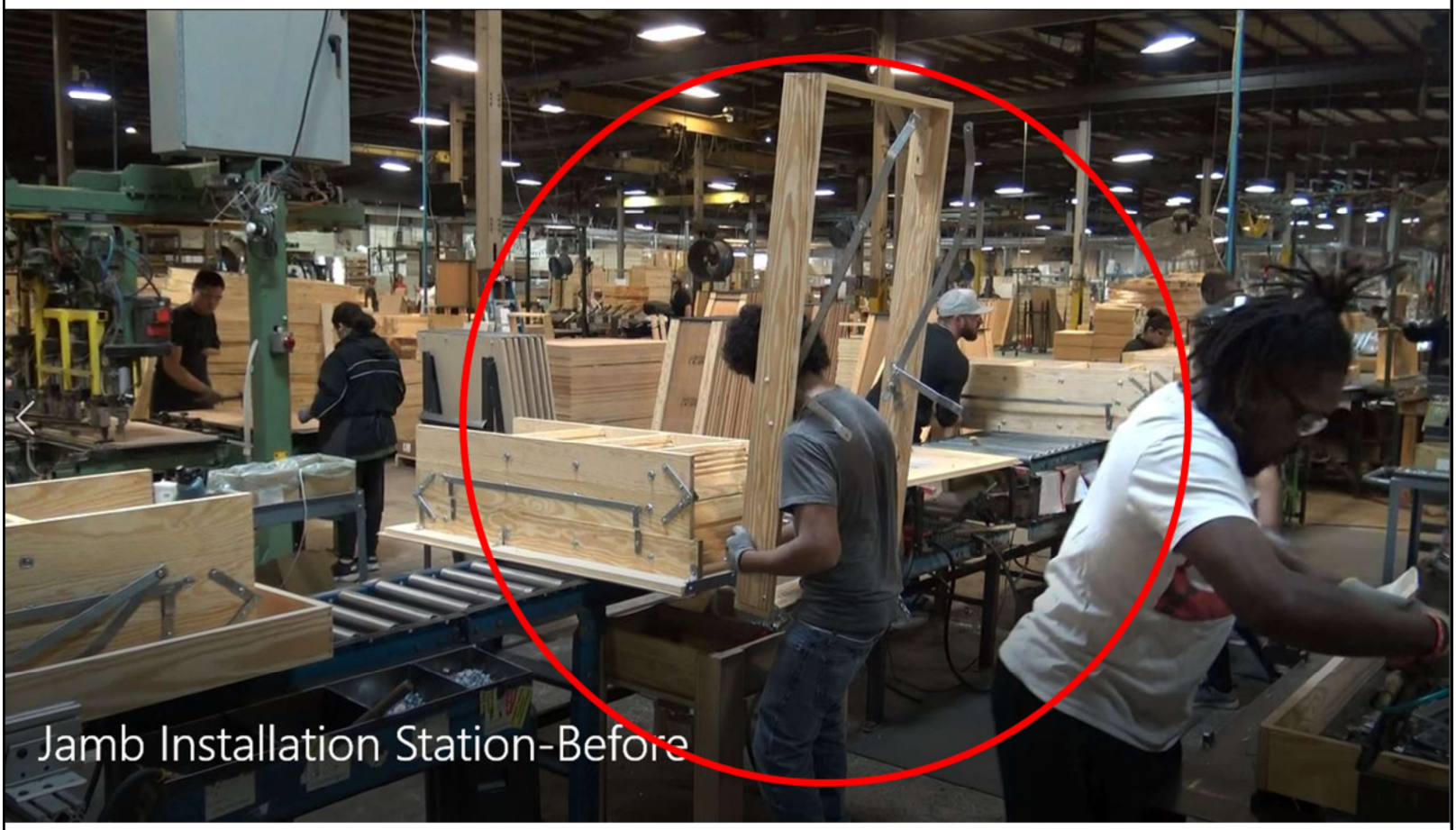


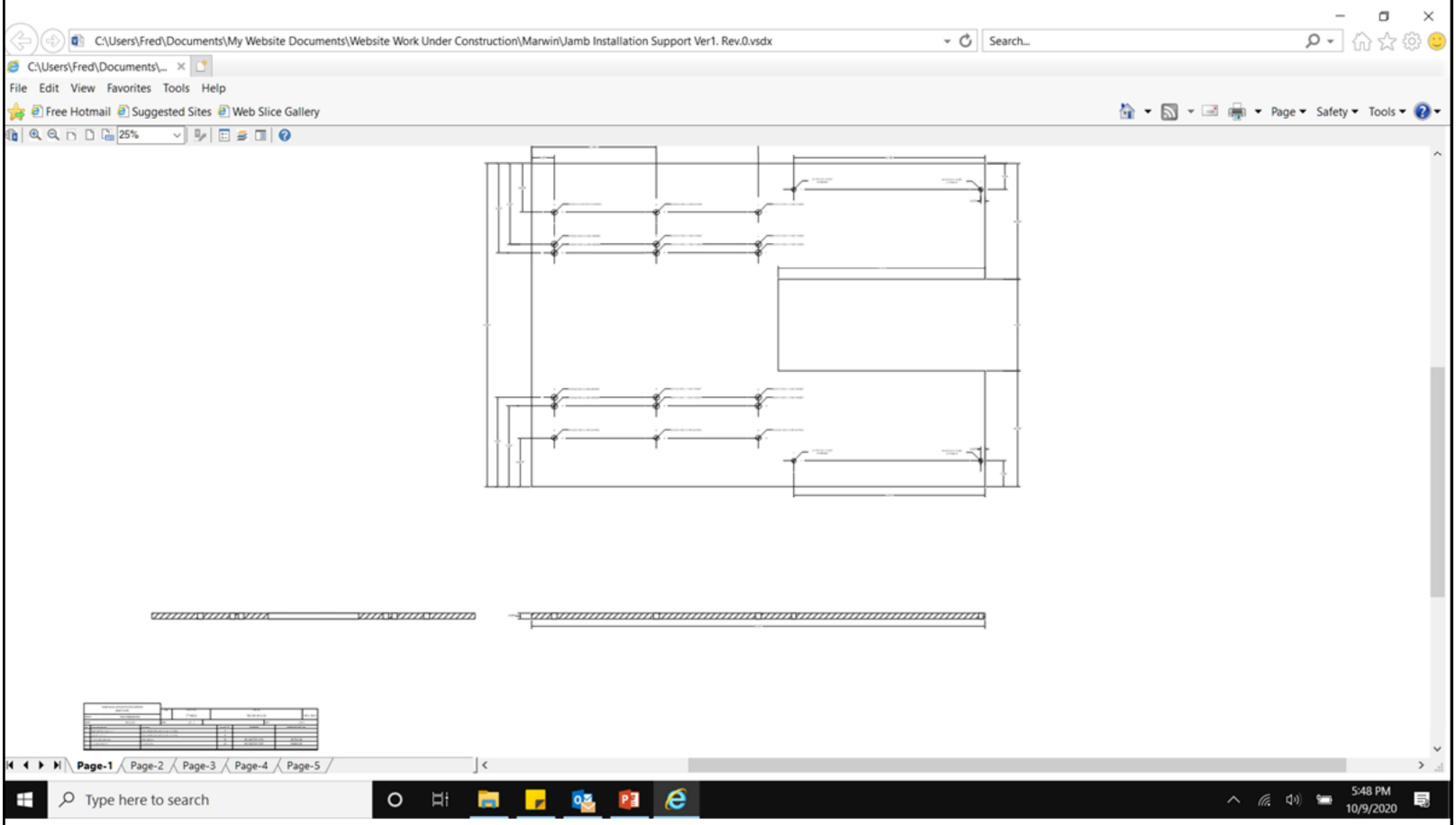
I was laid off in August of 2019 and was unemployed for 9 months. To make ends meet I took up temporary manufacturing efficiency consultant job with a company in West Columbia South Carolina what was embarking on their 'lean' journey. I teamed up with another consultant to help consult them through of adoption of lean thinking principles to help them improve their business operations results.

For me one thing that I noticed quite quickly in their operations that it was very labor intensive and assembly process was fraught with ergonomic inefficiencies. I knew that if I could improve the ergonomics I could improve the capacity, capability, available, flexibility and overall efficiency of the process lead time.

