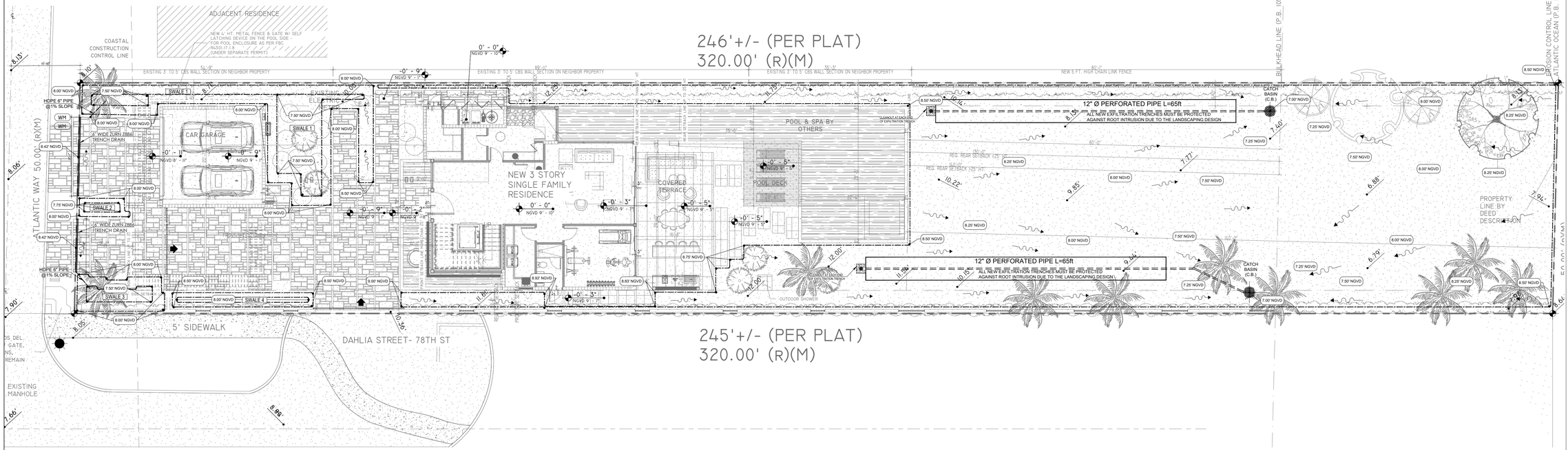

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NOTES/COMMENTS

REVISIONS / SUBMISSIONS

DRAINAGE PLAN

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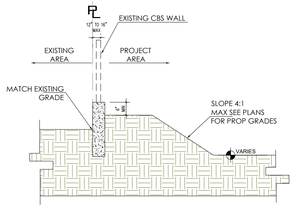
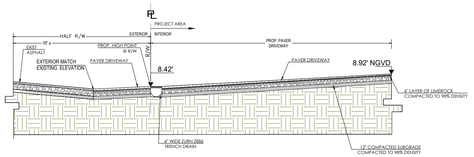
INITIAL DRAWING RELASE DATE: ISSUE DATE

C-1

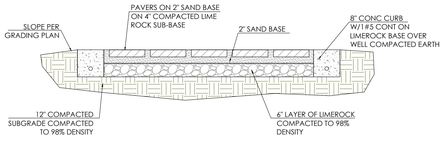
1 DRAINAGE PLAN
3/32" = 1'-0"



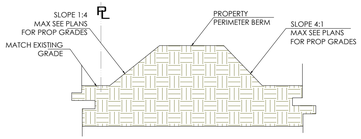
SECTION A-A (ALONG PROPERTY LINE)



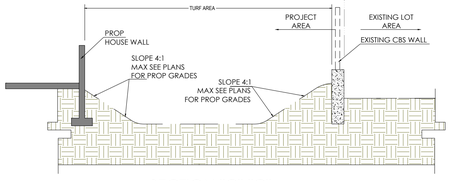
SECTION B-B THRU DRIVEWAY



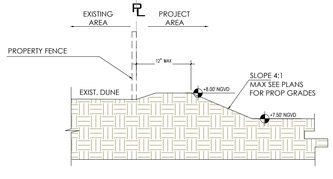
CONCRETE / BRICK PAVER DETAIL



PERIMETER BERM DETAIL



SECTION "C"-"C"



SECTION D-D (ALONG PROPERTY LINE)

LEGAL DESCRIPTION

LOT 6, BLOCK 5, OF CORRECTED PLAT ALTOS DEL MAR NO. 1, ACCORDING TO THE PLAT THEREOF, AS RECORDED IN PLAT BOOK 31, PAGE 40, OF THE PUBLIC RECORDS OF MIAMI-DADE COUNTY, FLORIDA.

