Figure 2 shows the Data Mover design without the controller circuit. This Data Mover is only for two bits, to make it four bits one would have to make this design twice. This design was done and tested in LogicWorks.
Figure 3 Control Circuit

Figure 3 shows the controller circuit that will control the Data Mover. This Controller Circuit will master the Data Mover in a parallel manner, while the data will enter in a serial way.
Figure 4 Control Timing

Figure 4 shows the output of the controller circuit. This is the correct and ideal output of the controller circuit.