

T A

901

.H9

Hydrex Felt & Engineering Co.

Modernized Waterproofing

1905.



Class TA 901

Book .H9

Copyright N<sup>o</sup> \_\_\_\_\_

**COPYRIGHT DEPOSIT.**





MODERNIZED  
WATERPROOFING

THE LIBRARY  
OF CONGRESS

THE LIBRARY  
OF CONGRESS

# MODERNIZED WATERPROOFING AS RELATED TO ARCHITECTURE AND ENGINEERING

---

---

## FOUNDATION SECURITY

There is no worthy record of any serious effort to improve, to modernize, and to place on a scientific basis the methods, as well as the *materials*, of the art of waterproofing—as related to Architecture and Engineering.

The safety of every structure, whether a twenty story office building, anchored seventy feet below the ground surface, or a modest suburban residence, depends primarily upon the security of its foundation.

No foundation is *secure* which is not proof against, and can be weakened by *water*.

The very *essence* of every specification should be to prevent the percolation of water into foundations. For work so vital there should be specified and *used* only the best, the most modern materials possibly obtainable, notwithstanding that in the past it may have been customary to employ cheaper and inferior materials,—simply because of the *lack* of something better and safer.

The following, from the March (1904) issue of "Architecture," is to the point:—

## WATERPROOFING:

### ITS IMPORTANCE AND DEVELOPMENT

"The increasing use of concrete in all manner of structural work, especially in foundations, emphasizes the necessity of a reliable material and method for waterproofing. Concrete is not in itself waterproof, and no foundation through which

water percolates is safe. Painting iron may preserve it. Painting, however, a porous brick or concrete wall may, in a measure, make it damp proof, but *cannot* make it water proof.

"Time was when a coating of tar alone was used for

1905  
Mar. 8, 1905  
a  
110855

T.A. / H.S.  
7-3274  
T.A. 90  
H.S.



WATERPROOFING SOLID, BALLASTED FLOOR BRIDGES: TRACK ELEVATION WORK, CHICAGO & WESTERN INDIANA R. R. AT CHICAGO. "HYDREX" WATERPROOFING MATERIALS OVER DECK

7-3274



waterproofing, but the tar cracked clear through with any settling or cracking of the masonry.

Burlap was afterward used to reinforce the tar, but did not prevent the hardened tar from cracking, and burlap being not waterproof was practically useless.

Later came tar paper, which, though for the same use is superior to burlap, soon becomes dry and brittle and lacks tensile strength and durability.

The now generally accepted best material is a strong, fibrous *felt*, waterproof, coated (containing *no tar*), and prepared especially for underground conditions, several sheets of the felt, as applied on the work, being cemented to-

gether with an elastic waterproof compound, the combination forming a flexible waterproof strata of alternate layers of cement and felt, each layer in itself absolutely waterproof.

The chief requisite in a waterproofing substance is elasticity. This strata is so pliable that it can be bent, twisted, etc., and whether in a building foundation or enveloping a tunnel, readily conforms and sets to the concrete, in which it is usually embedded.

This is the method used in leading modern work. In the Pennsylvania Tunnel under New York City specifications call for six layers of this special felt, namely '*Hydrex felt, as made by F. W. Bird & Son, of East Walpole, Mass.*'"

## M A T E R I A L S

As above indicated, the use of "mastic," or of a layer, of an inch or more, of tar or asphalt alone, is, for *permanent* water-tight work, *absolutely worthless*. The basic necessity in all waterproofing is a waterproof felt, *i.e.*, a waterproof membrane, which in three, four, or six layers may be formed into a pliable, elastic, waterproof stratum. Ordinary dry, uncoated tar paper or so-called "asphalt felts" serve temporarily, and to a certain degree, but are antiquated, "old-school" materials, and are imperfect for *permanent* waterproofing.

"Hydrex" Felt is specially made for a special purpose, —

*viz*: for underground waterproofing conditions. It contains NO TAR. It is peculiarly pliable, elastic, and tough,—the first essentials in a waterproofing material.

"Hydrex" Felt must not be confounded with tar paper, or so-called "asphalt felts." It is widely *different*,—in fiber, in saturation,—in its entire composition. It is designed and made on certain defined scientific principles,—for one, a hydrostatic principle.

