

Engineering Challenge:

A Backhoe weighing 8 tons is on top of a flatbed trailer and heading east on Interstate 70 near Hays, Kansas. The extended shovel arm is made of hardened refined steel and the approaching overpass is made of commercial-grade concrete, reinforced with 1 1/2 inch steel rebar spaced at 6 inch intervals in a crisscross pattern layered at 1 foot vertical spacing.

Solve: When the shovel arm hits the overpass, how fast do you have to be going to slice the bridge in half? (Assume no effect for headwind and no braking by the driver....)

Extra Credit: Solve for the time and distance required for the entire rig to come to a complete stop after hitting the overpass at the speed calculated above.





Answer - Who knows? But the trucking company just bought themselves a bridge.