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

Crumpler Plastic Pipe, Inc.

Manufacturers of Corrugated Plastic Drainage Pipe

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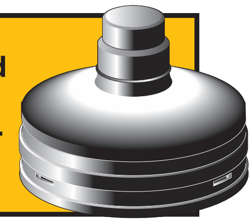
CPP-NR Rev.08/22

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

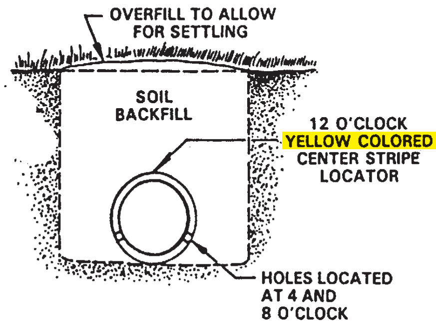
Blind Tee's

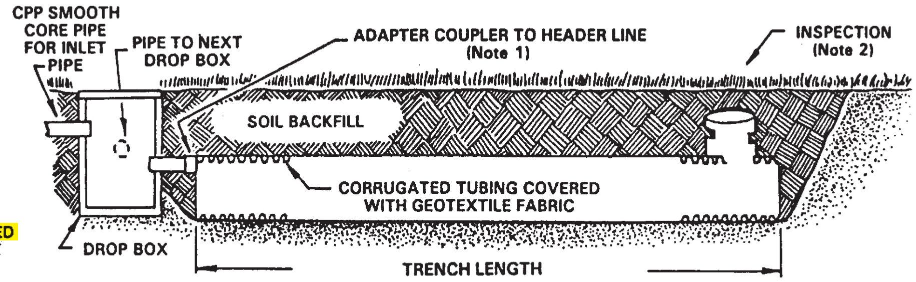
Tee With Cleanout

Snap Combo End Cap/4" Reducer/Adapter



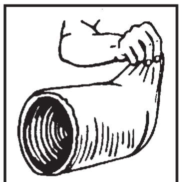
CPP No-Rock™ LDP Trench Construction Details





Notes:

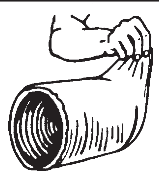
1. CPP ADAPTER TO 4" COUPLER USED TO CONNECT TO SOLID HEADERS. THE 4" ADAPTER IS ROTATED TO TOP OF PIPE.
2. CPP BLIND TEE USED FOR END-CAP. SNOUT PORT CAN BE CUT OUT FOR INSTALLING A CLEAN OUT ADAPTER THAT ALLOWS FOR POST INSTALLATION INSPECTION.

	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 **No-Rock™** 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, 8" and 10" pipes create reduced On-Center (**OC**) spacing between more narrow parallel septic trench lines. **An 8" pipe will fit into a 10" wide trench and a 10" pipe in a 12" wide trench. This allows for a 5 foot OC spacing for 8" and a 6 foot OC for 10".** 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 **No-Rock™** 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 No-Rock™ 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 <u>ANY SOIL TYPE</u> deemed acceptable for a conventional system with LTAR of 0.8 and under. One should check with local inspectors to determine if CPP No-Rock approved soils of 0.8 LTAR or under are present on one's property/lot.**

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/ft^2 = loam soil's long term application rate.

3BR x 120 gpd = 360 gpd
360 gpd ÷ 0.6 gpd/ft^2 = 600 ft.

600 ft^2 ÷ 2ft = 300 linear ft of 8" or
600 ft^2 ÷ 2.5 ft = 240 linear ft of 10"
600 ft^2 ÷ 3 ft = 200 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"

Native backfill from all approved soil sites should be used and any soil clods should be eliminated. Also, any trench root rubbish or site construction debris should be removed from the trench prior to backfill. 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.**

Slope Correction Table

NOTE: Add the inches from Slope Table to the MSD[1] to determine the RSD[2]

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 calcuation of the additional required soil depth is necessary using the table above or the following formula: RSD = MSD + (TW x .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.

