

LEAD

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*Baltimore City Hall and Municipal Building, interiors of both painted with pure white lead
and oil in accordance with city specifications*

LEAD INDUSTRIES ASSOCIATION

Graybar Building • 420 Lexington Avenue • New York



LIA25610

Submarine Water Main Uses Lead Calking

In order to provide additional necessary fire protection for the town of Riverside, Conn., as recommended by the National Board of Fire Underwriters, a new submarine water main is now being laid under the Cos Cob-Riverside inlet of Long Island Sound.

This installation is under the control of the Greenwich Water Company, Greenwich, Conn., a subsidiary of the American Water Works & Electric Company, which supplies the towns of Cos Cob and Riverside with water. In accordance with their general practice,

this new main is of cast iron with lead calked joints.

The complete line, extending from Strickland Ave., Cos Cob, to Riverside Ave., Riverside, is about 2,750 ft. long of which 1,300 ft. is submarine. For the regular land-laid portion of the line American Water Works Standard Class B bell and spigot pipe is used, and Metropolitan joint pipe for the submarine sections. The latter is 16-in cast iron laid in 12 ft. lengths with about 60 lb. of lead used to calk each joint. Approximately 12,000 lb. are

used in all. Joints are both hand and machine calked.

On the Cos Cob side the new main connects through a 20 x 16-in cast iron tee to a main line, and is 350 ft. long. On the other side of the inlet the new line is 1,100 ft. long, tying into a 12-in main. The old mains are also all of cast iron with lead joints.

For the submarine part of the line the lengths of pipe are laid on a wooden pile and trestle framework and calked together on the frame. Sections of about 100 ft., when finished, are then lowered to the bottom by means of chain falls. For a distance of about 130 ft. on the Cos Cob side of the inlet a serious mud condition on the bottom threatened installation difficulties. Soft mud was found to be from about 6 to 8 ft. deep on the bottom. Consequently, this part of the line is laid on the framework, and then the piles line. The chain falls are first removed and the piles sawed off and capped, the cast iron pipe resting on the caps. The remainder of the underwater section is solid bottom and the line is merely lowered to rest.

The metropolitan joints, which may bear a maximum deflection of 13 deg., are used only with a 5 deg. deflection

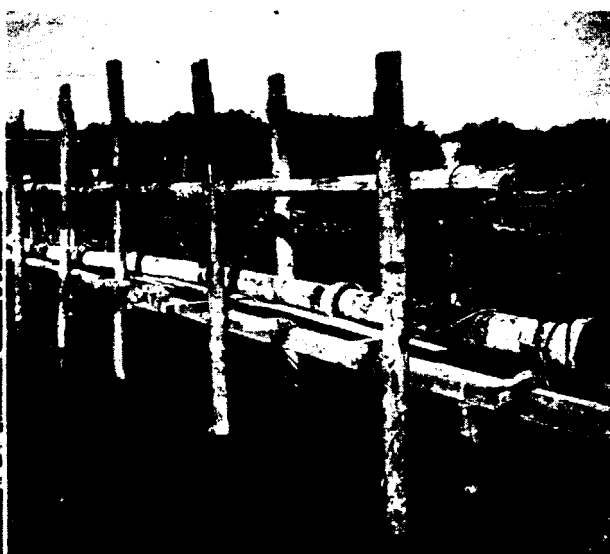


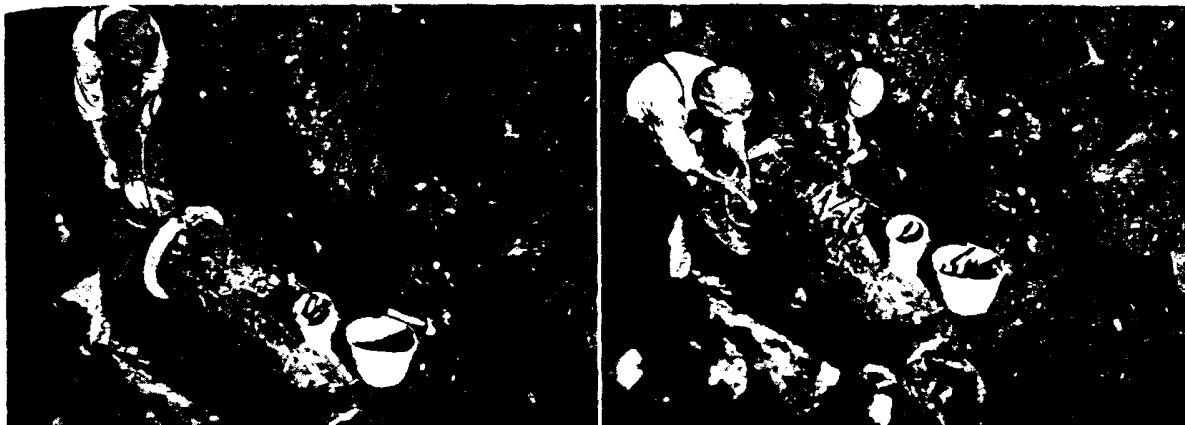
A general view of the Cos Cob-Riverside, Conn., water service installation, showing the land portion of the line in the foreground

