ADDENDUM #1 TO THE TECHNICAL DRAINAGE STUDY
FOR
CIRCLE K @ SAHARA - MARYLAND

DS-5610
W.O. # C360-2209
October 4, 2022

Prepared for:

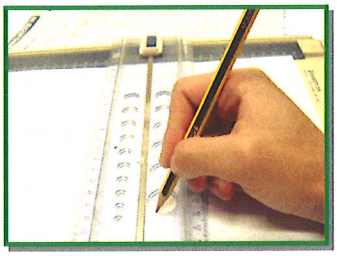
Civil 360 Planning & Engineering
6490 W Desert Inn Road
Las Vegas, NV 89146
Phone: (702) 899-6068
Email: info@civil360lv.com

PROFESSIONAL ENGINEER - STATE OF NEVADA
PETER J. LAAS
Exp: 12/31/23
CIVIL
No. 14444
10/4/22

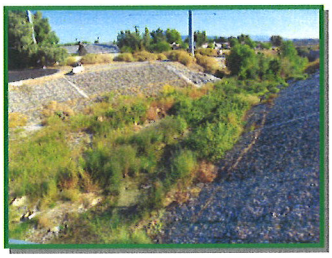
Prepared by:

Impulse
Civil Engineering & Planning
7485 West Azure Avenue, Suite 226
Las Vegas, NV 89130
Phone: 702-815-0720 · Fax: 702-478-8535

$$I = \int F \cdot dt$$


Civil Engineering

Land Planning


Flood Control

Utilities

Impulse
Civil Engineering & Planning
7485 West Azure Avenue, Suite 226
Las Vegas, NV 89130
PHONE 702-815-0720
FAX 702-478-8535

October 4, 2022

City Las Vegas
Public Works – Flood Control
495 S Main Street
Las Vegas, NV 89101

Re: Addendum #1 to the
CIRCLE K @ SAHARA - MARYLAND
Technical Drainage Study

Submitted for your approval are two copies of the ***Addendum #1 to the Technical Drainage Study for Circle K @ Sahara - Maryland*** a proposed 0.71 acre commercial development, being APN 162-03-812-003. The site is completely within a FEMA Special Flood Hazard Area Zone X as shown on Community Panel Number 32003C2170F and is adjacent to a Category A Proposed Clark County Regional Flood Control District (CCRFCD) Master Planned Facility (BHSA-0175) according to the CCRFCD Master Plan Update, Figure F-30, so CCRFCD concurrence should be required.

If you have any questions, please call me at (702) 308-7115.

Sincerely,
IMPULSE CIVIL ENGINEERING

Peter J. Laas, P.E.
Principal

$$I = \int F \cdot dt$$

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Circle K @ Sahara & Maryland Date: 10-04/2022

Location of Development: a) Descriptive (Cross Streets) North/South: Maryland Parkway

East/West: Sahara Avenue

b) Section: 3 Township: 21 S Range: 61 E

c) APN : 162-03-812-003.

Name of Owner: FEM LLC c/o Civil 360 Planning & Engineering

Telephone No.: (702) 899-6068 Fax No.: none E-Mail Address: info@civil360lv.com

Address: 6490 W Desert Inn Road, Las Vegas, NV 89146

Contact Person-Name: Peter Laas **Telephone No.:** 702-815-0720

* **E-Mail Address:** plaas@ImpulseCivil.net **Fax No.:** 702-478-8535

Firm: Impulse Civil Engineering

Address: 7485 West Azure Avenue, Suite 226, Las Vegas NV 89130

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: 0.71 AC+- Being Developed/Disturbed: 0.71 AC+-
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ **Yes**** ☒ **No**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ **Yes**** ☐ **No**
4. Proposed type of development (Residential, Commercial, Etc.): Commercial
5. Approximate upstream land area which drains to the subject site: 0.78 ACRES
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: CLV #5432 and PW21-15848 The Technical Drainage Study for Almond Grove
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: The northeast corner of the site into the existing streets
8. Briefly describe your proposed schedule for the subject project: As soon as possible

PROFESSIONAL ENGINEER - STATE OF NEVADA
PETER J. LAAS
Exp: 12/31/23
CIVIL
No. 14444

10/4/22

Engineer's Seal

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

***New Required Field**

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

DS-5610

Local Entity File No.

Revision	Date

REFERENCE: $I = \int F \cdot dt$

STANDARD FORM 1

Updated 05/01/2008

The format for this Addendum is as follows – the City of Las Vegas comment is listed first in bold and then followed by the response. A copy of the City of Las Vegas Comment letter is included at the rear of this study.

RESPONSE TO COMMENTS

Comment 1. Provide a copy of the zoning/planning conditions associated with this site with the next submittal to verify compliance with conditions. Flood Control will not issue conditional approval of the drainage study without the associated zoning/planning conditions (issued by the City Council. Any associated conditions of approval that revise the site drainage parameters will require that the drainage study be revised and resubmitted.

Response 1. We are providing a copy of the zoning notice of final action issued by City Council with this addendum which may be found after the City of Las Vegas comment letter.

Comment 2. The site is adjacent to or crosses an existing or proposed Clark County Regional Flood Control District (CCRFCD) master planned facility. Therefore, CCRFCD concurrence is required prior to final approval of the drainage study.

Response 2. We understand this comment and will submit a copy of the study and all addenda to CCRFCD for concurrence once the City of Las Vegas conditionally accept the study.

Comment 3. Figure 3: Existing Condition Map: Provide full size exhibits, 24"x36", that include flow arrows for EX1, Q_{10}/Q_{100} for OF1 and EX1, and tables with results from hydraulic analysis.

Response 3. We have created a full size exhibit and added flow arrows to the existing onsite basin. Basin flow rates are provided in a summary table and the table summarizing the hydraulic analyses in included.

Comment 4. Figure 4: Interim Condition Map: Provide full size exhibits, 24"x36", that include flow arrows for PR1, Q_{10}/Q_{100} for OF1 and PR, and tables with results from hydraulic analysis.

Response 4. We have created a full size exhibit and added flow arrows to the interim onsite basin. Basin flow rates are provided in a summary table and the table summarizing the hydraulic analyses in included.

Comment 5. The proposed onsite berm must protect the site from twice the depth of flow within Sahara Avenue to protect the finished floor. Note this means the entirety of the southern boundary must contain the water in Sahara Avenue.

Response 5. We have replaced the berm with a 2-foot floodwall at the back of sidewalk. Recall the depth of flow in Sahara is 1.34-feet. Twice the depth of flow would be 2.68 feet above the gutter flow line or 2.08-feet above the back of walk. We have added this wall to the plans.

Comment 6. The flow in Sahara Avenue is above the back of sidewalk and erosive. Provide erosion protection for the landscape area in the form of a stem wall, riprap, or approved alternate as required in the Regional Flood Control District Manual in section 904.3. Revise the grading plan and sections accordingly.

Response 6. We have added a 2-foot floodwall at the back of sidewalk which should keep runoff in Sahara Avenue and eliminate the need for erosion protection.

Comment 7. The following finish floors do not meet the Regional Flood Control District minimum criteria of twice the Q_{100} depth of flow up to 18-inches above the water surface (CCRFCD Manual Section 304.4. E.1) or 6-inch minimum above the highest adjacent top of curb (CCRFCD Manual Section 1602 304.4. E.1). The following finish floors should be revised or alternate flood protection provided.

FF shown	Adjacent TC	Min FF
2004.69	2006.13	2007.63

Response 7. The finished floor elevation is protected to twice the depth of flow in Sahara Avenue and as shown in the original study to twice the depth of flow onsite. Protection from Sahara is in the form of the floodwall. Recall the depth of flow onsite was less than the top of curb and the finished floor is greater than 6-inches above adjacent top of curb elevations.