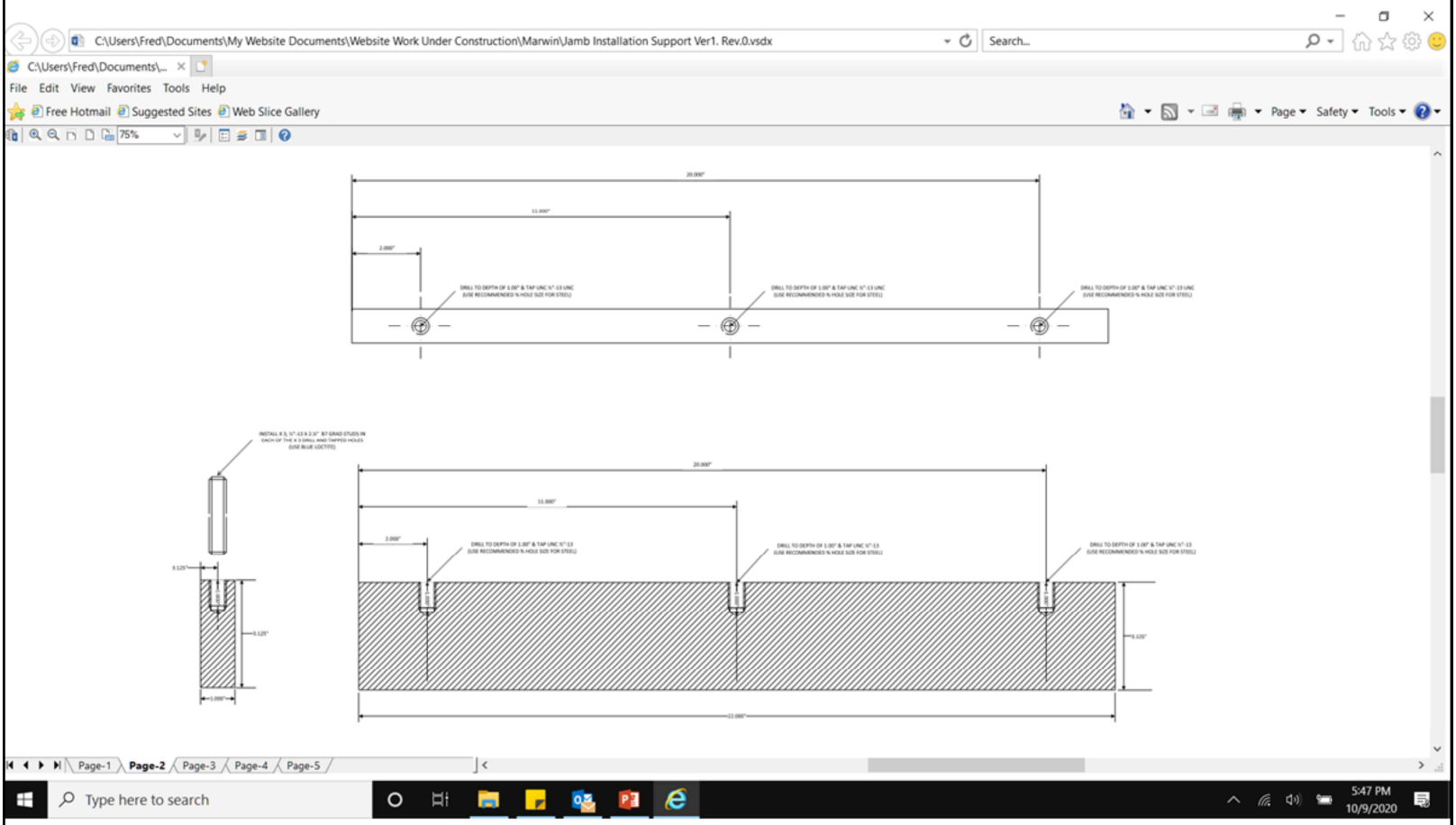
This this slide the operator at this folding attic stair production assembly line at this work station had to pick up the attic door jamb walk it over to the work station and then balancing the end of the jamb between one of his foreleg thighs and shoulder and holding it steady with his left hand offer up and align it to the attic door hinge for screws and nuts installation. This was my number one pet peeve off all the ergonomic problems this company had in its production lines.

So, I designed a simple shelf with two support rail mounted on it then attached to the underside of the roller conveyor. I kid you all the operators at this and the three other production lines at this station had calluses on their shoulders from this job task.

