

Mitchell Environmental, P.A.

SEPTIC SYSTEM DESIGN

for

PRINCE PLACE SUBDIVISION- LOT 14
Fuquay-Varina, Harnett County, North Carolina

Submitted to:

Harnett County Health Department
307 Cornelius Harnett Blvd.
Lillington, NC 27546

Prepared for:

Triple A Homes, Inc.
PO Box 1117
Holly Springs, North Carolina 27540

Prepared by:

Scott Mitchell, PE, LSS
Adam Aycock, EI

DATE: March 31, 2022

PROJECT NO.: 4721



Property Description:

LOT#14 PRINCE PLACE PH 1 MAP#2021-372

Harnett County GIS

PID: 050633 0026 14

PIN: 0633-76-8922.000

REID:

Subdivision:

Taxable Acreage: 0.820 AC ac

Caclulated Acreage: 0.82 ac

Account Number: 1500038152

Owners: TRIPLE A HOMES INC

Owner Address : PO BOX 1117 HOLLY SPRINGS, NC 27540

Property Address: 52 ROYAL ELLA CT FUQUAY-VARINA, NC 27526

City, State, Zip: FUQUAY-VARINA, NC, 27526

Building Count: 0

Township Code: 08

Fire Tax District: Northwest Harnett

Parcel Building Value: Unavailable

Parcel Outbuilding Value : Unavailable

Parcel Land Value : Unavailable

Parcel Special Land Value : Unavailable

Total Value : Unavailable

Parcel Deferred Value : Unavailable

Total Assessed Value : Unavailable

Neighborhood: 00821

Actual Year Built:

TotalAcutalAreaHeated: Sq/Ft

Sale Month and Year: 10 / 2021

Sale Price: \$715000

Deed Book & Page: 4055-0910

Deed Date: 1633392000000

Plat Book & Page: 2021-372

Instrument Type: WD

Vacant or Improved:

QualifiedCode: A

Transfer or Split: T

Within 1mi of Agriculture District: Yes

Prior Building Value: Unavailable

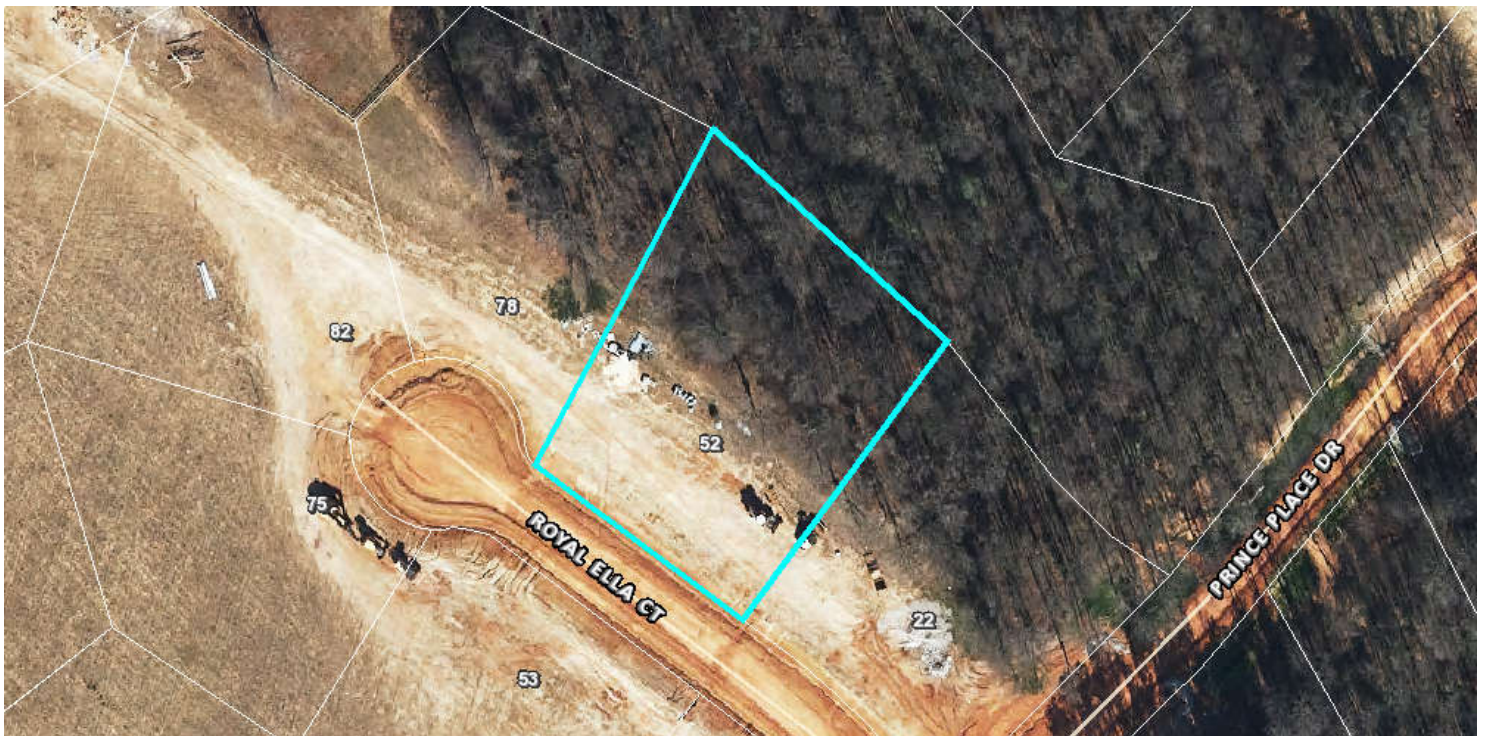
Prior Outbuilding Value : Unavailable

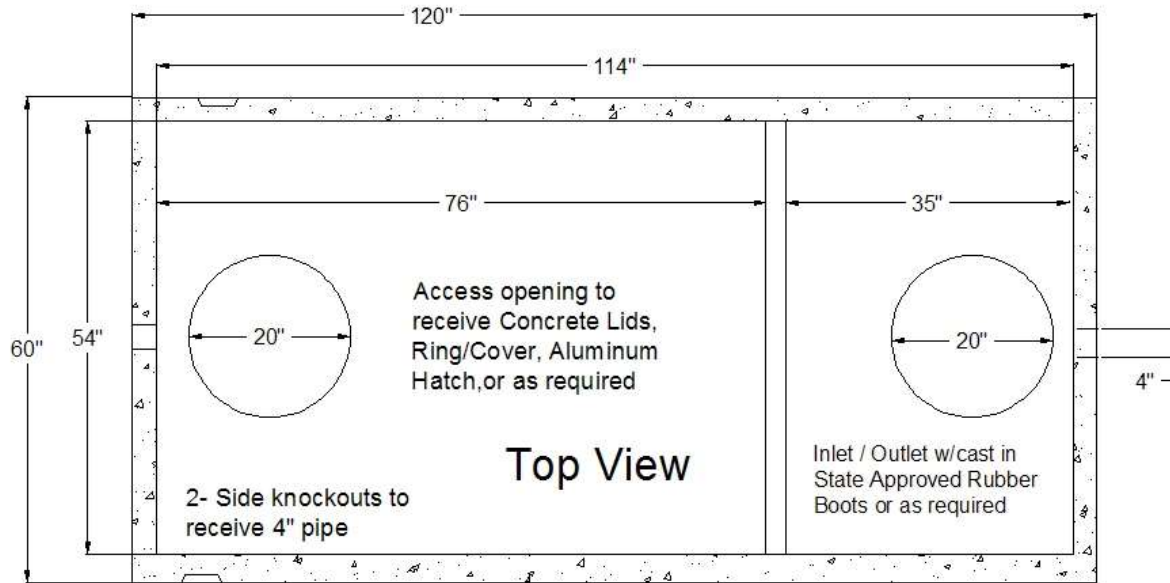
Prior Land Value : Unavailable

Prior Special Land Value : Unavailable

Prior Deferred Value : Unavailable

Prior Assessed Value : Unavailable





STB - 345 - Top Seam

Approval Date: 12 - 09 - 99

Liquid Capacity 1007 Gallons

Non Traffic Rated

Reinforcing Schedule: # 3 Grade 60 Rebar

4500 PSI Concrete w/ State Approved Structural Fiber

Est. Weight: 8,200 lbs.

Manufactured By:

GARNERS

Septic Tanks, Inc.

