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LEAD INDUSTRIES ASSOCIATION

60 EAST 42ND STREET

NEW YORK 17, N. Y.

November 3, 1958

SUBJECT: PREPRINTS - 1959 SWEET'S CATALOGS ON PLUMBING, ROOFING AND FLASHING

To Members of the Lead Industries Association

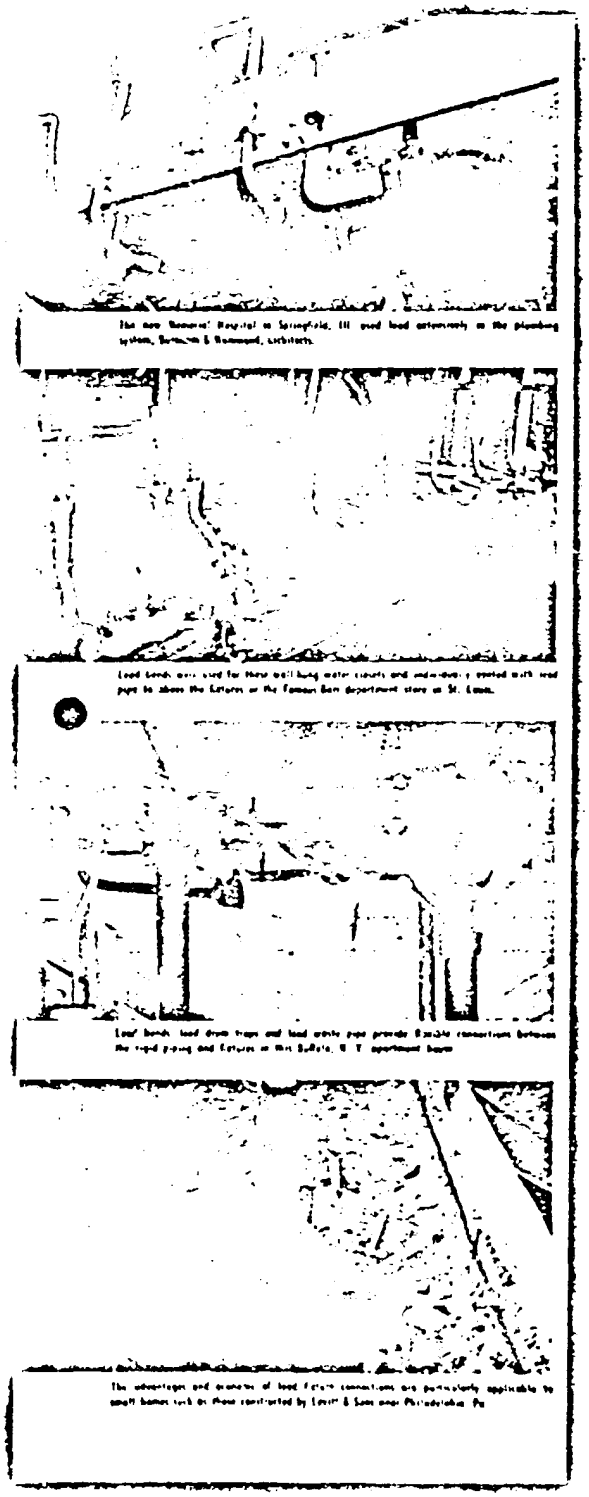
Attached are preprints of our catalogs on "Lead in Modern Plumbing" and "Sheet Lead for Roofing and Flashing," which will appear in the 1959 Sweet's Catalogs to be distributed in January, 1959.

The texts are essentially the same as appeared in the 1958 Sweet's Catalogs, the major change being the addition of a second color and redesign of the covers.

Both of our catalogs will appear in the Sweet's Architectural volume with a circulation of 19,000 architects, and the Light Construction volume with a circulation of 27,000 builders of small homes and other light construction projects.

Sincerely yours,

Secretary



LEAD for MODERN PLUMBING

One of the major advantages of lead plumbing is its adaptability to all types of structures and all kinds of construction conditions. It is equally at ease in large office buildings, hotels and apartment houses and in the smallest bungalow. No matter what the type of structure, lead helps to provide a trouble-free and economical plumbing installation. Economies are effected with this high quality material primarily because lead is flexible; thus the number of joints are minimized and installation considerably speeded.

