

REGION 7 FAR WEST REGION CA. HI, OR. WA

Region 7- Commercial Building Division February 7<sup>th</sup> – 10<sup>th</sup>, 2024

# **Problem Statement**



Los Angeles Airport (LAX) Police Headquarters

Los Angeles, CA

## **ANSWER PACKET**



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## PROBLEM SPONSOR



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4750 Willow Road Pleasanton, CA 94588 (925) 494.9700

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#### **Mid Atlantic Region**

1600 Tysons Boulevard, Suite 800 Tysons Corner, VA 22102 (703) 720-4900

#### **Pacific Region**

841 Bishop Street, Suite 2001 Honolulu, HI 96813 (808) 535-9500

#### **Corporate Office**

420 Sixth Avenue Greeley, CO 80632 (970) 352-6565

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## I. COMMERCIAL DIVISION TIMETABLE

## Day 1 | Thursday, FEBRUARY 8th

Day 1 Content Due	10:00 PM
Sub Interviews & Team Game (15 min / team) *Every team member is required to support this meeting	2:00 PM – 7:00 PM
First Progress Meeting / RFI's Due	10:00 AM
Opening Conference / Distribute Problem *Establish interview times and presentation order for teams	6:00 AM

## Day 2 | Friday, FEBRARY 9th

Presentation Materials Due (ALL TEAMS)	6:45 AM
Oral Presentations	7:00 AM – 6:35 PM
Project Debrief	6:45 PM – 7:30 PM

## Day 3 | SATURDAY, FEBRUARY 10th

Career Fair	8:00 AM - 12:00 PM

Awards Ceremony: ..... 11:00 AM



## II. PREFACE

WELCOME to the 2024 ASC Student Competition. All participants are to be commended for the personal time and commitment made in preparing for and participating in this competition. The construction industry has noted these sacrifices and the premier student population that is competing this year. This is evident in the quantity and quality of companies committed to the competition and Career Fair.

The student competition is designed to challenge each team in 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 presentation 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!



## III. PROJECT INFORMATION (Collin & Khristina)

The new Airport Police Facility (APF) is a headquarters project for LAX Airport; the first project of its' kind for Los Angeles World Airports (LAWA). This project's purpose is to develop a new Airport Police Facility to co-locate the many functions of the Airport Police Division (APD) onto one site from 2020 through 2040 and beyond. The new APF will be a purpose-built structure, designed to accommodate the continuous operations of critical police functions, with infrastructure to support the next generation of law-enforcement technologies and practices. The project consists of the following main components: a Headquarters Building, Parking Structure, Firing Range and Site development.



\*Rendering of APF

- 1) The new Headquarters Building is a 3-level, 165,000 SF, cast in place concrete structure that utilizes post-tensioned reinforcing for the decks.
- 2) The Parking Structure is 340,000 SF and accommodates (863) parking spaces.
- 3) The indoor Firing Range is 42,000 SF and utilizes the latest technology.





\*Construction progress photo capturing the full 12-acre site and location of APF

Aside from the buildings, the project also includes complete site development, as well as incorporation of requirements by the LAX Northside Design Guidelines and Standards including, but not limited to: the paseo, lighting, paving & landscape requirements, and (41) visitor spaces.



## IV. Problem Scenario (Collin & Khristina)

Hensel Phelps has just been awarded the LAX Airport Police Facility project. This is a Design-Build project with accelerated civil and structural foundation design packages that allows construction to begin while the design of the building finishes is being completed.

While Hensel Phelps has done work at LAX before, this is the first time we have contracted directly with Los Angeles World Airports (LAWA). Additionally, this is the first LAX project where we have been 100% responsible for design. This project is an opportunity to show a new client the expertise that we bring to the table as a world-class General Contractor.

The components listed under the Problem Outline are real deliverables that your project team needs to generate to manage a successful job. To ensure a successful project, the Senior Leaders have scheduled a project kickoff meeting.

Senior Leadership has scheduled the Project Kickoff meeting to review your group's understanding of the Project. They are particularly interested in site utilization, schedule, and self-work opportunities as outlined in different sections of the problem outline. Your written overview is due by **10:00pm tonight** and you will be asked to present a complete review tomorrow. Interim progress meetings are scheduled for 10:00am and 2:00pm (Thursday February 8<sup>th</sup>).

Any questions should be delivered, in writing, on the Request for Information form (RFI) to the senior management team via email <u>rfranssen@henselphelps.com</u> by 10:00 AM on Thursday February 8<sup>th</sup> 2024. Responses to the RFI's will be provided before the 2:00 PM Meetings. The RFI for has been provided in the Supplemental Information (X.0.3). All RFI's need to be provided in PDF copy with the following file naming.

"Problem Outline Section Number - Section Name - School Name"

#### "Section 6 – Coordination of Work – Hensel Phelps"

For the oral presentation on Friday, all team members shall contribute and include members representing the Project Manager, Superintendent, Estimator and Scheduler; 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.



## V. PROBLEM OUTLINE

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

1. GENERAL SUMMARY	Error! Bookmark not defined.
2. ESTIMATE	Error! Bookmark not defined.
3. GENERAL CONDITIONS	Error! Bookmark not defined.
4. PROPOSAL SUMMARY (TAB ANALYSIS)	
5.SCHEDULE	
6.COORDINATION OF WORK	
7. CHANGE MANAGEMENT	
8. PERSONNEL ISSUES	
9.SAFETY	
10.SITE UTILIZATION	Error! Bookmark not defined.
11.SUSTAINABILITY	Error! Bookmark not defined.7



## 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

Team 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.

