

STORMWATER RETENTION CALCULATIONS
(Basin A)

A. SITE INFORMATION

Total Property Area = 13,781 sq.ft.

Drainage Basin Area = 10,487 sq.ft.

Drainage Area Impervious Surface = 5,742 sq.ft.

Drainage Area Pervious Surface = 4,745 sq.ft.

B. ESTIMATED STORMWATER RETENTION VOLUME

The retention volume is estimated using the Rational Method ($Q=CiA$)

where:

$C = 1.0$ (impervious surface)

$C = 0.2$ (pervious surface)

$i = 2$ in/hr

Impervious Surface Runoff Volume:

$1.0 \times 2 \text{ in/hr} \times 5,742 \text{ sq.ft.} \times 1 \text{ ft./12 in.} = 957 \text{ cu.ft.}$

Pervious Runoff Volume:

$0.2 \times 2 \text{ in/hr} \times 4,745 \text{ sq.ft.} \times 1 \text{ ft./12 in.} = 159 \text{ cu.ft.}$

Total Volume to be Retained = 1,116 cu.ft.

C. PROPOSED EXFILTRATION TRENCH SIZING

Exfiltration Trench #A-1

L = Total Length of Trench Provided = 50 ft
W = Trench Width = 10 ft
K = Hydraulic Conductivity = 0.00005 cfs/sq.ft./ft. of head
H2 = Depth to Water Table = 3.00 ft
DU = Un-Saturated Trench Depth = 2.50 ft
DS = Saturated Trench Depth = 0.00 ft

V = Volume Treated = 982 cu.ft.

Exfiltration Trench #A-2

L = Total Length of Trench Provided = 20 ft
W = Trench Width = 10 ft
K = Hydraulic Conductivity = 0.00005 cfs/sq.ft./ft. of head
H2 = Depth to Water Table = 3.00 ft
DU = Un-Saturated Trench Depth = 2.50 ft
DS = Saturated Trench Depth = 0.00 ft

V = Volume Treated = 393 cu.ft.

Total Volume Retained in Exfiltration Trenches = 1,375 cu.ft.

STORMWATER RETENTION CALCULATIONS
(Basin B)

A. SITE INFORMATION

Total Property Area = 13,781 sq.ft.

Drainage Basin Area = 3,294 sq.ft.

Drainage Area Impervious Surface = 1,837 sq.ft.

Drainage Area Pervious Surface = 1,457 sq.ft.

B. ESTIMATED STORMWATER RETENTION VOLUME

The retention volume is estimated using the Rational Method ($Q=CiA$)

where:

$C = 1.0$ (impervious surface)

$C = 0.2$ (pervious surface)

$i = 2$ in/hr

Impervious Surface Runoff Volume:

$1.0 \times 2 \text{ in/hr} \times 1,837 \text{ sq.ft.} \times 1 \text{ ft./12 in.} = 307 \text{ cu.ft.}$

Pervious Runoff Volume:

$0.2 \times 2 \text{ in/hr} \times 1,457 \text{ sq.ft.} \times 1 \text{ ft./12 in.} = 49 \text{ cu.ft.}$

Total Volume to be Retained = 356 cu.ft.

