



# CRUMPLER PLASTIC PIPE INC.



Manufacturers of Corrugated Plastic Drainage Pipe



## Bell and Spigot Couplers



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CORROSION RESISTANT PIPES  
FOR  
SUSTAINABLE DEVELOPMENT

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## Bell & Spigot Couplers with "O" Ring Gaskets



CPP 12" TO 24" Meet 10.8 psi Lab  
Test With One ASTM-F-477 "O" Ring



CPP 30" to 48" Meet 10.8 psi Lab Test With One  
ASTM-F-477 "O" Ring and a Stainless Steel Strap



A Toggle Bolt On The Stainless  
Steel Band Can Be Tightened  
After Assembly of 30" to 48"

CPP BELL & SPIGOT WITH "O" RING GASKETS – these couplers come with a water seal restricting gasket manufactured per ASTM-F-477. These couplers meet the 10.8 psi Pre-Installation, Gravity Flow, Pipe Joint Laboratory Test ASTM-D-3212. State Highway Departments and others knowledgeable in pipe installing often note in writing pipe job installation specifications that Lab Tests of pipe joints are not intended to indicate any Field Performance of a pipe joint, but only a joint's performance under ideal Lab conditions. For Installed Joint Testing, some inspecting authorities may call for ASTM-F-2487 (06), which is a specification written specifically for Polyethylene Corrugated Pipe Installed Joint performance.

CPP 12"-to-24" meet the ASTM-D-3212 Lab Test 10.8 psi requirement with one ASTM-F-477 "O" Ring. CPP 30"-to-48" with one "O" Ring, meet the ASTM-D-3212 10.8 psi level as modified with a Factory Applied Stainless Steel Band around the Bell. The Stainless Steel Band may be Toggle Bolt tightened one or two turns after the pipe is assembled. This Toggle Bolt Field tightening sequence can assist in a Bell's return to its pre-assembled normal circumference after being strained/stretched by an assembly that utilizes large equipment, which is prone to applying unknown insertion forces.

As with concrete, metal or clay pipes, the installer must take precautions at all coupling sites that have historically been a **SINKHOLE** formation problem of failure, no matter a pipe's raw material base. Like any coupling junction, Man-Hole Tie-In, existing pipe Cross-over points, etc. extra installing care must be taken to insure that the uniform 95% Proctor Density compaction soil support is available per ASTM Installation specifications D-2321 and the PPI-CPPA Installation guide. The correct soil compaction level prevents deflection stresses on CPP Pipes from exceeding 5%, and thus protects from an over-deflection on the coupler's "O" Ring Seals as well.

The bedding of the pipe and joints must be without Reverse Grades that could bend, pinch or misalign a joint assemblage that would prevent a joint seal. If CPP pipes are installed in soils that are expected to experience any movement from a future high water table or soil-moisture ratio change, a GRAVEL PACK LOADBEARING ENVELOPE ENCASED INSIDE a FILTER WRAP, **must** be used. Soils not reinforced properly to withstand soil-moisture changes, can result in a MUSHY soil that will increase a pipe's deflection to the point of jeopardizing a joint leak resistant gasket seal. This is particularly true in non-cohesive silts, Class IV, Class V and N/R soils. It should be noted that the flexibility of CPP pipes is an attribute that accommodates minor post installation soil settling and shifting, and thus prevents many opportunities of catastrophic differential, sheer loading related joint misalignments that are often experienced by the more rigid pipe system materials. The 20-foot sections of CPP pipes also reduce joint failure opportunities because there are fewer joints. However, in Class IV, V or other Fluctuating Water-Table prone soils, soils reinforcement practices (as noted in ASTM-D-2321) must be selected to assure performance as would be required for the installation of rigid pipe products. Under these site conditions, a CPP MASTIC WRAP COUPLER should be specified by the Engineer to avoid leakage that could lead to possible Sinkhole formations that may develop years after an installation.

