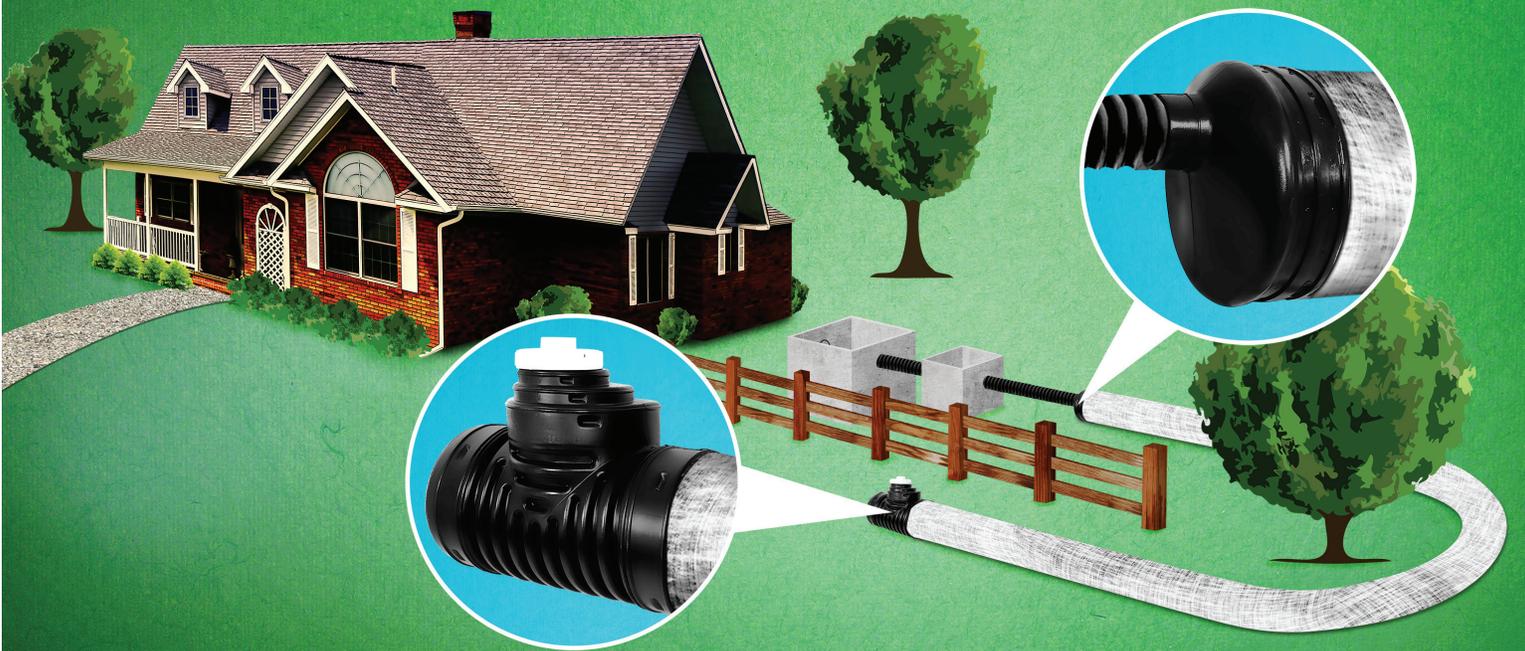


Crumpler's No-Rock™ Fabric Wrapped Large Diameter (LDP) Septic Pipe



Crumpler Plastic Pipe, Inc.