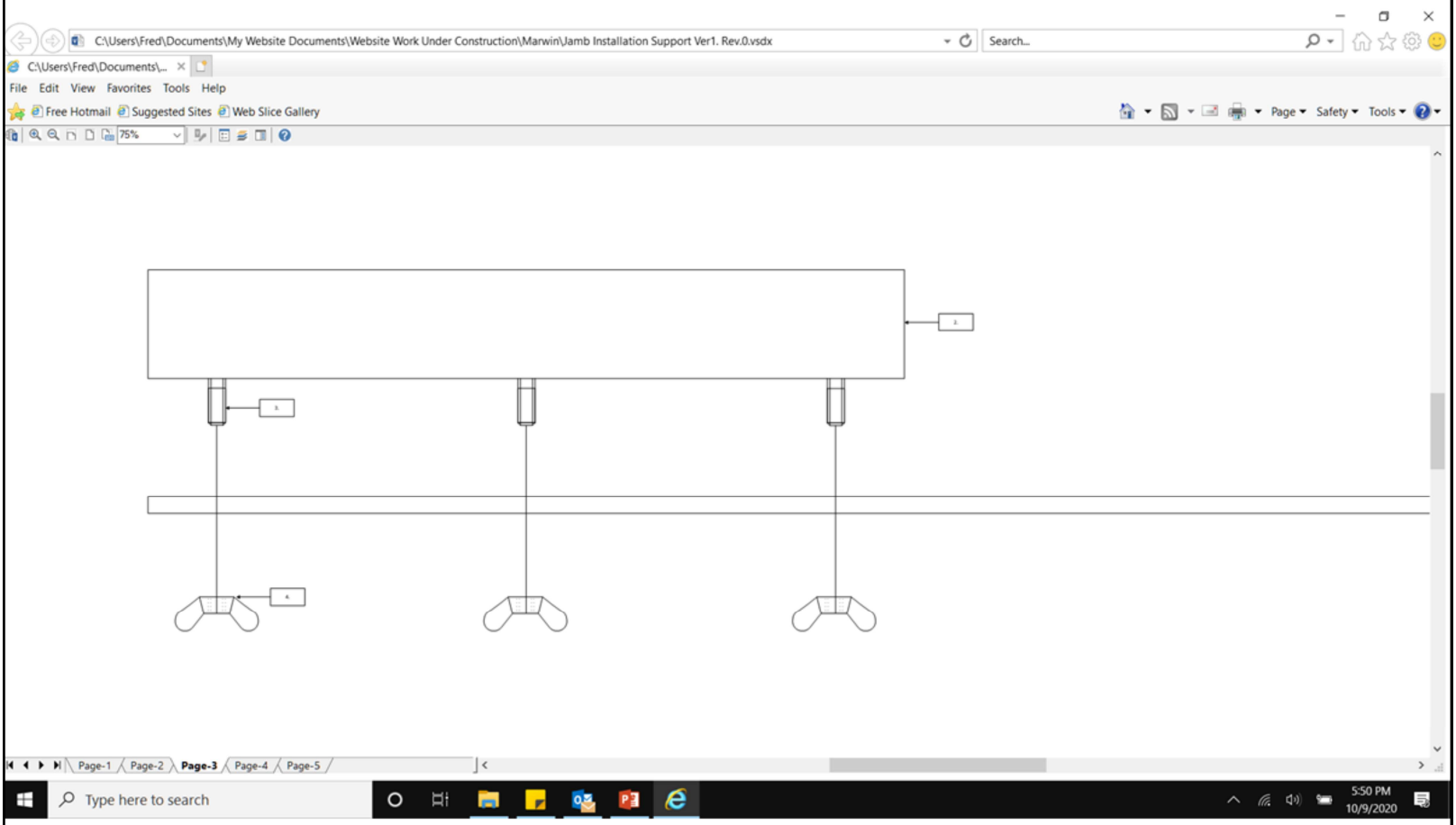
This slide shows the current state of the operator offering up and aligning the jamb to the door hinge work station. **BEFORE VIDEO RECORDING CLICK ON LINK TO YOUTUBE ➡** https://youtu.be/Ha2FTicH77U



