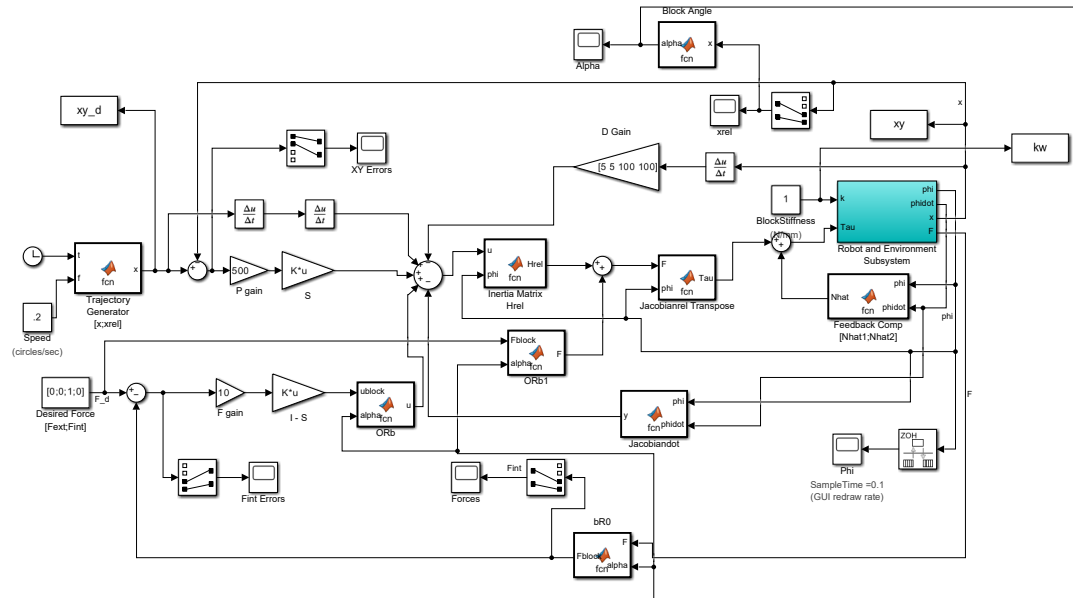


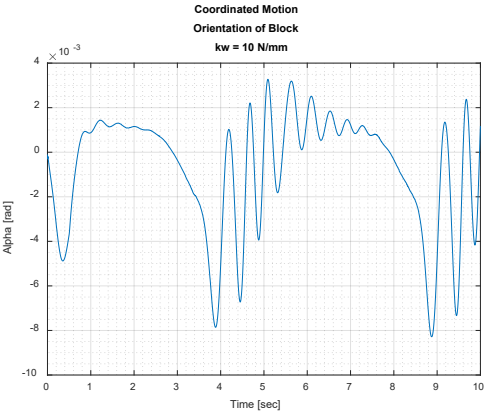
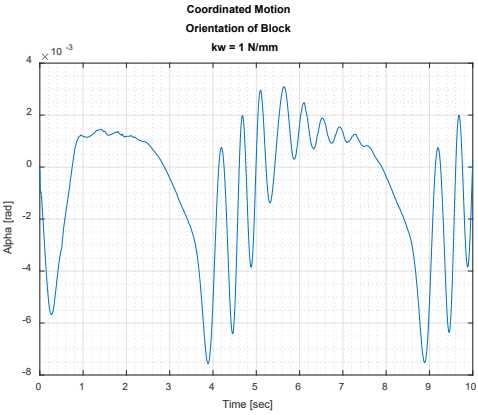
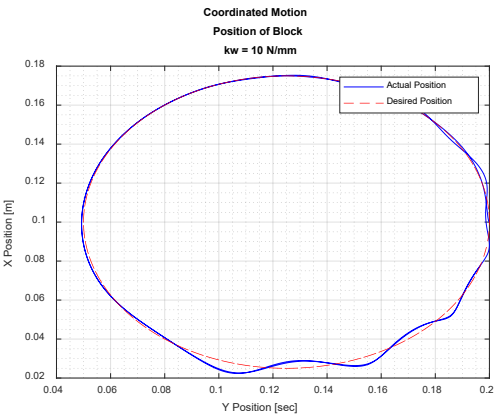
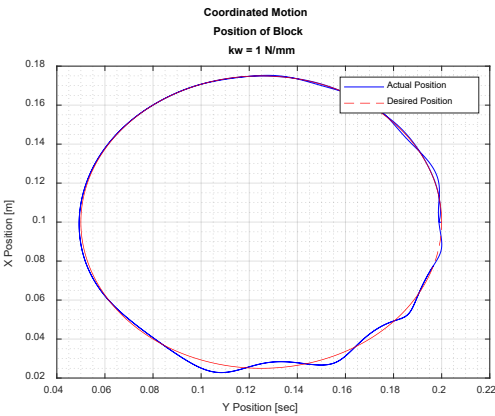
1 PLANAR 2-DOF ROBOTS

