

# TECHNICAL DRAINAGE STUDY UPDATE

FOR

## Durango & Grand Montecito

## Multi-family Residential

BNN-21-001

APN: 125-29-512-015

City of Las Vegas

March 2023

Prepared for:

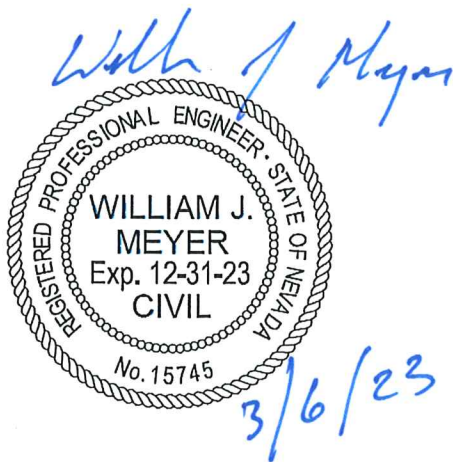
Larry Tindall

LTRD Corporation/GreeneTindall Design Group

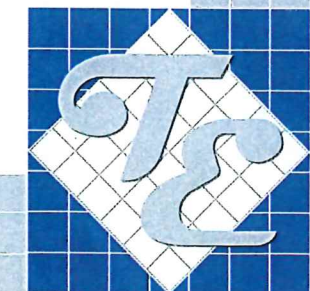
3047 East Warm Springs Road, Suite 500

(702) 597-5597

[larry@ltrdcorp.com](mailto:larry@ltrdcorp.com)



**TANEY & ENGINEERING**



6030 S. Jones Blvd.  
Las Vegas, NV 89118  
Phone (702) 362-8844  
Fax (702) 362-8844

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL  
**DRAINAGE STUDY INFORMATION FORM**

Name of Development: Durango & Grand Montecito Date: Mar 6, 2023

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

b) Section: 29 Township: 19S Range: 60E

c) APN : 125-29-512-015

Name of Owner: Centennial Hills Mob Owners LLC

Telephone No.: 847-656-5136 Fax No.: \_\_\_\_\_ E-Mail Address: ileibold@bannerreg.com

Address: 10120 West Flamingo Road Suite 4-124

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

\* E-Mail Address: JanelleK@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:

<input type="checkbox"/>	Rezoning	<input checked="" type="checkbox"/>	Subdivision Map	<input type="checkbox"/>	Clearing and Grading Only
<input type="checkbox"/>	Parcel Map	<input type="checkbox"/>	Planned Unit Development	<input type="checkbox"/>	Other (Please specify below)
<input type="checkbox"/>	Large Parcel Map	<input type="checkbox"/>	Building Permit		

1. Total Owned Land Area: At Site: 8.8+/- acres Being Developed/Disturbed: 8.8+/- 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

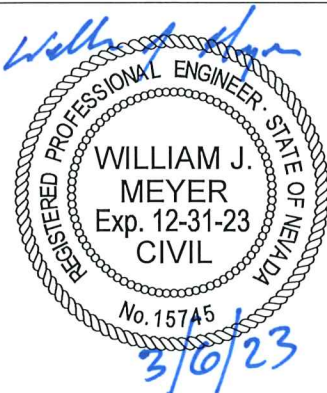
4. Proposed type of development (Residential, Commercial, Etc.): Residential

5. Approximate upstream land area which drains to the subject site: 4.25+/- acres

6. Has the site drainage been evaluated in the past?  YES  NO If yes, please identify documentation: DS-3941

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: The site will discharge to Grand Montecito Parkway.

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



Engineer's Seal

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

**\*New Required Field**

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

	Revision	Date

DS5570A

Local Entity File No.

REFERENCE:

STANDARD FORM 1



Job No. BNN-21-001

Date: March 3, 2023

**JURISDICTION:**

Albert Sung, P.E.  
Flood Control  
City of Las Vegas Public Works  
495 South Main Street  
Las Vegas, NV 89101

**UPDATE #1 to the Technical Drainage Study for Durango & Grand Montecito**

Dear Mr. Sung:

Taney Engineering is pleased to submit the Technical Drainage Study Update for **Durango & Grand Montecito**. This update addresses changes to the project site plan.