As a result of this and other advantages, lead is widely used in the most modern plumbing installations. In order to make permanently sanitary jobs, lead is virtually essential for certain applications.

ADVANTAGES OF LEAD

DURABLE—Lead has long been considered one of the most durable of the common metals.

FLEXIBLE—It provides a flexible connection that can take up uneven building settlement, vibration and differential expansion or contraction without damage to itself, the fixture or the rigid drain.

FREE FLOWING—It has an unusually smooth inner bore and wiped joints used with lead pipe offer no obstructions to which solids can cling and cause clogging.

BONDED JOINTS—The wiped joint used with lead connections provides an integral bond that cannot, when subject to vibration or other strains, come loose and leak.

LOW COST—The cost of lead connections is generally as low or lower than other types of connections. One reason is that no expensive fittings are required when changes of direction are made as the pipe itself is easily bent to conform.

COMPENSATES FOR INACCURACIES—Lead's flexibility permits the connection to be bent by hand to compensate for slight inaccuracies in measurements when the fixtures are set, reducing the cost of setting fixtures.

PLUMBING CODE ACCEPTANCE—Lead connections are accepted by practically all plumbing ordinances and required by many. They are used in all types of structures from the tallest skyscraper to the smallest cottage.

VENTS—Lead pipe is ideally suited for the individual venting of waste fixtures for the same reasons its use is desirable for connecting the fixtures to the drainage system. A point very often overlooked is the fact that vents are often more subject to corrosion than waste lines, particularly that area of the vent below the rim of the fixture where moisture may collect.

NEW

Lead waste and vent pipe, lead bends or stubs, and lead traps are now available already prepared and wiped to brass fittings. These connections are made under ideal working conditions by skilled workmen and are sold ready for installation. Such ready-to-install lead fixture connections and lead wastes and vents have the advantage of predetermined costs and quality.

SIZES AVAILABLE

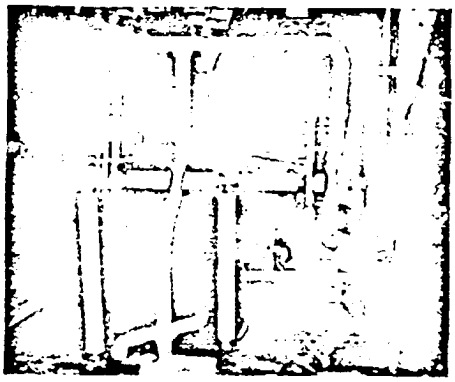
Lead pipe and fittings are sized according to the actual inside diameter and are available from your local plumbing supply organization.

Lead waste and vent pipe is standard in all sizes from 1¼ in. to 6 in. inside diameter, lead water service pipe from ¼ in. to 2 in.

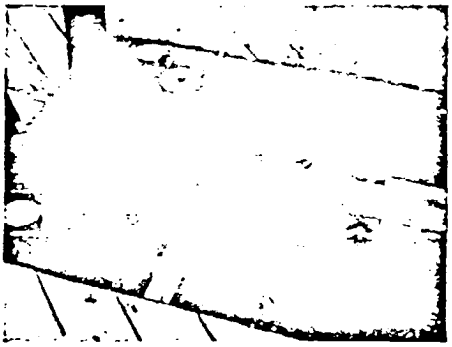
Lead bends for connections to fixtures with integral traps and for other types of connection are standard in 1¼, 2, 3 and 4 in. inside diameter. Inlet and outlet lengths are 5½ in. by 10, 12, 15, 18 and 24 in., also 30 in. by 10, 12, 15, 18 and 24 in. Lead reducing bends of the same bend dimensions with 4 in. I.D. inlet and 3-in. I.D. outlet for use with 3-in. stacks are standard items.

Lead traps, either S or P type in 1¼, 1½ or 2 in. inside diameter, with inlet and outlet 4½ x 7 in. or 4½ x 8 in. are standard, as is the drum type in 3 and 4 in. inside diameter, 3, 9 or 10 in. deep.

