

cluded an excess of 8 inches beyond the actual cut and all tunnels and cuts under the pavement.

In the table, trenching includes cutting through the pavement, excavating the trench to grade, preparing sub-trenches for underdrains, all backfilling and hauling away of surplus material. Laying pipe includes the furnishing and placing of all pipe, fittings, expansion devices, wood log, etc., the furnishing and laying of underdrains and all brickwork such as boxes around special devices and man-holes for valves, traps and expansion joints.

The prices given were a fair average at the time the pipe was laid, but for use at the present time should be increased about 10 per cent. This work largely replaced a former system and was installed complete between May 31 and October 23 in 1911.

**Temperature Control.**—One of the most essential requirements of every well operated modern heating system is the installation of some form of thermostatic control valve on all service connections. In the case of residences, this valve may be located where the service enters the house and the thermostat may be placed in a central position in the living rooms. In office buildings each radiator is usually fitted with its own control valve and thermostat.

Thermostatic control with careful handling is said to reduce the charges for service by 6 to 8 cents per sq. ft. when on a flat rate basis. When meters are used, the savings that may be effected by this control system over hand-controlled service are as much as 15 to 30%, according to several central station managers.

However, when thermostats are installed on a system, the customer's attention should always be called to the fact that unless some simple rules are strictly followed the thermostat will waste heat. For instance, a window may be opened to air the rooms in the morning, and as the thermostat maintains a constant room temperature, this window may be left open for a considerable period. This would result in an enormous waste of heat. With a flat rate the heating company loses by such practice, while the customer has to pay bills that are unduly high when meters are installed.

When air-controlled thermostatic valves are used on the system, an air line has to be laid from the central station along the side of the heating main with branches carried to each service. The compressed air in

this pipe is usually at about 15 pounds pressure. Johnson, Powers or National thermostats may be used with this system. In some cases independent thermostats like the Sylphon Regithern are placed on each individual service.

**Miscellaneous Central Plant Service.**—Vacuum systems are now quite commonly used in large office buildings, stores, libraries, private residences, etc., for cleaning and dusting. It has long been known that one of the cheapest means of transmitting energy is by the use of compressed air. In the case of vacuum the air is much less dense than when the air is under pressure and the losses are correspondingly reduced. It has, therefore, been proposed that the central heating company might in-

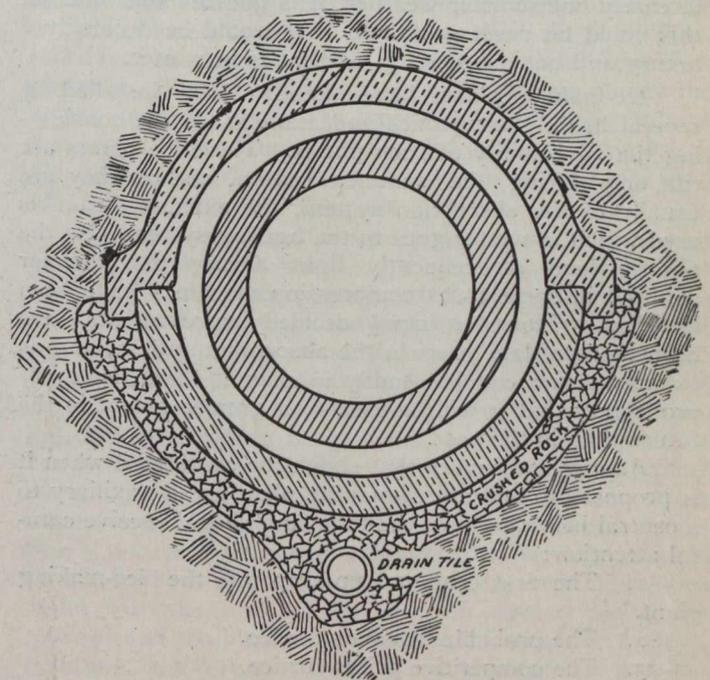


Fig. 8.—Split Glazed Tile Conduit.

stall a system of vacuum piping together with their heating system, and thus be prepared to furnish service to customers over certain periods of the day at a flat rate. No information has come to hand concerning such a

Table 4.—Conduit Costs at Wilkes-Barre.

Size, in inches.	Pavement.	Length, in feet.	Cost					Per lin. foot.	
			Re-paving.	Trenching.	Laying pipe.	Incidentals.	Total.		
6	Brick	294	\$ 405.35	\$ 157.67	\$ 1,210.46	.....	\$ 1,773.48	\$ 6.03	
6	Asphalt	1,585	2,210.89	907.52	6,890.52	\$ 52.04	10,060.97	6.35	
8	Asphalt	489	744.68	283.95	2,878.63	3.66	3,910.92	8.01	
9	Asphalt	361	533.97	229.76	2,582.40	.....	3,346.13	9.28	
10	Brick	1,053	1,419.05	764.26	7,477.58	17.46	9,678.35	9.19	
10	Asphalt	851	1,238.83	625.77	6,090.82	11.67	7,967.09	9.36	
12	Asphalt	585	966.10	489.27	5,406.86	11.08	6,873.31	11.75	
14	Asphalt	2,109	3,337.30	1,571.11	20,951.42	142.81	26,002.64	12.33	
16	Asphalt	2,607	4,378.34	2,240.64	35,832.42	157.92	42,609.32	16.35	
20	Brick	552	1,033.17	652.61	10,954.77	.....	12,640.55	22.89	
24	Brick	275	521.83	484.18	6,807.59	6.23	7,819.83	28.39	
18 and 24	Brick	.....	.....	.....	.....	.....	978.45	.....	
(in station)									
Total .....			10,761	\$16,789.51	\$8,406.74	\$108,061.92	\$402.87	\$133,661.04	
						Reconnecting house services ...	3,067.27		
						Engineering, 1.17% .....	1,600.64		
						Total cost of work .....	\$138,328.95		