



Lead Bearing Plates Used In Setting Stone Roof

Lead Makes Permanent and Artistic Letters

THE William C. Gotschall mausoleum, being erected by the Presbrey-Leland Studios, in Woodlawn Cemetery, N. Y., is another example of the use of lead in fine stone-work construction, a practice dating back many centuries. The ancient Greeks and Romans used lead in their massive structures to set the stones, a splendid example of which is found in the columns of the Temple of Apollo, which are still standing. These stones were set in the Seventh Century, B. C. (LEAD, March, 1935).

The setting of the roof for the mausoleum presents an interesting application. There are three stone blocks weighing 110 tons in all, which can not be cut accurately enough to be set directly onto the pediment. The load on the pediment would not be uniform and the supporting stone would be broken by the uneven pressure. Lead plates are used, therefore, between the roof and the pediment, making a firm and close-fitting bearing. The plates are $\frac{1}{4}$ in. thick and about 3 in.



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Two views of the lead bearing plates in position on the slope of the pediment and on top of the side walls.

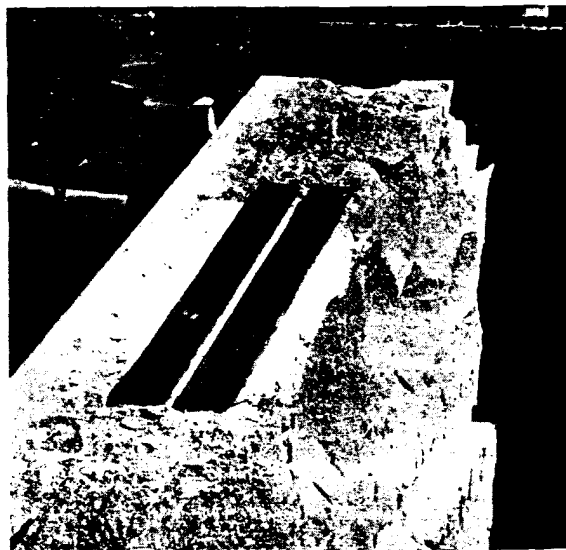


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Application of lead strip in making letters on monuments.

wide by 24 in. long, placed approximately 2 in. from the inner edge of the pediment, as shown in the accompanying pictures. The roof is then set on the pediment and a liquid grout poured around the lead bearings. The load is thus evenly distributed.

Another use of lead in monument construction is in lettering. Letters are cut into the stone and small holes are drilled into the faces of the letters. A round lead bar, about the size of an ordinary pencil, is placed flat in the letter and hammered down as tightly as possible. It is then polished down flush with the face of the stone, giving a very beautiful and finished





appearance. Letters, such as these, are valued not only because of their effectiveness, but also because of their permanence. Their indestructibility has been recognized throughout the ages. Even in the Bible we find reference to this fact, wherein Job prays that his words may be graven with an iron pen and lead in the rock forever.

These applications of lead again show how advantageous is its pliability and should suggest other ways in which benefit might be derived from this characteristic.

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Workman placing a lead bearing plate in position on the pediment with one roof piece in place.

White Lead Proved Dependable For Hanging Murals

WHITE lead adhesive was used to hang the mural paintings in the Delivery Room of the Boston Public Library in January, 1902, and they have remained in good condition for 35 years, demonstrating the dependability of white lead as an adhesive. The paintings, five in number, were done by the late Edwin Austin Abbey and depict the quest of the Holy Grail, from the birth of Galahad until his failure to gain the Grail.

The five pictures are 8 ft. high and range from 6 ft. wide, in the first, to 33 ft. wide in the fifth painting. Over 100 life-size figures are included in the set, the result of four year's research and labor.

The paintings are hung by a process called marouflage. The top of the canvas is tacked along the top of the wall and the canvas rolled up. The back of the canvas was first painted with red lead to give added protection and firmness. The wall was then painted with white lead and the canvas rolled down into position on the wall, very much in the way wallpaper is applied. The adhesive upon drying fixed the paintings as firmly as if they were part of the wall itself.

The murals were hung by the Louis F. Perry and Whitney Co., now Louis F. Perry & Sons, Boston decorators.

In direct contrast to this excellent performance of white lead adhesive, and showing what may happen when an adhesive that is not tough enough is used, was the failure, late this August, of part of the new Ellis Island mural to stay in place when hung. The mural, depicting the "Role of the Immigrant in the Industrial Development of America," was painted by Edward Lanning, and is 110 ft. long and 7 ft. high. The large center portion of the mural was hung using

an adhesive other than white lead. Two or three days later it was found to have buckled, bulging out in tiny ripples and forming large bubbles. These had to be slit or pricked and pasted back again using white lead adhesive. The two side pieces of the murals were not hung until after the center part had been found damaged. They were then hung with white lead and gave no trouble whatsoever.