Manufacturers of Corrugated Plastic Drainage Pipe

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

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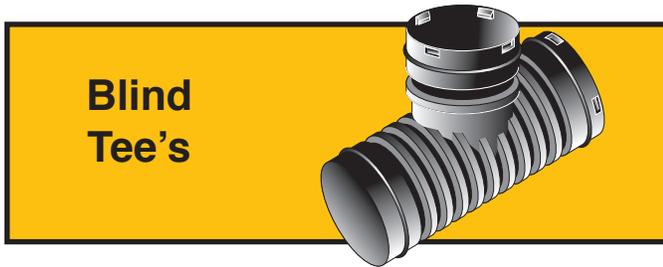
Roseboro, North Carolina 28382

Web Site: www.cpp-pipe.com





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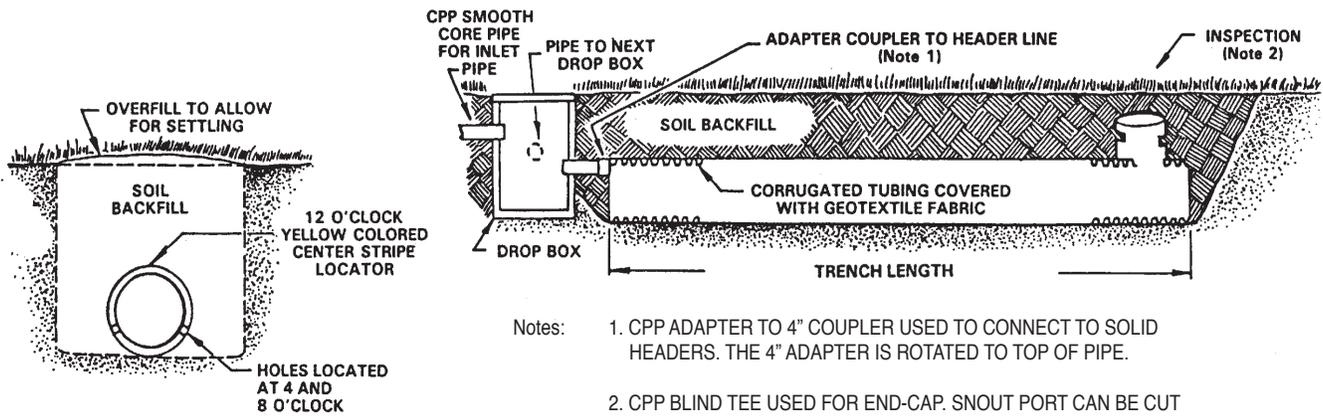


Blind Tee's



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



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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

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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.