Eddie Garner, President

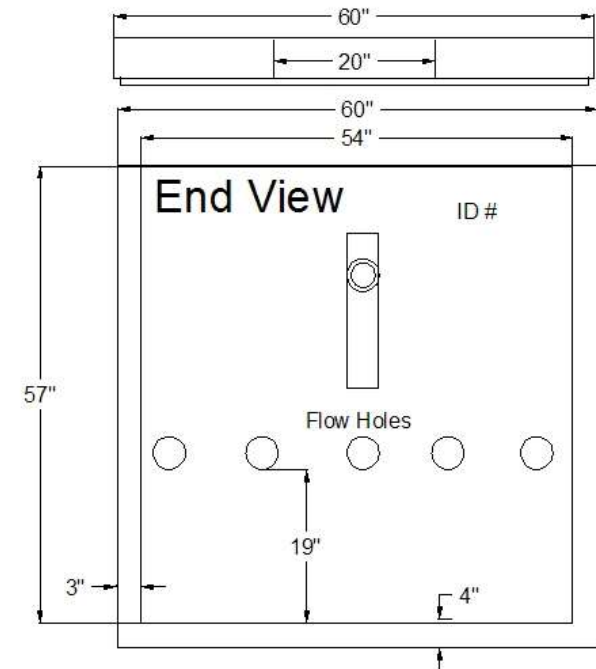
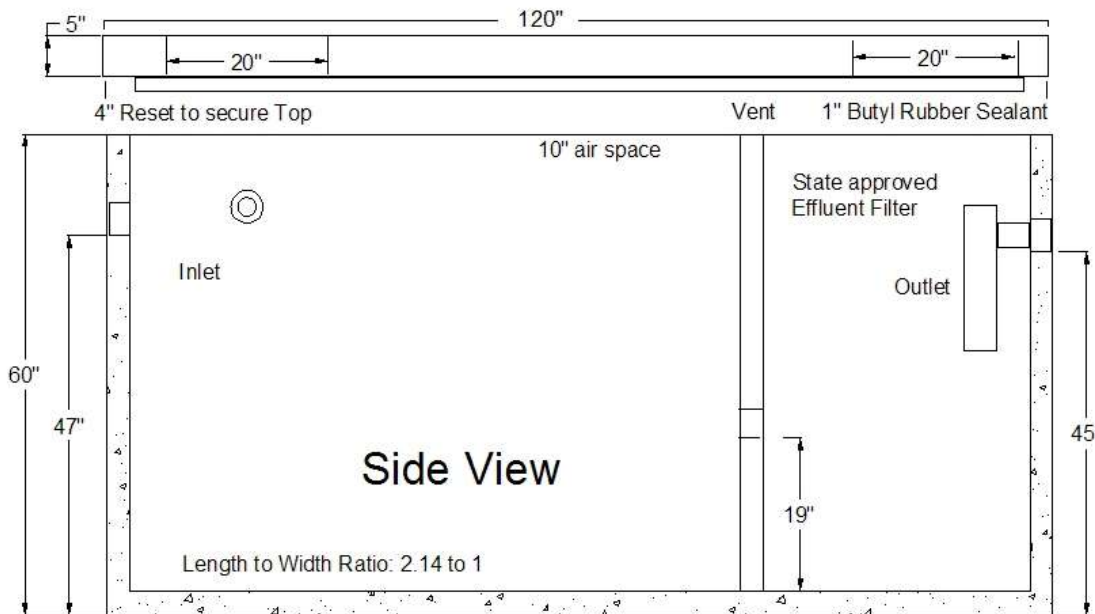
919-718-5181

121 Stanton Hill Road

Carthage, NC 28327

Fax 919-775-2229

Eddie@garnersseptic tanks.com



PL-68 Filter and Tee

PL-68 is much more than just an effluent filter. The housing can also be used as an inlet baffle (tee) or an outlet baffle. The housing is designed to accept Polylok’s snap in gas deflector to deflect gas bubbles away from the tee and to keep the solids in the tank.

Features:

- Offers 68 linear feet of 1/16” filter slots, which significantly extends time between cleaning.
- Accepts 3/4” PVC handle.
- Locks in any 360° position when used with PL-68 Tee.
- PL-68 Housing can be used as an inlet or outlet tee.
- Gasket prevents bypass.

PL-68 Installation:

Ideal for residential waste flows up to 800 gallons per day (GPD). Easily installs in any new or existing 4” outlet tee.

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the outlet pipe, or use a Polylok Extend & Lok if not enough pipe exists.
4. Insert the PL-68 filter into tee.
5. Replace and secure the septic tank cover.

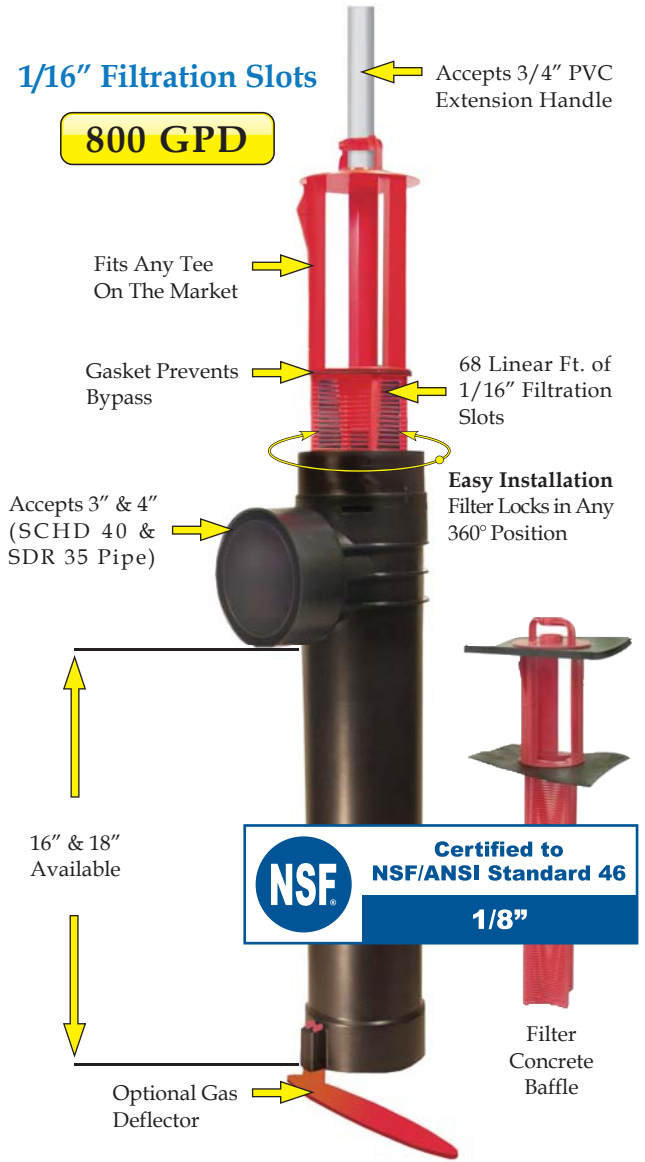
PL-68 Maintenance:

The PL-68 Effluent Filter will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years.

1. Do not use plumbing when filter is removed.
2. Pull PL-68 out of the tee.
3. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
4. Insert filter back into tee/housing.

Related Products:

PL-68 Filter Concrete Baffle
 Extend & Lok™



Extend & Lok™
 Easily installs into existing tanks.



Spacer Bushing
 4” SCHD 40 to SDR 35

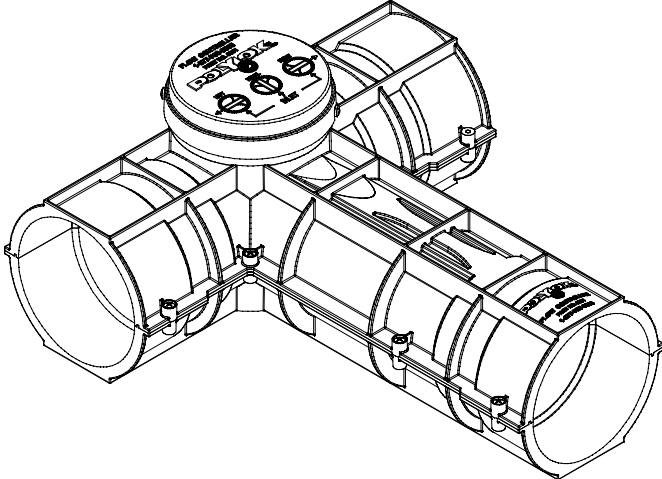
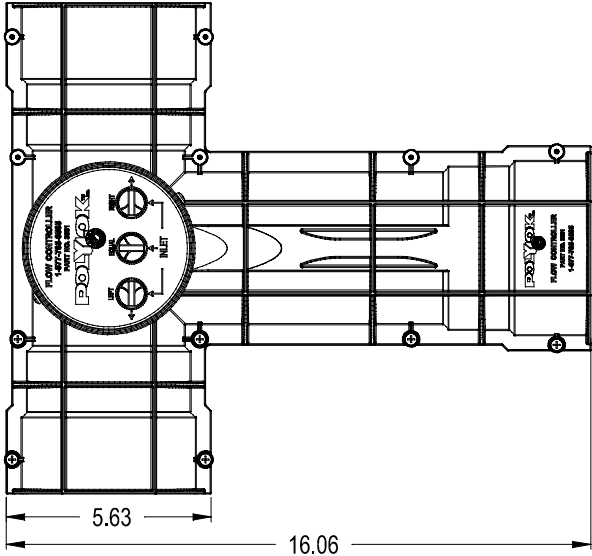