The following deliverables will be required to get turned into the judges at 10:00am for review and grading.

Estimate - Part A Deliverable

Personnel Issues -

Sustainability -

## 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

Unless stated otherwise, one electronic copies of your proposal are due at 10:00 PM, as per the Timetable in Section I. A  $\frac{1}{2}$  point penalty will be deducted from the team's score for each minute the proposal is turned in late.



## 1. GENERAL SUMMARY

Written by Charleston Burr

#### Financial Status Report

The project has kicked off, and upper management has requested a meeting to review the project's estimate and financial status. As project manager, you were intimately involved with the procurement and have worked alongside the estimating department to establish the budget for the project. Upper management has tasked you with compiling the remaining information and providing a financial status update for review. The Contract Design to Budget value is \$145M, and it's important to LAWA, a valuable client, that the final GMP proposal stays as close to this original budget as possible.

#### Part A - General Summary

The Financial Status Report (FSR) is a tool used to compare the purchase price of each subsystem to the estimate and evaluate buyout gains and losses. The GMP values for each subsystem will eventually be the subcontract value issued for each scope of work as listed on the FSR. Use the FSR spreadsheet to complete the analysis for each bid package for the project. Use the values given in the FSR spreadsheet (X.1.1) along with the final amounts from Section 2 (Estimate, as needed), Section 3 (General Conditions), and Section 4 (Proposal Summary) to fill in the highlighted fields in the FSR.

#### Part B - Contingency

The contingency in the proposal was 6% and was included for buyout risks and typical construction issues that will arise. These typical issues include but may not necessarily be limited to weather, soil conditions, lead times, budget overruns, etc. Now that you have been awarded the project, your assignment is to assess whether the initial contingency is still necessary or if that amount can be adjusted. Using the FSR spreadsheet, fill in the highlighted field with the contingency percentage that you determine is most appropriate. It's important to understand that any dollars spent over contingency will come from your fee.

#### Part C - Financial Status Narrative

Now that you have compiled all of the information into the Financial Status Report, provide a written narrative summarizing the project's financial status using no more than 200 words. Include the final cost model value, total budget gains or losses, and the contingency you will present to upper management. Include a list of your top three (3) contingency risks and be prepared to discuss them during your check-in with upper management.

#### ANSWER:

Part A – Reference attached X.01.1.a

#### Part B – Reference attached X.01.1.a

The project team has compiled a design and cost model that we have determined meets the owners needs and requirements. We are confident in the pricing efforts conducted by our estimating team and anticipate that we will have some buyout gains once we present our GMP and begin buying out our major scopes. As a result, upper management is comfortable at this time lowering the contingency to 5%. Being a design



build, we anticipate risks and changes to the scope. These include but are not necessarily limited to supply chain issues, expediting materials & equipment, and unforeseen conditions such as utility tie connections and soil conditions.

Part C – Reference attached X.01.1.a

Cost Model Value - \$164,769,029

Budget Gains - \$1,312,083

Contingency: 5% or \$6,503,738



## 2. ESTIMATE

Written by Amanda Schilling

The Los Angeles Airport Police Headquarters Project has been awarded. Your Senior Estimator has met with several trades throughout the early procurement process – including concrete subcontractors. She has a couple of quotes from subcontractors but wants to remain open to the idea of self-performing the concrete work.

Hensel Phelps continually strives to increase the quantity of self-performed work and ultimately create more opportunity for our craft as well as to augment project fees. Self-performing the concrete scope would give us a unique opportunity to control our destiny by driving the schedule, enhancing profit, and providing a quality product to the end users.

You are the Project Engineer fresh off your second successful self-performed concrete project with Hensel Phelps. You are bringing a wealth of experience and knowledge in the self-perform concrete arena. Moreover, you have a high-performing crew available from your last job. Thanks to your experience, your Project Superintendent has asked you to connect with the Senior Estimator on this project to do an analysis and determine whether it is profitable to self-perform this job.

#### PART A - Parking Garage

You have been asked by your Senior Estimator to determine whether the project will self perform the concrete for the Parking Garage or subcontract it out. As a company, Hensel Phelps has made the decision to expand the types of projects we self perform. Parking Garages are one of the types of projects we would like to begin entering to help expand the experience of our craft and our ability to remain an industry leader in concrete. It is your responsibility to estimate the cost of a small portion of the Parking Garage, as well as analyze the other 2 bids provided, to determine if Hensel Phelps should perform the concrete scope OR if it should be a subcontracted scope. Please use the two provided bids to make your decision. Between the 2 bids and your quantities, choose which one you would pick.

Use the provided contract drawings in section X.0.1 and your project schedule (reference Section 5) to analyze the Parking Garage quotes and determine if the concrete scope should be self performed, based on the overall cost and potential risks following items:

- Foundations
- Columns (Assume all column heights are 12')

Clarifications and Exclusions

- Do NOT modify the Estimate Spreadsheet.
- Do NOT include additional material to account for concrete waste.
- Do NOT include additional material or labor to account for patching of exposed concrete.
- Do NOT include reinforcing bar in your concrete estimate.
- Do NOT provide any other concrete components other than the items listed above, i.e. CMU walls, SOD,SOG, etc.
- Do assume excavations for footings are neat dug

Supplemental Information



- Concrete Estimate Spreadsheet PG (X.02.1) This spreadsheet has been formulated for your use in compiling data, all teams will use the same format. Please fill in the quantities, unit costs, tax, and fee on this spreadsheet.
- Concrete Estimate Spreadsheet PG (X.02.1) Resource tabs have been added for labor, material, and equipment unit costs at the end of the tabs.
- Parking Garage Subcontractor Quotes (X.02.3 & X.02.4) Two formwork quotes from vendors have been provided for your use to evaluate your cost of formwork.
- Parking Garage Drawings for Quantity Take-Offs (X.02.5) Only the elements highlighted in yellow need to be quantified for this task. Detail sheets have also been provided to assist in the ease of quantifying these elements.

