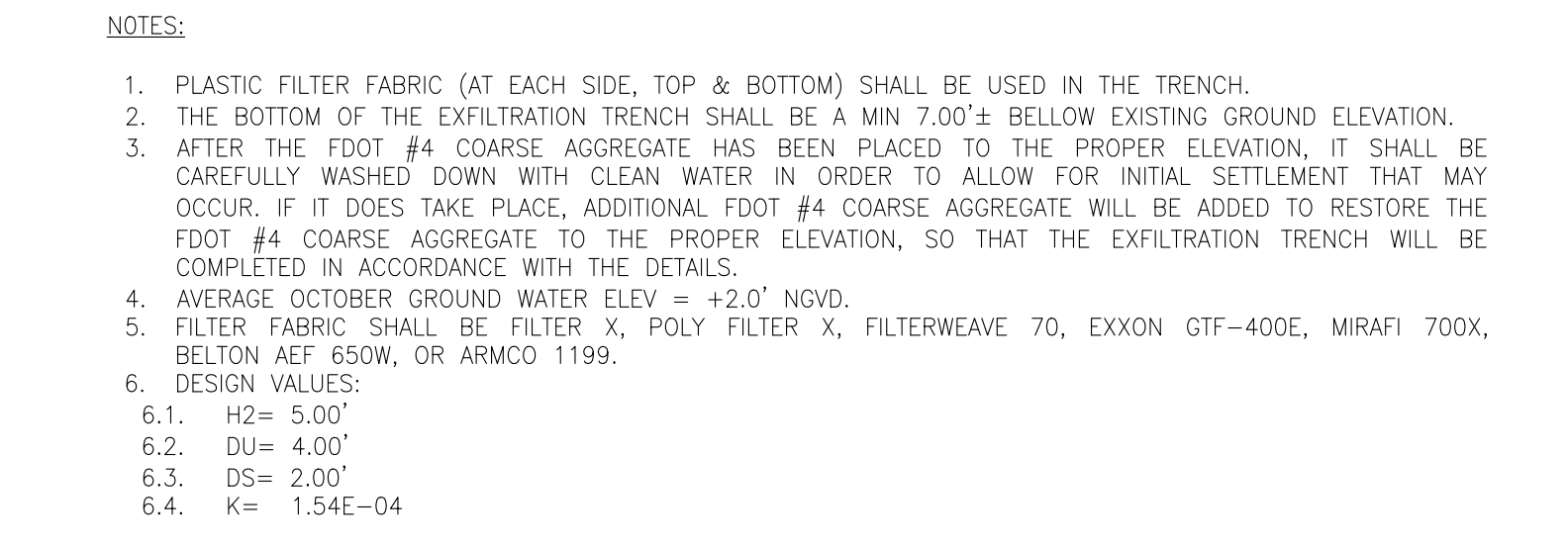
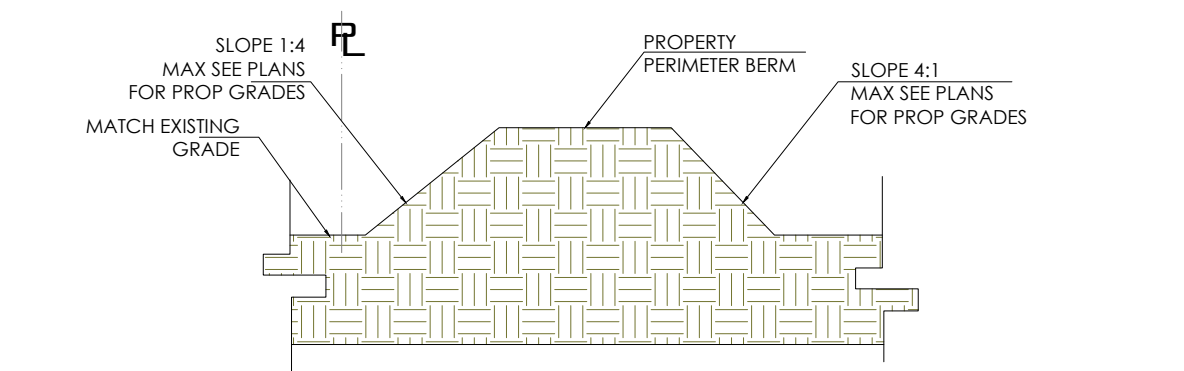
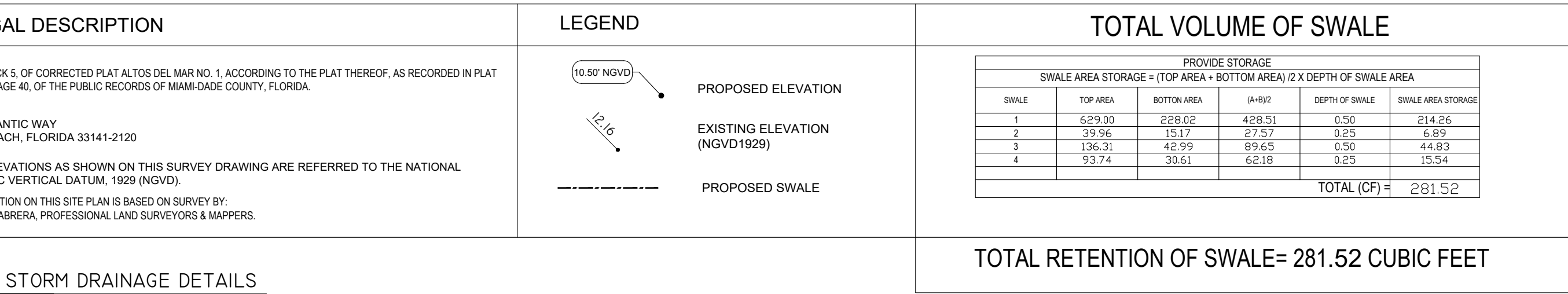


PROPOSED LAND USED : 7801 ATLANTIC WAY, MIAMI BEACH, FL 33141**IMPERVIOUS AREA**

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

PROPOSED CONDITION

H₂ = 5.0 ft

Water Table Elevation : 2.07 ft NGVD

D_u = 4.0 ft

Average Finish Site Grade : 7.07 ft NGVD

D_s = 2.0 ft

(From Pervious Areas)

W = 5.5 ft

Ex. Trench on Pervious Area 100.0%

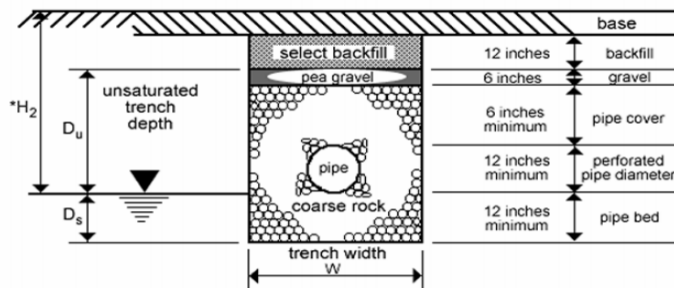
K (Soil) = 1.54E-04

Ex. Trench on Impervious Area 0.0%

Depth Of Trench = 7.0 ft

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