

LEAD

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HOW AND WHY

**To Use Lead Plumbing in
Low Cost Housing with
Special Reference to
Defense Construction**

THERE is every reason—durability, efficiency, economy—to use lead plumbing at any time. These reasons are magnified many fold, in time of national defense, for other than normal considerations also enter into the choice of materials. Careful consideration of all aspects of the problem leads to the conclusion that lead plumbing can be of noteworthy assistance in defense building of all types.

Availability of Material

It is essential that the materials used be available in sufficient quantity and that manufacturing facilities be adequate. Lead is in an excellent position in both respects. Supplies of lead are available for meeting almost any demand, and smelting, refining and manufacturing capacities are more than adequate. No shortage of lead has appeared. About the only direct war use of lead is in small arms ammunition, a use of relative minor importance in modern mechanized warfare, and one which does not utilize the manufac-



Although the main focus of attention is now on defense construction, the proper maintenance and construction of our civic and other peace-time buildings should not be neglected. The Department of Education Building, Schenectady, N. Y., is an example of good maintenance practice, with white lead, which should be continued for all types of construction during these critical times. (Article on Page 5)

WHITE STUDY

420 Lexington Ave. **Lead Industries Association** New York C

turing facilities needed to produce lead plumbing goods. These factors, ample supplies of raw material and factory capacities, should receive great weight in planning construction so that vital materials are not used where they are not needed. It is important not only to free critical materials for defense work but to insure also, by using lead, that shortages of materials will not cause delay in deliveries, tying up large defense construction projects.

Temporary Building

Much defense construction is considered of a temporary nature and it is sometimes felt that there is no reason to employ so durable a material as lead in temporary buildings. There are, however, several good reasons. Temporary structures are of necessity apt to be of a type of construction in which considerable movement and settlement will take place. This is particularly true at Army and Navy bases where the buildings may be subjected to vibration from heavy artillery practice fire and ground demolition. Flexibility is needed in the piping system in order to prevent damage resulting in expense and unsanitary conditions. Lead is the only piping material that will adequately supply this necessary flexibility.

Furthermore, lead pipe has the highest salvage value in relation to its original cost of any of the common pipe materials. Thus when temporary buildings are ultimately removed a large part of the original value may be realized.

Also many buildings erected now as temporary may eventually be found more permanent than originally expected. Many "temporary" buildings of the last war are still in use or have been reconditioned for use, and the same thing will probably happen again. If lead is used in the plumbing, it will be prepared for any eventuality, temporary or permanent.

Economy

Most people think of lead plumbing as expensive plumbing because of its



recognized top quality. However, because of its flexibility and method of jointing, lead pipe eliminates many expensive fittings. Furthermore, on large projects where a number of identical units are employed, lead work can be planned so that it is almost all done in the shop by production methods under working conditions that result in greatest efficiency. Because of this, in the last few years lead has been used in many of the large low-cost public and private housing projects and it has been demonstrated that it costs no more, and sometimes even less, than less suitable plumbing installations.

Speed

Speed is absolutely essential to defense construction. Here lead plumbing is outstanding. Ample supplies and factories in all parts of the country eliminate delays in delivering material. Since so much of the work is done in the shop, it can proceed in all kinds of weather and the good working conditions contribute to speed. Because lead pipe and fittings are flexible, extreme care in taking measurements is not necessary since slight adjustments can be made in the flexible metal when fixtures are set. Since all joints are bonded metal-to-metal, no leaky joints have to be repaired when a water test is put on the system. Moreover, since there are no bulky fittings on lead work, time may be saved which is ordinarily required for furring out when such fittings are used.

Adaptability

Defense building consists of all kinds, from low-cost housing to hospitals and huge industrial buildings. Lead plumbing has fully proved its suitability for all types of buildings in all parts of the country. Hospitals, housing projects, real estate developments, schools, public buildings and

many other types, both wood-frame and steel and concrete construction, have found lead both economical and serviceable. Lead is as completely modern in plumbing as chromium plated fittings and stream-lined fixtures.

