

JEPCO NEWS

SPRING

by Ed Pennypacker

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WHERE DO YOU PUT THE BUTYL?

There are more wrong answers to this question floating around than there should be. So, if anyone tells you where to put the butyl, ask how he knows. Before extensive testing ConSeal had it wrong too. Not now. Here's the **key**: In order for ConSeal to work you need compression. How much? It's never been fully tested, but experience shows that at least **50% compression** always works. Will 30% compression work? Maybe. Probably.



Two strips, one as here, and another on top of the spigot virtually guarantees a water-tight joint.

Can you put too much in the joint? No. It is just that simple: No. If there is excess sealant it will “squeeze out” of the joint. In very cold conditions it will take a while to compress, but eventually it will settle to the ideal amount of sealant versus the weight of the structures and the shape of the joint. You cannot squeeze it all out. When you see the ConSeal squeezing out of the joint, think “full” not empty. (I actually had an engineer say that the sealant all squeezed out. This is easily disproved. Take two pieces of steel, a wad of ConSeal, and a vice. Assemble and squeeze. When you try to take the steel pieces apart you will understand the concept.)

Determining how much to use to get the 50% compression is a matter of measuring. If there is a $\frac{3}{4}$ inch gap between structures then $1\frac{1}{2}$ sealant is called for. If you cannot easily measure the gap, perform a “bitewing” test. Put some butyl strips across the joints at strategic locations and assemble the structures. To prevent sticking, wet the area or use talcum powder. Let the structure rest for a few minutes and disassemble.

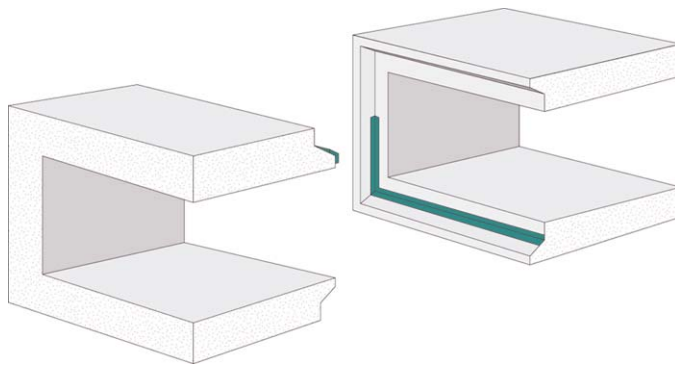


Bitewing test: Short strips of ConSeal placed across the joint are crushed when the top is assembled. The pattern of compression reveals the contour of the joint and what size sealant to use.

The compression pattern will tell what you need to know. Put the sealant where the fit is tightest, use a sufficient amount, and water-tight structures are assured.

KNEAD TOGETHER THE ENDS to make a continuous bead of sealant. Cut the ends on a 45° angle, or over lap, or over lay, it does not matter; so long as the butyl is kneaded together to make a **continuous gasket**.

Box culverts and pipes present their own challenges. It has been the custom to put half of the sealant

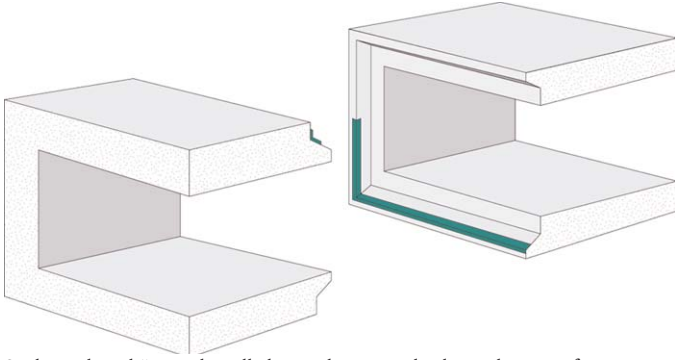


Sealant placed “inside” will show when you look down into the joints from the inside of the pipe or culvert. For a continuous gasket this is where to put the butyl.

on one piece and half on the other. Because without primer it is often difficult to make the sealant “hang” on the face of the concrete while it is being handled. Unfortunately, this has led to mistakes. If the ConSeal is placed at the back of the female (bell) and at the back of the male (spigot), the gasket is not continuous.

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It is perfectly all right to place sealant at either "inside" or "outside" locations on pipe and culvert. Just do not mix the two. No matter where you put it, select the right size and quality of sealant. Be careful if it is not ConSeal,



Sealant placed "outside will show when you look into the joint from outside the structure. Note that the ConSeal is placed on the leading edge of the bell and the back shoulder of the spigot.

because there are several sizes of the "same size" sealant on the market! This is because ASTM has remained silent on the subject of sealant sizes. The opportunity to cheat is too much for some to resist. Measure the sealant to see if you got what you paid for. The chart below illustrates the point. These undersizes have

Ø size	πr^2	Full Size	Undersize	Ratio
1/2"	.19 in ²	.44 x .44 = .19	.375 x .375 = .14	.74
3/4"	.44	.6 x .75 = .45	.5 x .75 = .38	.86
7/8"	.60	.75 x .75 = .56	.6 x .75 = .45	.80
1"	.79	.95 x .925 = .78	.625 x 1 = .625	.80
1 1/4"	1.26	.98 x 1.20 = 1.23	.88 x 1.25 = 1.1	.89
1 1/2"	1.76	1.25 x 1.5 = 1.80	1.0 x 1.75 = 1.75	.97
2"	3.14	1.4 x 2.25 = 3.15	n/a	n/a

been found at precaster's across the Northeast. "One inch" refers to the equivalent of a round one inch cross section. So, a round cross section will measure .79 square inches in area.. ConSeal's full size computes to

.78 square inches. Just about right! But the undersize "one inch" computes to just .625 square inches! Only 80% of full size! I am sure you can see how profitable undersize can be! When the key to water-tight joints is 50% compression, why buy undersized sealant? Especially when they cheat on the height!

Precast is a very technical business. Attention to detail makes the difference between high and low quality. So what do you do when you find a joint that is tight some places and not so good in other places? First, this indi-



Dry fit your structures and visually inspect the joints on a regular basis. This septic tank joint was cast in a brand new form! The other end of the tank was so tight you couldn't slide a piece of paper in!

cates that the pallets are off. Something slipped, there may be a stone under one corner of the form, hardened concrete has built up and warped the pallet, etc.; for sure something is wrong. You will fix it, but just now you have to deliver a box with an uneven joint and it can't leak! Double up the ConSeal in the bad area. Stack sealant upon itself until you have enough to achieve the 50% compression. If stacking is not practical, twist several pieces of sealant upon themselves to form a rope the size you need.

ConSeal is your seal of assurance. If you want to know where to put the butyl.. ask ConSeal. How do we know? Testing, lots of testing.



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