

DRC

DRAINAGE CALCULATIONS

PZ23-12000001
05/03/2023

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

Prepared by:
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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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SURFACE WATER MANAGEMENT CALCULATIONS

for

1300 N RIVERSIDE BLVD

1) PROPOSED LAND USE

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PROJECT PHASE	TOTAL AREA (ACRES)	BUILDING (ACRES)	%	ROADS, WALKS, DRIVES (ACRES)	%	IMPERVIOUS 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
 5 year, 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
 Depth to water table..... 3.89 ft.

Assuming 25% compaction, available ground storage is..... 13.80 inch
 Storage available in pervious areas of the site is 0.10 acre
 Converting to site wide moisture storage, S 5.87 inch

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
 Roadways store linearly from..... 3.80 to elevation..... 5.10 then vertically
 Site green areas store linearly from..... 4.50 to elevation..... 5.00 then vertically
 Trench stores linearly from..... 0.00 to elevation..... 0.00 then vertically

Stage (acre ft.)

Stage	La	Det.	Trch	Roadways	Site	Total	Stage
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.

$$Q = (P - (0.2 \times S))^2 / (P + (0.8 \times S))$$

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 storm 17.67 in.

Runoff 12.16 in.

Volume of runoff 0.21 acre ft.

Corresponding stage is between..... 6.00 d..... 6.50 navd

Interpolating gives an elevation of..... 6.05 navd

10 Year 1 day Flood (zero discharge)

The Stage is Below Average 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.

DRC

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