Comment 8. Sheet CS.01, Section H: Show the proposed 3-course solid grouting on Section H, 8.01 on the western wall of the project site.

Response 8. We have updated Section H to show the proposed 3-course solid grouting.

Comment 9. Revise the note for all sections showing solid grouting for flood control to indicate "8-inch minimum solid grouted CMU block 3 courses above finish grade with all joints mortared," where 3-courses is 18-inches or twice the depth above the calculated water surface elevation.

Response 9. We have updated the note on the sections verbatim.

Comment 10. Show the current off site grading on the grading plans and not the future condition. The future improvements shown do not match the current site.

Response 10. We have updated the plans to reflect the current condition of the offsite areas.

We feel that we have completely addressed all of the concerns expressed in the comment letter generated from the review of the initial study. If you have any questions or require additional information, please do not hesitate to call me at (702) 308-7115.

Sincerely,
IMPULSE CIVIL ENGINEERING

Peter J. Laas, P.E.
Principal

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: October 3, 2022
TO: **Land Development Services** Department of Building & Safety				FROM: Caitlyn Alcantara, P.E. Flood Control Engineer Associate Department of Public Works
SUBJECT:	Drainage Study for:			**COPIES TO:**
Circle K at Sahara & Maryland				Civil 360 Planning & Engineering
Cross Streets:	Maryland Pkwy. and Sahara Ave.			FEM LLC
File Number:	F:\Depot\DSMemos\DS05610A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	162-03-812-003			
Zoning Action:				
FEMA Flood Zone	YES	NO	X	
Proposed Storm Drain	YES	NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	9/19/22	10/3/22	See Comments Below	$400	4958343: $400
			TOTAL FEES (LDDRS):	**$400**	**----**

REMARKS:

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

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

The following are comments pertaining to the subject site specific drainage study and grading plans:

1. Provide a copy of the zoning/planning conditions associated with this site with the next submittal to verify compliance with conditions. *Flood Control* will not issue conditional approval of the drainage study without the associated zoning/planning conditions (issued by the *City Council*). Any associated conditions of approval that revise the site drainage parameters will require that the drainage study be revised and resubmitted.
2. The site is adjacent to or crosses an existing or proposed Clark County Regional Flood Control District (CCRFCD) master planned facility. Therefore, CCRFCD concurrence is required prior to final approval of the drainage study.
3. **Figure 3: Existing Condition Map:** Provide full size exhibits, 24"x36", that include flow arrows for EX1, Q_{10}/Q_{100} for OF1 and EX1, and tables with results from hydraulic analysis.
4. **Figure 4: Interim Condition Map:** Provide full size exhibits, 24"x36", that include flow arrows for PR1, Q_{10}/Q_{100} for OF1 and PR1, and tables with results from hydraulic analysis.
5. The proposed onsite berm must protect the site from twice the depth of flow within Sahara Avenue to protect the finished floor. Note this means the entirety of the southern boundary must contain the water in Sahara Avenue.
6. The flow in Sahara Avenue is above the back of sidewalk and erosive. Provide erosion protection for the landscape area in the form of a stem wall, riprap, or approved alternate as required in the

Regional Flood Control District Manual in section 904.3. Revise the grading plan and sections accordingly.

7. The following finish floors do not meet the Regional Flood Control District minimum criteria of twice the Q100 depth of flow up to 18-inches above the water surface (CCRFCD Manual Section 304.4.E.1) or 6-inch minimum above the highest adjacent top of curb (CCRFCD Manual Section 1602 304.4.E.1). The following finish floors should be revised or alternate flood protection provided.

FF shown	Adjacent TC	Min FF
2004.69	2006.13	2007.63

8. **Sheet C8.01, Section H:** Show the proposed 3-course solid grouting on Section H, 8.01 on the western wall of the project site.
9. Revise the note for all sections showing solid grouting for flood control to indicate "8-inch minimum solid grouted CMU block 3 courses above finish grade with all joints mortared," where 3-courses is 18-inches or twice the depth above the calculated water surface elevation.
10. Show the current offsite grading on the grading plans and not the future condition. The future improvements shown do not match the current site.

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

END OF REMARKS
HDR/CAA

T/R/S: T21S/R61E/S03
AREA R-03

Sahara 10-year
Worksheet for Irregular Channel

Project Description	
Project File	c:\hydrology\haestad\fmw\ck-sahar.fm2
Worksheet	Sahara
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

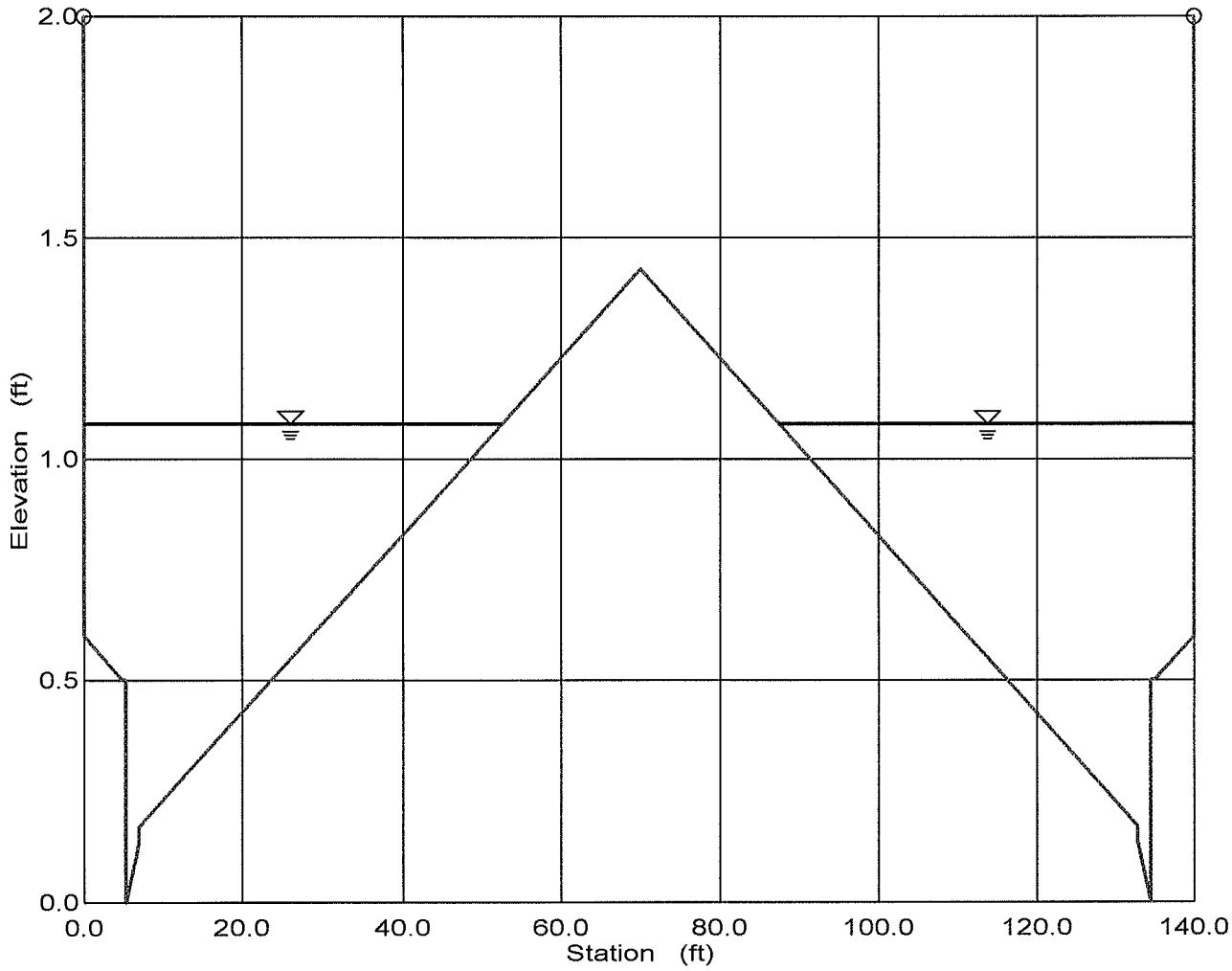
Input Data				
Channel Slope	0.016800 ft/ft			
Elevation range: 0.00 ft to 2.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2.00	0.00	140.00	0.016
0.00	0.60			
5.00	0.50			
5.50	0.50			
5.50	0.00			
7.00	0.13			
7.00	0.17			
70.00	1.43			
133.00	0.17			
133.00	0.13			
134.50	0.00			
134.50	0.50			
135.00	0.50			
140.00	0.60			
140.00	2.00			
Discharge	365.00 cfs			

