

DRCDCRC

DRAINAGE CALCULATIONS

PZ23-12000001
05/03/2023

New 3 Unit Residence
1300 N. Riverside Drive
Pompano Beach, Florida

PZ23-12000001
04/03/2024

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Imtiaz
Ahmed

Digitally signed
by Imtiaz Ahmed
Date: 2023.01.17
10:18:25 -05'00'

Imtiaz Ahmed, P.E.
Florida License # 46102
January 17, 2023

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11/16/2023

SURFACE WATER MANAGEMENT CALCULATIONS

for

1300 N RIVER SIDE BLVD

1) PROPOSED LAND USE

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PROJECT PHASE	TOTAL AREA (ACRES)	BUILDING (ACRES)	%	ROADS, WALKS, DRIVES (ACRES)	%	PERVIOUS AREA (ACRES)	%
	0.20	0.07	34.8%	0.05	22.6%	0.12	57.4%
TOTAL	0.20	0.07		0.05		0.12	57.4%

Site Summary

Site Area..... 0.20 acres
Submerged land..... 0.00 acres
Net Area..... 0.20 acres

Building Area..... 0.07 acres
Parking/Roads Area..... 0.05 acres
Conservation easment..... 0.00 acres
Green Area..... 0.07 acres

Pervious Area..... 0.09 acres
Impervious Area..... 0.12 acres

Detention Area

6.74%

Dry detention..... 0.01 acres
Dry detention top of bank elevation..... 5.00 navd
Dry detention at top of bank..... 0.02 acres

2) FLOOD AND RAINFALL CRITERIA

5 year, 1 hr..... 3.10 inches
5year, 1 day storm..... 6.50 inches
10 year, 1 day storm..... 8.50 inches
25 year, 1 day storm..... 10.50 inches
25 year, 3 day storm..... 14.27 inches
100 year, 1 day storm..... 13.00 inches
100 year, 3 day storm..... 17.67 inches

Average road elevation..... 4.00 navd
Minimum road crown..... 3.83 navd
100 yr flood elev..... NA navd
Min finished floor elev..... 5.50 navd

3) COMPUTE SOIL STORAGE

Wet season water elev..... 2.36 navd
Ave. groundwater elev..... 2.36 navd
Ave. site elevation..... 6.25 navd
Water table..... 9 ft.

Assuming 2% compaction, available ground storage is..... 13.80 inches
Storage available in the site..... 0.10 acre ft.
Converting to site water moisture storage, S..... 5.87 inches

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4) WATER QUALITY REQUIREMENTS

a) Based on the first inch of runoff

Site area..... 0.20 acres
 Required detention..... 0.02 acre ft.

b) Based on 2.5 inches times percent impervious (3 year - 1 hour storm)

Site area..... 0.13 acres (Excluding building & lake areas)
 Impervious area..... 0.05 acres (Excluding building & lake areas)
 Percent impervious..... 34.71 %
 Required detention..... 0.01 acre ft.

Therefore the required detention is..... **0.02 acre ft.**

Corresponding stage is between..... 4.50 and..... 5.00 navd

Interpolating gives a weir crest of..... **4.50 navd**

c) Compute Pretreatment volume based on 1/2" inch of runoff

Total site less lakes..... 0.20 acres
 Required Pretreatment based on 1/2 inch..... 0.01 acre ft.

Corresponding stage is between..... 4.00 and..... 4.50 navd

Interpolating gives a required elev of..... **4.24 navd**

d) Compute the resulting required detention volume

Therefore pretreatment required in detention area..... **0.02 ac.ft or 0.20 ac. inches****Provided in retention area at elevation 5.00 navd..... 0.02 ac.ft or 0.22 ac. inches**5) COMPUTE STAGE STORAGE

Assumptions:

Lake areas store linearly from..... 2.36 to elevation..... 9.00 then vertically
 Dry detention areas store linearly from..... 4.00 to elevation..... 5.00 then vertically
 Roadway areas store linearly from..... 3.80 to elevation..... 5.10 then vertically
 Site ground areas store linearly from..... 3.50 to elevation..... 5.00 then vertically
 Channel areas store linearly from..... 0.00 to elevation..... 0.00 then vertically

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age (acre ft.)