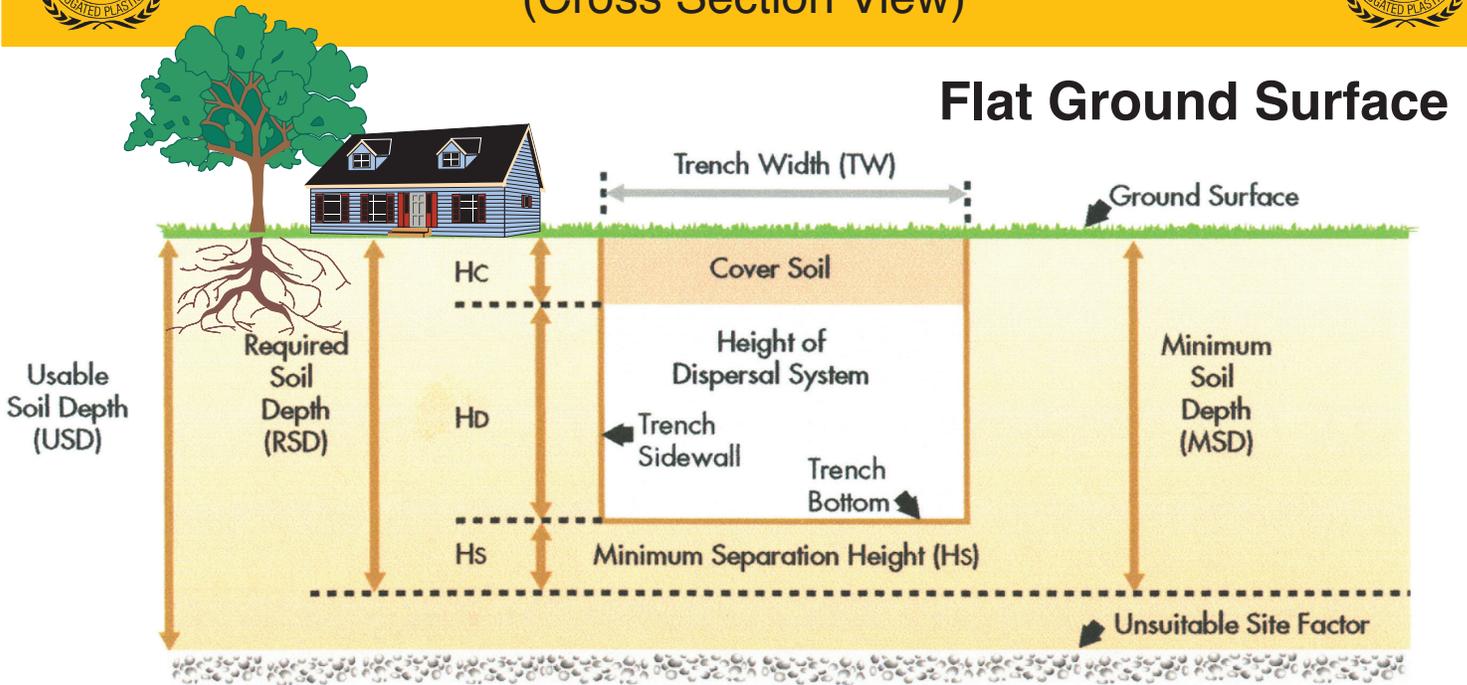
Trial 2: Crumpler NO ROCK™ 8 inch ID (10 in. OD) installed in a 12 inch wide trench would require a usable soil depth of 31.4 inches. [31.4 RSD = 28 inches MSD + (12 inches TW x .28 S)] Therefore, site is acceptable for Crumpler 8 in. NO ROCK™.

