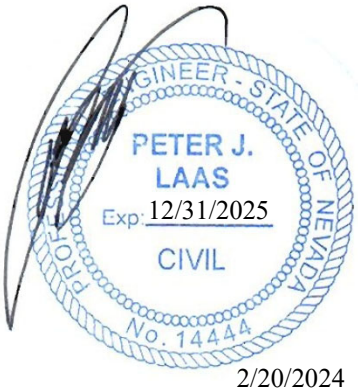
ADDENDUM #2 TO THE TECHNICAL DRAINAGE STUDY
FOR
GOLDEN APARTMENTS

DS-5725
W.O. # AW-2305
February 20, 2024



2/20/2024

Prepared for:

The Golden Apartments, LLC
c/o Jack Panou
1735 N Nellis Boulevard, STE #D-E
Las Vegas, NV 89115

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

February 20, 2024

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

Re: Addendum #2 to the Technical Drainage Study GOLDEN APARTMENTS

Submitted for your approval are two copies of the ***Addendum #2 to the Technical Drainage Study Golden Apartments,*** a proposed 3.03 acre mixed-use development. The site is affected by a FEMA Special Flood Hazard Area Unshaded Zone X according to FEMA FIRM Map 32003C2160F, and is adjacent to an existing Clark County Regional Flood Control District (CCRFCD) Master Planned Facility (LVOW-0146) according to the CCRFCD Master Plan Update, Figure F-24, 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: Golden Apartments Date: 2/20/2024

Location of Development: a) Descriptive (Cross Streets) North/South: Simmons Street

East/West: Vegas Drive

b) Section: 20 Township: 20 South Range: 61 East

c) APN : 139-20-403-001 & 002

Name of Owner: The Golden Apartments, LLC c/o Jack Panou

Telephone No.: Fax No.: E-Mail Address:

Address: 1735 N Nellis Boulevard, STE #D-E, Las Vegas, NV 89115

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

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

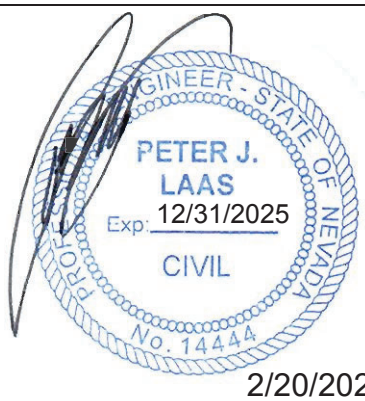
Firm: Impulse Civil Engineering

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: 3.03 AC+- Being Developed/Disturbed: 3.03 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.): Mixed-Use
5. Approximate upstream land area which drains to the subject site: 80 ACRES
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: Willow Brook Manor (DS-211) and GSI Building (DS-2558) but neither were constructed
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: South to Vegas Drive and east to Simmons Street
8. Briefly describe your proposed schedule for the subject project: As soon as possible



2/20/2024

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-5725

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. 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 1. We understand this requirement and will submit the study and all addenda to CCRFCD once accepted by the City of Las Vegas.

Comment 2. The flow depth along Vegas Dr. is above the sidewalk, and has a velocity over 5 ft/s. Please provide erosion protection along the landscape area on Vegas Dr.

Response 2. We have added 4" rock to Section C/4 and are providing a calculation to show how the size was determined. A copy of the calculation may be found after the comment letter at the rear of this report.

Comment 3. Flood Control agrees with the idea of using the street centerline stationing to complete the hydraulic analysis along Vegas Dr. When determining the minimum finish floor, the highest adjacent top of curb elevation must be used. For Building 2, the 3.70 TC would be used to determine the minimum finish floor. Review and revise accordingly.

Response 3. The 3.70 top of curb elevation is approximately 100-feet upstream and as we demonstrated in the previous analysis, the depth of flow is increasing as we go to the east while the top of curb is decreasing. We are already applying twice the depth of flow as a safety factor so the appropriate methodology is to prepare another section near 12+00 to represent the actual flow depth at the upstream end of the building. Based on the previous discussion and the geometry of Vegas Drive, the following summary of flow depth to finished floor is provided:

Building	Station	TC	FL	D_{100}	FF_{min}	FF_{design}
3	11+00	4.27	3.77	1.41	6.59	7.20
2	12+00	3.70	3.20	1.45	6.10	6.20
1	15+00	2.60	2.10	2.12	5.72	6.00

Comment 4. The runoff flow, when adding the velocity head, from Crystal Chimes Dr. will overtop the driveway high point of the project site. Review and revise accordingly.

Response 4. According to Standard Form 2, a freeboard of 6-inches above the flow depth is required at entrances. Recall the depth of flow in Crystal Chimes Drive is 0.98-feet and the velocity head is 0.38-feet as provided in Addendum 1. The flow line is 5.13 on the south side of Crystal Chimes Drive so the maximum water surface is 6.49 which would require a top of curb of at least 6.99. Using the north flow line of 5.28 would make the

maximum water surface 6.64 which would require a top of curb of at least 7.14. We have raised the top of curbs to be above this requirement.