#### Estimate PART A 10:00 AM Deliverable:

- Submit an electronic copy (PDF) of a narrative describing your final decision of which of the 3 options you would choose to perform the concrete for the Parking Garage. This narrative should be no more than a one (1) page document in 150 words or less. This file should be named "X.02.5 – Concrete Narrative – (School Name)
- **2.** Submit an electronic copy in native format (Excel) of your Concrete Estimate Spreadsheet PG (X.02.1). This file should be named "X.02.1 Concrete Estimate (School Name)

#### Submit Early Deliverable to same email as RFI\*\*

#### PART B - Concrete Estimate

The estimate is comprised of formwork, concrete material, labor, equipment, and associated general conditions. Additional crew members and general condition costs will be required to self-perform the concrete scope. Therefore, all associated general conditions for the concrete work shall be integrated into the total concrete value. Typically, for a concrete project this size, one additional Area Superintendent and two Field Engineers would be added to manage the concrete scope, alongside several forepersons and general forepersons to run the self-perform craft crews.

Use the provided contract drawings to quantify the value of cast-in-place concrete to be installed on the Los Angeles Airport Police Headquarters Project, specifically:

- Continuous Footings
- Spread Footings
- Slab on Grade
- Columns
- Slab on Decks

Supplemental Information:

- Concrete Estimate Spreadsheet HQ (X.02.2) This spreadsheet has been formulated for your use in compiling data, all teams will use the same format. Please fill in the quantities, unit costs, tax, and fee on this spreadsheet. (Hint: The only cells you need to fill out will be highlighted in yellow and all calculations will be automatically populated.)
- Concrete Estimate Spreadsheet HQ (X.02.2) Resource tabs have been added for labor, material, and equipment unit costs at the end of the tabs.



Clarifications and Exclusions

In order to keep all teams' estimates consistent, please follow the guidelines below:

- Do NOT modify the Estimate Spreadsheet.
- Do NOT include additional material to account for concrete waste.
- Do NOT include additional material or labor to account for patching of exposed concrete.
- Do NOT include reinforcing bar in your concrete estimate.
- Do NOT provide any other concrete components other than the items listed above, i.e. Site Concrete, Exterior Stairs, Site Seat Walls, Shear Walls, Elevator Walls, etc.
- Do assume excavations for footings are neat dug
- For General Conditions, please round up to the nearest whole number to get total months.

#### Estimate PART B Deliverable:

Submit an electronic copy in native format (Excel) of your Concrete Estimate Spreadsheet
– HQ (X.02.02). This file should be named "X.02.02 – Concrete Estimate Spreadsheet –
HQ – (School Name).

#### PART C - Fee

While understanding the extent of self-perform work on this project, determine what fee percentage will be allocated to your estimate. The proposed fee percentage shall be populated in the Concrete Estimate Spreadsheet (X.02.02) on the Summary Tab. A short narrative (150 word maximum) shall be submitted describing why the percentage was selected. If the concrete scope of work is performed by a subcontractor, the fee may be around 15-20%. Keep this in mind when proposing a fee percentage on self-perform work. The goal of self-perform is to provide a competitive price and enhance additional fee on the project.

#### **Estimate PART C Deliverable:**

 Submit an electronic copy (PDF) of a narrative describing determination of fee percentage used for overall concrete estimate. This narrative should be no more than a one (1) page document in 150 words or less. This file should be named "X.02.06 – Concrete Fee Narrative – (School Name)"

#### ANSWER:

#### Part A – Reference attached X.02.01.a

Narrative Answer: Although there are 3 options, there is not a specific company that is the correct answer. The narrative should include a response that involves picking a company that would provide the least amount of risk to Hensel Phelps based on overall cost, experience of the company, and overall potential profit/growth for Hensel Phelps.

#### Part B – Reference attached X.02.02.a

*Part C* – The fee narrative that is selected is 12%. This is a higher risk project in regards to the self-work so a higher overall fee was selected to benefit the overall project fee.



## 3. GENERAL CONDITIONS

Written by Moustafa Jafar & Kali Saueressig

General Conditions (GC's) are real construction costs that are not immediately quantifiable by the untrained eye and are associated with on-site management, supervision and contract administration. GC's are the costs incurred during a construction project that typically are not directly related with labor or materials for construction, but are integral to the success, efficiency, and safety of the project. GC's are a critical component to risk and cost management and afford the contractor the ability to forecast costs, staffing, and project needs.

At the outset of the job, a GC Estimate is required to forecast the associated project costs. The GC Estimate along with a supporting staffing matrix will be critical to ensure that we are preparing properly to staff the job and put Hensel Phelps in the best position to effectively manage the project. In preparation for the Pre-Bid meeting, upper management has asked that you review the overall project schedule. Following your review, you are being requested to create a staffing plan that encompasses the duration of the project. Hensel Phelps Southern California Region has many projects at all different phases that staff can be transferred from. It is imperative that the project's staffing needs are communicated to upper management early on to help plan the region's staffing needs as well as gain the best team for this specific scope of work. This projection will not only aid upper management in their ability to forecast staffing needs for your project, but it will also identify future opportunities for staff to grow and develop into new positions.

