

DRAINAGE REPORT
FOR
CASA ROBLES
AT
6545 SW 131 STREET
PINECREST FL, 33156

Prepared by:



TCE PROJ. NO. 231226

Florida Certificate of Authorization No: 27209

4011 West Flagler Street, Ste 404
Miami, Florida 33134

May 30, 2024

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I. 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 1- day storm event. The on-site storm water management system shall also retain the 3.3 inches of runoff according to Miami-Dade DERM's criteria for the 5-year, 1-hour storm.

II. VILLAGE OF PINECREST CRITERIA

A spreadsheet was used to calculate the runoff for the Village of Pinecrest 25-year, 1-day storm event with an intensity of 9.5 inches to ensure the runoff volume is contained within the property and doesn't overflow to the public Right-of-Way or adjacent properties.

Based on the spreadsheets attached, the following are the results:

WATER QUALITY:

First Inch of runoff: = 3,356 cu. ft.

2.5" x Percent of imperviousness: = 1,686 cu. ft.

Required Water Quality Volume = 3,356 cu. Ft.

WATER QUANTITY:

Pre-Development Runoff Volume : = 15,138 cu. ft.

Post-Development Runoff Volume : = 17,403 cu. ft.

Required Water Quantity Volume = 17,403 – 15,138 = 2,265 cu. ft.

Required Water Quantity Volume = 2,265 cu. Ft.

III. DERM CRITERIA

A spreadsheet was used to calculate the runoff for Miami-Dade DERM's 5-year, 1-hour storm with an intensity of 3.3 inches to ensure the runoff volume is contained within the property and doesn't overflow to the public Right-of-Way or adjacent properties.

Based on the spreadsheets attached, the following are the results:

Post-Development Runoff Volume for DERM 5-year, 1-hour = 2,234 cu. ft.

IV. CONCLUSION

Based on the above City of Pinecrest and DERM criteria, the site must retain at a minimum the required water quality volume shown below:

CRITICAL VOLUME FOR ON-SITE RETAINAGE = 3,356 cu. ft. (QUALITY)

The project proposes 6,749 cu. ft. of total onsite retention which exceeds the required water quality retention volume above. The also project proposes 20 LF of exfiltration trench to drain the roof's RWLs; it is not required for the critical on-site retainage.

V. DRAWDOWN TIME:

According to the exfiltration test performed, the existing subsoil is composed mostly of a tan medium sand with rock fragments and sandy limestone. 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.



Date: 5/30/2024
Document: Residential Drainage Calculation
Project Manager:
Project Name: Casa Robles
Project Address: 6545 SW 131 Street, Pinecrest, FL 33156

WATER QUALITY CALCULATIONS

Total Site Area = 40,276 sq. ft.
Roof Area (House/Roof+Pool)= 7,625 sq. ft.
Impervious Area (Paved Areas+Pool Deck)= 6,562 sq. ft.
Pervious Area = 26,089 sq. ft.

Site Area for water quality perv/imp (Total -Roof Area)= 32,651 sq. ft.
Impervious area for water quality = 6,562 sq. ft.

1) COMPUTE THE 1" WQ RUNOFF VOLUME

1" WQ = 3,356 cu.ft.

2) COMPUTE 2.5" WQ RUNOFF VOLUME

% Imp.= 0.20
2.5" WQ = 2.5" x % Imp. x Total site / 12
2.5" WQ = 1,686 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)	40,276	
	Average elevation of Pervious Areas (ft)	8.00	
	High ground water elevation (ft)	3.00	
	Distance between Avg Elevation of Pervious Areas and the High Ground Water Elevation	5.00	AEPA - HGWE = Depth to Water table - DW

Project detailed information: (PRE-DEVELOPMENT)