Spacer Bushing
 4” SCHD 40 to 110mm Pipe



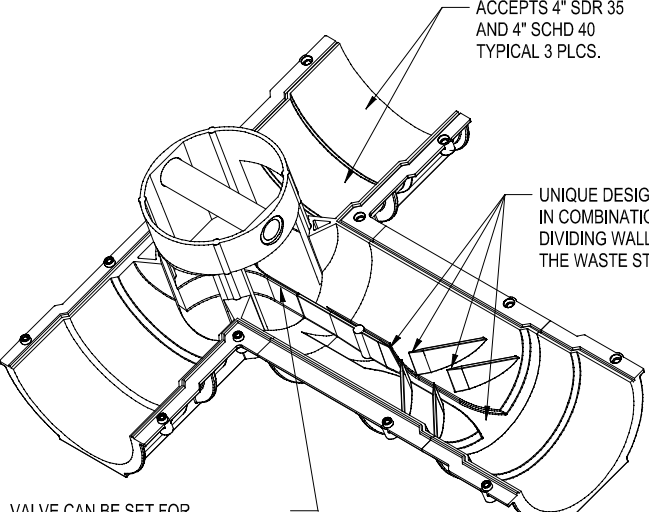
2” Extender

POLYLOK FLOW CONTROLLER
 PART NO. 3051
 MATERIAL - ABS

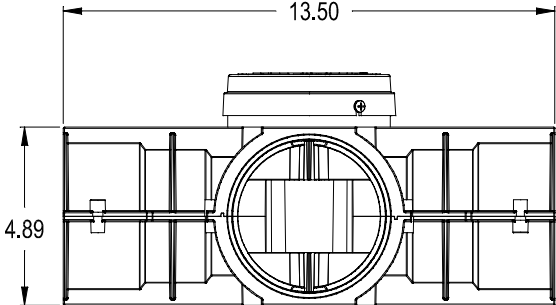
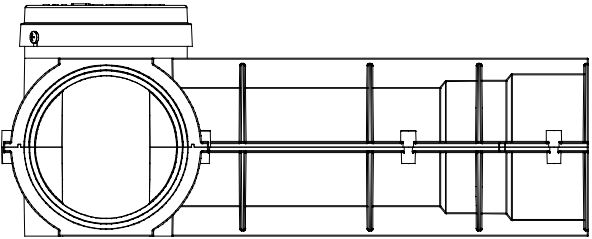


ACCEPTS 4" SDR 35
 AND 4" SCHD 40
 TYPICAL 3 PLCS.

UNIQUE DESIGN USING A DOUBLE SET OF VEINS
 IN COMBINATION WITH A CHANNEL SPLIT BY A
 DIVIDING WALL. THIS ENABLES AN EQUAL SPLIT OF
 THE WASTE STREAM, EVEN AT A 2% SHIFT IN SOIL.



VALVE CAN BE SET FOR
 EQUAL DISTRIBUTION (FACTORY SET)
 ALL DISTRIBUTION RIGHT
 ALL DISTRIBUTION LEFT



Crumpler's No-Rock™ Fabric Wrapped Large Diameter (LDP) Septic Pipe



Crumpler Plastic Pipe, Inc.

Manufacturers of Corrugated Plastic Drainage Pipe

Phone 910-525-4046 / (800) 334-5071

Post Office Box 2068

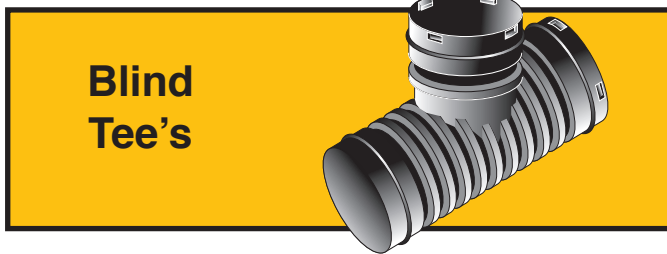
Roseboro, North Carolina 28382

Web Site: www.cpp-pipe.com





Crumpler's No-Rock™ Fabric Wrapped Large Diameter (LDP) Septic Pipe

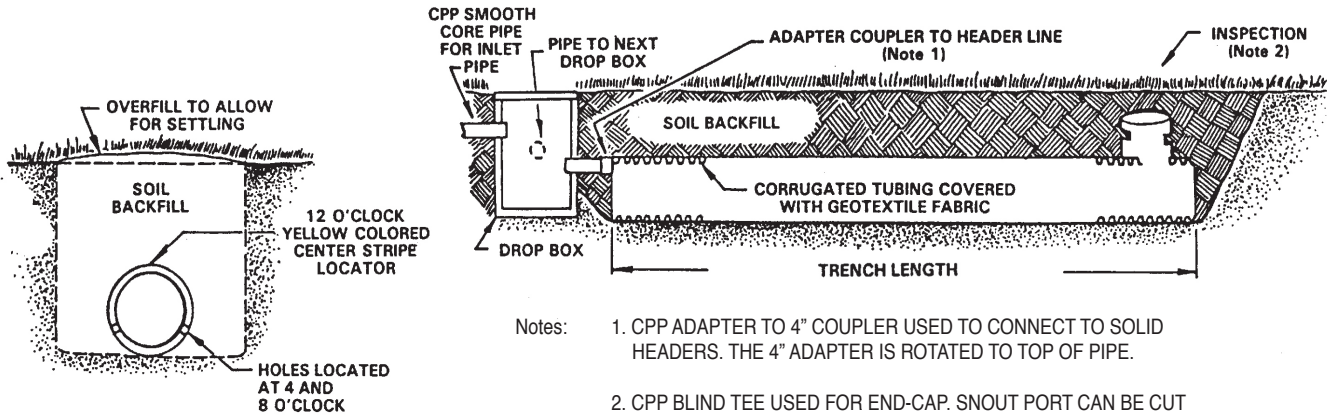


Blind Tee's



Snap Combo End Cap/4'' Reducer/Adapter

CPP Gravelless LDP Trench Construction Details



- Notes:
1. CPP ADAPTER TO 4" COUPLER USED TO CONNECT TO SOLID HEADERS. THE 4" ADAPTER IS ROTATED TO TOP OF PIPE.
 2. CPP BLIND TEE USED FOR END-CAP. SNOUT PORT CAN BE CUT OUT FOR INSTALLING A CLEAN OUT ADAPTER THAT ALLOWS FOR POST INSTALLATION INSPECTION.

	TYPE	SIZE	PART NO.	PACKAGE DESCRIPTION	PRICE
		8"	0830020B	CRUMPLER'S NO-ROCK™ SEPTIC - 20 ft. with filter wrap	
		10"	1030020B	CRUMPLER'S NO-ROCK™ SEPTIC - 20 ft. with filter wrap	

Large diameter (LDP) CPP GRAVELLESS septic tank trench systems use a filter wrap that allows for the installation of septic treatment pipes without gravel. The advantage in using CPP NO-ROCK is evident in areas where there is a shortage of inexpensive quality rock or where the shape and topography of a lot hinder the access of heavy construction equipment. Less equipment use means more trees can be saved,



less lot grading is needed, and thus fuel and labor are saved. Additionally, narrow trenches for 8" and 10" CPP pipes create a reduced OC (On-Center) Spacing between parallel septic trenches. An 8" CPP pipe can fit in a 10" wide trench and a 10" CPP pipe in a 12" wide trench. Thus Lot space is saved for other uses.