Tar paper, for example, is not in itself waterproof. "Hydrex" Felt is *absolutely waterproof*.

Again: Hot tar usually burns the fiber and life out



WAR COLLEGE BUILDINGS, WASHINGTON, D. C. SEVERAL LAYERS OF HYDREX USED FOR WATERPROOFING FOUNDATIONS, AND ONE LAYER UNDER SLATE ROOF

---

---

of dry, brittle, uncoated tar paper, and so-called "asphalt felts,"—a defect not discovered until in the course of years the percolation of water is apparent. "Hydrex" Felt is so

*protected*, as well as *preserved*, by an elastic, shell-like *coating* as not to be injured by the application of the hot liquid.

## STANDARDIZATION

Briefly: "Hydrex" Felt is the most advanced, the highest type of waterproofing felt now made. It is the result of long study and of extensive and varied waterproofing experience. It has stood the strongest and severest tests. It has received the highest endorsements—as practically demonstrated by its specification by leading Engineers, Architects, the U. S. Government, and its use in the largest and most important work. Though originally

made for underground conditions, the felt is *also* extensively specified and used—in three or more layers—as a base for tile, vitrified brick, slag, and gravel roofing, between wooden floors, under concrete and cement floors, etc., etc., and has aided and been used in perfectly setting a standard for waterproofing iron bridges, especially over city streets, in track elevation work on railroads, etc., etc.

## APPLICATION

As the waterproofing material is important, so is the application thereof important, likewise the proper construction of the foundation or other thing to be waterproofed, so as to properly provide for and receive correct application. In such matters we render service by giving architects and engineers the benefit of our experience. We are the only manufacturers who have specialized underground

waterproofing work, improved methods of construction, and made for the peculiar conditions special materials,—manufactured *throughout* in our own mills, where we have been making papers and felts since 1817. To-day "Hydrex" Waterproofing methods and materials are accepted by the professions and in Government and Railroad circles as STANDARD.



NORTH GERMAN LLOYD PIERS, HOBOKEN N. J. 400,000 SQUARE FEET HYDREX USED IN THESE MODERN DOCKS  
FOR WATERPROOFING FLOORS PER OUR "COLD PROCESS"

---

---

## HOW TO SPECIFY

Specifications should call for from two to five layers of "Hydrex" Felt, laid shingle fashion, cemented together with "Hydrex" Compound swabbed on very *hot* and quickly, and the felt *immediately* well pressed therein.

The above, according to conditions and plans, for waterproofing:— Office Buildings, Tunnels, Railroad Shops, Reservoirs, Power Houses, Concrete Floors, Railroad Bridges (per new method), Stone Arches, Dry Docks, Swimming Tanks, Magazines, Batteries, Fortifications.

Also as a base for Roofs— tile, vitrified brick, slag, gravel.

Between Wooden Floors—in mills, warehouses, factories, refrigerator cars, piers, department stores, etc., one or two layers of the Felt may be used as a waterproof interlining. By our "Cold Process" no heat is required and fire danger is obviated. A floor interlining of "Hydrex" Felt, etc., would prevent water from leaking or let-loose sprinklers reaching other floors. This construction

is also in line with the recommendations of the Fire Underwriters.

Under slate, tin, or copper roofs use one layer of "Hydrex" as a permanent preservative and protection, in substitution of tar paper, or dry, not waterproof, cheap building paper which corrode and destroy the tin, nails, etc.

For *damp* proofing (not waterproofing) walls, or painting and preserving structural iron, Railroad Bridges, etc., use "Hydrex" Cement, applied with a brush, cold, like paint. Very elastic, does not flake or peel. Sulphur, gas, and acid fume proof. One gallon covers 200 square feet or more.

"Hydrex" Compound, melted, and applied hot, covers about 100 square feet per gallon.

"Hydrex" Felt is 36 inches wide. Shipped in rolls of 200 square feet.

Three layers of "Hydrex" Felt usually specified to five of tar paper and so-called "asphalt felt."

WE DRAW WATERPROOFING SPECIFICATIONS AND WILL BE PLEASED  
TO HAVE YOU CONSULT US





GOVERNMENT FORTIFICATIONS, FORT HAMILTON, N. Y. HYDREX LARGELY USED FOR WATERPROOFING MAGAZINES.  
60,000 SQUARE FEET USED IN THIS BATTERY



PAXTANG ELECTRIC CO.'S POWER HOUSE,  
HARRISBURG, PA.

