



ASSOCIATED SCHOOLS OF CONSTRUCTION

ROCKY MOUNTAIN REGION
REGION VI
AK, AZ, CO, ID, MT, NV, NM, UT, WY

FAR WEST REGION
REGION VII
CA, HI, OR, WA

Region VII- Commercial Building Division
February 5-8, 2014

Answer Statement

Veteran Homes of California **Fresno, CA**

Problem Sponsor:



HENSEL PHELPS
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**Associated Schools of Construction Competition
Region VII – Commercial Building Division
February 5-8, 2014**

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PROBLEM SPONSOR



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I. COMMERCIAL DIVISION TIME TABLE

THURSDAY, FEBRUARY 6TH

Opening Conference / Distribute Problem /

Establish Presentation Order	6:00 AM
First Progress Meeting / RFI's Due	10:00 AM
Lunch Delivered to Rooms	+/-12:00 PM
Site Utilization Plan Due	2:00 PM
Second Progress Meeting / Question Session	2:00 PM
Subcontractor Interviews (10 min. / team).....	2:30 – 7:00 PM
Dinner Delivered to Rooms	+/-5:30 PM

FRIDAY, FEBRUARY 7TH

Proposals Due	12:00 AM (Midnight)
Interview Material Due (all teams).....	6:45 AM
Interviews Start	7:00 AM
Project Debriefing.....	7:15 PM

SATURDAY, FEBRUARY 8TH

Career Fair	8:00 AM -12:00 PM
Awards Ceremony.....	11:00 AM

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II. PREFACE

WELCOME to the 2014 ASC Student Competition. All participants are to be commended for the personal time and financial commitment made in preparing for and attending this competition. The construction industry has noted these sacrifices and the premier student population that is competing here. This is evident in the quantity and quality of companies attending the Career Fair.

The student competition is designed to challenge each team to different facets of the construction industry. Each team's estimating, scheduling, organization, leadership, productivity, and communication skills will be tested and enhanced while participating in this competition.

The competition will present each participant with construction industry exposure that may not otherwise be experienced until after working in the industry. It is Hensel Phelps' desire to present each team member with real life situations through this competition. Some of these "experiences" may seem uncomfortable and/or appear to contain no logic. Be aware the real world is very often not kind, fair, or logical! The construction industry will present situations where people are less than pleasant, and pressure is applied to the extreme, but it will also provide great feelings of accomplishment and team camaraderie. Some questions, both in real life and in this competition, may have multiple answers and some questions may have no correct answer. The superior level of the student competitors attending the competition should embrace these challenges and recognize the value of these lessons.

The judges in the interview portion of this competition may seem to "put you through the wringer" with tough questions and references to deficiencies in your written proposal. Although it is human nature to "take it personal", please understand that these lessons are for the good of your development and excellence. It is not the intent of the judges to frustrate and alienate you, yet the spirit of competition places a duty on the judges to ask the hard questions that will allow team rankings to occur. At the end of the competition each team member should reflect on the knowledge and experience gained, and hopefully the judges can become mentors and friends to you.

As a driven team member, realize that all teams have come to the competition with the main goal of WINNING! However, with so many competitors, also realize that there can only be one winner announced. As an intelligent, driven, and committed individual, you should recognize the vast knowledge, industry exposure, and experience gained in competing and finishing this problem. This is the real reason all teams and individuals are competing. Yes, it is true, every person competing is a winner, regardless of the final overall placement. Make sure you, and your team, understand this; it does make a difference!

Determination of the Winner is based on a uniform grading scale for the written portion of the competition coupled with the oral presentation, judged by a seasoned multi-member judge panel. The combination of these two components, in the scoring ratios listed, determines the overall team placement. Overall team placements will not be posted, but feedback will be provided after the competition.

Congratulations for participating and Good Luck!

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III. PROBLEM SCENARIO

(Competing schools will represent a Project Team that must evaluate the following project.)

Your company has been selected as the design-builder of choice to deliver the long-awaited Veterans Homes of California in Fresno, California. The Veterans Home in Fresno will be one of eight home-like environments in California to provide aged or disabled veterans with rehabilitative, residential and medical care.

The City of Fresno and surrounding communities include a large Veteran population with great need for assisted living and long-term services to California veterans. With the on-going state budget crisis and the watchful eye of eagerly awaiting veterans, the Owner, the State of California's Department of General Services, is placing great pressure on your company to complete this project on-time and on-budget.

Your firm has also taken particular interest in this project and considers it an honor and privilege to provide for our country's veterans. You are a third of the way through the project and you are due for your Third Point Review with your firm's Upper Management. The purpose of the Third Point review is to provide a thorough analysis of the project status including budget, schedule and associated project risks to ensure the project is on track.

You must submit documentation to them by midnight tonight, and you will be asked to present your findings in a "Third Point" meeting with Upper Management tomorrow.

Interim progress meetings are scheduled for 10:00 AM and 2:00 PM today (Thursday, February 6th).

Any questions should be delivered, in writing on the Request for Information form (RFI), to the management team at the 10:00 AM meeting. Response to these RFI's will be provided at or before the 2:00 PM meeting. The RFI form is provided in Section X. The 2:00 PM meeting will be for verbal questions and answers only.

Please note that some of the written questions occur earlier or later than the Third Point meeting, consider these a "Time Warp" and answer them with that understanding. This is to challenge your team on the full realm of construction issues.

For the oral presentation on Friday, all teams shall include students representing the company's Project Manager, Superintendent, Estimator and Project Engineer; other roles will be at the team's discretion. The 30 minute presentation should allow for 20 minutes of team presentation and 10 minutes of questions and answers.

Your presentation should focus on the following topics: Cost, Schedule, Site Utilization, Construction Planning, Quality and Safety. Creativity and innovation are encouraged, shallow marketing pitches are not.

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IV. PROJECT INFORMATION

The State of California, through the Department of Veterans Affairs, operates Veterans' homes in Yountville, Barstow, Chula Vista, Los Angeles, Ventura, and Lancaster. Additional homes in Redding and Fresno are now under construction.

The Veterans Home in Fresno is a 239,000 square-foot, 300-bed home which spreads across 26.2 acres and includes a Central Services Building, Central Plant and five member communities. The two-story Central Services Building provides the residents with a central gathering place complete with a post office, general store, barber shop, and various medical service functions. It also includes the community dining hall, main kitchen, laundry facility, and space for all administrative functions.

To emphasize the home-like environment of the overall veteran's home, each of the five communities includes two neighborhoods, which in turn include two houses. Each house contains 15 private member rooms. Amenities within each house are inspired by the average American home with a living room, reading area, residential kitchen and grazing counter, laundry room and a recreation room complete with televisions and Nintendo Wii games.

Outside, members can participate in one of many recreational opportunities including a putting green, bocce ball, shuffleboard, and fly casting area, or meander through therapy and memory gardens, admire water features, or attend outdoor performances.

This project is highly visible, complex and offers the opportunity to showcase your firm's respect for California Veterans. Your Upper Management is honored to provide this service. It is important to them that you put your best foot forward and deliver this project on-time, on-budget and exceed the Veterans' expectations. Your Upper Management is looking forward to your team's review, analysis and presentation of this project.

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V. PROBLEM OUTLINE

Structure and tab your documentation according to the following outline. Include only the information requested in **Section VI. Submission Requirements**.

1. Job Purchasing Schedule.....	page 9
2. Change Management.....	page 11
3. Estimate.....	page 14
4. General Conditions.....	page 16
5. Proposal Summary (Tab Analysis).....	page 18
6. Schedule.....	page 20
7. Coordination of Work.....	page 24
8. Personnel Issues.....	page 26
9. Safety.....	page 28
10. Site Utilization.....	page 29
11. Quality Control.....	page 30
12. Mock-Up.....	page 31
13. Team Member Resume.....	page 31

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VI. SUBMISSION REQUIREMENTS:

Please note that some of the following questions do not fit into the time frame of the Problem Scenario described earlier (i.e. they occur earlier or later in the construction phase), consider these a “Time Warp” and answer them with that understanding.

0.1 EARLY DELIVERABLE - BIOGRAPHIES

Although this item has past, as a requirement of the Pre-Problem Statement, your team’s final score may reflect a small point deduction if you failed to comply with this item in a timely and professional manner.

