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## EE/CprE/Se 491 WEEKLY REPORT 05

October 6, 2018- October 19, 2018

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

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### Weekly Summary:

After our discussion with Burns and McDonnell during our bi-weekly conference call, we determined that we could optimize our grounding design to use less copper and therefore reduce cost. To focus on our grounding grid optimization, we put the lightning study on hold and determined that we would focus our attention on that next week. To optimize the grounding design, we increased the distance between the copper in 5 feet increments and reran the study each time until the maximum voltage level was closer to our minimum allowable voltage. When we were satisfied with our new grounding design, we performed another quality assurance check on the design to ensure its accuracy. When the quality assurance check was completed, we then had to update the grounding report appropriately with our new design. This update involved taking the necessary information and photos from CDEGS and analyzing the past study with the optimized study to understand what had changed and what needed to be updated in the report.

A few weeks ago, Burns and McDonnell requested that we run the bi-weekly meetings in a way similar to the way in which Burns and McDonnell would run their meetings with their clients. After our conference call with Burns and McDonnell this week, we determined it would be beneficial to create a meeting agenda template and a meeting minutes template that we could send to them before and after our meetings. We completed this template and used it during our conference call and determined it was effective and therefore will be used in the future.

**Past Week Accomplishments:**

- Grounding design optimization - Everyone
  - Ran various studies using CDEGS, increasing our distance by 5 feet each trial
  - Analyzed the output of each of the results to determine whether the study was passing or failing
- Grounding Study QC Check - Tom and Connor
  - Checked that information from the grounding reference guide given to us by Burns and McDonnell remained the same
  - Ensured that the new design followed IEEE 80
  - Compiled a list of items in the report that had changed
  - Checked that the new design still followed client standards
- Grounding report update - Wilson and Jake
  - Gathered the new information from CDEGS using the list compiled by Tom and Connor from the QC check
  - Updated the new values in our report and changed the necessary verbiage
- Meeting agenda and meeting minutes - Rebecca and Riley
  - Used Burns and McDonnell style
  - Determined the important topics to discuss with Burns and McDonnell and created an agenda that was sent to Burns and McDonnell prior to the meeting
  - Took minutes during the conference call
  - Finalized meeting minutes and sent them to the group and Burns and McDonnell

**Pending Issues:**

- Equipment
  - Understanding the equipment we must use and the equipment we are not allowed to use
  - How the equipment decisions will impact our reports
- Finalize the meeting report for upcoming bi-monthly meeting with BMcD
  - Discuss the impact of the equipment we use and how it may impact our reports
- Discuss optimization concerns

**Individual Contributions:**

Name / Role	Individual Contribution	Hours this week	Cumulative Hours
Rebecca Franzen	Grounding study optimization and finalizing of meeting agenda and meeting minutes	12.5	50.5

Jacob Heiller	Grounding study optimization and grounding report update	12	47.5
Tom Kelly	Grounding study optimization and grounding study QC check	13	50.5
Connor Mislivec	Grounding study optimization and grounding study QC check	13	50
Riley O'Donnell	Grounding study optimization and finalizing of meeting agenda and meeting minutes	12.5	50.5
Wilson Pietruszewski	Grounding study optimization and grounding report update	12	48

Comments and extended discussion:

Plan for coming week:

- Begin Cyclone Substation lightning study - Everyone
  - Perform necessary calculations
  - Determine data needed for report
  - Write down any questions that arise
- Discuss grounding study results after optimization with BMcD during conference call - Everyone
  - Record any changes that need to be made the finalize grounding design and report
- Begin Cyclone Substation site layout - Everyone
  - Determine software needed to complete drawings
  - Review example drawings provided by Burns and McDonnell

Weekly Advisor Meeting Summary:

- Discussed progress made towards completing grounding report and lightning study
- Discussed Lightning Talks and why they are important
- Discussed class assignments that are approaching