Addendum #2 to the Technical Drainage Study for

AREA 15 DISTRICT 2

Date Prepared:
February 2023

Prepared for:
Fisher Brothers Las Vegas, LLC
299 Park Avenue, 42nd Floor
New York, NY 10171
212.940.6262

Prepared by:
Kimley-Horn and Associates, Inc.
6671 Las Vegas Boulevard South, Suite 320
Las Vegas, NV 89119
702.862.3600

Kimley»Horn

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Area 15 District 2 Date: February 2023

Location of Development: a) Descriptive (Cross Streets) North/South: Rigel Avenue & Rancho Drive

East/West: Meade Avenue & Sirius Avenue

b) Section: 8 Township: 21 South Range: 61 East

c) APN : 162-08-702-001, 162-08-702-002, 162-08-303-034, 162-08-799-003, 162-08-799-009, and 162-08-799-009

Name of Owner: New Vegas Holding Company, LLC

Telephone No.: 212.940.6262 Fax No.: n/a E-Mail Address: pbrohn@fisherbrothers.com

Address: 299 Park Avenue New York, NY 10171

Contact Person-Name: Rachael R. Dennis, P.E. **Telephone No.:** 702.734.5666

* **E-Mail Address:** Rachael.Dennis@kimley-horn.com **Fax No.:**

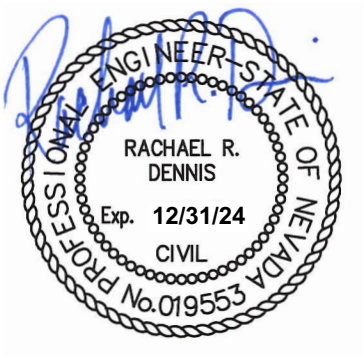
Firm: Kimley-Horn

Address: 6671 Las Vegas Boulevard South, #320, Las Vegas NV 89119

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: +/- 11.06 ac Being Developed/Disturbed: +/- 11.06 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.): Parking Garage, Commercial
5. Approximate upstream land area which drains to the subject site: +/- 4.38 sq. mi.
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: Area 15 TDS (DS-4921); Area 15 Event Pkg Lot TDS (DS-5288); Area 15 - Phase 2 TDS (DS-5313)
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Surface runoff into Rancho Drive, Rigel Avenue, & Meade Avenue
8. Briefly describe your proposed schedule for the subject project: ASAP



Engineer's Seal 2/21/23

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

***New Required Field**

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

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: February 6, 2023
TO: **Land Development Services** Department of Building & Safety				FROM: Caitlyn Alcantara, P.E. Flood Control, Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for:			**COPIES TO:**
Area 15 District 2				Kimley-Horn and Associates, Inc.
Cross Streets:	Rigel Avenue & Rancho Drive/ Meade Avenue & Sirius Avenue			Fisher Brothers Las Vegas, LLC
File Number:	F:\Depot\DSMemos\DS05627B.doc			CCRFCD
Parcel Number:	162-08-702-001, 162-08-702-002, 162-08-303-034, 162-08-799-003, 162-08-799-009			
Zoning Action:	22-0425-TMP1			
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	11/23/2022	12/08/2022	Not Approved	$400	5048051: $400
2nd Submittal	1/17/2023	2/6/2023	See Comments Below	$400	5111599: $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

   Please note that effective April 6, 2020, only electronic submittals to the CCRFCD will be accepted for regional concurrence. Contact cwang@regionalflood.org for direction.

2. It is unclear what flood protection is provided. Construction Note 10 states solid grout 18" inches above finished floor. It also asserts a grouted screen wall with the screen height as noted on the grading plans. Clarify the situation with a section showing the solid grouting and provide a section at the high side of the PR Building 1 ensuring the finished floor is protected.
3. Provide missing contours on Sheet C03.10 (proposed) and C03.11 (existing).
4. **Sheet C03.04, C03.05, & C03.15:** Explain what will happen when the walls break for a ramp up to the buildings, what protection is offered for these buildings.

5. The finish floor of PR Building 1 does 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 finished floor is not protected at the high side of the building.

