



SUNDT

Problem Statement for:

CONCRETE SOLUTIONS

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THE SCENARIO

Our objective with this problem statement is to provide you with a real life experience that touches on different aspects of our business. We hope that it provokes critical thinking, displays your technical skills, presentation skills and ability to work as a team.

The project is a high-rise hotel tower and ballroom that are being constructed as an addition to an existing operating casino resort. It is being delivered design-build and the Concrete Division is being contracted to a lump sum subcontract as part of an overall Guaranteed Maximum Price contract being undertaken by the Sundt Building Division. Selection was based on qualifications, schedule, insurance costs, fees (overhead and profit) and interview. **For the purposes of this problem, we will be focusing on the 11-story hotel tower.**

The problem statement focuses on the Concrete Division as a self-performing entity and the teams are comprised of employees of that Division. The Concrete Division's scope of work includes all of the structural concrete in the tower, including foundations. Other entities are responsible for all other trades and all ballroom components.

There are several important constraints to the project that have been imposed by the client:

- Site access, fencing and staging cannot impede any existing entrances.
- The casino operates 24-hours a day and cannot be shut down at any time.
- The property has approximately 300 hotel rooms already in service and adjacent to the new tower location. Overnight work and work before 5am requires written permission from the client.
- Limits of construction are restricted to the areas identified on the Jobsite Map.
- The contract language does not specifically prohibit the owner from attempting to recover damages associated with significant business disruption associated with failure to comply with any of the above.

The judging panel is comprised of the Concrete Division, Building Group, and Civil Group pre-construction and project team members.



PROBLEM DETAILS

Sundt has recently been successful in its pursuit of a Design Build project. Your team of Sundt employees has been assembled to assist the company in self-performing the concrete scope of work. **The problem statement will be related to both preconstruction and construction responsibilities.**

The competition teams will be expected to:

- Provide budget assistance.
- Provide design assistance and constructability reviews.
- Perform a quantitative takeoff.
- Develop a detailed estimate.
- Develop a construction/pour sequence schedule, demonstrating an understanding of concrete-related activities and sequence.
- Recognize and address safety concerns and/or develop a detailed, site-specific safety plan.
- Develop a complete site logistics plan.
- Recognize and be able to address project and ACI specification items.
- Analyze forming systems and determine which system best fits the project scope items.

Deliverables that are expected to be received from the teams are as follows:

- **Proposal** - At a minimum, you will be expected to provide completed Exhibits B, C, and a written Safety Recognition Plan (Exhibit D). Include any clarifications or specific exclusions as required.
- **Schedule** - You will need to provide a schedule in Primavera P6, or other scheduling software, that details stages of construction and the sequences of concrete pours.
- **Logistics Plan** - You will be expected to develop a full site logistics plan based on the information contained within the jobsite map.
- **Presentation** - You will present your solution to the problem using Microsoft PowerPoint or a software program of your choice.

Suggested software:

- On Screen Take Off or other quantity take off software
- Bluebeam Revu
- Microsoft Office
- Revit Structure or other modeling software
- HCSS Heavy Bid or other estimating software
- Primavera P6 or other scheduling software

Point of Contact (during competition only)

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OTHER NOTABLE PROBLEM INFORMATION

- Competing teams will have access to internet at their own discretion and cost.
- Points will be deducted for submitting deliverables past the stated deadlines - *1 point for every minute late.*
- A white board, LCD projector, and screen will be provided for presentations.
- Team rooms will be visited by the judges periodically on Thursday, February 8, 2018.
- Initial problem documents will be distributed via flash drive. Hard copies of particular documents will be provided.
- Trophies and cash prizes will be awarded for first, second and third place finishing teams.
- The competition rules listed on asc67.org/rules will be strictly adhered to.

SCORING CRITERIA

Scoring criteria will be broken down as follows

<i>Points</i>	<i>Criteria</i>
<i>50 Points</i>	SELF-PERFORM DELIVERABLES (TEMPLATES HAVE BEEN PROVIDED IN HARD COPY AND ELECTRONIC FORMAT.)
<i>50 Points</i>	PROJECT MEETING/TEAM PRESENTATION
<i>5 Points</i>	BONUS — FOR IDENTIFYING THE CONCRETE SOLUTION(S)



SCHEDULE OF EVENTS

THURSDAY, FEBRUARY 8

Events as listed in ASC Schedule of Events. A meeting agenda and presentation schedule for Friday's presentations will be distributed between 1:00 and 5:00 pm.

- 7:00-8:00 am: Pre-bid meeting.
- 8:00 pm: Deliverables as outlined in the Problem Statement are due

FRIDAY, FEBRUARY 9

- 7:00 am-6:30 pm: Concrete Solutions Student Presentations
 - Presentation times will be assigned on Thursday during problem exercise.
 - Times will also be posted at meeting room.
- 6:15 pm-6:55 pm: Problem Recap Meeting.
Conference room - Southern Pacific AGB
- 7:00 pm-9:00 pm: Social Event (food, drinks and prizes). *Conference room - Southern Pacific AGB*



SATURDAY, FEBRUARY 10

Events as listed in ASC Schedule of Events.