Other sizes than those given on all products are available on special order.



This lead plumbing roughing-in for the Town House apartments in Springfield, Ill., is specifically designed for a dishwasher and garbage disposal unit. Architect Shaw, Metz & Dolan.



Prefabricated lead roughing-in for back-to-back bathrooms in a West Palm Beach, Fla., garden home project.

More complete information on weights and other data for these lead products will be found in Federal Specification WW-P-325—Pipe, Bends and Traps; Lead (for) Plumbing and Water Distribution, copies of which are available upon request.

LEAD INTERIOR PLUMBING

Building settlement, vibration, and expansion and contraction of building materials are bound to bring about differential movement of the component parts of a building, whether it be large or small. Under these conditions, if bathroom or kitchen fixtures are connected to a hard rigid material, stresses are placed on the piping as well as the fixtures until eventually something gives. If the piping fails, discovery of the failure is usually made only after the leakage has caused considerable damage to walls and ceilings and unsanitary conditions prevail. If the fixture itself cracks, an unsanitary condition results and expensive replacement is necessary.

These possible sources of future replacement and repairs are easily overcome by the use of flexible lead piping and connections which yield sufficiently to take up this movement without damage or strain.

INSTALLATION

Requirements for the installation of plumbing systems vary widely depending upon state or local plumbing codes or ordinances and on local practice. However, lead is the one material in today's plumbing system whose use is permitted by practically all codes or ordinances and is in fact required for certain purposes by many—strong proof of its superb record of performance.

Lead finds its widest use for the waste lines of the plumbing system leading to the cast-iron soil stack, also for the individual vents where sound sanitary practices recommend that the lead be extended above the fixture level. Thus two important properties of lead, its flexibility and high resistance to corrosion, are used to advantage in this highly vulnerable and always wet and moist area of the plumbing system.

Lead waste and vent pipe should conform to the requirement for "D" weight lead pipe as given in Federal Specification WW-P-325. In conformance with the same specification, lead traps and bends should have a wall thickness of $\frac{1}{8}$ in. The following are the recommended methods of joining lead to lead and lead to other materials:

LEAD TO LEAD—Joints in lead pipe are made with a wiped joint or, on the fixture side of the trap, a cup joint made with a soldering iron.

LEAD TO CAST IRON—Lead connections to cast-iron soil pipe are made by a brass ferrule wiped to the lead and lead caulked into the hub of the soil pipe.

LEAD TO GALVANIZED PIPE (DURHAM)—Lead connections to galvanized pipe are made by a brass solder bushing or nipple wiped to the lead and screwed to the galvanized piping.

LEAD TO COPPER TUBE—Lead connections to copper tubing are made by wiping the lead to a 4 in. section of copper tubing which is then sweat soldered into the drainage fitting or the lead may be wiped directly to the drainage fitting.

Lead's softness which imparts the desirable qualities of flexibility to the pipe, also requires that simple precautionary measures be taken to see that the pipe is properly supported. Vertical runs of lead pipe should be supported at intervals of approximately 4 ft. by means of lead tacks soldered to the pipe and fastened to the studs or wall, or by flange joints at the floor level. On horizontal runs, the lead should be supported preferably over its entire length by wood strips or metal troughs fastened to the joists or hung from ceilings by means of hangers.

CHEMICAL LABORATORY DRAINAGE SYSTEMS

In chemical processing plants, the piping, storage and other equipment for handling corrosive chemicals may be designed with specific references to the corrosion resistance of materials to the particular chemicals to be handled. In school, college, hospital, plant and other laboratories, however, materials must be selected which have good corrosion resistance against the widest possible variety of chemicals because there is no beforehand knowledge of what chemicals will be used and the variety is invariably great. Since lead is probably more resistant to corrosion by a greater variety of chemicals than any other common metal, it is therefore one of the most useful materials for laboratory piping, fittings, sinks, troughs and the like.

