Appendix G

Pictures of the System Being Built
Conference Speaker Timing System

Team Time’s UP!

**Frank Gonzales** - Computer Engineer
Programming Specialist and Hardware/Software Design Expert

**Tim Montoya** - Electrical Engineer
Client Liaison, Team Coordinator, and Hardware Design Expert

**Jesse Rebeck** - Electrical Engineer
Procurement Specialist and Hardware Wiring Expert

**Hugh Roberts** - Electrical Engineer
Documentation Specialist and Web Design Master

ECE Senior Design 2006
The Components of the Speaker Timing System

Rabbit 2000 Microprocessor, Prototype Board, & Wireless RF Module

Components of Master Unit (RCM2000, LCD, Keypad, LEDs, Clock)

Components of Slave Unit (RCM2000, Digits, LEDs)

Keypad Assembly and Testing

Wired Keypad Encoder Chip

Keypad Wired to Keypad Encoder Chip and Prototype Board

Analyzing Keypad
Indicator/Warning Lights Assembly and Testing

LED's Ready to Test

LED's Ready to Test with Keypad

Green Light Turns on When Countdown Begins

Yellow Light Working at Correct Time. It Blinks, too.

Red Light turns on when Countdown Timer Reaches 0:00:00

Lights are Mounted
5-Digit 7-Segment Display Assembly and Testing

Testing 2 Digits

Testing all 10 Digits with Microcontroller

Success! Digit Lights Up!

Wiring and Soldering Display to Mounting Boards

Driver IC, Inverter Chip & Voltage Regulator Wired and Mounted Together

Board Complete with Driver IC, Inverter Chip, and Voltage Regulator Attached to Display
Testing the Display with the Microcontroller (It Works!)
Attaching all Components for Testing

Testing Components

All Components Attached to Each Other and Being Tested
Assembling the Stations

Final Wiring of LCD

Installing Components in Enclosure

Testing Before Final Assembly

Inside the Master Station

Putting the Master Station Together

Putting the Slave Station Together
The Speaker Timing System is Finished!

Both Units of the Speaker Timing System

System Counting Down
Both Units of the Speaker Timing System Ready to Use