

vary as much as 100 per cent., it seems out of order at the present time to pass any criticism on the way this building was designed."

Fig. 1 is a general view of the plant, all of which was of brick or mill construction, with the exception of the one warehouse which was flat-slab type, reinforced concrete construction, and the circular concrete grain bins,

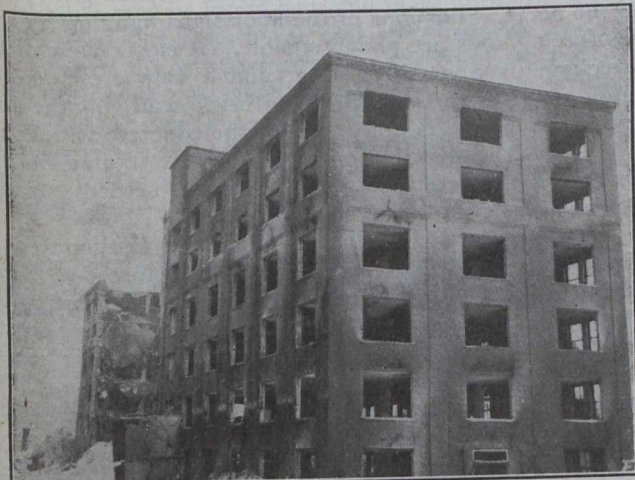


Fig. 5—The Warehouse After the Fire.

which were of reinforced concrete construction. The grain bins are at the extreme right of the plant, the concrete warehouse at the extreme left, in the rear of Fig. 1, running from the left end of the plant almost to the wooden elevator building on which there was a large "Quaker Oats" sign, and paralleling the mill construction building which burned first and which set fire to the contents of the concrete structure.

The eighteen storage bins were practically uninjured by fire, and represent the only portion of the plant which is not an absolute wreck. Fig. 2 is a general block plan of the plant. The portion of the concrete warehouse which collapsed is indicated, but the remainder of the warehouse is gradually breaking up and is so badly injured that it will be torn down, says Mr. Mylrea.

Fig. 3 gives a typical cross-section of the reinforced concrete warehouse showing the general constructional features. Fig. 4 is a horizontal section showing the kind and amount of reinforcing on the various floors.

The concrete warehouse was approximately 60 ft. wide, 280 ft. long and basement and six stories high. The Leonard Construction Co., Limited, were the engineers and contractors for both the upper and lower sections of the building.

The first four stories were built in 1910 and the two upper ones in 1916, and the common practice at these different dates is well represented in the details of construction. The floors were designed for 200 lbs. per square foot, live load.

Following is an abstract of Mr. Mylrea's detailed report:—

**Mr. Mylrea's Report.**—From the structural details as shown in Fig. 3, it will be noticed that in the first four stories there are no drop panels at the top of the columns, and that the column caps decrease in diameter with the columns. There is also more steel in the diagonal bands of reinforcement than in the direct bands. The circular reinforcement of the column shafts consist of separate steel hoops about 1½ ins. x ¼ in. in section spaced about 8-in. centres. As the theory of flat-slab construction was not understood at the time these stories were built, these

are features that contradict the facts brought out later by extensometer tests, but they represent the best construction known at the time.

The upper two floors show the column capital of constant diameter, the drop panel, the correct distribution of the slab steel, and the spiral form of circular column reinforcement. For some reason or other, the drop panels were omitted from around the caps of the wall columns in the two upper stories and a bracket substituted. On the corner columns even these brackets are lacking.

Since a drop panel would not have interfered with the windows, it is hard to tell just why this was done, for at these places the bending moments are most severe. It might have been that the type of construction adopted required less work on the forms. It might be fair to state, however, that up until quite recently another American firm had this bracket system as one of its standards, in which case they used four brackets around the interior columns, and no flaring heads.

When the two upper stories were erected, it was decided to increase the diameter of the columns on the third and fourth stories to aid them in carrying the additional load. This was accomplished by wrapping them in expanded metal and pouring a rich grout around them. The fifth floor—the former roof—was increased from 7



Fig. 6—Looking Directly Toward Standing 1½ Bays to the north. View taken from Standing Bays at the south end.

ins. to 9 ins. in thickness by laying expanded metal upon it and pouring another 2 ins. of concrete on it. The aggregate used throughout was a local gravel of good quality.

The north wall of the building was blank. The east wall, facing the lane between the reinforced concrete