N. Y. HERALD TRIBUNE PHOTO

Repairing the part of the Ellis Island mural not hung with white lead. The bubbles and ripples were pricked open and put back with white lead adhesive.



THAT cracked water closet bowls can be avoided by connecting them to flexible lead bends is realized by many architects and plumbers and is well illustrated by the new New York apartment houses shown here. In these three buildings of completely fireproof construction, all water closet connections in the several hundred bathrooms are lead.

Building settlement, vibration, and expansion and contraction of building materials are bound to bring about differential movement of the component parts of the building. If china closet bowls are connected to a



Lead bend installed in one of the partially completed apartments shown on this page.

Cracked Fixtures Prevented

Two New York apartment buildings in which lead bends are used for all toilet connections. Emery Roth is architect for building at top, and Charles Kreyborg for one at bottom. L. Michel Plumbing and Heating Corp., plumbing contractors for both.

New York Apartment Connection

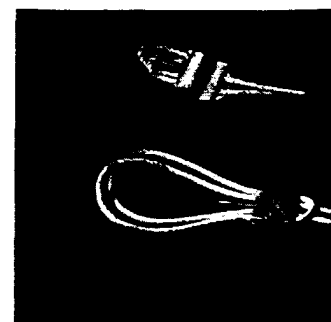
hard rigid material this movement may, and frequently does, crack the bowls. Expensive replacement and often unsanitary conditions are the result. Flexible lead bends yield sufficiently to take up this movement without damage or strain either to the fixture or the connection.

This applies to stall urinals and to wall hung fixtures as well as to the conventional water closet. An example of the excellent service provided by lead connections to wall hung fixtures is Ludden Hall of Domestic Science in Bakersfield, Cal., a locality where movement may be quite large. Batteries of wall hung closets and urinals were installed with lead connections in that fireproof building sixteen years ago and no trouble has been experienced since. In fact, Bakersfield's plumbing code permits no other type of connection.

To the protection of fixtures provided by the flexibility of lead are added other advantages. Fixtures

Lead Makes A Tamper-Proof

LEAD seals are used to fasten the tops of money bags to protect them against tampering. The seals are about $\frac{3}{4}$ in. square and $\frac{1}{8}$ in. or more thick, each weighing about $\frac{1}{2}$ oz. Four holes are bored horizontally through them and through these is threaded a piece of waxed string, forming a double loop at one end and a single loop and two loose ends at the other. From the center of one end of the lead a $\frac{3}{4}$ in. nail protrudes.



View showing the lead seal being used.

Currency en route to the Federal Reserve Banks is thrown into white canvas money bags which are stamped with the name of the sending bank. The double loop is slipped over the neck of the bag and

Prevent Flexibility Of Lead Bends

New York Apartments Use Lead Connections in Bathrooms

Ludden Hall of Domestic Science in Bakersfield, Cal., where lead connections have given excellent service for sixteen years. Lead bends are required by many plumbing ordinances, including Bakersfield's, because they are flexible and durable.

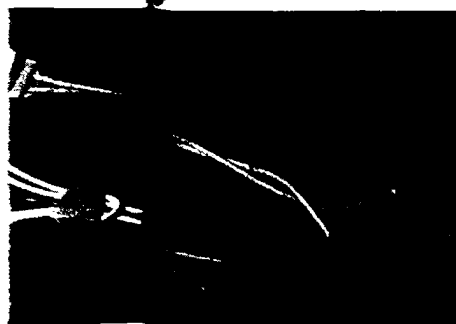
are set more easily and quickly because the lead bends may be bent slightly to make up for slight inaccuracies in measurements. The durability of lead when exposed to such corrosives as hydrogen sulphide and ammonia found in soil systems is axiomatic and assures long freedom from trouble and permanently sanitary conditions. Also the smooth inner surface of both lead pipe and wiped joints offer little opportunity for solids to lodge and clog the pipe.

By specifying lead connections for all fixtures, architects can prevent damage and obtain the most durable and trouble-free installation. In so specifying lead, a provision should be included to require that all lead to be embedded in or to pass through concrete be wrapped with tar paper or coated with asphaltum to prevent possible corrosion by free lime while the cement remains green. No danger of this corrosion exists after the concrete is thoroughly cured. Another advisable feature of the specification is to require that



the brass ferrule to which the lead is connected have an inside diameter equal to the outside diameter of the lead and that the lead pass entirely through the ferrule and be turned back over the bead on the end. This presents only one metal, lead, to the polluted water, and reduces the danger of both galvanic action and normal corrosion. It also makes possible a stronger joint and better seating of the ferrule in the hub into which it will be calked. No lead bends lighter than those known to the trade as "extra-heavy" should be used. These weigh 8 lb. per running ft. when 4 in. in diameter. Use of bends stamped with the "Lead Industries' Seal of Approval" is assurance of proper quality and weight.

