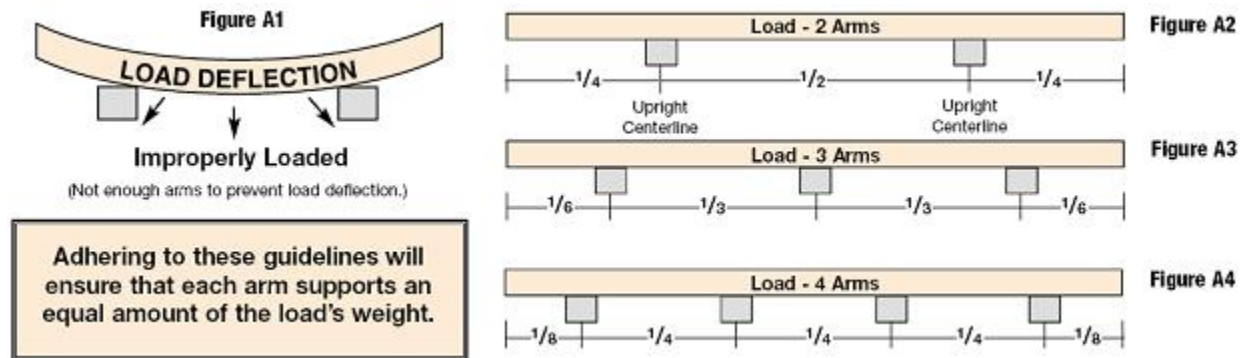


Designing a Cantilever Rack System:

The key to a successful cantilever rack system is the answer to one question: What is the product (load) being stored? The answer must include the length, depth, height, and weight of the product. Once this data is ascertained it becomes a simple matter to determine the required arms, uprights, and braces.

Determine the Number and Spacing of Arms:

The load must be supported by enough arms to prevent load deflection. Deflection may cause damage to the load being stored as well as the arms (figure A1). To detect deflection, place the load over two wooden blocks (to represent the cantilever arms) as shown in figure A2. If deflection is not present it is acceptable to use a two arm system as long as this does not create an overload condition. If the load shows deflection use three blocks (or more) as shown in figure A4.



IMPORTANT: The load should overhang the end arms by one half the distance from upright centerline to upright centerline. Failure to observe this measure may cause an overload condition on the arms.

Determine the Length of the Arms:

The depth of the load should never exceed the length of the arm. A 48" wide bundle of plywood requires a 48" long arm, bundles of steel 24" wide require a 24" arm and so on. Rated arm capacities may be seriously diminished if proper loading techniques are not observed. Figures B1, B2, and B3 illustrate correct and incorrect arm loading.

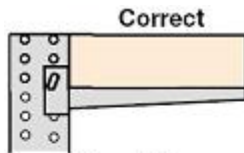


Figure B1

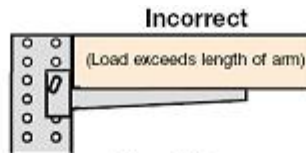


Figure B2

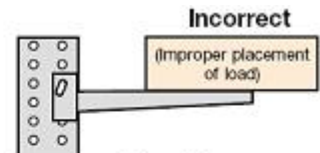


Figure B3

NOTE: All arm capacities are based on an evenly distributed load as in figures B4 and B5 below.

Evenly Distributed Load
(front to back)
Full rated arm capacity

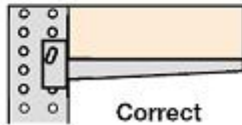


Figure B4

Centered Load
Full rated arm capacity

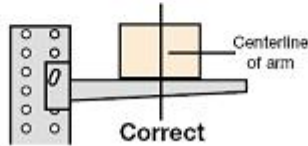


Figure B5

Tip Loading
Arm capacity may be reduced by up to 50%

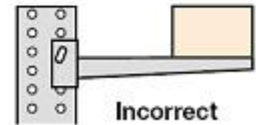


Figure B6

Determine the Height of the Upright:

When determining the height of the upright it is important to consider the ceiling height, forklift reach, sprinkler systems and other factors, such as local building codes that might affect the overall height.

The height of the upright in figure C1 is determined by adding the base height, the number of loads to be stored, the arm thickness plus 6" clearance between the load and the next arm.