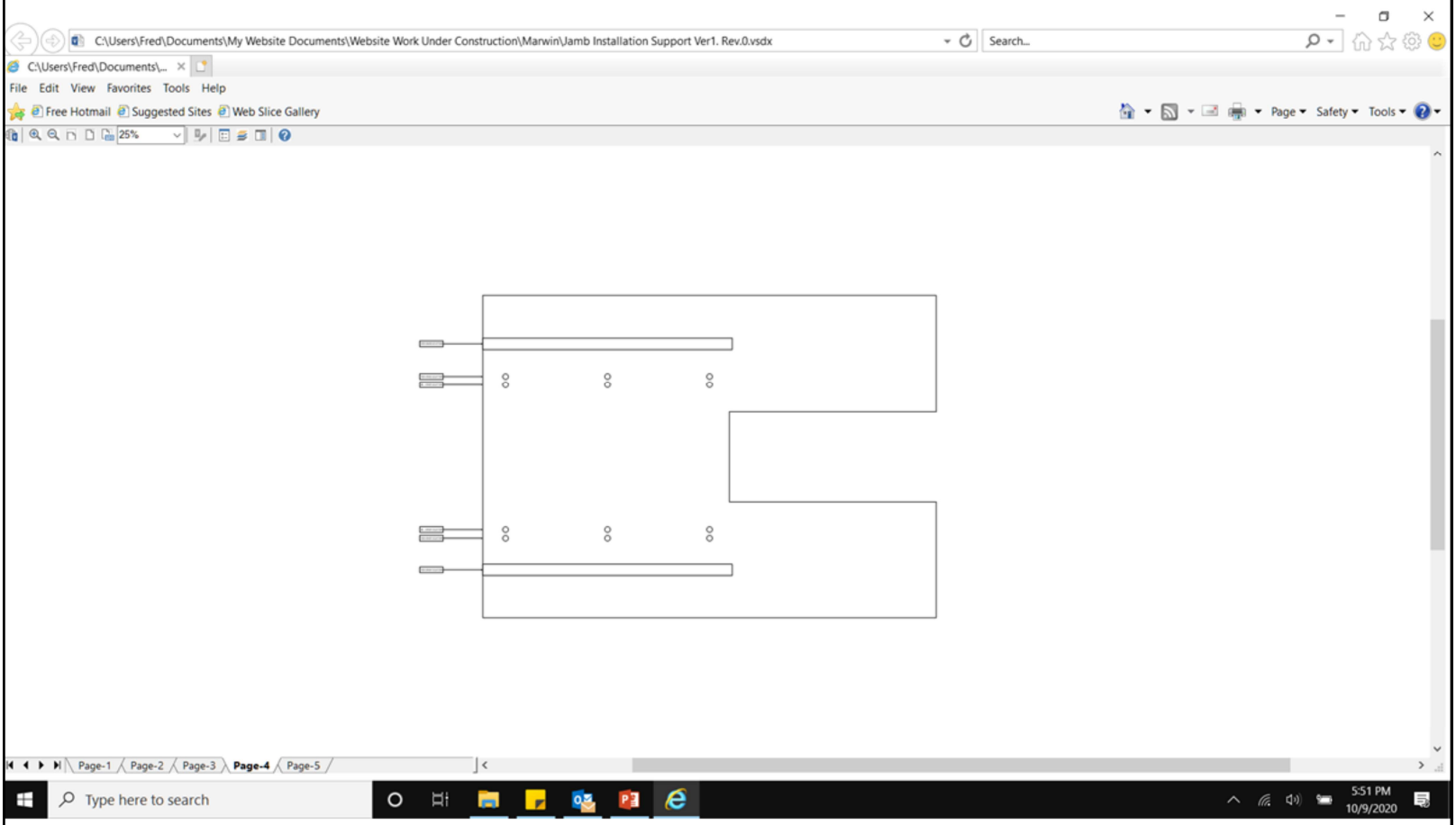
Self designed information document holder board made from acrylic plastic – 11 1/8” X 8 1/2” X 1/2”. Drawn using Microsoft Visio Professional 2016.



