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The BULLETIN *of the* NATIONAL DISTRICT HEATING ASSOCIATION

ORGANIZED 1909

VOLUME XXXIII

OCTOBER 1947

NUMBER 1



MADE BY THE NATIONAL DISTRICT HEATING ASSOCIATION

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"Ohio Edison Company Installs 16 Inch Steam Line in Akron, Ohio"

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THE constant growth in steam sales by Ohio Edison Company, Akron, Ohio from the fall of 1927, at which time the steam distribution system was started in Akron, up to the fall of 1946, resulted in a point being reached where the capacity of the main feeder from the Beech Street Plant was being taxed severely.

The Akron steam system, supplied steam from the Beech Street Plant, which distributes live steam only and does not utilize exhaust or bled steam in conjunction with electric generation, ranked twentieth in size of operation among companies reporting to the National District Heating Association in 1946. Four hundred twenty-two customers are served with more than 600 million pounds of steam annually through an underground pipe distribution network of nearly ten miles. The plan of downtown Akron shows excellent saturation of steam in the area served.

Several years ago, some consideration was given to installation of another feeder from the Beech Street Plant since considerable trouble was experienced in maintaining the proper pressure at the end of the line during peak demands. In 1946, it was decided to construct a new feeder from the Beech Street Plant to supply additional assurance that pressures would be maintained.

It was decided to construct a 12 in. line from the south end of the present boiler header to the plant wall and from there a 16 in. feeder tying into the 8 in. line at Market and Canal Streets. (See map).

Several methods of construction were given consideration and it was finally decided to use prefabricated Ric-wiL insulated pipe units with Schedule 20 steel pipe completely encased in Hel-cor conduit. The insulation is made up of 2½ in. of fibre glass.

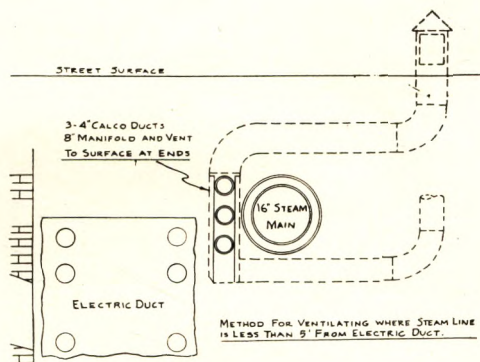
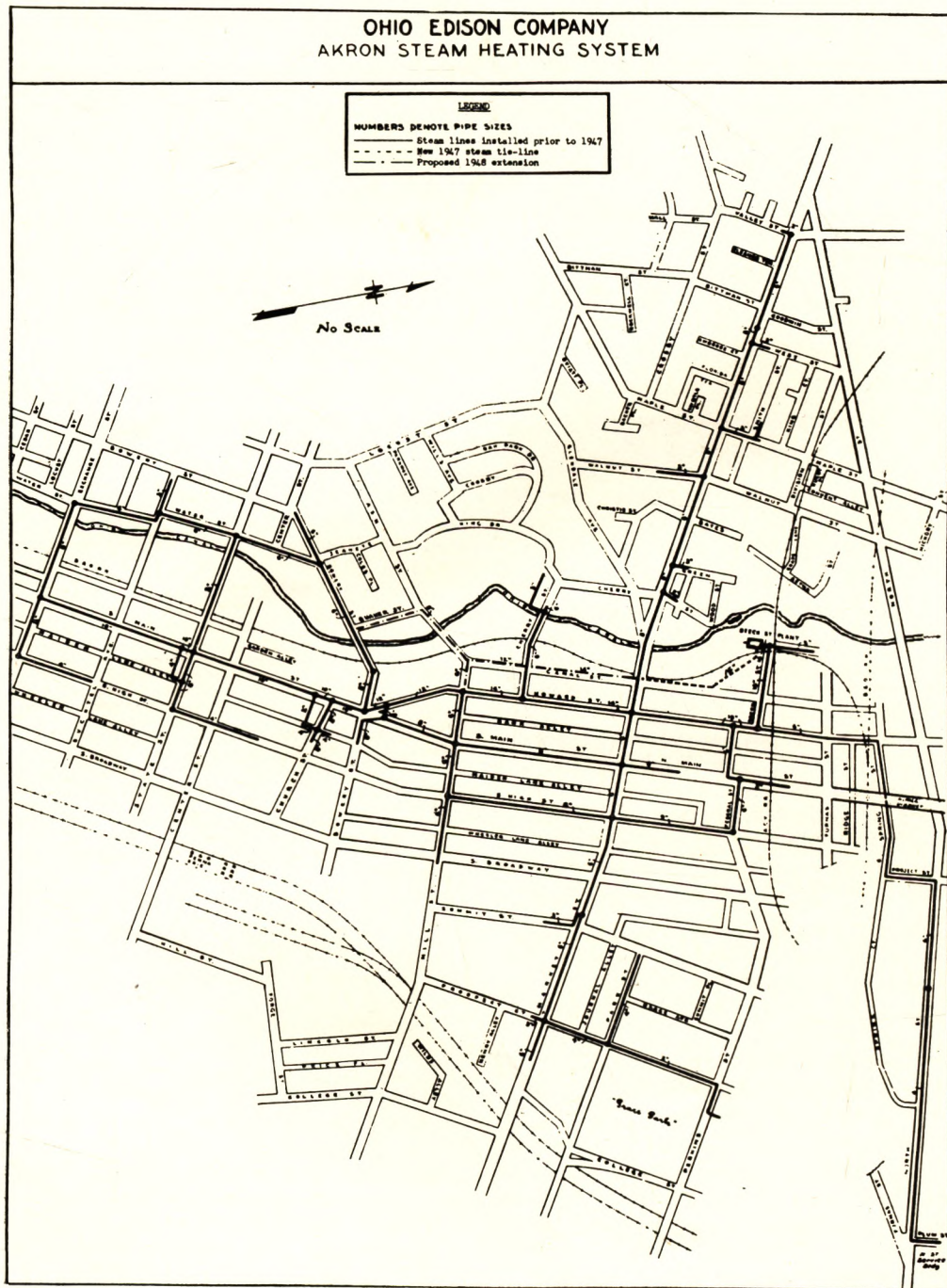