Location	PR Building 1 FF	FL Grade at Ditch	Depth Applied	Min FF (FL + Depth + Freeboard)	Solid Grouting Protection Provided	
					FF + 18"	Top-of-Wall
High Side of Building	2108.00'	2101'	8.56' (Section RD)	2111.06' (2101 + 8.56 + 1.5)	2109.5'	2109.98'
At Section RD		2100.4'		2110.46' (2100.4 + 8.56 + 1.5)		2109.41'

6. Provide contour labels and slopes for streets for sheets C03.51 – C03.56.
7. **Sheet C03.18**: ADA WALK DETAIL is overlayed on the parking garage. Remove the detail from the sheet.
8. **Sheet C03.10 & C03.11:** In the OUTDOOR PATIO/STORAGE AREA, adjacent to the south of PR Building 1, there is a trench drain collecting onsite flow, Trench ONG#4. From the grading it appears Trench ONG#4 has no clear escape in an emergency situation. Show greater detail in this area or provide a pathway of escape.
9. **Sheets C03.06 & C03.10:** Provide a wall at the southwest corner of PR Building 1 to connect the north and south walls to prevent onsite flow from reaching the building and to protect against the emergency overflow of Trench ONG #1.
10. **Sheet C03.04:** There is a pond being created at the northeast wall of the trash enclosure. Review and revise accordingly.
11. **Previous Comment 10:** Provide flow slopes throughout the site for the proposed pipe and trench drains to verify pipe and trench flow capacity.
12. Provide for all streets with proposed improvements longitudinal slopes in the profiles.
13. Show the existing/proposed longitudinal slopes for all adjacent streets on the grading plans so we may review the provided computation analyzing the streets.
14. **Previous Comment 22:** Provide existing grades including grading tags100-feet past any proposed improvements on the grading plans. This comment applies to all surrounding streets, Meade Avenue, Rigel Avenue, Sirius Avenue, and the surrounding properties.
15. Street images indicate there are two drop inlets on both the north and the south boundary of the project site on Rancho Drive. Show both sets of inlets, the respective attached pipes with sizes, and the approved plan number, 107-V2438 for the north and 107-V1535 for the south, on the improvement plans.
16. The pipes impacting the retaining wall and going beneath the sidewalk underdrain are acceptable, however, the flow cannot be expected to go over the sidewalk in the 100-year event. Provide a transition and two sidewalk underdrains at every pipe outlet larger than 6" or equivalent solution.

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/S8
AREA R-08

Kimley»Horn

February 21, 2023

Mr. Albert Sung, P.E.
City of Las Vegas Flood Control
333 Rancho Drive
Las Vegas, NV 89106

RE: ***Addendum #2 to the Technical Drainage Study for Area 15 District 2***

Dear Mr. Sung,

Attached is one (1) copy of the *Addendum #2 to the Technical Drainage Study for Area 15 District 2* for your review. This letter certifies that all items provided on the electronic submittal (CD) match the paper version bound into the study.

With Kimley-Horn, you should expect more and will experience better. Please contact me at (702) 734-5666 or rachael.dennis@kimley-horn.com should you have any questions or concerns.

Sincerely,

Rachael R. Dennis, P.E.

Sean Schofield, Analyst

Kimley»Horn

Addendum #2 to the Technical Drainage Study for *AREA 15 DISTRICT 2*

Date Prepared:
February 2023

Prepared for:
Fisher Brothers Las Vegas, LLC
299 Park Avenue, 42nd Floor
New York, NY 10171
212.940.6262

Prepared by:
Kimley-Horn and Associates, Inc.
6671 Las Vegas Boulevard South, Suite 320
Las Vegas, NV 89119
702.862.3600

February 2023
KH Project #092965012

Kimley»Horn

February 21, 2023

Caitlyn Alcantara, P.E.
Flood Control, Engr. Associate
Department of Public Works
City of Las Vegas
495 S. Main Street
Las Vegas, NV 89101

RE*: Addendum #2 to the Technical Drainage Study for Area 15 District 2* **(DS05627)**

The purpose of this letter is to provide satisfactory answers to the comments issued in the subject Comment Letter dated February 6, 2023. These comments have been reviewed and are addressed herein.

