

DRAINAGE REPORT
FOR
NEW RESIDENCE
CASA OHAD
AT

6200 SW 123RD TERRACE

Prepared by:



TCE PROJ. NO. 230826

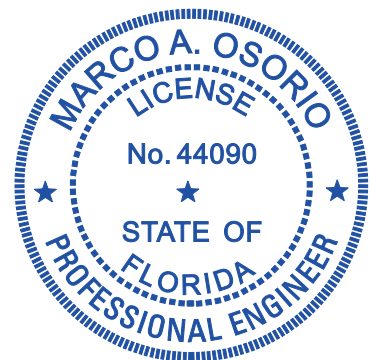
Florida Certificate of Authorization No: 27209

**4011 West Flagler Street, Ste 404
Miami, Florida 33134**

December 4, 2023

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EXECUTIVE SUMMARY

The objective of the on-site storm water management system is to make sure that it meets the Village of Pinecrest Stormwater Level of Service and the required water quality treatment. Accordingly, the system shall provide water quality treatment for the first inch of runoff or 2.5 inches times the percentage of imperviousness, whichever is greater, and also make sure that post-development runoff doesn't exceed the pre-development runoff for the 25 year one day storm event.

CONCLUSIONS

Based on the spreadsheets presented below, the following are the resulting numbers:

WATER QUALITY:

First Inch of runoff: = 2,663 cu. ft.

2.5" x Percent of imperviousness: = 1,810 cu. ft.

Required Water Quality Volume = 2,663 cu. Ft.

WATER QUANTITY:

Pre-Development Runoff Volume : 13,422 cu. ft.

Post-Development Runoff Volume : 14,948 cu. ft.

Required Water Quantity Volume = $14,948 - 13,422 = 1,526$ cu. ft.

Required Water Quantity Volume = 1,526 cu. Ft.

CRITICAL VOLUME FOR ON-SITE RETAINAGE = 2,663 cu. ft.

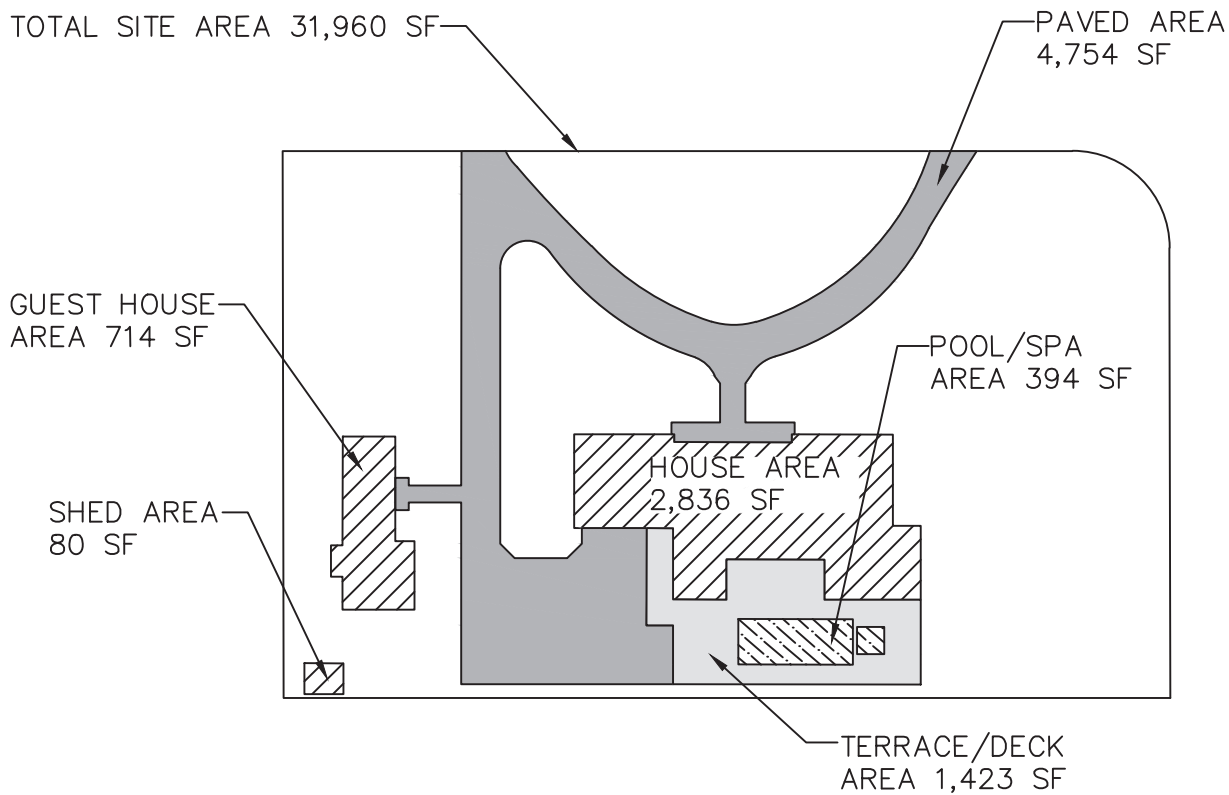
ON-SITE RETENTION VOLUME PROVIDED = 4,143 cu. ft. OK!