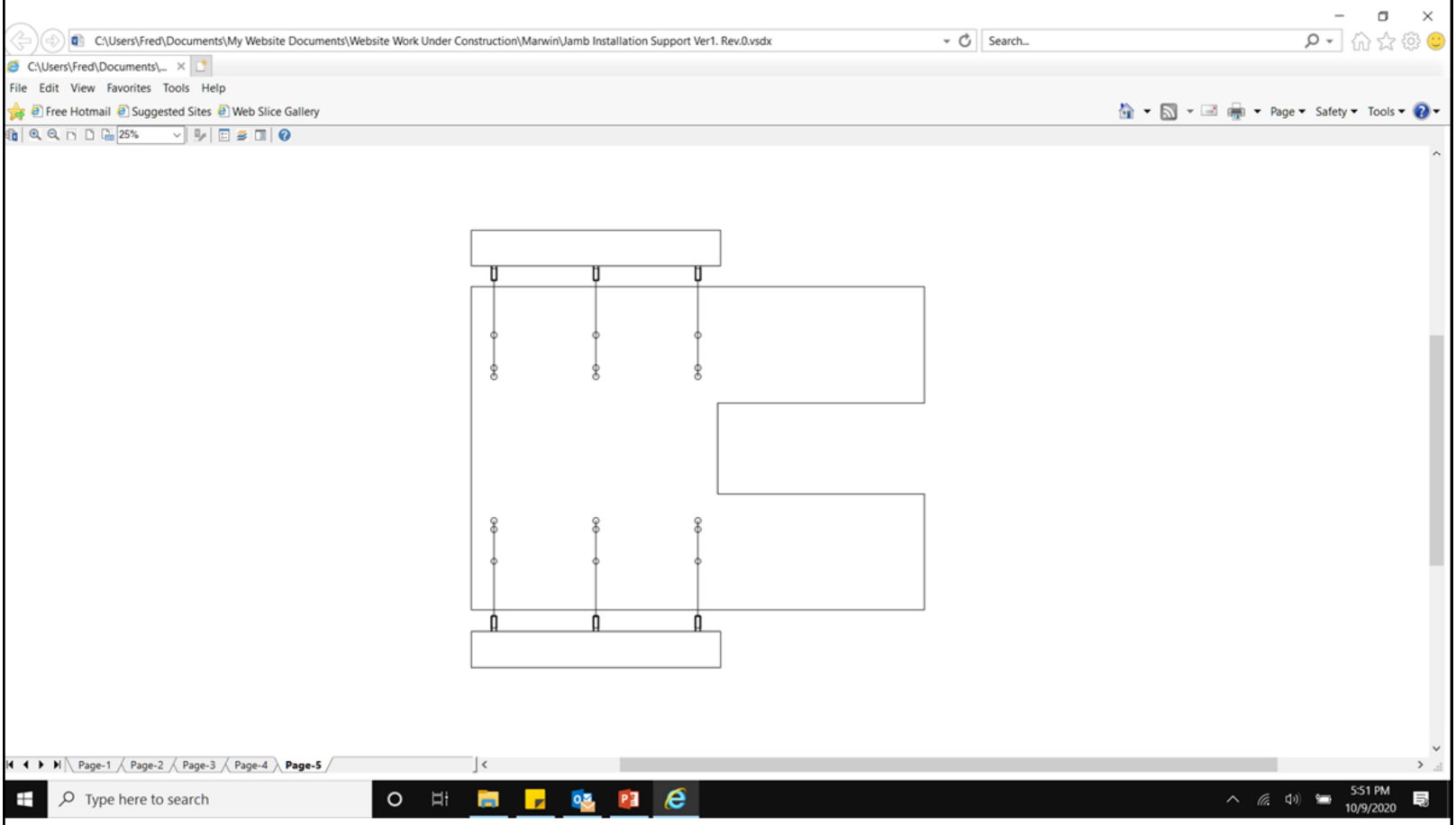
Because this company products was about 95% made from wood there was a copious supply of wood of every size and shape I could want, I made a mock up of want I had in mind from wood. I then installed it, tried it out and when I proved it worked I designed and made the permanent from steel. The next four slides shows my design drawing of the final steel version.



