REPORT OF COMMITTEE ON AUXILIARY HIGH PRESSURE FIRE PROTECTION WATER SUPPLY TO THE COURT OF COMMON COUNCIL OF THE CITY OF HARTFORD. MARCH 5, 1907

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HENRY F. SMITH

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REPORT

OF COMMITTEE ON

Auxiliary High Pressure Fire Protection Water Supply

TO THE

COURT OF COMMON COUNCIL

OF THE

CITY OF HARTFORD, CONN.

MARCH, 5, 1907.

REPORT.

To the Honorable Court of Common Council of the City of Hartford, Conn:

Agreeable to your instructions, your committee on an auxiliary fire protection system of high pressure fire mains for the City of Hartford, begs leave to submit the following report:

RESOLUTION CREATING THE COMMITTEE ON A HIGH PRESSURE WATER SYSTEM FOR THE CITY OF HARTFORD.

On April 30, 1906, your Honorable Body passed the following resolution:

RESOLVED, That the President of the Board of Fire Commissioners, the President of the Board of Street Commissioners, the President of the Board of Water Commissioners and the City Engineer be, and they are hereby, instructed to report to the Court of Common Council, after proper investigation, a detailed plan for an auxiliary system of fire protection for the business section of the city, consisting of a central pumping station at the river with a system of high pressure fire mains, with hydrants to which hose could be directly attached, and in addition to connect the same with the Garden Street reservoir to provide an ample supply of water for washing the streets nightly in the East Side and business sections, with an estimate of the cost of the equipment and construction based on the extension of the work over a series of years.

Approved, May 10, 1906.

Attest,

HENRY F. SMITH, *City Clerk.*

In October of the fall following, your committee met and organized with President Joseph M. Birmingham, of the Water Board, Chairman, and City Engineer F. L. Ford, Secretary. At this meeting City Engineer Ford and Engineer E. M. Peck of the Water Department were authorized and instructed to prepare the detailed report for the committee.

INTRODUCTION.

The art of the fire protection engineer is rapidly coming to be one of the most important in the whole field of engineering. Improved materials, together with increased knowledge of methods of construction, have made it possible to concentrate immense structural values under one comparatively small roof. The grouping of such risks in the congested business portions of our larger cities, even with their so-called fireproof or fire-resisting construction, does not materially lessen the danger from the increasingly frequent conflagrations to which our cities are subject. With improved methods of construction, coupled with all the modern devices of pumps, standpipes, hose connections, sprinklers, water curtains and what not, together with a thoroughly equipped, up to date fire department, the modern fire protection architect and egineer endeavors to surround his risk with every safeguard only to be cruelly disappointed some day at seeing the monument to his genius swept of everything inflammable and seriously damaged as well by a conflagration among unprotected adjacent buildings.

Beautiful fronts, stately columns and strong piers of stone become terribly spalled and disfigured; steel members, designed and constructed with the greatest factors of safety, expand and warp under the tremendous heat and frequently wreck their walls. Captain Stephen S. Sewell, Corps of Engineers, U. S. A., estimated that the cost of restoring the fire-proof buildings damaged in the Baltimore conflagration would be not less than 60% of the original cost of the buildings. His estimate of loss on the various items of the buildings is as follows:—

Steel frame	10%
Outer walls	50%
Floor systems	50%
Partitions	90%
Column coverings	100%
Mechanical equipment	100%
Trim and finish	100%
Office furniture	100%
Contents of vaults	25%

Rarely, if ever, is a properly constructed fire-proof building seriously damaged by an internal fire. The foregoing figures, however, exhibit the dangers to which they are exposed from an external one.

Tables of fire losses covering a number of years show that nearly one-third of the fire loss of the country is due to the exposure hazard. Fire is communicated from one building to another in almost every case through wall openings, through doors or windows, and to provide against this danger fire protectionists have directed some of their best endeavors.

In this connection it may be noted that while the landlord may derive some 40% or 50% benefit from "fire-proof" construction in case of fire, the tenant is no better off than he would have been in a non-fire-proof building, as his is a total loss in any case. In all of our older and larger cities there are places in the congested districts where, under a set of conditions far from improbable, a conflagration would be unavoidable. It is needless to say that these points are the cause of the greatest anxiety to the alert and watchful fire chief, and it is with apprehension that he hears an alarm rung in from a box in their vicinity. A drouth, a strong southwest wind, an undisciplined fire department, and a cow to kick over a kerosene lamp among the straw of a stable, combined to produce one of the greatest conflagrations in all history in Chicago. An innocent little flame in a bale of cotton on the water front at Hoboken caused the loss of 150 lives and millions of dollars worth of property. A common everyday fire in a small drygoods house in Baltimore one Sabbath morning, under the influence of a strong wind, resulted in a conflagration which left a property loss of $75,000,000.00 in its wake. Fire-proof construction may prevent the spread of a fire if it originates in the building in which such construction is employed, as it may act as a retardent if such buildings are grouped in sufficient numbers across the path of a conflagration. Chemical engines in the hands of an efficient fire department may prevent a high percentage of fires from spreading beyond the limits of the room in which they start; but when for any cause the flames leap beyond the limit of such control, the only agent thus far discovered capable in any sense of meeting the exigency is the old traditional enemy of fire—water; not water in little thin streams, but water in huge quantities from powerful appliances in the hands of fearless, intelligent firemen.