Comment 5. There is a low point located north of Building 1 adjacent to the proposed dog park that does not provide positive drainage toward the proposed valley gutter. The top of curb elevation labeled 5.43, is the low point due to the surrounding top of curb elevations being 5.53 and 5.54, respectively.

Response 5. We have corrected the low point to that it flows to the valley gutter.

We feel that we have completely addressed all 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:** **February 20, 2024**
TO: **Land Development Services** Department of Community Development – Building & Safety Division			**FROM:** Tyler Key Flood Control Engineering Associate Department of Public Works
SUBJECT:	Drainage Study for: **Golden Apartments**		**COPIES TO:** Impulse Civil Engineering
Cross Streets:	Simmons St & Vegas Dr		The Golden Apartments
File Number:	F:\Depot\DSMemos\DS5725B.doc		Bart Anderson, P.E., DevCo
Parcel Number:	139-20-403-001 & 002		CCRFCD
Zoning Action:	23-0050-SDR1; 23-0050-SUP1; 23-0050-VAR1		
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	12/20/2023	1/11/2024	Not Approved	$400	5562203: $400
2nd Submittal	2/5/2024	2/20/2024	See Comments Below	$400	5620695: $400
			TOTAL FEES (LDDRS):	**$800**	**----**

REMARKS:

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

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

1. 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.

   Please note that effective March 15, 2019, the CCRFCD adopted new requirements for drainage study concurrence submittal. Follow the link below for specific guidance.

   http://gustfront.ccrfcd.org/LandDev/LandDev.aspx

2. The flow depth along Vegas Dr. is above the sidewalk, and has a velocity over 5 ft/s. Please provide erosion protection along the landscape area on Vegas Dr.

3. Flood Control agrees with the idea of using the street centerline stationing to complete the hydraulic analysis along Vegas Dr. When determining the minimum finish floor, the highest adjacent top of curb elevation must be used. For **Building 2**, the 3.70 TC would be used to determine the minimum finish floor. Review and revise accordingly.

4. The runoff flow, when adding the velocity head, from Crystal Chimes Dr. will overtop the driveway high point of the project site. Review and revise accordingly.

5. There is a low point located north of **Building 1** adjacent to the proposed dog park that does not provide positive drainage toward the proposed valley gutter. The top of curb elevation labeled 5.43, is the low point due to the surrounding top of curb elevations being 5.53 and 5.54, respectively.

***** The City of Las Vegas Flood Control is standardizing the file naming of drainage studies and plans during the digitizing process. When saving the project files in the CD or thumb drive, please follow the system below:**

If drainage study only contains one combined file, use the following naming convention in Document Title:

1st Submittal DS and Plans (for first and original submittal);

2nd Submittal DS and Plans (for second submittal (addendum #1)) etc.

If drainage study contains multiple files, use the following naming convention in Document Title:

1st Submittal DS (for the report of the drainage study)

1st Submittal Plan 1 (could be the drainage condition maps)

1st Submittal Plan 2 (could be the improvement plans) etc.

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

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

END OF REMARKS
TJK

T/R/S: T20S/R61E/S20
AREA M20

Impulse
Civil Engineering Planning

7485 West Azure Drive, Suite 226
Las Vegas, NV 89130
Phone: 702-815-0720

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

Rip Rap Sizing Calculation - Vegas Drive

$$d_{50} = \left[\frac{v \cdot S^{0.17}}{3 \cdot (S_s - 1)}\right]^2$$

v =	6.11	ft/s
S =	0.006	ft/ft
S_s =	2.5	minimum
d_{50}=	0.33	ft
d_{50}=	3.91	in

Thickness should be atleast 2d50 (CCRFCD-705.4.6 pg. 748)
use 4" rock, 8" THICK

Equation (732), page 747
CCRFD Manual

n= 0.0395 (d50)^1/6

n= 0.033

Ultimate Condition

Vegas at 12+00 100-year
Worksheet for Irregular Channel

Project Description	
Project File	c:\hydrology\haestad\fmw\gold.fm2
Worksheet	Vegas Drive At 12+00
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data		
Channel Slope	0.006100	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	90.00	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			
34.00	0.73			
34.00	1.23			
48.00	1.18			
48.00	0.68			
83.00	0.60			
83.00	0.56			
84.50	0.43			
84.50	0.93			
85.00	0.93			
90.00	1.03			
90.00	2.00			

Discharge	421.00	cfs

Results		
Wtd. Mannings Coefficient	0.016	
Water Surface Elevation	1.45	ft
Flow Area	70.20	ft²
Wetted Perimeter	93.38	ft
Top Width	90.00	ft
Height	1.45	ft
Critical Depth	1.55	ft
Critical Slope	0.004101	ft/ft
Velocity	6.00	ft/s
Velocity Head	0.56	ft
Specific Energy	2.01	ft
Froude Number	1.20	
Flow is supercritical.		

Cross Section
Cross Section for Irregular Channel

Project Description	
Project File	c:\hydrology\haestad\fmw\gold.fm2
Worksheet	Vegas Drive At 12+00
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data		
Wtd. Mannings Coefficient	0.016	
Channel Slope	0.006100	ft/ft
Water Surface Elevation	1.45	ft
Discharge	421.00	cfs