLE WITH WATERIGHT JOINTS & SINGLE 24" LID PER DCSWCS SD-1, SD-3, SD-4 AND SD-5
2. FIELD VERIFY EXISTING SSMH INVERT ELEVATION & CONNECT PER DCSWCS STANDARDS
3. INSTALL SDR-35 PVC SANITARY SEWER PIPE (PUBLIC)
4. INSTALL C900 PVC SANITARY SEWER PIPE (PUBLIC)
5. INSTALL SEWER STUB AND CAP W/ 1.0 CUBIC FOOT OF GRAVEL FOR FUTURE CONNECTION
6. REMOVED OR ADD GRADE RINGS AS NEEDED TO BRING EXISTING MANHOLE COVER TO PROPOSED GRADES SHOWN ON PLANS
7. INSTALL 22" DIAMETER SANITARY SEWER MANHOLE WITH DUAL COVERS PER DCSWCS SD-2
8. INSTALL CORROSION PROTECTION PER DCSWCS 213.19H AND 316.8
9. INSTALL C900 SS LATERAL PROTECTION PER SD-19 AND SD-21

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES
PROJECT NO. 137430, FIRST APPROVED DATE



Westwood

5740 S. Anville Street
Suite 216
Las Vegas, NV 89118
Phone: (702) 284-5300
Fax: (702) 284-5399
westwoodpa.com
Westwood Professional Services, Inc.

DATE: 6/29/20

DESCRIPTION:

CITY OF LAS VEGAS, NV

ANN AND HUALAPAI - PHASE 1

PLAN AND PROFILE - HUALAPAI AVE STA 27+50 TO 33+50

DATE: 6/29/20

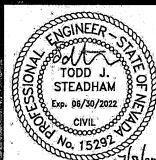
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DESIGNER: AJY

CHECKED: STS

PROJECT NO.

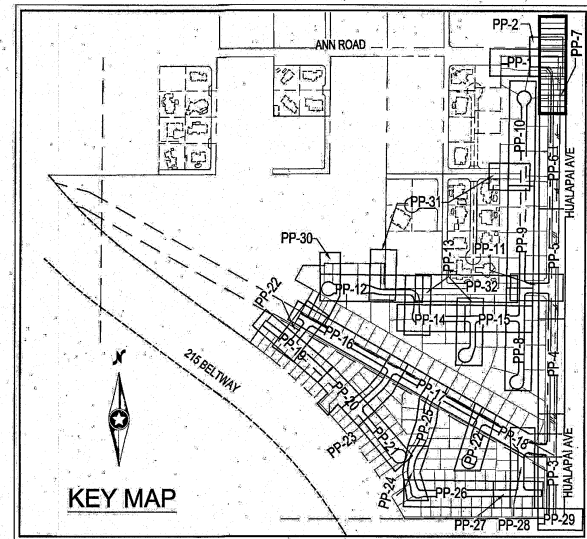
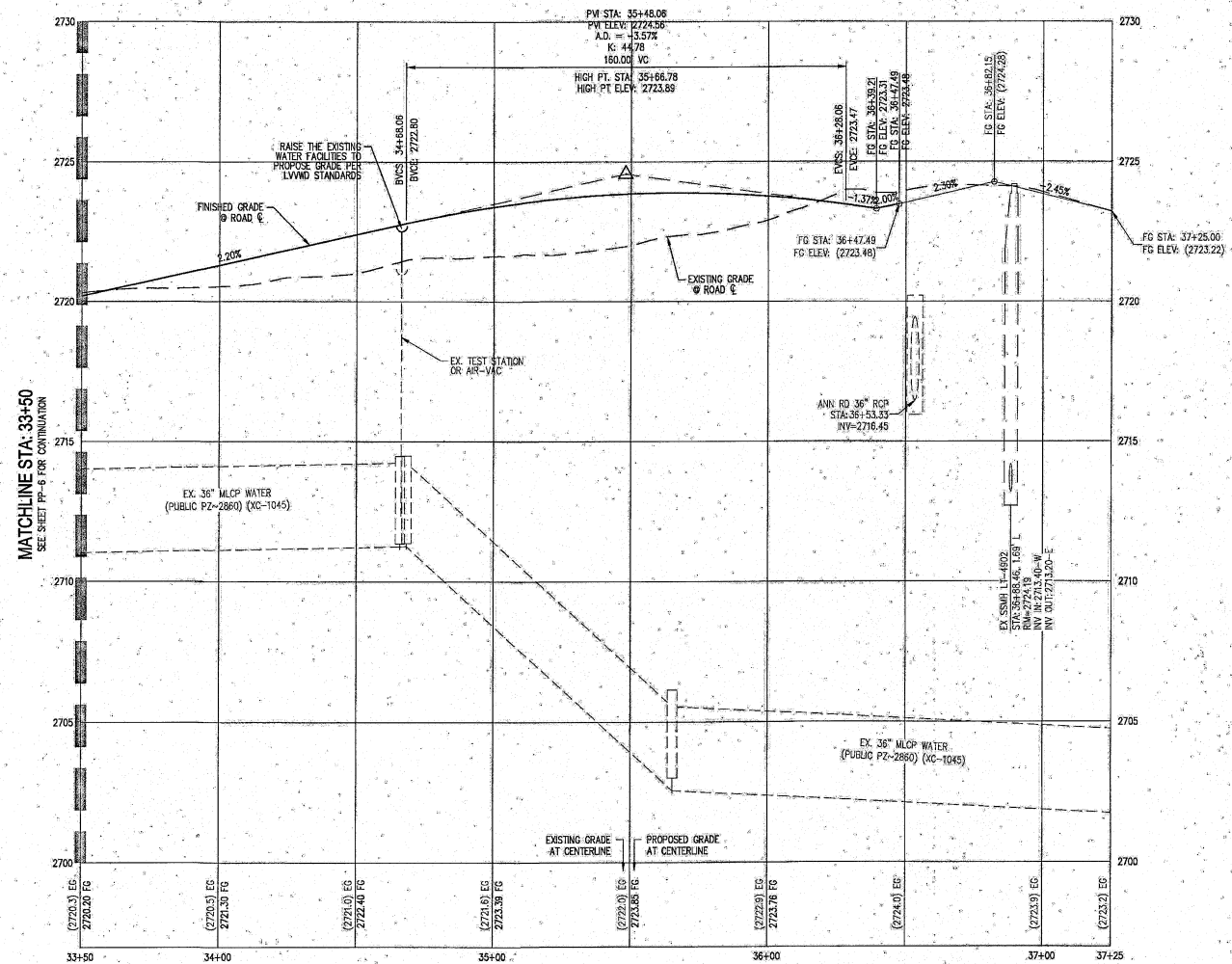
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PP-6

