

BROWARD COUNTY BSO SUBSTATION

2714 NW 4 COURT, POMPANO BEACH FL 33069

Drainage Report



LOCATION MAP AERIAL

Prepared for: The City of Pompano Beach, Florida

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INTRODUCTION

The site is in Broward County, SEC 33, TWP 48S, RNG 42E. The address of the site is 2714 NW 4 COURT, POMPANO BEACH FL 33069. The BSO Substation parcel consists of 0.33 acres. The development will consist of the construction of a 1 story building, asphalt pavement parking and driveways and landscaped pervious areas.

Stormwater Management System

The Stormwater Management System (SWM) proposed for this project consists of providing Exfiltration Trenches capable of containing and disposing of the runoff volume corresponding to the 5 Year- 1 Hour Storm equivalent to 3.28 inches with safety factor of 2 over the entire site area of 0.33 Acres.

The Stormwater Management System will provide interconnected catch basins and route roof water to these catch basins. 98 LF of W 6'-0" x H 7.5' exfiltration trench and a system of pipes will be utilized.

BASIS OF DESIGN

Finished Floor Elevation

ASCE-24-14 Chapter 1 Section 1.5 Table 1-1 Floor design class for Critical Facilities are designated as class 4 and Chapter 2 Section 2.6 Table 2-1 requires the Top of Lowest Floor for Class 4 structures to be at Base Flood Elevation plus 2' or Design Flood Elevation whichever is higher.

The proposed development is in Flood Zone X - Below 500 Year Flood Plain. flood floor elevation. For more information, please see the attached portion of the FEMA Flood Insurance Rate Map (FIRM) Panel No. 12011C0356H effective date 08/08/2014. See appendix.

Pompano Beach Code of Ordinances in the Flood Plain Regulation article 152.29 (c)(1) (c) states that:

Critical facilities buildings. New construction and substantial improvement of critical facilities buildings shall have the lowest floor, including basement, elevated or dry flood-proofed to or above the base flood elevation plus two feet, or the 500-year flood elevation, or at least 18 inches above the highest point of the crown of all existing streets adjacent to the plot upon which all other buildings are located, whichever results in the highest elevation.

The highest point of the crown of adjacent streets is 11.78' NAVD per the survey prepared by David and Gerhard, Inc.

Broward County Code of Ordinances Chapter 27, Article V, Sec.27-200. (b). (5).3. c. states that the lowest habitable building finished floor elevation shall be above the 100-year flood elevation, as determined from the most appropriate information. Broward County 100-year Flood Map Elevation is stated at 11.5 NAVD. (See Appendix)

The City of Pompano Beach Code of Ordinances controls. The minimum finished floor elevation of the proposed building must be $11.78 \text{ NAVD} + 1.50' = 13.28 \text{ NAVD}$. The proposed design Finish Floor Elevation is **13.50 NAVD**, which meets and exceeds the controlling criteria.

Minimum Paved Area/Parking Area Elevation

The lowest proposed pavement elevation is **12.30' NAVD** per Civil Engineering plans.

The 5-year – 1-hour storm event was utilized as the criteria to provide flood protection to paved areas. Future Ground water elevation is 4.50 NAVD, pavement elevation at the lowest point is more than 5' above the water table.

Soil's percolation Report

The hydraulic conductivity of soil is $K = 1.50 \times 10^{-4}$ CFS/SF- FT of head, according with the Percolation Report performed by Federal Engineering Testing, Inc and dated on July 17, 2019, which was provided by the City of Pompano Beach.

EXFILTRATION TRENCH CALCULATION SHEET

BC BSO SUBSTATION

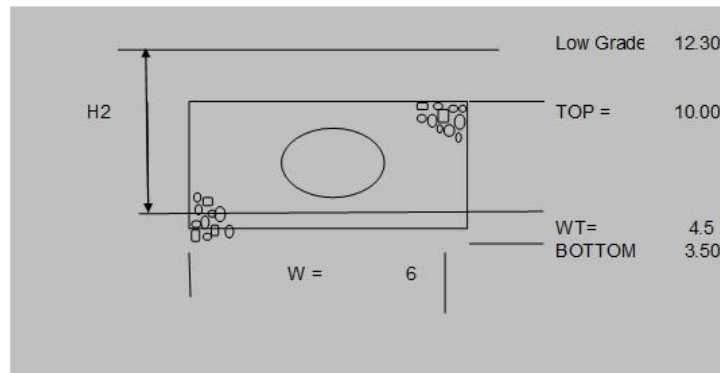
INPUTS:			RUNOFF INPUTS:	
PERCOLATION RATE	(K)	1.50E-04	Volume in Trench 3.28 Inches (5 Year- 1 Hour Storm)	
WIDTH	(W)	6.0 FT	3.28" x 0.33 Ac. = 1.08 Ac.-In.	
DEPTH TO WT	(H2)	7.8 FT	1.08 Ac.-In. x 2 (Safety Factor) = 2.17 Ac.-In.	
UNSATURATED TRENCH	(Du)	5.5 FT	VOLUME TO BE TREATED	
SATURATED TRENCH	(Ds)	1.0 FT	2.17 AC-IN	
WATER TABLE ELEV.	(WT)	4.5 NGVD		