Lead waste and vent pipe for chemical laboratories should be Class "B" or "M" weight except for educational units where the piping is accessible, the lighter Class "D" or "XL" weight may be used, class designations in accordance with Federal Specification WW-P-325.

Lead traps should have a wall thickness comparable to the lead pipe to which it is connected and have at least a 2-in. trap seal.

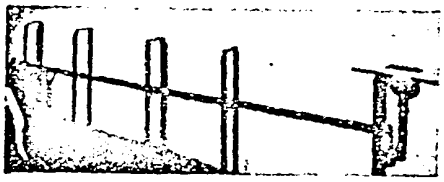
Lead cup sinks or waste bowls should have a wall thickness of at least 5/32 in. equivalent to 10 lb. sheet lead.

At least 4-lb. sheet lead should be used for covering tables and lining table troughs or acid trays.

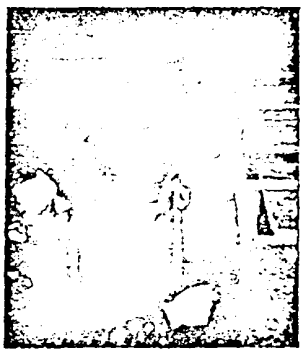
All joints in lead pipe or sheet lead used for chemical laboratory drainage systems should be lead burned. Soldered joints should not be used.

Further details and complete specification is contained in Lead Building Construction Bulletin No. 3—Specification for Lead Chemical Laboratory Drainage Systems, available upon request.

At the U. S. Army Medical Depot, St. Louis, Mo., three back to back lead covered wall hung water closets required only 26 lin. ft. horizontal space.



One of the waste lead waste lines from the lead cup sinks in chemical laboratory tables installed in the new wing of the University of Arkansas Medical School.



Lining the troughs in the laboratory tables with 4-lb. sheet lead.

LEAD VENT STACK FLASHINGS

Lead vent stack flashings, specifically fabricated for a particular job, are easily made from not less than 3-lb. sheet lead with soldered or burned joints. Lead vent stack flashings cast in one piece or prefabricated from sheet lead, designed for use on a variety of roofs of standard design, are also available.

Lead is one of the most durable of the common metals when exposed to the atmosphere and the pleasing gray patina that develops upon exposure blends well with any color scheme. More important, this patina is a strongly adherent film that is insoluble and therefore nonstaining. This is particularly important on pitched roofs where any resulting stains can mar the roof and side walls.

LEAD for Modern Plumbing

LEAD PANS FOR INTERIOR WATERPROOFING

Lead pans properly installed provide an impermeable moisture barrier between plumbing fixtures, such as shower baths and slop sinks, and adjoining walls and floors. An impermeable barrier that will prevent, at small additional cost, moisture from seeping through the fixture to the eventual destruction of adjoining beams, studs or decorated surfaces.

Sheet lead pans are also an excellent waterproofing membrane for larger areas such as would be required for shower rooms, soda fountains and restaurant kitchens.

The accompanying drawings detail the correct method of installing sheet lead pans for stall showers and slop sinks. For shower stalls, the sheet lead used should weigh not less than 4 lb. per sq. ft., approximately 1/16 in. thick, and for slop sinks either 4 lb. or 6 lb. per sq. ft. sheet lead can be used. Further details on these type installations and for waterproofing larger areas where leakage and spillage may occur are outlined in "Lead Building Construction Bulletin No. 2—Specification for Lead Shower and Safe Pans" available upon request.

A note of precaution: Green cement, concrete or mortar containing free lime may be corrosive to lead as it is to many other common metals under the conditions imposed by such installations. It is therefore necessary to coat the lead with asphaltum to protect it during the curing stage of the cement. After the curing, the asphaltum coating which provided the interim protection is no longer portant.

CALKING LEAD

Lead has several advantages when used for calking cast-iron bell and spigot pipe for interior plumbing, water mains, or wherever cast-iron bell and spigot pipe is employed. It is soft and allows the joint to become deformed due to settling, vibration, or expansion and contraction, without leaking. It does not deteriorate with age. As a matter of fact, it has often been re-used.