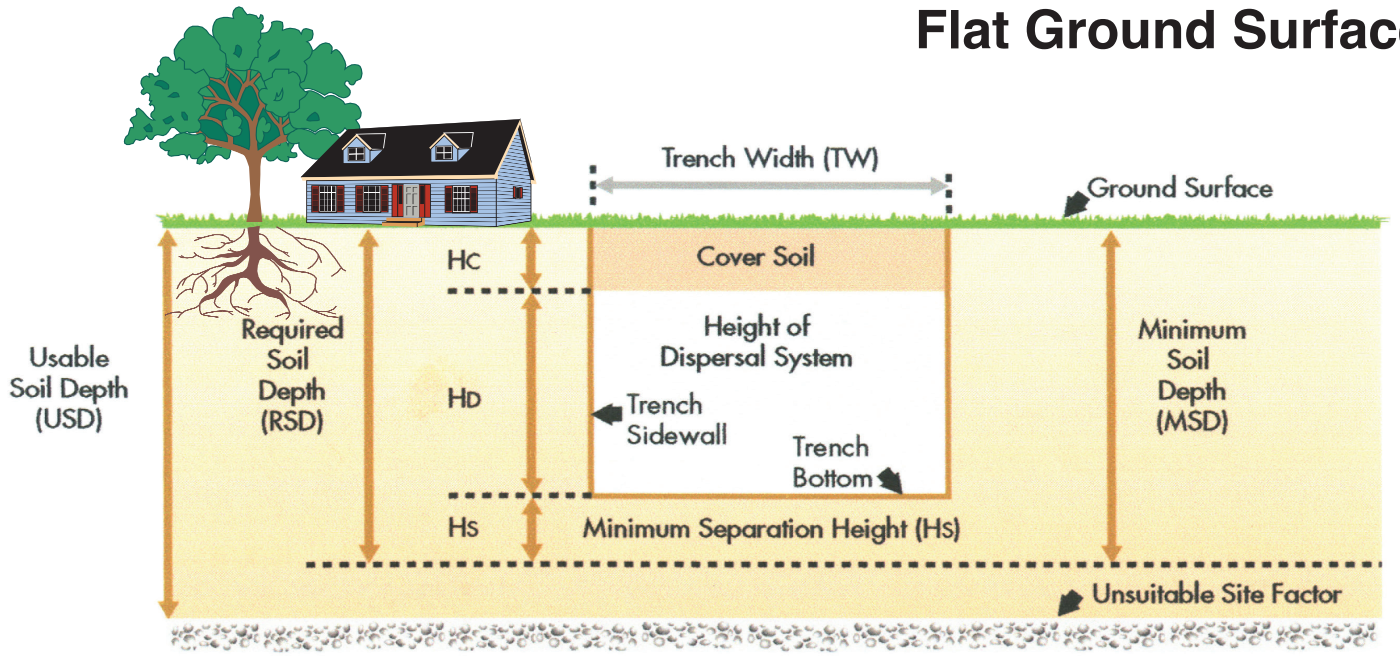
Trial 2: Crumpler NO ROCK™ 8 inch ID (9.3 in. OD) installed in a 10 inch wide trench would require a usable soil depth of 31.4 inches. [31.4 RSD = 28 inches MSD + (12 inches TW x .28 S)] Therefore, site is acceptable for Crumpler 8 in. NO ROCK™.

Trial 3: Crumpler NO ROCK™ 10 inch ID (11.7 in. OD) installed in an 12 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)