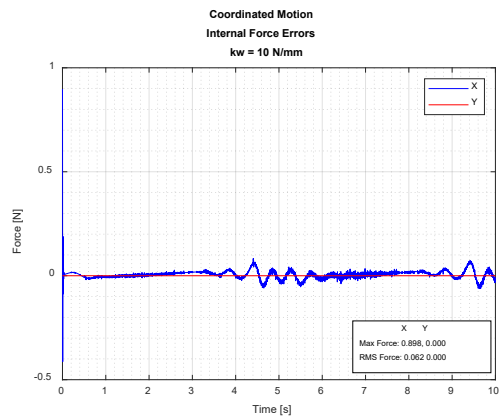
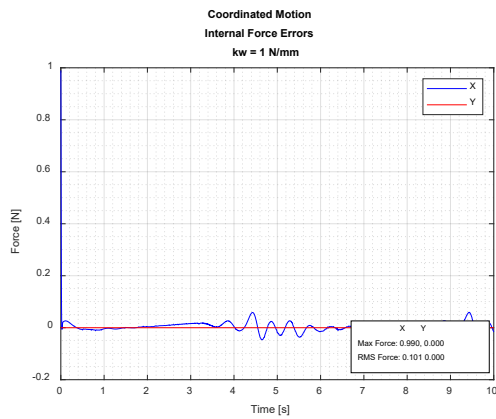
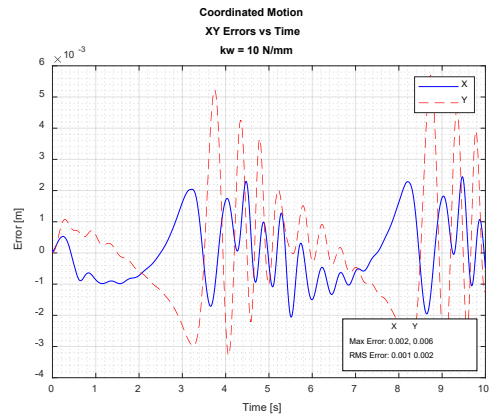
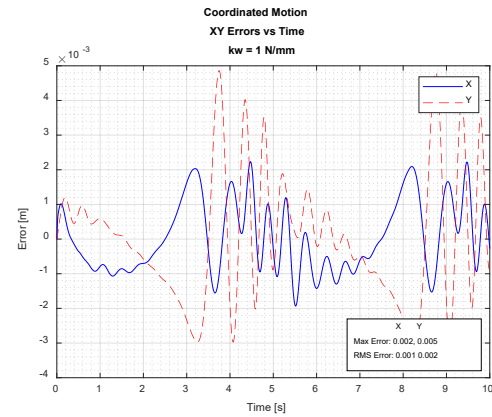
Simulink model