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.**

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

Please note that effective April 6, 2020, only electronic submittals to the CCRFCD will be accepted for regional concurrence. Contact cwang@regionalflood.org for direction.

Response: Noted. Upon conditional approval by CLV, the study will be submitted to CCRFCD for concurrence.

Comment 2: **It is unclear what flood protection is provided. Construction Note 10 states solid grout 18'' inches above finished floor. It also asserts a grouted screen wall with the screen height as noted on the grading plans. Clarify the situation with a section showing the solid grouting and provide a section at the high side of the PR Building 1 ensuring the finished floor is protected.**

Response: As discussed in a meeting with CLV on February 13, 2023, **Section K/C03.21** has been revised to callout 6 feet of solid grouting (**Construction Note 10A**) for the proposed screen wall closest to Building 1 to provide finished floor protection for Building 1. The proposed solid grouting will provide a minimum of 18-inches of freeboard above the adjacent flow depth in Rancho Drive. Refer to the improvement plans in **Appendix C**.

Comment 3: **Provide missing contours on Sheet C03.10 (proposed) and C03.11 (existing).**

Response: **Sheet C03.10** and **C03.11** have been revised and now show contours. Please refer to the improvement plans in **Appendix C**.

Comment 4: **Sheet C03.04, C03.05, & C03.15: Explain what will happen when the walls break for a ramp up to the buildings, what protection is offered for these buildings.**

Response: As discussed in a meeting with CLV on February 13, 2023, flood protection has been provided at the following areas:

Sheet C03.01: The proposed pedestrian access at Rigel Avenue is elevated 6-inches above the WSE in the street. Additionally, structural flood proofing for **PR Building 6** has been provided where the walls along Rigel Avenue break for the pedestrian access. Flood protection notes have been added to the Improvement Plans to call out the flood protection for the west side of **PR Building 6**. Please refer to the improvement plans in **Appendix C**.

Sheet C03.02: The proposed pedestrian access Ramp 2, Ramp 3, and the Stairway at Meade Avenue are elevated more than 6-inches above the WSE in the street. Additionally, the proposed **PR Buildings 5** & **6** finished floor elevations are set above twice the depth of flow in the adjacent roadway along Meade Avenue. Please refer to the improvement plans in **Appendix C**.

Sheet C03.04: The proposed driveway access at Rancho Drive is humped 6-inches above the WSE in the street looking both north and south along the driveway. Additionally, solid grouted walls have been provided for **PR Building 1** (Refer to Response to Comment #2) along Rancho Drive. It is understood that the 100-year water surface elevation will inundate the driveway, and pedestrian ramps to the north, but will not impact the proposed **PR Building 1**. Please refer to the improvement plans in **Appendix C**.

Sheet C03.05: The proposed pedestrian access Ramp 10 at Rigel Avenue is humped 6-inches above the WSE in the street. The proposed driveway access at Rigel Avenue is also humped 6-inches above the WSE in the street. Additionally, the **PR Building 5** finished floor elevation is set above twice the depth of flow in the adjacent roadway along Rigel Avenue. Please refer to the improvement plans in **Appendix C**.

Sheet C03.09: The proposed driveway access at Rigel Avenue is elevated more than 6-inches above the WSE in the street. Additionally, the proposed **PR Building 5** finished floor elevation is set above twice the depth of flow in the adjacent roadway along Rigel Avenue. Please refer to the improvement plans in **Appendix C**.

Sheet C03.14: The proposed driveway access at Rancho Drive is elevated 6-inches above the WSE in the street looking both north and south along the driveway. Additionally, proposed **PR Buildings 2 & 3** are elevated a minimum of 18-inches above the water surface elevation along Rancho Drive. It is understood that the 100-year water surface elevation will inundate the driveway ramp but will not impact **PR Buildings 2 & 3**. Please refer to the improvement plans in **Appendix C**.

Sheet C03.15: The proposed pedestrian access ramp at Sirius Avenue is elevated more than 6-inches above the WSE in the street (**HEC RAS Cross Section 1170**). Please refer to the improvement plans in **Appendix C**.

