

ST. PHILIP CHURCH
STORM WATER MANAGEMENT CALCULATIONS

1) SITE PLAN DATA:

Total Lot Area = 35,057 sq.ft. ± (0.805 acres ±)
Lot Area after ROW Dedication = 32,189 sq.ft. ± (0.739 acres ±)

The drainage area is considered to be 0.739 acres (32,189 sq.ft.) which is the entire area minus the dedicated ROW. The drainage area has been evaluated as follows:

A) **IMPERVIOUS AREAS** (Per various plans in CADD with area takeoffs):

ITEM	PROPOSED
Buildings	1,862 sq.ft.
Drive/Walkways/Decks/Pool	9,677 sq.ft.
IMPERVIOUS (total):	11,539 sq.ft.

Note: square footage has been rounded upward in some instances for estimating purposes; assumes pavers as impervious and includes roof overhangs.

B) **PERVIOUS AREAS:**

TOTAL = (32,189 sq.ft. - 11,539 sq.ft.) (1 acre/43,560 sq.ft.) = 20,650 sq.ft. or 0.474 acres

2) SFWM CRITERIA DATA:

5 Year, 1 Day Storm = 8.0" (refer to rainfall map)

Soil Storage Factor (S)

S_{DEVELOPED} = 10.9" assumes: coastal soils
compacted soils condition
maximum 4' depth to water table

3) ESTIMATED RUNOFF RATE

$$\text{SFWM Formula: } Q = \frac{(P-0.2S)^2}{P+0.8S}$$

Where Q = Runoff rate in inches
S = Soil storage factor (see soil factor calculations)
P = Rainfall = 8.0" (5 year, 1 Day storm)

S_{DEVELOPED} = 10.9" x 0.474 acres = 6.99"

Q_{DEVELOPED} = 18.0" - 0.2 (6.99")² / 8.0" + 0.8 (6.99") = 3.21"

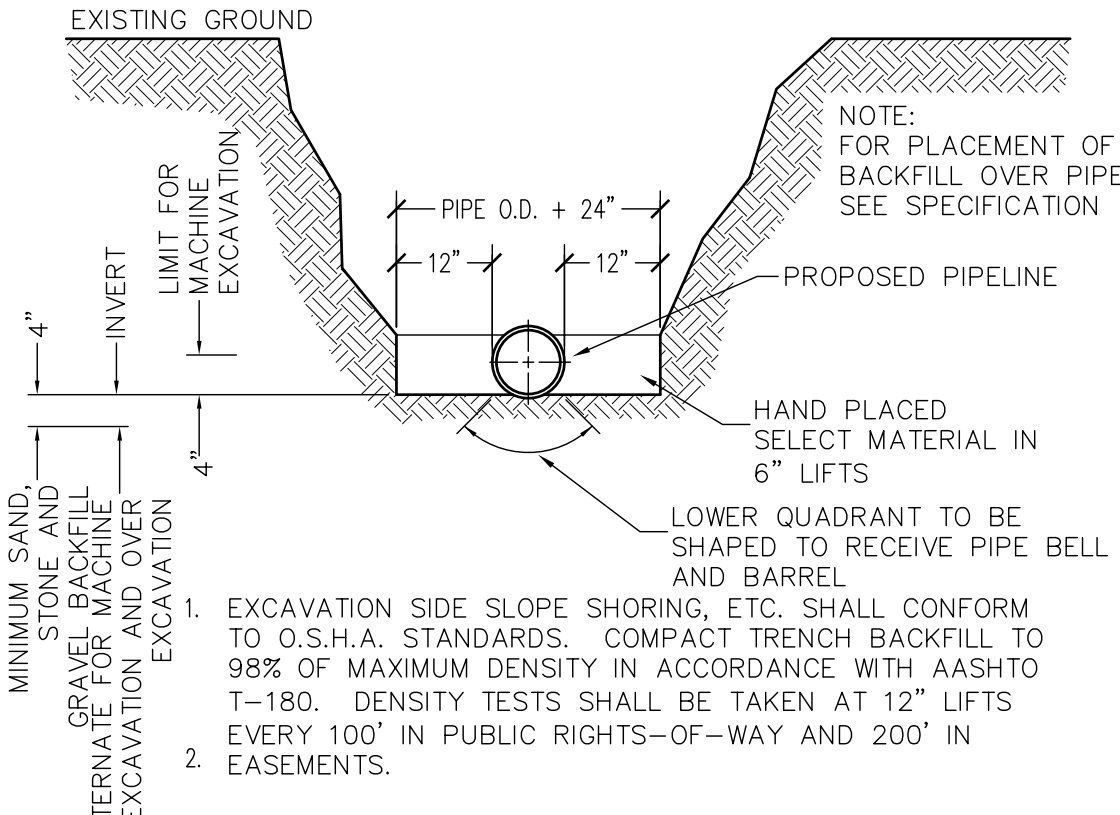
4) ESTIMATED RUNOFF VOLUME FOR 5 YEAR, 1 DAY STORM:

Runoff Volume = Runoff Rate x Area

$$(\text{Runoff Volume})_{\text{DEVELOPED}} = 3.21" \times 0.739 \text{ acres} \times \frac{\text{ft}}{12 \text{ in.}} \times 43,560 \frac{\text{ft}^2}{\text{acre}} = 8,611 \text{ ft}^3$$

Dry Retention Storage = 3,145 cu.ft.
Exfiltration Trench Storage = 5,506 cu.ft.

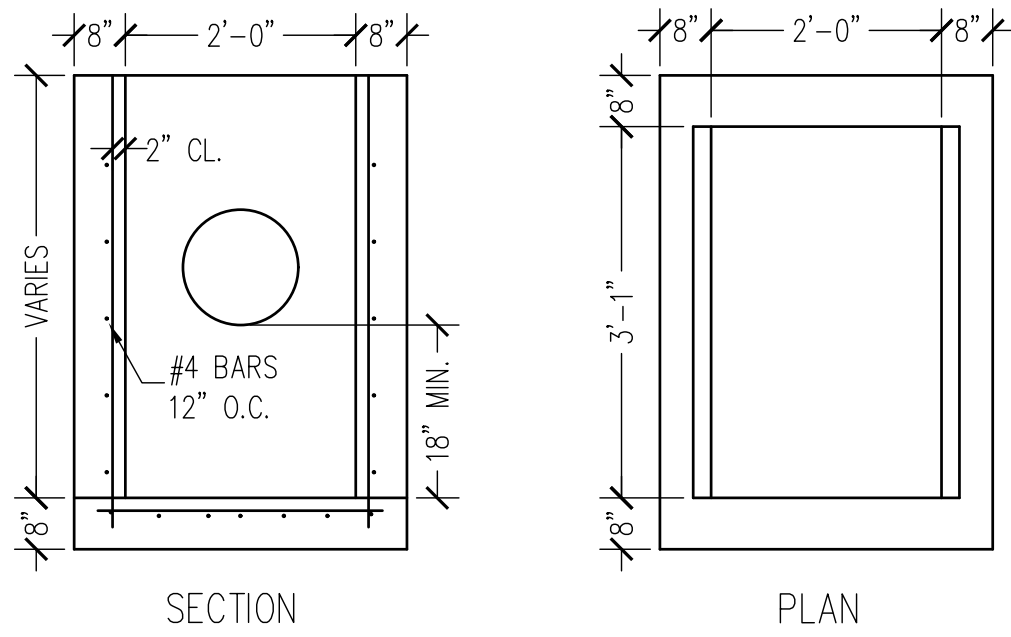
Existing site contours and recontouring of contours near proposed residential construction will "manage" this volume on-site within designated exfiltration trenches and high percolation rate soils.