Lead Seal For Currency Bags



Showing the lead seal on currency bags before and after being sealed.

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the nail is pierced through the bag to prevent the seal from being moved up or down. The loose ends are drawn out, tightening the double loop around the bag's neck. Then the seal is placed in a press which further draws the cords around the neck and at the same time squeezes the lead into the shape shown in the photograph, imbedding the string firmly in the seal so

that it can not be moved. The press also stamps the lead seal with the name of the bank, department number, and teller's identification. In this way, it is impossible for anyone to tamper with it without damaging the seal noticeably. Lead's pliability and softness makes its use possible for such seals.



A new New York apartment building in which all toilets are connected to lead and all concealed traps are lead. H. S. Feldman, architect. Farr Plumbing Co., Inc., plumbing contractors.



New Standards For Calking Lead



BECAUSE the flexibility and durability of calked lead joints are so essential to satisfactory cast-iron water main, sewer and plumbing installations, the Lead Industries Association recently adopted rigid standards for calking lead and is making arrangements for producers to use the "Lead Industries' Seal of Approval" on calking lead meeting these standards. Therefore, if buyers or specifiers of calking lead will insist on material bearing this Seal, they will be assured of lead of proper purity to make the highest quality job. It is the same arrangement that was successfully put into operation at the beginning of 1937 for lead pipe, traps and bends.

To give lead the necessary flexibility and durability, certain impurities must be substantially excluded. With this in mind, the standards were established and are as follows:
Specification for Calking Lead

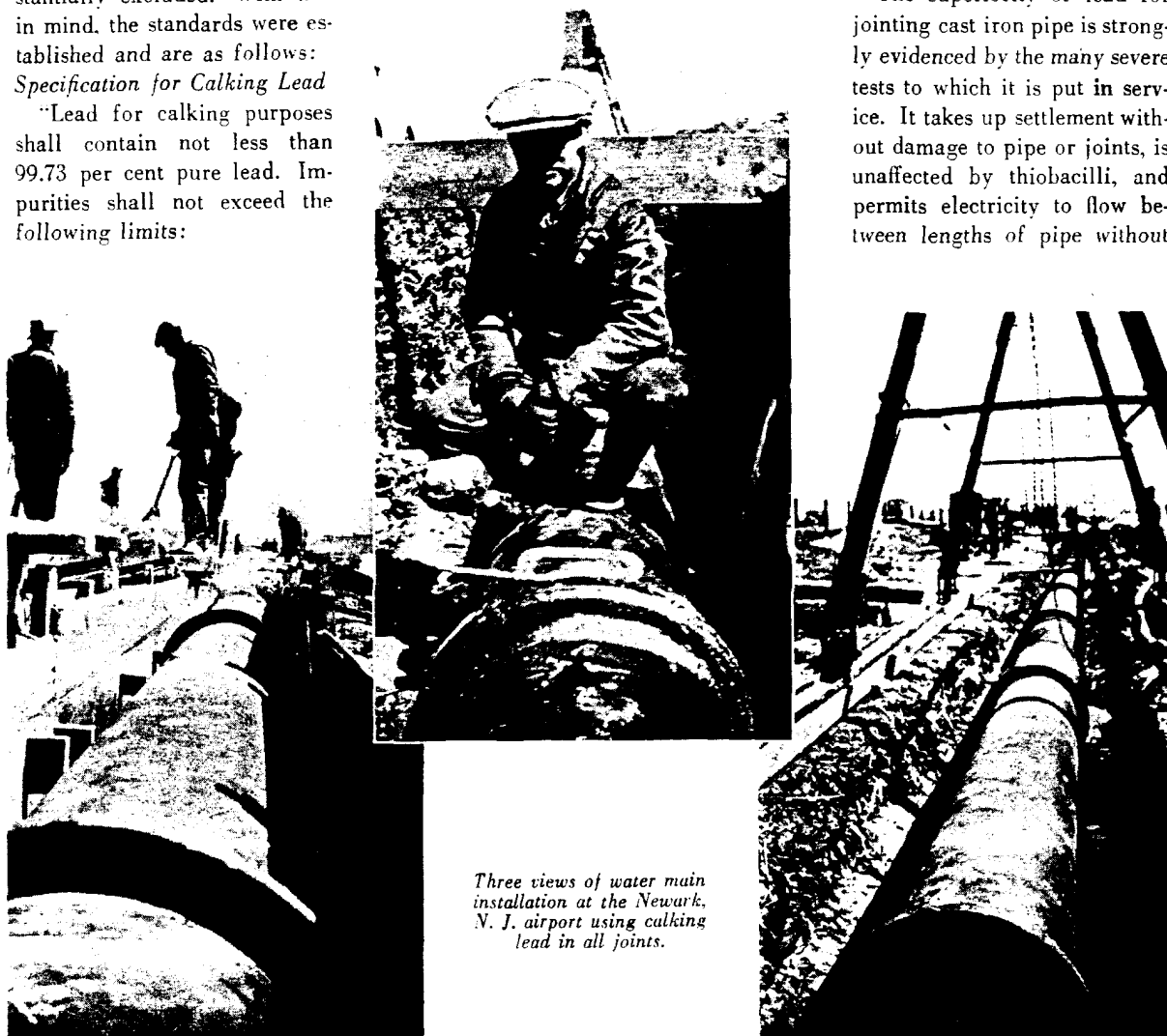
"Lead for calking purposes shall contain not less than 99.73 per cent pure lead. Impurities shall not exceed the following limits:

