

C – 22: Industrial Concrete Floors

Industrial concrete floors represent additional challenges to designers, concrete contractors and inspectors. However, with proper planning and placement procedures and detailed inspections, long-lasting, good-looking concrete floors can be expected.

Industrial floors discussed here are defined as concrete slabs on grade that are expected to carry significant amounts of forklift truck or similar traffic. The traffic on industrial floors imposes severe demands especially on joint edges and the wearing surface. The floor has to be constructed properly the first time because once completed it is the only part of the building that is very difficult to improve at a later date.

The bottom line is, without a first class floor the owner ends up with a second-class building.

The construction of high quality concrete floors is an art as well as a science. The floors are constructed each day under variable conditions of labor, materials and environment. Typically, the best quality control comes from a competent industrial floor concrete contractor with plentiful experience in this type of application.

Also, a knowledgeable designer-client inspector should be on the job every day to see to the following critical elements:

1. The control joints are cut at one quarter of the slab thickness,
2. The curing materials are applied soon enough and adequately,
3. The dowels are kept in proper alignment and
4. The reinforcing steel (if used) is correctly positioned.

With regard to control joints, follow the PCA recommendations for spacing and depth (25% of the slab thickness). Saw cut with a wet blade and be sure to restore wet curing in the saw cut area immediately

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after sawing. A dry blade can heat up the concrete and dry it out. If wet curing is not continued right away, you could have concrete weakness in crucial areas. Try to keep as many joints as possible out of the traffic paths.

Curing is a very important process in the production of industrial floors and how well it is done exerts a major influence on slab performance, especially the wearing surface. The real challenge is having curing done promptly, properly and thoroughly - every day.

Compressive strength is much overemphasized as a measure of concrete floor quality. There are other factors related directly to the floor performance that sometimes get overlooked. Some of these factors are basic compaction, workmanship, aggregate to cement ratio, type and size of aggregate, the wearing surface and finish, the joint detail, the joint spacing and filling, and effective curing.

The simpler the concrete mixture, the more consistent and predictable the concrete will be in regards to finishing. When placing the concrete, avoid the use of the checkerboard pattern.

Placement of the concrete in long narrow strips approximately 20 ft. (6.1 m) wide permits better control over flatness and other finishing operations. Specify a power screed and a maximum 4 inch (100 mm) slump.

Representatives of all parties involved with the floor should meet at the jobsite about a week before starting the slab. Those attending the meeting should discuss and define all responsibilities, procedures, equipment and should clarify any potential misunderstandings prior to the commencement of the concrete work.

Many building owners get good concrete floors continuously as a result of pre-job meetings and paying close attention to the cumulative job details during the construction process.