Work Completed:

The LCD test circuit was completed and worked properly so it was connected to the microcontroller. The LCD phase input was originally connected to an output port of the microcontroller with the intention of using software to generate the required phase square pulse. Although the samples from microchip were ordered at the end of December, the primary microcontroller was unavailable and delayed the order. It arrived on Monday at my house and I had to drive home to pick up the chips on Tuesday. I then plugged in the wireless receiver, the keypad, and the ICD 2. The entire setup is prepared for programming using the MPLAB software.

Current Status:

Within the last day I have confirmed communications between the computer and the PIC 16f737 microcontroller. While reviewing the datasheet of the PIC there were a few electrical wiring changes that needed to be made based on the software capabilities of the device. The received signal strength output of the wireless receiver requires an analog to digital conversion and was thus connected to AN11, one of the PIC’s A/D ports. However, when using the software to configure one analog port and the rest as I/O ports, it was discovered that only AN0 could be used as a single A/D converter. Therefore the latch for the tenths digit of the LCD needed to be moved to a different port.

I have written a simple test program that should set all of the LCD displays to zero, however the program is not yet working properly. The most critical concern I have now is that the internal oscillator block is not functioning as I expect. The benefit of the internal oscillator is that I can change the device to different clock settings without using additional hardware. However, the disadvantage is that I cannot use the oscilloscope to test the actual speed of the system clock. If I can get the LCD test program to work properly I will be convinced that the microcontroller clock is working properly.

Also, a 555 timer chip has been used to generate the square wave for the LCD’s. After careful consideration, the electrical implementation was more prudent than a software implementation. In software interrupts would be required to stop the current process to generate the proper square wave frequency. This could jeopardize important time sensitive operations, such as reading data transmitted over the wireless link. As long as the blanking input is connected to the processor, the LCD displays can still be cleared.

The diagram below illustrates the current implemented circuit for the display which should not change unless there is some software concern that requires rewiring.
Future Work:

Next week I should have completed the LCD test program. I am going to generate a final program flow graph so that I have an acceptable blueprint for programming. Once the program flow graph is finalized I will not take anymore suggestions for software functionality, so I will need to make sure that everyone approves of the program. With the flow graph I will begin programming as much of the display as is possible without the load cells. However, I do not want to end up having to significantly alter the display program if platform output is different than I expect.

Project Review:

Although I have not completed the LCD and keypad programming as detailed in my timeline, I believe that programming the serial read algorithm next week was premature. I should not program that section until I am sure of the signal transmitted by the platform. I do not feel that I am far behind from my projected timeline.

Hours Worked: 14