0.2 QUALITY OF SUBMITTED PROPOSAL

The appearance and organization of proposals is important in the construction industry as it is often our first opportunity to interact with a new Owner and / or impress the upper management in our company. We want them to see the professional image we are trying to portray and be able to find and understand the information we are presenting. Points will be awarded in this section based upon the appearance and organization of your team’s submitted response to the following problems.

0.3 TIMELINESS OF PROPOSAL

One (1) hard copy and one (2) electronic copies of your proposal is due at Midnight, as per the Time Table in Section I. A ½ point penalty will be deducted from the team’s score for each minute the proposal is turned in late.

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1. Job Purchasing Schedule (JPS)

Written by Wade Chance

One of the key reports to indicate how a job is being bought out is the Job Purchasing Schedule. Similar to a Transmittal and Delivery log this is a tool that is used on the jobsite to track the status of budgets and the status of subcontracting the job. This log is also important to upper management as it is a glimpse into what scopes are at risk, not under contract or have realized a gain/loss. It is important that the work be purchased with subcontractors early in the project to lock in pricing and minimize Hensel Phelps risk. Understand that this responsibility takes time; it is vital to be done quickly at the beginning of the project however it is even more critical that it be done comprehensively with not rushing through it. This is when you do the best job eliminating scope gaps and purchasing scope for the best value. Making sure each complete scope is covered and purchased either through self-performed work or subcontracted is a huge part a project success.

PART A: Job Purchasing Schedule

Using the Job Purchasing Schedule spreadsheet included in Section X1.1, enter your analysis of the following project cost items. These are the actual dollar amounts you will purchase these scopes of work for. These values are derived from section 3, 4 and 5 of the problem statement.

1. Division 005000 General Conditions Division
 - a. 005000 Supervision
 - b. 005002 Engineering & Survey Work
 - c. 005003 Safety Requirements
 - d. 005004 Temp Facilities
 - e. 005005 Building Services
 - f. 005006 Transportation
 - g. 00500 Sales Tax on Material
2. Division 054000 Cold-Formed Metal Framing
3. Division 061000 Rough Carpentry
4. Division 061500 Wood Trusses
5. Division 072100 Insulation Acoustics
6. Division 071326 Self Adhering Sheet Water Proofing
7. Division 072200 Roof Deck Insulation
8. Division 072710 Building Paper
9. Division 073200 Roof Tiles
10. Division 076200 Sheet metal Flashing and Trim
11. Division 079200 Joint Sealants
12. Division 093013 Ceramic Tile
13. Division 098437 Sound Absorbing Wall Panels
14. Division 095113 Acoustical Ceilings
15. Division 092900 Interior Gypsum Board
16. Division 11400 Kitchen Equipment

Answer: Reference completed Job Purchasing Schedule in Section X.1.1.a

Part B: Scheduling Job Purchasing

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Identify and prioritize the first 5 subcontracts that need to be executed. Keep in mind this is a design-build project.

1. Provide the list of your top five priority subcontracts you will purchase and get under contract.
2. Indicate on the JPS log when an executed subcontract must be in place to support the CPM schedule making sure to consider early project starts as well as long lead submittal and material procurement/delivery.

Answer (Note the answer to this section is subjective and was judged accordingly):

Part 1:

1. Designer
2. Mechanical/HVAC
3. Electrical
4. Utility/Earthwork
5. Concrete

Part 2: Reference completed Job Purchasing Schedule in Section X.1.1.a.

Part C: Purchasing Gain/Loss

When you have all scopes either determined as self-performed work or subcontracted and fill in all the purchased values into the JPS. The missing purchased values (Contract Amounts) are provided in Section X1.2. Indicate in the JPS what the total gain or loss will be in the gain/loss column.

Answer: Reference completed Job Purchasing Schedule in Section X.1.1.a.

Part D: Gain/Loss Budget

Now that you have determined your gain or loss from a purchasing standpoint write a short narrative (+/- 200 words) explaining the net results of your buyout effort. Assume the project is about 25% complete. Explain how you will incorporate the results (gain or loss) into the projects financial plan.

Answer:

(Note the answer to this section is subjective and was judged accordingly)

The project team has done a great job with purchasing the work for the California Veterans Home. The scope has been identified and covered 100% either through Hensel Phelps self-performed work or is under contract with a series of qualified subcontractors. The purchasing process has provided a net gain of \$4,946,285. The original estimated 2.2% construction contingency of \$2.5 million which was built into the original estimate will be increased to help fund items unforeseen. Of the \$4.9 million we will increase construction contingency by \$3.4 million giving a total construction contingency of \$5.9 million or 5.5% of the contract value. The remaining \$1.55 million will be added into the margin bringing the total projected margin to \$7.6 million or slightly over 6.7%. This added contingency will allow for the project team to execute the project on schedule and within budget all while at the same time protecting the projected margin of 6.7%.

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Job Purchasing Schedule Deliverables:

1. Provide (1) hard copy and (2) electronic copies in native format (Excel) of your completed Job Purchasing Schedule.
2. Provide (1) hard copy and (2) electronic copies of your list of first 5 contracts to be purchased.
3. Provide (1) hard copy and (2) electronic copies of your letter explaining your buyout results and how you will incorporate this into the project.

2. Change Management

Written by Nathan Lowery

(Time Warp to later in the project)

The project is under construction, and you are off to a great start. You are progressing through earthwork, site utilities, and have started to frame your first “neighborhood”. The Owner is impressed with the quality of work to date, your collaborative team atmosphere, and your superintendent’s aggressive approach to the early schedule activities in order to prepare for the winter rainy season.

Your Operations Manager has just returned from a weekly meeting over coffee with the Owner’s representative. During the meeting, the Owner handed your Operations Manager Change Proposal Request No. 001 (PR No. 001) that was first hinted at two weeks ago to change Building 3 from a standard housing unit to a Memory housing unit. The most significant alteration that will be required as a part of this modification is changing the kitchen from a warming kitchen to a full cooking kitchen.

The timing of this change request is less than timely. You have just completed all underground rough-in activities at Building 3A, and are in the process of placing vapor barrier in preparation of your first slab-on-grade placement at Building 3A. However, you have worked hard to develop a great working relationship with your Ownership group. Due to changing demographics within the housing member’s group, the Owner greatly desires to implement this change if practical and within budget constraints for the project.

PART A: Schedule Fragnet

A schedule fragnet is a small schedule describing the time associated with implementation of a change, which can be inserted within the greater Project CPM Schedule in order to determine the impacts to the overall project schedule. Using the form provided in Section X.2.1, develop a schedule fragnet to indicate the time associated with implementation of this change. Include appropriate time for change estimate pricing, negotiations and approvals, re-design, permitting activities, and re-work activities. Be sure to show how the revised sequence of work relates to the original sequence of work. Again, you are motivated to implement this change with the least impact to the Owner from both a time and cost perspective, while still protecting Hensel Phelps and the aggressive schedule you have implemented.

NOTE: Use today’s date as your fragnet start date.

The activities to include within the schedule fragnet (in no particular order) are:

- Re-permitting (2 weeks)
- Excavate and re-work underground MEP rough in

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- Backfill MEP
- Remove vapor barrier
- Owner approval of re-design
- Re-design
- Compile and submit PR 001 notice and backup to Owner (1 week)
- Re-install vapor barrier
- Approval and execution of change order for PR No. 001 (1 week)
- AHJ signoff of underground MEP rough in (3 days)
- Form and reinforce slab-on-grade (SOG) (2 weeks)

Answer: Reference Schedule Fragnet Part A in Section X.2.1a.