Fig. 1

The line is very shallow at some points and it was necessary to get as much insulation as possible and practical. Where previous pipe line construction in city streets of necessity was deep, the inherent strength of the corrugated iron conduit in many instances enabled installation of the tie-line under only two feet of cover. The entire construction is in earth and the contour of the ground lent itself quite readily to this type of construction. The expansion joints are the

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OHIO EDISON COMPANY
AKRON STEAM HEATING SYSTEM



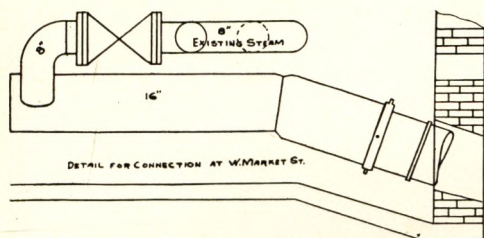


Fig. 2

Yar-Way gun-packed type. Two of them are located in one manhole and one single joint is in the second manhole.

Due to the fact that high voltage underground cables are within five feet and run parallel to the new steam line for a distance of ap-

proximately 175 feet before the connection to the 6 in. line, it was decided to build a ventilating system between the steam and electric ducts to prevent a temperature rise in the cable system and resultant loss of capacity. Figure 1 shows a cross-section of this ventilating system. The ventilator consists of three 4 in. conduit pipes manifolded into an 8 in. conduit at each end. In this area there is a rise in grade of about 20 ft, so with the lower manifold connected to the air inlet pipe and the upper one to an exhaust pipe, a very fine flow of air is obtained by gravity. To date this arrangement has given very satisfactory service.

The 16 in. tie-line, approximately 800 feet long, leaves the Beech Street Boiler Plant, parallels the main 15 in. feeder, then veers sharply



Fig. 3

south into Canal Street, forming a loop in connection with the 8 in. feeder at West Market Street. Figure 2 shows a detail of the connection to the existing 8 in. steam line.

Figures 3, 4 and 5 show various stages in installation of the new 16 in. tie-line. Figure 3 shows the contractor's crane boom lowering prefabricated pipe units into the trench directly from the delivery truck. The Beech Street Boiler Plant also is shown at top left. Several 21 ft units in Figure 4 were completely welded together above ground and jacked under the tracks of the main line of the railroad, without interrupting train service and with a minimum of excavation. Note the narrow, shallow trenches paralleling the train tracks in Figure 5, also Akron's First National Bank in upper center, a customer of the Ohio Edison Company for many years.

The operation of the line since it went into service the first part of December of 1946, has more than met all expectations. On the day the line actually was cut into service, approximately 185 lb pressure was being carried at the boiler header, feeding into the system at 135 psi. Difficulty was being experienced in maintaining a tail-end pressure of 115 lb. It was extremely in-



Fig. 4



Fig. 5

teresting to watch the plant's operation, as the 16 in. line was cut into service. Within 24 hours, extremities of the Market Street line built up pressures much greater than required and the system had to be stabilized at the boiler plant. The boiler pressure gradually dropped until it was possible to get along with approximately 160 lb with the correct increase in tail-end pressure of from 8 to 10 lb.

The method of operation is to use the 6 in. by-pass around the 12 in. gate valve. The line operates as a stabilizing element for the 15 in. and 8 in. lines in Market Street.

Rather exhaustive tests were run on the actual condensate loss in the line both by steam flowing through it and with the Market Street end shut off. These losses showed that the operation of the new line was well within expectations with regard to estimated line loss.

Experience with this new line shows that it would not have been possible to carry the proper tail-end pressure during the extremely heavy loads in the early part of 1947 without this new feeder in service. It also was designed so that the present 15 in. line could be completely cut off this last summer for the installation of new expansion joints without shutting down the entire plant which was always necessary in the past.

The actual costs of the line, also were well within the estimates.

Another tie-line, scheduled for construction in 1948, will connect the newly installed 16 in. steam line with a 14 in. line at Howard and Mills Streets and with a 6 in. line at Quaker and

Bowery Streets. Steam pipe diameters will range in reducing sizes from a 14-in. connection to the 16 in. line at Canal and West Market Streets to an 8 in. line at the extremities. The function of this line also is to loop the area to insure uninterrupted service in event of a pipe line break or repacking of expansion joints in that section when required.

The contemplated tie-line also will protect pressures and services to three of the company's largest customers with respective peak demands of 25,000, 15,000 and 20,000 lb of steam per hour. In that same area, we have this year contracted for steam requirements that mean an additional load of 25,000 lb per hour.

Snow Melting in New York City



The excellent job of snow melting being done by the sidewalk installation in front of Best & Company's new store on Fifth Avenue, New York City, is indicated by this picture.