1.1 BLOCK STIFFNESS

1.1.1 Plots



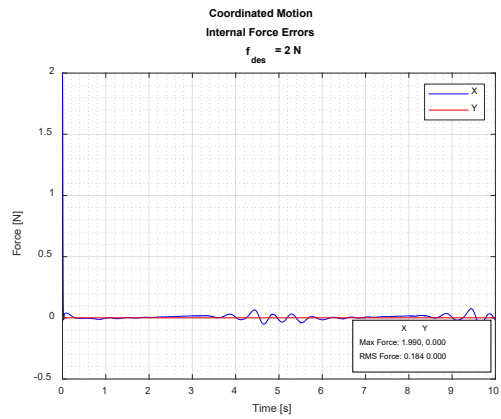
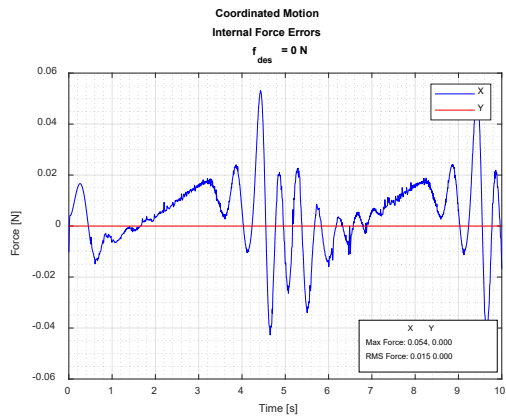
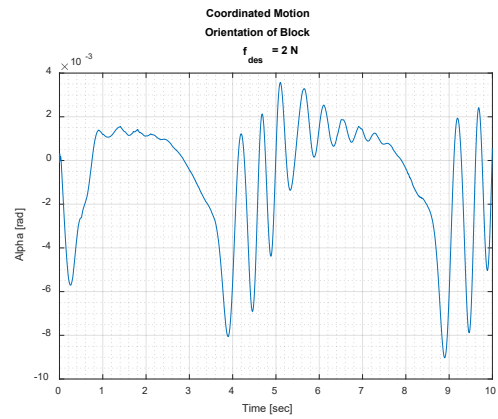
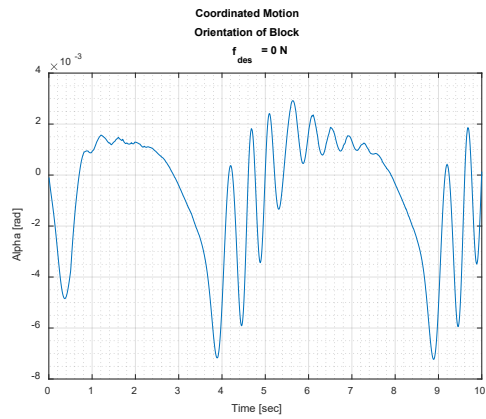
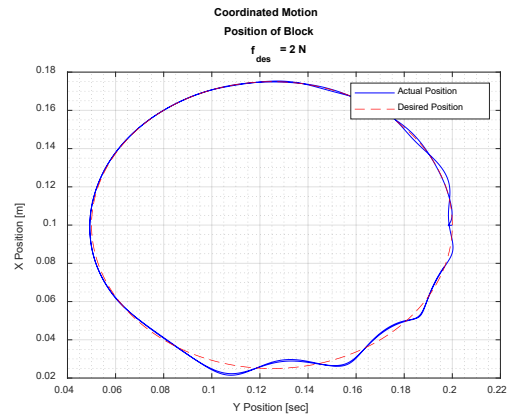
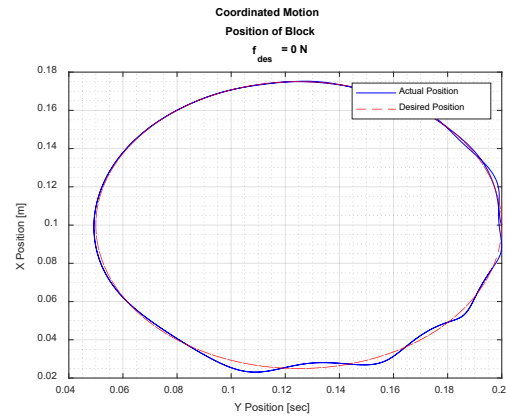