#### PART A - Staffing Plan and Organizational Chart

#### (Note: the Project Staffing budget from this part should be carried into the FSR section)

Prepare a staffing plan and an organizational chart that directly reflects the project need in accordance with the project schedule created in Section X.5. Descriptions of each position are provided in X.03.1. Each staff member's total dedicated duration on the project should be included on form X.03.2 to accurately assess project staffing costs as these durations are transferred to the GC estimate.

The region has the following employees available to work on the LAX police headquarters project: One (1) preconstruction manager, one (1) design manager, one (1) project manager, two (2) project engineers, five (5) office engineers, one (1) project superintendent, four (4) area superintendents, six (6) field engineers, one (1) safety manager, one (1) quality control manager, one (1) BIM manager, one (1) office manager/admin.

Position	Duration Available
Design Manager	16 Months
Preconstruction Manager	10 months
Project Manager	37 Months
Project Engineer	32 Months
Project Engineer	34 Months
Office Engineer	35 Months
Office Engineer	18 Months





Office Engineer	24 Months
Office Engineer	16 Months
Office Engineer	8 Months
Project Superintendent	37 Months
Area Superintendent	7 Months
Area Superintendent	16 Months
Area Superintendent	32 Months
Area Superintendent	19 Months
Field Engineer	8 Months
Field Engineer	18 Months
Field Engineer	16 Months
Field Engineer	15 Months
Field Engineer	11 Months
Field Engineer	11 Months
Safety Manager	36 Months
Quality Control Manager	36 Months
BIM Manager	15 Months
Office Manager/Admin	40 Months

Use the available employees to populate the staffing plan form (X.03.2) in alignment with the project schedule. See X.03.3 for example staffing matrix. Your staffing plan deliverable will be graded on total work months and total staffing costs.

Please note the following:

- Project Executives (Operations Manager and General Superintendent) are to be carried by district overhead and not included in GCs.
- Supervisory staff positions should be allocated to the project as the team sees fit to complete the change order work and base scope of work closeout.
- The project will be assigned two interns over the summer.
- You do not need to use the full duration each staff member above is available in your staffing plan.
- Reference Schedule Section X.5 for Notice to Proceed and Substantial Completion information.

When developing the staffing plan keep in mind the manpower needed throughout different phases of construction. Use X.03.4 to determine the monthly rate for each staff member and input the monthly cost for the correct position in highlighted columns on X.03.2. Take the total value calculated for project staffing and transfer this over the **FSR** that will be developed for **Section 1**.

Using the staffing plan you created, develop a staff organizational chart that depicts the various roles that will be required for the project to run smoothly and efficiently. An example of a staffing organizational chart has been provided in X.03.5. X.03.5 is just an example of how an organizational chart should be outlined for a specific MEP scope. Ensure you are representing the scopes and phases of the LAX police headquarters. Include the position, role (interiors, MEP, etc.) and start date, based on staffing matrix created above, of the staff member in each box of the organizational chart. The staff organizational chart will be graded based on the logic of employee allocation.



Through your evaluation of the staffing plan and allocation of roles and responsibilities, provide a one-page evaluation to upper management with reasoning behind your staffing decisions for this project. Within your narrative reference your staffing plan. Grading will be based on logic and reasoning of your staffing recommendations.

#### **General Conditions PART A Deliverables:**

- 1. Submit an electronic copy in native format (Excel) of your Staffing Plan (X.03.2)
- 2. Submit an electronic copy (PDF) of your Staffing Organizational Chart (X.03.5)
- 3. Submit an electronic copy (PDF) of your staffing analysis narrative as described above. This file should be named "X.03.6 – Staffing Analysis Narrative – (School Name)"

#### PART B - General Requirements Estimate

(Note: the General Requirements budget from this part should be carried into the FSR section)

Prepare a detailed general requirements estimate projecting all cost from Notice of Award through Final Completion.

Use the General Requirements Template provided in Section X.03.6 and the rates found in Section X.03.7 to calculate the overall value for the GRs. As you determine the costs and units for each GR item, make sure to align your general requirements with what your team develops for project schedule as well as site utilization. Use your best judgment, team experience or available resources to determine these breakdowns. Grading will be based on the duration for each general requirement item.

Item Description	Budget Available
General Cleaning (Trailers)	\$39,600
Dumpsters 40 Yard	\$34,500
Forklift	\$85,100
Radios	\$8,000
Field Trailers - Setup & Teardown	\$14,000
Field Trailers - Monthly Rental	\$99,900
1 Security Guard	\$148,000
Street Sweeping	\$37,000
Temp Data/Internet	\$14,850
Temp Fences/Gates	\$129,500
Temp Sanitary Facilities	\$74,000
Crane	\$150,000

Please note the following:

• Home-office overhead is not included in GRs. However, satellite project office and relocation costs will be billed to the project.

#### **General Conditions PART B Deliverables:**

1. Submit an electronic copy in native format (Excel) of your General Requirements Estimate (X.03.6).



ANSWER:

Part A – Reference attached X.03.2.a & X.03.05.a

The staffing matrix is completed so that it aligns with the design and construction schedule. Noting the NTP dates provided in the schedule section, this should play a key role in when you choose to start adding staff onto the project. Not that there should be some overlap in staff between the design and construction phases. As a design build project, the higher level staff will start before construction begins to support early coordination efforts on the project. The staff should be structured to ensure optimal teams for both the field staff (superintendents, and fields engineers) and office staff (office engineers, project engineers, and project managers) Take into consideration the sequence of construction activities to ensure there is proper field coverage during peak construction times, as well as continued office coverage early in the project to assist with the processing of early project coordination.