A section of the submarine line suspended by rope and chain falls before lowering into the water in sections of about 100 ft. long and already calked together



A close-up of the submarine section of the line. Ball and socket joints of this 16" Metropolitan type cast-iron pipe are calked with lead using both air-driven and hand calking tools





Left, pouring lead into the bell and spigot joint of the 12" cast-iron land section of the line. Right, calking the lead to assure a water-tight and lasting joint

which, with the flexibility of the lead calked joint, assures the tightness of the line and minimizes any necessity for recalking after the line has been lowered.

This installation is but one more example of the reliance placed on lead joints for cast iron mains where installation problems are more serious than

average. Permanently tight and flexible, lead's excellent service under trying conditions is even greater proof of its advisability under ordinary installation conditions. Moreover, the dependability of lead for calked joints is doubly assured by the Seal of Approval on calking lead which guarantees the quality and uniformity of the

lead and maximum point of efficiency.

G. F. Russell, engineer for the American Water Works and Electric Company, supervised the installation. Perna Brothers, Old Greenwich, Conn., installed the land portion of the line, and the McKinnon Construction Company, East Providence, R. I., the submarine line.

Selecting Good Calking Lead

THE importance of selecting good lead for calking is sometimes underestimated. Lead is such a universally used material that many persons may overlook the question of quality. However, there are many grades of pig lead, each of which has its own characteristics, selection being determined by the ultimate usage.

In calking lead, purity and softness are requisites. Impurities may harden lead, making thorough calking difficult and the increased dross inclusion means a certain amount of waste. Soft lead is absolutely necessary so that the calking operation will expand the lead to fill the joint tightly, and to take up whatever shrinkage occurs when the lead solidifies and cools. Hard lead can be expanded only at the surface.

It is not necessary for the purchaser of pig lead to analyze each ingot delivered. He should merely word his specifications so that only the highest quality material may conform. This may be done easily by requiring that all calking lead be stamped with the

Lead Industries' Seal of Approval. This familiar Seal when stamped on lead products is assurance that they are of the highest quality obtainable. It was to provide this assurance that the Lead Industries Association set up rigid standards and licensed manufacturers to stamp products meeting these standards with the Seal. Moreover, continuous close inspection and analysis of Seal of Approval products is provided.

Purchasers may often be tempted to buy calking lead at so-called "bargain prices," but in doing so they run the risk of purchasing remelted scrap lead unrefined and containing large amounts of impurities. The saving made by the bargain is soon more than lost by excessive dross difficult calking, and unsatisfactory joints. With good lead, however, no better calked joint can be made in cast-iron pipe.

Eighteen manufacturers located in all parts of the country are licensed to stamp their calking lead with the Lead Industries' Seal of Approval, making this material readily available to every purchaser and user of calking lead. The standard and seal apply not only to ingot and other forms of lead for making poured joints, but to lead wool as well. In the latter case, of necessity the seal does not appear stamped on the lead but on the package or tag.

The standard on calking lead upon which the Seal is authorized is as follows:

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%
Copper	0.08
Zinc	0.002
Iron	0.002
Bismuth	0.025
Silver	0.02

SPECIFY  MATERIAL

Large Development Builder Relies on White Lead



Two of the 157 homes at Orchard Park, Union, N. J., built by Wilbur Dunham using production line methods. Low maintenance costs are assured on Orchard Park homes by the use of pure white lead paint on all exteriors. Left, the Cape Cod Cottage design; right, a Colonial design.

LOWER costs and all around better homes have been achieved in the Orchard Park development, Union, N. J., by the use of production line methods and standard products such as pure white lead paint. Employing many of the principles used successfully in mass production, Wilbur Dunham, developer, has succeeded in producing highest quality homes and, at the same time, reduced the normal cost of such dwellings.

Orchard Park is an excellent example of how a builder with experience and business acumen can apply the

best methods of other industries to the building field. For instance, all lumber is cut on the job by power saw to the exact lengths needed in construction. Other methods include the use of as much prefabricated construction as possible.