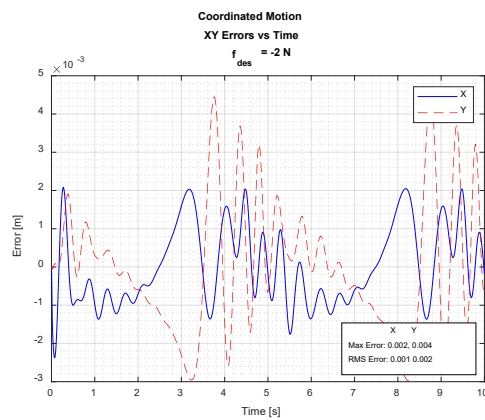
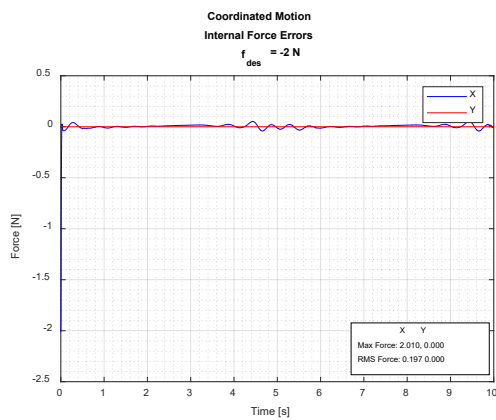
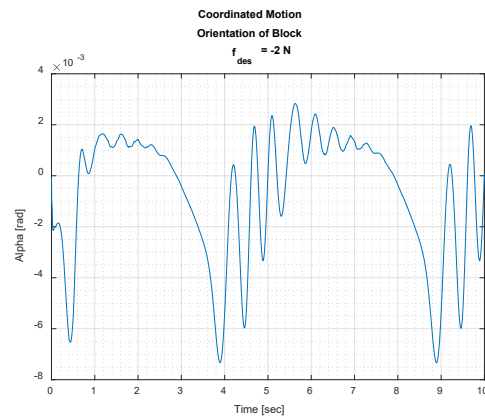
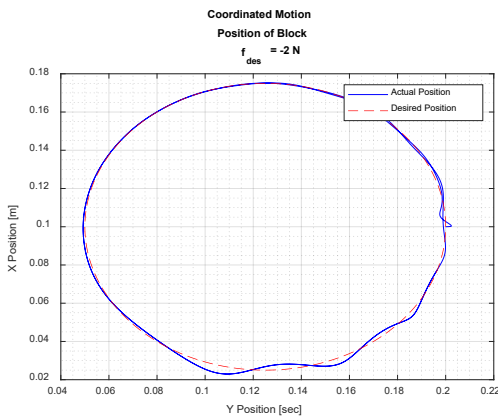
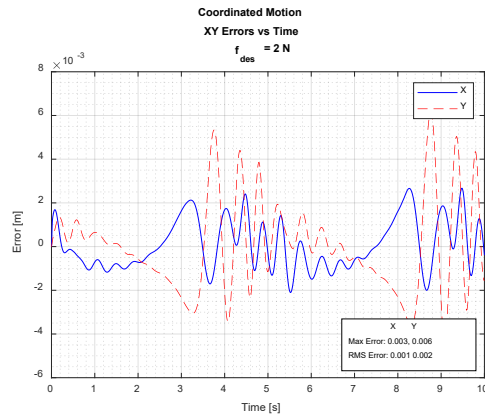
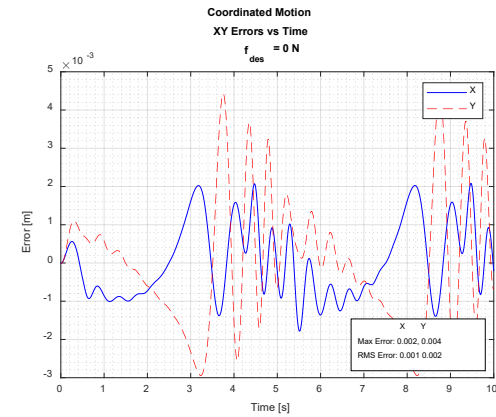
1.1.2 Analysis

Block stiffness didn't seem to change the results much. There was a slightly smaller maximum force, but other parameters were identical, or within a few thousandths of a unit.