Part B – Reference attached X.03.06.a



## 4. PROPOSAL SUMMARY (TAB ANALYSIS)

Written by Austin Thornburg & Christina Du

As a Design-Build project, time is of the essence in all stages of designing, procuring, and constructing the LAX Airport Police Facility. Currently, you are in preconstruction and the field team will need to get the early trades coordinated soon. In preparation, the office team is working on finalizing selection and onboarding for all trades. You are a Project Engineer assigned to help your Project Manager review and evaluate qualified bidders for key upcoming scopes.

Your assignment is to review and determine the lowest qualified bidder for (5) challenging scopes: CMU, tactile shooting range containment system, curtain wall systems, weapons rack specialties systems, and flooring. Keep in mind the purpose and end-user needs of the building, as this project will become the Airport Police Division (APD)'s premier headquarters and training facility. Your Estimating Team has already prepared and distributed a Bid Package to their shortlist of qualified bidders for these scopes and has collected their bid proposals for your review.

As a seasoned Project Engineer, you understand how important a succinct and thorough tab analysis is for determining the subcontractor teams most suited for taking on the responsibility of these key scopes. Your ability to correctly identify and clearly communicate scope and cost will influence the decisions that affect not only these project components and trade partners, but also the amount and types of risk your team will need to manage. Ultimately, your decision is a domino determining the path of your overall project's success.

After reviewing these scopes with your Project Manager, the two of you have decided to split your scopes into (5) bid tabs. These will cover the (5) scopes, respectively: CMU, tactile shooting range containment system, curtain wall systems, weapons rack specialties systems, and flooring. As this project is a leading police facility for one of the busiest airports in the world, it has piqued the interest of many subcontractor firms in the industry, with various levels of experience working in industry and with Hensel Phelps. As you sort through the proposals collected by your Estimating Team, you note the varied levels of detail and completeness. You know completing the bid tabs is not easy but remember: your team is counting on you to be the first line of defense in minimizing risk.

To assist with your bid tab analysis, the Senior Estimator and the Project Manager have generated bid tab "skeletons" with check questions and an estimated budget for the definable feature of work to be bid. These bid tabs have been provided as a reference tool but should not be viewed as a complete analysis of the scope. The budget provided for each scope by the



Project Manager and the Senior Estimator represents a best estimate based on historical data and subcontractor pricing but will vary from the trade partner's proposals.

To complete your bid tab analysis, you will need to identify which bidders have captured in their entirety the scopes included in your Project Contract. It is imperative to fully understand which proposals are incomplete vs. which proposals carry too much scope, and execute a clear understanding of any qualifications or exclusions. To complete your assignment, you will need to review the submitted proposals, complete a bid tab for all scopes of work, and make a final recommendation to your Project Manager regarding which subcontractors should be awarded a contract. Sum values should be rounded to the nearest \$1,000 to allow the tabs to be quickly processed. Remember, every minute counts!

#### **Clarifications:**

If a subcontractor has not included a certain scope use a "Blue Number" to represent an estimated value. "Blue Numbers" are values derived by the estimating team or by applying a number provided by a different trade partner that did capture the scope in their proposal. "Blue Numbers" are named as such because they are input in the bid tab using blue pencil. "Red Numbers," similar to blue numbers, are used to deduct scope that should not have been included in the proposal. "Red Numbers" are deducted from the proposal total. Red Numbers are named as such because they are input in the bid tab using red pencil.

You will be allowed to briefly interview each subcontractor "by phone" to ask general scope questions not already included in their proposals or to clarify inclusions or exclusions within their proposals. Subcontractor representatives will be available in the Presentation Room at the time assigned this afternoon. Each trade will be represented by a separate member of the Hensel Phelps team, giving you the opportunity to interview multiple subcontractors at once. You will be allotted ten (10) minutes to conduct your interviews. Please note that this is intended to be a realistic exercise. Your subcontractors may be rude or evasive; this is not an attempt to frustrate the team, but rather to represent the very real difficulties encountered in real time buyout situations.

#### **Considerations:**

- Company policy requires Payment and Performance bonds for all subcontractors with a subcontract value over \$50,000.
- Hensel Phelps is signatory to the Laborers, Carpenters, and Concrete Mason Unions.
- All subcontractors will have to report Certified Payroll to the City of Sunnyvale for review.
- All confirmed pricing must be held for 120 Days.

Included in attachment X.04.2 are the subcontractor proposals for each scope of work requested for review by your Project Manager and Senior Estimator. Carefully read through each proposal and fill in the values for each line item on the Bid Tabs provided in Section X.04.1 using blue and red numbers where necessary to assure a complete scope. Once you have



completed your review sum up the total value and select a subcontractor by circling the complete value for the required scope of work.

#### **Proposal Summary Deliverables:**

- 1. Submit an electronic copy in (Excel) of each "closed" bid tab with the selected subcontractors total value circled. X.04.1
- 2. Submit one electronic copy with a brief narrative for each of the (5) scopes (500 words or less) explaining why the subcontractor for each scope was chosen.

#### Concrete Masonry Unit Scope Award – Pop, Block, and Drop It

With the indoor shooting range being such a feature component of the project, selecting a qualified trade partner is a must. Pop, Block, and Drop It captured all of the project scope and satisfied all of the subcontracting requirements, which is why they were circled RED on the bid tab analysis. Other trade partners that did not capture all of the project scope had their final bid number inflated by Blue Numbers. A thorough review of the project scope could have won these trade partners a landmark job.