Flat Ground Surface



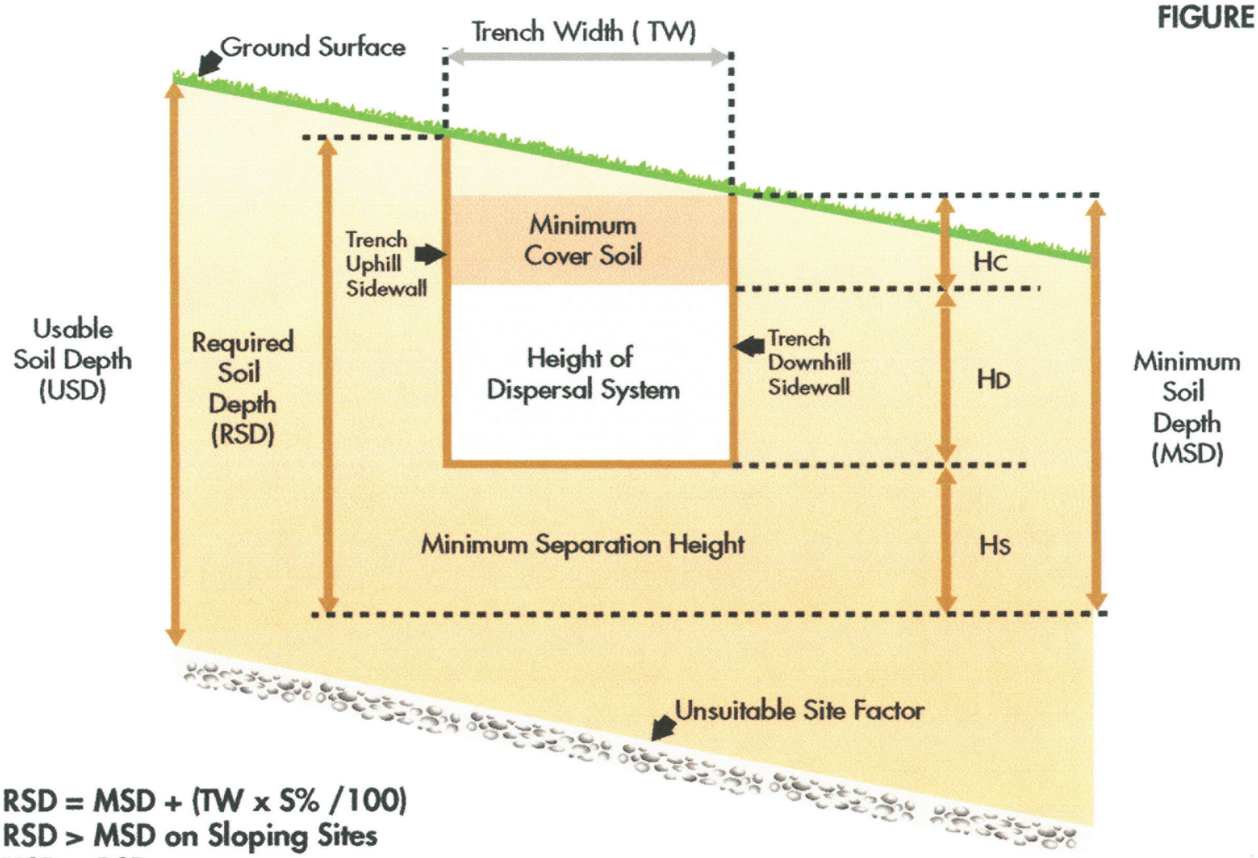
MSD = Hc + HD + Hs
MSD = RSD on Flat Sites

