

Actual vs. Plan Timeline

Plan	Component	Scheduled Time	Actual Time
Fabrication	Guide rails	Week 1	Week 3
	Lead Screw	Week 3	Week 3-4
	End Blocks/Stage Block	Week 1	Week 2-3
	Linear Stage Platform	Week 2	Week 3
	Rotational Stage Block	Week 2-3	Week 3-4
	Shaft Couplers	Week 3	Week 4-5
	Arbor & Pins	Week 2-3	Week 5
	80/20 Frame	Week 5	Week 8
	Controller Plate	Week 6	Week 6-7
	Rotational Motor Faceplate	Week 3	Week 5
Mounting	Dimension Holes - controller & motors	Week 5	Week 5
	80/20 Holes	Week 8	Week 9
Miscellaneous Hardware	Plexi	Week 6	Week 9
	Fasteners	Week 6	Week 9
Optical Micrometer	Develop Labview Sequence for Micrometer Control	Week 6	Week 5
	Check Speed - 500 sa/s	Week 6	Week 5
Motion Control	Develop Labview Sequence for Motion Control	Week 5	Week 5 - mid 7
	Looped stepping of motors, 500Hz	Week 6	Week 7
Testing	Assemble Complete System	Week 7	Week 8
	System Testing & De-bugging	Week 8 - 10	Week 9 - 10

As shown above, the several items on the project schedule did not quite stay on task. This is largely due to the delay of material arrival. The team had placed most orders before leaving for break, however, the orders were not placed until week one of spring quarter. This significantly affected the fabrication schedule.

Additionally, there was an issue with the supplier of the motion controller and stepper motors. Unknown to the team, they were in the process of changing manufacturing locations. This delayed the arrival of the material by an additional two and a half weeks, to the middle of week five.

The development of the programming stayed relatively on schedule, with the exception of the motion control, as described above. Simulated data was used to develop analysis routines for the rivets, which allowed a majority of the programming to be created before the system had been built. This also allowed more attention to be directed at the motion control programming when the components arrived late. However, due to the late start with motion control programming and the complexity of the overall system, more time was required for debugging than initially assumed. As a result, the team was unable to complete the statistical process control into the programming. However, this can easily be achieved by utilizing the standardized output reports generated by the program in conjunction with additional VBA macros or Minitab.

The full assembly of the Rivetron was completed during week 8, which allowed 2 weeks for testing and debugging before the final product was presented the customer.