#### Tactile Shooting Range Containment System Scope Award – Bang Bang Shooting Range

This highly specialized scope produced only two qualified bidders. While Firearm Fanatics generated the lowest bid, their inability to bond on a contract worth \$500,000 prevented them from winning the job. To protect the company's risk, Payment and Performance Bonds are non-starters on large contracts. The risk is simply too great to inherit without the protections afforded by a Surety. The importance of risk management in construction cannot be overstated.

#### Curtain Wall Systems Scope Award – Glazed and Confused

Nothing can derail a project's schedule and budget quite like water intrusion. A qualified curtain wall designer and installer is of paramount importance on a high-profile design build project. Although The Glass is Always Greener has years of industry experience their inexperience with custom frits is concerning. They fail to meet the qualifications required by the projects specifications. As the design builder, the general contractor has the opportunity to select the most qualified bidder as opposed to the lowest bidder. Hopefully Glazed and Confused's proven track records allows for easy coordination and relieves the workload imposed on the supervising staff.

#### Weapons Rack Specialties Scope Award – Licensed to Rack

No frills here. Low bid takes the cake. Who would have thought tactile equipment could be so expensive.

Flooring Scope Award – Float Like a Slab, Sting Like a Bee



Given the multi-uses of this building sound and vibration isolation is critical. Due to the highly technical nature of this work, it comes as no surprise that this scope is not cheap. With all the bidders meeting the project's minimum qualifications this scope was awarded based on Float Like a Slab, Sting Like a Bee's low-bid.

#### ANSWER:

Part A – Reference attached X.04.1.a



## 5. SCHEDULE

Written by Collin Engelbrecht

The Construction Schedule serves as the "road map" to how you are planning to build the project. It assures adequate planning, scheduling, and reporting during execution of all construction activities so they may be executed in an orderly and expeditious manner. It must incorporate durations and milestones stipulated by the Prime Contract. The contract schedule also assures coordination of the work between the Contractor and the various subcontractors. It also assists in detecting problems for the purpose of taking corrective action and to provide a mechanism or tool for determining and monitoring such actions.

As the Project Superintendent, you have been tasked with developing a schedule that accurately reflects your plan for building the <u>Headquarters Building only</u>. Using the drawings and specifications provided, you are to submit a proposed Detail Design/Construction Schedule in CPM format for review with your executive project management team. The schedule needs to effectively communicate your plan. In turn, your schedule presentation, written and oral, will be comprised of:

- 1. Building a CPM Schedule to support a project completion of 521 working days from Notice to Proceed Construction.
- 2. A Work Breakdown Structure for the Design portion of the schedule.
- 3. Identifying the Critical path and justifying it.
- 4. Incorporation of key milestones

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

#### Part A - Construction Schedule

General CPM Schedule Criteria:

- a. Presentation Criteria:
  - i. Column Format:
    - 1. At a minimum show the following columns to the left of the timescale (Gantt Chart): Activity ID, Activity Name/Description, Original Duration, Early Start, Early Finish, and Total Float (see Figure "A" example below).:

Figure A:

	Line	Activity ID	Name	Duration	Predecessors	Successors	Start	Finish	Free float	Total float
+	1	Milestones								
+	2	± Design								
+	3	3 • Pre-Construction								
+	4	Construction - He	eadquarters Building							
+	5	Startup & Comise	sioning							
+	6	Punchlist & Close	eout							

- i. Activity count: No less than 500 and no more than 750 activities.
- ii. There should be a continuous logic flow of critical path activities from the Notice to Proceed through to Final Project Completion.
- iii. Organize your activities so they are easy to read, grouped intuitively and follow proper sequence to present a nice schedule "flow."



#### b. Work Breakdown Structure (WBS):

To maintain flow and composition, schedules are typically organized by a WBS. The WBS is the outline of a schedule, and acts as an umbrella to capture the theme or specific nature of an activity set. A WBS can contain multiple layers and subsets to aid in the organization of the activities, or it can be simply based on the structure and complexity of the schedule.

The following (i.- vi.) is the base WBS provided by your Project Superintendent. Your CPM should match this structure. Each WBS should contain a breakdown of activities which will demonstrate your knowledge of the entire project. The Main WBS subcategories have been provided to assist in building your schedule, you will need to further detail the WBS as necessary and most importantly incorporate the activities required to show the full flow of work from start to finish.

Project Holidays – The CPM calendar must be cross referenced to the Prime Contract and union holiday calendars. For this project, the following project holidays will be observed. No work is to be performed on these days:

- a. New Year's Day
- b. Presidents' Day / Washington's Birthday
- c. Memorial Day
- d. Independence Day
- e. Labor Day
- f. Veteran's Day
- g. Thanksgiving Day
- h. Day After Thanksgiving
- i. Christmas Day
- i. Milestones (Constrained Dates)
  - a. <u>Notice to Proceed 1 Design</u>: This milestone marks the date that the project has been awarded and the owner has issued a contract to begin design. The NTP 1 date for this project is 2/9/2024. There is no contractual completion date for the design. However, you must create a design schedule that allows you to pull permits in a timely fashion to support construction.
  - b. <u>Notice to Proceed 2 Construction</u>: This milestone marks the date that the owner will award the 2<sup>nd</sup> part of the contract which allows construction to commence. The NTP 2 date for this project is 5/6/2025. You must have the design far enough along to support pulling your civil and foundation permit to begin mass excavation and building foundations.
  - c. <u>Construction Complete:</u> This is the date on which all construction needs to be complete to obtain substantial completion in accordance with the prime contract. Construction complete for the project is 1/20/2027
  - d. <u>Contract Adverse Weather Days</u>: The prime contract allows for 56 working days to cover potential adverse weather impacts. These adverse weather days must be accounted for in the schedule duration between NTP 2 and Substantial Completion. While the prime contract allows these days to become float if not used, you must plan to complete all work required to obtain substantial completion before the adverse weather schedule activity. (NTP 2 + Construction Duration + Adverse Weather Duration = Substantial Completion)
  - e. <u>Substantial Completion:</u> Substantial Completion is the milestone in the progress of the work where the work is sufficiently and suitably complete in accordance with the Contract Documents so that the Owner can obtain beneficial use prior to Final