The best of materials including kiln dried lumber, red cedar shingles and clear oak flooring are used throughout these homes. Winter air conditioning, distributing warmed and humidified air evenly throughout the house, is another feature of the Orchard Park homes. Pure white lead and oil paint

is specified to provide the maximum in protection and beauty for exterior surfaces.

One of the sales features at Orchard Park is, "Take the future upkeep headaches out of the house." Pure white lead paint is one of the many materials used which will help to make this statement a reality. White lead paint gives long years of even wear leaving an excellent surface for repainting when that becomes necessary. "Upkeep headaches" and maintenance expense are thus kept at a minimum without sacrifice of beauty.



Two more views of the Orchard Park Homes. Brick chimneys and picket fences as well as the body of the house are painted with pure white lead and oil for lasting durability and charm.

Pure white lead and oil has four advantages, namely, durability, stylability, serviceability and economy, that make it the ideal painting material for development builders. White lead combines these qualities to a greater extent than any other paint. Its long life and beauty are unsurpassed and

yet it costs less to paint with pure white lead paint than with many other paints lacking its good qualities. The original cost of white lead is low and its spreading rate speeds up building operations. Its durability keeps maintenance costs at a minimum and customers contented. Furthermore, white

lead may be used on any type of surface and in any shade or color. This eliminates the need for large stocks of different paints to meet different requirements. White lead may be obtained anywhere with the assurance of the same high standard of quality at all times.



MOISTURE is a common cause of paint troubles. The anchorage of a paint film is primarily dependent on the ability of the priming coat to penetrate the surface pores, there creating upon oxidation a solid bond which assures a firm foundation for subsequent coats. Should the pores already be filled with moisture or, following application, moisture be allowed to penetrate behind the film, adhesion is lost and loosening of the paint results in unsightly blistering and peeling. The sun's rays or interior warmth causes the moisture to come through the wall or siding, and, since paint acts as a barrier to moisture coming from within as well as from without, water collects between the surface and the paint film resulting in the formation of blisters. Gradually the blisters break upon expansion, and peeling results.

Sources of Moisture

The presence of blisters on a paint film frequently provides good evidence as to the probable location of the source of the moisture. If the blisters appear confined to a limited surface section, some structural fault is indicated near the affected area. Usually a close inspection of neighboring joints and flashings will disclose the crack through which water has seeped to get behind the paint film. Once these structural defects are repaired, moisture troubles should cease.

Where investigation reveals all joints and flashings to be water-tight, diagnosis and correction generally are

more difficult. Under such conditions, peeling paint is frequently the result of precipitation in sidewall cavities due to high interior humidity and low outside temperatures. The comparatively warm, moisture laden interior air reaches the dew point and condenses between the interior and exterior walls when its saturation point is suddenly reduced by lower exterior temperatures. Where vapor barriers are inadequate, this condensation becomes so great that it soaks the wall cavity, and this moisture upon being drawn through to the outer surface undermines the paint causing it to blister and peel off. The correction of such a condition requires the installation of vapor barriers in the wall as well as improved ventilation of the house to expedite removal of excessive water vapor.

Installing Vapor Barriers

Correct application of the vapor barrier in the wall cavity is an important factor. The United States Forest Products Laboratory has carried out numerous experiments along these lines to determine the most efficient method of establishing this vapor barrier. They recommend the installation of an asphalt impregnated and surface coated sheathing paper on the warm side of the wall under the plaster base. This paper is highly resistant to the passage of water vapor and economical if applied during construction. It should be applied vertically on the studs with two-inch lap-overs.

If the possibility of the above de-

fects are eliminated on new construction, the immediate causes for trouble may be damp walls and siding as well as plaster which has not been given sufficient time to dry. It is therefore essential that all previously unpainted surfaces be thoroughly dry before applying the priming coat, and that care be taken to see that ample time elapses between coats on all work so that each will oxidize well, setting up as a firm foundation for the next. Following extended periods of fog, drenching rains, or when adverse drying conditions prevail, as much as a week or more may be required before painting—as well as between coats—to guard against moisture difficulties.

Selecting a Paint

As to the selection of paint, there is no formula or method of application which will assure adhesion under adverse moisture conditions; that is, no paint, whatever its formulation, can stick long to a wet surface. However, experience has proved that paint mixed with a high pigment to non-volatile ratio is more resistant to surface moisture, while impartial tests indicate that a pure white lead and oil paint film will stand more moisture behind it before blistering than any other type of house paint. Furthermore, if blisters do appear when a coating consists entirely of white lead, they will usually disappear when the wood dries out without leading to subsequent peeling and scaling, according to Consumer's Guide published by the U. S. Dept. of Agriculture.