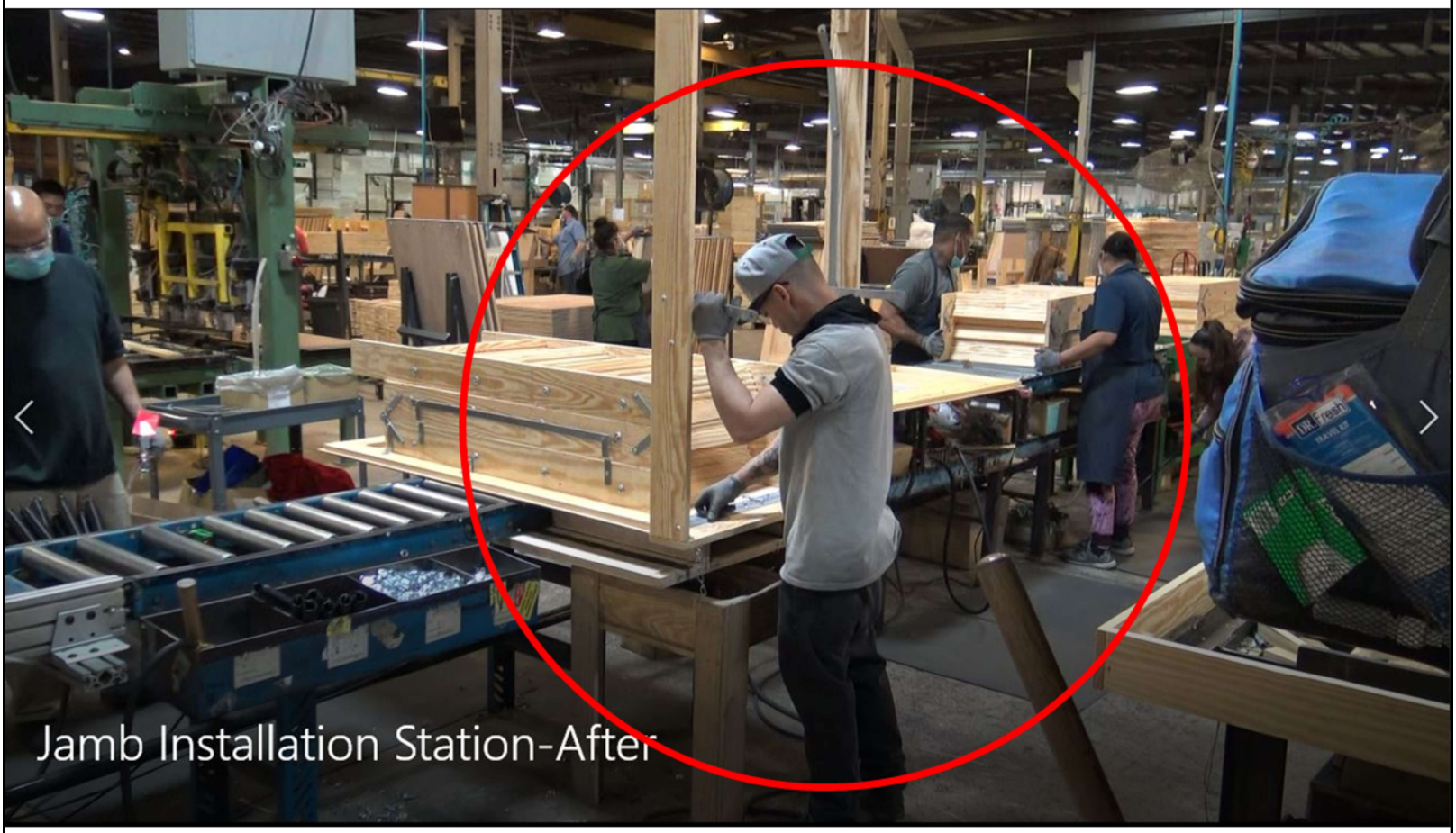
Side view of the support rail



Plane view of the support base plate.



