Design Problem 2

At the end of an assembly line at a cannery, 1 lb cans of Garbanzo beans drop 5 inches and go to the packaging area. In order to keep the Garbanzos from being damaged, they must not see more than 10g's of deceleration during the drop.

You are asked to design a cantilever beam spring that will be soft enough to limit the impact of the drop to 10x the weight of the can, thereby avoiding bean damage.

The beam should be made from a rectangular bar of 1020 steel Q&T 870°C, and should have a factor of safety of two for infinite fatigue life, thereby avoiding beam damage.

Design a beam for the beans.

> Find a length, thickness, and width for the beam.
> Assume that the surface, size, and reliability fatigue factors are all equal to 1.