Not To Scale

FIGURE 1

Sloping ground Surface

FIGURE 2

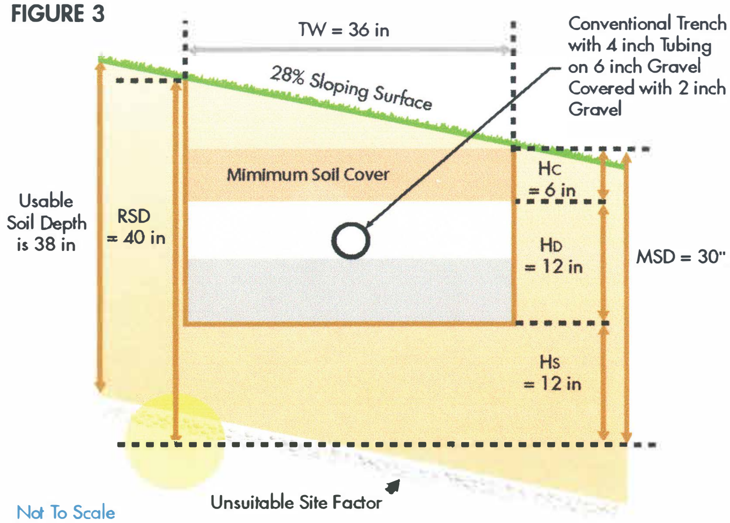


RSD = MSD + (TW x S% / 100)
RSD > MSD on Sloping Sites
USD ≥ RSD

Not To Scale

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

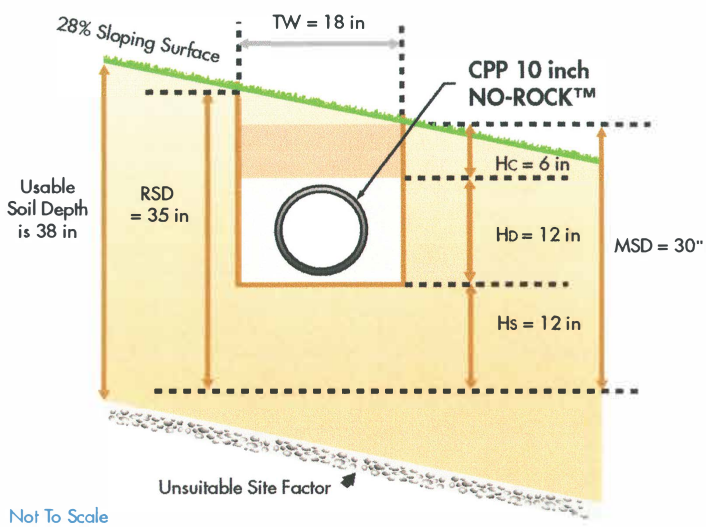
MSD = 6 in + 12 in + 12 in = 30 in

RSD = 30 in plus (36 in x28%/100) = 40 in

RSD (40 in) > USD (38 in)

Proposed System **Unsuitable** for Slope

FIGURE 4



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 12 inch wide trench.

MSD = 6 in + 12 in + 12 in = 30 in

RSD = 30 in plus (18 in x 28%/100) = 35 in

USD (38 in) > RSD (35 in)

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

Septic Effluent Disposal Trenches on Sloping Sites *(Cross Section)* Trial No. 4

Site has 28% slope and soil is 38 inches deep

Trial No. 2: Use CPP 8 inch NO-ROCK™ with 12 inch wide trench.

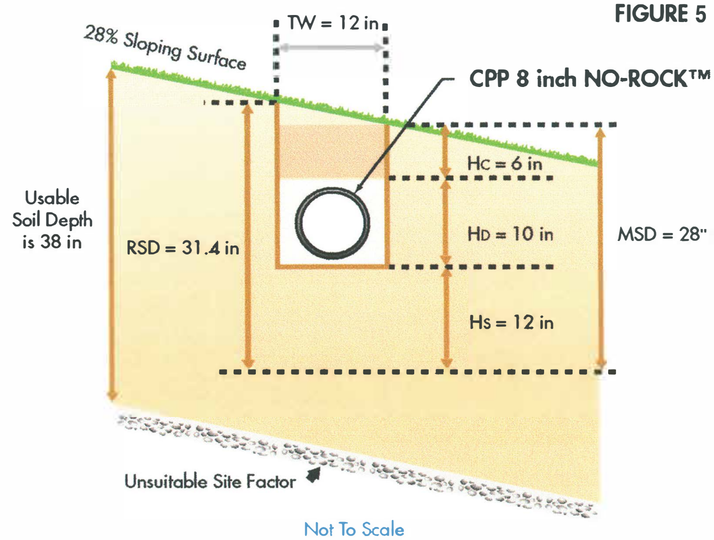
MSD = 6 in + 10 in + 12 in = 28 in

RSD = 28 in plus (12 in x28%/100) = 31.4 in

USD (38 in) > RSD (31.4 in)

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

FIGURE 5



The LTAR Rate - What Does It Mean

Long-**T**erm **A**cceptance **R**ate **(LTAR)** means the rate of effluent absorption by the soil, existing fill, or saprolite in a wastewater system after long-term use. the LTAR, in units of gpd/ft^2, is assigned based upon soil textural class, structure, consistence, depth, percent of course rock, landscape position, topography, and septic system type. It is used to determine the dispersal field sizing requirements for on-site septic sewage syatems so they can function reliably for years if those systems are properly operated and mantained.