Impervious areas		Description	Pervious areas		Description
Imp_1	2,362	paved area	Per_1	32,675	green area
Imp_2	3,787	house & guest house area	Per_2		
Imp_3	910	pool deck	Per_3		
Imp_4	403	pool area			
Imp_5	140	wall area			
Tot_Imp =	7,602		Tot_Per =	32,675	

Soil Storage Capacity Calculations (S)

(PRE-DEVELOPMENT)

32,675

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

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

$$S = \frac{32,675}{40,276} = 8.18$$

WE = 8.18

S = 6.64

(PRE-DEVELOPMENT)

Runoff Depth Calculation (R)

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

$$(I + 0.8 * S)$$

$$R = 4.51 \text{ in}$$

PRE-DEVELOPMENT RUNOFF VOLUME:

$$V = A * R / 12$$

$$V_{pre} = 15,138 \text{ Cubic feet}$$



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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)	40,276	
	Average elevation of Pervious Areas (ft)	8.00	
	High ground water elevation (ft)	3.00	
	Distance between Avg Elevation of Pervious Areas and the High Ground Water Elevation	5.00	AEPA - HGWE = Depth to Water table - DW

Project detailed information: (POST-DEVELOPMENT)

Impervious areas		Description	Pervious areas		Description
Imp_1	3,851	paved area	Per_1	26,089	green area
Imp_2	6,086	house area	Per_2		
Imp_3	2,711	deck/terrace area			
Imp_4	1,539	pool/pond area			
Imp_5					
Tot_Imp =		14,187	Tot_Per =		26,089

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

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

$$S = \frac{26,089}{40,276} = 8.18$$

WE = 8.18

S = 5.30

(POST-DEVELOPMENT)

Runoff Depth Calculation (R)

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

R = 5.19

in

POST-DEVELOPMENT RUNOFF VOLUME:

$$V = A * R / 12$$

Vpost= 17,403 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)	40,276	
	Average elevation of Pervious Areas (ft)	8.00	
	High ground water elevation (ft)	3.00	
	Distance between Avg Elevation of Pervious Areas and the High Ground Water Elevation	5.00	AEPA - HGWE = Depth to Water table - DW

Project detailed information: (POST-DEVELOPMENT)

Impervious areas		Description	Pervious areas		Description
Imp_1	3,851	paved area	Per_1	26,089	green area
Imp_2	6,086	house area	Per_2		
Imp_3	2,711	deck/terrace area			
Imp_4	1,539	pool/pond area			
Imp_5					
Tot_Imp =	14,187		Tot_Per =	26,089	

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

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

$$S = \frac{26,089}{40,276} = 8.18$$

WE = 8.18

S = 5.30

(POST-DEVELOPMENT)

Runoff Depth Calculation (R)

$$R = \frac{(I - 0.2 * S)^{0.5}}{(I + 0.8 * S)}$$

R = 0.67

in

POST-DEVELOPMENT RUNOFF VOLUME:

$$V = A * R / 12$$

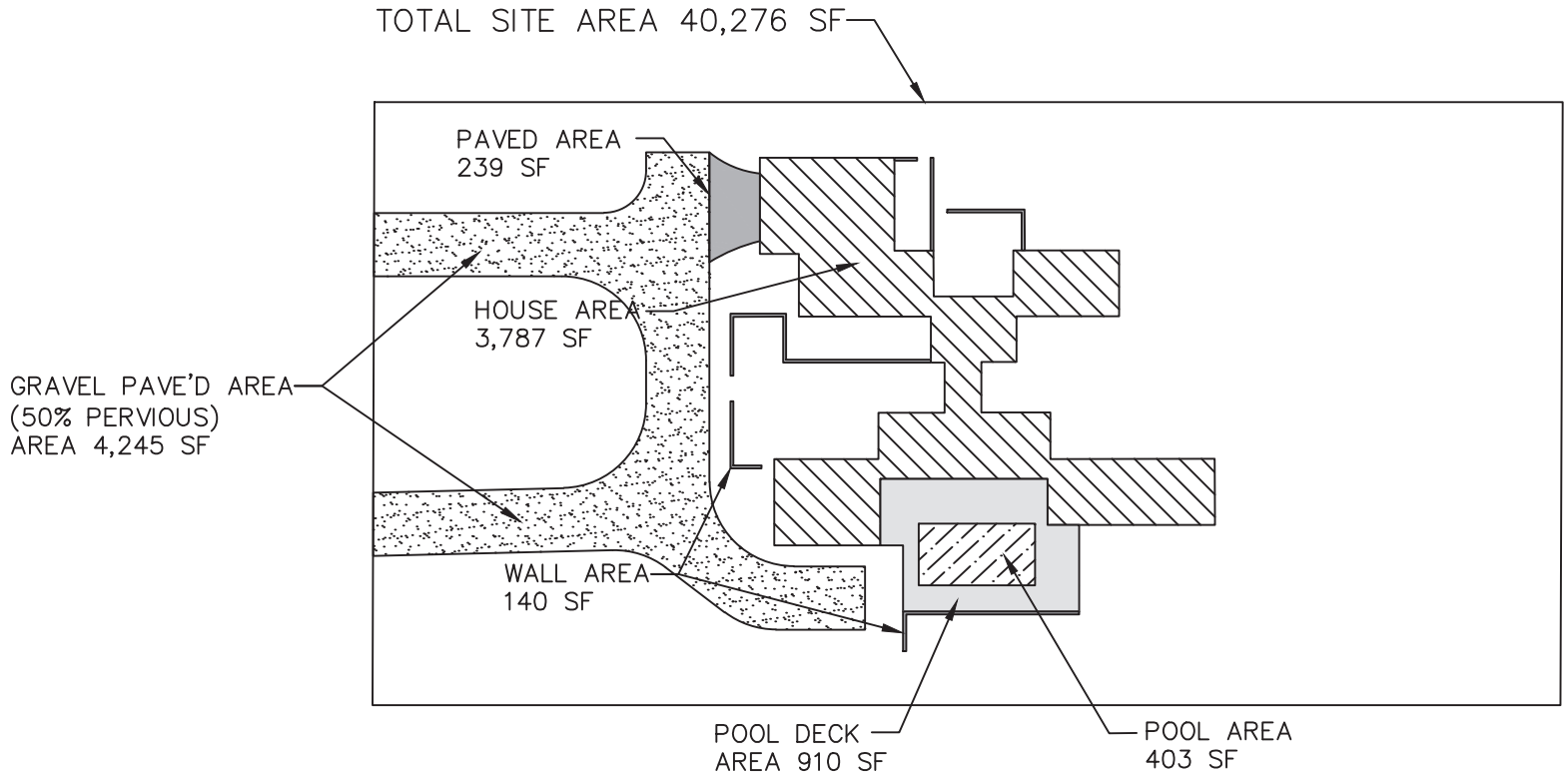
Vpost=

2,234

Cubic feet

DRAINAGE MAP

PRE-DEVELOPMENT CONDITION



HOUSE AREA	3,787 SF
PAVED AREA	239 SF
GRAVEL AREA (50%)	2,123 SF
DECK AREA	910 SF
POOL AREA	403 SF
WALL AREA	140 SF

TOTAL IMPERVIOUS AREA 7,602 SF

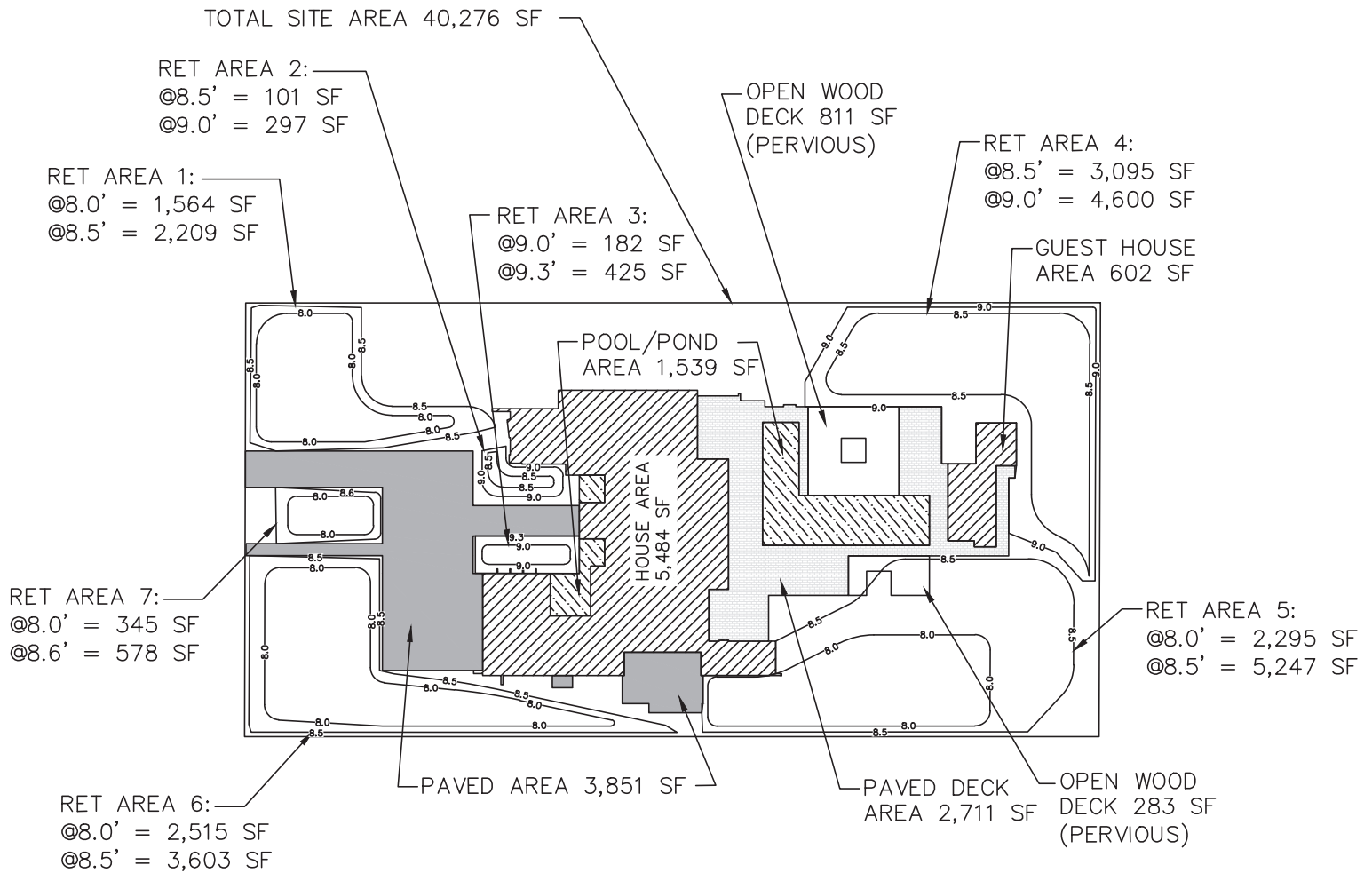