No. 3

In the early part of the 18th century, the Connecticut pioneers were spreading out from the coast and the river valley to build numerous villages throughout their territory. Almost the first consideration in a new community was the establishment of a parish and the provision of a place for worship. Since the first church in the early community was generally the meeting house, it naturally became the center of the growing village. The history of these early settlers was built around their church parish and to a great extent is inseparable from it. Therefore, as time went on, all the best in New England culture and building skill was reflected in the beautiful buildings they erected to further glorify their religious beliefs. Frequently, these early churches remain today, in many communities, as the dominating center of historical interest and architectural craftsmanship.

Historic old churches, many of them over a hundred years old, may be

Top, the First Congregational Church of New Milford, Conn., as seen looking East from the green. This 107-year old church has six Doric stone columns supporting the wood pediment and partially covering a front of butt-joined wood facing. The spire is constructed of wood and the sides finished with lapped clapboard. The entire building was repainted this Spring with pure white lead and oil

Bottom, Christ Church, Episcopal, in Redding Ridge, Conn. Originally erected in 1732, this building was rebuilt in 1750 and again rebuilt in 1833. Front and steeple are of butt-joined weather-board; sides are clapboard and roof of shingles. During the march by the British on Danbury during the American Revolution, a cannon-ball struck the church and is lodged to this day in one of its beams. Pure white lead and oil paint protects this landmark

THIS IS NO. 3 OF A SERIES REPRESENTATIVE OF THE
THAT ARE PRESERVED FOR THE FUTURE WITH PURE
PROTECTED WITH THIS RELIABLE

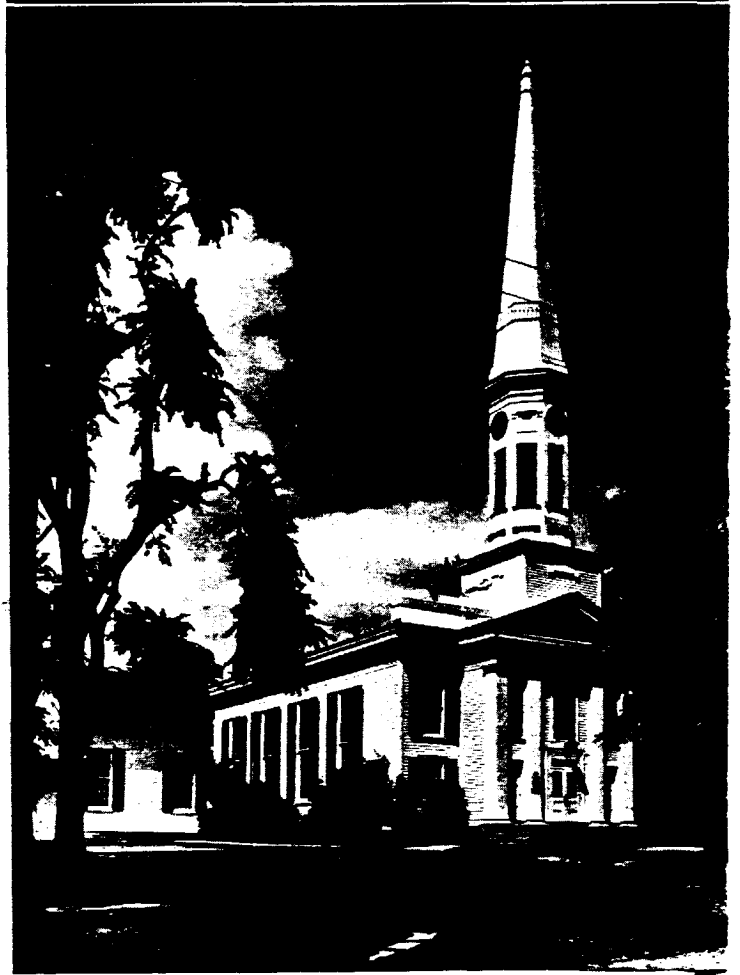
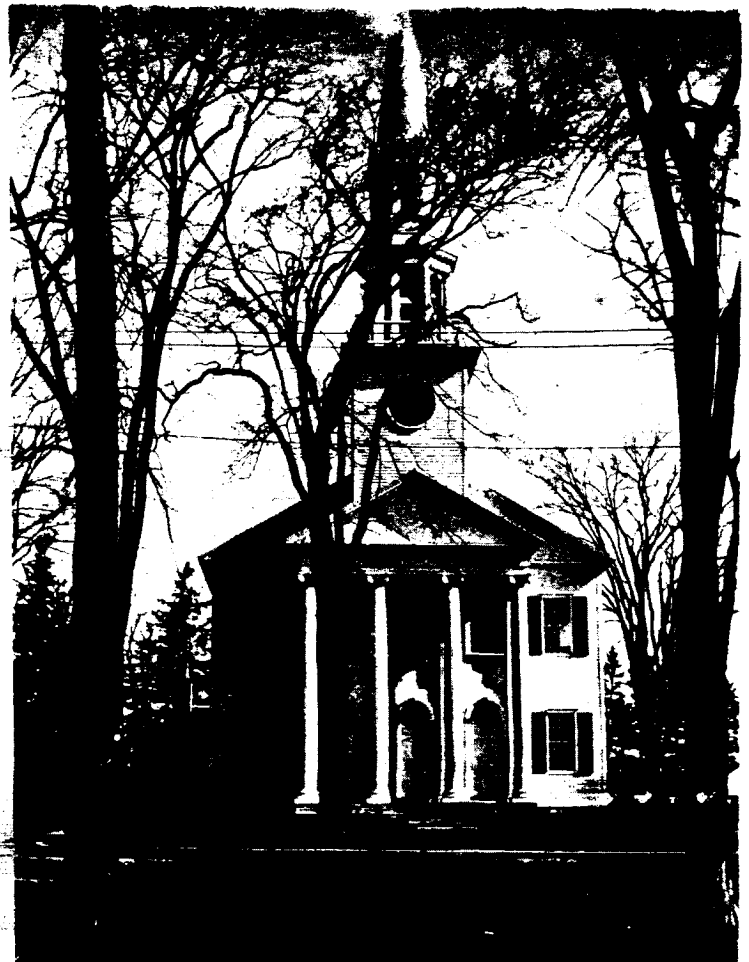
Historical Connecticut Churches Are Protected and Beautified With Pure White Lead Paint