PART B: Change Estimate

As noted in Part A above, provide a Rough Order of Magnitude (ROM) Change Estimate for the requested change using the Change Estimate spreadsheet provided in Section X.2.2 and taking into consideration the following:

- This will be Change Estimate No. 001.
- The following direct costs-of-work items shall be considered. Subcontractors Estimates have been provided in Section X.2.3. Provide a rough description of the work that will be involved with each subcontractor to justify the cost you are submitting to the Owner:
 - Earthwork
 - Concrete
 - Plumbing
 - Waterproofing
 - Kitchen Equipment
 - Framing
 - Electric
- Include any General Conditions cost. Be sure to consider any time impacts and/or acceleration associated with this change. This could include the following:
 - Staff (either extended staffing or additional staff)
 - Winter conditions (temporary enclosures)
 - Temporary roads
 - Temporary utilities
- Indirects, including:
 - Bonds
 - Insurance (General Liability and Builder's Risk)
 - Design
 - Permitting
- Contingency. Based on previous discussions with the Owner and considering the amount of unknowns surrounding this change, this shall be included at 10% of the direct Cost of Work (COW) components .
- Fee, including Overhead and Profit. The Owner intends to incorporate this change into your contract based on your response to this change. The fee should be appropriate in

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relation to your overall Project Fee, but should also consider that this is a change order that poses much risk to your team. You are trying to balance this with the fact that you don't want to appear to be "taking advantage" of the Owner with your pricing.

Answer: Reference completed Change Estimate 001 in Section X.2.2.a.

PART C: Letter to the Owner

Your contract requires that you provide a notice to the Owner for any cost and/or schedule impacts. Prepare a letter to the Owner notifying them of the impacts surrounding this potential change. The Notice shall address the following items. For reference, your team has identified this as Change Estimate No. 001:

- Identify the Rough Order Magnitude (ROM) cost impact associated with this change as determined within Section B, and include pricing as an attachment to this letter. Identify the approximate schedule impacts (if any) associated with this change.
- Describe your approach to the Owner on how to best implement and mitigate the impacts of this change. Be sure to provide a clear picture of the status of the Project, and a firm stance that will provide a clear path to the Owner without coming off as brash and / or overly-aggressive.

Answer: Reference Owner Notification in Section X.2.3.a.

Change Estimate Deliverables:

1. Submit (1) one hard copy and (2) electronic copies (pdf) of the Notice to the Owner.
2. Submit (1) one hard copy and (2) electronic copies in native format (Excel) of Change Estimate No. 001.
3. Submit (1) one hard copy and (2) electronic copies in native format (Excel) of the schedule fragnet to support this change using the form located in section

3. Estimate

Written by Michelle Heick and Adam Minto

PART A – Framing Estimate

This section is independent and should not influence your response to other sections of the problem statement. The content contained within the "Estimate" section does not lead to or affect answers of other sections.

Upper Management has learned of a large difference between Wood Framing prices and Metal Framing prices. The project's Senior Estimator is very concerned about this news and is meeting with you to check the Wood Framing Scope of Work. As the Lead Estimator in charge of Wood Framing, you are tasked to perform a Wood Framing estimate and compare it to a Metal Framing Proposal.

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The goal of Part A is to compare your Wood Framing estimate to a Metal Framing Proposal and determine if we should continue with a Wood Frame Design.

Use the provided contract drawings to quantify and estimate **ONLY** the following framing components:

- Interior Wood Framed Partitions
- Plywood Roof Sheathing

Your estimate must **ONLY** include Buildings 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5A, 5B

The supplemental information in Section X contains:

- Framing Estimate Spreadsheet (Section X.3.1)– This spreadsheet has been formulated for your use in compiling data in the same format as the other teams. You are to fill in the quantities, unit costs, tax and fee on this spreadsheet.
- Historical Cost Data (Section X.3.2)– Resource to be used for labor, material and equipment unit costs for Wood Framing.
- Metal Framing Cost Estimate (X.3.3)– Resource to evaluate which is more economical – Wood Framing or Metal Framing.

Clarifications and Exclusions:

- In order to keep all teams' estimates consistent, do **NOT** modify Framing Estimate Spreadsheet.
- Do **NOT** include additional material to account for framing waste. Assume this is already covered in the unit costs based on company historical data.
- Do **NOT** include framing in other buildings or related items shown on Civil or Landscape drawings.
- Assume all walls are 9' tall.
- Take off partitions through doors and windows.
- Assume plywood roof sheathing under mechanical roof wells.
- Exclude all Top of Wall / Head of Wall details and quantity take off.
- Exclude all Structural Wood Truss details and quantity take off.
- Exclude all Structural Shear Wall related details. Framing Take Off shall be per Architectural sheets only

ANSWER: Reference Wood Framing Estimate Spreadsheet in Section X.3.1.a. Comparing the Wood Framing Estimate to the Metal Framing Estimate provided, there is a substantial cost benefit to stay with wood framing.

PART B - Concrete Curb Estimate

Your Project Manager has just returned from a meeting with Upper Management. As a part of the Risk Assessment review of the project, wet areas such as bathrooms and kitchens have been identified as areas with potential risk. In order to prevent water infiltration from the wet areas, Upper Management has requested you evaluate the cost to install concrete curbs under all partitions in wet areas. To assess this new risk, your Project Manager wants you to estimate the value of the added Concrete Curbs.

The goal of Part B is to estimate the value of the added Concrete Curbs.

Use the provided contract drawings to quantify the Concrete Curbs under partitions.

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Your estimate must **ONLY** include Buildings 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5A, 5B.

The supplemental information in Section X contains:

- Concrete Curb Estimate Spreadsheet (Section X.3.1)– This spreadsheet has been formulated for your use in compiling data in the same format as the other teams. You are to fill in the quantities, unit costs, tax and fee on this spreadsheet
- Historical Cost Data (Section X.3.2) – Resource to be used for labor, material and equipment unit costs for Concrete Curbs.

Clarifications and Exclusions

- In order to keep all teams' estimates consistent, do **NOT** modify Concrete Curb Estimate Spreadsheet.
- Do **NOT** include additional material to account for Concrete Curb waste. Assume this is already covered in the unit costs based on company historical data.
- Do **NOT** include Concrete Curbs in other buildings or related items shown on Civil or Landscape drawings.
- Only take off the Concrete Curbs as shown.
- Assume **ALL** Concrete Curbs are 6 1/2" tall.
- Assume Concrete Curb width is determined by partition.

ANSWER: Reference Concrete Estimate Spreadsheet in Section X.3.1.a.

Estimate Deliverable:

Provide (1) hard copy and (2) electronic copies in native format (Excel) of the Wood Framing and Concrete Estimate Spreadsheet.

4. GENERAL CONDITIONS

Written by David Shellman

General Conditions are the on-site project management and supervision costs incurred throughout the duration of the project.

In preparation of your Third Point meeting, Upper Management has requested you perform a detailed review of your General Conditions budget to see if there is any potential for savings. To do this, your team will need to prepare a new breakdown of the project's General Conditions. This breakdown will allow your team, as well as Upper Management, to confirm the staffing, mobilization, operating, and other resource costs that will be spent during the project.

The Supplemental Information attached in Section X provides descriptions of Staff Position Duties (Section X.4.4) and a list of Company Historic General Condition Rates (Section X.4.3).

Please note the following:

- General Conditions include salaried on-site personnel that are assigned to the project. Included are all operating costs and expenses that are a function of on-site job supervision. These expenses include but are not limited to: office documentation support, networking service and fees, utilities, cellular phones, computers, etc.

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- Home-office overhead (G&A) is not included in the General Conditions of the project. However, your team may need the assistance of the estimating department. A full time estimator may be considered in the General Conditions for a period of time to assist the Project Manager with subcontractor bid packaging, scope breakdown, purchasing, and contract issuance.
- Supervisory staff positions should be allocated to the project as the team sees fit.
- All General Conditions associated with direct work such as concrete are typically carried within the specific scope budget and therefore are not to be included in the overall General Conditions breakdown.
- This project will be assigned one summer intern. All costs associated with moving and housing are provided by the jobsite office.

Please prepare the following documents:

Part A: General Conditions

Prepare a detailed General Conditions breakdown projecting through the end of the project using the form provided in Section X.4.1. Complete for all General Conditions following the contract award.

As you determine the costs and units for each budget item provided in Section X.4.1, be mindful that items may be comprised of labor, material, equipment or any combination of all three. Use your best judgment, team experience or available resources to determine these break-downs.

Answer: Reference attached General Conditions Spreadsheet in Section X.4.1.a

Part B: Staffing Matrix

Prepare a Staffing Matrix showing the duration and period each staff member assigned to the project following the contract award using the form provided in Section X.4.2. Staff Position Duties are provided in Section X.4.4.

Answer: Reference attached Staffing Matrix Spreadsheet in Section X.4.2.a

General Conditions Deliverables:

Submit (1) one hard copy and (2) electronic copies in native format (Excel) of your General Conditions.