1. EXCAVATION SIDE SLOPE SHORING, ETC. SHALL CONFORM TO O.S.H.A. STANDARDS. COMPACT TRENCH BACKFILL TO 98% OF MAXIMUM DENSITY IN ACCORDANCE WITH AASHTO T-180. DENSITY TESTS SHALL BE TAKEN AT 12" LIFTS EVERY 100' IN PUBLIC RIGHTS-OF-WAY AND 200' IN EASEMENTS.
2. BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 3/8"-7/8" SIZING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS, HARDPAN AND LARGER ROCKS SHALL BE REMOVED.
3. THE PIPE SHALL BE PLACED IN A DRY TRENCH.
4. BACKFILL SHALL BE FREE OF UNSUITABLE MATERIAL SUCH AS LARGE ROCK, MUCK, HARDPAN AND DEBRIS.
5. SEE SEPARATE DETAIL FOR "PIPE INSTALLATION UNDER EXISTING PAVEMENT-OPEN CUT.
6. THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION OR AS SPECIFIED IN PERMIT/CONTRACT DOCUMENTS.

TRENCH AND BACKFILL DETAIL

N.T.S.



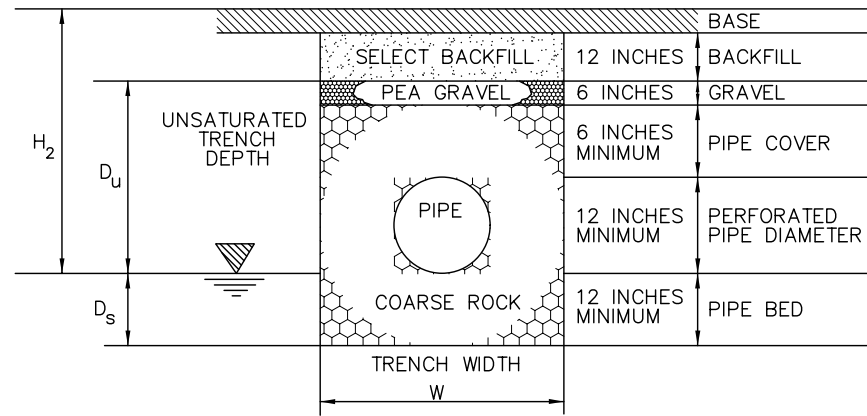
GENERAL NOTES

- BEVELED EDGES: ALL EXPOSED EDGES TO BE CHAMFERED 3/4"
- GRATES: CAST IRON GRATES IN ACCORDANCE WITH FLORIDA D.O.T. SPECIFICATIONS
- MATERIAL: INLET WALLS AND FOOTING MAY EITHER BE POURED IN PLACE 3000 LB. CONCRETE, OR PRECAST CLASS "A" 3000 LB. CONCRETE
- BAFFLE: INLET TO HAVE MIN. 18" SUMP AND MIN. 12" CLEARANCE BETWEEN BOTTOM OF BAFFLE AND BOTTOM OF INLET (SEE BAFFLE DETAIL)