The grading shown on the current plan set is generally consistent with the plans approved in the initial drainage study. The Finished Floors elevations have all been raised. The revisions proposed with this update provide greater protection for the North wing, West wing, South Wing, and Clubhouse.

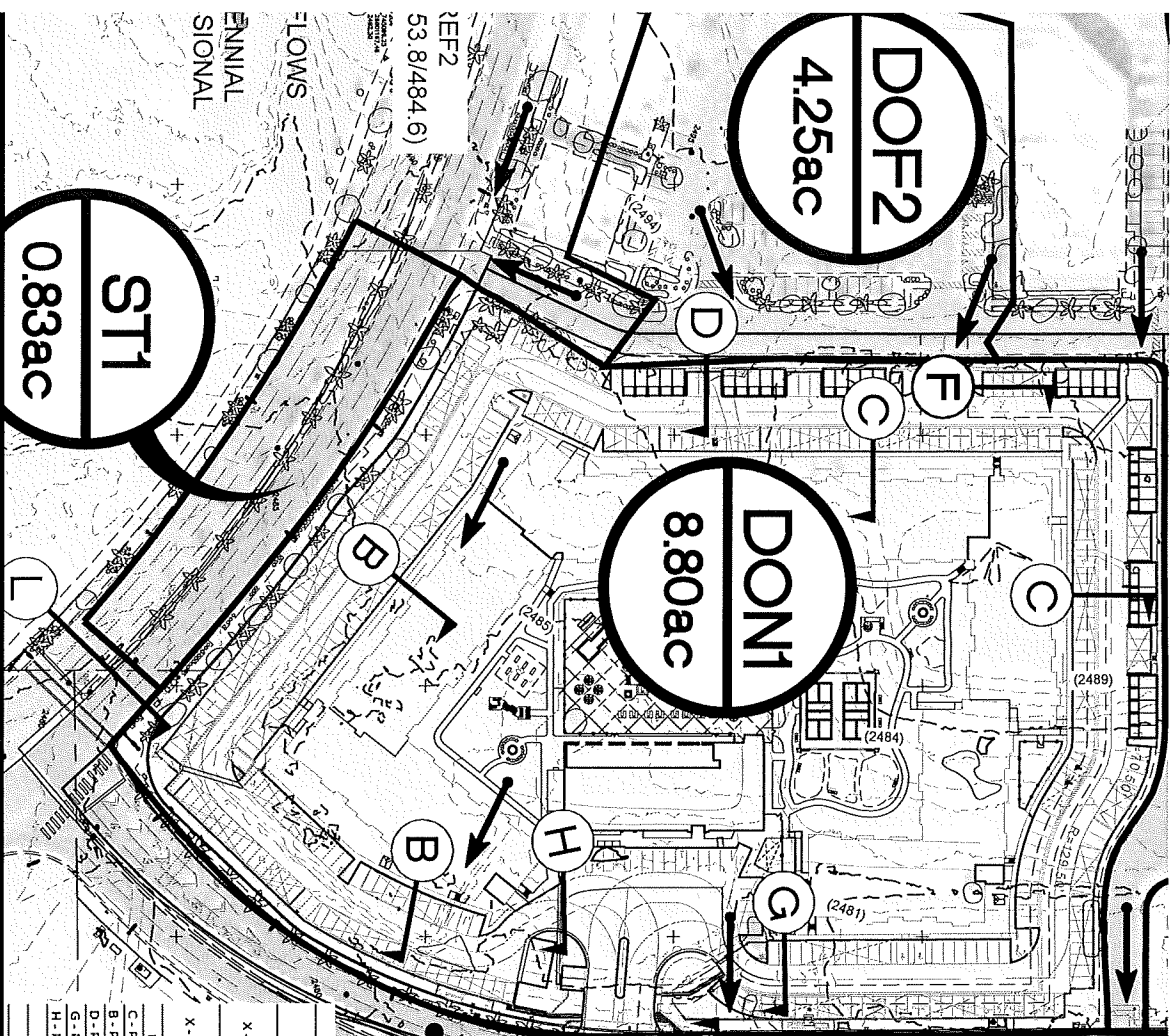
The following table represents a hydraulic summary showing that the buildings are adequately elevated per requirements.