Foundations and engine-wells waterproofed with  
Hydrex Felt

"HYDREX"  
[Ex-water]



PROF. ALEXANDER GRAHAM BELL'S RESIDENCE, WASHINGTON, D. C.  
SWIMMING POOL WATERPROOFED WITH HYDREX



STARTING HYDREX WATERPROOFING FELT AS A DAMP COURSE THROUGH THE WALLS IN ONE OF THE SHOPS  
OF THE LEHIGH VALLEY R. R., SAYRE, PA.





GANSEVOORT COLD STORAGE CO'S BUILDING, NEW YORK CITY. FLOORS WATERPROOFED WITH HYDREX



STANDARD BUTTERINE CO.'S BUILDINGS, WASHINGTON, D. C.  
 THREE LAYERS USED TO WATERPROOF FLOORS



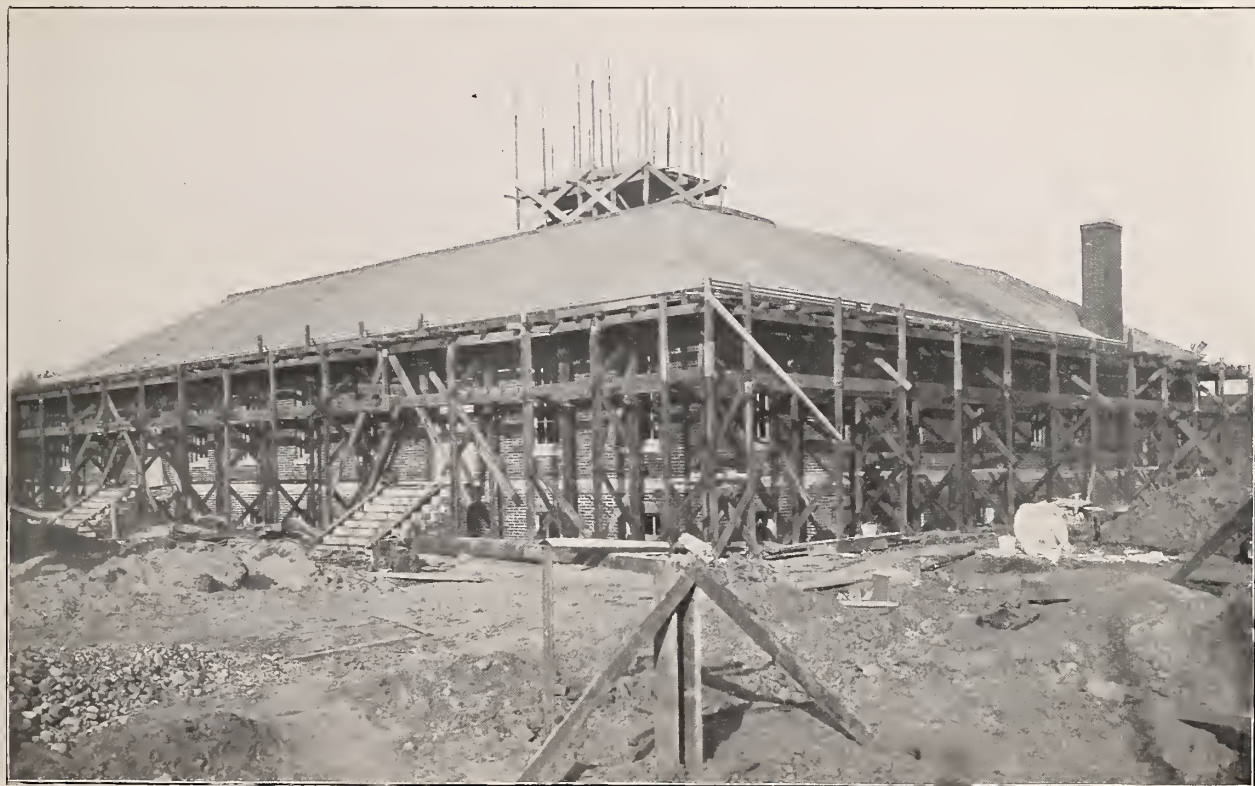
RUNKEL BROS., CHOCOLATE FACTORY,  
 NEW YORK CITY