Results		
Wtd. Mannings Coefficient	0.016	
Water Surface Elevation	1.08	ft
Flow Area	50.20	ft^2
Wetted Perimeter	106.95	ft
Top Width	104.88	ft
Height	1.08	ft
Critical Depth	1.34	ft
Critical Slope	0.004488	ft/ft
Velocity	7.27	ft/s
Velocity Head	0.82	ft
Specific Energy	1.90	ft
Froude Number	1.85	
Flow is supercritical.		
Flow is divided.		

Cross Section
Cross Section for Irregular Channel

Project Description	
Project File	c:\hydrology\haestad\fmw\ck-sahar.fm2
Worksheet	Sahara
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data		
Wtd. Mannings Coefficient	0.016	
Channel Slope	0.016800	ft/ft
Water Surface Elevation	1.08	ft
Discharge	365.00	cfs



Sahara 100-year
Worksheet for Irregular Channel

Project Description	
Project File	c:\hydrology\haestad\fmw\ck-sahar.fm2
Worksheet	Sahara
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

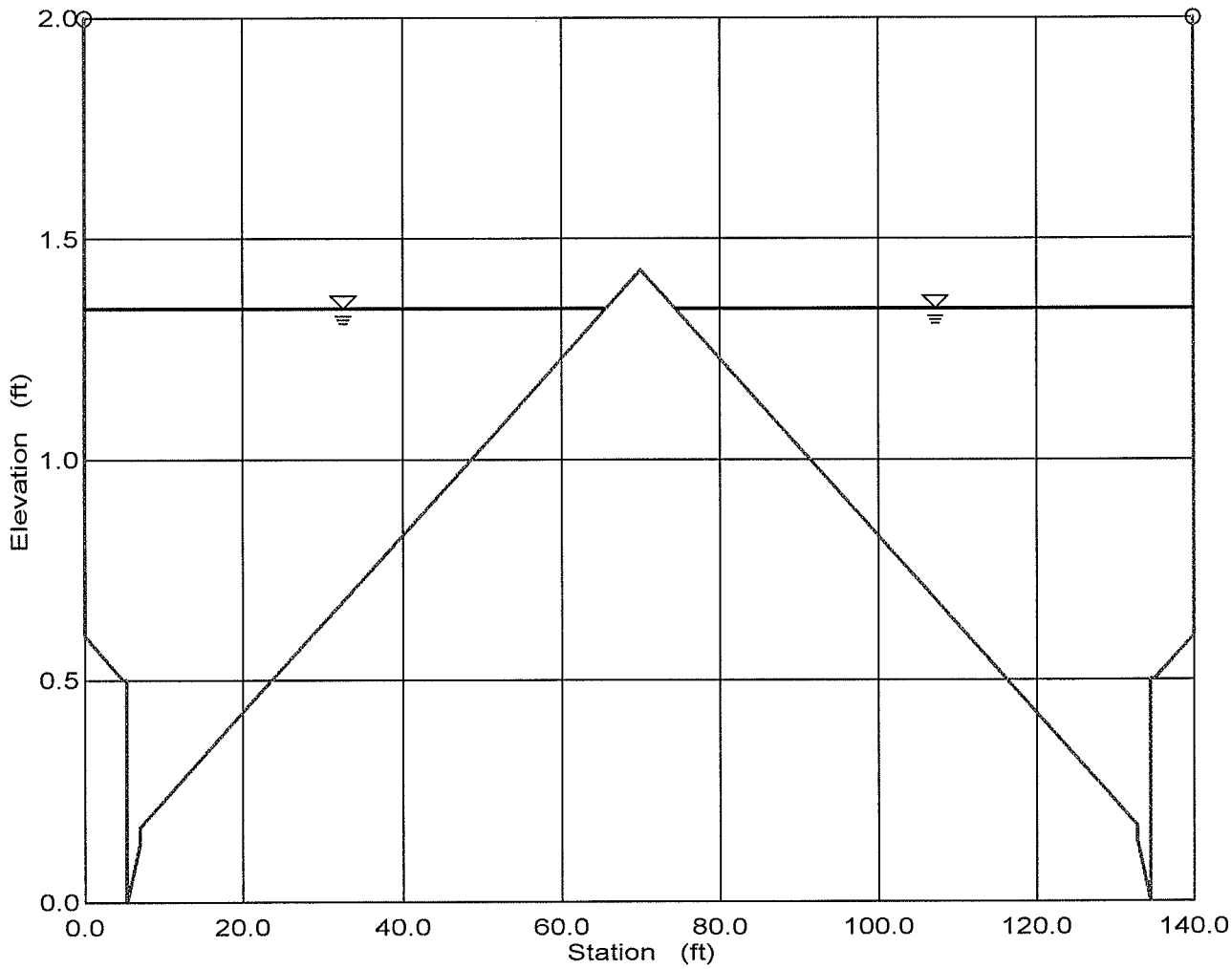
Input Data				
Channel Slope	0.016800 ft/ft			
Elevation range: 0.00 ft to 2.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2.00	0.00	140.00	0.016
0.00	0.60			
5.00	0.50			
5.50	0.50			
5.50	0.00			
7.00	0.13			
7.00	0.17			
70.00	1.43			
133.00	0.17			
133.00	0.13			
134.50	0.00			
134.50	0.50			
135.00	0.50			
140.00	0.60			
140.00	2.00			
Discharge	701.00 cfs			

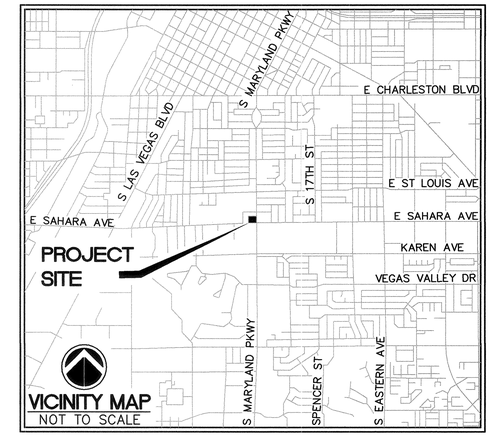
Results		
Wtd. Mannings Coefficient	0.016	
Water Surface Elevation	1.34	ft
Flow Area	81.22	ft^2
Wetted Perimeter	133.76	ft
Top Width	131.16	ft
Height	1.34	ft
Critical Depth	1.68	ft
Critical Slope	0.003956	ft/ft
Velocity	8.63	ft/s
Velocity Head	1.16	ft
Specific Energy	2.50	ft
Froude Number	1.93	
Flow is supercritical.		
Flow is divided.		