UPDATE SUMMARY							
Bldg	Basin Cross Section	Old FF Elev.	New FF Elev.	Slope (%)	FL Depth	Velocity	DV
North Wing	Section C	84.50	87.00	0.64	0.4	2.93	1.17
Clubhouse-N	Section G	84.50	82.66	0.50	0.3	2.85	1.14
Clubhouse-S*	Section H	84.50	82.66	0.50	0.5	3.01	1.51
South Wing	Section B	84.50	87.00	0.50	0.6	2.97	1.78
West Wing	Section C	84.50	87.00	0.64	0.4	2.93	1.17

If there are any question or you need any additional information, please do not hesitate to contact our office.

Sincerely,  
**TANEY ENGINEERING**

ShaTobe Hal



CP1 (38.6/116.3)  
 EX. 18' SDDI

\*CP1 = DOF1 + DOF4 + XOF5 - EX. 18' DI (15.3CFS)  
 \*CP2 = DOF2 + DON1 - (SDDI#32 + EX. 20' INTERCEPT)

SDDI#34-20' TYPE CM2  
 SDDI#33-40' TYPE CM2  
 SDDI#35-5' TYPE CM2

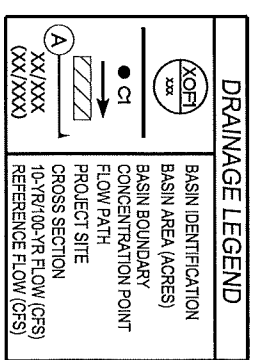
SDDI#32-20' TYPE CM2  
 EX. 20' TYPE CM2 SDDI

**Basin Summary - Ultimate Condition**

Basin	Area (acres)	Q <sub>in</sub> (cfs)	Q <sub>out</sub> (cfs)
DOF3	1.05	2	4
DOF4	1.7	2.7	5.4
DOF5	0.73	1.2	2.5
CP1	-	38.6	116.3
DOF1	5.97	8.9	19
DOF2	4.25	6.2	12.7
CP2	-	<1	<1
DON1	8.8	14.1	28.7
ST1	0.83	1.6	2.8

**Cross Section Summary - Ultimate Condition**

Cross Section	Description	q (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	Dxv
X - GRAND MONTECTO 100R	CP1 - EX 18'DI+D134+	0.0	0.37	0.00	0.00	0.00
X - GRAND MONTECTO 100R	CP1 - EX D133+D135	0.0	0.37	0.00	0.00	0.00
X - GRAND MONTECTO 100R	D133+D135	0.0	0.37	0.00	0.00	0.00
F - PRIVATE DRIVE 100 YR	DOF2	12.7	3.5	0.20	4.79	0.96
C - PARKING-DRIVE AISLE 100 YR	DON1	28.7	0.64	0.40	2.93	1.17
B - PARKING-DRIVE AISLE 100 YR	DON1	28.7	0.5	0.60	2.97	1.78
D - PARKING-DRIVE AISLE 100 YR	DON1	1.0	0.64	0.10	1.11	0.11
G - PARKING DRIVE AISLE 100 YR	DON1	28.7	0.5	0.40	2.88	1.14
H - PARKING DRIVE AISLE 100 YR	DON1	28.7	0.5	0.50	3.01	1.51
L - DURANGO 10 YR	CP3	155.4	1.81	0.90	6.81	6.13
L - DURANGO 100 YR	CP3	487.4	1.81	1.40	10.11	14.15



ULTIMATE CONDITION

FIGURE 8

## Worksheet for G

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### Project Description

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Friction Method	Manning
	Formula
Solve For	Normal Depth

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### Input Data

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Channel Slope	0.500 %
Discharge	28.70 cfs

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### Section Definitions

Station (ft)	Elevation (ft)
0+00.00	82.31
0+19.00	81.94
0+31.00	81.37
0+42.00	81.07
0+63.00	81.34

### Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 82.31)	(0+19.00, 81.94)	0.016
(0+19.00, 81.94)	(0+31.00, 81.37)	0.016
(0+31.00, 81.37)	(0+42.00, 81.07)	0.016
(0+42.00, 81.07)	(0+63.00, 81.34)	0.016

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### Options

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Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

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### Results

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Normal Depth	0.4 ft
Roughness Coefficient	0.016
Elevation	81.52 ft
Elevation Range	81.070 to 82.310 ft
Flow Area	10.1 ft <sup>2</sup>
Wetted Perimeter	35.306 ft
Hydraulic Radius	0.3 ft
Top Width	35.12 ft
Normal Depth	0.4 ft
Critical Depth	0.4 ft
Critical Slope	0.577 %
Velocity	2.85 ft/s
Velocity Head	0.13 ft

## Worksheet for G

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### Results

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Specific Energy	0.57 ft
Froude Number	0.936
Flow Type	Subcritical

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### GVF Input Data

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Downstream Depth	0.0 ft
Length	0.000 ft
Number Of Steps	0

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### GVF Output Data

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Upstream Depth	0.0 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.4 ft
Critical Depth	0.4 ft
Channel Slope	0.500 %
Critical Slope	0.577 %

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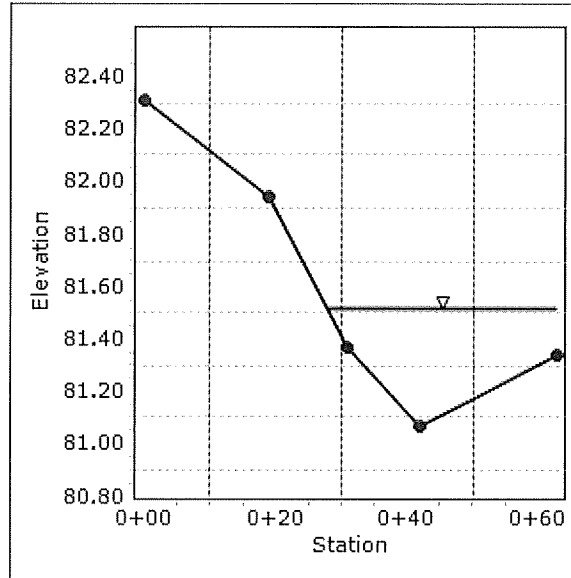
## Cross Section for G

### Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

### Input Data

Channel Slope	0.500 %
Normal Depth	0.4 ft
Discharge	28.70 cfs



## Worksheet for H

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.500 %
Discharge	28.70 cfs

### Section Definitions

Station (ft)	Elevation (ft)
0+00.00	82.60
0+23.00	82.51
0+35.00	81.29
0+50.00	81.08
0+63.00	81.50

### Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 82.60)	(0+23.00, 82.51)	0.016
(0+23.00, 82.51)	(0+35.00, 81.29)	0.016
(0+35.00, 81.29)	(0+50.00, 81.08)	0.016
(0+50.00, 81.08)	(0+63.00, 81.50)	0.016

### Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

### Results

Normal Depth	0.5 ft
Roughness Coefficient	0.016
Elevation	81.56 ft
Elevation Range	81.080 to 82.600 ft
Flow Area	9.5 ft <sup>2</sup>
Wetted Perimeter	30.754 ft
Hydraulic Radius	0.3 ft
Top Width	30.67 ft
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Critical Slope	0.558 %
Velocity	3.01 ft/s
Velocity Head	0.14 ft

## Worksheet for H

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### Results

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Specific Energy	0.62 ft
Froude Number	0.951
Flow Type	Subcritical

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### GVF Input Data

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Downstream Depth	0.0 ft
Length	0.000 ft
Number Of Steps	0

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### GVF Output Data

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Upstream Depth	0.0 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.5 ft
Critical Depth	0.5 ft
Channel Slope	0.500 %
Critical Slope	0.558 %

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## Cross Section for H

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

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Input Data	
Channel Slope	0.500 %
Normal Depth	0.5 ft
Discharge	28.70 cfs

