ASC 2017 - MECHANICAL PRE-PROBLEM STATEMENT

INTRODUCTION

The Northern California Mechanical Contractors Association and Southland Industries (a Joint Committee of Mechanical Professionals) welcomes competitors to the 2017 Associated Schools of Construction (ASC) Open Student Competition and the Mechanical Problem. This is a great opportunity for students, faculty, and industry to come together in a tremendous learning environment. The Mechanical Problem will provide students with an overview of the commercial construction process, and an insight into complicated building systems that bring it to life. We are excited to have you join us here in February, and share in this experience.

General questions direct via e-mail to Greg Hamm at ghamm@southlandind.com

PROBLEM DESCRIPTION

The scenario for this years' problem will have student competition teams and the judges working for the same company. Student competition teams will be the company's construction team onsite executing the Mechanical & Plumbing scope under a Guaranteed Maximum Price (GMP) contract, and the judges panel will be framed as upper management in the company. Upper management (judges panel) has requested to have a project update meeting addressing current financial status, revenue projections, budget updates, construction progress, risk and opportunity analysis, and mitigation plans.

The project, Phase 1 of a 36.4 -megawatt Data Center, is underway at approximately 30% complete. With N+2 redundancy on the mechanical systems, it's a priority for the owner to have the highest level of quality built into the systems while keeping a focus on reliability and serviceability. Like with most data centers though, they are challenged with speed to market, and thus an aggressive construction schedule has been put in place. This will require teams to be innovative in their construction approach and planning of the work.

The project scope of work and its primary systems are as follows:

- Equipment Installation (owner furnished/ contractor installed)
- Mechanical and Plumbing Systems including:
  - Sanitary & Storm drain
  - Domestic Hot & Cold Water
  - Compressed Air
  - Fuel Oil
  - Urea Reagent
  - Chilled Water
  - Condenser Water
  - Heating Hot Water
  - Generator & Boiler Exhaust
  - Supply, Return, Ventilation and Exhaust Air
- Materials that will be used for this project will be as follows:
  - ASTM B88 Type L Copper
  - ASTM B88 Type M Copper
  - ASTM A53 Grade B Sch 40 Steel
  - ASTM A53 Grade A Sch 40 Steel
  - ASTM A403 Grade WP304L Sch 10 Stainless Steel
  - UL/ULC Listed Fiberglass Red Thread IIA Piping
  - ASTM D1784 Sch 80 CPVC
  - ASTM A888 Hubless Cast Iron
  - ASTM A653 Sheet Metal
- Methods of connections for this project will be as follows:
  - Solder
  - No-Hub
  - Socket Welding
  - Butt Welding
  - Flanged (150 & 300 Class)

PRE-COMPETITION ACTIVITIES

Once your School has signed up for the competition and you have determined your final team, please forward a copy of your individual resumes and a team photo that identifies each participant to Attention: Greg Hamm ghamm@southlandind.com. Please provide these before the competition by February 7th, 2017. This will be worth 5% of your score.

To help prepare for this year's problem we encourage teams to familiarize themselves with the following:

- **Document Control**: RFIs, Submittals, Bulletins and Procurement Logs
- **Change Estimates**: Labor rates (standard time, overtime, shifts), Identifying changes, Takeoffs, Pricing, Budget Update
- **Project Finances**: GMP Billings, Schedule of Values (SOV), Cost Projections, and Cash Flow
- **Construction Management / Operations**: Contracts, Drawings & Specifications, Labor Tracking, Schedule Activities, Site Logistics, and Coordination between Subs & GC.

COMPETITION ACTIVITIES

The deliverables this year will be specific documentation that your upper management will request for the status meeting (presentation) in order to get them up to speed on where the project is currently at and where it is going. Specifics on what those deliverables are and how they should be organized will be given on the day of the competition along with all standard company forms, logs, and the project contract documents. At a minimum, teams will need to utilize Microsoft Word, Excel, and BlueBeam Revu. The deliverables will need to be submitted before the competition time is up via one hard copy in a binder provided by the judges as well as an electronic copy.

The presentation will be formatted around a meeting with upper management (judges panel). Be prepared to discuss the deliverables in detail. Remember, we are working for the same company so keep introductions and background info to a minimum. Keep the focus on your solution to some of the project challenges.

SCORING CRITERIA

The successful team solution will be based on the team's understanding of the construction process, the financial analysis and projection, specific details of the project, innovation applied, ability to recognize and mitigate potential impacts, ability to follow contract requirements, and the project presentation.

Each team will be scored on the following items:

- **Pre-Competition activities complete**
- **Financial Analysis:** Current status & forecast projection accuracy
- **Risk Analysis:** Identification of existing or future impacts, and proposed mitigations

- **Quality Management:** Understanding and adherence to contract documents
- **Innovation & Project Approach**
- **Understanding of Systems & Equipment**
- **Budget Update:** Pricing of future work, accuracy and completeness
- **Project Schedule and Site Logistics:** Schedule activities, logic of schedule, coordination between trades and presentation of schedule activities.
- **Overall Deliverable Appearance and Completeness**.
- **Team Oral Presentation:** Team participation, eye contact, public speaking ability, and quality of information presented. Judging will place particular emphasis on the information presented on the specific aspects of the problem and the level of confidence you show. Have a plan, and own it.

MECHANICAL PROBLEM RULES

The NCMCA/Southland Industries Joint Committee will be enforcing the following rules: If any team should be cited for breaking any of the rules, the Joint Committee reserves the right to deduct points or disqualify said team. The Joint Committee also follows the Competition Rules as stated on the ASC website: www.asc67.org.

1. Once the competition begins, the six students are not allowed the use of any outside information.

2. No person besides the stated six student participants shall be allowed beyond the threshold of the door of the designated work room at any time during the competition. The competition begins when the problem statement is handed out and does not end until the team's presentation is over.

3. Once a presentation has begun, no person shall be allowed to enter the presentation room.

4. The Joint Committee discourages the use of "canned" or fluff materials in both deliverables and presentations.

The NCMCA/Southland Industries Joint Committee expects the best of all our Student Team Competitors. Ethics, Creativity, and Professionalism are extremely important to our mechanical industry. We are looking for future industry leaders through this competition.

Good luck, and we look forward to meeting each of you at the competition!

Sincerely,

The 2017 NCMCA/Southland Industries Joint Committee