TYPE "C" INLET

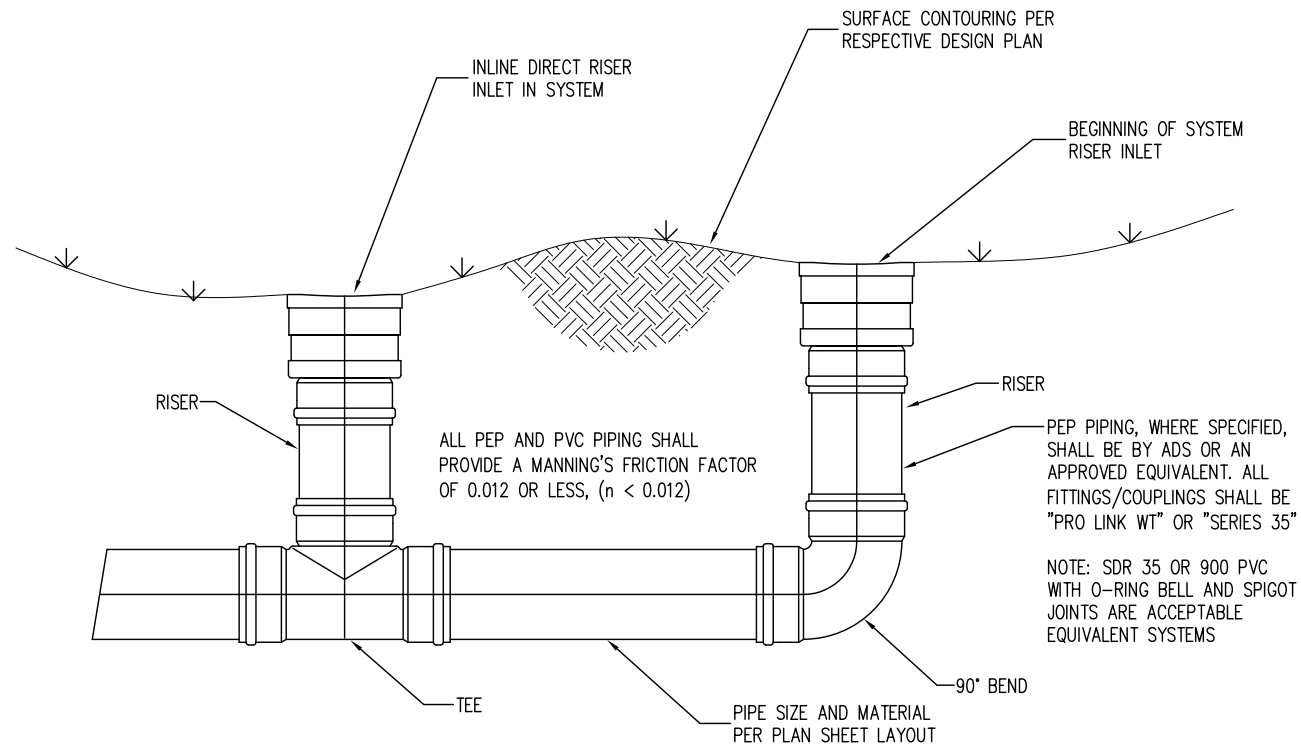
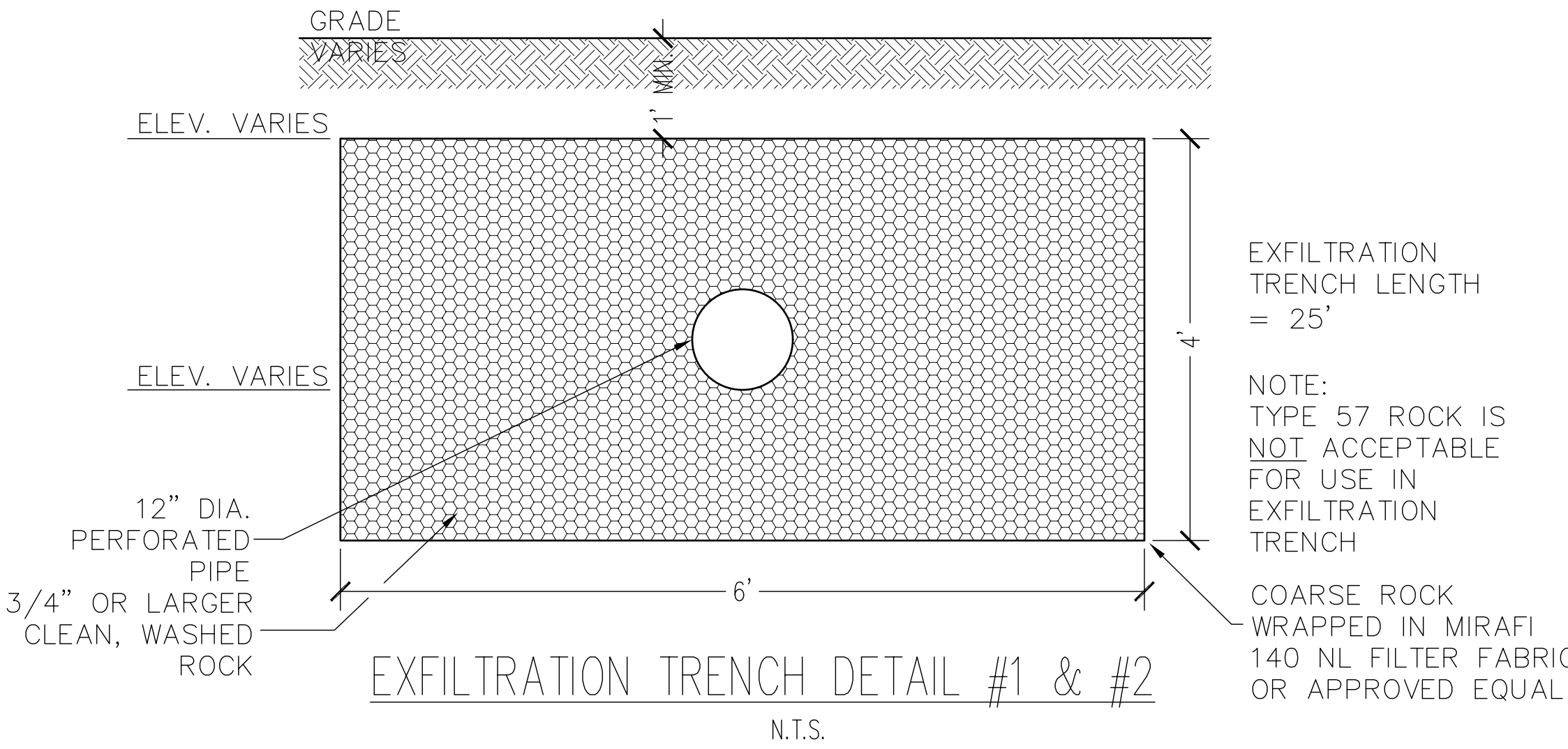
N.T.S.