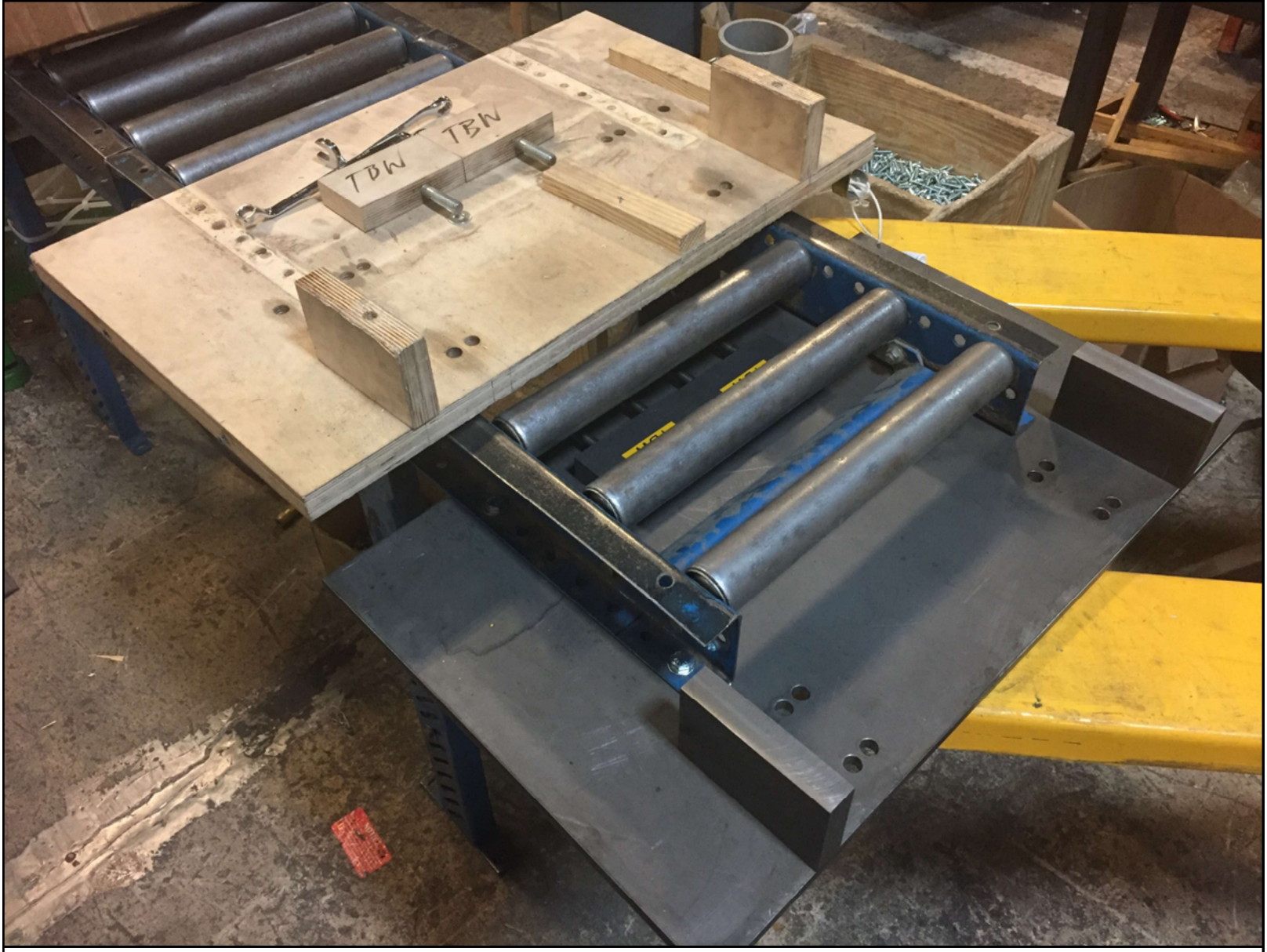
Assembly drawing.



This is the mock up design installed on the line note that the operator now only has to pick up the jamb and rest it on top of the support rail. No need for him to use his foreleg thigh or shoulder to balance the jamb.

Apart from the ergonomic improvement my invention also reduced the cycle time of this operation from 18 seconds to 8 seconds.

This slide shows the current state of the operator offering up and aligning the jamb to the door hinge work station. **AFTER VIDEO RECORDING CLICK ON LINK TO YOUTUBE ➡** https://youtu.be/xw9tPBU9Nvw



This picture shows both my original mock up design made from wood and my later design made from steel.

One other thing that I did was to mount the install station in-line with the production assembly line to improve material flow and presentation of the work in process.

I later went on to mount the totes that contained the screws and bolts to the support rail base plate and pull cord hooks and instructions manual holder.

I later went on to mount the totes that contained the screws and bolts to the support rail base plate and pull cord hooks and instructions manual holder.