TOOLBOX SAFETY TIPS

TST #155

Weight of Concrete

It is important to know the weight of any section of concrete that is being cut. The weight of concrete is approximately 150 pounds per cubic foot, or 4,050 pounds per cubic yard. The formula for calculating the weight of concrete is: Length (in feet) x Width (in feet) x Thickness (in inches) /12 x 150 = weight (in pounds).

For example, the weight of a 7-foot-high door, 3 feet wide and 12 inches thick would be: 7 x 3 x 12/12 x 150 = 3,150 lbs.

If removing the pieces with a skid steer, the pieces should not be more than 1,000 pounds each. An important lesson to remember is that the bigger the piece, the more it will weigh when the reach of the skid steer is extended. If a forklift is being used for removal, be sure not to exceed the maximum lifting weight required by the particular forklift.

Overestimating the lifting capacity of any piece of equipment is likely to occur when the rigging provided for a job is insufficient in size. Using undersized or incorrect equipment for a lift causes a substantial number of accidents. Undersized equipment creates the "weakest link in the chain." A system made up of a 30-ton overhead crane with a 30-ton hoist, 30-ton hook, 30-ton spreader bar, 30-ton sling arrangement and 10-ton shackle is rated to lift only 10 tons. A cutting contractor needs to know the limits of the equipment he owns or rents.

For smaller pieces, it is best to use a forklift whenever possible to avoid injuries. But, if you need to remove concrete by hand, the pieces should be about 75 to 125 pounds each, depending upon the strength of the individual who is doing the removal. Cutting large pieces into smaller pieces lessens the chance for an operator to strain his or her back. When doing any lifting, it is important to remember to transfer much of the weight to the legs, not the back or arms.

SLABS

The following table is based on a cubic foot of cured concrete with an average weight of 150 lbs.

Size	Thickness	Weight
3 x 7 ft.	6 in.	1,575 lbs.
4 x 8 ft.	6 in.	2,400 lbs.
5 x 10 ft.	6 in.	3,750 lbs.
8 x 10 ft.	6 in.	6,000 lbs.

CORES

To calculate the weight in pounds of a concrete core section use the following formula:

1. First calculate the volume in cubic feet: 3.14 x (D (in inches)/24)^2 x H (in feet) = Volume (in cubic feet)
2. To find the volume of a 8 inch diameter core one foot in length: 3.14 x (8/24)^2 x 1 = 0.349 cubic feet
3. Then to find the weight, multiple the volume in cubic feet by 150 pounds/cubic foot:

V (in cubic feet) x 150 lbs/ft^3 = Weight in pounds

0.349 x 150 = 52 pounds

Core Diameter	Core Length	Core Volume	Core Weight
8 in.	1 ft.	0.349 ft^3	52 lbs.
16 in.	1 ft.	1.396 ft^3	209 lbs.
24 in.	1 ft.	3.143 ft^3	471 lbs.
36 in.	1 ft.	7.071 ft^3	1,061 lbs.

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