LTAR depends on a number of factors, including soil type, the **LTAR** of a specific soil at the trench bottom infiltrative surface, the type of onsite system, and the wastewater contents. Soil texture affects **LTAR** values for conventional septic systems since the loading rate for Group I Soils can be as much as 10 times greater than that of Group IV soils. In most states the loading rates and the **LTAR** rates are the same. **LTAR** rates are based on many years of observation and experience with each soil type.

LTAR rates are also affected by the type of septic system installed. For a **Conventional** pipe and gravel trench or a modified conventional trench, the **LTAR** is the rate per day that Septic wastewaters can be absorbed through the bottom and sidewall of the trench and the underlying soil horizons. For a **Low Pressure** pipe system, the **LTAR** rate is the daily rate that septic wastewater is absorbed through the entire drain field (trenches and the area between them). **CPP No-Rock Large Diameter Pipe (LDP)** can be installed in soils with loading rate ranges of from 0.1 gpd/ft^2 up to 0.8 gpd/ft^2.

In the following examples of how **LTAR** is used to size different septic trench technologies an average wastewater loading rate soil of **0.4 gpd/ft^2** has been selected for easy comparison of how much lot footprint space is needed for different trench technologies that would serve a three bedroom house. For septic wastewater discharge requirements most state regulations assign 120 gpd for each bedroom. Thus a three bedroom home would generate 360 gpd of sewage discharge. Therefore, the following basic information would determine the size of each septic trench technology considered.

Footprint Comparisons

Example Permit Layout:

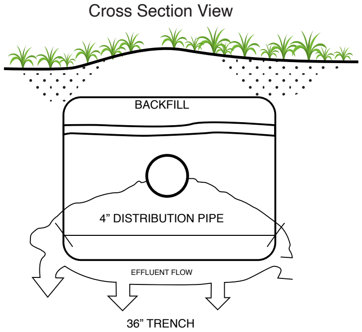
* 3 Bedroom house
* 0.4 LTAR
* 360 Gallos/day flow
* 360 / 0.4 = 900

* 900 Square Feet of Nitrification Trench Bottom

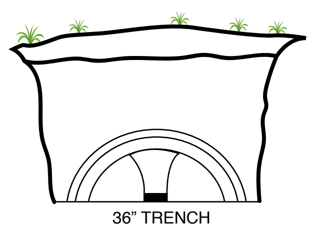
Footprint Comparisons

* 0.4 **LTAR**
* 360 Gallons/day flow
* 360 / .4 = 900
* 900 Square Feet of Nitrification Trench Bottom

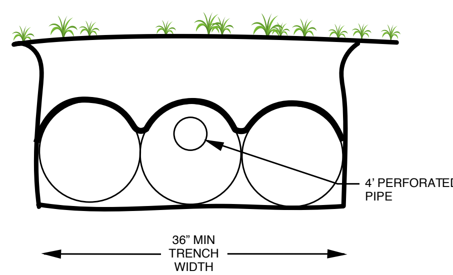
Typical Conventional Gravel Septic System
Cross Section View



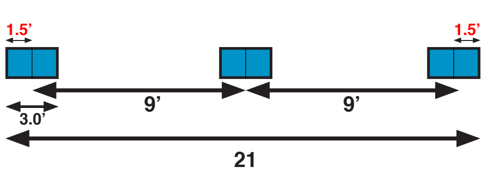
Typical Chamber Septic System
Cross Section in a 36" Trench