SHEET 30 OF 81

L20-00818
107Y5138



BENCHMARK

BENCHMARK #9LV90-31C4 CLV RIVET & ROUND PLATE IN CONC PA
WEST SIDE OF GRAND CANYON DR., 120 FEET SOUTH OF WASHBURN
ROAD.
ELEVATION = 795.579 METERS (2010.16 FEET) NAVD 88

BASIS OF BEARINGS

S. 89°14'18" E. BEING THE NORTH LINE OF THE SE $\frac{1}{4}$, NW $\frac{1}{4}$ OF SECTION 31 TOWNSHIP 19 SOUTH, RANGE 60 EAST; M.D.M. AS SHOWN ON FILE 97, PAGE 85 OF PARCEL MAPS ON FILE AT THE RECORDER'S OFFICE OF CLARK COUNTY, NV OFFICIAL RECORDS.

CONSTRUCTION NOTES

- 1 INSTALL 2.0" ASPHALT PAVEMENT OVER 4" TYPE II AGGREGATE BASE, PER SLOES REPORT
- 2 INSTALL 4.5" ASPHALT PAVEMENT OVER 9" TYPE II AGGREGATE BASE, PER SLOES REPORT SEE ~~##-####~~
- 3 SHALLOWS AND REMOVE EXISTING ASPHALT FOR CLEAN EDGE, AND MATCH TO EXISTING PAVEMENT SECTION
- 4 INSTALL 30" ROLL CURB PER CAUSAD NO. 217.2.S1
- 5 INSTALL 24" L-TYPE CURB PER CAUSAD NO. 216
- 6 INSTALL A-TYPE ISLAND CURB PER CAUSAD NO. 219
- 7 CONSTRUCT 6" WIDE CROSS CUTTER PER CAUSAD NO. 228
- 8 CONSTRUCT TRANSITION FROM ROLL-CURB TO L-CURB PER DETAIL ON SHEET D-5
- 9 INSTALL 5' WIDE SIDEWALK PER CAUSAD NO. 234
- 10 INSTALL 6' WIDE SIDEWALK PER CAUSAD NO. 234
- 11 CONSTRUCT ROLL CURB TRANSITION TO SIDEWALK UNDERDRAIN PER DETAIL ON SHEET D-5
- 12 CONSTRUCT 10.0' WIDE TRAIL PER DETAIL ON SHEET D-5
- 13 INSTALL 6" WROUGHT IRON FENCE PER CAUSAD NO. 425.S1
- 14 CONSTRUCT CASE 1 A.D.S. SIDEWALK RAMP PER CAUSAD NO. 234
- 15 INSTALL 5' OF RI-RAP 60-60-60 THICK=12" AT END OF ROADWAY, MATCH THE FULL WIDTH OF ROAD IMPROVEMENTS TO EXISTING ON
- 16 CONSTRUCT DEPRESSIONED CURB TRANSITION PER DETAIL ON SHEET D-5, WITH 3' DEPRESSIONED CURB SECTION
- 17 CONSTRUCT 24" WIDE GATE FOR EMERGENCY, UTILITY AND MAINTENANCE ACCESS PURPOSES
- 18 CONSTRUCT SIDEWALK UNDERDRAIN PER CAUSAD NO. 236
- 19 INSTALL 5' TYPE "M2" STORM DRAIN DOW INLET PER DETAIL ON SHEET D-5
- 20 INSTALL STORM DRAIN CONCRETE COLLAR PER DETAIL ON SHEET D-5
- 21 INSTALL RI-RAP EROSION PROTECTION D50=12" DEPTH=0.5'
- 22 INSTALL RI-RAP EROSION PROTECTION D50=6" DEPTH=1.0'
- 23 INSTALL RI-RAP EROSION PROTECTION D50=6" DEPTH=1.5'
- 24 INSTALL RI-RAP EROSION PROTECTION D50=6" DEPTH=2.0'
- 25 CONSTRUCT 3' WIDE VALLEY BUTTER PER DETAIL ON SHEET D-5
- 26 CONSTRUCT 2' DEEP CUT-OFF WALL AT EDGE OF EASEMENT PER DETAIL ON SHEET D-5
- 27 INSTALL STEEL SLEEVE FOR WATER MAIN PER UDACS PLT 22

SEWER CONNECTION NOTE

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND/OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND/OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE, OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

SURVEY NOTE

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DISCLAIMER NOTE

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- 3) CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PRIOR TO PLACE ORDER FOR CONSTRUCTION, CONTRACTOR SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLEASING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.

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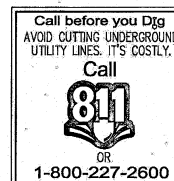
SEWER CONSTRUCTION NOTES

- | SEWER CONSTRUCTION NOTES | |
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| 1 | INSTALL 48" DIAMETER SANITARY SEWER MANHOLE WITH
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10-4 AND SD-9 |
| 2 | FIELD VERIFY EXISTING SMV INVERT ELEVATION & CONNECT PER
DCSWS STANDARDS |
| 3 | INSTALL SDR-35 PVC SANITARY SEWER PIPE (PUBLIC) |
| 4 | INSTALL C900 PVC SANITARY SEWER PIPE (PUBLIC) |
| 5 | INSTALL SEWER STUB AND CAP W/ 1.0 CUBIC FOOT OF
CONCRETE FOR FUTURE CONNECTION. |
| 6 | REMOVED OR ADD GRADE RINGS AS NEEDED TO BRING EXISTING
MANHOLE COVER TO PROPOSED GRADES SHOWN ON PLANS |
| 7 | INSTALL 92" DIAMETER SANITARY SEWER MANHOLE WITH DUAL
COVERS PER DCSWS SD-2 |
| 8 | INSTALL CORROSION PROTECTION PER DCSWS 2.13.19H AND
SD-12 |
| 9 | INSTALL C900 SS LATERAL PROTECTION PER SD-19 AND
SD-21 |

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT No. 137430 FIRST APPROVED DATE 12/1/78



Westwood

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Westwood Professional Services, Inc.

[illegible]

CITY OF LAS VEGAS, NV

DR. HORTON



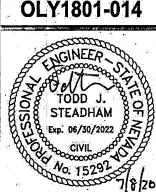
DATE: 6/29/20

DRAFTER: AJY

DESIGNER: AJY

CHECKED: STS

PROJECT NO. _____



11

PP-7

SHEET 31 OF 81