TYPICAL EXFILTRATION TRENCH



$$L = \frac{V}{K(H_2W + 2H_2D_u - D_u^2 + 2H_2D_s) + (1.39 \times 10^{-4})WD_u}$$

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)

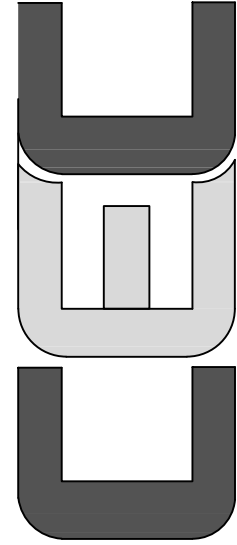


DIRECT RISER INLET: TYPICAL INSTALLATION

N.T.S.



Know what's below.
Call before you dig.



CIVIL ENGINEERING CONSULTING, INC.
CERTIFICATE OF AUTHORIZATION #33369
8195 WHITE ROCK CIRCLE
BOYNTON BEACH, FL 33436
Phone: 561-847-0398

andre@cec-fl.com

Date:

Revisions:

No:

DRAINAGE AND GRADING PLANS FOR:
ST. PHILIP CHURCH
2505 NW 3RD ST.
POMPANO BEACH, FL

Project #:	21-030
Issue Date:	05/17/21
Drawn By:	AMW
Chkd By:	AMW
Scale:	As Shown



SHEET TITLE
DRAINAGE &
GRADING
DETAILS

SHEET NUMBER:

C-3

Digitally signed by Andre M Webster
Date: 2021.09.16 12:58:33 -04'00'

DRC
PZ21-12000028
10/20/2021