

Cement Siding Construction

C. W. NOBLE*

While reinforced concrete construction has made marked progress when used as floors, beams, columns and footings, it has advanced very little in competition with ordinary types of brick and wood outside walls. The reason for this seems to be due to the fact that the cost of form work for walls is very much higher than form work for structural members which will lie horizontally, and the use of brick is so eminently satisfactory that the desire for a substitute is evidently not felt.

Another reason lies in the difficulty of putting up a concrete wall and getting the structure absolutely plumb and free from wind. The blotchy and discolored appearance of a concrete wall also makes it very unpopular when compared with the neat and uniform appearance of brick work.

There is, however, a type of outside wall construction in cement recently evolved in the States and receiving considerable notice in Canada. It consists of the use of herringbone lath attached to studs, either of wood or metal, and plastered with Portland cement plaster. The appearance resulting from this construction is not

The third type consists of the use of metal studs instead of wood, with one layer of lath on the outside as before. In this case the studs are usually very small, not exceeding $\frac{3}{4}$ of an inch in depth, and the plaster coats are more numerous, building the entire wall up to perhaps $1\frac{3}{4}$ inches in thickness. The wall will not carry loads, and consequently must be sustained on a framework, consisting as a rule of wood or steel girts running horizontally and spaced about ten feet apart, and sustained in their turn by columns, which also support the roof trusses.

Still another modification is made by the use of two or three inch metal studs instead of $\frac{3}{4}$ -inch studs just mentioned. These deeper studs are lathed and plastered on both sides, and as a result an air space is obtained. The field for this type also is limited to positions where the wall is carried by the columns rather than intended to sustain any load.

Probably one of the oldest instances of the first-mentioned type of cement siding construction, that is,



Bonner Springs Portland Cement Co., Kansas City, of cement siding construction.

blotchy, the effect being very similar to that of a building covered with galvanized sheet iron. The walls are also free from wind, and the general appearance is good.

The construction is built in one of four ways: First, the studs may be of wood, the lath being attached to one side only and plastered on the outside and on the inside between the studs. This last coat, of course, is applied on the clinch of the first coat, and aids materially in stiffening the building. It is omitted in some cases. The studs in this construction are capped by a plate, which binds the walls together and serves as a sill for the roof rafters. The wall is, therefore, a carrying wall.

The second type consists of the application of a layer of herringbone lath to the inside of the studs after the construction has just been completed as described for the first type. This interior coating of lath is plastered on the inside, but cannot be plastered between the studs.

the one in which herringbone lath is attached to one side only of wood studs, exists in the plant of the United Zinc and Chemical Co., Argentine, Kansas. This company manufactures sulphuric acid as a by-product of the smelting of zinc and lead ores. The fumes resulting from this manufacture are so noxious that all vegetation in the immediate neighborhood is frequently destroyed.

The structural materials which may be used in such a plant are limited. The slightest portion of lime in a brick will expand under the action of the acid fumes and crack the wall. Structural steel is very seriously attacked, and if used at all must be protected by a very expensive coating, consisting mainly of oxide of lead. Galvanized iron has practically no life. Wood loses a portion of its strength, but not its entire value, but Portland cement is not affected. As a result of these difficulties the first buildings constructed were entirely of wood, except one where the first risk was unusually great, and here the first described type of cement siding was used.

* Structural Engineer, Toronto, Ont.