BUILDING OR REHABILITATING YOUR WAREHOUSE

There has been a quiet revolution in the construction of warehouse buildings. While the price of other products and services has steadily escalated, the cost of warehouse construction has remained fairly static, and in some cases has gone down. As you look at new construction, consider where the priorities for controlling quality should be placed.

The most important component in any warehouse building is the floor. If extremely bad, a defective floor can result in the need to tear down the building. In less extreme cases, broken floors typically stay bad for the entire life of the building.

Second in priority is the framing and roof system. If the structure and the roof are done badly, they can be repaired, although such repairs are difficult and expensive.

Next in importance are docks and dock doors, which are the key points for flow of materials in and out of the building. If the doors are poorly placed, the material flow will be difficult and expensive.

Least in importance is that part of the building that gets the most attention from the uninitiated—the walls. Many warehouse buildings have walls that do not bear any load, with the entire roof supported by the upright columns. When the walls are not load bearing, it matters little whether they are made of granite or cardboard, as long as they are accompanied by a perimeter alarm system and insulation to protect stored products.

To illustrate the point, one distribution center for building mate-

K. B. Ackerman, Practical Handbook of Warehousing
© Springer Science+Business Media Dordrecht 1997
rial was designed with no exterior doors or walls at all. The buildings are used for storage of materials that are loaded and unloaded from flat bed trailers at grade level.

**The Floor**

The goal for the end product is a floor that requires a minimum of maintenance and has durable wear surfaces. The floor cannot be stronger than the earth beneath it. If the ground is not properly prepared and compacted, a void in the earth beneath the floor will inevitably cause the floor itself to fail.

To reduce maintenance, the floor should be poured in a manner that minimizes curling, which is the development of concave patterns in the floor as the concrete cures. The joints must be created in a way that minimizes spalling or failure of the floor surface at the joint. To create maximum durability, it is important that the concrete itself be dense and nonporous.

In one warehouse, the floor was poured with a series of butt joints. A strip of concrete is poured, with an adjacent area of similar size left vacant, followed by another strip of concrete. The voids between each strip are poured after the first strips have already cured. The builder uses this method to create a higher quality floor.

Another builder places prime reliance on controlling the installation environment. The floor is not poured until the walls and roof are nearly complete in order to reduce temperature variance and wind flow over the curing floor. Direct exposure to the sun can cause concrete to dry too quickly. In the controlled installation environment, relative humidity remains as high as possible to slow the drying process.

Since the subbase is of critical importance, a laser bulldozer and vibrator roller are used to ensure a solid and level base. That base is then surfaced with 46D, a gravel compound that possesses concrete properties. The concrete is poured in the same direction in which traffic will move in the warehouse. The wet cure process should take four weeks in order to achieve maximum strength.

A flatness test is utilized as the concrete is finished to ensure