Typical EPS Bundle Septic System
Cross Section in a 36" Trench

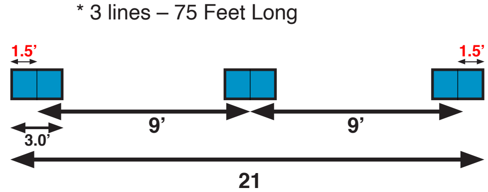


* 900 FT^2 Trench Bottom Needed
* 3 foot wide trench
* 900 / 3 = 300 LF of Trench
* 3 lines – 100 Feet Long



21' X 100' = 2,100 SF of construction area

* 900 FT2 Trench Bottom Needed
* 3 foot wide trench
* 4 FT Equivalent Trench Width
* 900 / 4 = 225 LF of Trench
* 3 lines – 75 Feet Long



21' X 75' = 1,575 SF of construction area
21' X 100' = 2,100 SF of construction area if no reduction allowed

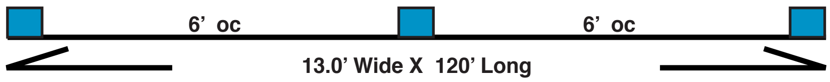
Crumpler's 10" No-Rock™ Fabric Wrapped Large Diameter (LDP) Septic Pipe

Footprint Comparisons

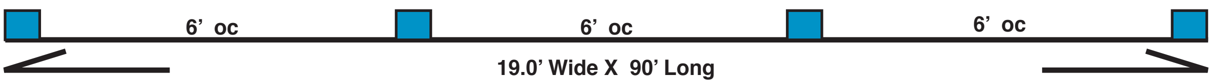
* 3 Bedroom house
* 0.4 LTAR
* 360 Gallons/day flow
* 360 / .4 = 900

* 900 Square Feet of Nitrification
  Trench Bottom / 2.5 = 360 FT of Trench

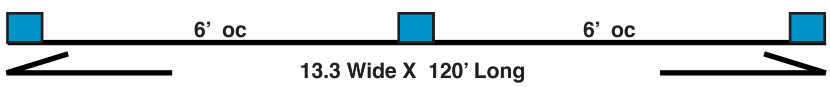
CPP-10" LDP No Rock – 3 Lines – 120' Long in a 12" Wide Trench
13.0' Wide X 120' Long = 1,560 Sq Ft of Construction Footprint



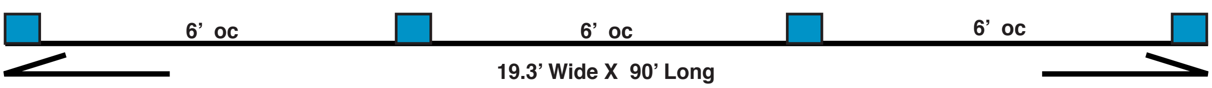
CPP-10" LDP No Rock – 4 Lines – 90' Long in a 12" Wide Trench
19.0' Wide X 90' Long = 1,710 Sq Ft of Construction Footprint



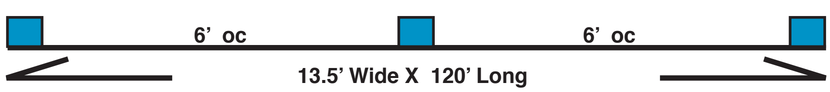
CPP-10" LDP No Rock – 3 Lines – 120' Long in a 16" Wide Trench
13.3' Wide X 120' Long = 1,596 Sq Ft of Construction Footprint



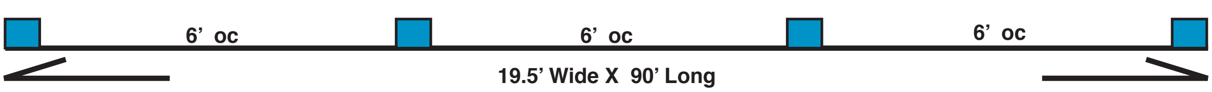
CPP-10" LDP No Rock – 4 Lines – 90' Long in a 16" Wide Trench
19.3' Wide X 90' Long = 1,737 Sq Ft of Construction Footprint



