In This Issue

ELEMENTS OF SUCCESS IN DISTRICT HEATING

HISTORY OF DISTRICT HEATING

SYRACUSE UNIVERSITY HEATS ALL BUILDINGS FROM CENTRAL PLANT

HOW DISTRICT HEATING LOWERS BUILDING COSTS

UNITED STATES GOVERNMENT ENDORSES DISTRICT HEATING

Published by the
AMERICAN DISTRICT STEAM COMPANY

GENERAL OFFICES AND WORKS
NORTH TONAWANDA, N.Y.
For High
Steam Pressures

ADSCO Multicell tile is a special conduit tile developed to meet the needs for high pressure steam distribution for underground lines. It combines high efficiency, ease of installation and low cost, with durability and flexibility in application.

Construction details are shown in the above cross-section. The photographs at the left illustrate two types of ADSCO Multicell tile conduit used in district heating installations made at Saginaw, Michigan for the Consumers' Power Company.

Element of Success in District Heating

Careful Planning — Efficient Management — Adequate Service essential to success.

Perhaps the outstanding element of success in District Heating is the knowledge one has and the interest one takes in the Management of the Plant and Distribution System, from the economies of steam production to the satisfaction of the furthermost consumer. Heating systems so directed are having an abundant success, both in service and financial return.

One has some hesitancy in directing attention to specific companies and their success in the Heating Department of the corporation, but since such success is used to persuade investors in the securities of the company, it would seem permissible to make such citations.

For example, the heating department of the Union Electric Company in St. Louis was, until 1924, just an adjunct to the electric business and an orphan. In January of 1923 a business man of considerable experience in operation was employed and placed in charge of the heating department— and directed to improve operation, construction and service to consumers, to adjust rates with fairness and to demonstrate just what such a department was worth to the holding company.

Within three years this plant was entirely rebuilt underground; isolated, uneconomical steam plants were closed down; hauling of coal and ashes was removed from St. Louis streets; services into building were re-insulated; something like two miles of new high pressure mains were installed and the service so improved that rates could be charged commensurate with the service rendered. New business was added to the mains, amounting to approximately twice the former connected load, all of which was accomplished to the complete satisfaction of these customers, both as to excellence of service and fairness of rates charged.

Every phase of steam business is handled from this system of mains, including heating at low pressure, laundry and cooking at medium pressure and high pressure for elevator or other Power Service. It is a matter of public record found in the reports to the State Auditor that the steam department of this splendid property is profitable.

Again, District Heating, both high pressure and low pressure, has been in operation in Detroit, Michigan, since approximately 1900. With the tremendous growth of this city, the heating business had to be "brought along" or be lost in the maze of construction and the consequent demands of every sort of business where steam was used for heating, power, etc.

The Management of the Detroit Edison Company called to the De-
partment of Heating many of the best minds in the organization, instructing them that Steam Service was one of their very considerable investments and would be expected to show a satisfactory return on the investment with adequate service to consumers' needs at all times.

It is a well known and published fact that the District Heating System in Detroit has been increased, both as to underground mains and boiler capacity approximately twenty times since its inception. And again the published statements by this company prove that the management's judgment was sound.

No better heating system or plants can be found anywhere in the country than in Detroit, and more than 2000 customers vouch for the splendid service, day and night, for every heating and power need.

**Summary of Earnings of New York Steam Corporation**

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>Gross Earnings</th>
<th>Operating Expenses, Maintenance and Taxes other than Federal Income Taxes</th>
<th>Net Earnings before Federal Income Taxes</th>
<th>Interest on Funded Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>$3,409,234.80</td>
<td>$2,598,421.52</td>
<td>$810,813.28</td>
<td>$287,856.67</td>
</tr>
<tr>
<td>1923</td>
<td>3,724,097.09</td>
<td>2,787,670.68</td>
<td>958,427.01</td>
<td>310,004.00</td>
</tr>
<tr>
<td>1924</td>
<td>3,843,973.81</td>
<td>3,754,496.94</td>
<td>1,089,478.87</td>
<td>316,188.42</td>
</tr>
<tr>
<td>1925</td>
<td>4,334,388.94</td>
<td>3,139,537.44</td>
<td>1,194,851.50</td>
<td>347,899.49</td>
</tr>
<tr>
<td>1926</td>
<td>5,518,449.60</td>
<td>3,904,117.55</td>
<td>1,614,333.05</td>
<td>424,163.36</td>
</tr>
<tr>
<td>1927*</td>
<td>5,749,604.10</td>
<td>4,033,106.33</td>
<td>1,716,587.77</td>
<td>434,508.06</td>
</tr>
</tbody>
</table>

*12 months ended January 31, 1927*
History of District Heating

Part 3

Fifty years of progress an assurance of future growth and success

Looking back over the years since, in 1877, Birdsall Holly first proved the feasibility of the principle of district heating, three distinct phases of the industry's growth and development come to mind.