- Eliminates Rock
- Saves On Lot Grading
- Saves Trees On Lot
- Saves on Installation Labor
- Saves Fuel
- Increases Lot Value



Crumpler's No-Rock™ Fabric Wrapped Large Diameter (LDP) Septic Pipe



	TYPE	SIZE	PART NO.	PACKAGE DESCRIPTION	PRICE
			8"	0830020B	CRUMPLER'S NO-ROCK™ SEPTIC - 20 ft. with filter wrap
		10"	1030020B	CRUMPLER'S NO-ROCK™ SEPTIC - 20 ft. with filter wrap	

Large diameter GRAVELLESS septic tank trench systems were developed as an alternative to 4" pipe systems in gravel-filled trenches for use in soils that most conventional 4" gravel would be allowed in. Organic Iron Ochre soils, however, are unsuitable for Filter Enclosed Gravelless Septic Pipes. The advantage in using the large diameter systems is evident in areas where there is a shortage of inexpensive quality rock, or where the shape and topography of a lot hinder the access of heavy construction equipment. The use of small trenchers for digging narrow trenches means more trees can be saved, less grading is needed, and thus fuel and labor are saved.

Crumpler's NO-ROCK™ septic systems include using either an 8" or a 10" corrugated HDPE pipe enclosed in a polypropylene filter wrap. ASTM-F-481 septic installation specification should be reviewed prior to installation. **Most states allow GRAVELLESS large diameter systems to be substituted for conventional systems in ANY SOIL TYPE deemed acceptable for a**

conventional system. One should check with local septic inspectors for locally approved soils.

Crumpler's NO-ROCK™ septic system may be substituted for any conventional 4" pipe gravel trench system utilizing distribution devices, serial distribution, hillside or stepdowns. However, it should not be substituted for bed systems. It should also be limited to domestic sewage, and not used where there will be large amounts of grease or oil such as in restaurants unless designed by an engineer.

The 8" size pipe will equal to 2-foot wide conventional trench; and the 10" size will equal a 2.5 foot wide trench. To determine the required linear footage of either pipe size, first determine the square footage by dividing the design sewage flow by the appropriate soil's long term application rate. Then divide this total square footage area figure by either 2 feet (for 8") or 2.5 feet (for 10") to establish the linear footage amount. Per chart below, on center (oc) spacing will be determined by actual trench width.

Example: A 3-bedroom house on a loam soil
0.6 gpd/ft² = loam soil's long term application rate.

$$3BR \times 120 \text{ gpd} = 360 \text{ gpd}$$

$$360 \text{ gpd} \div 0.6 \text{ gpd/ft}^2 = 600 \text{ ft.}$$

$$600 \text{ ft}^2 \div 2 \text{ ft} = 300 \text{ linear ft of 8" or}$$

$$600 \text{ ft}^2 \div 2.5 \text{ ft} = 240 \text{ linear ft of 10"}$$

$$600 \text{ ft}^2 \div 3 \text{ ft} = 200 \text{ ft for conventional 4" gravel}$$

SUGGESTED INSTALLATION OF STANDARDS

Nitrification trench bottom minimum width for 8"	10"
Nitrification trench bottom minimum width for 10"	12"
Nitrification line center spacing on 8"	5' oc
Nitrification line center spacing on 10"	6' oc
Nitrification trench bottom minimum depth	18"
Nitrification trench bottom maximum depth (24" preferred)	36"
Nitrification trench bottom slope	level to 1" per 100 ft
Nitrification line minimum cover	6"
Nitrification line maximum cover (12" preferred)	24"

To eliminate voids and clods under pipes 15" - 18" trenches is recommended unless sand backfill is used.

The corrugated pipe used shall comply with ASTM-F-667. Also the installer should be careful to note that the filter wrap is light

sensitive, and should not be exposed to sunlight for extended periods of time. The installer should also take care during installation to avoid tearing of the filter material. The protective plastic wrap that protects the filter should be disposed of off site.

WEB SITE: www.cpp-pipe.com / E-Mail: cppsales@cpp-pipe.com

(800) 334-5071

TOLL FREE USA/CANADA

OUR PIPE IS LABORATORY TESTED

(910) 525-5801

24 HOUR FAX SERVICE



Slope Correction Table



NOTE: Add the inches from Slope Table to the MSD¹ to determine the RSD²

PERCENT SLOPE	10" Trench	12" Trench	18" Trench	24" Trench	36" Trench
6	0.6	0.7	1.1	1.4	2.2
12	1.2	1.4	2.2	2.9	4.3
18	1.8	2.2	3.2	4.3	6.5
24	2.4	2.9	4.3	5.8	8.6
30	3	3.6	5.4	7.2	10.8
36	3.6	4.3	6.5	8.6	13.0
42	4.2	5.0	7.6	10.1	15.1
48	4.8	5.8	8.6	11.5	17.3
54	5.4	6.5	9.7	13.0	19.4
60	6	7.2	10.8	14.4	21.6

NOTE: For sloping sites a calculation of the additional required soil depth is necessary using the table above or the following formula: $RSD = MSD + (TW \times .S)$

Where; RSD = Required Soil Depth (inches),

MSD - Min. Soil Depth (Min. Soil Cover + Ht. of Sys. + Min. Separation) (in)

TW = Trench Width (inches), &

.S = Percent Slope (.00)

Example: Assume site for septic system dispersal field has a slope of 28% and the trench bottom is required to be 12 inches above a site limitation, such as, weathered rock or perched water table. Also, assume that the proposed site has a usable or acceptable soil depth of 38 inches. Further, a minimum soil cover of 6 inches is required over the dispersal system.

Trial 1: Conventional trench (36 inches wide, 12 inches gravel, 6 inches over) would require a usable soil depth of 40 inches. [40 inches RSD - 30 inches MSD + (36 inches TW x .28 S)] Thus, a conventional or 36 inch wide trench is unsuitable at this site.

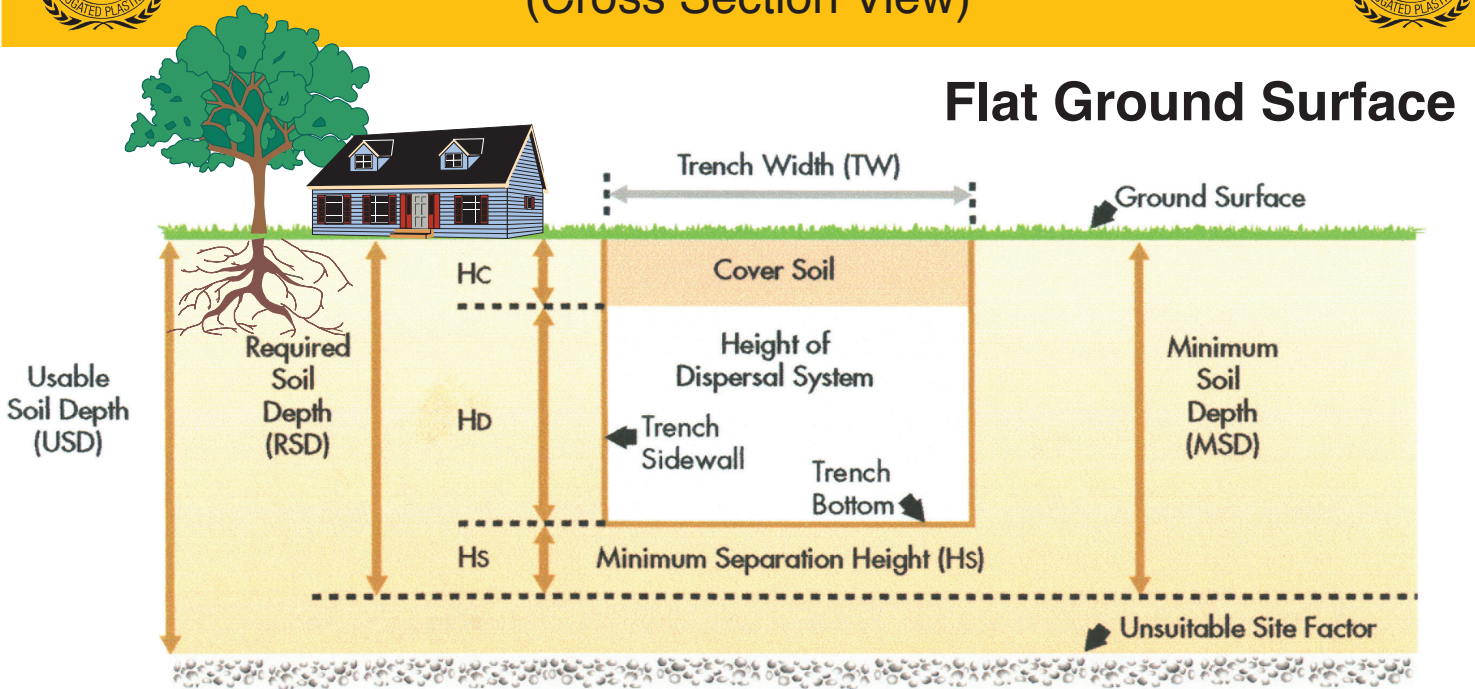
Trial 2: Crumpler NO ROCK™ 8 inch ID (10 in. OD) installed in a 12 inch wide trench would require a usable soil depth of 31.4 inches. [31.4 RSD = 28 inches MSD + (12 inches TW x .28 S)] Therefore, site is acceptable for Crumpler 8 in. NO ROCK™.