Stage	La	Det.	Tch	Roadways	Site	al	Stage
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1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1.50	0.00	0.00	0.00	0.00	0.00	0.00	1.50
2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
2.50	0.00	0.00	0.00	0.00	0.00	0.00	2.50
3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
3.50	0.00	0.00	0.00	0.00	0.00	0.00	3.50
4.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00
4.50	0.00	0.01	0.00	0.01	0.00	0.02	4.50
5.00	0.00	0.02	0.00	0.03	0.02	0.06	5.00
5.50	0.00	0.03	0.00	0.04	0.05	0.13	5.50
6.00	0.00	0.04	0.00	0.07	0.09	0.20	6.00
6.50	0.00	0.05	0.00	0.09	0.13	0.27	6.50
7.00	0.00	0.06	0.00	0.11	0.16	0.34	7.00
7.50	0.00	0.08	0.00	0.14	0.20	0.41	7.50
8.00	0.00	0.09	0.00	0.16	0.24	0.49	8.00
8.50	0.00	0.10	0.00	0.18	0.27	0.56	8.50
9.00	0.00	0.11	0.00	0.21	0.31	0.63	9.00
9.50	0.00	0.12	0.00	0.23	0.35	0.70	9.50
10.00	0.00	0.13	0.00	0.25	0.38	0.77	10.00
10.50	0.00	0.14	0.00	0.28	0.42	0.84	10.50
11.00	0.00	0.16	0.00	0.30	0.46	0.91	11.00
11.50	0.00	0.17	0.00	0.32	0.49	0.98	11.50
12.00	0.00	0.18	0.00	0.34	0.53	1.05	12.00
12.50	0.00	0.19	0.00	0.37	0.57	1.13	12.50
13.00	0.00	0.20	0.00	0.39	0.60	1.20	13.00
13.50	0.00	0.21	0.00	0.41	0.64	1.27	13.50
14.00	0.00	0.22	0.00	0.44	0.68	1.34	14.00
14.50	0.00	0.24	0.00	0.46	0.71	1.41	14.50

6) FLOOD STAGE CRITERIA

100 Year 3 day Flood

(zero discharge)

The Finish Floor is Adequate.

$$Q = (P - (0.2xS))^2 / (P + (0.8xS))$$

Storage required..... 0.21 ac. ft. at elev... 5.50 navd

Storage provided..... 0.13 ac. ft. at elev... 5.50 navd

100 Year 3 day Flood..... 17.6 in.

Runoff..... 1.6 in.

Volume of runoff..... 21 acre ft.

Corresponding stage between..... 6.00 and..... 6.50 navd

Interpolating gives an elevation of..... 5 navd

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10 Year 1 day Flood (zero discharge) The Stage is Below Minimum Road Crown Elevation.

$$Q=(P-(0.2xS))^2/(P+(0.8xS))$$

Storage required..... 0.07 ac. ft. at elev... 4.00 navd
Storage provided..... 0.00 ac. ft. at elev... 4.00 navd

Corresponding stage is between..... 5.00 and..... 5.50 navd
Interpolating gives an elevation of..... **5.05** navd

5 Year 1 day Flood (zero discharge) The Stage is Below Minimum Road Crown Elevation.

$$Q=(P-(0.2xS))^2/(P+(0.8xS))$$

Storage required..... 0.01 ac. ft. at elev... 3.83 navd
Storage provided..... 0.00 ac. ft. at elev... 0.00 navd

Corresponding stage is between..... 4.00 and..... 4.50 navd
Interpolating gives an elevation of..... **4.23** navd

25 Year 3 day Flood (zero discharge) **Min. Perimeter Berm Elevation**
25 year, 3 day storm 14.28 in.
Runoff 10.74 in.
Volume of runoff 0.18 acre ft.

Corresponding stage is between..... 5.50 and..... 6.00 navd
Interpolating gives an elevation of..... **5.88** navd

I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE
AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

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