STANDARD FORMULA

$$L = \frac{V}{\{K(H2W + 2 \times H2Du - Du^2 + 2 \times H2Ds)\} + \{(1.39 \times 10E-4)WDu\}}$$

FORMULA when Ds > Du or when W is twice the height

$$L = \frac{V}{\{K(2 \times H2Du - Du^2 + 2 \times H2Ds)\} + \{(1.39 \times 10E-4)WDu\}}$$

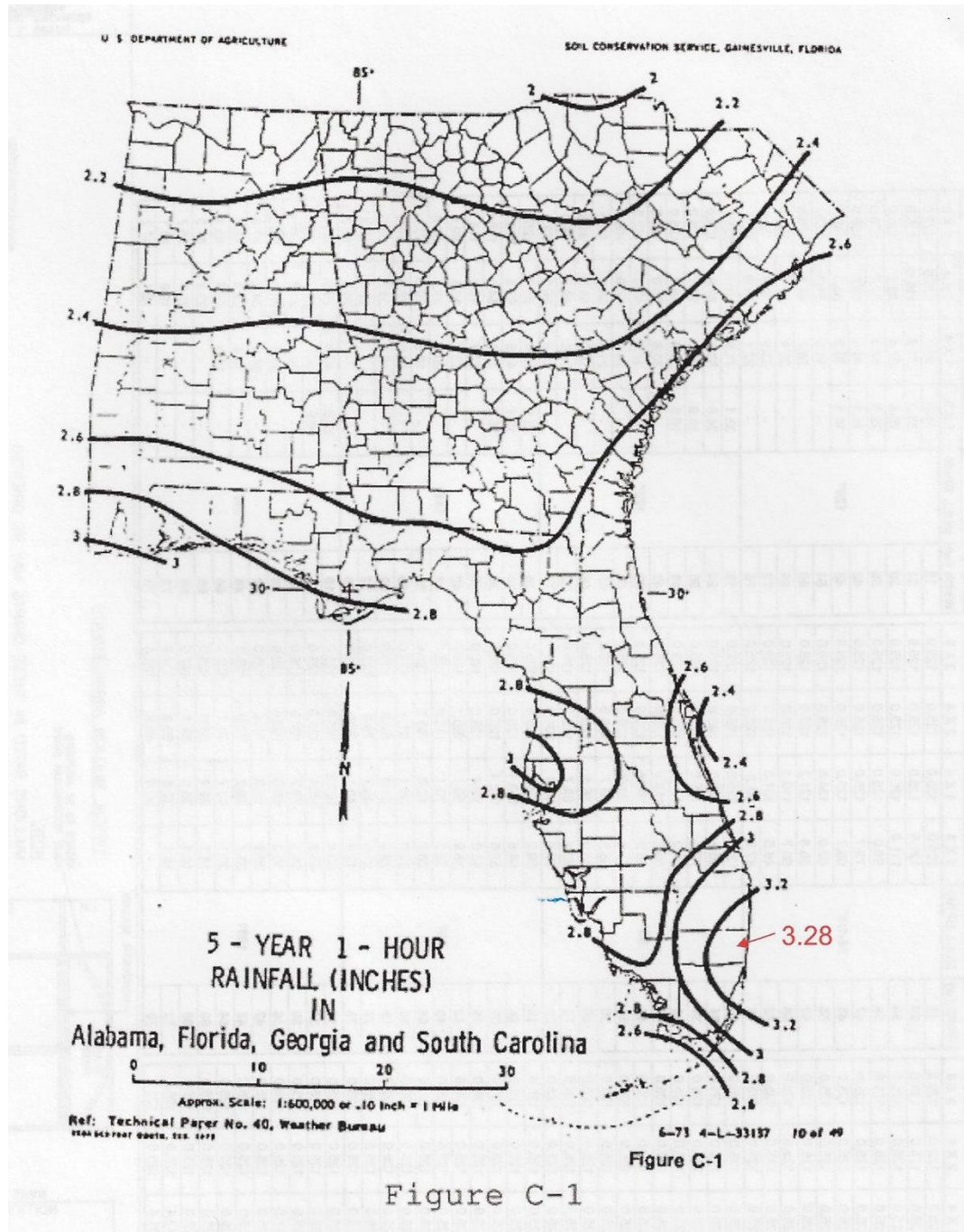


LENGTH OF TRENCH NEEDED =	97.399 FEET
LENGTH OF TRENCH PROVIDED =	98 FEET

2/25/2021

APPENDIX

1. SFWMD Rainfall Maps
2. Broward County FEMA Map
3. Broward County 100 Year Flood Elevations Map



DRC

Broward FEMA Flood Map Effective August 18, 2014

Details

Zone AE	Flood insurance apply.
Zone AH	Flood insurance Mandatory flood
Zone VE	Flood insurance Mandatory flood
Zone X-Shaded (0.2 PCT Annual Chance Flood Hazard)	Moderate flood between the line which are the Zone X (Below
Zone X	