C. PROPOSED EXFILTRATION TRENCH SIZING

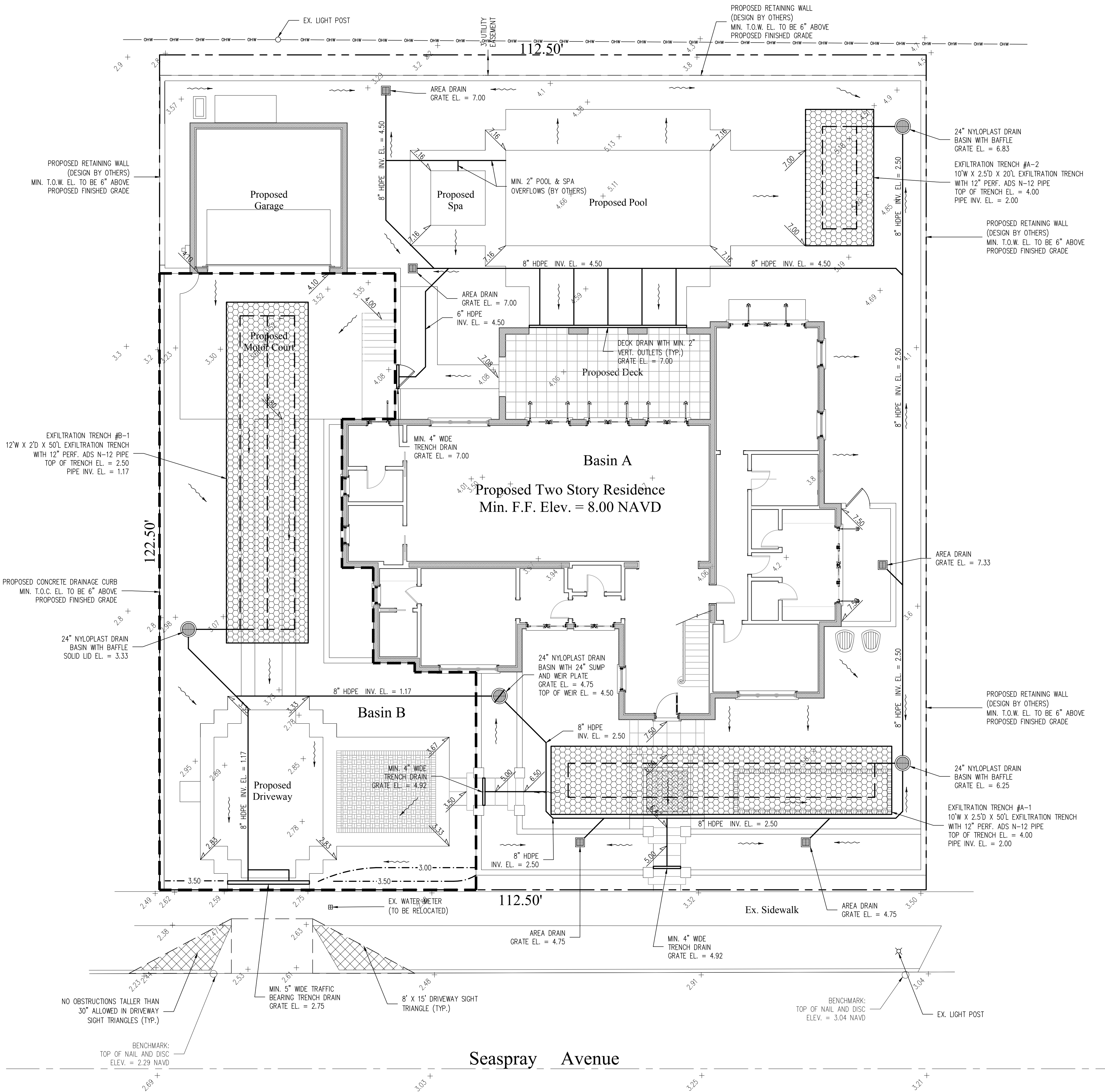
Exfiltration Trench #B-1

L = Total Length of Trench Provided = 50 ft
W = Trench Width = 12 ft
K = Hydraulic Conductivity = 0.00005 cfs/sq.ft./ft. of head
H2 = Depth to Water Table = 1.25 ft
DU = Un-Saturated Trench Depth = 1.00 ft
DS = Saturated Trench Depth = 1.00 ft

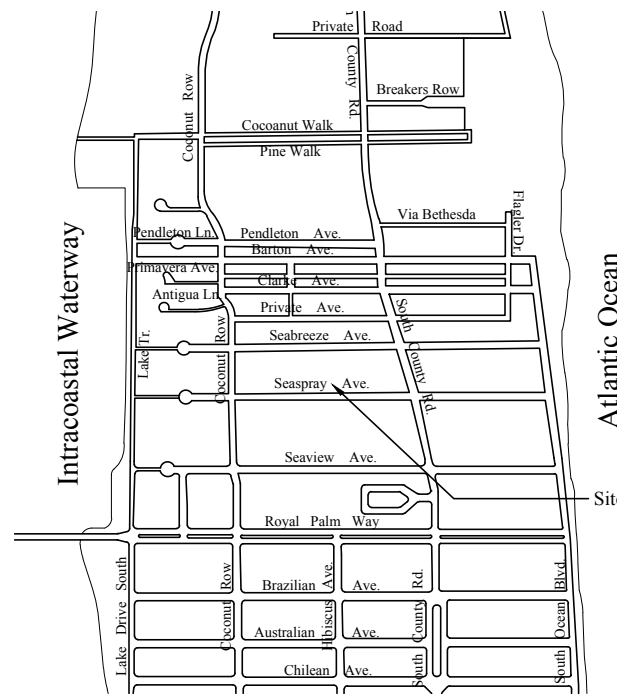
V = Volume Treated = 475 cu.ft.

