problem of intermittent feeding, [he] can build or purchase a storage feedwater heater of suitable capacity. Selection of an open or a closed heater depends on the state of the steam when it leaves the curing cylinders. If oil or scale-forming substances are present in the steam, a closed heater or a tank with suitable coils is desirable. Steam that is not contaminated can be used in an open heater or permitted to discharge directly into the tank.

Should *HW* decide to design and build the heater or write specifications for it, he should consider the following points. Heater size is dependent upon needed storage capacity and available space in the plant. A proper-size drain, manhole and water gage must be provided. A vent equipped with a safety valve or atmospheric relief valve is also necessary. In either case, ASME rules for the construction of non-fired pressure vessels should be observed.

If construction or purchase of a heater is too expensive, *HW* can build a simple condenser to recover part of the exhaust process steam for future use as feedwater. Immersing a pipe coil in a wooden tank is an easy way to solve this problem. Feedwater may be stored in another wooden tank and used when necessary. Tyler G Hicks, New York, N. Y.

Heat Feedwater With Exhaust Steam

HW USES 4½ TONS OF COAL at 12,000 Btu per lb in 24 hr or (4.5x2000x 12,000) ÷ 24 = 4.5 million Btu per hr. Assuming an efficiency of 72% we get 3.24 millions Btu actually contained in the steam used for curing the concrete blocks.

The steam fed to the cylinders is at 12 psi, or 26.7 psia. We assume the steam is dry, saturated and contains 1161 Btu per lb. Later during the process the steam is raised to 100 lb or 114.7 psia. If the steam is dry and saturated, it contains 1189 Btu per lb. At this pressure and enthalpy (1189), *HW* discharges the steam to heat the countryside.

My suggestion is to install a tank and bypass the feedwater to it. Discharge the steam to the tank and condense it to atmospheric pressure. Every pound of steam will give up 1189 — 180, or 1009 Btu. This will be used in heating the raw feedwater from the Detroit River to 212 F. The tank, in effect, is now a condenser and a heater. Pump this condensate to the boiler to raise the temperature 338-212, which is 126 F. J Yovitch, Philadelphia, Pa.