Comment 5: **The finish floor of PR Building 1 does 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 (. The finished floor is not protected at the high side of the building.**

Location	PR Building 1 FF	FL Grade at Ditch	Depth Applied	Min FF (FL + Depth + Freeboard)	Solid Grouting Protection Provided	
					FF + 18"	Top-of-Wall
High Side of Building	2108.00'	2101'	8.56' (Section RD)	2111.06' (2101 + 8.56 + 1.5)	2109.5'	2109.98'
At Section RD		2100.4'		2110.46' (2100.4 + 8.56 + 1.5)		2109.41'

Response: See Response to Comment #2. A 6-foot-tall solid grouted flood wall has been provided along proposed **PR Building 1**. Refer to the improvement plans in **Appendix C**.

High Side of Building = FL + Depth + Freeboard = 2101' + 8.56' + 1.5' = 2111.06'
Proposed Top of Flood Wall = TC + Wall Ht = 2107.35' + 6' = 2113.35'
Since the proposed flood wall is 2.29 feet above the required freeboard to protect the finished floor; therefore, the proposed flood wall provides adequate flood protection for **PR Building 1.**

Section RD = FL + Depth + Freeboard = 2100.4' + 8.56' + 1.5' = 2110.46'
Proposed Top of Flood Wall = TC + Wall Ht = 2107.90' + 6' = 2113.90'
Since the proposed flood wall is 3.44 feet above the required freeboard to protect the finished floor; therefore, the proposed flood wall provides adequate flood protection for **PR Building 1.**

Comment 6: **Provide contour labels and slopes for sheets C03.51 – C03.56.**

Response: **Sheet C03.51** – **C03.56** have been revised to include contour labels and slopes. Refer to the improvement plans in **Appendix D**.

Comment 7: **Sheet C03.18: ADA WALK DETAIL is overlayed on the parking garage. Remove the detail from the sheet.**

Response: As discussed in a meeting with CLV on February 13, 2023, the ADA Walk Detail will remain on **Sheet C03.18** to show the variable curb height.

Comment 8: **Sheet C03.10 & C03.11: In the OUTDOOR PATIO/STORAGE AREA, adjacent to the south of PR Building 1, there is a trench drain collecting onsite flow, Trench ONG#4. From the grading it appears Trench ONG#4 has no clear escape in an emergency situation. Show greater detail in this area or provide a pathway of escape.**

Response: As discussed in a meeting with CLV on February 13, 2023, a gate has been added to **Sheet C03.11** to provide an emergency overflow path for the Outdoor Patio/Storage Area in the unlikely event the **Trench Drain ONG#4** becomes completely clogged. Please note that this is an emergency overflow condition only and the proposed system is designed to intercept and convey all onsite nuisance and storm flows up to a 100-year storm event. Refer to the improvement plans in **Appendix C**.

Comment 9: **Sheet C03.06 & C03.10: Provide a wall at the southwest corner of PR Building 1 to connect the north and south walls to prevent onsite flow from reaching the building and to protect against the emergency overflow of Trench ONG #1.**

Response: Per a phone conversation with CLV on February 13, 2023, the north and south walls at the southwest corner of **PR Building 1** have been connected to the building as shown on **Sheet C03.06** and **C03.10** to prevent emergency overflows from Trench ONG #1 from impacting the PR Building 1. Refer to the improvement plans in **Appendix C.**

Comment 10: **Sheet C03.04: There is a pond being created at the northeast wall of the trash enclosure. Review and revise accordingly.**

Response: Per a phone conversation with CLV on February 13, 2023, a note has been added to the **Ramp 15** Detail on **Sheet C03.25** noting that a drain will be provided at the low point for the trash compactor sand-oil separator which connects directly into the sewer system. Refer to the improvement plans in **Appendix C.**

Comment 11: **Previous Comment 10: Provide flow slopes throughout the site for the proposed pipe and trench drains to verify pipe and trench flow capacity.**

Response: Per phone conversation with CLV on February 13, 2023 this comment has been removed since the trench drain information was previously provided per the manufacturer detail shown on **Sheet C03.33**.

Comment 12: **Provide for all streets with proposed improvements longitudinal slopes in the profiles.**

Response: The longitudinal slopes have been provided for all the street profiles. Refer to the improvement plans in **Appendix C**.