Trial 3: Crumpler NO ROCK™ 10 inch ID (12 in. OD) installed in an 18 inch wide trench would require a usable soil depth of 35 inches. [35 inches RSD = 30 inches MSD + (18 inches TW x .28 S)] Therefore, site is acceptable for Crumpler 10 inch NO ROCK™.

¹ MSD is the minimum soil depth at 0% slope and is the sum of the min. separation distance between trench bottom and limiting horizon (typ. 12 in), plus the system height, plus the min. soil cover (typ. 6 in.).

² RSD is the required soil depth to install a trench on a sloping site with the added inches to meet the minimum separation distance on the uphill side of the trench.

Septic Effluent Disposal Trenches on Sloping Sites (Cross Section View)



$MSD = H_c + H_d + H_s$
 $MSD = RSD$ on Flat Sites

Not To Scale

FIGURE 1

Sloping ground Surface

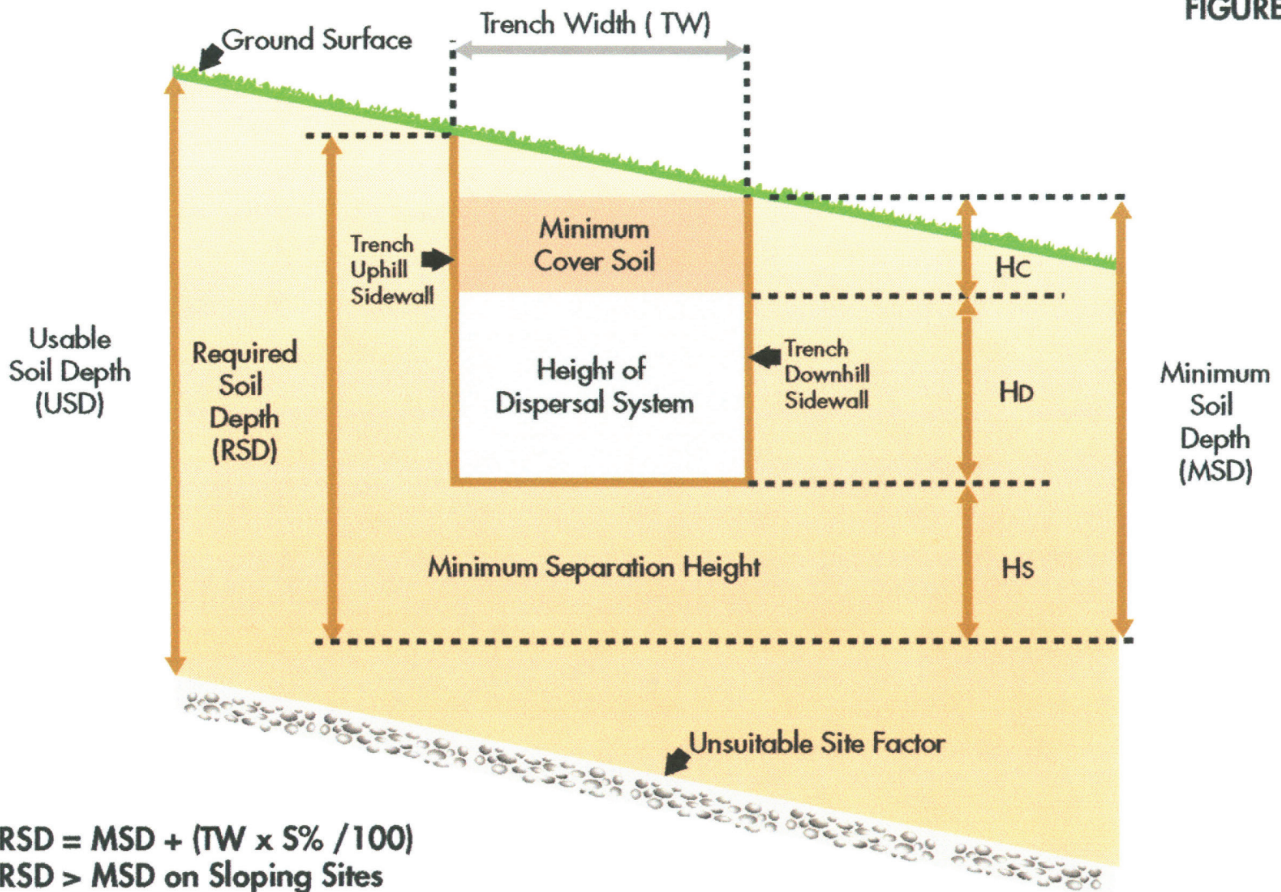
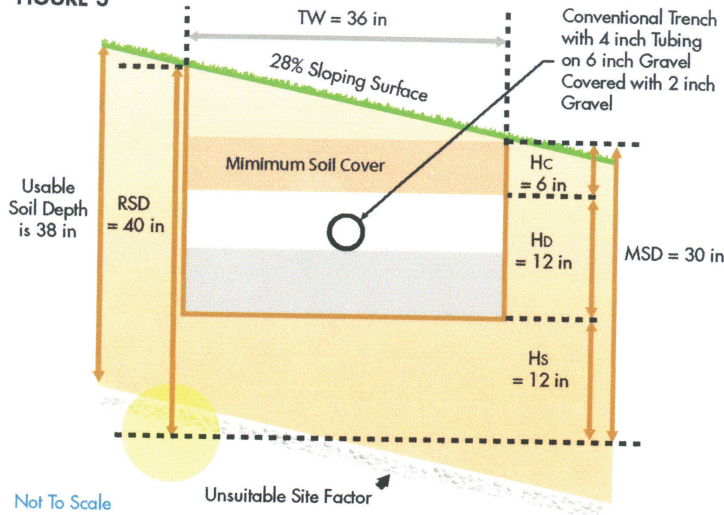


FIGURE 2

$RSD = MSD + (TW \times 5\% / 100)$
 $RSD > MSD$ on Sloping Sites
 $USD \geq RSD$

Not To Scale

FIGURE 3



Septic Effluent Disposal Trenches on Sloping Sites (Cross Section) Trial No. 1

Site has 28% slope and soil is 38 inches deep

- Trial No. 1:** Use 36 inch wide conventional trench system
- MSD** = 6 in + 12 in + 12 in = 30 inches
- RSD** = 30 in (36 in x 28%/100) = 40 inches
- RSD (40 in) > USD (38 in)**

Proposed System **Unsuitable** for Slope

Septic Effluent Disposal Trenches on Sloping Sites (Cross Section) Trial No. 2

Site has 28% slope and soil is 38 inches deep

- Trial No. 2:** Use CPP 8 inch NO-ROCK™ with 12 inch wide trench.
- MSD** = 6 in + 10 in + 12 in = 28 inches
- RSD** = 30 in (12 in x 28%/100) = 31.4 inches
- USD (38 in) > RSD (31.4 in)**