When using the CPP Bell and Spigot Gasket system, both the "O" Ring and the Bell Coupler must be lubricated with a Non-Petroleum, Bio-degradable pipe joint lubricant. First, the protective wrap should be removed from the gasket. The Male and Female Ends should be cleaned prior to lubrication to insure a secure gasket sealing opportunity. As corrugations can drag loose trench soil into the coupling joint area, a clean plastic sheet of construction film should be placed under the coupling joint work zone. The Bell End should cover two full pipe corrugations when fully seated.

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For additional information you can reach us on the  
worldwide web @ <http://www.cpp-pipe.com>

24 HOUR FAX SERVICE  
1-(910) 525-5801

## SAVINGS REALIZED WITH HDPE PIPE\*




PROJECT	LOCATION	DESCRIPTION	PIPE USED	COST SAVINGS OVER CONCRETE
Orlando Intl. Airport (parking facility)	Orlando, FL	Storm sewer system	12" - 36" HDPE pipe	\$31,000
Atlanta's Hartsfield Intl. Airport	Atlanta, GA	Retention/detention system	15" - 48" HDPE pipe	30 - 50%
Target	Jacksonville, NC	Storm sewer system	HDPE pipe	25% or \$35,250
Wal-Mart Super Center	Pensacola, FL	Storm sewer system	12" - 48" HDPE pipe	40% or \$20,900
NYSDOT	Guilderland, NY	Storm sewer system	18" - 36" HDPE pipe	\$21,308
Ardmore High School	Bowie, MD	Storm sewer system	12" - 36" HDPE pipe	\$16,270**

The above chart was compiled by the Corrugated Polyethylene Pipe Association, a Division of the Plastic Pipe Institute. Lighter weight structural plastic culvert pipes speed up installation labor output, and reduce equipment cost for contractor bid work. A 1995 study by the Ohio Department of Transportation found a 22% cost savings over concrete pipes when alternate plastic pipe was bid.

\* Compiled from individual reports. On all projects, concrete pipe and corrugated polyethylene pipe were allowed materials.

\*\* Does not include reduced costs for installation.

## COMPARATIVE ANALYSIS OF PIPE MATERIALS

	SPECIFICATIONS	DURABILITY	HYDRAULICS	STRUCTURAL	DIAMETERS	JOINTS
<b>CPP PIPE</b> 	<ul style="list-style-type: none"> <li>• AASHTO-M-252</li> <li>• AASHTO-M-294</li> <li>• SCS-606</li> <li>• ASTM-F-405</li> <li>• ASTM-F-667</li> <li>• ASTM-F-2306</li> <li>• ASTM-F-2648</li> <li>• CCPA-100 Standard Spec.</li> <li>• CAN CSA-182.6</li> </ul>	<p>Excellent chemical and abrasion resistance</p>	<p>Typical Manning's "n" design values of .013 (Published test values as low as .009. CPP Inc. Selects .010 as its Lab Value.)</p>	<ul style="list-style-type: none"> <li>• Capable of live load traffic (H-20) at 1 foot of min. cover and (E-80) at 2 feet of min. cover</li> <li>• Standard product capable of deep burial applications</li> </ul>	<p>3" - 48"</p>	<ul style="list-style-type: none"> <li>• 60% Fewer joints than concrete</li> <li>• Gaskets meet ASTM-F-477</li> <li>• Field tested to ASTM-F-2487 (06)</li> </ul>
<b>REINFORCED CONCRETE PIPE</b> 	<ul style="list-style-type: none"> <li>• ASTM C76</li> <li>• AASHTO M17</li> </ul>	<ul style="list-style-type: none"> <li>• HDPE or PVC lining used to enhance service life, and/or reduce abrasion</li> <li>• Susceptible to corrosion from road salts and chemicals</li> </ul>	<p>Typical Manning's "n" design values of .013 (Published test values as low as .010)</p>	<ul style="list-style-type: none"> <li>• Standard strength classes available</li> <li>• Spigot reinforcing may be required to prevent joint shear</li> </ul>	<p>8" - 144" (Some smaller diameters have no reinforcement)</p>	<p>Tested to ASTM-C-924/C-969</p>
<b>CORRUGATED METAL PIPE</b> 	<ul style="list-style-type: none"> <li>• ASTM A760</li> <li>• AASHTO M36</li> </ul>	<p>Special coatings and/or increased steel thickness can be used to enhance service life</p>	<p>Typical Manning's "n" design values of .024 (Published test values as low as .011)</p>	<p>Standard gauge thickness available</p>	<p>4" - 144"</p>	<p>Tested to AASHTO Section 26</p>