CPP-10" LDP No Rock – 3 Lines – 120' Long in a 18" Wide Trench
13.5' Wide x 120' Long = 1,620 Sq Ft of Construction Footprint



CPP-10" LDP No Rock – 4 Lines – 90' Long in a 18" Wide Trench
19.5' Wide X 90' Long = 1,755 Sq Ft of Construction Footprint



Crumpler's 8" No-Rock™ Fabric Wrapped Large Diameter (LDP) Septic Pipe

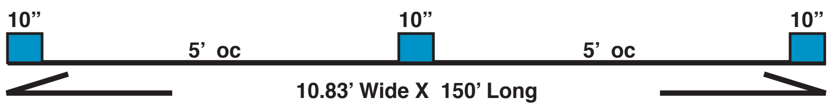
Footprint Comparisons

Example Permit Layout:

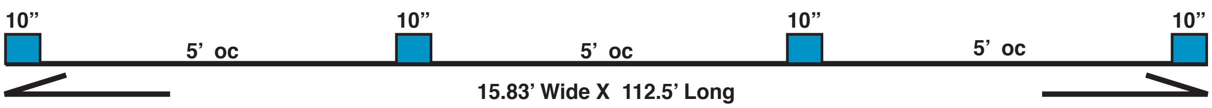
* 3 Bedroom house
* 0.4 LTAR
* 360 Gallons/day flow
* 360 / .4 = 900

* 900 Square Feet of Nitrification
  Trench Bottom / 2.0 = 450 Ft of Trench

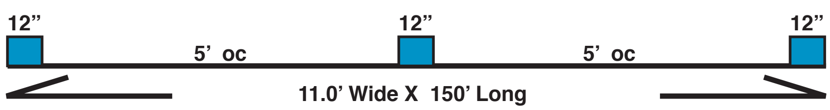
CPP-8" LDP No Rock – 3 Lines – 150' Long in a 10" Wide Trench
10.83' Wide X 150' Long = 1,625 Sq Ft of Construction Footprint



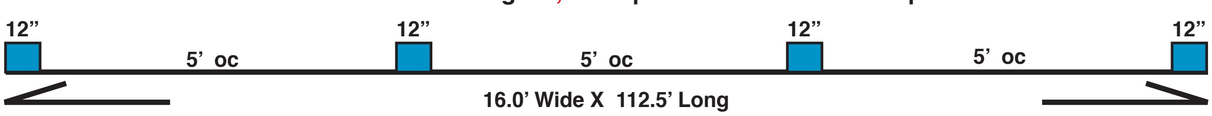
CPP-8" LDP No Rock – 4 Lines – 112.5' Long in a 10" Wide Trench
15.83' Wide X 112.5' Long = 1,780.88 Sq Ft of Construction Footprint



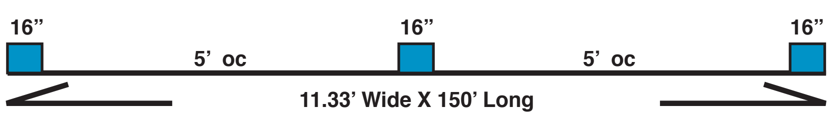
CPP-8" LDP No Rock – 3 Lines – 150' Long in a 12" Wide Trench
11.0' Wide X 150' Long = 1,650 Sq Ft of Construction Footprint



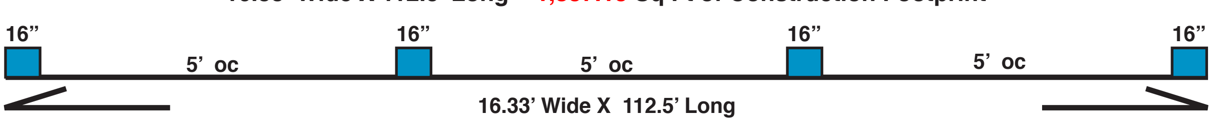
CPP-8" LDP No Rock – 4 Lines – 112.5' Long in a 12" Wide Trench
16.0 Wide X 112.5' Long = 1,860 Sq Ft of Construction Footprint