Proposed **CPP 8 inch NO-ROCK™** **Suitable** for Slope

FIGURE 4

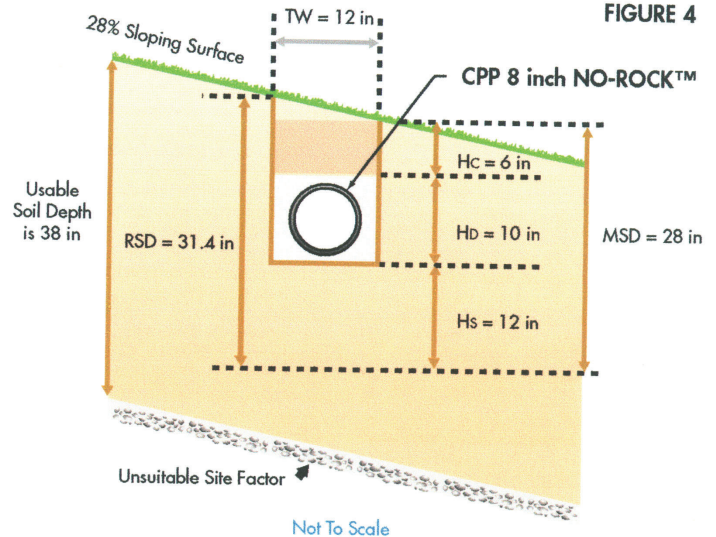
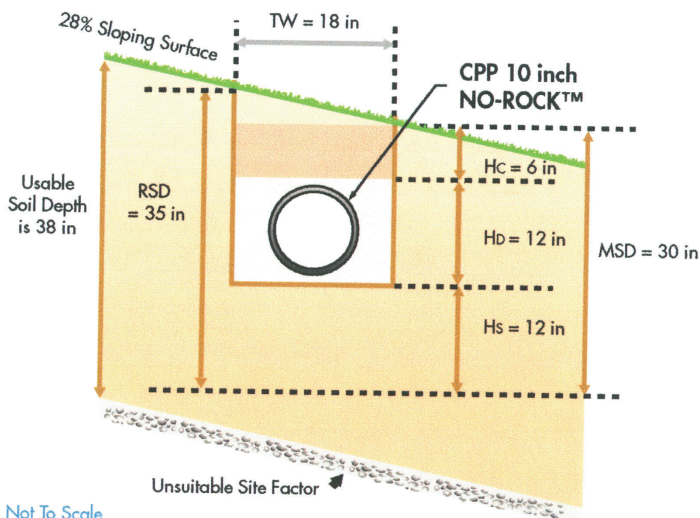


FIGURE 5



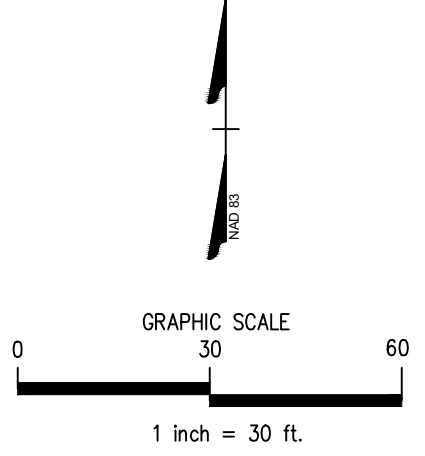
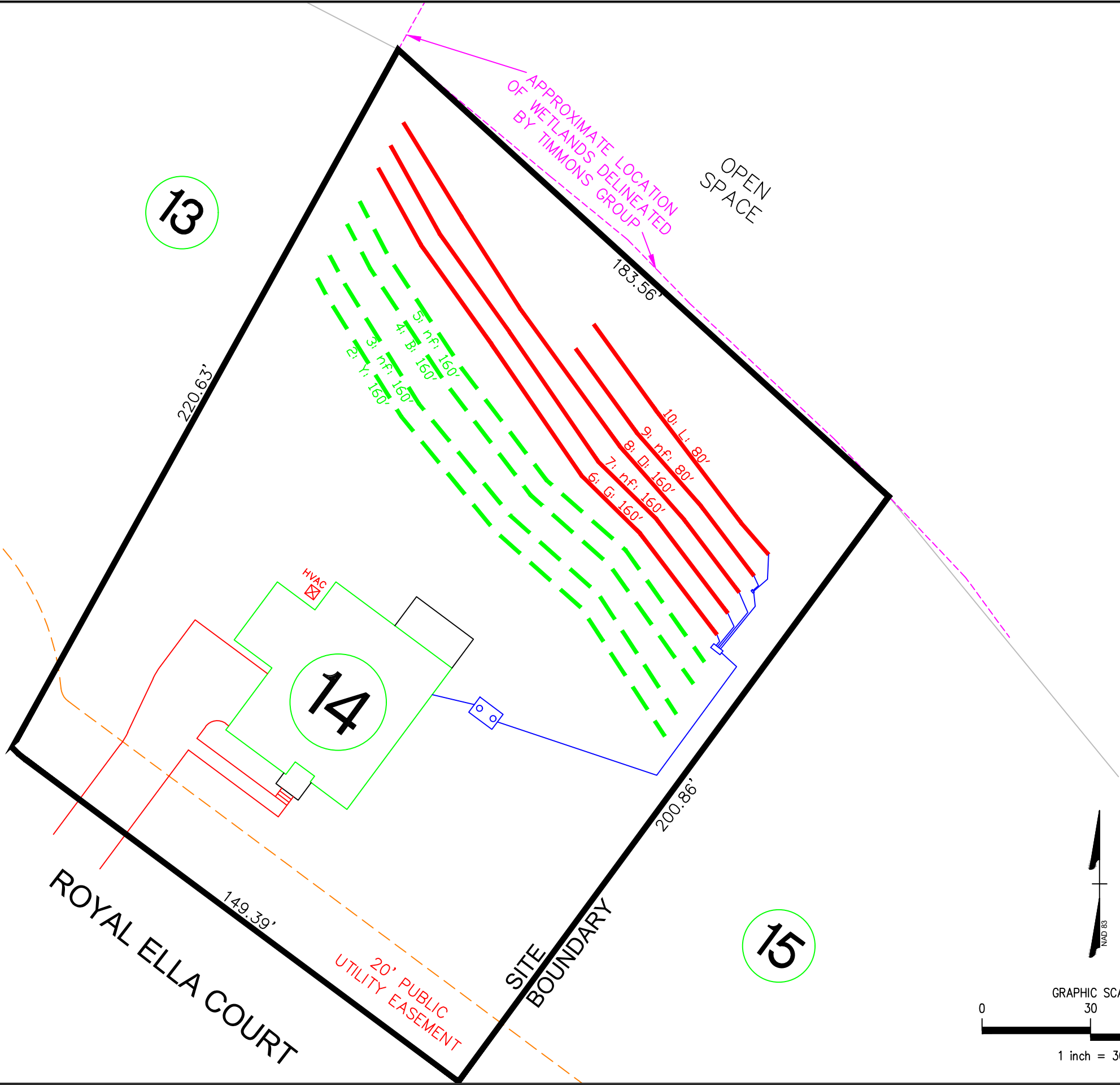
Septic Effluent Disposal Trenches on Sloping Sites (Cross Section) Trial No. 3

Site has 28% slope and soil is 38 inches deep

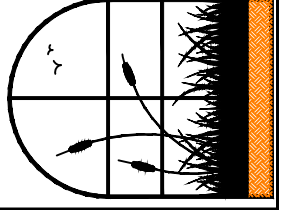
- Trial No. 3:** Use CPP 10 inch NO-ROCK™ with 18 inch wide trench.
- MSD** = 6 in + 12 in + 12 in = 30 inches
- RSD** = 30 in (18 in x 28%/100) = 35 inches
- USD (38 in) > RSD (35 in)**