The first of these covers the experimental period when Mr. Holly, after conceiving the idea of conveying steam through well insulated underground pipes, proceeded to install what was actually the first district heating plant at Lockport, N. Y. Crude as this attempt was, it was apparently of sufficient importance to interest outside capitalists, who were apparently "sold" upon its possibilities, not alone for heating but also for such purposes as power, fighting fires, operating pumps and elevators, cooking, etc.

Next came the actual application of the principles first set forth by Mr. Holly in places outside of Lockport, N. Y. The report of General Haupt, employed by a group of New York City capitalists to investigate the Holly System, forms part of the historic background of the industry, and the conclusions arrived at by this eminent engineer did much to further the progress of district heating and influence its acceptance by a number of capitalists in cities throughout the country.

Acceptance by Public Utilities

The third phase is the modern one, which has resulted in the growing acceptance of the applicability of district heating to other utility services by public utility companies. Within the past decade an increasing number of these companies, visioning the tremendous possibilities which district heating offered in coordination with their electric and power service, installed district heating plants. They soon found that increased revenue and profits amply repaid the considerable investment in this equipment. It enabled them not only to add to their present electric load, but it materially increased their service to the community and served as a means of building good will among their customers.

Among the more recent extensions of this service by public utility companies brought about by the installation of district heating are: the Iowa Railway & Light Corporation, Cedar Rapids, Iowa; the Penn Public Service Corporation of Johnstown and Philipsburg, Pa.; the Utica Gas & Electric Company of Utica, N. Y.; the Union Electric Company of St. Louis, Mo.; the Consumers' Power Company, Grand Rapids and Saginaw, Michigan; the Arkansas Central Power Company, Little Rock, Arkansas; the Rochester Gas & Electric Company, Rochester, N. Y.; the Scranton Electric Company, Scranton, Pa.; the Utility Companies in Wilkes Barre and York, Pa.; Kansas City, Mo., Lincoln, Neb., Salt Lake City, Utah, St. Paul, Minn., Cleveland and Dayton, Ohio, Indianapolis, Ind., Atlanta, Ga., Birmingham, Ala., Pittsburgh, Pa., Boston, Mass., Portland, Ore., Seattle, Wash. and many others.

Recent Notable Installations

Of particular interest are a number of new undertakings now under construction. The Philadelphia Electric Company, after an extensive study, has decided to make a considerable investment in district heating and construction has already started to provide downtown Philadelphia with district steam heating service.

If investigation discloses a worthwhile opportunity, ADSCO engineers prepare a complete report covering the required investment, necessary equipment and other phases of the work. Should this program be approved, the American District Steam Company, through its subsidiary, the Northeastern Piping & Construction Corporation, contracts for and makes the complete underground installations, guaranteeing its work as to equipment and operation.

The success and fundamental soundness of district heating are being proven more emphatically each year and the many millions of dollars being expended in various parts of the country in the construction of underground pipe work for district steam heating systems, indicates the very healthy growth of the Industry.

This evidence of absolute faith in its ability to provide a service in keeping with the needs of our modern life, presages a brilliant future for district heating, at the same time providing a vehicle by which progressive business can extend its usefulness both from an earning and investment standpoint.

This is the last of a series of three articles on the History of District Heating.
Nationwide Activity in District Heating

Growing appreciation of Public Utilities Corporations of the profitability of District Heating is responsible for its rapid extension as a utility service.

ADSCO Underground Steam Distribution effects tremendous economies in industrial plants, colleges, hospitals and other groups of buildings where one boiler plant serves for all groups of buildings.

Illustrated here are a few of the hundreds of operations planned by ADSCO engineers and equipped with ADSCO products—casing or Multicell conduit, expansion devices, gate valves, steam traps, reducing valves and meters.

Every year the demand for ADSCO service and ADSCO equipment increases with the growing appreciation of district heating as a modern, economical and efficient method of heat distribution.

Refer your problems on district heating to ADSCO Engineers' Service Department, maintained for the purpose of cooperating with all who may be interested.

Its recommendations are based upon ADSCO'S fifty years' experience in steam distribution and are regarded as authoritative throughout the district heating field.

Consult our Engineering Service Department
Syracuse University Heats All Buildings From Central Plant

Recently installs completely equipped modern steam heating system

Syracuse University at Syracuse, N. Y. has recently put into operation one of the most completely equipped and modern District Steam Heating Systems in existence.