GREEN AREA 32,674 SF

TOTAL PERVIOUS AREA 32,674 SF

TOTAL CONTRIBUTING AREA 40,276 SF

DRAINAGE MAP

POST-DEVELOPMENT CONDITION



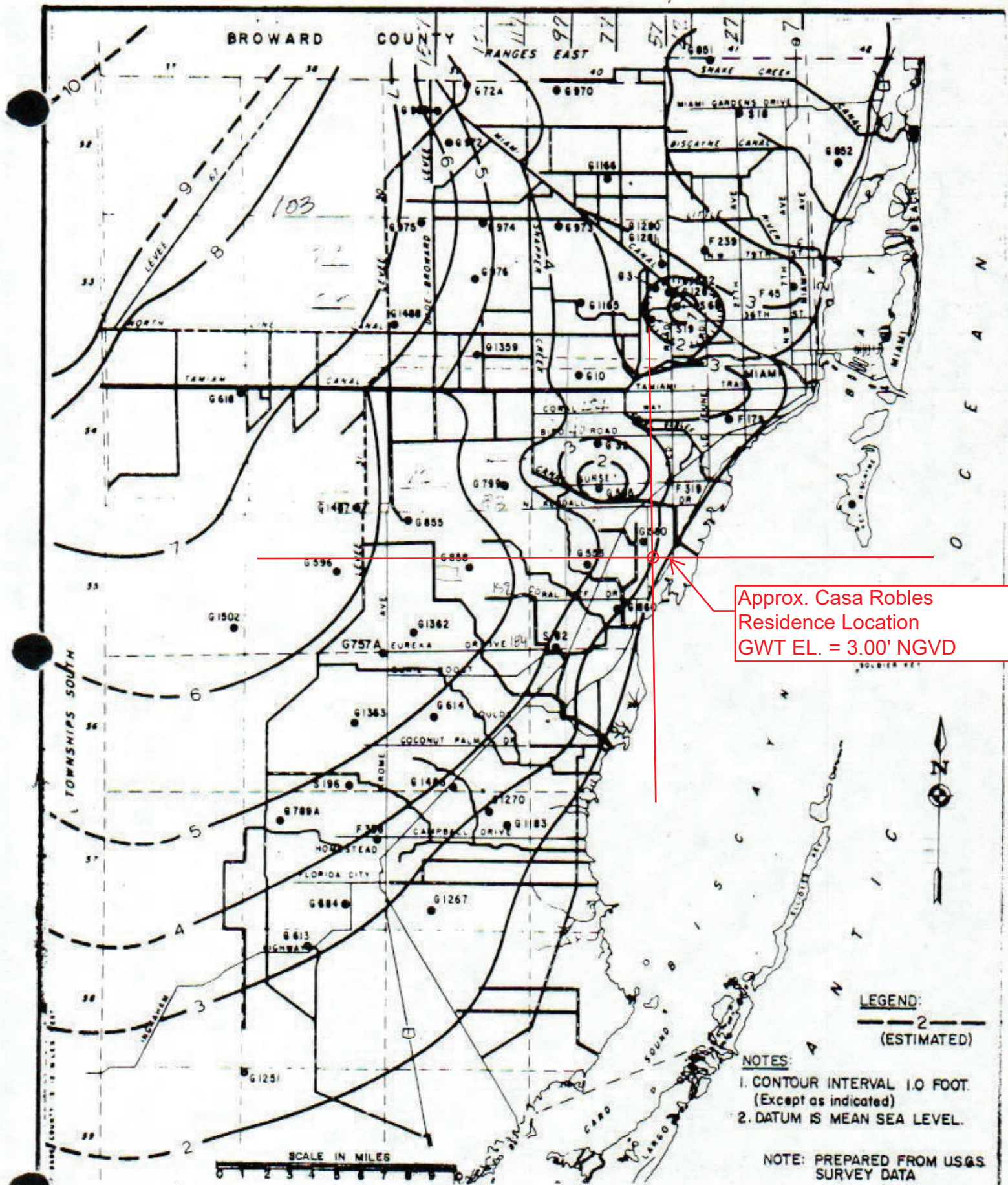
HOUSE ROOF AREA	6,086 SF
PAVED AREA	3,851 SF
PAVED DECK AREA	2,711 SF
POOL/POND AREA	1,539 SF

TOTAL IMPERVIOUS AREA 14,187 SF

GREEN AREA 26,089 SF

TOTAL PERVIOUS AREA 26,089 SF

TOTAL CONTRIBUTING AREA 40,276 SF



**METROPOLITAN
DADE COUNTY
PUBLIC WORKS**

APPROVED

4/5/72

REVISED

2/19/75

4/14/77

DESIGN STANDARDS
**AVERAGE OCTOBER
GROUND WATER LEVEL**

11 of 17

W.C.
22



DYNATECH ENGINEERING CORP.