Labor

Skilled labor is important in these times. Many young men have been taken into the armed forces or are being trained at trades that require youthful stamina. But lead work is the easiest physical labor connected with plumbing. By specifying lead plumbing older men, who may tire quickly at the heavier work of using stocks and dies, can install the lead, thus releasing younger men for other essential work. Also, there is an ample supply of skilled lead workers in the country, distributed throughout the 48 states. And with good organization only a few craftsmen are necessary to handle the skilled operations in lead work, thus resulting in top-notch workmanship and efficiency.

Quality

So far no mention has been made of the characteristics that make lead installations the finest of any kind of plumbing job. Lead's durability is unquestioned. It is the most durable of the common metals, particularly in the plumbing system where it is exposed to ammonia, hydrogen sulphide and other destructive ingredients encountered in soil and waste systems that rapidly destroy some other materials. The importance of flexibility and the leak-proof quality of wiped joints in lead pipe have already been mentioned. Furthermore, the inner bore of lead pipe is smooth and rust-proof so that it does not clog and reduce the flow of water and circulation of air.

Also lead pipe, fittings, and calking lead are covered by rigid industry standards and identified by the Lead Industries' Seal of Approval, so that if these standards are followed in the used of lead plumbing goods, the quality and weight of the material is assured.

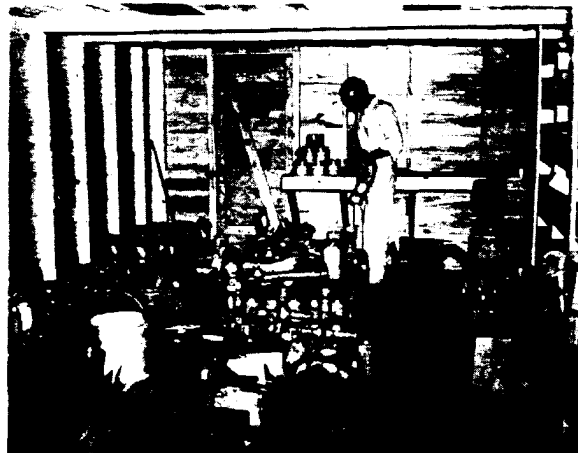


Highlights of Lead Plumbing In Low Cost Housing Projects

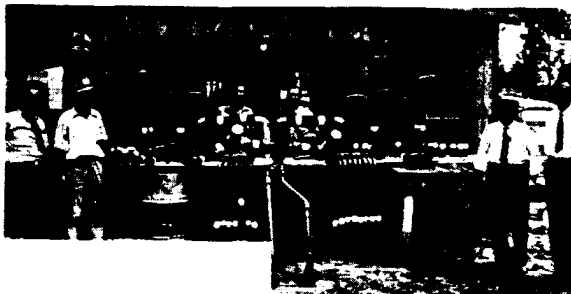
IT IS RECOGNIZED THAT LEAD MAKES AN UN-SURPASSED PLUMBING INSTALLATION. LEAD PLUMBING NOT ONLY HAS BEEN, BUT IS BEING INSTALLED EVERY DAY IN DEFENSE AND OTHER HOUSING PROJECTS AT REAL ECONOMY.

Preparing lead work for a housing project in conjunction with the Naval Air Base, Corpus Christi, Texas. There are 51 buildings with 250 bathrooms. All closet bends, drum traps, waste connections and vent flashings are of lead

MCGREGOR STUDIOS

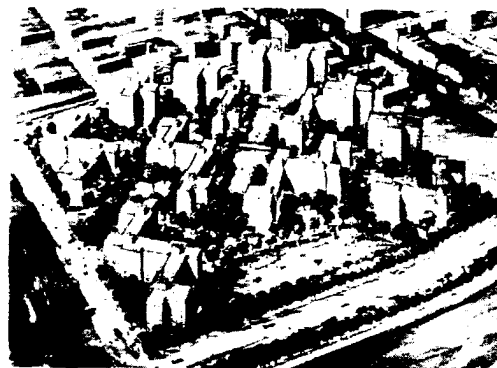


Paducah, Ky., below, and Jacksonville, Fla., at right, rely on lead in their U.S.H.A. housing projects. The group photos show the type of lead frames, bends and waste connections used in these projects