Submit (1) one hard copy and (2) electronic copies in native format (Excel) of your Staffing Matrix.

5. PROPOSAL SUMMARY (TAB ANALYSIS)

Written by Tim Queely

One of the most critical steps in the procurement phase of a project is analyzing each subcontractor's bid and verifying each bid includes a complete scope of work. In addition, it is important to confirm the inclusions in each bid is similar amongst the subcontractors for each scope of work to ensure bids do not include extra scope (too much money) or incomplete scope (not enough money).

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Proposal Summary Tabs or Bid Tabs are used to compare multiple subcontractor bids received for each scope of work. This tabular format allows you to quickly assess scope gaps and provides an excellent summary of the bid status.

At your Third Point meeting, Upper Management has requested to review Bid Tabs for the following scopes of work to see the progress of your subcontractor buyout:

1. Tile
2. Food Service Equipment
3. Concrete Tile Roofing
4. Drywall, Insulation, Acoustical Ceiling and Wall Panels

As you are completing your Bid Tabs, keep in mind the following:

- The best value is not always the lowest dollar proposal!
- The Prime Contract requires that we meet minimum subcontracting goals for State of California certified Disabled Veterans Business Enterprises (DVBE) and Small Business Enterprises (SBE) in the execution of its work at a value not less than identified below.
 1. Tile: DVBE (25%), SBE (100%)
 2. Framing & Drywall: DVBE (10%), SBE (25%)
 3. Roofing Tile: DVBE (5%), SBE (5%)
 4. Food Service Equipment: DVBE (10%), SBE (10%)
- Company policy requires bonds on all subcontractors with subcontract values over \$50,000 unless waived by the District Manager.

The Proposal Summary sheets have been created and some “check questions” written on them to determine if the subcontractors have the correct scope per plans and specifications (you may find that additional “check questions” are necessary to define the complete scope or differentiate between bidders. You are to add “check questions” as you see fit). The “Scope Desired” column contains the budget from the original estimate that you are justifying to Upper Management. These values are not always hard numbers derived from subcontractors so they will vary from the actual proposals.

Choose your subcontractors carefully to ensure they will perform the correct scope, staff the project adequately, and that they are financially stable. Note: We encourage teams to tabulate quote items by rounding to the nearest \$1,000 for each entry; this allows quick summation of the Proposal Summaries.

Part A - Drywall, Insulation, Acoustical Ceiling and Wall Panels Proposal Summaries

Total up the completed Bid Tab for the Drywall, Insulation, Acoustical Ceiling and Wall Panels provided in Section X.5.1 and make a selection as to who provides the “best value” for the project. Add up each column to determine the total purchase value for each subcontractor. Circle the subcontractor’s total proposed bid amount who provides the best value in red.

Note: “Blue Numbers” are values established through internal estimates or breakout numbers from a different subcontractor that account for values NOT provided by that given subcontractor. It assists in establishing the complete “buyout” value for the given scope.

ANSWER:

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Part A: Reference attached Drywall, Insulation, Acoustical Ceiling and Wall Panels Proposal Summary in Section X.5.1.a. As stated in the Prime Contract, DVBE and SBE participation is critical within the subcontractor selection process. The magnitude of this scope assisting with meeting project goals far exceeds the minimal cost difference currently between subcontractors of 4k. Therefore the best value contractor is The Works.

Part B - Food Service Equipment, Concrete Tile Roofing, and Tile Proposal Summaries

Prior to meeting with Upper Management to review the California Veterans Home project some “tabs” have not been completed. To assure the correct subcontractor will be selected, use the subcontractor proposals provided in Section X.5.2 to complete a bid tab analysis of these scopes: concrete tile roofing, food service equipment, and tile. Use the proposal summaries provided in Section X.5.3, 4, and 5 to complete this task. Make sure to indicate on the tab which subcontractor is selected with the total cost of work.

You will be able to speak to representatives of each subcontractor briefly to ask scope questions not included in their proposals when they visit your room between 2:30PM and 7:00PM. Each trade will be represented by a separate Hensel Phelps employee; therefore, multiple members of your team can interface with the subcontractors concurrently. Each team will be allowed ten (10) minutes with the subcontractors to conduct mock telephone conversations. Please be aware that the “subcontractors” will respond to questions in a realistic manner; their answers may seem evasive, rude and less than complete. This is done not to frustrate you, but to be realistic and force you to make decisions in the same manner as you will when you enter the industry.

ANSWER:

Part B: Reference attached Food Service Equipment, Concrete Tile Roofing, and Tile Bid Tabs in Section X.5.1.a

Part C

Use the subcontractor’s bid amount selected in Part B to complete the Job Purchasing Schedule in Section 1 of this problem statement and identify whether there is a fiscal gain or loss for each scope of work.

ANSWER:

Part C: Reference the attached Job Purchasing Schedule in Section X.1.1.a.

Proposal Summary Deliverables:

Submit (1) hard copy and (2) electronic copies (pdf) of your completed Part A tab sheet clearly identifying which subcontractor has been selected.

Submit (1) hard copy and (2) electronic copies (pdf) of a short narrative as to what qualified the subcontractor chosen in Part A as the “best value.”

Submit (1) hard copy and (2) electronic copies in native format (Excel) of each proposal summary for Part B.

6. SCHEDULE

Written by Jamie McEnroe and Cole Weaver

(Time Warp to the beginning of the project.)

The project schedule is a fundamental tool in properly planning and managing a project. A well-developed schedule will communicate and direct all parties along the path to success. As part of your review with Upper Management, you will be required to present a complete, workable Critical Path Method (CPM) Schedule which effectively outlines your plan of attack to build this project. This schedule shall be comprised of the following:

1. A CPM Schedule which supports a Final Completion no later than December 11, 2015.
2. Incorporation of key milestones outlined below.
3. Identifying the Primary Critical Path.

The following criterion explains the background information and requirements of the CPM schedule your team will present.

Note: As part of the preconstruction services already provided for this project, a general schedule outline (below) has been created and analyzed by a seasoned General Superintendent. Summary durations given in parentheses () are to be used as parameters and shall be elaborated on. Your team shall use these parameters to develop a detailed schedule that will fully communicate to Upper Management the plan your team has to complete this project within the timeframe you have committed to the Owner.

General CPM Schedule Criteria:

a. Presentation Criteria:

i. Format:

- a. At a minimum show the following columns to the left of the timescale: Activity ID, Activity Description, Original Duration (OD), Early Start (ES), Early Finish (EF), and Total Float (TF) per activity (see Figure “A” Example below):

Figure A:

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
MILESTONES					
MILESTONE SUMMARY					
CONTRACTUAL MILESTONES					
DESIGN					
MILESTONE #1 – NOTICE TO PROCEED					
MM-01	Notice to Proceed	0	19JAN10A		

- ii. Activity count: No More than 1000 Activities.

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- iii. There should be a continuous logic flow of critical path activities from Notice to Proceed, Design, *Procurement (Subcontractor Buy-Out)*, Submittals, Fabrication and Delivery lead times, Construction, Punchlist and Completion.
 - iv. Clearly identify the critical path of the schedule.
 - v. Organize your activities so they are easy to read, activities are grouped intuitively, and the schedule “flows” well.
- b. Contractual Criteria:
- i. Project Award and Design start on April 25, 2013
 - ii. Notice to Proceed occurs on December 12, 2013. This NTP authorizes contractor to begin construction. Assume start of construction at 35% complete of construction documents, which shall include site mobilization, grading and underground utilities.
 - iii. The design-build aspect of this project will require the project to fast-track, meaning construction can begin prior to design completion. Assume the following durations for design activities:
 - a. Schematic Design (90 CD)
 - b. Design Documents (120 CD)
 - c. Construction Documents (150 CD)
 - d. Owner Review of Documents (5 CD)
 - e. OSHPDA Review (5 CD)
 - f. California State Fire Marshall Review (5 CD)
 - iv. Show a Substantial Completion for each building. Substantial Completion is defined as “the building can be used for its intended purpose.” In order to satisfy this requirement, all construction activities shall be substantially complete, the building systems must be operational and all code required inspections must be complete and a Temporary Certificate of Occupancy must be received from the State Fire Marshal to allow occupancy of the building for its intended purpose. Final commissioning and punchlist activities are not required to be complete.
 - v. The schedule should account for all State of California holidays to properly plan work around holiday periods.
 - vi. Assume 25 working days for preparation and award of bid packages. There will be (5) bid packages total as follows:
 - a. Bid Package #1 – Structure/Elevators/U/G Utilities
 - b. Bid Package #2 – Rough-In Trades
 - c. Bid Package #3 – Exterior Enclosure
 - d. Bid Package #4 – Interior Finishes
 - e. Bid Package #5 – Exterior Improvements
 - vii. Assume 15 working days for award of subcontracts
 - viii. Additionally, assume 20 working days for in-house Submittal Review/Prep and 10 working days for Submission to Architect/Engineer for all submittals.
- c. General CPM Structure Requirements:

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i. General Conditions

- a. It will take the team 80 working days to mobilize and set-up on-site after NTP. Assume work activities can take place during mobilization.
- b. Show the following critical submittals with their related durations. Note: All Durations below are in Calendar Days (CD).
 - a. U/G Process Piping (30 CD)
 - b. Fire Suppression Drawings (30 CD)
 - c. HVAC Controls (30 CD)
 - d. Structural Steel (30 CD)
 - e. Wood Framing (30 CD)
 - f. Architectural Woodwork (40 CD)
 - g. Elevators (30 CD)
 - h. Food Service Equipment (40 CD)
 - i. MEP Long Lead Equipment (20 CD)
- c. The schedule should depict fabrication and delivery of the following critical items. Note: All Durations below are in Calendar Days (CD).
 - a. U/G Process Piping (30 CD)
 - b. Structural Steel (50 CD)
 - c. Framing Materials (45 CD)
 - d. Elevators (60 CD)
 - e. Emergency Generator (150 CD)
 - f. AHU, Boilers & Chillers (80 CD)
 - g. Light Fixtures (80 CD)
 - h. Wood Doors (80 CD)
 - i. Food Service Equipment (180 CD)
 - j. Architectural Woodwork (100 CD)

ii. Central Services Durations

- a. U/G Utilities (21 CD)
- b. Foundation/SOG (150 CD)
- c. Structure/Framing (120 CD)
- d. Exterior Skin (210 CD)
- e. Interiors & Commissioning (250 CD)

iii. Plant Operations Building Durations

- a. Structure (120 CD)
- b. Exteriors (100 CD)
- c. MEP Rough In & Equipment (180 CD)
- d. Interiors (60 CD)
- e. Commissioning (35 CD)

iv. Housing Durations (Typical for each Building Phase 1A, 1B, 2A, 2B, 3A, etc.)

- a. Structure & U/G Utilities (70 CD)

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- b. Superstructure (35 CD)
- c. Exterior Skin (60 CD)
- d. MEP Rough- In (120)
- e. Interiors (210 CD)
- f. Commissioning (28 CD)

- v. Sitework Summary Durations
 - a. Early Sitework Activities – (4) Phases - (40 CD for each phase) – includes Grading and Site Utilities from Central Plant up to 5'-0" outside each building perimeter.
 - b. Site Hardscape/Landscape – (4) phases - (50 CD for each phase)

- vi. Minimum Milestones
 - a. Overall Milestones
 - a. NTP (Notice to Proceed)
 - b. Substantial Completion
 - c. Final Completion
 - b. Construction Milestones
 - a. Design Documents
 - i. 35% Construction Documents
 - ii. 50% Construction Documents
 - iii. 100% Construction Documents
 - b. Facility/Housing Watertight
 - i. BLDG 1A
 - ii. BLDG 1B
 - iii. BLDG 2A
 - iv. BLDG 2B
 - v. BLDG 3A
 - vi. BLDG 3B
 - vii. BLDG 4A
 - viii. BLDG 4B
 - ix. BLDG 5A
 - x. BLDG 5B
 - xi. Central Services
 - xii. Central Plant
 - c. Central Plant
 - i. Permanent Gas Available
 - ii. Permanent Power Available
 - d. Final Commissioning Complete

Schedule Deliverables:

1. **Complete Network:** *(2 Electronic Copies of Schedule in Native Format on thumb drives)*

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2. **Required CPM Schedule Reports:** *(Include Hard Copies 1 EA, Electronic copies 2 EA in PDF Format)*
- i. Complete CPM: filtering all activities sorted by Start Date.
 - ii. Milestone Report: filtering project and building milestones.
 - iii. Primary Critical Path Report
- c. **Narrative** (Include Hard Copy and (2) Electronic copies in PDF Format.)
Schedule clarifications and assumptions utilized in reaching the Baseline.

Answer:

Reference attached Complete CPM Schedule, Milestone Report and Critical Path Report in Section X.6.1.a, X.6.2.a and X.6.3.a.

The baseline schedule created as the solution for this problem was based largely on the actual schedule for the project. The building construction sequence followed standard logic treating the central services building, the plant operations building, and the housing buildings almost as three separate projects all tying into one. The central services building took the longest to construct and followed the critical path of activities, but the crucial sequencing and planning took part in the phasing of each of the housing buildings. Proper planning allowed each building to follow in sequence from the start of the underground utilities to commissioning each building, essentially merging the schedule of five individual buildings into one.

The baseline schedule for any project can take many different paths to completion. For the most part specific sequences and durations were not evaluated for consistency with the answer Schedule. Compliance with the schedule parameters given in the problem statement as well as overall conformance with accepted construction practices (i.e. completing foundation prior to completing building structure, having permanent power available prior to utilizing an elevator or completing commissioning/start-up activities, etc.) were reviewed for grading. Although the problem criteria required a schedule of no more than 1000 activities, the solution schedule provided is larger to show the breakdown that is typically used within a detailed baseline schedule.

7. COORDINATION OF WORK

Written by Brian Thomas

(Time warp to framing phase of Housing Building 3A)

The Mechanical, Electrical, and Plumbing (MEP) subcontractors have struggled their way through rough-in activities in the A half of Building 1 and have lost three weeks on the schedule

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due to piping and electrical conduits conflicting with wall and ceiling framing members. It is apparent to you that the framing subcontractor did very little coordination with the MEP subcontractors. The prefabricated walls for Building 4 have arrived on site and the walls for Building 5 are nearing completion at the plant. Your mechanical and plumbing subcontractors have started to prefabricate large sections of piping to make up for lost time. Any changes to the piping or framing fabrication process at this point will jeopardize your completion date. There are approximately 100 locations per building that will require framing members to be relocated to prevent losing any more time on the schedule.

You conduct a meeting with the plumbing contractor, mechanical contractor, and framing contractor to see what manpower is available to alleviate the issues and to create a plan of action moving forward. The information you gather from the meeting is as follows:

- The mechanical and plumbing subcontractors will each provide one worker and the framing subcontractor will provide 2 workers.
- The mechanical and plumbing subcontractor will need 1 day each per building to layout all of their penetrations.
- The framing contractor has estimated that it will take approximately 5 days per building to relocate framing members.

Part A

Your Superintendent tasks you as the Lead Field Engineer to create a Short Interval Production Schedule (SIPS) to ensure there is no further delay in the project. Keeping in mind that in addition to the activities discussed at your meeting you will be responsible for verifying the framing members have been relocated correctly as well as scheduling a framing inspection for all penetrations. Create a SIPS to meet the following criteria:

A Short Interval Production Schedule (SIPS) is developed to detail the necessary day-to-day production or task-to-task production during any repeatable construction project.

- Your SIPS shall contain a maximum of 5 activities.
- The total duration to complete building 1B-5B should be no longer than 9 weeks.
- A SIPS template has been provided in Section X.7.1.
- Use the attached Example SIPS in Section X.7.2 as a guide to the required flow and appearance of your SIPS.

Answer:

Reference attached SIPS in Section X.7.1.a.

Part B

The lavatory wall in each typical member bathroom contains several items that require backing. In addition to the backing, there are several plumbing and electrical penetrations that need to be coordinated with the framing. Utilize the construction documents and product cut sheets attached in Section X.7.3 to author a Request for Information (RFI) to the architect containing a sketch with your proposed framing solution for the lavatory wall. A quality RFI will identify what the problem is, where the problem is located, and proposed solution with reasoning.

