

HEAVILY LOADED DRYWALL CARTS

In commercial construction it is common practice to use drywall carts for moving gypsum wallboard from one location to another. Occasionally, complaints occur when the wheels of heavily loaded drywall carts punch through floor panels, especially where the sheathing or combination subfloor-underlayment panels have been exposed to substantial wetting and have not yet fully dried out.

Although APA does not publish design loading information for panels subjected to this type of concentrated load, it may be useful to look at the concentrated static and impact test criteria listed in Table 1 of Voluntary Product Standard PS 2, *Performance Standard for Wood-Based Structural-Use Panels*, APA Form No. S350. It shows the minimum concentrated static loads that the panels must meet to receive a Span Rating, both before and after impacts. While these minimum load standards are not intended as construction-site performance standards, they provide a guide for evaluating the potential for failure when the panels are subjected to heavy concentrated loads.

The most commonly used floor panels are 23/32-inch-thick Rated Sturd-I-Floor® 24 oc, which is a combination subfloor-underlayment panel that meets minimum building code requirements in most situations when installed with the long axis perpendicular to three or more supports spaced 24 inches on center. The concentrated static and impact test criteria listed in Table 1 of PS 2 require a minimum ultimate load of 400 pounds, after an impact test, applied with a 1-inch-diameter disc for Subfloor - 24 panels. Wet conditions require a 25 percent reduction in design bending strength which means the 400 pounds should be reduced to 300 pounds to account for wet service conditions.

A typical drywall cart has 2-inch-wide by 8-inch-diameter wheels which probably provide about 1/2 square inch of effective contact area per wheel. Some of these carts have allowable capacities of over 3,000 pounds, or 750 pounds per wheel—more if the load isn't well balanced. It is easy to see how heavily loaded drywall carts can exceed the PS 2 concentrated-load test standard capacity, even when dry. In areas subject to drywall cart traffic, the temporary addition of a second layer of minimum 24 oc (23/32 inch) dry wood structural panels may help avoid punching failures of the floor panels.

Technical Services Division

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7011 South 19th Street • Tacoma, WA 98466
Telephone (253) 565-6600 • Fax Number (253) 565-7265