

Creating the world's flattest floor

Freightliner ordered a standard superflat floor to improve operator safety and reduce truck wear. What they got instead may well be the flattest industrial floor ever produced.

To the facilities managers at Freightliner, the benefits of specifying a superflat floor for the high-bay area of their new Reno parts distribution center were clear. A superflat floor greatly improves safety for operators of narrow aisle trucks, and substantially reduces vibration-related wear and tear on the vehicles.

"There was no question that we wanted a superflat floor for our newest distribution center," explains Randy Feder, parts distribution center operations manager. "Based on past experience, we've come to believe that the most important part of any distribution facility is its floor—it's really the heart of the building."

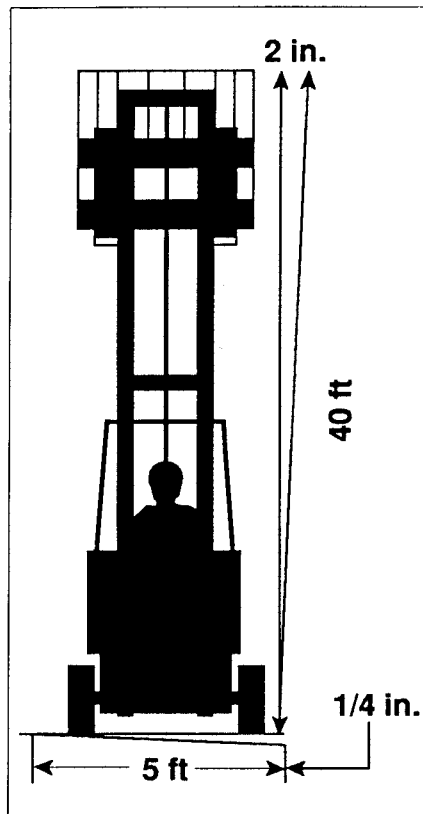
The Reno parts distribution center (PDC) is one of five centers scattered across the U.S. that stock and distribute parts for trucks manufactured by Freightliner Corp. and Mercedes-Benz. The Reno facility covers over 140,000 sq ft and features very-narrow-aisle (VNA), high-bay storage areas as well as conventional rack sections.

Orderpicker trucks are used for retrieving parts from the racks at heights up to 22 ft. The company plans to add turret trucks for storing unit loads in the racks. Both types of trucks will be rail-guided while operating in the 60-in.-wide

(rack-to-rack) aisles.

Specifications for the floor for the new facility included an integral floor topping of traprock that would provide the required hardness and durability.

"We specified a floor that would meet an F100 standard on the Face



scale (the scale developed by the Edward W. Face Co. for measuring floor flatness) for the VNA area, and an FF35/FL27 standard for the open traffic area. We're using these same specifications in all of our new PDCs now, so this seemed pretty straightforward."

But according to Feder, what happened next wasn't in the plans.

The crew gets down to business

Freightliner's general contractor hired a company that specializes in superflat industrial floors (Terry J. Fricks, Inc. of Ft. Worth, Texas). The flooring company brought in its own team of experienced concrete workers for the job who quickly got down to work on the project.

At the end of the first day, a representative from the Face Co. measured the day's pourings and announced that some sections measured an incredibly flat F200, while the slab as a whole earned a rare F150 rating.

The high F numbers caught the attention of the flooring crew. They decided to try to match the first slab's flatness with the next day's pours, and they succeeded. And then the next day they did it again. With growing excitement, the crew began to compete against itself, producing section after section of similar high quality.

Word of the project got out, and

Why specify a superflat floor? As this example shows, any variation in floor flatness is multiplied when narrow aisle trucks operate at heights of 25 ft or more.



Competing against themselves, the flooring crew worked to create section after section that far exceeded an F100 rating.

concrete flooring contractors from other areas drove to the site to watch the crew at work.

By the time the workers finished the last section, they had created 140,000 sq ft of concrete floor with every superflat slab showing at least an F125 rating, and with the rest of the floor averaging over F100. Sam Face reports that the superflat sections are "the flattest our company has ever measured. And the open areas exceed the flatness specification by the greatest margin we have ever seen. In fact, it's a pretty good bet that this is overall the flattest industrial floor of its size ever produced anywhere in the world."

Benefits of a one-of-a-kind floor

Randy Feder reports that Freightliner's facility managers are

tremendously excited by what the flooring crew accomplished: "In the first place, we take pride in Freightliner's being the owner of what may be the world's flattest floor. But beyond that, we think that the benefits of superflat floors will be multiplied with this particular floor. Operators working at 22-ft heights will be rock steady, even with a full load. That means that they will not only not have to worry about banging into a rack, but they will also be able to run their trucks at the maximum allowable speeds.

"And because we've proved in our other PDCs that there is a direct relationship between floor-related vibration and vehicle wear and tear, we expect that the NA trucks used in Reno will show much lower operating costs than usual."

Feder anticipates other benefits as well. Because the integral floor topping will be nearly dust-free, Freightliner will be spared the expense of having the floor sealed every 2 or 3 years. And the traprock topping does an excellent job of reflecting light, so the company will save on lighting costs too.

Surprisingly, Freightliner really didn't pay a premium for their incredibly flat floor. Feder reports that it cost roughly one dollar more per sq ft than a standard warehouse floor. But after factoring in the increased throughput due to faster NA truck travel speeds, the savings in vehicle maintenance and the lengthening of vehicle service life, and the elimination of regular floor sealing, Randy Feder says that Freightliner trucked home a bargain. —Les Gould