found in practically every city and village throughout New England. Their tall white spires showing above the trees are frequently the first sign to the traveler of the town that lies ahead. In some cases these old churches are now in the center of a heavily built-up city; more often they are found in the picturesque smaller villages. All of them are landmarks of Colonial culture and fine examples of early American architecture. Their excellent state of preservation is a tribute not only to their builders, but also to the paint that has protected them. A great many of these churches are painted now as they have been in the past with pure white lead and oil. Their gleaming beauty today is being well preserved for future generations by the inherent durability and long life of pure white lead paint.

Illustrated on this page are four century-old Connecticut churches, painted with pure white lead and oil and representative of many more that may be seen in other parts of the State.

Top, the Congregational Church in Litchfield, Conn., built in 1829. The body of the church is clapboard with roof and spire of shingles. Four graceful Ionic wood columns adorn the front of the building. Notice particularly the fan top triple doors with the same motif carried out above on the steeple. The entire structure is being preserved with pure white lead paint

Bottom, the Congregational Church of New Canaan, Conn. The Canaan Parish was established in 1733 and the present church completed in 1834. The main portion of the church is of clapboard with front doors framed by four wood pilasters. The tall spire is constructed of flat butt-joined weather-board. Pure white lead paint protects this building, and preserves its beauty for future generations



OF THE MANY LANDMARKS IN VARIOUS SECTIONS OF THE COUNTRY
PURE WHITE LEAD AND OIL PAINT. MANY OF THEM HAVE ALWAYS BEEN
LIABLE MAINTAINED ACCORDING TO AVAILABLE RECORDS.

Modern Lead Plumbing Methods on Housing Project

Left to right, kneeling, A. J. Monier, president, and O. B. Monier, vice-president, of A. J. Monier, Inc., plumbing contractor for Alazan Courts Housing Project; standing, Kurt A. J. Monier, secretary-treasurer, and Oran J. Vick, plumbing inspector on the project



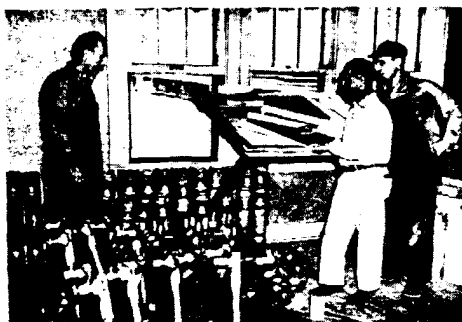
ALAZAN COURTS HOUSING PROJECT, in San Antonio, Texas, involved one of the largest plumbing contracts ever let in that city. The project covers eight city blocks, has 932 separate apartment units and administration building with 3,265 fixtures to rough and set. All fixture wastes and closet connections are lead, all baths have lead drum traps, all roof flashings are made up from sheet lead, and all joints in cast-iron pipe are calked with lead. Fur-

thermore, all this lead pipe, fittings and calking lead is stamped with the Lead Industries' Seal of Approval. All lead embedded in the poured concrete