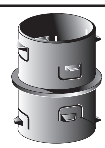
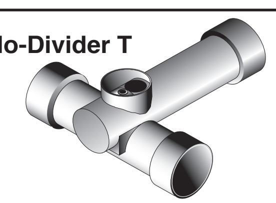


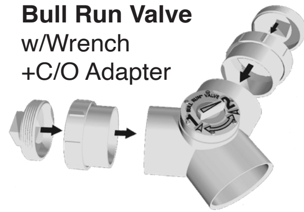
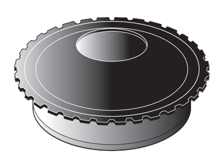
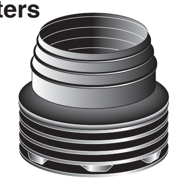
CPP-8" LDP No Rock – 3 Lines – 150' Long in a 16" Wide Trench
11.33' Wide x 150' Long = 1,699.5 Sq Ft of Construction Footprint



CPP-8" LDP No Rock – 4 Lines – 112.5' Long in a 16" Wide Trench
16.33' Wide X 112.5' Long = 1,837.13 Sq Ft of Construction Footprint



	SIZE	PKG #	PART #	PRICE
Split Couplers 	8" 10"	20 5	08F0811 10F1011	
Internal Lock Couplers 	3" 4" 5" 6" 8" 10"	50 50 25 20 10 6	03F0313 04F0413 05F0513 06F0613 08F0813 10F1013	
Snap End Caps 	8" 10"	10 10	08F0851 10F1051	
Snap Combo End Cap/4" Reducer/Adapter 	8" 8" 10" 10"	10 10 10 10	08F0851C 08F0851G w/Gasket 10F1051C 10F1051G w/Gasket	
Extension & Lok Sleeve 	4"	1	04F0471ELA	
Blind Tee's 	8" 10"	1 1	08F0821R 10F1021R	
6" Cleanout Adapter w/plug for 8" & 10" Blind T 	6" 6"	1 1	V060FC0A V060FC0P	
8" & 10" Blind Tee with Clean Out Adapter 	8" 10"	1 1	08F0821RCAP 10F1021RCAP	
Flo-Divider T 	Adjustable	1	500401A	

	SIZE	PKG #	PART #	PRICE
Septic Tank Tee w/Filter 	4" Filter Only	1 1	04F0421WF 04F0421F	
Septic Distribution Box 	FOR 4" PIPE	1	500206	
Bull Run Valve w/Wrench +C/O Adapter 	FOR 4" PIPE	1 1 1	500301 500302 SO40FCOAP	
Level-Flo-Dialer 	3" 4"	100 50	500220A 500220	
Drop Box with Solid or Grate Lid 	FOR 4" PIPE	1 1	500204 (BOX) 500207 (SOLID LID) 500208 (GRATED LID)	
Corrugated to Smooth -or- Clay Adapters 	4" 6" 8" 10" 12" 15"	50 20 10 5 1 1	04F0471 06F0671 08F0871 10F1071 12F1271 15F1571	
Snap Reducers 	4"x3" 5"x4" 6"x4" 6"X5" 8"X6" 10"X8" 12"X10" 15"X12" 18"X15" 24"X18"	25 25 20 20 5 5 5 1 1 1	04F0461 05F0561 06F0662 06F0661 08F0861 10F1061 12F1261 15F1561 18F1861 24F2461	

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

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

Protective plastic bags removed just prior to trench placement.

Protective plastic bags removed from the site for disposal elsewhere.

CPP - Adaptor end cup can fit multiple lead pipe sizes.

D-Box connections to 6FT OC trench spacing.

Pipe flex provides installation ease.

Pipe flex follows site contour.

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.

Final cover sequence begins.

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")

ASTM-F-481
(Installation Spec)

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

CRUMPLER PLASTIC PIPE, Inc.
CPP
CORRUGATED PLASTIC PIPE

PHONE 910-525-4046 / (800) 334-5071
24 HR. FAX SERVICE (800) CPP-PIPE
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