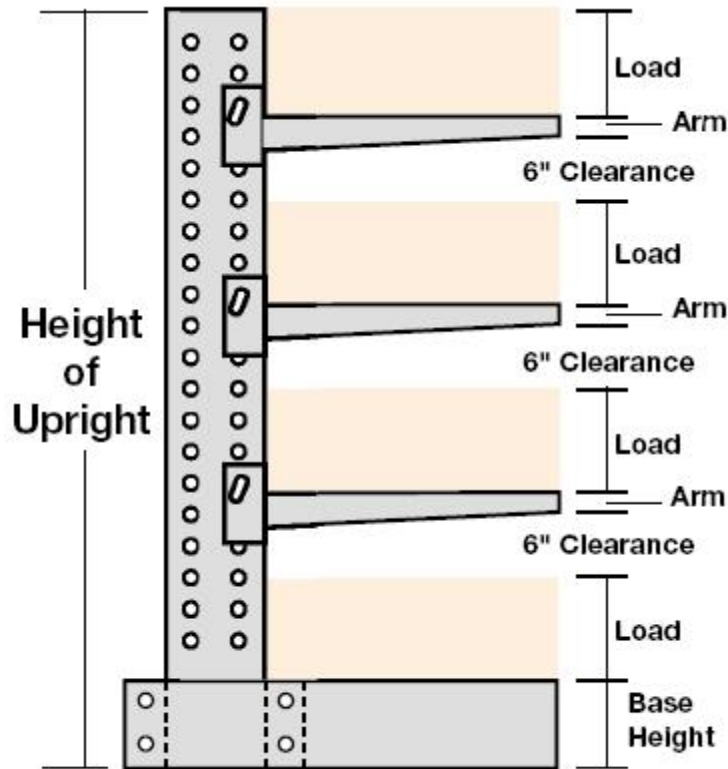


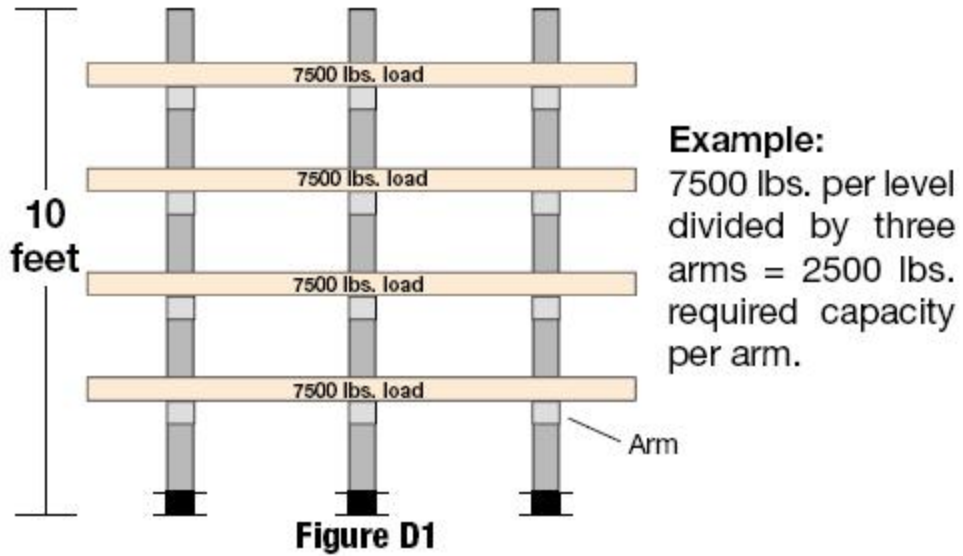
Figure C1

IMPORTANT: The load placed on the base does not diminish the rated capacity of the upright. Thus, the heaviest loads should be placed on the base.

Determine Arm and Upright Capacities:

As previously discussed, each arm supports an equal amount of the load's weight. By determining the number of arms per level and dividing it into the weight per level, the required arm capacity can be determined (see example below).

To determine the required capacity of each upright, multiply the number of arms per side by the load on each arm. In figure D1, each arm holds 2500 lbs. Twelve arms per side multiplied by 2500 lbs per arm equals 30,000 lbs., which when divided by three uprights, results in a required minimum capacity of 10,000 lbs. per upright. The correct upright can be selected by matching the minimum upright capacity of 10,000 lbs with the upright capacities set forth by the manufacturer information.



NOTE: Total arm capacity must never exceed total upright capacity.

Determine Brace Length:

Brace length is defined as the horizontal distance from centerline of upright to centerline of the next upright. Refer to the various brace set charts for the brace length that most closely matches the arm spacing determined in step 1.