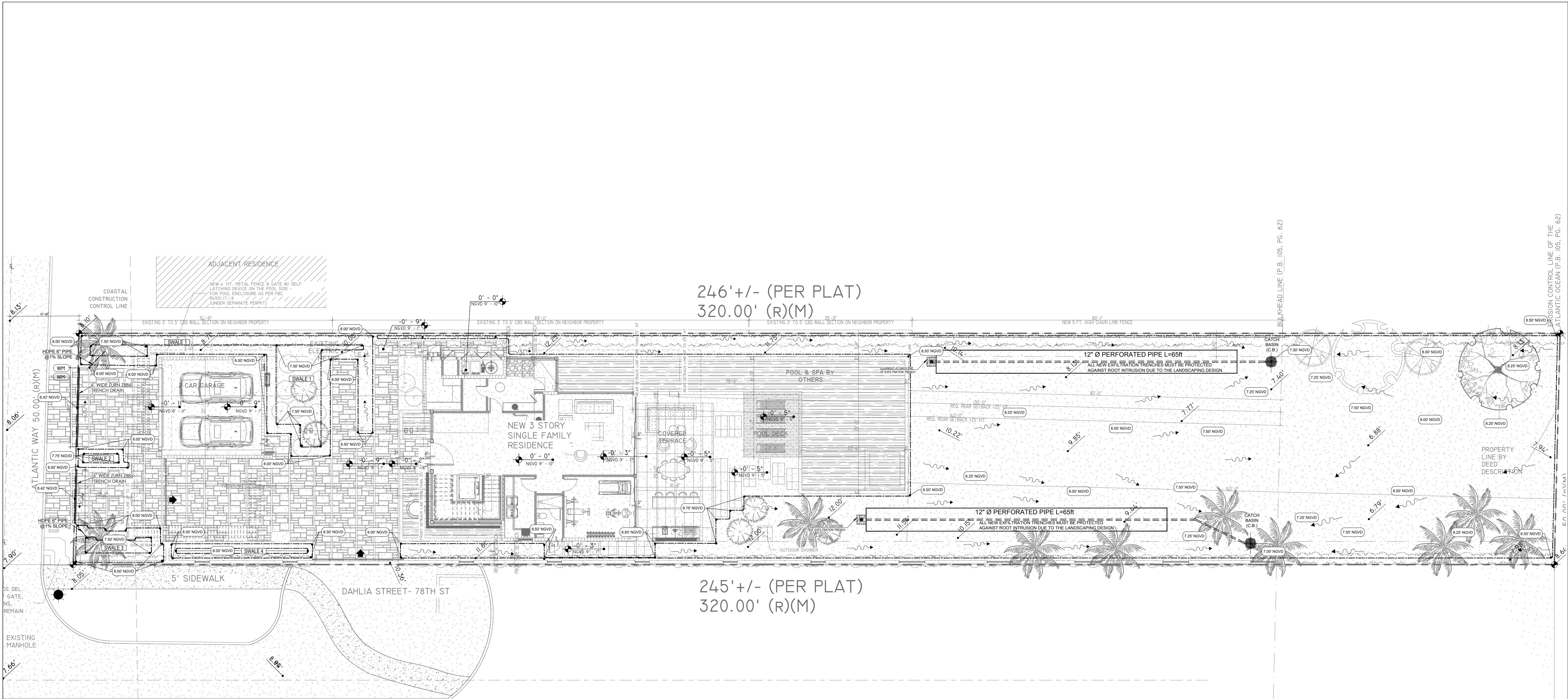




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OWNER

SEAL

NOTES/COMMENTS

REVISIONS / SUBMISSIONS

DRAINAGE PLAN

ALL DRAWINGS AND WRITTEN MATERIAL APPEARING HEREIN
CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF SDH
STUDIO, AND MAY NOT BE DUPLICATED, USED, OR DISCLOSED
WITHOUT THE EXPRESS WRITTEN CONSENT OF
STEPHANIE D. HALPEN

DRAWN BY: GCE
CHECKED BY: AG
INITIAL DRAWING
RELEASE DATE: ISSUE DATE

C-1

4	EXFILTRATION TRENCH CLEAN OUT N/A	5	TYP. CATCH BASIN DETAILS N/A	C-2
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PROPOSED LAND USED : 7801 ATLANTIC WAY, MIAMI BEACH, FL 33141**IMPERVIOUS AREA**

Building 2056.0 sf
Paver/Conc./Asphalt 3453.0 sf
Pool & Pond 1274.0 sf

Total Impervious Area: 6783.0 sf

TOTAL AREA : 15995.0 sf

PERVIOUS AREA

Green Areas: 9212.0 sf
Permeable Decks: 0.0 sf

Total pervious Area: 9212.0 sf

P = 8.75 in

STORAGE REQUIRED

Total Area = 15995.0 sf

Rainfall Amount P = 8.75 in

a) Total Storage To Contain

SFWMD 10-yr/24-hr

(P in X 1Ft/12inxTotal Area) = (11663.02 CF)

