Editorial Comment

Construction of Towers

WHEN planning new interlockings, car-retarder installations, loud-speaker yard communication systems, and some centralized traffic control installations, plans must be made for towers or offices in which to locate the control machines, and the problems involved have to do, not only with the design of a building as such, but also with its utilization as a part of the signaling or communication systems. Therefore, the signal and communications officers should have a voice in the design, not only to be sure that adequate space is provided for equipment, but also to make suggestions that may reduce the construction costs. A professional architect may do a good job in designing an artistic structure but it may cost more than is justified as a part of the overall project.

A first consideration is that the building should be of fireproof construction, not only to prevent loss of the building, but also the interlocking, C.T.C. and communication equipment which in numerous towers costs much more than the building. Furthermore, considerable time, perhaps several months, would be required to make replacements, and, in the meantime, train operations would be hampered by delays.

Fireproof construction can be accomplished with several types of materials, such as brick, concrete or steel frames covered with insulated sheet-metal panels. The choice depends somewhat on the materials available and the artistic appearance necessitated by the location of the building. Another important factor is an estimate of the years of service for the building at the proposed location. As a general rule, no one knows the circumstances which, in later years, may bring about the abandonment of a control tower, or its removal to some other location. For example, the consolidation of interlockings and the installation of C.T.C. during the last 25 years have resulted in the abandonment of hundreds of towers and offices.

About 20 years ago a railroad installed a modern electric interlocking, including a tower built of concrete and brick, and, when the project was finished, the signal engineer commented to the effect that the tower would be there long after he would be gone. A few years later, however, the interlocking was replaced as a part of a centralized traffic control project, and the tower was demolished, but the signal engineer is still on the job and is planning even more modern projects. A fact, therefore, is that none of us know of the future developments that may make obsolete a tower at a certain location.

In locations where overall appearance is not the controlling factor, perhaps a solution would be to use a form of construction such as steel frames and siding of insulated metal or asbestos materials, all of which could be taken down and reconstructed elsewhere if necessary. The Chicago & Western Indiana has constructed interlocking towers of this type, as discussed on page 378 of *Railway Signaling* for July, 1943. A somewhat similar form of construction was used to build the tower for loud-speaker communication in a yard on the Kentucky & Indiana Terminal, as explained elsewhere in this issue, and on the Southern, as discussed in the June, 1946 number.

Where steel frame construction is not adaptable, consideration may well be given to the construction employed in the new tower for the interlocking in Chattanooga, Tenn., as shown elsewhere in this issue. In this instance the foundation, floors and roof are each separate slabs of concrete poured in place, the walls being brick. The building presents good appearance, serves the purpose satisfactorily, and was constructed at about the minimum cost for a fireproof structure.

With modern all-relay control circuits, the panel-type interlocking machines are much smaller than the old type machines with mechanical locking and electric lever locks. Therefore, the floor space size of a tower can be much smaller, and, in fact, this area is more often determined by the space required on the ground floor to house relays, batteries and other apparatus. Keeping in mind that the upper floor for the control office can now be smaller, overall building costs can, at some locations, be reduced by constructing a three-story building with the second floor for relays and the ground floor or basement for batteries and a maintainer's shop.

On the other hand, where the ground is wet and not solid enough to support foundations for two-story buildings unless piles are driven, a cheaper and satisfactory solution is to use one-story construction, as, for example, a thick concrete slab on which a one-story brick building is constructed with thin light-weight walls of brick or concrete blocks, or a steel frame with tight-fitting insulated sheet-metal panels, as used by the Pennsylvania for instrument houses, as explained in the January, 1947, issue of *Railway Signaling*.

A conclusion is that many factors other than architecture are involved in the design of structures used for the control stations of interlockings, car retarders, centralized traffic control and various forms of communication systems. An important consideration is to be sure that the cost of the building is not out of proportion to the requirements and utilization.