Lead can be used in the molten state or in the form of lead wool. Poured joints using molten lead are the most common but lead wool is ideal where the molten form cannot be used, as in wet ground, under water, or for repairs in gas lines where heat might create a dangerous condition.

Calking lead is obtainable in pigs weighing 90 to 100 lb. or in ingots or cakes weighing 3 to 5 lb. Because the softness of the metal might be adversely affected by impurities, calking lead meeting the following requirements should be specified. This is identical with the U.S. Dept. of Commerce, Commercial Standard CS94-41, Calking Lead and the American Water Works Association Specification C-6??, Tentative Standard Specification for Installation of Cast Iron Water Mains.

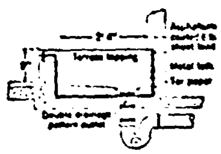
chemical requirement for calking lead

	PER CENT
Lead, not less than	99.73
Arsenic, antimony and tin together	0.015
Copper	0.08
Zinc	0.002
Iron	0.002
Bismuth	0.25
Silver	0.02

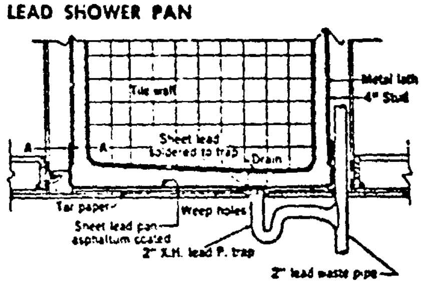
TECHNICAL ASSISTANCE—The Lead Industries Association is prepared to assist with technical information and specifications applicable to your specific problem. Write to:

Built-in floor-level slop sink in New York's Seagram Building and at left, a detail. Arch. Mies van der Rohe and Philip C. Johnson.

LEAD SLOP SINK



LEAD SHOWER PAN



ARCHITECTURAL DEPARTMENT
LEAD INDUSTRIES ASSOCIATION
[illegible] 42nd Street • New York 17, N. Y.

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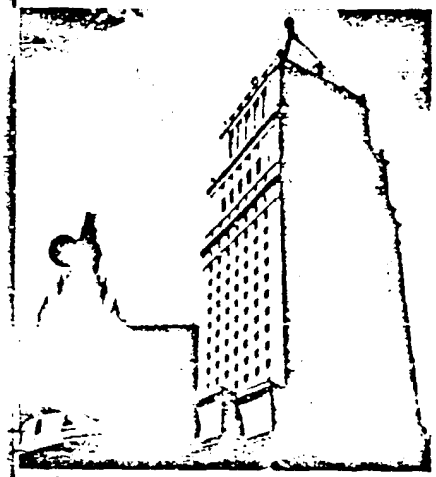
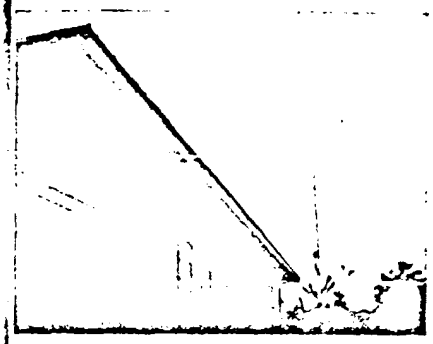
A small home in Stamford, Conn., with 2½-lb. hard lead flashing throughout, including chimney cap and gutter linings. Provoost and Everett, architects.



The Federal Court House, New York City, flashed throughout with 3 lb. hard lead. Through-wall flashing, copings, cornices and gutter linings are included. Cass Gilbert, architect.



A modern home in Vermont with hard lead facing strips and gravel stops. Flashings and chimney caps. Miriam Hilliard Fluck, architect.