The Volume that you need to contain in your property (V) is equal to Total Site Area per the Accumulated Direct Runoff in Feet: $V=A \times Q/12$

Accumulated Direct Runoff (Q) = $(P-0.2S)^2/(P+0.8S)$

$S= (\text{Total Pervious Area}/\text{Total Site Area}) \times (\text{Compacted Water Storage})$

Total pervious Area : 9212.0 sf

Total Site Area : 15995.0 sf

Average Water Elev. 2.07 ft NGVD

Average finished site grade (pervious areas) : 7 ft NGVD

Depth to Water table : 4.9 ft

Compacted Water Storage : 8.18 in (interpolation)

S : 4.71 in

Accumulated Direct Runoff (Q) : 4.87 in

Depth to Water	Compacted Water Storage [Inches]
1 FT	0.45 Inches
2 FT	1.88 Inches
3 FT	4.95 inches
4 FT	8.18 inches

Ref. SFWMD Soil Storage Table

Volume Of Runoff (V)

Note: The Volume of Runoff generated during a 10 year 24 hours storm (V) must be contained within the Property Boundaries. $V=AQ/12$

Volume of Runoff (V) : 6490.7 cf Soil Storage = 11663.02 - 6490.7 = (5172.31 CF)

Swale	Top Area (sf)	Bottom Area (sf)	Average Area (sf)	Height (ft)	Volume (cf)
1	629	228.02	428.51	0.5	214.26
2	39.96	15.17	27.565	0.25	6.89
3	136.31	42.99	89.65	0.5	44.83
4	93.74	30.61	62.175	0.25	15.54
5					
Total Swale Areas:					281.52

Volume of Runoff treated By Swale Areas : 281.5 cf

Volume of Runoff treated By Exfiltration Trench : 6209.2 cf

TRENCH CALCULATION FOR THE STANDARD SFWMD TRENCH

EXFILTRATION TRENCH CALCULATION

H₂ = 5.0 ft

D_u = 4.0 ft

D_s = 2.0 ft

W = 5.5 ft

K (Soil) = 1.54E-04

Depth Of Trench = 7.0 ft

PROPOSED CONDITION

Water Table Elevation : 2.07 ft NGVD

Average Finish Site Grade : 7.07 ft NGVD

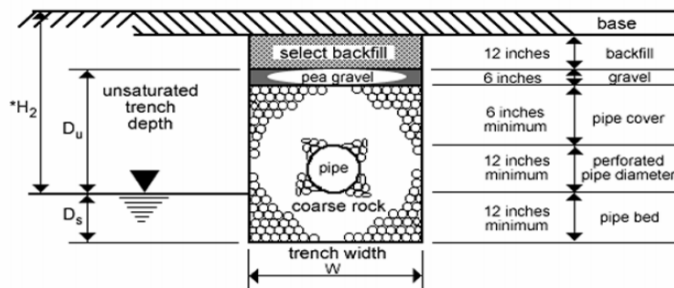
(From Pervious Areas)

Ex. Trench on Pervious Area 100.0%

Ex. Trench on Impervious Area 0.0%

SFWMD - TYPICAL EXFILTRATION TRENCH SECTION

TYPICAL EXFILTRATION TRENCH



L = Length of Trench Required (feet)

V = Volume Treated (acre – inches)

W = Trench Width (feet)

K = Hydraulic Conductivity (cfs/ft.² – ft. head)

***H₂ = Depth to Water Table (feet)**

D_u = Non-Saturated Trench Depth (feet)

D_s = Saturated Trench Depth (feet)

$$L = \frac{V}{K (H_2 W + 2 H_2 D_u - D_u^2 + 2 H_2 D_s) + (1.39 \times 10^{-4}) W D_u}$$

* The value of H₂ to be used in the equation is the effective head on the saturated surface. A weir must be installed at the downstream end of the trench, to create true retention and to establish H₂. To achieve the design retention and exfiltration, the crest of the weir must be no lower than the top of the trench pipe.

SFWMD-LENGTH OF TRENCH REQUIRED

Exf. when D_s > D_u 0.00983 Using [K*(2*H₂*D_u-D_u²+2*H₂*D_s)+(1.39X10⁻⁴)*W*D_u]

Exf. when D_s ≤ D_u 0.01407 Using [K*(H₂*W+2*H₂*D_u-D_u²+2*H₂*D_s)+(1.39X10⁻⁴)*W*D_u]

Used Exf For Design = **0.01407**

Required Retention Volume in (CF) : 6209.20 Amount of water (V) contained on the Trench

Required Retention Volume (ac-in) : **1.711**

Required L.F. of French Drain = 121.6 ft from equation L=V/Exf.

Use Length = 130.0 ft [OK] 1.07 Safety Factor