To get you started, a sketch has been provided (in Section X.7.3) showing the plumbing rough-in locations. In the narrative of your RFI be sure to reference all appropriate drawing sheets, details, notes and/or codes so the appropriate revisions can be made to the as-built set of drawings. Your sketch or sketches shall contain enough detail and information to clearly communicate your solution.

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Reference attached RFI in Section X.7.2.a.

Coordination of Work Deliverables:

Submit (1) one hard copy and (2) electronic copies in native format (Excel) of your completed Short Interval Production Schedule.

Submit (1) one hard copy and (2) electronic copies (pdf) of your proposed RFI.

8. PERSONNEL ISSUES

Written by Jenn Mehl

Part A: Project Engineer Roy

You are the Project Manager on the California Veterans Home project, which is in its final months of construction. While conducting a performance review of one of the Office Engineers, it is brought to your attention that he has been experiencing some problems dealing with his direct boss (and your subordinate) Project Engineer Roy. The Office Engineer explained that he previously felt too intimidated to speak up because Roy is so well-liked by yourself and the Project Superintendent.

After meeting with the other Office Engineers and discreetly polling some other employees that don't work under Roy, it is clear that multiple people have grievances with Roy. The general consensus is that Roy barks orders at his subordinates, takes credit for work others did, treats people with no respect, and leaves them feeling demoralized. This news comes as a shock to you as Roy has always been one of your favorite employees and one that has never given you any trouble. In fact, the Owner has always applauded Roy and has expressed to you multiple times that he is an asset to your team. Roy has been with the company for 7 years and has proven to be a very loyal employee.

Please write an email to Upper Management describing your plan of action for Roy.

ANSWER:

Dear Upper Management,

It has recently come to my attention that some of the employees on my jobsite are having a difficult time getting along with Roy. I have received complaints from his subordinates as well as his peers.

I have gone through all of Roy's past performance reviews looking for any indications that he has had trouble working with others. His reviews didn't indicate any major issues. I have also spoken to his past managers, and they informed me that they weren't aware of any problems with him.

I plan to sit down with Roy one on one this week and try to discover the root of the problem. I'm not sure if it is clash of personalities, his stress level, something outside of work, or possibly that he has let managing others go to his head. It could even be as simple as poor communication skills.

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I do believe Roy deserves a chance to improve, as he has been a loyal employee for the past 7 years. I plan to discuss with him that he will need to improve his performance if he wishes to continue working for Hensel Phelps. I will also ensure that he attends leadership training to improve his management skills. I think it is in the projects' best interest for Roy to be placed on a different project at this time. There is another project in the vicinity that we can place him on with a project manager and superintendent that he has never worked with before. That way, he can interact with some new people and be evaluated by others without any prior bias. If he continues to struggle with his relationships, he can be re-evaluated at that time and a new plan of action can be put in place.

Thanks,

Will, Project Manager

Part B: Community Concerns

The Field Engineers on your project were working in the evening last night and discovered multiple underground burrows of an animal they didn't recognize. The photographs below were taken by the Field Engineers:



An Environmental Impact Report (EIR) was previously performed for the jobsite, but it didn't indicate any findings of animal communities. The area that the burrows were discovered in is directly under the Central Plant, which is scheduled for footing excavation next week. Unfortunately, the project is already running 3 weeks behind schedule. As the Project Superintendent, please list the step(s) you would take regarding the discovered animals.

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ANSWER:

1. *Identify the animals as Fresno kangaroo rats (*Dipodomys nitratoides*), an endangered species*
2. *Research endangered species regulations and laws*
3. *Notify the Owner of your discovery*
4. *Classify the discovery as an unforeseen condition*
5. *Place the footing excavation on hold*
6. *Hire an environmentalist specializing in endangered species*
7. *Attempt to relocate the kangaroo rats to a new habitat*

Personnel Issues Deliverables:

Submit (1) one hard copy and (2) electronic copies of your letter to Upper Management.
Submit (1) one hard copy and (2) electronic copies of your list of steps regarding the discovered animal.

9. SAFETY

Written by Monica Blancas

Part A: Job Hazard Analysis

Construction installation of roof trusses poses certain safety risks. As an Area Superintendent, you know that pre-planning is critical for all scopes of work. It is your responsibility to ensure that all subcontractors submit a thorough Job Hazard Analysis (JHA) for their scopes of work that identifies any potential hazards and solutions to prevent these hazards from becoming accidents, and gives the employees thorough safety instruction to perform their work.

As our primary safety tool, you asked the subcontractor to submit a draft of their JHA for the installation of the roof trusses for your review prior to the preparatory meeting. During your evaluation, you have noticed that the subcontractor has fallen a little short in the accuracy of Hensel Phelps and the Owner Controlled Insurance Program (OCIP) requirements for fall protection which states that fall protection is required for all fall exposures of six (6) feet or more. Please review the JHA provided in Section X.9.1 in detail and correct any omissions and processes for fall protection. Submit a revised fall protection JHA and highlight your revisions so that you can explain them to the subcontractor. Remember that a well written JHA establishes a solid foundation for a safe and successful project!

Answer:

Reference attached Job Hazard Analysis in Section X.9.1.a.

Part B: Fall Protection Toolbox Meeting

The installation of the roof trusses is the next phase in our construction schedule. As a Field Engineer this is one of the scopes of work that was assigned to you. You have been preparing lift drawings and quantity take-offs, and it is now time for you to demonstrate your knowledge of this scope of work to your Area Superintendent. Safe work practices are essential in every aspect of construction and by conducting a well prepared fall protection toolbox meeting you will be demonstrating your commitment to safety and safe work practices to your Hensel Phelps team.

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Use the attached Toolbox Meeting template in Section X.9.2 to prepare your toolbox meeting agenda so that your Area Superintendent can review it and give you feedback. Include all fall protection topics that are applicable to this scope of work. Remember to be thorough and provide detailed information that will be easy for all Hensel Phelps personnel to understand.

Answer:

Reference attached Fall Protection Toolbox Meeting in Section X.9.2.a.

Safety Deliverables:

Submit (1) one hard copy and (2) electronic copies of your reviewed JHA.

Submit (1) one hard copy and (2) electronic copies of your fall protection toolbox meeting.

10. SITE UTILIZATION

Written by Michelle Heick

Site Utilization Plan **Early Deliverable due at 2:00PM**

(Time Warp to the beginning of the project.)

Now that your team has been awarded the project and you have coordinated a plan of attack, you must back up your schedule with a Site Utilization Plan. Your Site Utilization Plan will help communicate your scheduled plan to the Owner, designer, your staff and craft associated with the project. A blank site plan has been attached in Section X.10.1 for your use in creating your site utilization plan. (Keep in mind that you are creating this plan prior to any construction happening on site)

The California Veterans Home in Fresno project site is located in the southeast corner at the intersection of S. Marks Avenue and W. California Avenue. The project site is surrounded mostly by open farm land. However, there are two residential neighbors who are in very close proximity, located to the North and West of the project site.

Anticipated access to the site will be from the north, on W. California Avenue. Consideration shall be taken for traffic from employees and deliveries. While the site is very large, take into consideration an anticipated peak craft and staff population of 250 people.

The Site Utilization Plan should show how the site is organized from where the trailers and lay down areas are located to the general circulation of the site for employees and deliveries. Your team shall design a Site Utilization Plan that takes into consideration the different requirements of the project.

Explore your options and come up with a site utilization plan that will allow you to start and finish on time. At a minimum, you must address the following:

1. Office trailer(s) location(s).
2. Laydown area(s) for material unloading and storage.
3. Material and emergency access road to site.
4. Construction access gate(s).
5. Subcontractor craft parking area(s).

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6. HPCC staff parking area(s)
7. Temporary site fencing.
8. Garbage containers and/or dumpster locations.
9. Connex boxes for tool and material storage.
10. Location of jobsite information/bulletin boards.
11. Location of toilets and wash stations (assume 250 personnel).
12. Gathering location for emergency situations.

Additional information may be addressed in the Site Utilization Plan as needed.

Site Utilization Deliverables:

Submit (1) hard copy of your Site Utilization Plan(s) at the 2:00PM Progress Meeting.

Submit (1) hard copy and (2) electronic copies (pdf) with your final submission.

ANSWER:

Reference attached Site Utilization Plan in Section X.10.1.a.