Arsenic, Antimony and Tin together	..0.015 per cent
Copper	0.08 per cent
Zinc	0.002 per cent
Iron	0.002 per cent
Bismuth	0.25 per cent
Silver	0.02 per cent

"The producer's name or identification mark shall be clearly cast or stamped upon each piece of lead for calking purposes or, in the case of lead wool or other forms that can not be so marked, shall appear upon the label or package."

Users may either employ this entire specification for calking lead or may accomplish the same result merely by insisting that the lead bear the "Lead Industries' Seal of Approval."

The superiority of lead for jointing cast iron pipe is strongly evidenced by the many severe tests to which it is put in service. It takes up settlement without damage to pipe or joints, is unaffected by thiobacilli, and permits electricity to flow between lengths of pipe without



Three views of water main installation at the Newark, N. J. airport using calking lead in all joints.

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electrolytic corrosion which often results if non-conducting joints are used. An example of reliance on lead joints in severe service is a water main installation recently made at the Newark, N. J., airport. It consists of 7,500 ft. of 20 in. and 500 ft. of 30 in. pipe, all jointed with poured lead. The line is in marshy, reclaimed land, beside a highway carrying heavy traffic, and is, therefore, liable to considerable movement, which will be provided for by the lead joints. They

will also endure despite the attacks of corrosive substances like salt water in the ground at that location.

Under such exacting conditions and since excellent service is to be expected of lead joints, it is essential to use lead of good quality. The new standards and "Seal of Approval" will aid users to get calking lead that will give maximum performance, just as the same Seal on lead pipe, traps and bends is helping to assure long, trouble-free performance of these products.

SEAL OF  LEAD INDUSTRIES' APPROVAL

White Lead Paint Found a Valuable Selling Point

WHEN houses are built for resale, the architect will find that the use of white lead paint assists in presenting the dwellings most attractively to prospective purchasers. When white lead has been employed, the buyer knows that the paint will endure, will provide the building material with protection from excessive and undesirable weathering, and will retain its charm and appearance. No matter how carefully a building is erected or how excellent the quality of building material, the main impression is registered upon the eyes. Consequently, a fine paint job, like a well designed package, is of great advantage in selling a house. In the same respect, the splendid finish obtained through the use of white lead, sets off the skill and technique of the architect to its best advantage.

Mr. Randolph Evans, of New York, architect for many development projects, as well as private homes



Another Randolph Evans' house. Pure white lead paint shows off the architect's design to its best advantage.



One of the charming houses designed by Randolph Evans, a strong advocate of pure white lead paint.

and estates, specifies white lead and is a firm believer in its dependability.

"My experience has shown me that white lead and oil exteriors never result in complaints from clients which plague the architect when poor quality paint is used; furthermore, the beauty of white lead interiors provides a most attractive complement for the architect's design."

Mr. Evans' statement emphasizes the possibilities of white lead for interior painting. Many pleasing and harmonious effects may be obtained by tinting white lead to a wide variety of shades and colors. Stippling, blending and other treatments augment the scope of decorative styling. White lead paint brushes and flows easily and has a high spreading power, covering from 700 to 800 square feet per gallon making it an efficient and inexpensive medium for decoration.