SHEET LEAD
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SHEET LEAD

MODERN sheet lead *for roofing and flashings*

In recent years the cost of lead roofing and flashing has been lowered to a point where it is comparable—frequently even less—than the cost of other commonly used metals. This is because modern metallurgy has produced hard lead—an alloy of lead with between 6 and 7.5 per cent antimony—which is stronger and may be used in thinner, lighter sheets while retaining the well known resistance of lead to corrosion.

for the largest building or the smallest home

Thus the owner of the largest building or the smallest home now has within his reach this fine sheet metal which has long been considered a hall-mark of good construction. Lead's beauty and longevity have featured the great buildings and finest residences of the Old and New World for centuries. The lower cost and greater strength of the modern alloy now extend its usefulness to modern buildings of all kinds and sizes and in all locations—urban, rural, industrial or by the sea. If properly specified and applied, it should last as long as any building on which it is installed.

the advantages of lead

- Does not stain adjacent stone, paint or other materials when water runs over it and then onto the adjoining structure.
- Beautiful color, harmonious with all other materials and acquiring a natural patina that improves with age.
- Flexibility that permits easier, cheaper installation and better fitting to irregular surfaces.
- Most durable common metal, noted for corrosion resistance in all kinds of atmospheres—industrial, urban, rural or sea coast.
- About twice as thick as other sheet metals commonly used, adding even further to its durability.
- A homogeneous metal all the way through, not just a coating, enabling it always to give the same uniformly good service regardless of surface impairment.

installation of sheet lead

There are just three important things to bear in mind in order to obtain a satisfactory installation with hard sheet lead—specify the proper thickness or weight, use sheets of proper size, and install with cleats and loose-locks so that each sheet may expand and contract independently of every other sheet and the surface to which it is applied.

The thickness of sheet lead is usually designated by its weight per square foot. The weights of hard lead for roofing and flashing are as follows:

$2\frac{1}{2}$ lb. per sq. ft. is $\frac{5}{128}$ in. thick

3 lb. per sq. ft. is $\frac{3}{64}$ in. thick

For most applications in residential work, where areas covered are generally small and sheets are narrow, $2\frac{1}{2}$-lb. hard lead should be specified. For most applications on large buildings where areas covered are apt to be large and sheets wider, 3-lb. hard lead is recommended.

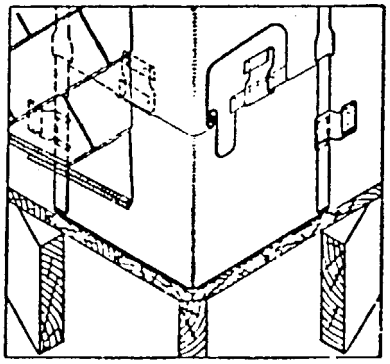
For general flashing purposes, individual sheets should not exceed 8 ft. in length. However, for unusually wide flashings, say 24 in. or more, the length of sheets should be reduced to 6 ft. For general roofing purposes, sheets 24 in. wide and not more than 4 ft. long should be used.

Lead roofing and flashing sheets should be secured to the underlying surface by $2\frac{1}{2}$-lb. hard lead or 16-oz. copper cleats loose-locked into the edges of the lead sheets. Where the lead sheets are particularly small, such as flashings interwoven with shingles or slates, the lead may be nailed along one edge only. Adjoining lead sheets should be loose-locked together so that expansion and contraction are confined to individual sheets. Sheets should never be soldered together, solder only being used to place gusset pieces and the like in individual sheets. Where lead is built into masonry walls or otherwise rigidly held, continuous loose-locks should be used to join it to exposed sheets. Edges of lead sheets turned over copings, cornices, etc., should be loose-locked to continuous cleats to secure them. Loose-locks should be filled with non-hardening compound such as Vulcatex No. 7200 on flatly pitching surfaces.

In other words, an understanding of the fact that expansion and contraction must be localized in small areas and each sheet allowed to move independently of others will lead to successful installations.

typical lead flashings details

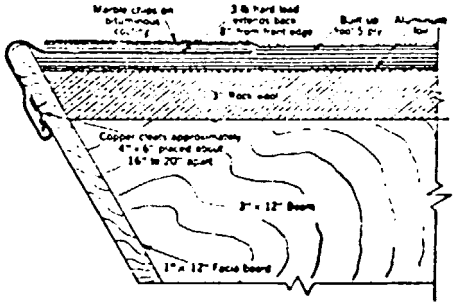
OPEN VALLEYS



Detail of a hard lead valley flashing showing cleats holding valley sheets at the sides and folded into the loose locks which join the sheets at 8-ft. intervals along the valley.

