
EE/CprE/Se 492 WEEKLY REPORT 1

January 14, 2019- February 1, 2019

Group Number : sdmay19-17

Project Title: Substation Design

Client: Burns & McDonnell

Advisor: Craig Rupp

Team Members:

Jacob Heiller- Controls Engineer

Rebecca Franzen- Studies Engineer

Connor Mislivec- Quality Control Specialist

Riley O'Donnell- Administrator

Tom Kelly- Project Manager

Wilson Pietruszewski- AutoCAD Engineer

Nicolaus Cory- AutoCAD Engineer

Weekly Summary:

This week, we spent some time helping our new group member, Nicolaus Cory, familiarize himself with the project. Wilson and Jake explained the physical design of the substation along with how our client wants revisions to be made. Riley and Rebecca demoed the software used to create the grounding plan. Tom and Connor reviewed the procedure for determining the zones of protection outlined in our lighting study. We had a meeting early on in the semester to discuss deliverables from last semester as well as expected deliverables for this semester. We also spent this time better understanding his strengths and previous experiences. After this meeting, we met with our client to discuss the plan for this semester as well as the previous deliverables from last semester. Our client had given us feedback on the three deliverables we had due last semester, physical layout, grounding design, and lighting protection design. The rest of the week was spent incorporating the changes from our client.

Past Week Accomplishments:

- Helped familiarize Nic with the project- Everyone
 - Discussed the client and the client expectations
 - Explained and demonstrated deliverables from previous semester
 - Walked through deliverables for this semester
- Review scope of project given to us by Burns and McDonnell- Everyone
 - Review timeline for each section of the project
 - Determine how much time each section of the project should take

- Divided tasks amongst group members for second semester
 - DC Battery Design, AC Station Service Study- Nic & Becca
 - One-Line Diagram, Three-Line Diagram, Breaker Schematics (69kV & 138kV)- Tom & Jake
 - One-Line Relay Schematic, Transformer Schematics- Riley & Wilson
 - Communication Block Diagram, Communication Network Design- Connor & Jake
- Made revisions to grounding report- Riley & Becca
 - Changed conductor size where necessary
 - Updated ground grid design based on updated physical layout
 - Adjust current ground grid to include transformer pad grounding
 - Re-run voltage potential tests after ground grid updates to ensure passing design
 - Update grounding study report to reflect changes made to design
- Made revisions to physical layout- Wilson & Jake
 - Changed bus supports to reflect plan view
 - Changed rigid bus height from the XFMR to the 138 kV ring bus per comments
 - Updated B-B to reflect the transition structure heights
 - Updated dimensions on A-A & B-B for unification
 - Changed the starting point from the concrete pad to the ground
- Made revisions to lightning report- Connor & Tom
 - QC'd all LTG masts per physical design changes
 - Confirmed results with client provided software
- Reviewed project documents to better understand project- Nic
 - Read the project plan and design document
 - Reviewed scope of services given by Burns and McDonnell
 - Skimmed through weekly reports for last semester
 - Met with Wilson to go over previous drawings and terminology

Pending Issues:

Individual Contributions:

Name / Role	Individual Contribution	Hours this week	Cumulative Hours
Rebecca Franzen	Grounding study revisions	4	92
Jacob Heiller	Physical layout revisions	4	91
Tom Kelly	Lightning study revisions	4	91
Connor Mislivec	Lightning study revisions	4	90.5

Riley O'Donnell	Grounding study revisions	4	92
Wilson Pietruszewski	Physical layout revisions	4	93.5
Nicolaus Cory	Familiarization of project	5.5	5.5

Comments and extended discussion:

Plan for coming week:

- Finalize revisions to first semester submittal- Everyone
 - QC check on all dimensions of plan view and elevation views
 - Perform software check on lightning mast heights
 - Clarify grounding report per client comments
- Begin DC battery sizing and report-Nic & Becca
 - Sizing to be done using IEEE specs and excel macro program
- Begin schematic block diagrams (to be drafted in CAD)- Jake, Tom, Riley, & Wilson
 - Initial systematic diagrams to base CAD drawings on
 - Additional research for IEEE standards
- Research communication layouts and plans- Jake & Connor
 - Research IEEE standards for communication specifications
 - Review material provided to us by our client

Weekly Advisor Meeting Summary:

- Discussed previous semester work
- Walked through final presentation for EE 491
- Discussed software that will be utilized this semester