Below, approximately 1,200 bends are used in East River Houses, New York City, U.S. H.A. project

COURTESY NEW YORK HOUSING AUTHORITY



In Atlanta, Ga., the Clark Howell Homes, below, as well as a second project, the John Hope Homes, use all lead on the sewer side of fixture traps to the stack, as well as many lead fittings and all sheet lead flashings



Installation detail of lead bends, drum traps and waste connections for the Silver Bow Project, Butte, Mont. (See cover LEAD, Jan. 1941)

AL'S PHOTO SHOP



Colonial Gateway To Western Frontier

Mohawk Valley Homes Re-
tain Historic Charm and
Beauty with White Lead

No. 6



The Woodward Home, a late 18th Century dwelling in Mohawk, N. Y. The plain Doric columns and pediment serve to illustrate the strong Greek revival influence apparent in many of the Mohawk Valley homes of this period. Pure white lead paint has contributed much to the life and appearance of this landmark

TRIPLE B. PHOTOS



Mattern Manor, a homestead built in 1799 in Sangerfield, N. Y. The charm of this interesting early Mohawk Valley home is being well preserved with pure white lead paint

THE MOHAWK VALLEY, leading from old New England to the New West, was one of the first great pathways into the Western frontier. As the restless pioneers in New England sought new lands, they moved steadily Westward along the river valley, clearing and planting the rich land as they advanced. The river was the first highway and line of communication for these early peoples. Travel overland was difficult at best, but the river, presenting a comparatively sure and easy route between East and West, soon became the great artery of traffic it is today. Along its banks sprang up numerous settlements, peopled by the restless and by those who were dissatisfied with New England and the East Coast. As the years passed these settlements grew rapidly into well established villages and towns.

Many of the homes of the first settlers remain to be seen today in various sections of the valley. Three typical examples of these early homes are illustrated on this page. Protected and decorated with pure white lead paint, they will stand for many years as landmarks to guide the traveler who retraces the Pathway of Empire linking the east with the west.

The Van Epps Homestead, Fultonville, N. Y. Built in 1790, this sturdy old home is occupied today by Mrs. Cora Van Epps Marlette, a direct descendent of the original builder and first settler of Fultonville. The early settlement was known as Van Epps Swamp until after the Revolution when its name was changed to Fultonville in honor of Robert Fulton. This landmark has always been painted with white lead according to the owner

WHITE STUDIO



THIS IS NO. 6 OF A SERIES REPRESENTATIVE OF THE MANY AMERICAN LANDMARKS IN VARIOUS SECTIONS OF THE COUNTRY THAT ARE PRESERVED FOR THE FUTURE WITH PURE WHITE LEAD AND OIL PAINT. MANY OF THEM HAVE ALWAYS BEEN PROTECTED WITH THIS RELIABLE MATERIAL ACCORDING TO AVAILABLE RECORDS.

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LIA25640

Lumber and Paint Provide Styling Versatility For Any Home



Lumber and paint provide the permanent decoration and stylability for these homes in the Fairway Knolls development, Maywood, N. J.

H. E. JELTSCH



THE ever increasing demand for distinctive, low-cost housing is re-emphasizing the durability of the limitless decorative treatments possible with the age-old combination of well-seasoned lumber and white lead paint. Wood, on the one hand, presents the surface ideal for painting, while pure white lead and oil has proven to be the economical solution to the problem of individualized styling in development construction.

Each lumber home—whatever the size or architectural design—is so easily made distinctive with white lead, while the color treatment originally selected can be readily altered at will without costly surface preparation to meet changing environmental conditions or progressive styling trends. This versatility is in direct contrast to the limitations on both present and future styling imposed with the use of synthetic siding materials—substitute for

lumber—which either are impractical to paint or form foundations inferior to wood for the adhesion of paint. Consequently, builders with an eye to economy and increased sales are featuring lumber and are turning away from unproven, or experimental paints which so often crack and scale or wash away to play safe with the same pure white lead and oil which has been the standard exterior coating since earliest colonial times.