The original heating station was centrally located but it was built in keeping with architectural consideration of surrounding buildings rather than the more important economic scheme of operation, and provided a very limited opportunity for supplying increasing demand. In the meantime the University grounds were extended and many adjacent dormitory sites were secured. A large hospital unit with an independent heating plant was also added to the properties of this popular and growing Institution.

The University grounds are located on a commanding elevation above Syracuse proper. In extreme weather and at times when there was high wind velocity, the old system could not provide sufficient heat for many of the greatly exposed main buildings. Outlying property and water heating units were provided with separate boilers and heaters burning anthracite coal, which resulted in ever-increasing heating costs and uncertain fuel delivery, plus extra janitor service.

To overcome these conditions and to provide for future expansion indefinitely, the Board of Managers secured the services of Mr. John L. Graham, Consulting Engineer, Syracuse, N. Y. to whom great credit is due for the present complete and economical steam generating and distributing system.

Fortunately the D. L. & W. railroad tracks are less than two city blocks from the border line of the University grounds, along which ample territory was secured for a steam plant, coal storage and car service trackage. The last word in fuel and ash handling, combustion, boilers, conveyors, superheaters, water supply, steam distribution and control, enters into this new scheme for an ideal central heating plant.

Ample size underground mains, steam supply and water return lines extend to the center of the University grounds and radiate in reduced sizes to all buildings, including two hospitals in the University group. The steam mains convey 125 lbs. pressure slightly superheated steam to all points for power and high temperature purposes, being reduced and desuperheated for low pressure steam heating.

All condensate is returned, mostly by gravity, to the main steam plant situated at the extreme low point of the system. Underground line losses are reduced to a minimum by the application of two 1 3/8" layers of moulded magnesia covering, telescopically applied and enclosed in a waterproof jacket. This covered main is housed on top and sides with Multicell tile, set in Portland cement mortar on a 4" concrete base with two drain tile lines and clean crushed stone beneath to prevent any possibility of accumulation of water in the soil surrounding the underground conduit.

Standard weight wrought iron pipe for steam and extra heavy wrought iron pipe for water return was installed with electric welded steel flange ends where flanged fittings occurred; all other pipe joints were oxyacetylene welded. All sections were tested to 300 lbs. hydraulic pressure before the covering was applied. Special Expansion Joints of long traverse in roomy manholes provided for expansion re-requirements, with anchor points secured by specially welded anchors set in concrete. Special pipe bending and built-up welded angles were supplied and all services and return laterals were welded off the top of main lines.

Valves were set in at junction points in the mains and where services were connected. A high-grade rust-proof paint was applied to all iron surfaces and copper wire was used at 8' intervals in binding on the waterproof jacket. Automatic traps were set in manholes at intervals in the main steam line and at low points in the buildings.

These and many other refinements in detail comprise the model heating plant installation which will amply provide for all the present and future steam and heating needs of the Uni-
United States Government Endorses District Heating

**Effects economies in maintenance of Public Buildings**

District Heating received a significant endorsement from the United States Government when an underground steam line was constructed to furnish steam heat to the White House from the boiler plant of the State Department.

Thus, the Presidential family is assured ample, constant warmth and this new and dependable source of supply banishes forever the old battery of furnaces which occupied the basement of the Executive Mansion.

Gone, too, are the soot, ashes and grime that formerly found their way up from the boiler room to detract from the cleanliness and beauty of the stately high-ceilinged rooms and corridors. And a considerable item of expense has likewise been saved on the annual government coal bill.

Colonel Clarence Sherrill, during the time he occupied the post of Chief Military Aide to the President and Officer in Charge of Government Buildings and Grounds, discovered that the boiler plant of the State Department was generating enough steam, not only to heat its own building, but also to supply the White House and it was under his direction that the new heating arrangement was installed.

This installation was preceded by a number of interesting and important district heating accomplishments for government buildings. Chief among these is the steam mains supplying the large Navy and Munitions Buildings with heat from the Potomac Electric Power Company’s generating plant.

Approximately 4200 feet of 12” and 1000 feet of 8” underground steam mains with corresponding 4” and 3” returns furnish steam for hundreds of thousands of feet of radiation.

ADSCO equipment, consisting of casing, meters and specially designed expansion joints, was used in this service to the Government.

**How District Heating Lowers Building Costs**

Interesting examples of savings in costs of building construction brought about by District Heating are found in the records of one of the country’s most prominent consulting engineers.