ADDENDUM #1: Security Plan

You have come back from a long weekend to find that there has been a theft on the jobsite. Not only have the thieves broken into subcontractors' connex boxes all over the site, but they have also broken into the Field Engineer's connex, stealing over \$50,000 in surveying equipment. This is a very serious problem that must be addressed right away.

Your Project Superintendent has tasked you with providing a plan to help secure the jobsite. He has given you a budget of \$80,000 for the remaining 14 months of the project. Using the attached proposal summaries from surveillance and security companies, provide a written recommendation to your Superintendent containing the following:

1. Your selection of surveillance equipment and/or security guard companies. If needed, include reasoning why you would need to exceed your \$80,000 budget.
2. A revised Site Utilization plan showing the location of any added equipment to the jobsite or modifications made to the overall plan. All revisions must be clouded and marked as Addendum #1.

Submit (2) electronic copies (PDF) and (1) hard copy of all documents.

Answer:

Reference attached email in Section X.10.2.a and revised Site Utilization Plan in Section X.10.1.a.

11. QUALITY CONTROL

Written by Mike Gulotta

This section is independent and should not influence your response to other sections of the problem statement. The content contained within the "quality control" section does not lead into answers of other sections.

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(Time Warp to completion of wall framing activities.)

Your company's culture is that of a true builder. As such, any field conditions that arise during construction are identified as early as possible. If an issue is located, you pride yourself on developing various solutions for the problem, prior to discussing them with the Design Team. Early in the planning stages of the project, the restrooms were identified as being a location of possible risk due to the tight clearances. To help mitigate the risk your company has decided to as-built the restrooms, analyze the ADA clearances, and verify plumbing rough-in locations as soon as the framing is installed.

You are the Office Engineer responsible for the toilet partitions, interior finishes, and plumbing fixtures. Your Project Superintendent has tasked you with reviewing restroom 6A-130 & 6A-131 as-built drawings that have been provided by the Field Engineer. Two drawings of the restrooms in questions have been provided. One indicating the room dimensions, from face of stud and the other sketch shows the plumbing rough-in locations. In addition, the enlarged architectural floor plan, plumbing floor plan, structural foundation plan, spec. section 224000, and plumbing fixture cut sheets have been provided in section X.11.1.

Part A – Verification of Room Dimensions

Review the as-built drawings, contract drawings, and fixture cut sheets to determine if the room will be large enough to account for the 60" ADA turnaround clearance requirement.

Answer:

Detail 2/A10.39 indicates the total assembly thickness for the backer board, ceramic tile, and thin-set equals 1". ADA requires a clear space of 60" to allow for wheelchair accessibility. For the vertical dimension: adding the 60" clearance requirement and the 2" of tile assembly thicknesses to the fixture depth of 26 ¾" yields a minimum clear dimensions of approximately 88 ¾". Since this is for the apex of the circle, it would also be the worst case scenario. Therefore the 7'-6" dimension is acceptable. For the horizontal dimension: per the as-built drawing, room 6A-130 is approximately 1" too narrow to account for the 60" ADA clearance in addition to the 1" of tile assembly thickness on each wall.

Part B – Plumbing Rough-in Verification

Review the as-built drawings, contract drawings, and fixture cut sheets to determine if the rough-in locations are in the correct place. Note: the required height of the water closet has been provided in the specifications.

Answer:

Sheet P2.10.2 calls out the water closets as type WC-5 for both restrooms. Specification section 224000 page 6 section E states WC-5 has a fixture height of 17 ½". Sheet S2.10 indicates a slab depression of 3" for both room 6A-130 & 6A-131. Per the fixture cut sheet: to have the top of the water closet be at 17 ½" the center of the plumbing rough-in should be located at 7" from finished floor, or 10" from the slab depression. Per the as-built: the center of the rough-in is 7" from the slab depression causing it to be incorrect.

Part C – Plan for Correction

As the Project Superintendent, you have requested that your Field Engineer and Office Engineer develop restroom as-built drawings and review them for ADA compliance. Your Office

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Engineer has provided a list of potential issues in the two restrooms (Part A). Before bringing the issue up to the Design Team, you will need to provide some possible solutions. For each issue develop a plan to correct the dimensional discrepancies.

Answer:

From the information provided by your Field and Office Engineers, it appears that the wall between rooms 6A-130 and 6A-131 is located approximately 1" in the wrong location. A possible solution would be to generate an RFI requesting permission from the structural engineer to chip 1" off the face of the wall curb inside room 6A-130 and then skim coat it. The side of the curb located in room 6A-131 will need to be roughened in accordance with the structural plans and then built out by 1". The wall framing could then be re-installed in the correct location.

Pertaining to the incorrect water closet rough-in: Since the plumbing is off by 3" it is well outside the tolerances of the fixture and floor slope. Since you know how important ADA dimensional requirements are and the potential ramifications of putting a Band-Aid on the problem, you decide to have the plumbing sub-contractor relocate the rough-ins. The walls will need to be opened up and the rough-ins will need to be raised 3".

Quality Control Deliverables:

Submit (1) hard copy and (2) electronic copies of your brief description of your research on whether the room is large enough for the 60" ADA turnaround clearance.

Submit (1) hard copy and (2) electronic copies of your brief description on whether the rough-in locations are in the correct location.

12. MOCK-UP

Written by Jenn Mehl

During the selection interview with the Owner, the Hensel Phelps team committed to providing the highest standards of quality for the California Veterans Home in Fresno. In order to fulfill this commitment, the Hensel Phelps team suggested providing mock-ups to illustrate items such as building materials, equipment functionality, coordination, and aesthetic qualities.

Since the concept of mock-ups was suggested by the Hensel Phelps team, the Owner has not provided any criteria documents or guidelines for the team to use as a basis. Therefore, your design-build team must develop the mock-up specification and accompanying designs to be included in the contract documents.

In order to develop a thorough mock-up specification and design, determine the most beneficial part of the project to do a mock-up of and include the reasoning for your choice. List four building systems (e.g., exterior walls) that the mock-up will include. For each system, list at least 3 things that will be demonstrated and/or verified within the mock-up. Also write a brief description of how and when this mock-up will be constructed.

Note: Actual specification and design will not be required.

ANSWER:

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The member room is the most repetitive part of the project, and therefore the most beneficial item to do a mock-up of. By constructing an entire member room, you can easily demonstrate multiple systems in one place and you can troubleshoot any problems that arise so that the construction of future member rooms goes smoothly.

1. *Exterior Walls*
 - a. *Windows (caulking, sill and head details, etc.)*
 - b. *Flashings*
 - c. *Transitions to roof and curb*
 - d. *Waterproofing (perform water test on system)*
2. *Bathroom*
 - a. *ADA clearances and mounting heights*
 - b. *MEP coordination (chase wall thicknesses, overhead clearances)*
 - c. *Waterproofing (shower, floor)*
 - d. *Ceramic tile conditions and transitions*
 - e. *Backing*
3. *Framed Interior Walls*
 - a. *In-wall MEP*
 - b. *Electrical switch locations*
 - c. *Drywall finish*
 - d. *Backing*
4. *Roof*
 - a. *Overhead MEP*
 - b. *Transitions from walls*
 - c. *Waterproofing*
 - d. *Penetration spacing*
5. *Finishes*
 - a. *Flooring transitions (carpet, tile, thresholds)*
 - b. *Paint*
 - c. *Furniture*
 - d. *Casework*
 - e. *Hardware (casework, doors)*
 - f. *Light fixtures*

The most beneficial way to construct this particular mock-up is to build it free-standing so that every component can be demonstrated ahead of the normal construction schedule. The key is to complete the mock-up before any of its components are constructed in the field. That way, if there are construction/coordination issues or missing details, they can be resolved before the construction of the actual building.

13. TEAM MEMBERS RESUMES

Provide each team members personal resume (**not** a resume tailored to this problem). Include mailing address, telephone and email contact information. Photos are encouraged but not required.

