#### 1. Project Descriptive:

Title: Modbus to DNP3 Gateway Device

Group Members: Joshua Daly

Daniel Doherty Mac Lightbourn Joseph Wilkerson

Sponsor: M.P. Electronics

#### 2. Project Narrative:

Our group was discussing many different ideas for the project but decided on Modbus to DNP3 Gateway Device for a multiple reasons. First and foremost the project offered a challenged for everyone in the group, it allowed us to leave our comfort zone and learn in a real world environment. In addition, because everyone in the group is getting ready to move into industry soon the real world experience is invaluable. Another draw of this project was that because we have two electrical engineers and two computer engineers we were looking for a project that had a balance of both circuit designs as well as software development which this will encompass.

The main goal of this project is to design a device with a universal connectivity that can be added to an existing lift station controller and allow it to transmit via an Ethernet signal. The objective is to make the hardware reliable, durable and portable. The software should be efficient, resilient and self-testing. Overall the device needs be able to convert the serial signal that the lift stations currently use to an Ethernet signal that would allow efficiency as far and the sending and receiving data as well as the ability to turn the "slave" device into the "master" to send important data. It also should be able to timestamp all the data and store it in memory until it is successfully sent. We would like it to have secure authentication as well.

# 3. Project Specs

Case Size	4" x 4" x 2"
Case Requirements	Must attach to a rail
Input Voltage	12 V at 35 W
Battery Backup	5 hours
	Powers: Memory to store data
	Sends signal to notify of power disruption
Ports	2 x Ethernet
	1 x Serial
Data Transmission	90% success on first transmission
Success Rate	
Data Security	128-bit SSL Encryption
Operation Temperature	

# 4. Project Block Diagram

Attached.

# 5. Project Finances

Qty	Item #	Description	Unit Price	Discount	Line Total
1		12-Volt DC Power Supply	39.99		39.99
3		Circuit Board	35.00		105.00
1		Serial Connector	1.00		1.00
		Miscellaneous Electrical Part	250.00		250.00
2		Ethernet connector	1.00		2.00
1		Aluminum Case	100.00		100.00
			Total Discount		
				Subtotal	497.99
				Sales Tax	29.88
				Total	527.87

The project will be funded solely by the sponsor, they intent to use the completed design in their current realm of business.

### 6. Project Milestones

9/11/2012 - Project Accepted

9/18/2012 - Project Specifications Formally Defined

10/30/2012 - All Calculations Completed

11/25/2012 - Senior Design I Paper Completed 1/20/2012 - Full Breadboard designs Completed

1/31/2012 - Designs Finalized and sent for board printing

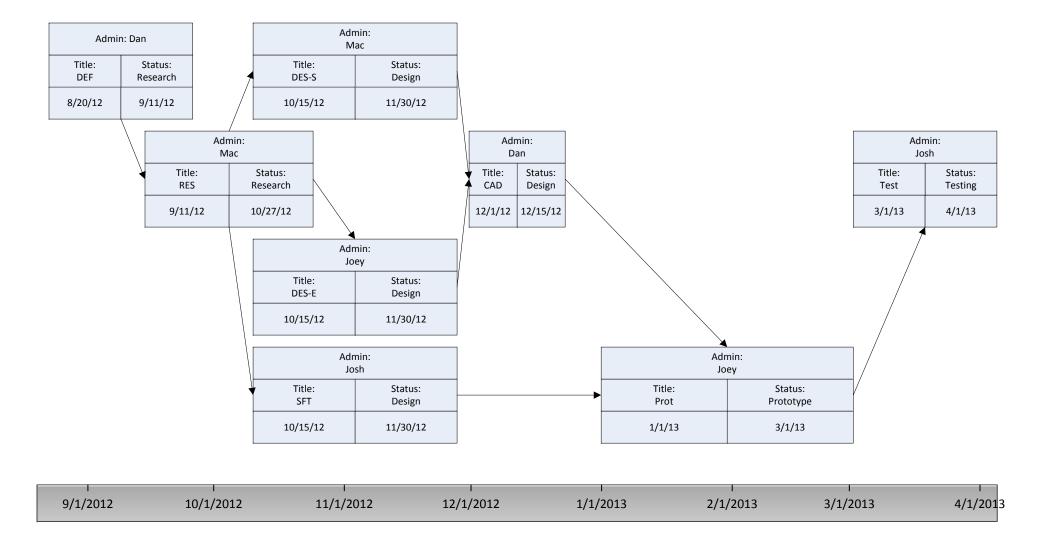
3/1/2012 - Prototype finished 3/20/2012 - Initial Testing Finished 4/1/2012 - Final Testing Finished

4/5/2012 - Senior Design Project Finished and turned over to sponsor.

#### Legend:

DEF: Definition of the Project
RES: Research in area's the project will encompass
DES-S: Design of the Serial communication board.
DES-E: Design of the Ethernet communication board.
SFT: Software design
CAD: Case Design

Prot: Prototyping of the design Test: Testing of design



8/20/2012 4/5/2013