Cross Section
Cross Section for Irregular Channel

Project Description	
Project File	c:\hydrology\haestad\fmw\ck-sahar.fm2
Worksheet	Sahara
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data		
Wtd. Mannings Coefficient	0.016	
Channel Slope	0.016800	ft/ft
Water Surface Elevation	1.34	ft
Discharge	701.00	cfs





* REFERENCED FROM CITY OF LAS VEGAS CENTRAL NEIGHBORHOOD FLOOD CONTROL MASTER PLAN, MARCH 2005

LEGEND

- BASIN BOUNDARY
- OF1 / 25.61 AC — BASIN OR POINT OF INTEREST / ACREAGE
- 39/125 CFS — SURFACE FLOW MAGNITUDE AND DIRECTION (Q10/Q100)
- 1 — NORMAL DEPTH LOCATION / NORMAL DEPTH SECTION NUMBER

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

Existing Condition Results

Basin	Acreage	Q_{10}	Q_{100}	Collection Point	Q_{10}	Q_{100}
OF1	0.78	2	3	CSA13*	365	701
EX1	1.22	1	3	Sahara	292	563
				Maryland	73	138
				CP1	73	139

* CSA13 is referenced from the MPU

Existing Condition Street Flow Calculations

Street Name	Sec #	Slope (%)	R.O.W. Width (ft)	Q_{10} (cfs)	V_{10} (ft/s)	d_{10} (ft)	V_{10}* d_{10}	Q_{100} (cfs)	V_{100} (ft/s)	d_{100} (ft)	V_{100}* d_{100}	Dry Lane (ft)
Sahara Avenue	1	1.68	100	365	7.27	1.08	7.85	701	8.63	1.34	11.56	10.50
Maryland Parkway	2	0.43	100	73	4.75	0.78	3.71	139	5.96	0.97	5.78	28.00

Dry Lane Calculations:	Dry Lane = ((Crown - d_{10}) / Cross Slope)-(Center Turn Lane / 2)
Sahara Avenue	Dry Lane = ((1.43 - d_{10}) / .02) - 7
Maryland Parkway	Dry Lane = ((1.48 - d_{10}) / .02) - 7

REV	REVISION DESCRIPTION	SHEETS	APP BY	APP DATE

TITLE: FIGURE 3 EXISTING CONDITION BASIN MAP

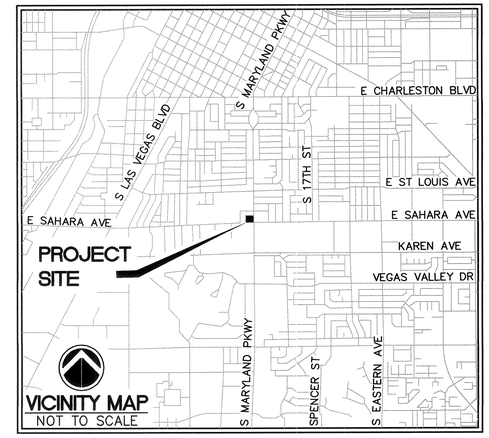
PROJECT: CIRCLE K @ SAHARA - MARYLAND CITY OF LAS VEGAS, NEVADA

FIGURE 3

Impulse Civil Engineering & Planning
$I = \int F \cdot dt$
CIVIL ENGINEERS - PLANNERS
7465 WEST AZURE DRIVE, SUITE 228
LAS VEGAS, NEVADA 89130
PHONE (702) 815-0720
FAX (702) 478-8535

W.O. #: W.O. #C360-2209
BY: P.JL
DATE: 10/04/2022
SCALE: 1"=40'
SHEET 1 OF 1 SHEETS

File: P:\Clients\Civil 360\SAHARA - MARYLAND\HYDROLOGY\Location and Vicinity map SAHARA MARYLAND.dwg Sheet: FIGURE 3 Date: 04-Oct-22 8:08:15am



* REFERENCED FROM CITY OF LAS VEGAS CENTRAL NEIGHBORHOOD FLOOD CONTROL MASTER PLAN, MARCH 2005

LEGEND

- BASIN BOUNDARY
- OF1 / 25.61 AC — BASIN OR POINT OF INTEREST / ACREAGE
- 39/125 CFS — SURFACE FLOW MAGNITUDE AND DIRECTION (Q10/Q100)
- 1 / - — NORMAL DEPTH LOCATION / NORMAL DEPTH SECTION NUMBER

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

Interim Condition Results						
Basin	Acreage	Q_{10}	Q_{100}	Collection Point	Q_{10}	Q_{100}
OF1	0.78	2	3	CSA13*	365	701
PR1	1.22	2	4	Sahara	292	563
				Maryland	73	138
				CP1	73	139

* CSA13 is referenced from the MPU

Interim/Ultimate Condition Street Flow Calculations

Street Name	Sec #	Slope (%)	R.O.W. Width (ft)	Q_{10} (cfs)	V_{10} (ft/s)	d_{10} (ft)	V_{10}* d_{10}	Q_{100} (cfs)	V_{100} (ft/s)	d_{100} (ft)	V_{100}* d_{100}	Dry Lane (ft)
Sahara Avenue	1	1.68	140	365	8.41	1.01	8.49	701	10.00	1.25	12.50	14.00
Maryland Parkway	2	0.43	100	73	4.75	0.78	3.71	139	5.96	0.97	5.78	28.00
West Drive Aisle	3	1.88	N/A	3	2.84	0.34	0.97	5	3.19	0.40	1.28	N/A
North Drive Aisle	4	1.67	N/A	3	2.93	0.37	1.08	5	3.30	0.43	1.42	N/A
East Drive Aisle	5	0.50	N/A	1	1.49	0.32	0.48	2	1.75	0.40	0.70	N/A

Dry Lane Calculations:	Dry Lane = ((Crown - d_{10}) / Cross Slope)-(Center Turn Lane / 2)
Sahara Avenue	Dry Lane = ((1.43 - d_{10}) / .02) - 7
Maryland Parkway	Dry Lane = ((1.48 - d_{10}) / .02) - 7

Section 3 = OF1 + 1/2 PR1 = 2/3 + 1/2 = 3/5
Section 4 = OF1 + 1/2 PR1 = 2/3 + 1/2 = 3/5
Section 5 = 1/2 PR1 = 1/2

REV	REVISION DESCRIPTION	SHEETS	APP BY	APP DATE

TITLE
INTERIM CONDITION BASIN MAP

PROJECT
CIRCLE K @ SAHARA - MARYLAND
CITY OF LAS VEGAS, NEVADA

FIGURE 4

Impulse
Civil Engineering & Planning
$I = \int F \cdot dt$
CIVIL ENGINEERS - PLANNERS
7465 WEST AZURE DRIVE, SUITE 226
LAS VEGAS, NEVADA 89130
PHONE (702) 815-0720
FAX (702) 476-8535

W.O. # : W.O. #2360-2209
BY : P.J.L.
DATE : 10/04/2022
SCALE : 1"=40'

SHEET 1 OF 1 SHEETS

File: P:\Clients\Civil 3D\SAHARA - MARYLAND\INTERIOR\Location and Vicinity map SAHARA MARYLAND.dwg Sheet: FIGURE 4 Date: 04-Oct-22 9:20:03am

IMPROVEMENT PLANS FOR

CIRCLE K AT SAHARA AVENUE & MARYLAND PARKWAY

APN:162-03-812-003

ACREAGE: 1.17± ACRES

REV#	REV. DESCRIPTION	SHEET(S)	APPD BY	DATE

SHEET INDEX

1.	C1.01	COVER AND APPROVAL SHEET
2.	C1.02	GENERAL NOTES
3.	C2.00	DEMOLITION PLAN
4.	C3.01	HORIZONTAL CONTROL PLAN 1
5.	C3.02	HORIZONTAL CONTROL PLAN 2
6.	C4.01	GRADING PLAN 1
7.	C4.02	GRADING PLAN 2
8.	C5.00	OVERALL UTILITY PLAN
9.	C5.01	UTILITY PLAN 1
10.	C5.02	UTILITY PLAN 2
11.	C6.01	FIRE ACCESS, SIGNAGE & STRIPING PLAN 1
12.	C6.02	FIRE ACCESS, SIGNAGE & STRIPING PLAN 2
13.	C8.01	DETAIL SHEET 1
14.	C8.02	DETAIL SHEET 2

OWNER

FEMLLC
C/O B MASON
8804 SPANISH RIDGE AVE #100
LAS VEGAS, NV, 89148

DEVELOPER

CIRCLE K STORES INC
1120 W. WARNER ROAD
TEMPE, AZ, 85284
SUZY PEEL
SUZY@CIRCLEK.COM
(602) 728-4047

BENCHMARK

CITY OF LAS VEGAS VERTICAL CONTROL "08LV113SES", BEING A RIVET AND PLATE IN TOP OF CURB AT NW CORNER OF MARYLAND PARKWAY AND SAHARA AVENUE.