Provided by Broward County GIS

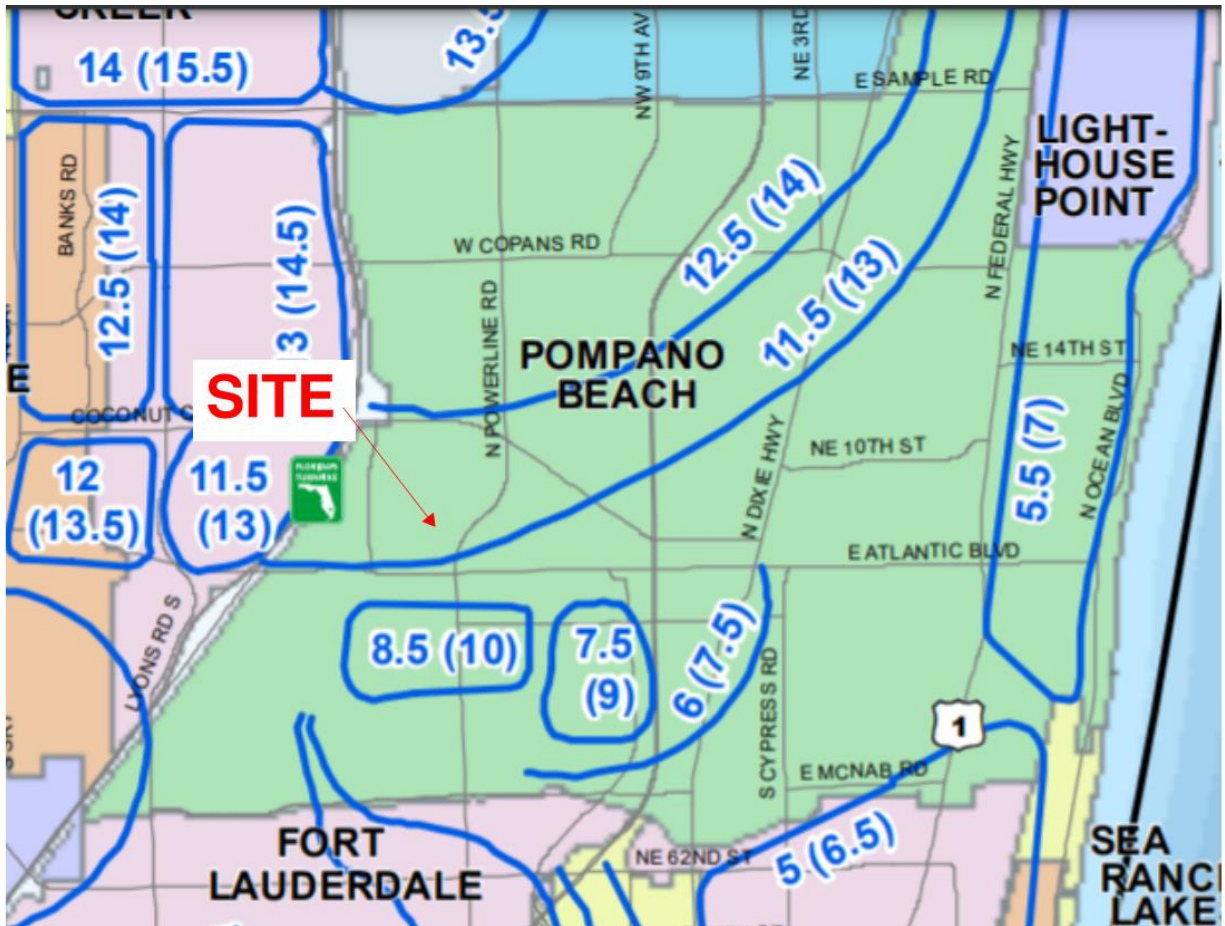
FEMA Flood Designations Effective 8/18/2014

Insurance Mandated? No

New Flood Zone: X - Below 500 Year Flood Plain
New NAVD 88 Elevation: N/A
New Flood Panel: 12011C0356H

Old Flood Zone: AH
Old NGVD 29 Elevation: 11
Old Flood Panel: 12011C0120 F

[More Information](#)
[Zoom to](#)



DRC