Comment 13: **Show the existing/proposed longitudinal slopes for all adjacent streets on the grading plans so we may review the provided computation analyzing the streets.**

Response: The longitudinal slopes for all adjacent streets are provided in the improvement plans. Refer to the improvement plans in **Appendix C.**

Comment 14: **Previous Comment 22: Provide existing grades including grading tags100-feet past any proposed improvements on the grading plans. This comment applies to all surrounding streets, Meade Avenue, Rigel Avenue, Sirius Avenue, and the surrounding properties.**

Response: Per a phone conversation with CLV on February 13, 2023, existing grading tags have been provided 100 feet past the proposed improvements. Additionally, a profile sheet for Sirius Avenue has been provided in lieu of providing additional grading sheets with "No Construction". Refer to the improvement plans in **Appendix D**.

Comment 15: **Street images indicate there are two drop inlets on both the north and south boundary of the project site on Rancho Drive. Show both sets of inlets, the respective attached pipes with sizes, and the approved plan number, 107-V2438 for the north and 107-V1535 for the south, on the improvement plans.**

Response: The existing drop inlets north and south of the project site on Rancho Drive are now included in the improvement plans with their respective. Refer to the improvement plans in **Appendix C**.

Comment 16: **The pipes impacting the retaining wall and going beneath the sidewalk underdrain are acceptable, however, the flow cannot be expected to go over the sidewalk in the 100-year event. Provide a transition and two sidewalk underdrains at every pipe outlet larger than 6'' or equivalent solution.**

Response: Per a phone conversation with CLV on February 15, 2023, nuisance flows are not permitted to overtop the sidewalk. Additionally, proposed onsite storm drain discharging through the wall and into the adjacent streets has been limited to a maximum size of 10" PVC where a Curb-O-Let Round to Rectangular Adapter will reduce the PVC outlet height to 3-inches or 4-inches tall. Refer to Details 11 & 12 on **Sheet C03.34** in **Appendix C.** Onsite prorates for **Subbasins ONG and ONE2** were also revised accordingly. Refer to revised summary tables on **Figures PRO-1** and **PRO-2** in **Appendix A**. Revised wall penetration locations have been shown on **Figure FAC-1** in **Appendix A**. The 18" RCP that was previously discharging 5.5 cfs into Meade Avenue has been replaced by two (2) 10" PVC pipes which convey flows from **Prorated Subbasins ONE2.2, ONE3, & ONE4** to Meade Avenue. The 18" RCP that was previously discharging 5 cfs into Rancho Drive has been replaced with two (2) 10" PVC pipes and two (2) 8" PVC pipes conveying flows from **Prorated Subbains ONG1, ONG2, ONG3 & OND1** to Rancho Drive. Due to cover constraints, DI#3 has been replaced with a 20-foot-long Trench Drain (Trench OND1 #1) to collect flows from onsite prorated **Subbasin OND1**, which continues to outlet flows directly into Rancho Drive. DI#4 has been renamed to DI#3 on all exhibits and tables in **Appendix A**.

Revised Rancho Road **Cross Sections 1.5. 2.0 & 2.5** and trench drain calculations have been included in **Appendix B** and in updated flow summary tables on revised **Figures PRO-1**, **PRO-2, FAC-1** and **FAC-2.** Refer to the improvement plans in **Appendix C**.

With Kimley-Horn, you should expect more and will experience better. Please contact me at (702) 734-5666 or rachael.dennis@kimley-horn.com should you have any questions or need any additional information.

Sincerely,

Rachael R. Dennis, PE

Sean Schofield, Analyst

LIST OF APPENDICES

Appendix A – Documents & Figures

- PRO-1: Overall Proposed Condition Drainage Map
- PRO-2: Onsite Proposed Condition Drainage Map
- FAC-1: Onsite Facility Map
- FAC-2: Parking Garage Facility Map

Appendix B – Hydraulic Calculations

- Normal Depth Calculations – Proposed Conditions Street Sections
- Normal Depth Calculations - Onsite Sections
- Trench Drain Calculations

Appendix C – Improvement Plans

Appendix D – Data CD