

LEAD INDUSTRIES ASSOCIATION, INC.

888 MADISON AVENUE

NEW YORK 17, N. Y.

October 2, 1963

SUBJECT: TIME-COST STUDY
LEAD-CALKED JOINT
VERSUS NEOPRENE
GASKET JOINT IN
CAST-IRON SOIL PIPE

To Members of the Lead Industries Association, Inc.:

Within the past two years, considerable efforts have been made by manufacturers of cast-iron plumbing soil pipe to develop jointing methods not requiring the use of lead-calked joints. Two such joints are now being marketed.

"TY-SEAL" JOINT

The first of these, a neoprene gasket for use in conventional bell and spigot pipe, is being marketed under the trade name "Ty-Seal" by the Tyler Pipe and Foundry Co., Tyler, Tex. Because of the competitive threat of this type of joint, Lead Industries Association has deemed it advisable to conduct a time-cost study of this joint versus the lead-calked joint. A copy of this study is attached.

"NO-HUB" JOINT

The second development in this area is newer and embraces an entirely new concept in jointing cast-iron soil pipe, that is, no hub is required. This joint, trade-named "No-Hub" has been developed through the efforts of the Cast Iron Soil Pipe Institute, and is being actively promoted by at least two cast-iron pipe manufacturers. This joint is made by inserting the two lengths of pipe to be joined into a neoprene ring which is then drawn tight by means of a stainless steel ring incorporating two hose type clamping rings.

As far as we can determine, the "No-Hub" type of joint is not yet commercially available but is being offered to city and state plumbing testing facilities in an attempt to get them approved for use.

As soon as the Association can obtain the "No-Hub" type joints, we plan to conduct a similar time-cost study as that conducted with the "Ty-Seal" type joint, as attached. Additional copies of this report are available upon request.

Sincerely yours,

David M. Borcia
David M. Borcia
Secretary

 **LB:100M**
Look Ahead with Lead

LEAD INDUSTRIES ASSOCIATION, INC.

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TIME-COST STUDY ON CAST-IRON PLUMBING SOIL PIPE JOINTS

Neoprene (Ty-Seal) Gaskets Versus Lead Calked Joints

A time-cost study of the plumbing roughing-in for a one-story single bathroom residence, comparing conventional lead-calked cast-iron joints against the neoprene (Ty-Seal) type joints was performed by Bernard F. Keating at the Voorhees Technical Institute, 304-326 East 67th Street, New York 21, N.Y. where he was the Head of the Apprentice Training Program.

The roughing-in was prepared in accordance with the New York City code and is similar to what would be standard practice in many areas of the country, that is, cast-iron pipe for the stack and house drain, galvanized or black iron for waste arms and a lead bend.

A photograph of the assemblies erected for the test is attached.

The results of the study indicate the lead-oakum roughing-in to be just under 8 per cent cheaper than the neoprene (Ty-Seal) installation. Summary cost figures are given in Table I with more detailed data in Tables II and III. All materials were purchased through a local supply house and no freight charges are included.

Tool costs are not included and it could be argued that a complete neoprene (Ty-Seal) job, using nothing but the required type of cast-iron pipe and fittings, will require less investment in tools, and this is true. In this event, however, material costs of every job would be substantially higher. It should also be pointed out that if a single length of steel pipe or a lead bend is incorporated in a neoprene (Ty-Seal) job, then practically all of the tools required for a complete lead-oakum job would be necessary.

It is also important to note that the cast-iron pipe required for the neoprene (Ty-Seal) joint is made to closer tolerances than conventional cast-iron pipe and without a bead on the spigot end. Because of the close tolerances required whenever a piping material other than the special cast-iron is used for a connection, a lead-calked joint is necessary.

As far as is currently known, the cast-iron pipe required for use with the neoprene (Ty-Seal) joint is made only by the Tyler Pipe and Foundry Co., Tyler, Tex.

One other decided advantage of the lead-oakum joint is that it can be used with any type of bell and spigot cast-iron pipe.



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Time-Cost Study on Cast-Iron
Plumbing Joint Pipe Joints

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In the making up of the roughing-in with the neoprene (Ty-Seal) joints, the following points were also noted:

1. Difficulty was experienced in making joints in confined spaces and on short-turn fittings.
2. The tremendous shock that must be absorbed by the hub of the bottom joint of long vertical runs when a fitting at the top is driven home with a sledge hammer, as required with a neoprene joint.
3. If there is a slight irregularity in the pipe end, such as would occur when it is cut on the job, difficulty is encountered in trying to keep the neoprene gasket from going into the joint.

A personal opinion expressed by Mr. Keating was that the effectiveness of the neoprene (Ty-Seal) joint depends on only a half-inch seal. He did not, however, make any tests to confirm this opinion.

He further reported that in dismantling the roughing-in, he pulled a jointed section across the floor and in so doing, the joint pulled apart easily. The direction of pull was opposite to the direction in which the joint was made.

Time-Cost Study on Cast-Iron
Drinking Cold Pipe Joints

TABLE I
MATERIAL AND LABOR COST

	<u>NEOPRENE (TY-SEAL)</u> <u>JOINT</u>	<u>LEAD AND OAKUM</u> <u>JOINT</u>
Material	\$66.07	\$49.61
Labor	\$32.00	\$41.00
TOTAL	\$98.07	\$90.61

TABLE II
LABOR TIME AND COST

	<u>NEOPRENE (TY-SEAL)</u> <u>JOINT</u>		<u>LEAD AND OAKUM</u> <u>JOINT</u>	
	<u>Hours</u>	<u>Min.</u>	<u>Hours</u>	<u>Min.</u>
Cutting, Positioning and Joining	2	30		
Cutting, Yarning, Positioning and Calking			4	30
Yarning and Calking	0	30		
Lead Bend	1	0	1	0
Screw Pipe Work	1	0	1	0
Filling and Testing	0	20	0	20
TOTAL HOURS	5	20	6	50
Labor at \$6 an hour	\$32.00		\$41.00	

TABLE III
MATERIAL COST

	<u>NEOPRENE (TY-SEAL)</u> <u>JOINT</u>	<u>LEAD AND OAKUM</u> <u>JOINT</u>
1 length 4 in. XHCI DH Pipe)		
2 lengths 4 in. XHCI SH Pipe)	\$19.68	\$14.65
1 4 in. x 2 in. XHCI dble. tapped tee)		
1 4 in. XHCI TY)		
1 4 in. XHCI 6/o Tee)	\$17.01	\$12.18
1 4 in. XHCI Sweep)		
1 4 in. x 2 in. XHCI dble. Y)		
1 4 in. brass ferrule	\$ 1.25	\$ 1.25
1 10 in. x 10 in. lead bend	\$ 2.40	\$ 2.40
40 lb. calking lead		\$ 8.00
7 lb. calking lead	\$ 1.40	
8 4 in. Ty-Seal Gaskets	\$12.00	
1 can Ty-Seal Compound	\$ 1.20	
5 lb. Oakum	\$ 1.60	\$ 1.60
2 45° Drainage Ells	\$ 2.10	\$ 2.10
2 Black Malleable Caps	\$.92	.92
2 Cast-Iron Plugs	\$ 1.26	\$ 1.26
4 ft. Black Steel Pipe	\$ 2.00	\$ 2.00
1 can Pipe Dope	\$.25	\$.25
3 lb. of 40/60 Solder	\$ 3.00	\$ 3.00
TOTAL	\$66.07	\$49.61