White Lead Features Schenectady, N. Y., School Painting

EASE of specification and purchase, and consistent good results, are major reasons why the City of Schenectady, N. Y., has standardized on pure white lead and oil paint for its schools and many municipal buildings.

The Schenectady Department of Education uses white lead for all exterior, and much interior, school painting. The Department of Education building shows the beauty attained with white lead together with unsurpassed protection.

Among the municipal buildings the City Hall is outstanding. Built in 1930 it was redecorated in 1936 using white lead throughout. A red lead primer is used on the metal dome with white lead undercoats for the gold leaf finish. White lead makes an excellent undercoat for gilding, providing a better bond and smoothing out any irregularities in the surface to be gilded.

The City Hall redecoration as well

as other recent city painting work was supervised by F. G. Cary, Paint Supervisor to the City Engineering Department. The success attained with white

lead bears out the practice of many other cities where economy, durability and beauty are all combined by a white lead painting program.

The Schenectady, N. Y. City Hall, painted with white lead as is the general practice of the City and School governments. The Department of Education building is shown on the cover

WHITE STUDIO



Careful Installation Methods And Instruction Develops Lead Service Pipe Advantages to Fullest Extent

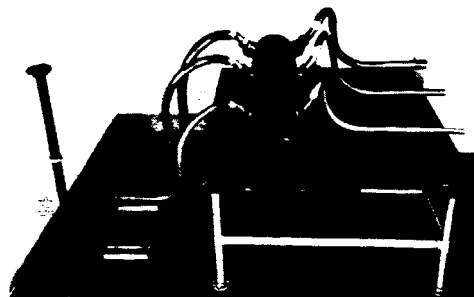
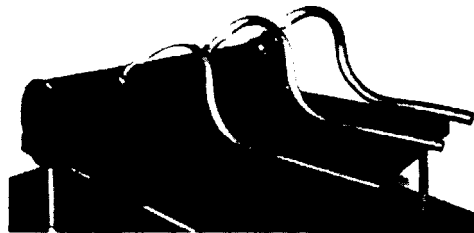
NO other material for water service pipe has the long life and dependability of lead. However, although lead will serve remarkably well under adverse conditions, like every other material it must be used correctly to give the greatest satisfaction. Chicago, Ill. and Belleville, N. J., where lead services are standard, are two cities which recognize this fact fully and have bent their efforts to gain every last bit of lead's advantages.

At Chicago's Water Pipe Extension Plumbing Laboratory of the Department of Public Works, Bureau of Engineering, is a display of the correct method of connecting lead services to the main. This exhibit emphasizes the importance of proper goosenecks to allow for ground settlement. Corporation cocks with tail pieces bent at a 45 deg. angle are used and tapping is done on the side of the main, in the upper segments.

In all cases in making the bend in the lead pipe toward the tap the bend must be always on the right hand side of the tap so any settlement will, if anything, tighten coupling and tap-in threads.

In addition the City provides detailed mimeographed instructions for

Two views of the exhibit of service pipe connections in Chicago laboratory, including connections to mains relaid at new elevation



preparing and wiping solder joints in service pipe work, covering cleaning and other preparatory factors. In all, the City does everything possible to insure the most practical and efficient



Commissioner Waters, of Belleville, N. J.

type of installation, under the able direction of John G. Mitchell, plumbing inspector in charge in the Water Pipe Extension Division, and B. W. Cullen.

Superintendent of the Water Pipe Extension Division.

Similar care is exercised in Belleville, N. J., whose water system serves more than 10,000 homes and factories through 57 miles of mains. This City now installs cast-iron pipe with lead joints for mains and lead pipe for all underground services.

In 1925 Commissioner Patrick A. Waters who since then has served 16 years as Director of the Department of Public Works, was instrumental in the adoption of lead services as a mandatory provision from the main to the house itself. The change to lead was away from rigid services and the wisdom of the change has been fully proved by the practically flawless experience with the lead. Almost every leak that has occurred has been in the old services or at the curb or corporation cock.