Lead Tubes Keep Printing Inks From Skinning

LEAD tubes are used by The International Printing Ink Corporation, as containers for printing inks. The main advantage of this form of container is that it reduces the possibility of waste by eliminating "skinning" of the ink. The small job printer is often unable to utilize all of the ink contained in a can on one piece of work and upon standing, the ink "skins", hardens, and is rendered useless. This is eliminated by the tube which keeps the ink away from hardening influences and enables the printing jobber to re-use his ink secure in its original texture.

In the manufacture of these tubes, circular disks are cut out of sheet lead, the thickness and diameter determined by the size of tube to be produced. The disk is then placed in a female die the shape of the top of the tube. A male die, the size of the inside diameter of the



Lead tubes make attractive and efficient containers for printing inks. They prevent waste by skinning and hardening.

tube, is forced onto this under high pressure and the lead disk is extruded up the male die, forming the tube. From this press, the tube is shifted to a cutting and capping machine which puts on the screw cap and shears off the extruded tube to the correct length. The tubes are now shipped to the user where automatic machines fill the tubes through the open bottom which is afterwards rolled up and tightly compressed, making an air- and moisture-proof container.

Lead tubes are easily rolled, resist corrosion from both outside and inside, and the softness and flexibility of lead reduces the destructive cracking of the walls. They can be easily decorated and together with the low cost of lead tubes, these factors combine to produce a durable, efficient and attractive package for preserving perishable substances.

The Following Companies are Represented in the Lead Industries Association:

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THE AMERICAN METAL CO., LTD., New York, N. Y.
AMERICAN SMELTING & REFINING Co., New York, N. Y.
THE ANDREWS LEAD CO., INC., Long Island City, N. Y.
BAKER LEAD MFG. CO., Worcester, Mass.
BUNKER HILL & SULLIVAN MINING & CONCENTRATING Co., Kellogg, Idaho.
CAMBRIDGE SMELTING Co., Cambridge, Mass.
CERRO DE PASCO COPPER CORP., New York, N. Y.
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CROWN METAL Co., Milwaukee, Wis.
DAYROCK MINING Co., Wallace, Idaho.
DICKSON WEATHERPROOF NAIL Co., Evanston, Ill.
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THE EAGLE-PICHER LEAD Co., Cincinnati, Ohio.
THE ELECTRIC AUTO-LITE Co., Toledo, Ohio.
EUSTON LEAD Co., Scranton, Pa.
FEDERAL MINING & SMELTING Co., New York, N. Y.
FEDERATED METALS DIVISION, AMERICAN SMELTING & REFINING Co., New York, N. Y.
THE FLEMM LEAD Co., INC., Long Island City, N. Y.
W. P. FULLER & Co., San Francisco, Cal.
GARDINER METAL Co., Chicago, Ill.
GENERAL LEAD MANUFACTURING Co., Denver, Colo.
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HAMMOND LEAD PRODUCTS, INC., Hammond, Ind.
HECLA MINING Co., Wallace, Idaho.
HERCULES MINING Co., Wallace, Idaho.
HUDSON SMELTING & REFINING Co., Newark, N. J.
IMPERIAL TYPE METAL Co., Philadelphia, Pa.

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THE LEWIN METALS CORP., East St. Louis, Ill.
MARKS LISSBERGER & SON, INC., Long Island City, N. Y.
METALS REFINING Co., Hammond, Ind.
NASSAU SMELTING & REFINING Co., INC., New York, N. Y.
NATIONAL LEAD Co., New York, N. Y.
NORTH AMERICAN SMELTING Co., INC., Philadelphia, Pa.
NORTHWEST LEAD Co., Seattle, Wash.
THE NORTH-WESTERN METAL MANUFACTURING Co., INC., Minneapolis, Minn.
PARK UTAH CONSOLIDATED MINES Co., Salt Lake City, Utah.
REYNOLDS METALS Co., New York, N. Y.
ROCHESTER LEAD WORKS, INC., Rochester, N. Y.
ST. JOSEPH LEAD Co., New York, N. Y.
SHERMAN LEAD Co., Wallace, Idaho.
THE SHERWIN-WILLIAMS Co., Cleveland, Ohio.
SILVER KING COALITION MINES Co., Salt Lake City, Utah.
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STANDARD ROLLING MILLS, INC., Brooklyn, N. Y.
TAMARACK & CUSTER CONSOLIDATED MINING Co., Wallace, Idaho.
TINTIC STANDARD MINING Co., Salt Lake City, Utah.
UNITED AMERICAN METALS CORP., Brooklyn, N. Y.
UNITED STATES SMELTING REFINING & MINING Co., INC., New York, N. Y.
WHITE METAL ROLLING & STAMPING CORP., Brooklyn, N. Y.
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