Notes:

- Exfiltration trenches and storm piping to be protected from roots with a root barrier.
- Roof drain downspouts are to be connected to the proposed drainage system. Contractor to provide engineer with downspout locations prior to installation of drainage system.
- Exfiltration trench design uses an assumed value of hydraulic conductivity. Client may obtain a site specific test for hydraulic conductivity prior to exfiltration trench installation.
- Contractor shall mill and overlay all roadway cuts a minimum of 50 ft. on either side of the excavation the entire width of each affected lane.
- Contractor is responsible for installing and maintaining erosion control measures during construction.
- Video inspection of storm drainage system required prior to installation of sod.



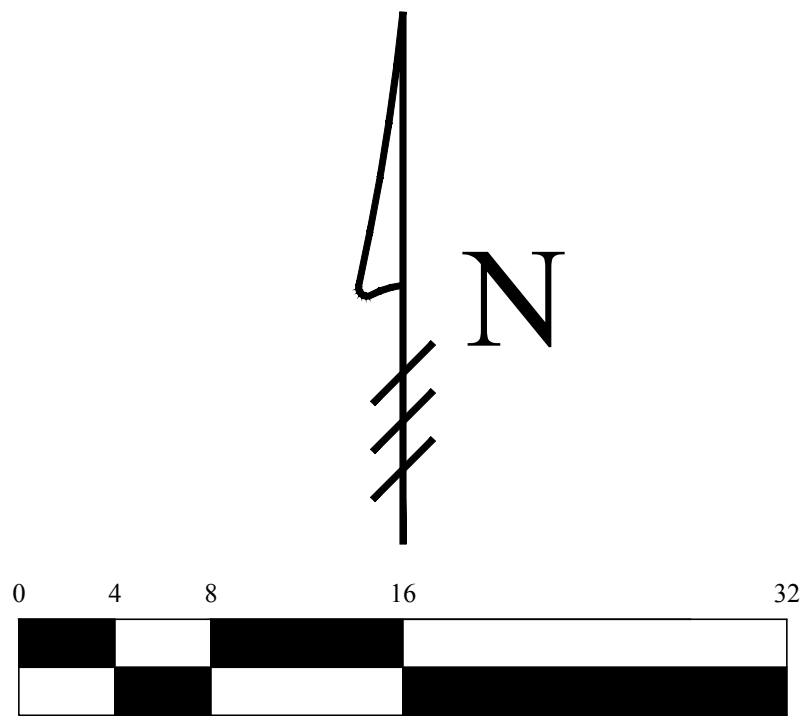
48 HOURS BEFORE DIGGING
CALL
1-800-432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA, INC.
Contractor is responsible for obtaining
location of existing utilities prior to
commencement of construction activities.



Location Map
N.T.S.

Legend

- EXISTING ELEVATION PER WALLACE SURVEYING CORP. (NAVD-88)
- PROPOSED ELEVATION (NAVD-88)
- PROPOSED ELEVATION CONTOUR (NAVD-88)
- FLOW DIRECTION
- EXFILTRATION TRENCH
- AREA DRAIN
- 24" NYLOPLAST DRAIN BASIN WITH BAFFLE



Scale: 1/8" = 1'-0"



Gruber Consulting
Engineers, Inc.
575 AMBER AVE., SUITE 305
WEST PALM BEACH, FL 33401
PHONE: 863.12.2841
office@gruberengineers.com

Project Information				
Project No.	2022-0053	Issue Date	02/08/2023	
Scale	1/8" = 1'-0"	Drawn By	KM	
Checked By	CG			

Conceptual Site Grading & Drainage Plan For:

Proposed Residence

Palm Beach, Florida

2443 Seaspray Avenue

Revisions

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Chad M. Gruber

FL P.E. No. 57466

Sheet No.

C-1

This item has been electronically signed and sealed by Chad M. Gruber
on the date adjacent to the seal using a SHA authentication code.
Printed copies of this document are not considered signed and sealed and
the SHA authentication code must be verified on any electronic copies.

Plan Background from Hardscape Plan by
Environment Design Group Received 2/3/23

ARC-23-036

© 2023 Gruber Consulting Engineers, Inc.