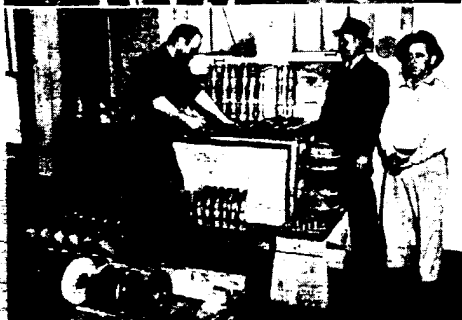


slab was painted with asphalt paint. In all, 932 lead drum traps, approximately 16,000 lb. of lead pipe, 15,500 lb. of sheet lead, 18 tons of calking lead and 3 tons of solder were used.

To perform a contract of this size at the low cost necessary for United States Housing Authority projects requires a responsible contractor having engineering and organization skill and a knowledge of the materials used, as well as skilled craftsmen. There is slight benefit to be derived from low cost housing if the materials used in the installation are not of the highest durability and efficiency. Otherwise maintenance costs soon force rent schedules up, and the project no longer serves its low rent function. Slum sections are the basic reason for such projects, and one of the greatest evils of slums is their lack of any plumbing or the fact that what plumbing originally was installed has become so deteriorated that it constitutes a serious health hazard. Consequently, it would be foolish to place inferior piping in the projects designed to eliminate the



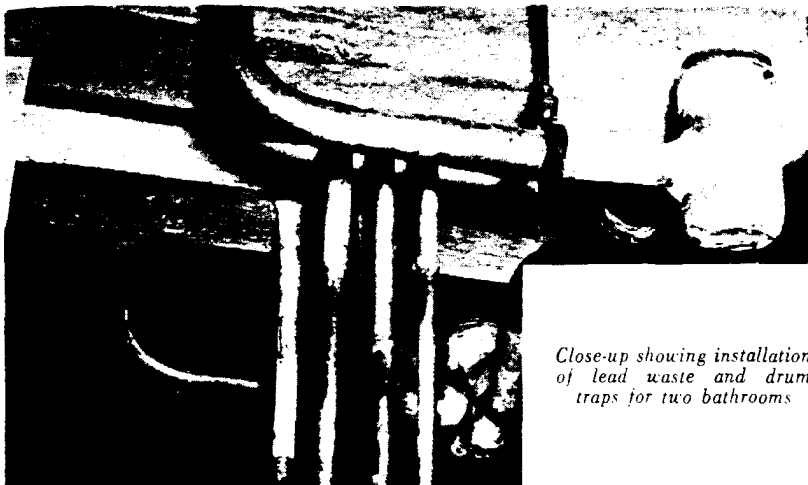
Left Top, O. B. Monier goes over detailed blue-prints of their work with journeymen to familiarize them with all phases



Bottom, journeyman prepares lead pipe for wiping while plumbing inspector Kissling and O. B. Monier look on



Right, journeymen prepare and wipe drum trap connections



Close-up showing installation of lead waste and drum traps for two bathrooms

slums. It is not so much the fixtures in a plumbing system that constitute a health hazard. Modern science and research on the part of the plumbing industry has clarified the question of dangerous fixtures. It is the danger of easily corroded pipes in the walls that is greatest. No matter how fine the fix-

tures or how carefully installed, if the pipes in the walls are not dependable, leaks and escaping sewer gas and waste are the almost inevitable result.

That is the main reason why so many projects have relied upon lead plumbing. Non-corrodible, flexible, with bonded joints, lead has every charac-

teristic necessary to provide lifetime service. On U. S. H. A. projects lead has shown numerous times that it does not raise the expense, for lead plumbing is fabricated on "assembly line" methods just as many other products, without sacrificing quality of craftsmanship.

Every phase of the plumbing work in Alazan Courts was covered by detailed drawings and each skilled lead worker provided with the drawings covering his part of the work. Thus he became thoroughly acquainted with his part in it, eliminating lost motion and time required to work out details on the job. Entire frames of waste and vent pipes may be assembled quickly by this method and merely calked into place, a procedure unobtainable with screwed systems, keeping costs low.

Phelps, DeWees & Simmons are the architects at San Antonio for the United States Housing Authority. A. J. Monier, Inc. of San Antonio was the plumbing contractor on the project.