The following table prepared by the National Board of Fire Underwriters exhibits the most important fires in the United States and Canada between the years 1820 and 1905:

Date	Place	Property Destroyed	Loss
1820	Savannah, Ga.	463 Buildings	$4,000,000
1835	New York, N. Y.	530 Buildings	15,000,000
1838	Charleston, S. C.	1,158 Buildings	3,000,000
1845	New York, N. Y.	300 Buildings	7,500,000
1845	Pittsburg, Pa.	1,100 Buildings	10,000,000
1848	Albany, N. Y.	600 Buildings	3,000,000
1849	St. Louis, Mo.	15 Blocks	3,000,000
1850	Philadelphia, Pa.	400 Buildings	5,000,000
1851	San Francisco, Cal. (May)	1,000 Buildings	10,000,000
1851	San Francisco, Cal. (June)	500 Buildings	3,000,000
1866	Portland, Me.	1,743 Buildings	10,000,000
1871	Chicago, Ill.	17,430 Buildings	168,000,000
1872	Boston, Mass.	776 Buildings	75,000,000
1879	New York, N. Y.	Drygoods buildings	3,500,000
1881	Quebec, Que.	One-fifth of city	$2,000,000
1889	New York, N. Y.	Elevators & wharves	3,000,000
1889	Seattle, Wash.	Business section	5,000,000
1889	Spokane, Wash.	Large part of city	6,000,000
1889	Boston, Mass.	Bedford St. Buildings	6,000,000
1889	Lynn, Mass.	300 Buildings	5,000,000
1892	New Orleans, La.	Drygoods district	3,000,000
1892	New Orleans, La.	Business district	3,000,000
1892	St. Johns, N. F.	600 Buildings	25,000,000
1892	Milwaukee, Wis.	Business buildings	6,000,000
1893	Boston, Mass.	Business buildings	4,500,000
1895	San Francisco, Cal.	Factory and buildings	2,000,000
1897	Newport News, Va.	Buildings and ships	2,000,000
1897	Pittsburg, Pa.	Business buildings	2,000,000
1897	Windsor, N. S.	Entire town	2,500,000
1898	Pittsburg, Pa.	Chautauqua building	2,000,000
1898	San Francisco, Cal.	Baldwin's Theatre	2,000,000
1898	Terre Haute, Ind.	Business section	1,850,000
1899	Dawson City, B. C.	111 Buildings	3,000,000

Date	Place		Property Destroyed	Loss
1899	Victor, Colo.	800	Buildings	$2,000,000
1899	Philadelphia, Pa.		Business block	3,000,000
1899	Ottawa & Hull, Canada		Large section	15,000,000
1900	Hoboken, N. J.		Piers and vessels	5,500,000
1900	Bayonne, N. J.		Oil Works	4,500,000
1901	Montreal, Que.		Business buildings	3,000,000
1901	Jacksonville, Fla.	148	Blocks	11,000,000
1902	Waterbury, Conn.		Business blocks	3,000,000
1902	Paterson, N. J.	26	Business blocks	7,000,000
1903	Cincinnati, O.		Opera House, etc.	2,000,000
1904	Baltimore, Md.		General conflagration	75,000,000
1904	Rochester, N. Y.		Business blocks	3,000,000
				$539,850,000

The frequency and danger of these conflagrations have resulted in a demand for a water supply for fire-fighting purposes quicker and more powerful to operate than through the medium of a fire engine, and in greater and more constant volume than that of the average municipal supply.

The inefficiency of steam fire engines is well known. The following is from the report of the committee on "High pressure system for fire services" of the National Fire Protection Association, and is "a summary of recent tests of steam fire engines picked at random from service equipment of many of the best city departments in the country:—

Number of engines tested	102
Nominal capacity	69800
Actual capacity	55900
Percentage of efficiency	80%

"In many cases the efficiency of individual 'steamers' is less than 50%."

The demand for an improved fire-fighting water supply has been met by the construction in some cities of an independent system of high pressure fire mains capable of delivering huge quantities of water with small loss of head under high pressures produced either by powerful pumps or by high level standpipes or reservoirs. It is a far cry from