1.2 MAGNITUDE OF INTERNAL FORCE PLOTS

1.2.1 Plots



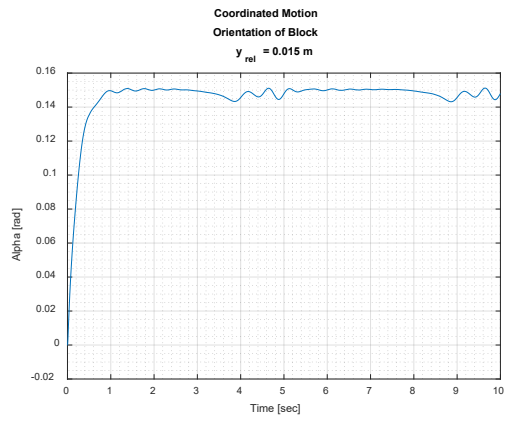
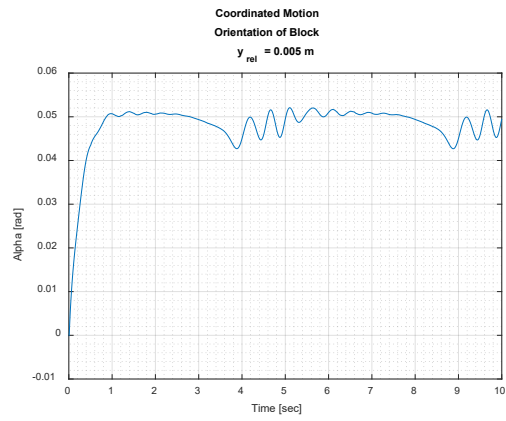
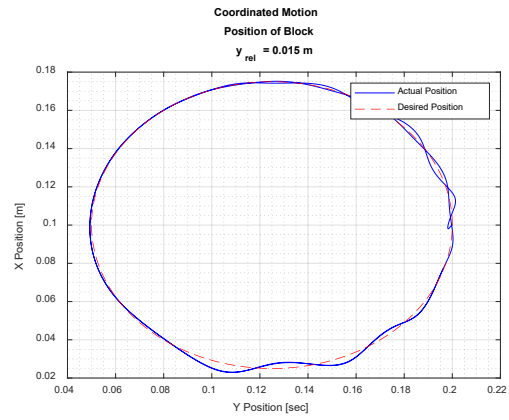
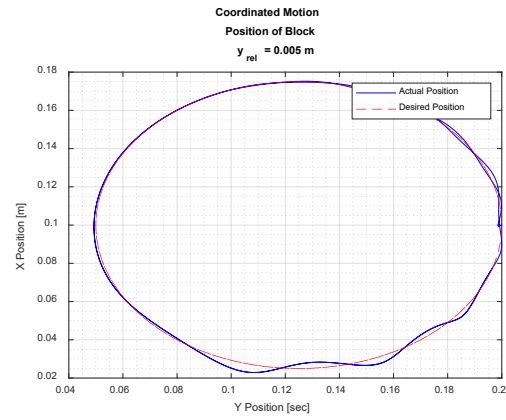