Another Proof of Lead Services' Long Time Economy

FORTY-SEVEN years ago a 1-in lead water main was installed to serve several buildings of Saint Mary's Academy, Bay View, East Providence, R. I. This service connected to the street main at one end and fed lead water laterals at the other end to supply the various individual buildings. Fifteen years later, 32 years ago, an additional main 1½ in. in diameter, was installed in the same way to supply lead laterals to other buildings.

Recently both lead mains were removed to permit the installation of larger pipes, a procedure necessary because of increased water demand. The photograph shows the excellent condition of the original lead mains after 47 and 32 years of service, respectively. The lead laterals were likewise in perfect condition and were re-connected to the new lead mains for many more years of service. It was necessary merely to wipe the new mains to the joints at the service boxes.

Countless examples such as this may be shown all over the country each year, testifying to the superior dura-

bility of lead water services. They represent the factual proof of lead's advantages. The reasons for this superiority have been brought out in many discussions and papers, outstanding of which was presented at the New England Water Works Association last year. A resume of this paper was reported in LEAD, May 1940. Copies of the paper and its frank treatment of

modern lead water pipe characteristics are still available upon request by water works engineers.

Water for Saint Mary's Academy is supplied by the East Providence Water Company. James V. Turner is water superintendent under whose supervision the installation of the new lead services was made by James J. Dunn, Plumbing Contractor, Riverside, R. I.

A close-up showing the excellent condition of lead water mains after 47 and 32 years of service, respectively, in Bay View, East Providence, R. I.



Baltimore's City Government Specifies White Lead

HOW white lead and oil helps to solve a large city's painting problems is well illustrated by the experience of the City of Baltimore, Md.

Since their switch to white lead specifications early in 1937, the City Bureau of Central Purchase reports that they have been free from many of the diffi-

culties that were experienced in the past with the purchase of other paints, and are getting the most satisfactory results with their white lead program.

Before 1937, Baltimore purchased paint under specifications calling for a multi-pigment paint meeting various minimum requirements. This system, however, showed numerous drawbacks. Most important of these according to J. H. Gaston, Purchasing Agent for the City of Baltimore, was the difficulty in obtaining a uniform product. Better standardization of paint specifications was needed if Baltimore was to have more efficient purchasing and greater satisfaction from its painting. As a result, the Board of Central Purchase began a program calling for pure white lead paint. Today this city specifies white lead and oil paint for over 65% of its total paint purchases, with the percentage of white lead over other paints increasing every year. The yearly increase in white lead consumption by the City of Baltimore is clearly shown by the following figures:

1936.....	6,325 lb.
1937.....	27,850 lb.
1938.....	99,575 lb.
1939.....	103,725 lb.

In a recent interview, Mr. Gaston expressed the following views in behalf of the Bureau of Central Purchase:

"We are having excellent results with pure white lead and oil. Purchasing has been made much easier and more efficient and we are noticeably free from the difficulties we once had with some of the lower grade paints on the market. Although there are many excellent ready mixed paints, it is frequently difficult to differentiate between the good and the bad. We are finding that our lead and oil jobs are not only giving us the best of service but are proving highly economical as well. At present, white lead constitutes over 65% of our total paint purchases. We are going to increase this percentage every year because we feel that white lead does a better all around job than any other paint."

There are many excellent reasons why white lead has solved Baltimore's



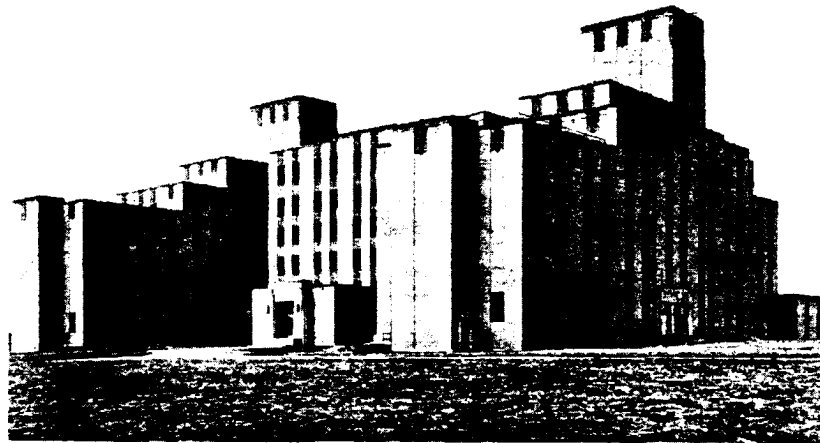
The Municipal Office Building of the City of Baltimore. All exterior trim and the entire interior of this building have been painted with pure white lead and oil in accordance with City of Baltimore specifications



The Nurses Home at the Baltimore City Hospital. Pure white lead paint provides lasting decoration for interior walls

paint problem. Paste white lead is a standard product, which, when bought from any of the established white lead manufacturers, will be found to be of highest quality and uniformity. Since white lead is so thoroughly standardized, its specification and purchase is greatly simplified. This fact and the recognized durability and low cost of white lead has made it the one paint that completely satisfies Baltimore's paint requirements.