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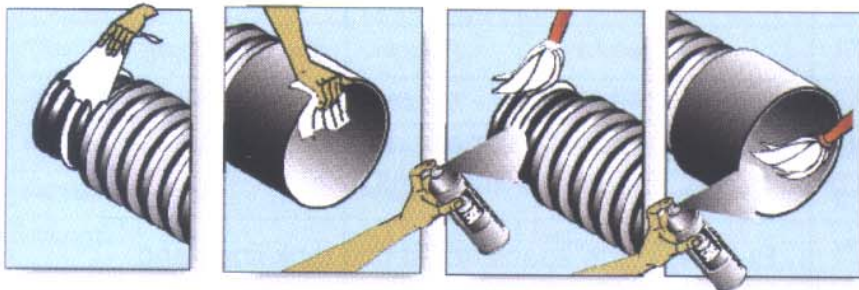
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# Bell & Spigot Couplers with "O" Ring Gaskets



**Step 1**

**Step 2**

**Step 3**

Step 1: Remove the protective cover from the "O" Ring and make sure the "O" ring is firmly seated. Step 2: Clean pipe, the "O" ring and the bell coupler of all mud, grit, etc..

Step 3: Use a johnny mop or paint brush to liberally apply gasket lube to both ends of pipe to be coupled, (for best lubrication use the CPP Spray - Lubrication System).

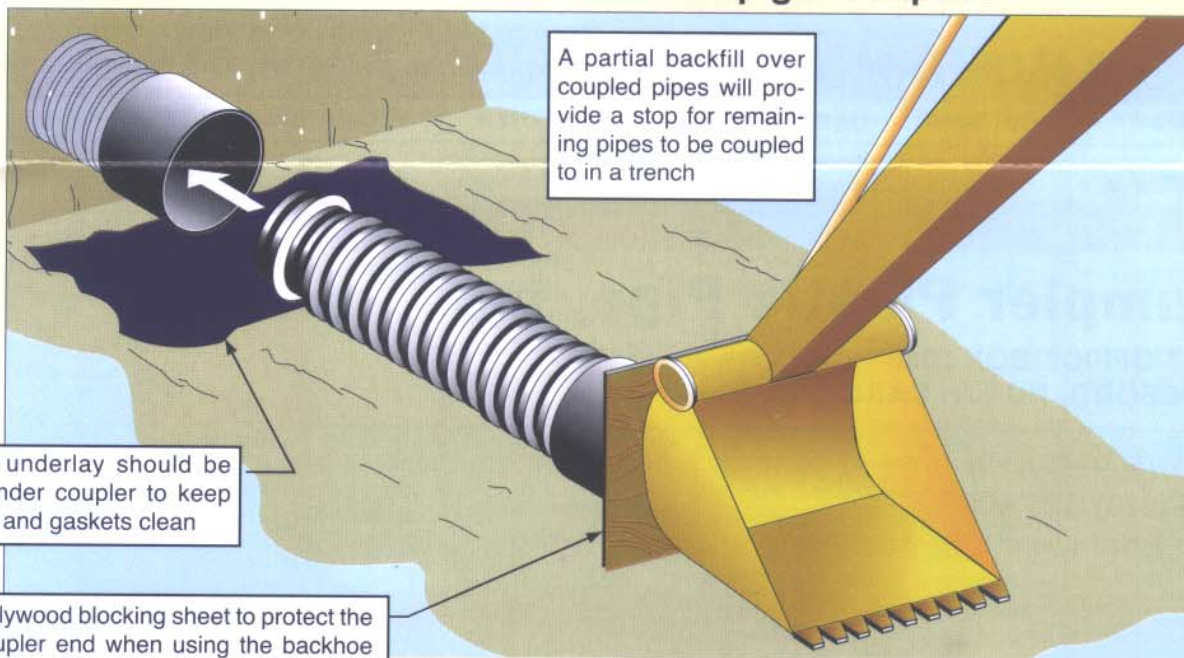
## CPP 30" -to- 48" 10.8 psi Joint Systems



When full seated, two corrugations should be covered.