ELEVATION: 2009.20 (U.S. SURVEY FEET)
612.41 (METERS)

CITY OF LAS VEGAS VERTICAL CONTROL BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS (LOW DISTORTION PROJECTION), NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

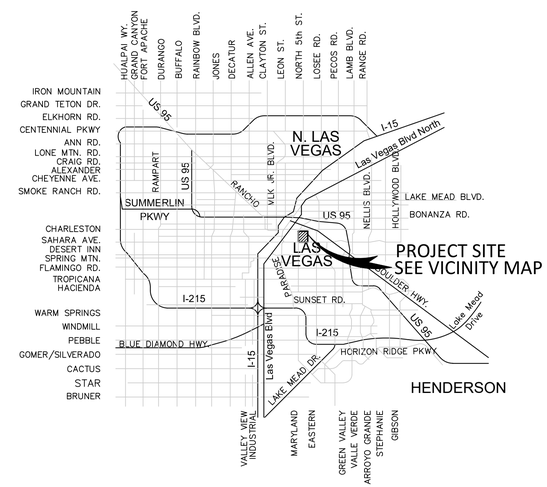
THE BEARING EQUATION FOR THIS PROJECT WOULD BE THE CENTERLINE OF SAHARA AVENUE AND THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 3, TOWNSHIP 21 SOUTH, RANGE 61 EAST, M.D.M., CLARK COUNTY, NEVADA, HAVING A BEARING OF N 87°34'25" E, ALSO BEING N 87°12'48" E AS SHOWN ON MAP THEREOF ON FILE IN BOOK 167 OF PLATS, PAGE 42, OFFICIAL RECORDS, CLARK COUNTY NEVADA.

LEGAL DESCRIPTION

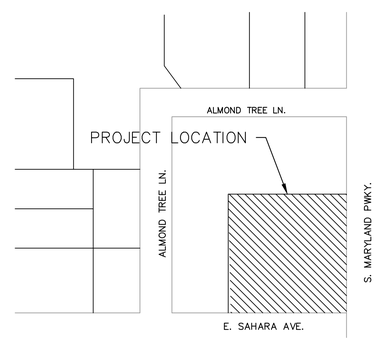
BEING THAT PORTION OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 3, TOWNSHIP 21 SOUTH, RANGE 61 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 3;
THENCE NORTH 00°24'54" WEST ALONG THE EAST LINE OF SAID SECTION 3, DA DISTANCE OF 50.04 FEET TO THE EASTERLY PROLONGATION OF THE NORTHERLY RIGHT-OF-WAY LINE OF SAHARA AVENUE(WIDTH VARIES); THENCE SOUTH 87°12'48" WEST ALONG SAID PROLONGATION, 116.45 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 87°12'48" WEST ALONG SAID NORTHERLY RIGHT-OF-WAY LINE, 446.70 FEET; THENCE NORTH 00°07'43" WEST ALONG A LINE BEING PARALLEL WITH THE CENTERLINE OF MARYLAND PARKWAY, 392.32 FEET TO THE SOUTHERLY LINE OF THAT CERTAIN PARCEL OF LAND DESCRIBED IN A GRANT DEED TO THE CITY OF LAS VEGAS RECORDED DECEMBER 13, 1966 IN BOOK 764 AS DOCUMENT NO. 613818, OFFICIAL RECORDS, CLARK COUNTY, NEVADA; THENCE ALONG THE SOUTHERLY LINE OF SAID CITY OF LAS VEGAS PARCEL THE FOLLOWING THREE (3) COURSES: CURVING TO THE RIGHT ALONG THE ARC OF A 15.00 FOOT RADIUS CURVE, CONCAVE SOUTHEASTERLY, THROUGH A CENTRAL ANGLE OF 87°20'31", AN ARC LENGTH OF 22.87 FEET; THENCE NORTH 87°12'48" EAST, 431.43 FEET; THENCE CURVING TO THE RIGHT ALONG THE ARC OF A 20.00 FOOT RADIUS CURVE, CONCAVE SOUTHWESTERLY, THROUGH A CENTRAL ANGLE OF 92°39'29", AN ARC LENGTH OF 32.34 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF SAID MARYLAND PARKWAY(WIDTH VARIES); THENCE ALONG SAID WESTERLY RIGHT-OF-WAY LINE THE FOLLOWING TWO (2) COURSES: SOUTH 00°07'43" EAST, 345.69 FEET; THENCE SOUTH 25°53'25" WEST, 45.54 FEET TO THE POINT OF BEGINNING.

CONTAINING 4.340 ACRES.



LOCATION MAP
N.T.S.



VICINITY MAP
N.T.S.

APPROVALS

CITY OF LAS VEGAS ENGINEERING

CITY OF LAS VEGAS DEPARTMENT OF PLANNING

CITY OF LAS VEGAS FIRE & RESCUE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

Project No. XXXXXX First Approved Date: _____
LVVWD Approved Fire Flow: Total 1,500 GPM/Onsite 1,500 GPM
SHEETS: C1.01, C1.02, C5.00, C5.01, C5.02, C8.02

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.

NV ENERGY DATE

"THE AFFIXED CENTURYLINK CORPORATION 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."