ADDRESS:
7801 ATLANTIC WAY
MIAMI BEACH, FLORIDA 33141-2120

1. ALL ELEVATIONS AS SHOWN ON THIS SURVEY DRAWING ARE REFERRED TO THE NATIONAL GEODETIC VERTICAL DATUM, 1929 (NGVD).

2. INFORMATION ON THIS SITE PLAN IS BASED ON SURVEY BY:
JORGE L. CABRERA, PROFESSIONAL LAND SURVEYORS & MAPPERS.

LEGEND

10.50' NGVD — PROPOSED ELEVATION

12.16 — EXISTING ELEVATION (NGVD1929)

PROPOSED SWALE

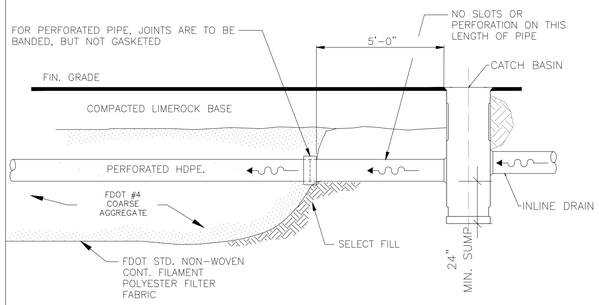
TOTAL VOLUME OF SWALE

PROVIDE STORAGE
SWALE AREA STORAGE = (TOP AREA + BOTTOM AREA) /2 X DEPTH OF SWALE AREA

SWALE	TOP AREA	BOTTOM AREA	(A+B)/2	DEPTH OF SWALE	SWALE AREA STORAGE
1	629.00	228.02	428.51	0.50	214.26
2	39.96	15.17	27.57	0.25	6.89
3	136.31	42.99	89.65	0.50	44.83
4	93.74	30.61	62.18	0.25	15.54
				TOTAL (CF) =	281.52

TOTAL RETENTION OF SWALE= 281.52 CUBIC FEET

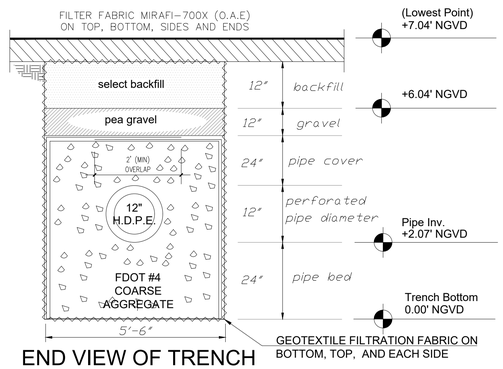
1 STORM DRAINAGE DETAILS
N.T.S.



EXFILTRATION NOTES:

1. PLASTIC FILTER FABRIC (AT EACH SIDE, TOP & BOTT.) SHALL BE USED IN SANDY AREAS AS NOTED ON PLANS AND/OR DIRECTED BY THE ENGINEER.

2 TYP. CATCH BASIN DETAILS (C.B)
N/A

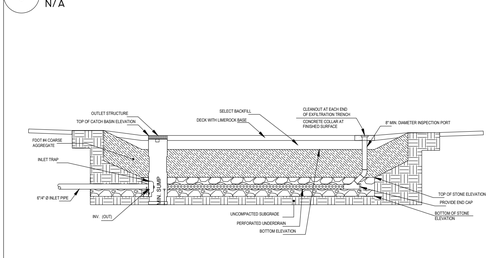


END VIEW OF TRENCH

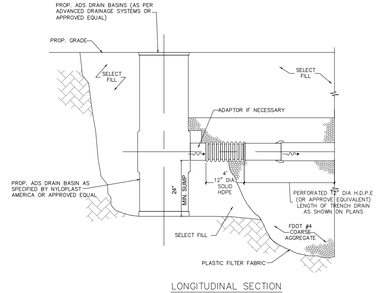
NOTES:

1. PLASTIC FILTER FABRIC (AT EACH SIDE, TOP & BOTTOM) SHALL BE USED IN THE TRENCH.
2. THE BOTTOM OF THE EXFILTRATION TRENCH SHALL BE A MIN 7.00'± BELLOW EXISTING GROUND ELEVATION.
3. AFTER THE FDOT #4 COARSE AGGREGATE HAS BEEN PLACED TO THE PROPER ELEVATION, IT SHALL BE CAREFULLY WASHED DOWN WITH CLEAN WATER IN ORDER TO ALLOW FOR INITIAL SETTLEMENT THAT MAY OCCUR. IF IT DOES TAKE PLACE, ADDITIONAL FDOT #4 COARSE AGGREGATE WILL BE ADDED TO RESTORE THE FDOT #4 COARSE AGGREGATE TO THE PROPER ELEVATION, SO THAT THE EXFILTRATION TRENCH WILL BE COMPLETED IN ACCORDANCE WITH THE DETAILS.
4. AVERAGE OCTOBER GROUND WATER ELEV = +2.0' NGVD.
5. FILTER FABRIC SHALL BE FILTER X, POLY FILTER X, FILTERWEAVE 70, EXXON GTF-400E, MIRAFI 700X, BELTON AEF 650W, OR ARMCO 1199.
6. DESIGN VALUES:
   6.1. H2= 5.00'
   6.2. DU= 4.00'
   6.3. DS= 2.00'
   6.4. K= 1.54E-04

3 TYP. TRENCH SECTION
N/A



4 EXFILTRATION TRENCH CLEAN OUT
N/A



LONGITUDINAL SECTION
N.T.S

NOTE:
AFTER THE FDOT #4 COARSE AGGREGATE HAS BEEN PLACES TO THE PROPER ELEVATION IT SHALL BE CAREFULLY WASHED DOWN WITH CLEAN WATER TO ALLOW FOR INITIAL SETTLEMENT THAT MAY OCCUR. IF THE SETTLEMENT DOES TAKE PLACE, ADDITIONAL FDOT #4 COARSE AGGREGATE WILL BE ADDED TO RESTORE THE FDOT #4 COARSE AGGREGATE TO THE PROPER ELEVATION SO THAT THE EXFILTRATION TRENCH IS COMPLETED IN ACCORDANCE WITH THE DETAILS.

5 TYP. CATCH BASIN DETAILS
N/A

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REVISIONS / SUBMISSIONS

STORM DRAINAGE DETAILS

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

C-2

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

IMPERVIOUS AREA		PERVIOUS AREA	
Building	2056.0 sf	Green Areas:	9212.0 sf
Paver/Conc./Asphalt	3453.0 sf	Permeable Decks:	0.0 sf
Pool & Pond	1274.0 sf		
Total Impervious Area:	6783.0 sf	Total pervious Area:	9212.0 sf
TOTAL AREA :	15995.0 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 x Q/12

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

S= (Total Pervious Area/Total Site Area) x (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 Runnoff (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)

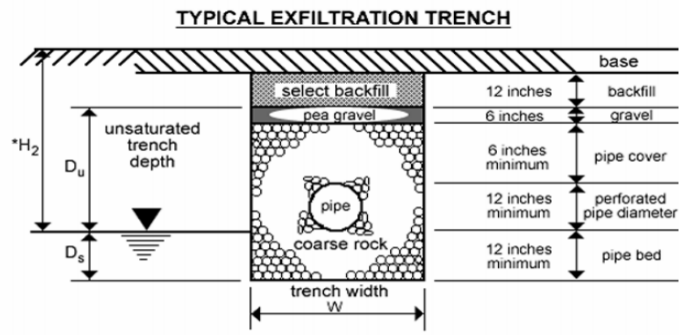
Swale	Top Area (sf)	Bottom Area (sf)	Average Area (sf)	Height (ft)	Volume (cf)
1	629	228.02	428.51	0.5	214.26
2	39.96	15.17	27.565	0.25	6.89
3	136.31	42.99	89.65	0.5	44.83
4	93.74	30.61	62.175	0.25	15.54
5					
			Total Swale Areas:		281.52

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
Du =	4.0 ft	Average Finish Site Grade :	7.07 ft	NGVD
Ds =	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



L = Length of Trench Required (feet)
V = Volume Treated (acre – inches)
W = Trench Width (feet)
K = Hydraulic Conductivity (cfs/ft.^{2} – ft. head)
***H_2 = Depth to Water Table (feet)**
D_u = Non-Saturated Trench Depth (feet)
D_S = Saturated Trench Depth (feet)

$$L = \frac{V}{K\,(H_2W + 2H_2D_u - D_u^2 + 2H_2D_S) + (1.39 \times 10^{-4})\,WD_u}$$

* **The value of H_2 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 H_2. 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. whenDs>Du	0.00983	Using [K*(2*H2*Du-DU^2+2*H2*Ds)+(1.39X10^-4)*W*Du]
Exf. whenDs≤Du	0.01407	Using [K*(H2*W+2*H2*Du-DU^2+2*H2*Ds)+(1.39X10^-4)*W*Du]

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**