What Could Go Wrong?

By R. G. Sparber

Background

I have a priceless bronze frame hanging on the wall. It is 72” wide, 48” high, and 2.5” thick. I estimate its total weight at 155 pounds.

The wall is 5/8” drywall with metal studs. These metal studs are 35 years old and appear more solid than the ones I see at Home Depot.

The top of the frame is about 8 feet above the floor, which has a slope of 1” in 24”.

The frame is currently secured into drywall at the upper right corner and seems to be screwed into a 12” long piece of angle secured to the wall at the upper left corner. The frame is not secured at the bottom. Nothing will be known about this angle stock until we remove the frame. I am amazed that the frame hasn’t fallen. We intend to reinstall it with proper anchors on all four corners.

The Task

I need to remove this frame from the wall and put it back up with as few people as possible. Safety is the top priority. Secondarily, we cannot afford to drop or damage this frame.

What I Want

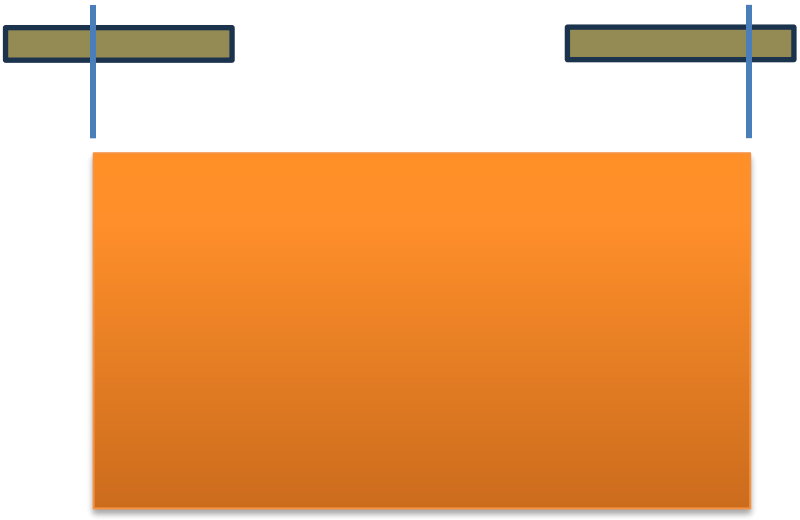
I need fresh eyes on the following procedure to identify flaws in my thinking. Secondarily, I'm interested in simpler ways to perform this task, given the above constraints.

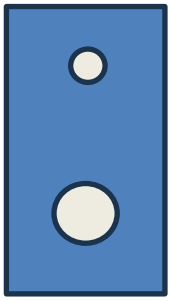
My Plan

First, I would locate four metal studs above the frame, located to the left and right of its edges. These studs are on 24" centers.

Then I would use toggle anchors through the drywall and through the metal studs to secure two 26" pieces of 2 by 4s. These anchors lock into the wall and permit a ¼-20 bolt to be inserted and removed at will. The manufacturer didn't provide a spec for anchoring into a metal stud, but in drywall it can hold 265 pounds, and in concrete, it can hold 1060 pounds. I assume this is a sheer force, and into metal studs, I'm closer to 1000 pounds than 265 pounds.

In this way, I can locate a point on each 2 by 4 that is directly above the frame's flank.

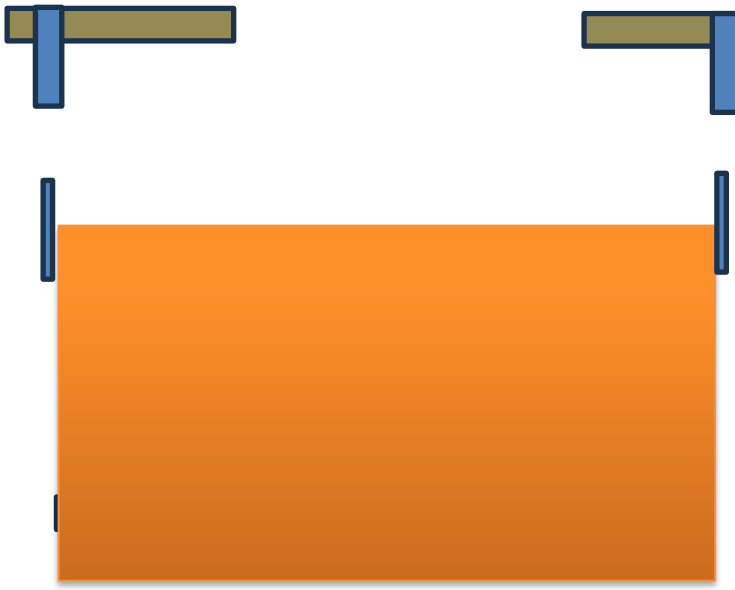




I will cut four 1/8” x 2” mild steel strips and drill a ¼”-20 clearance hole in the center of one end. These holes will be on the centerline and 1” from the end.

The other end of each strip would have a ¾” hole similarly placed.

Each strip would be about 7” long. Two strips attach to the 2-by-4 using ¼-20 bolts. Each strip is centered on the frame’s flank.



I will drill holes in the sides of the frame near the top and secure the remaining two strips using the same type of anchor. The distance, center-to-center, between ¾” holes would be 12”.

Next, I will attach a 500-pound capacity chain hoist on each side. Fully retracted, these hoists are 10” long. The chain is 5’ long.

Two people can easily operate these hoists to raise and lower 155 in a safe, controlled manner. There is enough chain to lower the frame to the ground. The left end would touch down first, and then the right end would follow after lowering another 3”.

When it is time to reinstall the frame, the chains can take all the weight until we can install the corner anchor.

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