WWW.DYNATECHENGINEERING.COM

Miami, December 7, 2023

Mr. Ohad Vilcovsky
RONALD FL2, LLC.
12000 Biscayne Boulevard, Suite 700
Miami, FL 33181

Re: Proposed 2-Story Residence @
6545 SW 131st Street
Pinecrest, FL 33156

Dear Mr. Vilcovsky:

Pursuant to your request, DYNATECH ENGINEERING CORP. (DEC) completed (1) Percolation Test on December 7, 2023 at the above referenced project. The purpose of our investigation was to help determine the hydraulic conductivity for storm drainage design.

The above hydraulic conductivity represents an ultimate value. The designer should decide on the required safety factor. This value is based on the existing soils at the location of the test. In the event the test location is changed or the soil removed and replaced; the test results will need to be re-evaluated.

Groundwater was measured immediately at the completion of each boring and was found at an average depth of approximately 7'-0" below existing ground surface at the time of drilling. This immediate depth to groundwater level should not be relied upon alone for project design considerations. Existing ground surface elevation was not provided to us at the time of drilling. Design engineers must verify existing ground elevations as well as FEMA Flood and County highest and lowest groundwater elevation for their design. Fluctuation in water level is anticipated due to seasonal variations and run off as well as varying ground elevations construction dewatering and pumping activities in the area, king tides, flash flooding, storm surge and global warming. Site contractor must familiarize himself with site conditions in the event groundwater controls and dewatering is needed during construction. Surface flooding may result under hurricane conditions and should be taken into consideration in the design of the project. The contractor shall monitor and make sure that groundwater levels on adjacent properties are not adversely impacted due to the contractors dewatering activities. Specialty groundwater and water proofing contractors shall be consulted for all work below the groundwater level. All dewatering volume & effluent discharge must meet local, State & Federal requirements.

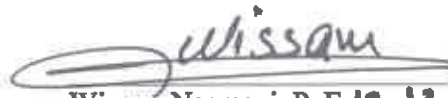
In case of existing structures, existing footings, new foundations and proposed drainage lines, provisions shall be made by the structural engineer, the civil engineer, and site contractor to protect all footings from future erosion, undermining and exposure. The geotechnical engineer shall be notified of these conditions to evaluate the applicability of his recommendations. The drainage system installation depth and dimension must be verified in the field during construction.

Re: 6545 SW 131st Street, Pinecrest, FL

This report was prepared in compliance with the 2020 Florida Building Code, 7th edition. Site elevations were not provided to us for the test locations. Depths reported on the field boring logs represent the depth below existing ground surface as they existed on the date of drilling. In the event of subsequent filling, excavations or site work, the reported depths must be adjusted to represent proper depths.