Acceptance of the Work. **Substantial Completion for this project is 4/9/2027**. The Design-Builder will be subject to liquidated damages of \$20,000/day for each day after the substantial completion date. <u>\*\*Refer to attachment X.05.0 - General</u> Conditions package provided as part of the reference documents to fully understand what tasks are required to be completed before substantial completion can be awarded. Make sure these tasks are completed by this date. <u>\*\*</u>

- f. <u>Project Closeout & Final Completion:</u> Designates the date that the Owner has approved the final inspection and is satisfied that the work has been completed in accordance with the Contract. All as-builts and record documents must be submitted and accepted by this date.
- ii. Design
  - a. Basis of Design
  - b. 30% Schematic Design
  - c. 60% Detailed Design At the 60% design phase you must break out your drawing packages based on the project permitting needs. For this project, the Civil Design, Foundation/Structural Design, and Early Under Foundation Utility Design packages must be completed and permitted by the NTP 2 date to support construction. The Building Interior and Remaining MEPF design packages can lag behind since they have more float. However, these must be permitted before you begin installing building interiors. Assume a minimum of 40 working days for LADBS plan check.
    - i. Civil Design
    - ii. Foundation/Structural Design
    - iii. MEPF Design
      - 1. Early Under Foundation Utility Design
      - 2. Remaining MEPF Design
    - iv. Building Interior Design
  - d. 90% Design Documents
    - i. Civil Design
    - ii. Foundation/Structural Design
    - iii. MEPF Design
      - 1. Early Under Foundation Utility Design
      - 2. Remaining MEPF Design
    - iv. Building Interior Design
  - e. 100% Construction Documents
    - i. Civil Design
      - 1. Obtain Permit
    - ii. Foundation/Structural Design
      - 1. Obtain Permit
    - iii. MEPF Design
      - 1. Early Under Foundation Utility Design
        - a. Obtain Permit
      - 2. Remaining MEPF Design
        - a. Obtain Permit
    - iv. Building Interior Design
      - 1. Obtain Permit
- iii. Preconstruction
  - a. Contracting, Submittals, and Material Procurement



- i. Negotiate & Sign Subcontracts This is the time to review bid packages and determine that winning bidder. This also accounts for the time to review and negotiate the subcontract. Assume 20 working days for these activities. Additionally, the estimating & procurement team cannot buyout all scopes of work at the exact same time. You must prioritize scope buyout in a way that supports the construction schedule.
- ii. Submittals Preparation & Review Submittal preparation and review allows time for your subcontractors to provide you with the product data (PD) and shop drawings (SD) related to their material and scope of work that will be utilized on the project. This time is also utilized for Hensel Phelps, the Design Team and Owner to review the submittal information for design compliance. Assume 10 working days for subcontractor submittal preparation time, 10 day for Hensel Phelps submittal review time, and 20 days for Architect/Owner submittal review time.
- iii. Material Procurement/Fabrication and Delivery Material procurement is a critical aspect of any Project. In many cases, the material cannot get on site fast enough to facilitate the Schedule. Before a Subcontractor can start material procurement, you need approved submittals. Similarly, to other sections, utilize the best schedule activity
- iv. Subcontracting, submittals, and material procurement shall be scheduled for the following scopes of work
  - 1. Earthwork (5WD Material Procurement & Delivery)
  - 2. Site Utilities 3. Electrical

4. Plumbing

- (10WD Material Procurement & Delivery) (120WD Material Procurement & Delivery)
- (20WD Material Procurement & Delivery)
  - (20WD Material Procurement & Delivery) (20WD Material Procurement & Delivery)
- 6. Structural Concrete 7. Waterproofing Delivery)

5. Fire Protection

- 8. Masonry
- 9. Elevators
- 10. Mechanical
- 11. Glazing
- 12. Metal Stairs
- 13. Mis. Metals
- 14. Framing & Drywall

- Material Procurement (5WD &
- (20WD Material Procurement & Delivery)
- (120WD Material Procurement & Delivery)
- (60WD Material Procurement & Delivery)
- (60WD Material Procurement & Delivery)
- (40WD Material Procurement & Delivery)

- Construction iv.
  - a. Mobilization
  - b. Earthwork
  - Building Structure You must provide separate WBS summary sections broken C. down by building levels 01 - 04. Within those summary sections, you must break down the building by sections H1 – H3 to correspond with the drawing match lines
    - i. Level 01
      - 1. Area H1
      - 2. Area H2
      - 3. Area H3
    - ii. Level 02
      - 1. Area H1
      - 2. Area H2
      - 3. Area H3
    - iii. Level 03



- (20WD Material Procurement & Delivery) (10WD Material Procurement & Delivery)