DRAWDOWN TIME:

According to the boring test performed, the existing subsoil is composed mostly of a brown medium sand with orange silt and white sandy lime rock. Therefore, we are assuming a conservative infiltration rate of 0.5 inches per hour. Consequently, we estimate the drawdown time, for the average 6" deep retention volume, as 12 hours.

DRAINAGE MAP

PRE-DEVELOPMENT CONDITION



PAVED AREA	4,754 SF
HOUSE AREA	2,836 SF
GUEST HOUSE AREA	714 SF
TERRACE/DECK AREA	1,423 SF
POOL/SPA AREA	394 SF
SHED AREA	80 SF

TOTAL IMPERVIOUS AREA	10,201 SF
GREEN AREA	21,759 SF

TOTAL PERVIOUS AREA	21,759 SF
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TOTAL SITE AREA 31,960 SF

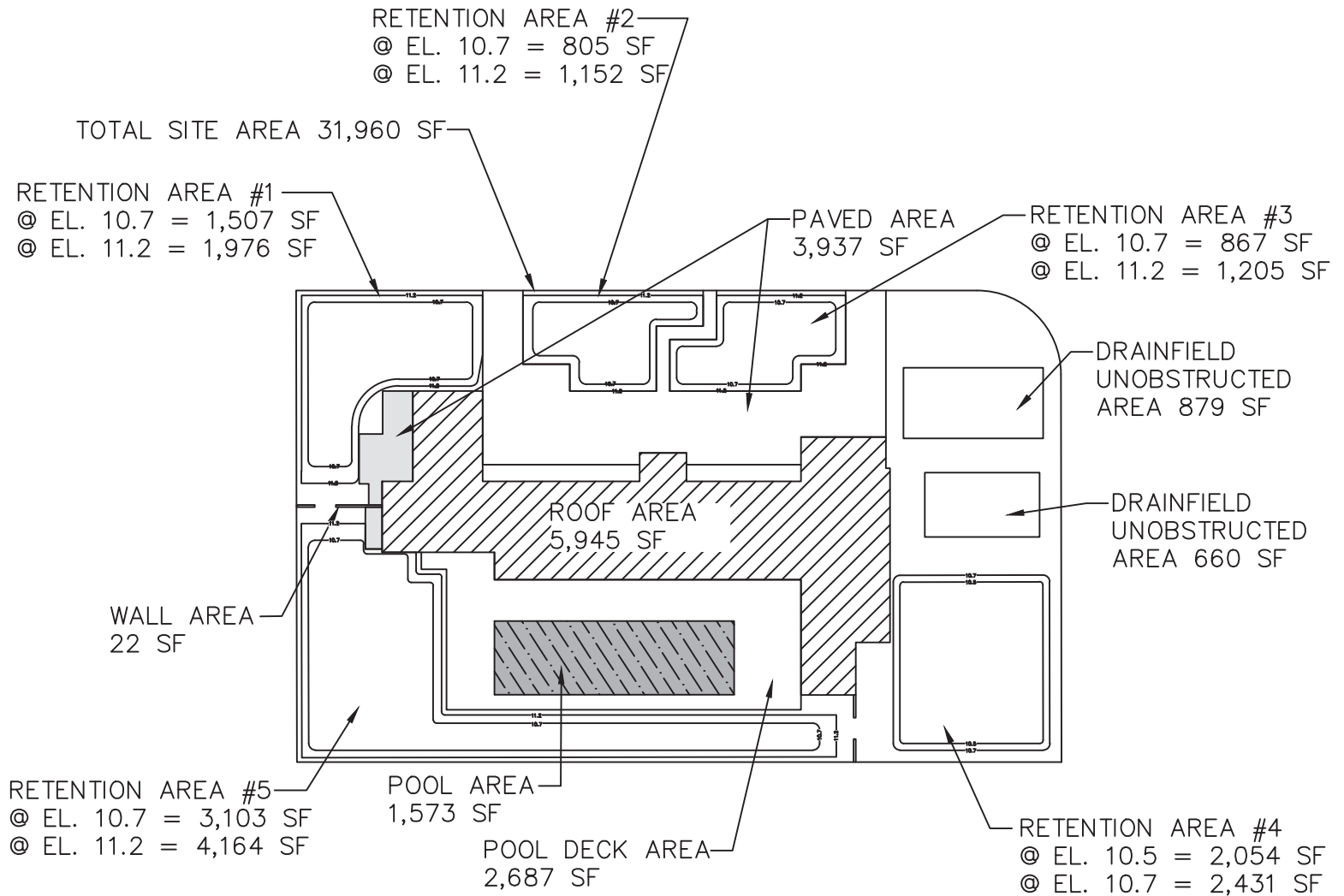


TERRA
CIVIL ENGINEERING

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DRAINAGE MAP

POST-DEVELOPMENT CONDITION



PAVED AREA	3,937 SF
HOUSE/ROOF AREA	5,945 SF
POOL DECK AREA	2,687 SF
POOL AREA	1,573 SF
WALL AREA	22 SF

TOTAL IMPERVIOUS AREA 14,164 SF

DRAINFIELD AREA	1,539 SF
GREEN AREA	16,257 SF

TOTAL PERVIOUS AREA 17,796 SF

TOTAL SITE AREA 31,960 SF



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Date: 12/4/2023
Document: Residential Drainage Calculation
Project Manager:
Project Name: Casa Ohad
Project Address: 6200 SW 123 Terrace, Pinecrest, FL 33156

WATER QUALITY CALCULATIONS