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

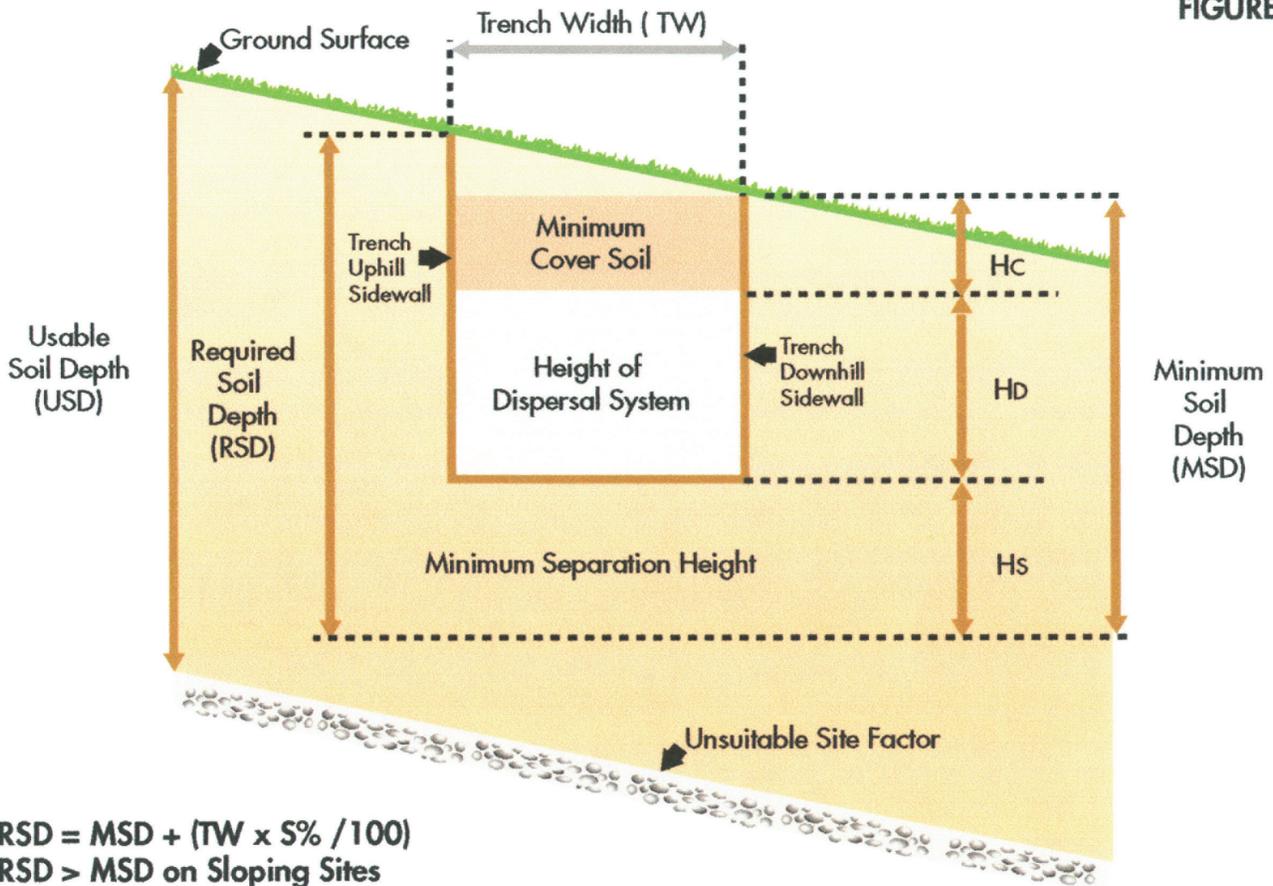


FIGURE 2

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

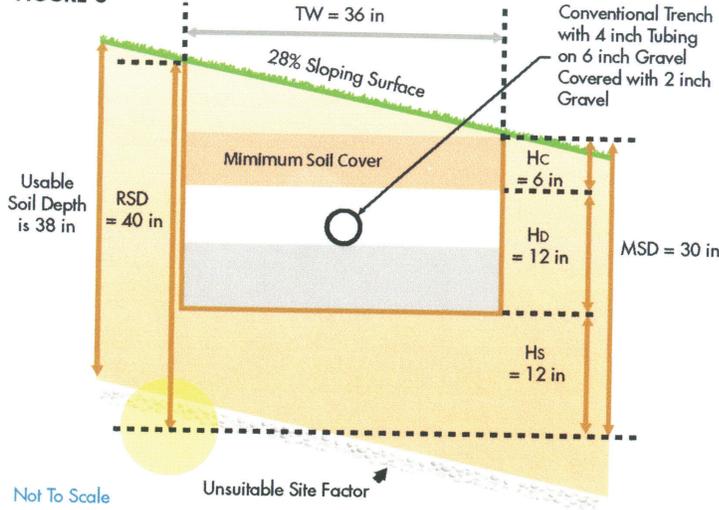
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Septic Effluent Disposal Trenches on Sloping Sites (Cross Section View)