- 8:00 -10:00 am: Student breakfast sponsored by Sundt in the Cascade Foyer.
- 8:00 am-12:00 pm: Job Fair in the Nugget Ballroom.
- 12:15 - 1:00 pm: Awards Ceremony in Cascade.

In an effort to continuously improve the quality of this problem, a survey will be issued via email to each team member and coaches the week after the competition.

Written feedback will be distributed to each team within 30 days of the competition.

Exhibit A

SCHEDULING CONSIDERATIONS

1. The deck concrete mix has reached 70% strength in 48 hour tests.
2. The MEP subcontractor requires 3 days to install all conduit, block-outs, and hanger mounts in the decks. There are minimal vertical concrete elements with MEP installations and these should be disregarded for the sake of this exercise.
3. The reinforcing subcontractor has informed you that installation of deck reinforcing steel and post-tensioning cable will require 3 days, not including inspection or corrections.
4. Sundt's place & finish superintendent has informed you that his crew can place and finish the full deck in one shift or two shifts as needed.
5. The Structural Engineer of Record will require 1 floor of 100% reshoring and 1 floor of 50% reshoring to adequately distribute the live and dead loads of ongoing construction activity.

Exhibit B

QUANTITY TAKE OFF

<i>Description</i>	<i>Net Quantity</i>	<i>Waste Factor %</i>	<i>Total Cubic Yards</i>	<i>Unit of Measurement</i>
<i>Total Hotel Cubic Yards (including foundations & SOG)</i>				CY
<i>Drilled Piers</i>				CY
<i>Pier Caps</i>				CY
<i>Grade Beams</i>				CY
<i>Elevator Pit Bottom</i>				CY
<i>Slab on Grade</i>				CY
<i>Slab on Metal Deck</i>				CY
<i>Shear Walls</i>				CY
<i>Columns</i>				CY
<i>Cast-In-Place Concrete Decks</i>				CY
<i>Misc. Concrete (pads, curbs, etc.)</i>				CY

Exhibit C

BUDGET BREAKDOWN

<i>Total Budget (including taxes, burden, & fee)</i>	<i>\$ Value</i>
Breakdown	
<i>Labor Costs without Fee & General Conditions:</i>	\$
<i>Administrative Man Hours</i>	_____ MHS
<i>Craft Man Hours</i>	_____ MHS
<i>Materials without Fee & GC's Costs:</i>	\$
<i>Equipment without Fee & GC's Costs:</i>	\$
<i>Subcontracts without Fee & GC's Costs:</i>	\$
<i>General Conditions and Indirects Costs:</i>	\$
<i>Fee Dollar Amount:</i>	\$
Total Budgeted Costs For Project	\$
Key Indicators	
<i>General Conditions/General Requirements % of Budget</i>	_____ %
<i>Margin %</i>	_____ %
<i>Supervisor Ratio - (craft to admin ratio)</i>	_____ MHS
<i>Craft Man Hours Per Cubic Yard</i>	_____ MHS
Project Ratios	
<i>Total Cost Per Square Foot (finish floor area, including roof)</i>	\$
<i>Total Cost Per Cubic Yard (total cubic yards for the project)</i>	\$
<i>Shear Wall Cost Per Square Foot (single side)</i>	\$
<i>Column Cost Per Cubic Yard</i>	\$

Exhibit D

SAFETY RECOGNITION PLAN

This exercise consists of a written response to the following question regarding the self-perform structural concrete scope on Sundt's recently awarded CM-at-Risk project.

Safety is a key component to the successful completion of any construction project. Construction safety has come a long way over the past 10-15 years, dictating which Projects we pursue, how we plan and build those Projects, as well as how we ensure that all team members are sent home for the day in the same condition they arrived in.

Please provide a detailed Safety Recognition Plan for implementation on Sundt's Casino Hotel Project. This plan should include the specific jobsite safety metric(s) your Project will measure, the intervals in which recognition will occur, and how the Project's management team will recognize these successes. A budget should also be included, specified in \$/Manhour units.

Please limit response to two pages.



Usable files for the following exhibits can be found on the USB.

<i>Exhibit</i>	<i>Description</i>
<i>E</i>	DRAWINGS (ARCH. & STRUCT.)
<i>F</i>	SPECIFICATIONS
<i>H</i>	LABOR RATES AND LABOR PRODUCTIONS
<i>I</i>	FOUNDATION PACKAGE QUOTES
<i>J</i>	FORMWORK SYSTEM QUOTES AND PRODUCT DATA
<i>K</i>	REINFORCING AND PT QUOTE
<i>L</i>	READY-MIX CONCRETE QUOTES
<i>M</i>	CONCRETE PUMP QUOTE
<i>N</i>	MISC. SUPPLIER QUOTES

DETAILED SITE LOGISTICS PLAN - JOB SITE MAP