Total Site Area = 31,960 sq. ft.
Roof Area (House/Roof+Pool)= 7,518 sq. ft.
Impervious Area (Paved Areas+Pool Deck)= 6,646 sq. ft.
Pervious Area = 17,796 sq. ft.

Site Area for water quality perv/imp (Total -Roof Area)= 24,442 sq. ft.
Impervious area for water quality = 6,646 sq. ft.

1) COMPUTE THE 1" WQ RUNOFF VOLUME

1" WQ = 2,663 cu.ft.

2) COMPUTE 2.5" WQ RUNOFF VOLUME

% Imp.= 0.27
2.5" WQ = 2.5" x % Imp. x Total site / 12
2.5" WQ = 1,810 cu.ft.



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PRE-DEVELOPMENT RUNOFF CALCULATIONS

Summary

Definitions (PRE-DEVELOPMENT)		Project Information	Comments
I	Rainfall produced during 25 years, 24 hours storm event (Per	9.50	Design Storm
A	Site total area (sf)	31,960	
	Average elevation of Pervious Areas (ft)	10.70	
	High ground water elevation (ft)	2.50	
	Distance between Avg Elevation of Pervious Areas and the High Ground Water Elevation	8.20	AEPA - HGWE = Depth to Water table - DW

Project detailed information: (PRE-DEVELOPMENT)

Impervious areas		Description	Pervious areas		Description
Imp_1	4,754	paved area	Per_1	21,759	green area
Imp_2	2,836	house & guest house area	Per_2		
Imp_3	714	guest house	Per_3		
Imp_4	1,423	terrace			
Imp_5	394	pool			
Imp_6	80	shed			
Tot_Imp =	10,201		Tot_Per =	21,759	

Soil Storage Capacity Calculations (S)

(PRE-DEVELOPMENT)