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VII. COMPETITION SCORING SYSTEM

Item	Description	POINTS
0.1	Early Deliverable - Biographies	0 (note 1)
0.2	Quality of Submitted Proposal	2
0.3	Timeliness of Proposal	0 (note 2)
1.	Job Purchasing Schedule	6
2.	Change Management	12
3.	Estimate	16
4.	General Conditions	8
5.	Proposal Summary	18
6.	Schedule	20
7.	Coordination of Work	10
8.	Personnel Issues	4
9.	Safety	4
10.	Site Utilization	8
11.	Quality Control	9
12.	Mock-Up	<u>3</u>
Subtotal		120
Oral Presentation		<u>80</u>
GRAND TOTAL		200 POINTS

Note 1: No points shall be issued in the competition for content of this previously due item; however points may be deducted from the team's score for having failed to comply with this item in a timely and professional manner.

Note 2: $\frac{1}{2}$ **point** will be deducted from the total score for **every minute** past the deadline time. Judges reserve the right to "cap" the penalty amount at their discretion; however no team with a penalty cap will be allowed to place in the competition awards.

As the team placement results often are separated by mere fractions of a point, it is recommended that your team take each point seriously. No points scoring information will be provided to the teams at the conclusion of the competition, but feedback will be provided for each component in an "above-average / average / below-average" format.

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VIII. LIST OF JUDGES

Oral Presentation Judges:

Sean Carolan, Operations Manager
(408) 452-1800
scarolan@henselphelps.com

Northern California District
226 Airport Parkway, Suite 150
San Jose, CA 95110

Wade Chance, Area Superintendent
(480) 383-8480
wchance@henselphelps.com

Western District
4129 East Van Buren, Suite 100
Phoenix, AZ 85008

Mike Gulotta, Project Engineer
(949) 852-0111
mgulotta@henselphelps.com

Southern California District
18850 Von Karman Ave., Suite 100
Irvine, CA 92612

Michelle Heick, Office Engineer
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mheick@henselphelps.com

Northern California District
226 Airport Parkway, Suite 150
San Jose, CA 95110

Jamie McEnroe, Project Scheduler
(408) 452-1800
jmccenroe@henselphelps.com

Northern California District
226 Airport Parkway, Suite 150
San Jose, CA 95110

David Shellman, Project Engineer
(949) 852-0111
dshellman@henselphelps.com

Southern California District
18850 Von Karman Ave., Suite 100
Irvine, CA 92612

Alternates:

Nate Lowery, Project Manager
(949) 852-0111
nlowery@henselphelps.com

Southern California District
18850 Von Karman Ave., Suite 100
Irvine, CA 92612

Tim Queely, Project Engineer
(480) 383-8480
tqueely@henselphelps.com

Western District
4129 East Van Buren, Suite 100
Phoenix, AZ 85008

Administrator / Executive Judge:

Eun Kim, Project Manager
(408) 452-1800
ekim@henselphelps.com

Northern California District
226 Airport Parkway, Suite 150
San Jose, CA 95110

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IX. THE RULES

The rules for the competition are designed to provide each team with an equal opportunity to apply their knowledge in developing their respective solutions and an equal opportunity to present their solutions to the panel of judges. The following rules apply to the Commercial Division and serve to supplement the ASC Competition Rules.

- Rule No. 1 While the competition is in progress, only the six students identified as being team members shall be present in the teams' room(s). As per ASC rules, no "runners" are allowed for food delivery, copying, etc. beyond the six team members. **Faculty advisor(s) may not interface with their team once the competition has begun.**
- Rule No. 2 One (1) Hard Copy and two (2) electronic copies of the proposal must be turned into the judges. **No proposals will be formally returned.** If you desire a copy for yourself or need one for your oral presentation preparation, please make copies prior to the submission of the proposal.
- Rule No. 3 The number of computers and printers per team is to be as outlined in the Competition Rules as published by the ASC. Use of the Internet is allowable and may be necessary for certain components of the problem; Hensel Phelps will pay for each team to have one (1) internet connection through the hotel for the Thursday written component preparation duration – details as to how this will be provided will be announced at the opening conference. An LCD projector and a computer will be supplied by Hensel Phelps for the teams to use during the oral presentations. Any additional equipment required for a presentation is the responsibility of the team. If your presentation requires specific software you must provide your own computer or inquire as to its availability on the provided computer.
- Rule No. 4 Attendance at other team's oral presentations is subject to the rules of the ASC, but in no case shall members of a school that has yet to present be allowed to attend another school's presentation. This rule extends to all students, faculty members and relatives / friends from the participating school, whether team members / coaches or not.
- Rule No. 5 The problems that are used for the competition are drawn from actual construction projects. In the past there have been situations where student team members have worked on, or have specific knowledge of, the project that is the subject of the problem. This can be perceived as giving the team an unfair advantage in developing a solution. If, upon receiving the problem, any student recognizes the project that is the subject of the problem statement, the student shall notify the problem sponsor to discuss the extent of the student's project or problem knowledge. Alternates may be considered should there be an identified conflict. The judges will have the final decision. Failure to notify the problem sponsor makes the team subject to disqualification.
- Rule No. 6 While the judges will endeavor to administer the problem with all fairness and appreciation for the team's perspectives, the decisions of the judges shall be final when deciding conflicts and scoring.
- Rule No. 7 A one-half (½) point deduction will be taken for each minute the proposal is turned in past the time it is due. Written proposals are due Friday at 12:00AM (Midnight Thursday night). Location of proposal delivery will be announced at

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opening conference. Other deliverable items, if applicable, will be due as specified elsewhere herein.

- Rule No. 8 Any team with graduate students can participate in the regional competition. However, the national level prohibits graduate students to participate on the team. The invitation from Region VII for the national competition will be from the highest placed team NOT containing any graduate students. If it is your team or school goal to go to the National competition please do not include graduate students on the team.
- Rule No. 9 Oral interviews will begin at 7:00 AM on Friday. Presentation materials for all teams are to be turned in to the judges by 6:45 AM. No other presentation material will be allowed into the presentation that is not turned into the judges by this time - NO EXCEPTIONS WILL BE ALLOWED. Teams are encouraged to bring electronic presentation materials on a CD or thumb drive for use on the HPCC provided presentation computer; this will save on set-up time. HPCC's computer will utilize Microsoft Office 2007 software; if specialized software is necessary then the team must provide a computer to run their presentation and this computer must be delivered prior to the 6:45 AM deadline.
- Rule No. 10 No phone calls or emails may be made to the Owner, Construction Manager, Architect, Civil, or Structural Engineer, or any other design consultants listed on the Drawings. Similarly, no components of the problem may be sent to others outside the team for assistance in completing the problem. Any violations of the above are subject to point penalties or team disqualification, at the Judge's discretion.
- Rule No. 11 Due to the sensitive nature of disclosing project information that the Owner and / or design professionals may not wish to be publicly distributed, Hensel Phelps reserves the right to require Confidentiality Agreements be signed by each team member prior to distribution of the Problem Statement. This may further require that all or some Contract Documents or other material provided to the team, both electronically and hard copy, be returned to Hensel Phelps at the conclusion of the competition.
- Rule No. 12 The premise of the proposal and oral interview is that you are presenting to the upper management of your own company. It is preferred that your team take the identity of Hensel Phelps, but other team / company names are acceptable. You are therefore asked to not include extra peripheral information about your company such as safety plans, company profiles or other marketing materials. Our intent is to test you on your knowledge of construction concepts, means and methods, not your ability to make up or compile marketing materials and canned programs. Please limit your responses generally to the information requested, although innovation and enhancement is encouraged.

Any team observed violating these rules may be asked to withdraw from the competition or be assessed point penalties.

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X. SUPPLEMENTAL INFORMATION (ANSWERS)

Note: Information is provided in electronic format only on thumb drive:

- 1.1.a Job Purchasing Schedule Spreadsheet
- 2.1.a Schedule Fragnet
- 2.2.a Change Estimate 001
- 2.3.a Owner Notification
- 3.1.a Wood Framing and Concrete Estimate Spreadsheet
- 4.1.a General Conditions Estimate
- 4.2.a Staffing Matrix
- 5.1.a Bid Tabs
- 6.1.a CPM Schedule
- 6.2.a Milestone Report
- 6.3.a Critical Path Report
- 7.1.a SIPS
- 7.2.a Coordination RFI
- 9.1.a Job Hazard Analysis
- 9.2.a Fall Protection Toolbox Meeting
- 10.1.a Site Utilization with Addendum
- 10.2.a Email to Superintendent