CHICAGO AND WESTERN INDIANA R. R. BRIDGES, CHICAGO, ILL., SHOWING APPLICATION OF HYDREX  
PER OUR NEW METHOD



NEW SHOPS, LEHIGH VALLEY R. R., SAYRE, PA., SHOWING VIEW OF STOREHOUSE FOUNDATIONS  
WATERPROOFED WITH HYDREX



UNITED STATES ARMY MESS HALL, WASHINGTON BARRACKS, WASHINGTON, D. C. HYDREX UNDER SLATE ROOF



POWER HOUSE OF D. & H. R. R., BINGHAMTON, N. Y. FOUNDATIONS WATERPROOFED WITH HYDREX



BESSEMER BUILDING, PITTSBURG, PA.  
HYDREX IN SEVERAL LAYERS AS A BASE FOR  
TILE AND VITRIFIED BRICK ROOFING

The FCLT is the principal thing —  
and it must be specially made  
for waterproofing conditions.



DELAWARE, LACKAWANNA & WESTERN R. R. SHOPS, NEWARK, N. J.  
HYDREX USED FOR WATERPROOFING AND DAMP COURSING



HYDREX BEING APPLIED IN TUNNEL WORK



## A FEW AMONG MANY OTHER PLACES WHERE "HYDREX" HAS BEEN USED OR IS NOW SPECIFIED

---

PENNSYLVANIA R. R. TUNNEL UNDER NEW YORK CITY.

PENN. R. R. AND B. & O. TUNNEL UNDER WASHINGTON, D. C.

STATE HOSPITAL BUILDING, Harrisburg, Pa.

HARTFORD CARPET CO.'S FACTORY, Hartford, Ct.

DELAWARE & HUDSON RIVER R. R. POWER HOUSES, Oneonta and Plattsburg, N. Y.

CARNEGIE LIBRARY, Brooklyn, N. Y.

YOUNG MEN'S CHRISTIAN ASSOCIATION BUILDINGS (swimming tanks, etc.), Ossining, N. Y., and Brooklyn, N. Y.

PROVIDENCE JOURNAL BLDG., Providence, R. I.

COLLEGE OF THE CITY OF NEW YORK (New Buildings).

SWIFT & CO.'S COLD STORAGE BUILDINGS, New York City.

NATIONAL ENAMELLING & STAMPING Co. (Floors), Brooklyn, N. Y.

ERIE R. R., STATIONS, SUBWAYS, ETC.

BELLEFIELD APARTMENT HOTEL, Pittsburg, Pa.

EMPIRE BUILDING, Clarksburg, W. Va.

DIAMOND NATIONAL BANK BUILDING, Pittsburg, Pa.

HUYLER'S NEW CANDY FACTORY, New York City.

BELLEVUE HOSPITAL (New), New York City.

LONG ISLAND R. R., FLATBUSH AVENUE TERMINAL, Brooklyn, N. Y.

NEW YORK CENTRAL & H. R. R. R. POWER HOUSES.

HENRY HEIDE'S NEW CANDY FACTORY (Floors), New York City.

ARBUCKLE'S (Sugar and Coffee) FACTORY, Brooklyn, N. Y.

MANILA ELECTRIC R. R. POWER HOUSES, Philippine Islands.

---

"Hydrex" standard for foundations, tunnels, concrete floors, roofs (as a base for tile, vitrified brick, concrete, slag, etc.), dry docks, reservoirs, magazines, batteries, refrigerator cars, bridges, stone arches, etc., etc.