The boring log (s) attached present (s) a detailed description of the soils encountered at test location (s). The soil stratification shown on the boring log (s) is based on the examination of the recovered soil samples and interpretation of the driller's field log (s). It indicates only the approximate boundaries between soil types. The actual transitions between adjacent soil types may be gradual. Regardless of the thoroughness of a geotechnical exploration there is always the possibility that conditions may be different from those of the test locations; therefore, DYNATECH ENGINEERING CORP. does not guarantee any subsoil conditions between the bore test holes. In accepting and using this report the client understands and accepts that all data from the borings are strictly for foundation analysis only and are not to be used for excavation or back filling estimates and pricing. Owner and site contractor must familiarize themselves with site conditions prior to bidding. Client recognizes that actual conditions in areas not tested by DEC may differ from those anticipated in DEC's report. Client understands and accepts that this can significantly increase the cost of construction for its future projects. Client agrees that DEC shall not be responsible or liable for any variations in the actual conditions of areas not tested by DEC. This report is not a Phase I and/or Phase II Environmental Site Assessments. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval. The scope of services performed in the execution of this investigation may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user. Said user must contact DEC in writing to verify applicability of this report for their use. All work must be conducted under the supervision of our geotechnical engineer. The discovery of any site or subsurface conditions during construction which deviate from the information obtained from our subsoil investigation is always likely and should be reported to us for our evaluation. All work shall be conducted in compliance with the Florida Building Code FBC and OSHA workers protection rules and all applicable Federal, State, County and City rules and regulations. In the event, changes, challenges and other value engineering opportunities occur without our knowledge, our recommendations may become compromised and geotechnical related issues may be misconstrued. Therefore, all geotechnical work shall be performed under our supervision to verify compliance with the intent of our recommendations.

Sincerely yours,



Wissam Naamani, P. E. 12-12-2023
DYNATECH ENGINEERING CORP.
Florida Reg. No. 39584
Special Inspector No. 757
Certificate of Authorization No.: CA 5491



THIS ITEM HAS BEEN DIGITALLY
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BY WISSAM SAAD NAMANI, P.E. ON
THE DATE ADJACENT TO THE SEAL.

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PERCOLATION TEST



DYNATECH ENGINEERING CORP.

WWW.DYNATECHENGINEERING.COM

PERCOLATION TEST ACCORDING TO S.F.W.M.D. D.O.T. STANDARD TEST

DATE : December 7, 2023
CLIENT : RONALD FL2, LLC.
PROJECT : Proposed 2-Story Residence @
PROJECT LOCATION : 6545 SW 131st Street, Pinecrest, FL
LOCATION OF TEST : SAS
DIAMETER OF HOLE : 7"
TEST NO. : P-1

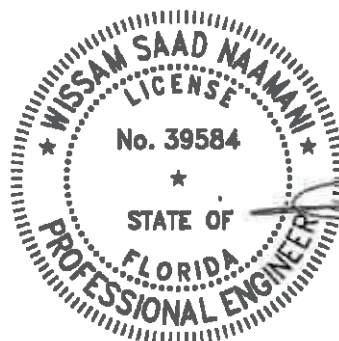
TEST DEPTH (feet) 0-15'
AVERAGE FLOW (GPM) 9.8
-4
AVERAGE K (CFS/Sq. Ft-Ft Head) 3.31x10

* The above hydraulic conductivity represents an ultimate value. The designer should decide on the required safety factor. This value is based on the existing soils at the location of the test.

Water Table 7'-0" Below existing ground surface.

SUBSURFACE INVESTIGATION

<u>Depth Below Ground Surface</u>	<u>Soil Description</u>
0'-0" to 0'-3"	Gravel garden rock's & brown fine to medium sand
0'-3" to 1'-0"	Tan medium sand w/rock fragments
1'-0" to 2'-0"	Brown mucky sand
2'-0" to 2'-6"	Tan very sandy limerock
2'-6" to 15'-0"	Tan sandy limerock



Respectfully submitted,

Wissam 12-12-2023
Wissam Naamani, P. E.
DYNATECH ENGINEERING CORP.
Florida Reg. No. 39584
Certificate of Authorization No.: CA 5491

* As a mutual protection to the clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statement conclusions or extracts from or regarding our reports is reserved pending on our written approval.

SITE PLAN

● P-# : Percolation Test Location

N



DYNATECH ENGINEERING CORP.

Client: Ronald FL2, LLC.

Scale: N.T.S.

Project: 6545 S.W. 131st Street, Pinecrest, FL 33156

Date: December 7, 2023