21,759

Depth to Water Table	WE Compacted Water Storage (in)
1	0.45
2	1.88
3	4.95
4	8.18

$$S = \frac{\text{Pervious Area} * \text{WE}}{\text{Site Total Area}}$$

$$S = \frac{21,759}{31,960} = 8.18$$

WE = 8.18

S = 5.57

(PRE-DEVELOPMENT)

Runoff Depth Calculation (R)

$$R = \frac{(I - 0.2 * S)^2}{(I + 0.8 * S)}$$

$$(I + 0.8 * S)$$

$$R = 5.04 \text{ in}$$

PRE-DEVELOPMENT RUNOFF VOLUME:

$$V = A * R / 12$$

$$V_{pre} = 13,422 \text{ Cubic feet}$$



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POST-DEVELOPMENT RUNOFF CALCULATIONS

Summary

Definitions (POST-DEVELOPMENT)		Project Information	Comments
I	Rainfall produced during 25 years, 24 hours storm event (Per	9.50	Design Storm 25Y-1D
A	Site total area (sf)	31,960	
	Average elevation of Pervious Areas (ft)	10.70	
	High ground water elevation (ft)	2.50	
	Distance between Avg Elevation of Pervious Areas and the High Ground Water Elevation	8.20	AEPA - HGWE = Depth to Water table - DW

Project detailed information: (POST-DEVELOPMENT)

Impervious areas		Description	Pervious areas		Description
Imp_1	3,937	paved area	Per_1	2,846	drainfield area
Imp_2	5,945	house area	Per_2	14,950	green area
Imp_3	2,687	deck/terrace area			
Imp_4	22	wall			
Imp_5	1,573	pool area			
Tot_Imp =	14,164		Tot_Per =	17,796	

Soil Storage Capacity Calculations (S)

(POST-DEVELOPMENT)

Depth to Water Table	WE Compacted Water Storage (in)
1	0.45
2	1.88
3	4.95
4	8.18

$$S = \frac{\text{Pervious Area} * \text{WE}}{\text{Site Total Area}}$$

$$S = \frac{17,796}{31,960} * 8.18$$

WE = 8.18

S = 4.55

(POST-DEVELOPMENT)

Runoff Depth Calculation (R)

$$R = (1 - 0.2 * S)^2$$

$$(1 + 0.8 * S)$$

R = 5.61

in

POST-DEVELOPMENT RUNOFF VOLUME:

$$V = A * R / 12$$

Vpost= 14,948 Cubic feet





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POST-DEVELOPMENT RUNOFF CALCULATIONS

Summary

Definitions (POST-DEVELOPMENT)		Project Information	Comments
I	Rainfall produced during 5 year, 1 hour storm event (Per figure C-3 SFWMD) - (in)	3.30	Design Storm 5Y-1H (DERM)
A	Site total area (sf)	31,960	
	Average elevation of Pervious Areas (ft)	10.70	
	High ground water elevation (ft)	2.50	
	Distance between Avg Elevation of Pervious Areas and the High Ground Water Elevation	8.20	AEPA - HGWE = Depth to Water table - DW

Project detailed information: (POST-DEVELOPMENT)

Impervious areas		Description	Pervious areas		Description
Imp_1	3,937	paved area	Per_1	2,846	drainfield area
Imp_2	5,945	house area	Per_2	14,950	green area
Imp_3	2,687	deck/terrace area			
Imp_4	22	wall			
Imp_5	1,573	pool area			
Tot_Imp =	14,164		Tot_Per =	17,796	

Soil Storage Capacity Calculations (S)

(POST-DEVELOPMENT)

Depth to Water Table	WE Compacted Water Storage (in)
1	0.45
2	1.88
3	4.95
4	8.18

$$S = \frac{\text{Pervious Area} * \text{WE}}{\text{Site Total Area}}$$

$$S = \frac{17,796}{31,960} * 8.18$$

WE = 8.18

S = 4.55

(POST-DEVELOPMENT)