Although Belleville is completely sold on the benefits of lead services.



PHOTOS BY JOHN MONAGHAN

Above, detail of correctly wiped joint on display board at Belleville, N. J.; and, at right, the full display board showing how joints in lead water services should be made



nevertheless, like Chicago, they pay strict attention to installation procedure, especially in joint making. In the Municipal Garage a display board has been erected for the precise purpose of showing the "right" and "wrong" way to make up the joints. In actual installation all joints in the pipe from main to curb are wiped by Ed Hicks, a plumber employed by the Department.

We are indebted to Commissioner Waters and Town Engineer Matthew J. Sheehan for the information on Belleville's excellent water service practice.

Wiping service connections in the shop



Above, stock of lead service pipe in the Belleville Water Department and a supply of lead services all wiped up to their connections and ready for installation

You're money ahead when you paint with

White Lead

STROKES PAINT BRUSH

In the last column of "Strokes from the Paint Brush" the question of winter painting was discussed, emphasizing the proper oil and turpentine ratio in paint to achieve success during the winter months.

Closely allied to that problem is that of soft or tacky paint, a situation to be guarded against during the closing winter and early spring days. Slow-drying paint films result in loss of time to painters and in consumer dissatisfaction due to sticky windows, gummy porch floors and the like remaining soft long after painting and accumulating much dust and dirt.

The causes of retarded oxidation—slow drying—of a paint film are relatively few in number and are generally fairly easy to control. The failure of an ordinary formula to give satisfactory results should lead to an adjustment of the ingredient ratio to produce a firm durable film.

The most common cause of slow drying is the use of too much linseed oil. A paint made with the proper ratio of pigment to vehicle may be found to be too thick for proper application in the lower temperatures encountered in the early

spring. The proper procedure is then to thin the paint to brushing consistency with turpentine at the same time preserving the original and correct pigment-vehicle ratio. If linseed oil instead of turpentine is used to thin the paint, an improperly balanced paint results. This paint containing excess oil not only tends to remain soft and tacky, but also will wear away more rapidly from lack of sufficient pigment to give the necessary "backbone" to the film. A paint dries by a process of oxidation of the linseed oil in the film; the relative concentrations of pigment in the paint influence the speed of this process, producing the correct drying characteristics only when the pigment and vehicle remain in the proper balance.

Another cause of tackiness is insufficient drier. This may occur, of course, on any job but is particularly true during periods of excessive humidity. Here again experience with local conditions will help to determine the correct proportions.

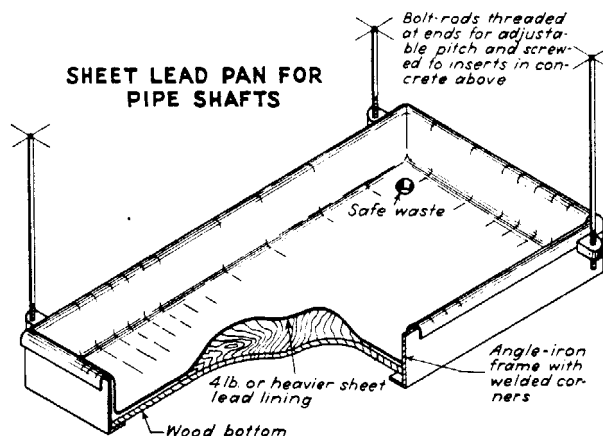
Both these causes of slow drying emphasize once more the outstanding theory determined by our previous

study of winter painting—that is the desirability of specifying and using a painting material which, by being mixed on the job, may be varied easily to meet changing conditions.

One further important point is a factor in tackiness. In the past there has been frequent misunderstanding concerning the formulation and function of undercoats. It should be remembered that the first or priming coat must carry sufficient linseed oil to satisfy surface porosity, but also should contain sufficient thinner to dry hard without gloss. A gloss undercoat remains too soft to provide a firm foundation for following coats, besides extending the drying time.