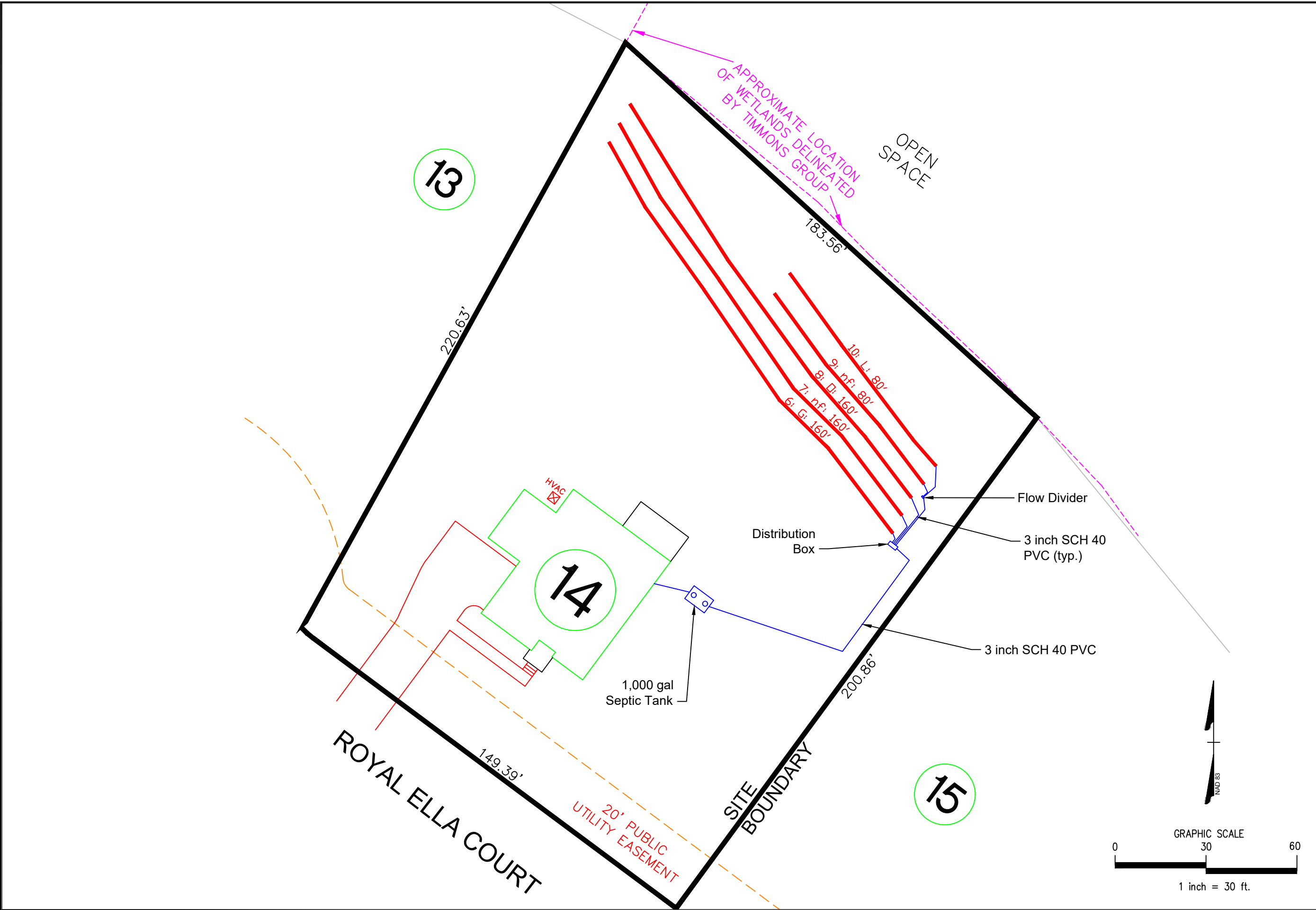
Proposed **CPP 10 inch NO-ROCK™** **Suitable** for Slope

4-Bedroom
 LTAR: 0.3 gpd/ft²
 Initial: Gravity-to-10" Large Diameter
 Pipe utilizing lines 6-10 (640')
 Repair: Gravity-to-10" Large Diameter
 Pipe utilizing lines 2-5 (640')

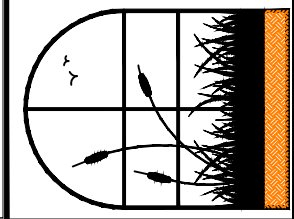


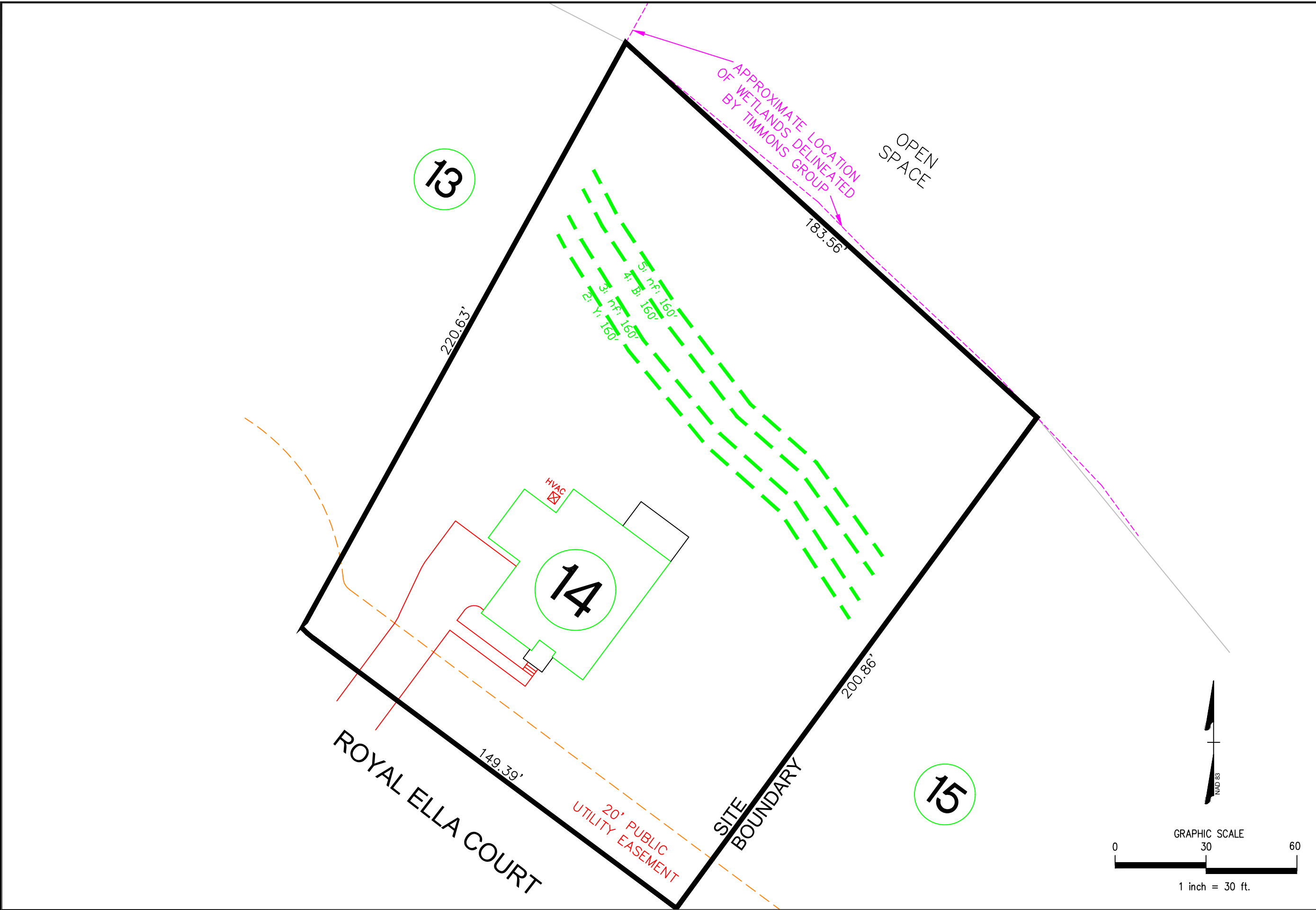
MITCHELL ENVIRONMENTAL, PA C-2917		PREPARED FOR : Triple A Homes PO Box 1117 Holly Springs, NC 27540		REVISION NO. Original Submittal	DATE March 31, 2022	SHEET NUMBER 1 of 5
1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526		DATE : March 31, 2022		Revision 1	-----	Prince Place Lot 14 Overall Septic
		DESIGNER CONTACT: ADAM AYCOCK, EI		Revision 2	-----	
		DRAWN BY: ADAM AYCOCK, EI		Revision 3	-----	
				Master Set	-----	