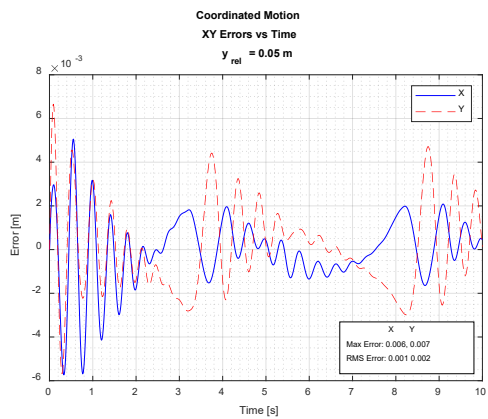
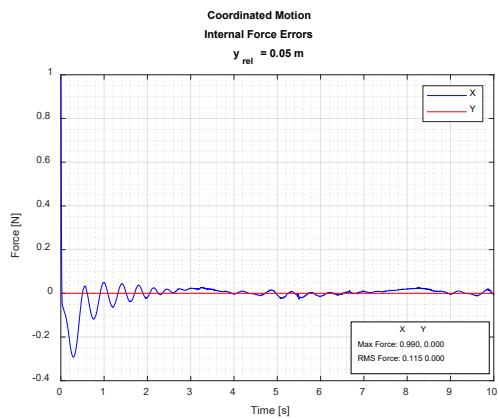
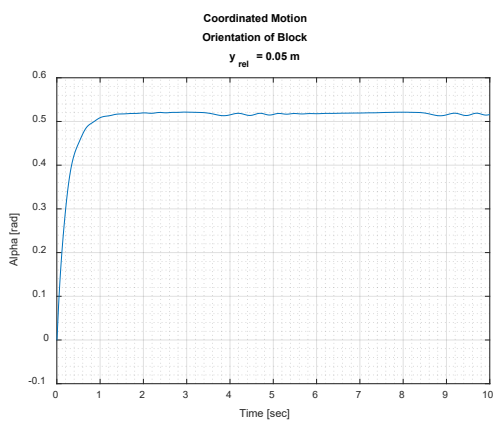
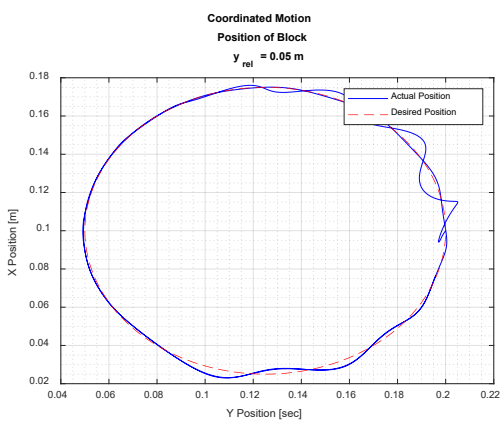
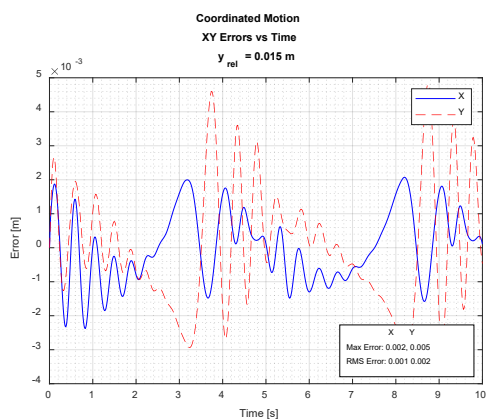
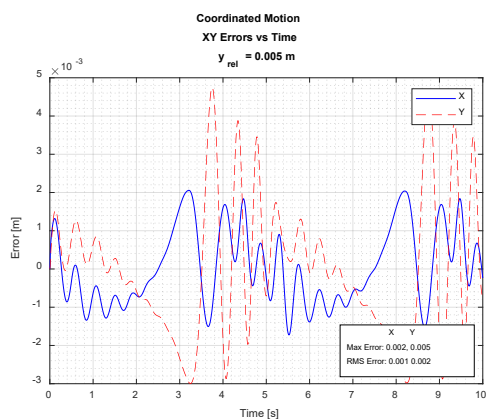
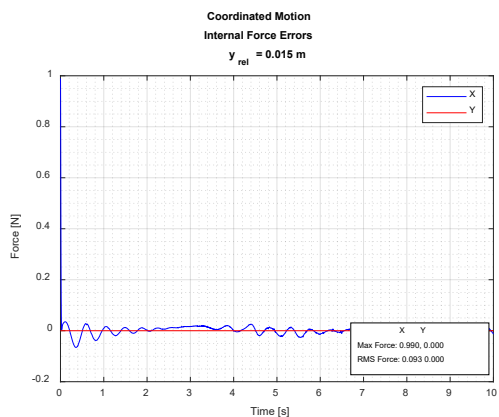
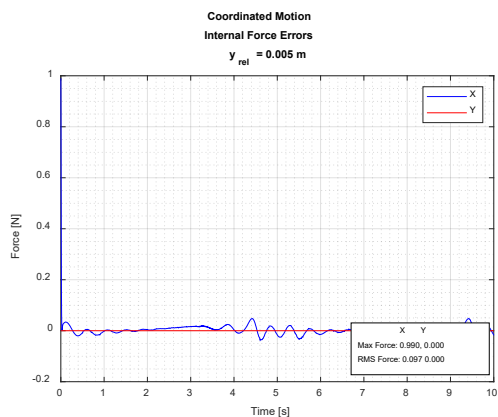
1.2.2 Analysis

The desired force metric led to much different plot results. The sign of the desired force led to a large initial spike of that force's error but was eventually able to settle out. With this large desired force, there was decent trajectory, but it had a few circles and unexpected disturbances. Alpha was similar across the desired forces, and max xy errors were interestingly largest when internal forces were in tension. RMS x errors were similar across all desired internal forces.

1.3 Y RELATIVE

1.3.1 Plots





1.3.2 Analysis

The y relative offset doesn't do much below a certain threshold, but then created large errors due to singularities. The y offset made the controller much more unstable once it hit 0.5 m.