Runoff Depth Calculation (R)

$$R = \frac{(I - 0.2 * S)^2}{(I + 0.8 * S)}$$

R = 0.82

in

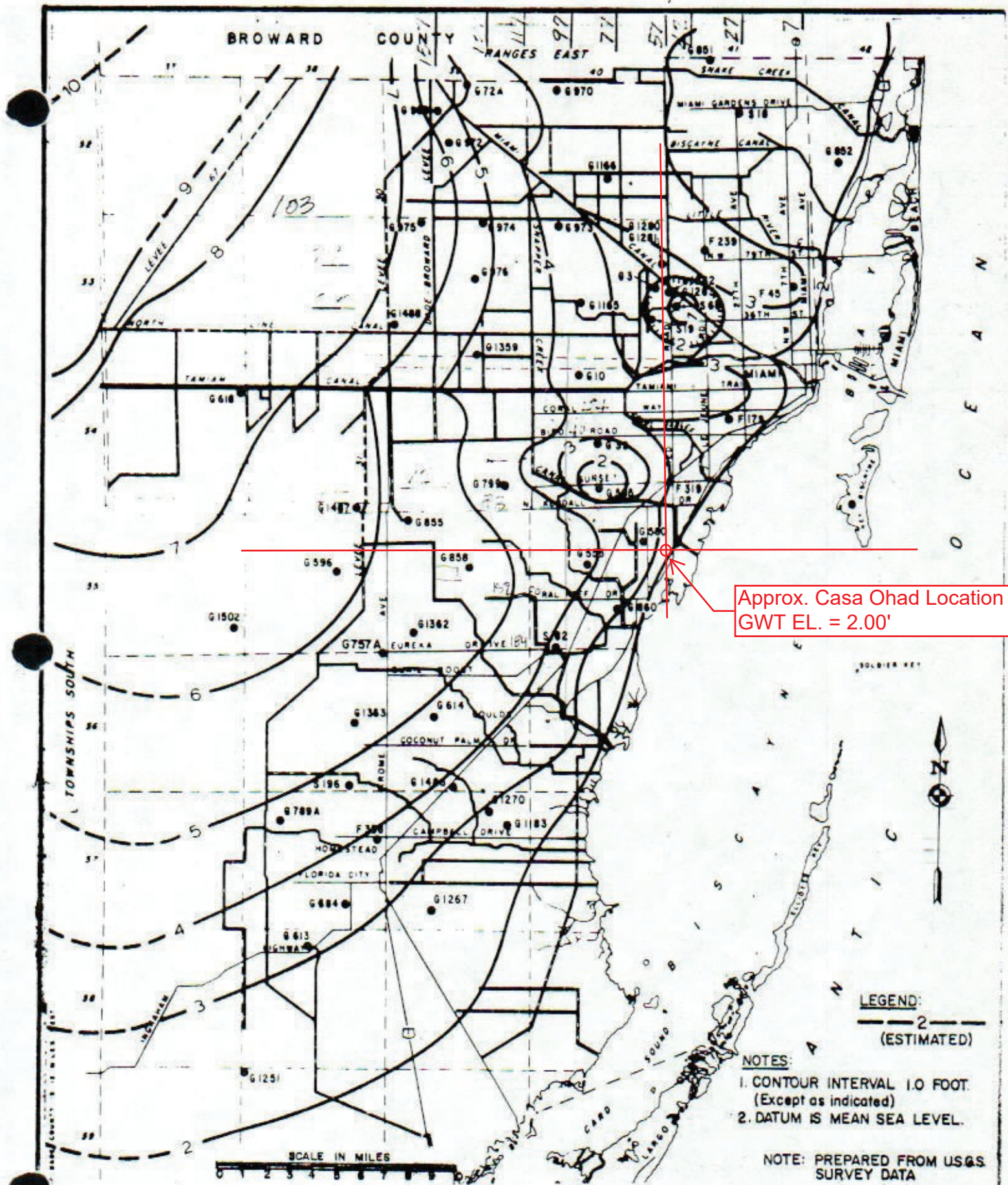
POST-DEVELOPMENT RUNOFF VOLUME:

$$V = A * R / 12$$

Vpost= 2,189 Cubic feet



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**METROPOLITAN
DADE COUNTY
PUBLIC WORKS**

APPROVED

4/5/72

REVISED

2/19/75

4/14/77

DESIGN STANDARDS

**AVERAGE OCTOBER
GROUND WATER LEVEL**

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