“A 26-story office building, cost $1,900,000. By reducing excavation and eliminating the specified high pressure steam boilers and auxiliaries, and substituting central station heating, which was abundantly available, a saving of about $80,000 was made in capital cost.”

“A 10-story apartment house cost $300,000. By reducing excavation and eliminating smoke flue and stack, a capital cost saving of $7,500 was made. As this apartment was on a small plot, the extra floor area released by the absence of the stack was valuable in improving the plan.

“A 13-story professional office building cost $560,000. Capital cost saving due to reduced excavation and elimination of flue and stack amounted to $20,000. By discovering the possibility of re-rating the building on steam contract, a saving resulted of $1,500 a year.”

An idea of the savings possible through district heating may be gained from the statement that **elimination of flue and stack** in a modern skyscraper adds an average of twenty square feet to the area of each floor. Any building manager can figure out the usefulness of that area.

**Service trench from old Power House towards Library at Syracuse University.**
Heat **All Buildings** from One Boiler Plant

**You** wouldn’t install an electric generating plant in each one of your manufacturing buildings. You purchase electric current from a company that operates central power plants. If you generate your own current, one power plant furnishes the current required for all your buildings.

**Why** generate steam in each of several separate buildings?

Heat all your buildings from one central source through well-insulated underground mains. Save coal, labor, valuable space and the cost of boilers when new buildings are erected.

Reduce your own costs of steam for heat and power by selling steam to neighboring plants and buildings.

For over 50 years ADSCO have been planning and furnishing the equipment for large industrial district heating installations.

Ask us to send an ADSCO Engineer to go over your layout and advise you how quickly centralized heating will pay for itself in your plant.

**ADSCO RISER EXPANSION JOINTS**

**Selected for the New Mather Tower**

Chicago’s Highest Office Building

The expansion of the pipe in the risers as well as in the supply and return lines presented a problem in designing the heating system for the new Mather Tower.

Loops or swings were too difficult and expensive to install. ADSCO Riser Expansion Joints were selected as the most convenient and inexpensive solution.

They provide Automatic and certain absorption of the expansion without strain on any fittings.

A bronze guide sleeve keeps the slips in true alignment—prevents any weaving or twisting in the pipe line from distorting or cramping the slips or causing unequal pressure and wear on the packing; prolongs service of packing and assures a tight joint.

Write for “The Blue Book on Expansion” which describes ADSCO Expansion Devices for every pressure and service condition.

**AMERICAN DISTRICT STEAM COMPANY**

**NORTH TONAWANDA, N.Y.**

Offices and Agents in Principal Cities

**Selected for the New Mather Tower**

Chicago’s Highest Office Building

The expansion of the pipe in the risers as well as in the supply and return lines presented a problem in designing the heating system for the new Mather Tower.

Loops or swings were too difficult and expensive to install. ADSCO Riser Expansion Joints were selected as the most convenient and inexpensive solution.

They provide Automatic and certain absorption of the expansion without strain on any fittings.

A bronze guide sleeve keeps the slips in true alignment—prevents any weaving or twisting in the pipe line from distorting or cramping the slips or causing unequal pressure and wear on the packing; prolongs service of packing and assures a tight joint.

Write for “The Blue Book on Expansion” which describes ADSCO Expansion Devices for every pressure and service condition.

**AMERICAN DISTRICT STEAM COMPANY**

**NORTH TONAWANDA, N.Y.**

Offices and Agents in Principal Cities
Rochester Gas and Electric Co.
Enlarge Steam Heating Facilities

Alert to the utility needs of the community it serves, the Rochester Gas and Electric Company is constantly enlarging the district in which it supplies steam for heat and power.

The underground lines for steam distribution are installed for this company by the Northeastern Piping & Construction Corp. The use of ADSCO Expansion Joints and other specialties for steam distribution reduces maintenance costs to a minimum.

Among the larger contracts given the “Northeastern” for early installation are included the new underground steam distribution systems in Philadelphia for the Philadelphia Electric Company, in Akron, Ohio, for the Northern Ohio Power and Light Company. In addition to the Rochester extensions there are large extensions contracted for in Cedar Rapids, Iowa, for the Iowa Railway and Power Co. and others.

The Northeastern Piping & Construction Corp. maintains a large staff of experienced construction engineers and has complete equipment for economical and rapid installations of underground piping.

NORTHEASTERN
PIPING & CONSTRUCTION CORP.
NORTH TONAWANDA, N. Y.
Branches, New York, Philadelphia, Chicago, Seattle.
Subsidiary of
AMERICAN DISTRICT STEAM COMPANY
GENERAL OFFICES AND WORKS
NORTH TONAWANDA, N.Y.
Over 50 years experience in the installation of district heating systems