Illustrated on this page and on the cover are some of the Baltimore city buildings recently painted with pure white lead paint in accordance with the new specifications for city painting. These principle buildings and many others including a majority of the City schools are now being painted both exterior and interior with pure white lead and oil.



The Baltimore City Hospital. Exterior trim and all interior rooms except a few requiring special treatment are painted with pure white lead and oil and permitting repeated washings for sanitary purposes

F. H. A. Modernization Drive in Full Swing

ANOTHER nation-wide modernization drive sponsored by the Federal Housing Administration was begun in mid-August and is now proceeding at a rapid pace. Among the many items eligible for loans, painting, sheet metal work and roofing, and plumbing modernization are three of the most important and popular.

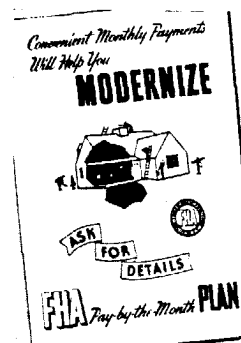
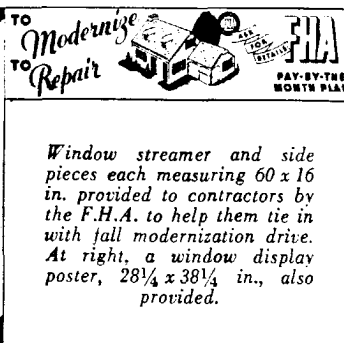
The campaign offers an excellent opportunity to architects, builders, contractors and others to benefit by the widespread interest aroused by the F. H. A. publicity. An attractive window display in three colors, a two-color booklet for distribution to home owners by contractors, and a manual for contractors explaining how they may increase their sales through the F. H. A. installment payment plan are all available free of charge. They may be obtained directly from the F. H. A. at Washington or its 64 field offices.

Armed with such excellent sales material contractors should experience no difficulty in pushing remodeling work, especially where they plan to use lead products. In many cases remodeling must be done in cramped spaces where rigid materials are diffi-

cult to install. This is true of both plumbing and sheet metal work. In plumbing, additional bathrooms, new fixtures, shower stalls and new pipes to replace old clogged or leaking pipes are easily roughed in with flexible lead pipe. With lead pipe unusual bends and changes in direction, necessitated many times by remodeling work, are but a simple matter. Their installation with screwed systems would mean many extra fittings and a consequent increase in cost. Also, by eliminating the projecting bulk of such fittings, the lead piping may fit into the smallest possible space. The flexibility of sheet lead, too,

renders this same working advantage. flashings and other new and replacement work being easily and snugly fit into even the most difficult corners. Moreover, the fact that the new low cost of hard lead flashing makes this material competitive with other metals commonly used is a sales factor of great importance to home owners who wish to obtain the most from their building dollar.

Whether in new work or repainting there is, of course, no substitute for pure white lead, and the economy of white lead jobs will be an added sales factor to help contractors obtain remodeling work.



What paint do most architects prefer?



Drucker & Baltes Co.

PRESERVED FOR THE FUTURE—Protection against time and weather of this beautiful old Long Island residence, built in 1705, is entrusted to pure white lead paint.

EVERY architect wants his work to stand the test of time—and paint has a lot to do with that.

That is why so many architects favor the use of paints made with white lead—because long experience proves there's nothing like white lead in making paint resistant to time and weather.

Made from lead, one of the most durable of metals, white lead endows paint with the same kind of slow-wearing quality—gives it a tough elasticity that prevents cracking and scaling—makes it cling in a smooth unbroken film that protects the surface underneath from moisture and rot.

The best proof of that is the many fine old buildings that have been preserved down through the years by white lead paint.

So it's a good idea when specifying paint to know how much lead it contains. And it's a pretty safe rule to say: *the higher the lead content*, the better the paint. You can't, for example, get a more durable paint than one containing 100% white lead. This is the kind good painters mix from lead-in-oil. In many localities it is also sold ready for use.

LEAD INDUSTRIES ASSOCIATION
420 Lexington Avenue, New York, N. Y.

HOW LONG SHOULD A GOOD PAINT JOB LAST? You'll find the answer to this and many other important paint questions in the booklet "WHAT TO EXPECT FROM WHITE LEAD PAINT." Send for your free copy today



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