CENTRAL TELEPHONE CO. D/B/A CENTURY LINK DATE

COX COMMUNICATIONS, LAS VEGAS, INC. DATE

SOUTHWEST GAS CORPORATION DATE

REVISIONS

NO.	DESCRIPTION	DATE	BY

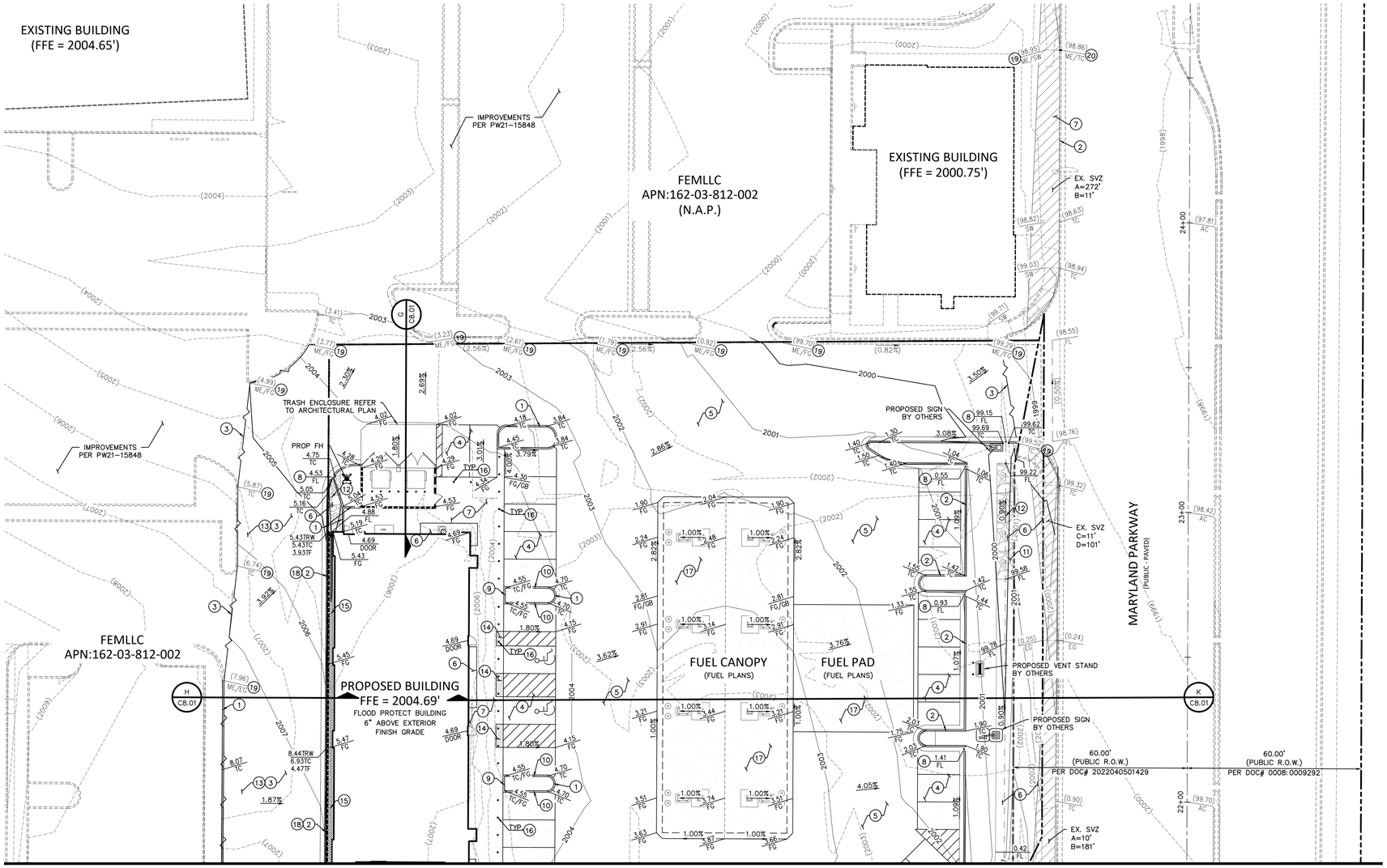
DESIGNED	JSH
DRAWN	JSH
CHECKED	JLE
APPROVED	JLE
DATE	10/25/2022
SCALE	N.T.S.

CIVIL 360
Planning & Engineering
6490 W. DESERT INN
(702) 899-6068
WWW.CIVIL360LV.COM
INFO@CIVIL360LV.COM

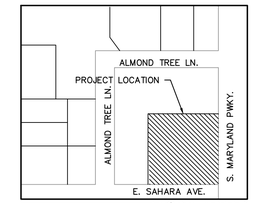
PROFESSIONAL ENGINEER — STATE OF NEVADA
JONATHAN S. HEAD
EXP. 06-30-23
CIVIL
NO. 028401
10/25/2022

COVER & APPROVAL SHEET
IMPROVEMENT PLANS FOR
CIRCLE K AT SAHARA AVENUE & MARYLAND PARKWAY
APN: 162-03-812-003
LAS VEGAS, NEVADA

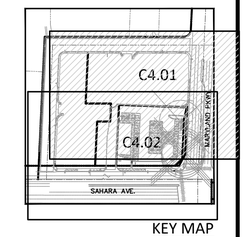
SHEET NUMBER
C1.01
SHEET 1 OF 14
DRAWING NUMBER



FOR CONTINUATION SEE SHEET C4.02



VICINITY MAP
NTS



KEY MAP
NTS

GRAPHIC SCALE

20 0 10 20

SCALE: 1"=20'

BASIS OF BEARING

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS (LOW DISTORTION PROJECTION), NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

THE BEARING EQUATION FOR THIS PROJECT WOULD BE THE CENTERLINE OF SAHARA AVENUE AND THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 3, TOWNSHIP 21 SOUTH, RANGE 61 EAST, M.D.M., CLARK COUNTY, NEVADA, HAVING A BEARING OF N 87°34'25" E, ALSO BEING N 87°12'48" E AS SHOWN ON MAP THEREOF ON FILE IN BOOK 167 OF PLATS, PAGE 42, OFFICIAL RECORDS, CLARK COUNTY NEVADA.

BENCHMARK

CITY OF LAS VEGAS VERTICAL CONTROL "08LV113SES", BEING A RIVET AND PLATE IN TOP OF CURB AT NW CORNER OF MARYLAND PARKWAY AND SAHARA AVENUE.

ELEVATION: 2009.20 (U.S. SURVEY FEET)
612.41 (METERS)

CITY OF LAS VEGAS VERTICAL CONTROL BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

CONSTRUCTION NOTES

NO.	ITEM USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA.
1	CONSTRUCT "A" TYPE CURB PER DETAIL A/C8.01.
2	CONSTRUCT "L" TYPE CURB PER USDCCA DWG. NO. 216.
3	SAWCUT & MATCH EXISTING AC PAVEMENT GRADES.
4	CONSTRUCT 7" PCC PAVEMENT OVER 6" TYPE II AGGREGATE BASE. (PARKING STALLS).
5	CONSTRUCT 7.5" AC PAVEMENT OVER 13" TYPE II AGGREGATE BASE. (DRIVE AISLE/FIRE ACCESS LANE).
6	LANDSCAPE AREA PER LANDSCAPE PLANS.
7	CONSTRUCT CONCRETE SIDEWALK PER USDCCA DWG. NO. 234.
8	CONSTRUCT 2 LF CURB OPENING (SIZE PER PLAN) PER DETAIL B/C8.01.
9	CONSTRUCT 0" CURB PER DETAIL E/C8.01.
10	CONSTRUCT 0" FACE TO 6" TYPE "A" CURB TRANSITION PER DETAIL F/C8.01.
11	INSTALL RIP-RAP BMP AREA. D_{50}=4" TH=8" PER DETAIL D/C8.01. (MIN 6' WIDE)
12	CONSTRUCT GRADED LANDSCAPE SWALE PER PLAN.
13	SAWCUT, TRENCH, BACKFILL & PAVEMENT RESTORATION PER USDCCA NO. 500.3, 500.5, & 503.
14	INSTALL DETECTABLE WARNING PER USDCCA NO. 235.
15	INSTALL DUAL NDS 8" PRO SERIES CHANNEL DRAINS (MODEL #833) PER DETAIL "C"/C8.02.
16	CONSTRUCT BOLLARDS PER DETAIL C/C8.02.
17	CONSTRUCT 7" PCC PAVEMENT OVER 6" TYPE II AGGREGATE BASE. (FUELING PAD).
18	CONSTRUCT 4' MAX RETAINING WALL. FINISH GRADE TYPICALLY 1' ABOVE TOP OF FOOTING UNLESS OTHERWISE STATED PER SNBO B-100-2. SOLID GROUT 3 COURSES ABOVE HIGHEST FLOWLINE ELEVATION.
19	FIELD VERIFY, CONNECT TO, AND/OR MATCH TO EXISTING.

FLOOD ZONE NOTE:

THE PROJECT SITE LIES WITHIN FLOOD ZONE 'X' PER FIRM PANEL 32003C2170F REVISED NOVEMBER 16, 2011. FLOOD ZONE 'X' IS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL FLOODPLAIN.

GENERAL NOTE:

IT IS THE CONTRACTORS RESPONSIBILITY TO FILE A NOTICE OF INTENT/REQUEST TO BE INCLUDED IN THE STORM WATER GENERAL PERMIT, AND SUBMIT THE ASSOCIATED STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AS REQUIRED BY FEDERAL LAW, AND MONITORED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION.

ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "CIRCLE K – NWC SAHARA & MARYLAND"

PROJECT No.: 64225057 DATED: JULY 29, 2022
PREPARED BY:
TERRACON CONSULTANTS, INC.
750 PILOT ROAD, SUITE F
LAS VEGAS, NV, 89119
PHONE No.:(702) 597-9393

ALL WORK SHALL BE PERFORMED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL SOILS ENGINEER.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY #DS XXXX FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS.

JONATHAN S. HEAD, P.E. 028401 DATE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS 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 OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811 or 1-800-642-2444

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD WORK
1-702-227-2929

LEGEND

00.00%	SLOPE	SD	STORM DRAIN		6" TYPE 'A' CURB
00.00 XX	ELEVATION TAG	SS	SEWER LINE		24" TYPE 'L' CURB
	STORM MANHOLE	W	WATER LINE		CLEAN OUT
	DROP INLET		GAS LINE		FIRE HYDRANT
00.00	CONTOUR	X—X	FENCE		FDC
	RETAINING WALL		PL-RIGHT-OF-WAY		GATE VALVE
	SCREEN WALL		PL-ADJACENT		SIGN
			CENTERLINE		BACK WATER VALVE
			EASEMENT LINE		REDUCER
			FLOW LINE		
			SAWCUT LINE		

SEWER MANHOLE
AREA LIGHT

REVISIONS

NO.	DESCRIPTION	DATE	BY

DESIGNED	JSH
DRAWN	JSH
CHECKED	JLE
APPROVED	JLE
DATE	10/25/2022
SCALE	1"=20'

CIVIL 360
Planning & Engineering
6490 W. DESERT INN
(702) 899-6068
WWW.CIVIL360LV.COM
INFO@CIVIL360LV.COM

PROFESSIONAL ENGINEER
JONATHAN S. HEAD
EXP. 06-30-23
CIVIL
NO. 028401
STATE OF NEVADA
10/25/2022

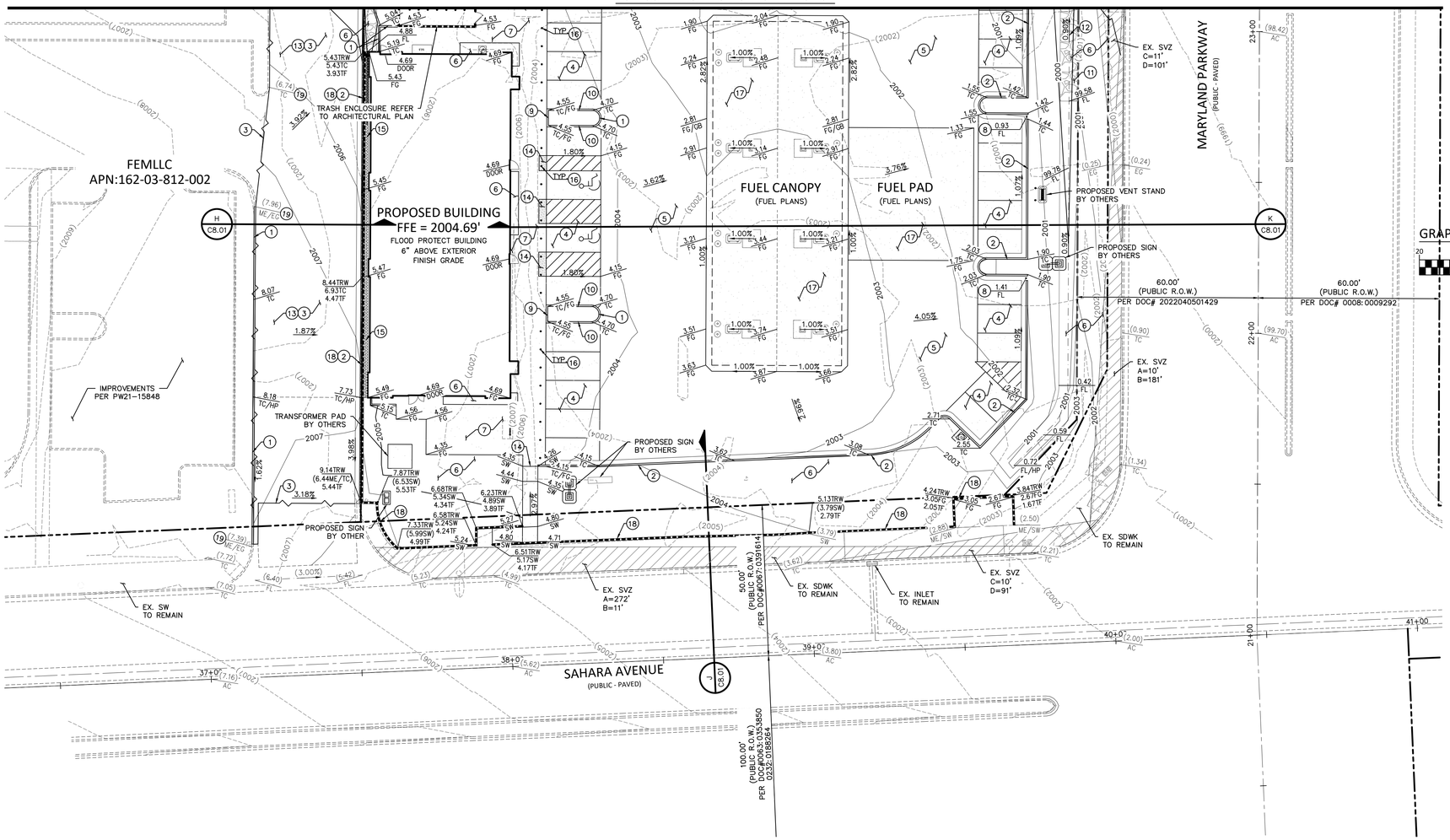
GRADING PLAN 1

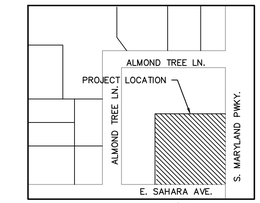
IMPROVEMENT PLANS FOR
CIRCLE K AT SAHARA AVENUE & MARYLAND PARKWAY
APN: 162-03-812-003

LAS VEGAS, NEVADA

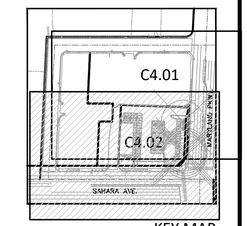
SHEET NUMBER
C4.01
SHEET 6 OF 14
DRAWING NUMBER

FOR CONTINUATION SEE SHEET C4.01





VICINITY MAP
NTS



KEY MAP
NTS

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BASIS OF BEARING

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ELEVATION: 2009.20 (U.S. SURVEY FEET)
612.41 (METERS)

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ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "CIRCLE K – NWC SAHARA & MARYLAND"

PROJECT No.: 64225057 DATED: JULY 29, 2022
PREPARED BY:
TERRACON CONSULTANTS, INC.
750 PILOT ROAD, SUITE F
LAS VEGAS, NV, 89119
PHONE No.:(702) 597-9393

ALL WORK SHALL BE PERFORMED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL SOILS ENGINEER.

I CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY #DS XXXX FOR THIS SITE ON FILE WITH CITY OF LAS VEGAS.