At sites where ASTM-D-3212 LAB TESTED Joints are required for 30" -to- 48" In-Line Molded Couplers, CPP offers Factory Applied Stainless Steel Straps that can be TOGGLE BOLT Tightened by One or Two Turns for uniform Gasket Engagement between the BELL & SPIGOT Surfaces **AFTER** Field Assembly.

## The Push Method for Bell and Spigot Couplers

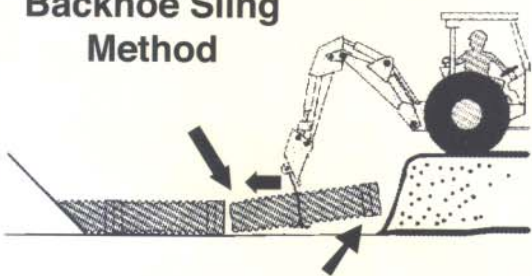


A partial backfill over coupled pipes will provide a stop for remaining pipes to be coupled to in a trench

Plastic underlay should be used under coupler to keep coupler and gaskets clean

Use a plywood blocking sheet to protect the Bell coupler end when using the backhoe push method of installing couplers

### Backhoe Sling Method



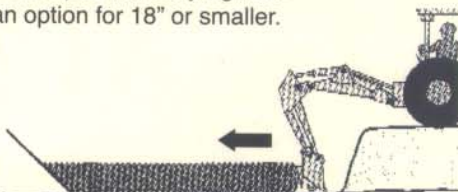
NOTE: Wrap nylon sling around center. Guide pipe squarely into bell to avoid misalignment.

### Bar/Sheet Blocking Method



NOTE: This method requires use of installation blocking sheet. DO NOT push directly against pipe. This method an option for 18" or smaller.

### Backhoe Push Method



NOTE: This method requires use of installation blocking sheet. DO NOT push backhoe directly against pipe.



# CRUMPLER PLASTIC PIPE, INC.

## For the ease of coupling installation



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CPP, INC. recommends the use of a  
Non-Petroleum based spray

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INSTALLATION COMPARISON	
SPRAY	TUB-LUBE
Finger tip dispensing	Sloppy/messy application
Reduces labor 400%	Labor intensive
No loss can system	Loss due to spillage
Dissipates moisture on pipe	Difficult wet pipe application
Does not freeze	Gels or freezes
NSF-61 approved	Not all lubes potable



Comparison information provided by SILKSTYX SPRAY COMPANY is based on PVC pipe coverages. Figures for Spray and Tub-Lube may be slightly less for CPP, INC. corrugated pipes' larger OD Diameter.

COVERAGE COMPARISON BETWEEN SPRAY AND TUB-LUBE		
	SPRAY-16 oz can joints per can	Conventional Tub Lube-Joints per LB
4"	75	35
6"	50	25
8"	37	15
10"	30	11
12"	25	6
15"	20	5+
18"	16+	3+
24"	12+	3
30"	10	2+
36"	8+	2-
42"	7+	1+
48"	6+	1+



# TECHNICAL DATA



CRUMPLER'S corrugated plastic tubing and accessories meet and exceed all specifications concerning corrugated plastic pipe. These Specifications include:

ASTM-F-405 for 3" - 6" Sizes

ASTM-F-667 for 8" -24" Sizes

CS-226

ASTM-F-2306 for 12" - 60" Sizes

ASTM-F-2648 for 2" - 60" Sizes

Building trade specs, for septic tank lines and foundation drainage

The specifications cited above are accepted by BOCA, ICBO, SBCC & IAPMO

SCS-606

Farm drainage specs.

AASHTO-M-252 for 3" - 10" Sizes

AASHTO-M-294 for 12" - 48" Sizes

Highway drainage specs.

CPPA-PPI-100 for 3" - 60" Sizes

Corrugated Polyethylene Pipe Association,  
Division of the Plastic Pipe Institute Spec.

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