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

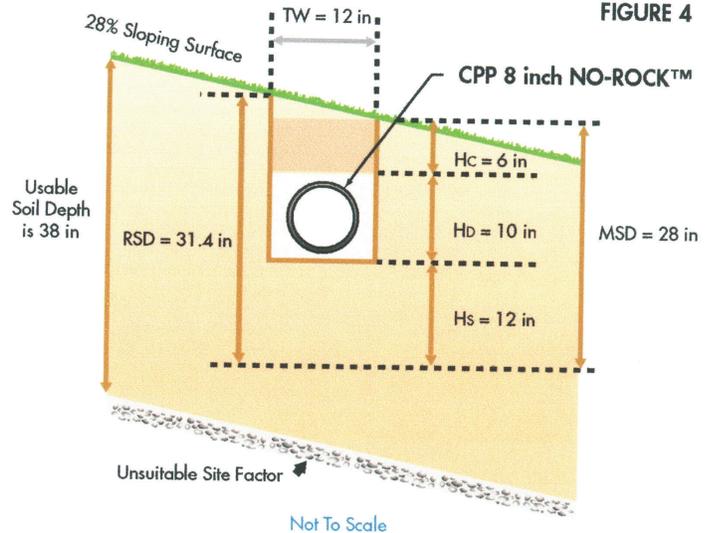
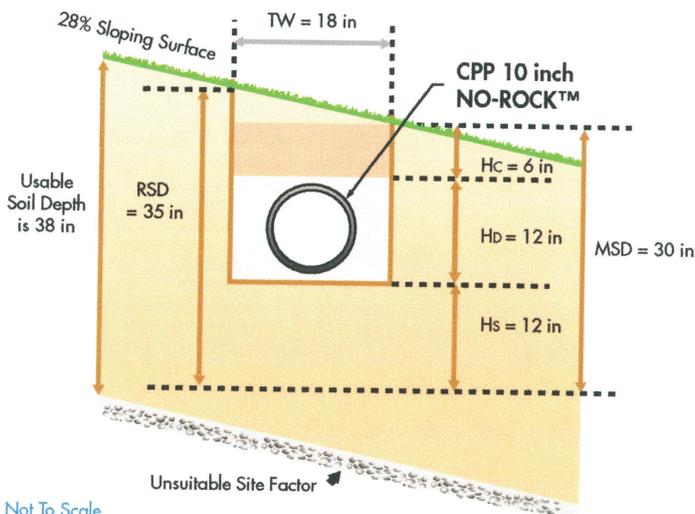


FIGURE 5



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



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1
NC State University layout of CPP No-Rock Septic at the Ed Booth field Learning Lab.



2
Laser Level adjustment setting prior to trenching sequence.



3
Laser Level check of trench depth grade and bag encased protected pipe moved onto trench site. The plastic bags protect the filter wrap from extended storage UV deterioration and natural handling abuses.



4
Protective plastic bags removed just prior to trench placement.



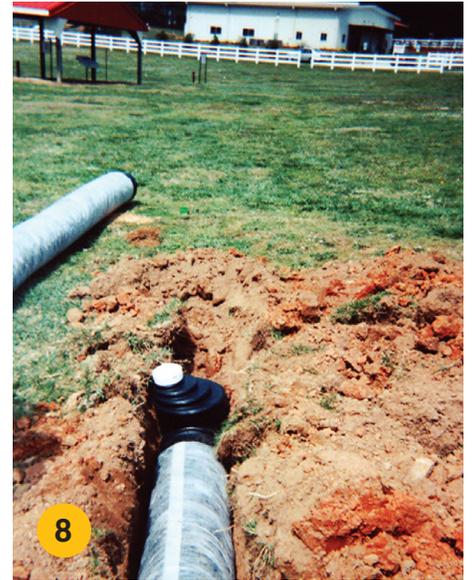
5
Protective plastic bags removed from the site for disposal elsewhere.



6
Trenching complete, and ready for Side-Wall rake prep sequence.



7
CPP No-Rock Septic pipes allow for narrow trenches that offer a closer OC spacing, which requires a reduced land area foot print compared to conventional 3-foot wide trenches.



8
A Blind Tee with a screw off Clean Out Plug is placed at the end of each individual line. This allows for a line inspection.



9
Final cover sequence begins.



10
Narrow trenches allow for faster, less cumbersome of equipment about the site during the final cover phase, and this saves equipment time on the job.

To Spec (HDPE) Corrugated Plastic Pipe Spec as:

ASTM General Construction

CPP-ASTM-F-677 (3" - 24")
CPP-ASTM-F-2306 (12" - 60")
CPP-ASTM-F-2648 (2"-60")

AASHTO Highway Construction

CPP-AASHTO-M-252 (3" - 10")
CPP-AASHTO-M-294 (12" - 60")

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