Naturally, it is best to paint only in clear weather, with moderate temperature. However, it is easily possible with correct adjustment of formula to obtain highly satisfactory painting during the blustery months and other days generally considered unfavorable. A knowledge of how white lead paint formulation is affected by these conditions and the use of material easily adjusted in its formula are the two primary requisites for satisfaction.

Sheet Lead Waterproofing Pans For Hotel Pipe Shafts



A suggested drawing of a lead pan for pipe shafts. Similar pans are used in the Robert Driscoll Hotel, Corpus Christi, Texas, to protect the mezzanine floor, from condensation or leakage in the shafts which are offset over the mezzanine floor

FOR general installation purposes pipe shaft pans may be constructed by welding or bolting together 2 x 6 in. angle irons into a frame extending at least 6 in. on each side of the shaft. The iron should be painted with two coats of red lead. A wood bottom is laid in the pan, painted with white lead to protect the wood from moisture. The sheet lead is made in one piece to fit inside the frame and with upstands turning over the top of the frame and down about 1 in. on the outsides. The pan may be attached under the shaft with adjustable bolts to get the proper pitch.

The pan should be attached to an indirect waste, the end of which is exposed as a tell-tale of leaks developing. The wood floor is countersunk around the waste opening and the sheet lead dressed into the countersunk part with a gradual slope and soldered to the waste pipe with the soldered seam made in the direction of flow.



The following articles and reprints contain information, drawings and specifications on the use of lead products helpful to architects, engineers and others in the construction industry. They are available, free of charge, upon request to the Lead Industries Association, 420 Lexington Avenue, New York City.

WHAT TO EXPECT FROM WHITE LEAD PAINT

An attractive 28-page booklet with charts, formulas, and mixing instructions covering some of the problems of painting and how white lead meets these problems.

PAINTING YOUR HOME by Dr. F. L. Browne, Senior Chemist, Forests Products Laboratory, Madison, Wisc.

A discussion of house painting reprinted from American Forests, May, 1939.

SOME PAINTING PROBLEMS AND THE ANSWERS

By Dr. F. L. Browne, Senior Chemist, Forests Products Laboratory, Madison, Wisc.

Reprinted from the National Real Estate Journal, Sept., 1939.

STAMFORD'S DOUBLE LIFETIME HOME

A complete analysis of hard lead flashing, white lead paint, lead plumbing, plywood and red cedar Certigrade shingle details and installation methods. Reprinted from the American Builder, July, 1939.

SHEET LEAD INSTALLATION DETAILS

A detailed analysis of the principles and application of lead flashing and sheet lead work for small homes. Reprinted from Sheet Metal Worker, June, 1939.

SHEET LEAD SHIELDING X-RAY ROOMS

A discussion of X-ray protection and installation methods reprinted from Sheet Metal Worker.

UPON REQUEST, THE LEAD INDUSTRIES ASSOCIATION WILL BE GLAD TO MAIL "LEAD" REGULARLY, FREE OF CHARGE, TO THOSE INTERESTED, AND WILL COOPERATE WITHOUT OBLIGATION, IN THE SOLUTION OF YOUR LEAD PROBLEMS

PLUMBING CODES—AN ANALYSIS AND SURVEY—

Part II by Bob Dick

This paper, delivered at the annual meeting of the American Society of Sanitary Engineering in Wilmington, Del., in August, 1940, constitutes the most complete and up to date study of plumbing codes available. Everyone interested in plumbing codes should have a copy.

LASTING LEADWORK IN MODERN PLUMBING

By T. N. Thompson, Technical Editor, Plumbing and Heating Journal.

Reprinted from Plumbing and Heating Journal, Feb., 1939.

HOW LUMBER AND PAINT KEEP YOUR HOME ALWAYS IN STYLE

A brief digest of the advantages of painted lumber homes with color-styling suggestions and other interesting information.

LEAD CHIMNEY CAPS

Notes on the installation and advantages of lead chimney-cap protection, reprinted from American Artisan, May, 1940.

NEW SIMPLIFIED STANDARD FOR LEAD TRAPS AND BENDS

File size leaflet with new standards for lead traps and bends as well as existing standards for lead pipe and calking lead, and other informative data.