FEB 18 1905

After  
Jan. 1, 1905  
By The

**HYDREX FELT & ENGINEERING CO.**

**MAKERS OF FELTS, CEMENTS AND COMPOUNDS**

**SPECIALISTS IN  
MODERNIZED WATERPROOFING FOR STRUCTURAL WORK**

**FOUNDATIONS, TUNNELS, BRIDGES, WATERWORKS, ETC.**

**ESTIMATES, PLANS, SPECIFICATIONS**

**NEW YORK  
120 LIBERTY STREET**

**WASHINGTON  
1110 F STREET, N. W.**

**CHICAGO  
1434 MONADNOCK BLDG.**

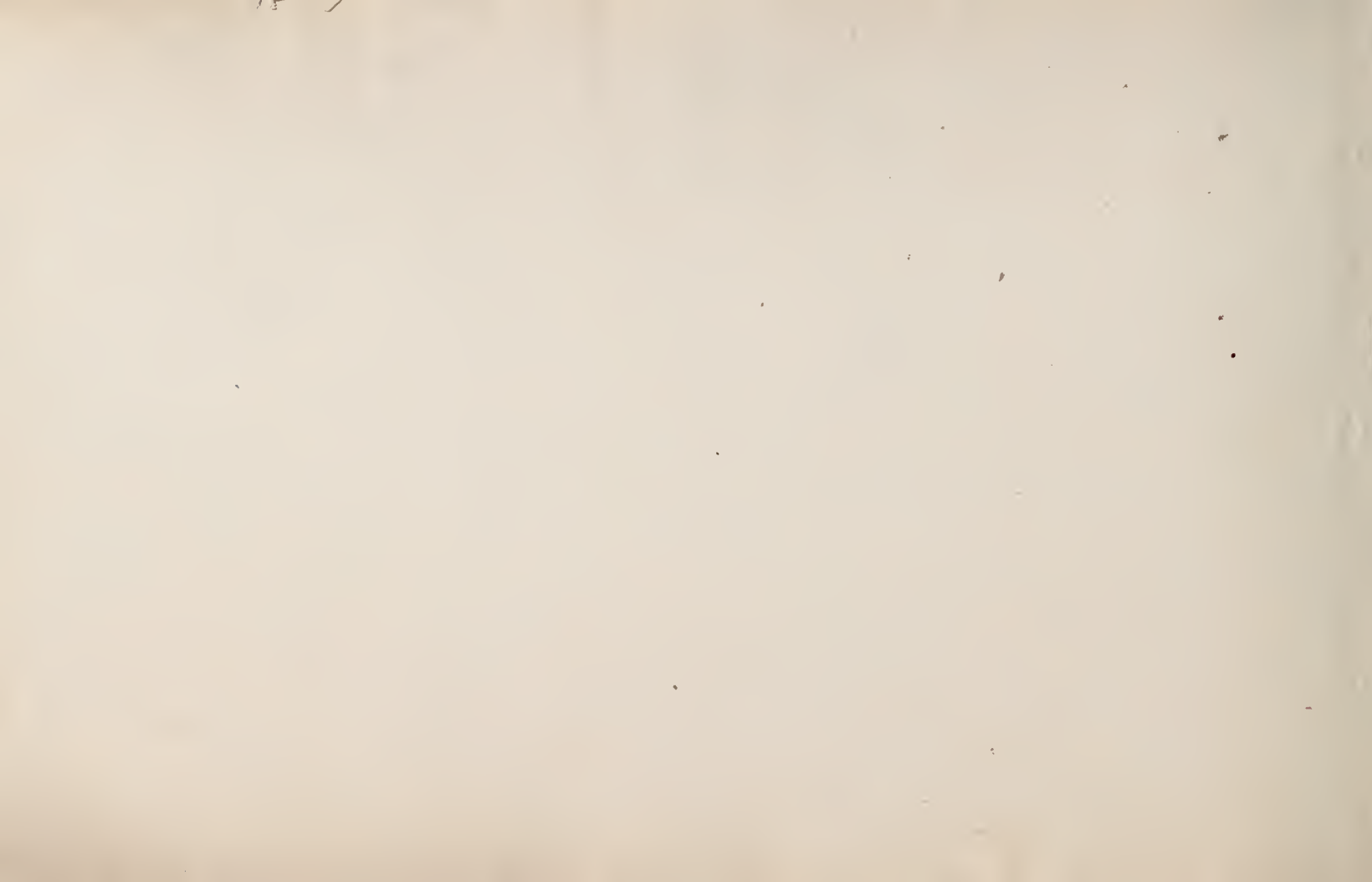
**EAST WALPOLE  
MASS.**

**CABLE: "HYDREX," NEW YORK**













LIBRARY OF CONGRESS



0 021 600 985 A ●