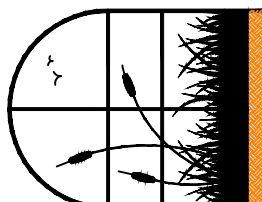


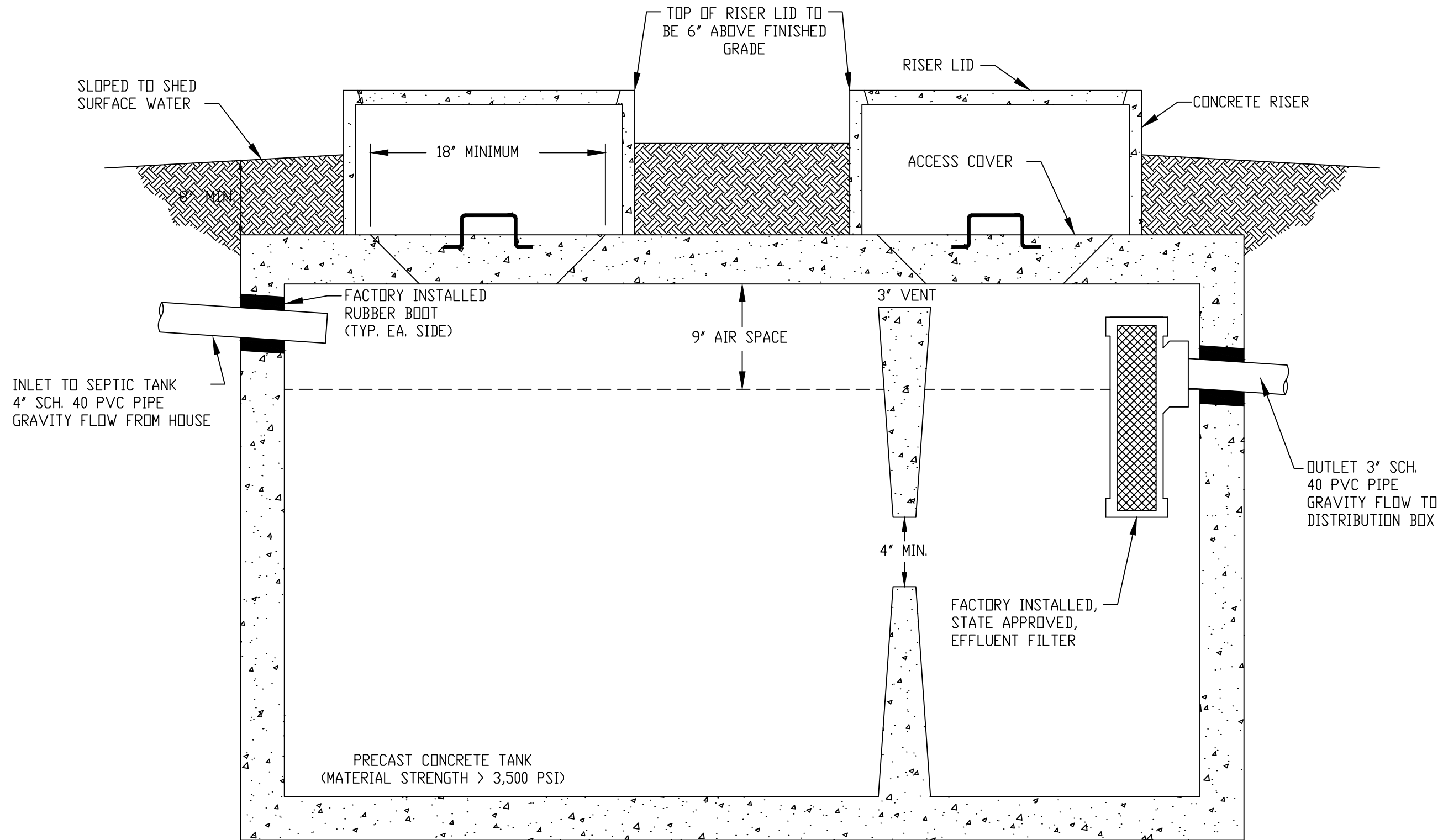


MITCHELL ENVIRONMENTAL, PA C-2917 1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526		PREPARED FOR : Triple A Homes PO Box 1117 Holly Springs, NC 27540	REVISION NO. Original Submittal Revision 1 Revision 2 Revision 3 Master Set	DATE March 31, 2022 ----- ----- ----- -----	SHEET NUMBER 2 of 5
1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526		DATE : March 31, 2022 DESIGNER CONTACT: ADAM AYCOCK, EI DRAWN BY: ADAM AYCOCK, EI	Revision 1 Revision 2 Revision 3 Master Set	March 31, 2022 ----- ----- ----- -----	Prince Place Lot 14 Initial Nitritification Field





	MITCHELL ENVIRONMENTAL, PA C-2917		PREPARED FOR : Triple A Homes PO Box 1117 Holly Springs, NC 27540		REVISION NO. Original Submittal	DATE March 31, 2022	SHEET NUMBER 3 of 5
	1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526		DATE : March 31, 2022 DESIGNER CONTACT: ADAM AYCOCK, EI	Revision 1 Revision 2 Revision 3 Master Set	Prince Place Lot 14 Repair Nitritification Field		
			DRAWN BY: ADAM AYCOCK, EI				

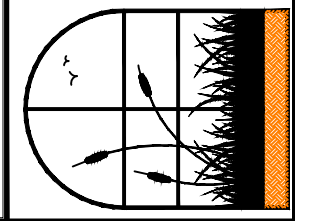


1,000 GALLON SEPTIC TANK

SEPTIC TANK DETAIL

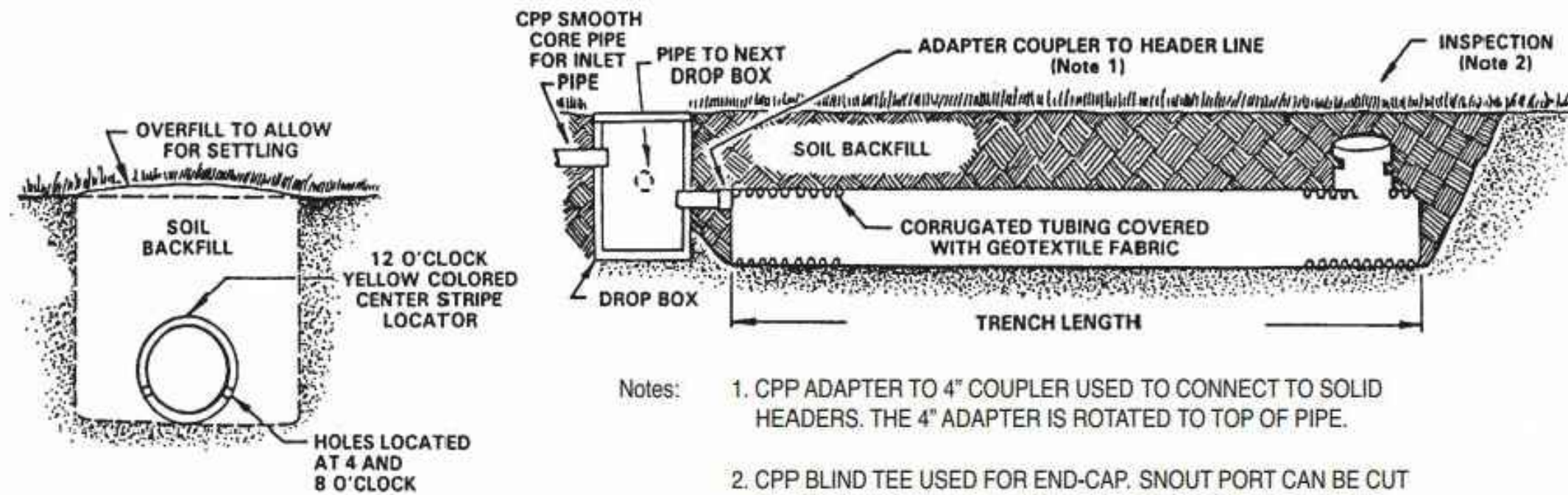
N.T.S.

SHEET NUMBER		4 of 5	
PREPARED FOR : Triple A Homes PO Box 1117 Holly Springs, NC 27540		PRINCE PLACE Lot 14 Septic Tank Detail	
REVISION NO. Original Submittal	DATE March 31, 2022	REVISION 1 REVISION 2 REVISION 3 Master Set	DATE --- --- ---
DATE : March 31, 2022 DESIGNER CONTACT: ADAM AYCOCK, EI		DRAWN BY: ADAM AYCOCK, EI	
MITCHELL ENVIRONMENTAL, PA C-2917 1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526			



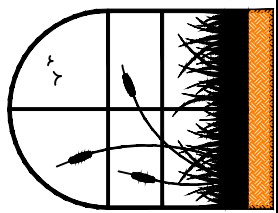
Trench Width = 12 Inches
 Trench Depth = See Harnett County permit

CPP Gravelless LDP Trench Construction Details



- Notes:
1. CPP ADAPTER TO 4" COUPLER USED TO CONNECT TO SOLID HEADERS. THE 4" ADAPTER IS ROTATED TO TOP OF PIPE.
 2. CPP BLIND TEE USED FOR END-CAP. SNOOT PORT CAN BE CUT OUT FOR INSTALLING A CLEAN OUT ADAPTER THAT ALLOWS FOR POST INSTALLATION INSPECTION.

SHEET NUMBER		5 of 5	
DATE		March 31, 2022	
REVISION NO.	Original Submittal	Revision 1	Revision 2
REVISION NO.	Revision 3	Revision 3	Master Set
PREPARED FOR :	Triple A Homes PO Box 1117 Holly Springs, NC 27540	DATE :	March 31, 2022
DESIGNER CONTACT:	Crumpler Plastic Pipe	DRAWN BY:	Crumpler Plastic Pipe
MITCHELL ENVIRONMENTAL, PA C-2911 1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526			



Prince Place
 Lot 14
 Large Diameter Pipe Detail