JONATHAN S. HEAD, P.E. 028401 DATE

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LEGEND

00.00% SLOPE	STORM DRAIN	6" TYPE 'A' CURB	SEWER MANHOLE
00.00 XX ELEVATION TAG	SEWER LINE	24" TYPE 'L' CURB	AREA LIGHT
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DROP INLET	GAS LINE	FIRE HYDRANT	
00.00 CONTOUR	FENCE	FDC	
RETAINING WALL	PL-RIGHT-OF-WAY	GATE VALVE	
SCREEN WALL	PL-ADJACENT	SIGN	
	CENTERLINE	BACK WATER VALVE	
	EASEMENT LINE	REDUCER	
	FLOW LINE		
	SAWCUT LINE		

NO.	DESCRIPTION	DATE	BY
	REVISIONS		

DESIGNED	JSH
DRAWN	JSH
CHECKED	JLE
APPROVED	JLE
DATE	10/25/2022
SCALE	1"=20'

CIVIL 360
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6490 W. DESERT INN
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INFO@CIVIL360LV.COM

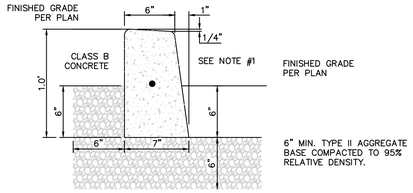
PROFESSIONAL ENGINEER
JONATHAN S. HEAD
EXP. 06-30-23
CIVIL
NO. 028401
STATE OF NEVADA
10/25/2022

GRADING PLAN 2

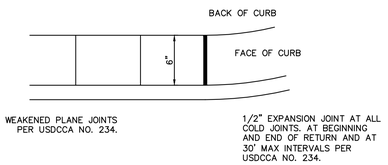
IMPROVEMENT PLANS FOR
CIRCLE K AT SAHARA AVENUE & MARYLAND PARKWAY
APN: 162-03-812-003

LAS VEGAS, NEVADA

SHEET NUMBER
C4.02
SHEET 7 OF 14
DRAWING NUMBER



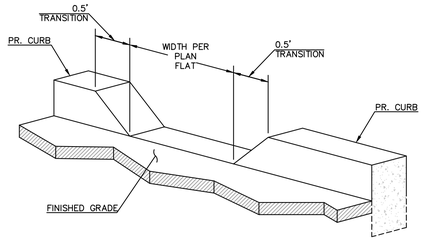
TYPE 'A' CURB SECTION



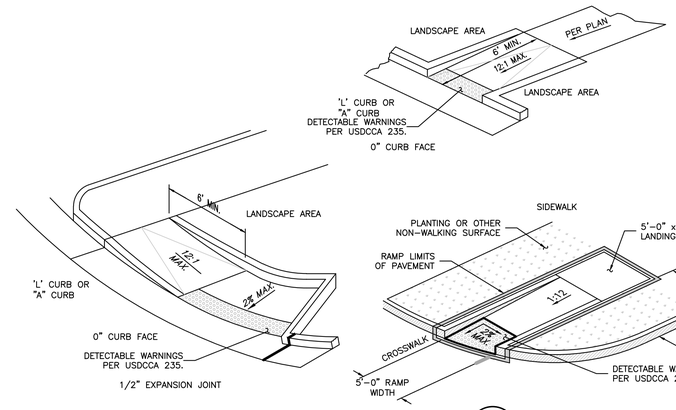
TYPICAL PLAN

NOTES:
1. CONTINUOUS #4 REBAR IN RADIUS OF CURB ONLY.

A / C8.01 — TYPE 'A' CURB (ONSITE)
NTS



B / C8.01 — CURB OPENING
NTS



C / C8.01 — HANDICAP RAMPS
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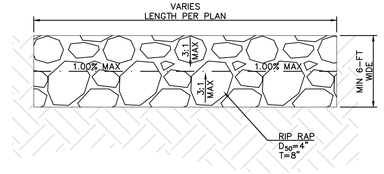
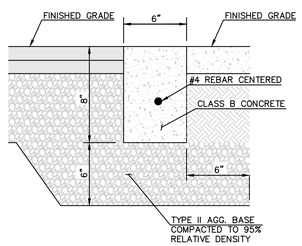
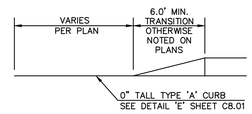


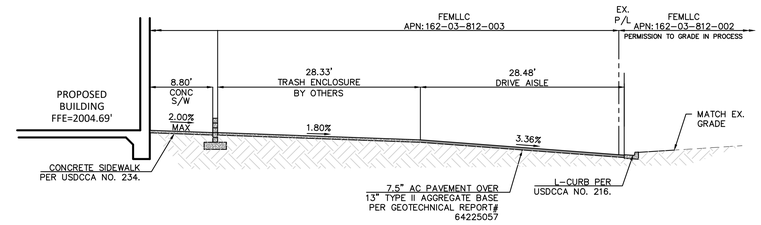
D / 8.01 — RIP-RAP BMP AREA
NTS



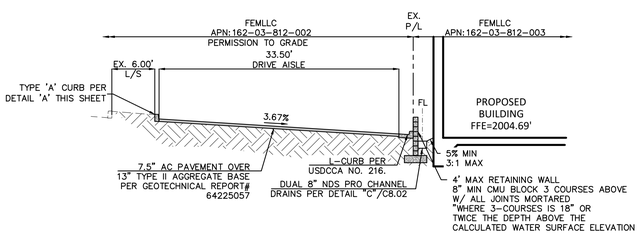
E / C8.01 — 0" TALL TYPE 'A' CURB
NTS



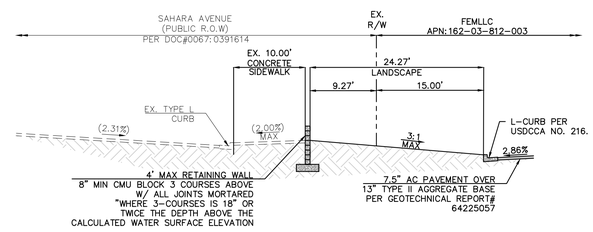
F / C8.01 — CURB TRANSITION
NTS



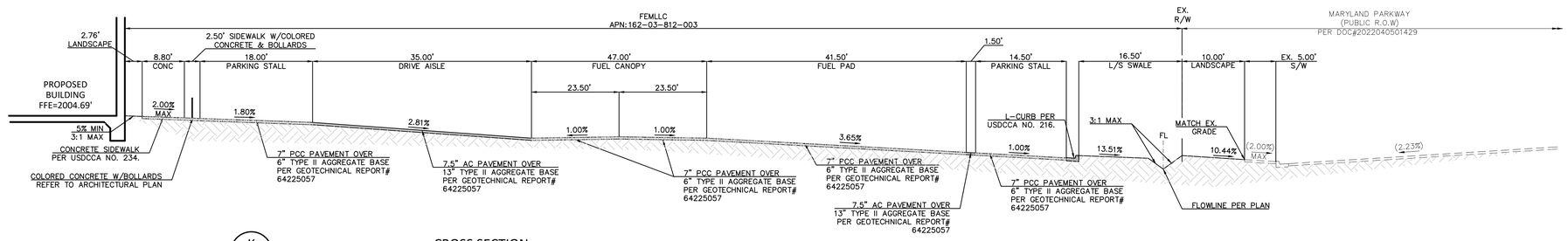
G / 8.01 — CROSS SECTION
NTS



H / 8.01 — CROSS SECTION
NTS



J / 8.01 — CROSS SECTION
NTS



K / 8.01 — CROSS SECTION
NTS

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DESIGNED	JSH	
DRAWN	JSH	
CHECKED	JLE	
APPROVED	JLE	
DATE	10/25/2022	
SCALE	N.T.S.	

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PROFESSIONAL ENGINEER - STATE OF NEVADA
JONATHAN S. HEAD
EXP. 06-30-23
CIVIL
NO. 02840
10/25/2022

DETAIL SHEET 1

IMPROVEMENT PLANS FOR
CIRCLE K AT SAHARA AVENUE & MARYLAND PARKWAY
APN: 162-03-812-003
LAS VEGAS, NEVADA

SHEET NUMBER
C8.01
SHEET13 OF 14

DRAWING NUMBER