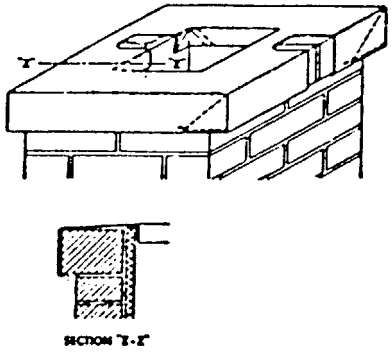
Photograph of a hard lead valley flashing being installed on a residence at Greenwich, Conn., showing one 8-ft. sheet in place, held by cleats at the side and turned back at the upper end ready to be loose-locked to the next sheet.

FACING STRIP AND GRAVEL STOP



Detail of hard lead facing strip and gravel stop. The lead runs back on the roof between the layers of roofing, is turned over a facia board with rounded edges to prevent cutting the lead, and is held by cleats at the lower edge. The lead is installed in not more than 8-ft. lengths with 4-in. overlaps between lengths.

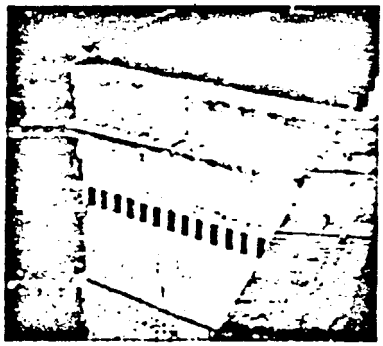
CHIMKEY CAPS AND FLASHINGS



Detail of a lead chimney cap as shown on the house on the cover. Outside corners are folded and inside corners are closed by gussets soldered in place. The caps are either turned back under projecting chimney tops or held down by cleats built into the masonry with the cap locked over them. Chimney base flashings are installed as with other metals.

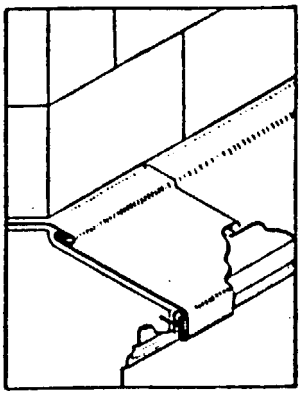
MODERN SHEET LEAD

CORNICE, COPING AND THROUGH WALL FLASHINGS

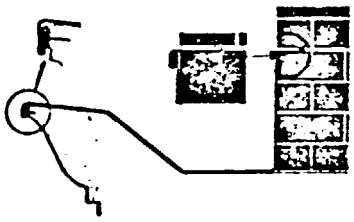


Architect. JAGOW & HEIDELBERGER

Photograph of hard lead cornice and coping covering on the library at Lynbrook, Long Island, N.Y. The detail at the right shows a method of installation, with loose-locked cross seams at 8-ft. intervals. Loose-locks are also provided where the flashing emerges from masonry and along the outer edge of cornices.



BUILT-IN GUTTER



Photograph of hard lead built-in gutter on a new dormitory at Duke University and a detailed drawing of the method of installation. A continuous cleat anchors the lead at the edges and loose-locked cross seams in the direction of flow, filled with non-hardening compound, are provided at not more than 8-ft. intervals.

Architect. SIX ASSOCIATES

LEAD ROOF CONSTRUCTION

Lead roofs may be of either the standing seam or batten type. The latter is preferred for large roofs while the former may be employed for porch, bay window or other smaller roofs. Cleats are staggered at 24-in. intervals along the sides of the sheets. Horizontal flat loose-locked cross seams in the direction of flow are provided at 4-ft. intervals and have cleats folded into them. Cross seams should be staggered in adjoining bays. Hard lead batten roof on the New Jersey Reformatory at Rahway is shown during installation.

SERVICE

The Lead Industries Association is prepared to assist with technical information and specifications applicable to your specific problems. Write to:

ARCHITECTURAL DEPARTMENT
LEAD INDUSTRIES ASSOCIATION
60 East 42nd Street • New York 17, N. Y.