- 1. Area H1
- 2. Area H2
- 3. Area H3
- iv. Level 04
  - 1. Area H2
  - 2. Area H3
- d. Exterior Skin & Roof Sorted by level only. Area sorting not required.
  - i. Level 01 Exterior Skin & Roof
  - ii. Level 02 Exterior Skin & Roof
  - iii. Level 03 Exterior Skin & Roof
  - iv. Level 04 Exterior Skin & Roof
- e. Interior Buildout Sorted by level only. Area sorting not required.
  - i. MEPF Priority Rooms
  - ii. Building Stairs
  - iii. Elevators
  - iv. Level 01
    - 1. Rough In
    - 2. Finishes
  - v. Level 02
    - 1. Rough In
    - 2. Finishes
  - vi. Level 03
    - 1. Rough In
    - 2. Finishes
  - vii. Level 04
    - 1. Rough In
    - 2. Finishes
- v. Startup & Commissioning
  - a. Electrical Startup & Commissioning
    - i. Pull Cable
    - ii. Final Connections
    - iii. Startup Main Gear Main Electrical Room 1
    - iv. Power & Lighting Functional Testing
  - b. Fiber/Comm Startup & Commissioning
    - i. Pull Cable
    - ii. Final Connections
    - iii. Startup Fiber/Comm Equipment
    - iv. Fiber/Comm Functional Testing
  - c. Mechanical Startup & Commissioning
    - i. Startup HVAC Units
    - ii. Test & Balance
  - d. Plumbing Startup & Commissioning
    - i. Final Pressure Tests
    - ii. Startup Pumps & Water Heaters
    - iii. Flush Test & Chlorination
  - e. Fire Alarm Startup & Commissioning
    - i. Pre-Test Fire Alarm
    - ii. Final Test Fire Alarm
  - f. Elevator Startup & Commissioning
    - i. State Elevator Sign Off





- vi. Punchlist & Closeout
  - a. Generate Owner/Architect Punchlist
  - b. Complete Owner/Architect Punchlist
  - c. Demobilization
  - d. Administrative Closeout
    - i. Operational Acceptance & LAWA Staff Trainings
    - ii. O&M and Record Document Submittals

#### Schedule PART A Deliverables:

- 1. Submit an electronic copy of the Full Baseline CPM Schedule in Native File Format (i.e. XER file).
- 2. Submit one electronic copy (PDF) of the following:
  - a. Full CPM with WBS This file should be named "X.05.1 CPM (School Name)"
  - b. Primary Critical Path (Longest Path) with WBS: Sorted by start date. *This file should be named "X.05.2 Primary Critical Path (School Name)"*

#### ANSWER:

#### Part A – Reference attached X.05.1.a & X.05.2.a



## 6. COORDINATION OF WORK

Written by Gus Bueno & Andy Dorado

#### PART A - Coordination of 75 YD Practice Range

You are the Area Superintendent responsible for the build-out of the 75 YD practice range facility (G02-1319A). Given that this is a very complex and unique scope understanding the construction of all the components and system is critical and will require a lot of coordination. Currently the CPM schedule shows major activities however a more detailed schedule will be required to ensure all components are capture: The CPM does not provide an adequate breakdown for you to schedule the multiple different Trade Partners that will be required to complete the work. As you can see from Drawing A10-202-G4, A2-202-G4, A8-901 there are unique installation details and the sequence of construction will be critical in ensuring the systems gets installed correctly, the correct Subcontractors are on site with the materials required and construction occurs in a timely manner.

1. Utilizing the contract documents, provide a construction sequence list with key superstructure components, finishes and key special systems for the practice range. This should include each construction activity in chronological order. The sequence should start after foundations. Limit the number of activities to 25.

Concrete Slabs Concrete Columns Concrete Walls Mechanical Electrical Fire Protection Special Systems Wall Finishes Floor Finishes Ceiling Finishes

#### Coordination of Work PART A Deliverables:

1. Submit one electronic copy (PDF) of the construction sequence list (utilizing attachment X.06.1).

#### ANSWER:

Part A – Reference attached X.06.1.a



## 7. CHANGE MANAGEMENT

Written by Brendan Saville & Gabriel Mitchell

You are an office engineer who has started working on the LAX Airport Police Facility Project. After an Owner-Architect-Contractor Meeting, you find out from your project engineer that LAWA PD had requested that a mixed-use room on the 2<sup>nd</sup> floor (H02-1110) be changed to a fitness room for their employees. Since the meeting, updated contract document drawings have been issued by the AE firm via Design Bulletin 027, and delegated design drawings for an acoustical floating floor have been submitted to your firm.

Design Bulletin 027: (Attachment X.07.1)

Updated Drawings: A2-202-H3, A4-202-H3, A7-141, A10-100, G0-910, E0-312, EP2-202-H3, P2-202-H3, T2-202-H3, S2-202-H3, S4-103, Specification 11 66 23 Delegated Design Submittal: Acoustical Floating Floor System

It is now your task to review and confirm final pricing with the impacted trade partners, review vendor quotes for fitness equipment, draft a change order request, and submit it to the owner for approval.

#### PART A - Review and Finalize Subcontractor Cost

With the exception of the fitness equipment, all changes to the design can be covered by trade partners already under contract. Change order requests (X.07.2, X.07.3 and X.07.4) have been submitted by the trades affected by the changes in Design Bulletin 027. Since you, the general contractor, will be performing the structural concrete, that price has already been reviewed by your team. It is your task to review the change order requests for accuracy in scope, quantities, and allowable markups. Be sure to note the following allowable markups for change order work:

- Max allowable OH&P for Labor, Materials, Equipment, Misc: 15%
- Sales Tax on Material: 7.25%
- Contractor Bonds and Insurance: 1.1%
- Allowable Markup on 2<sup>nd</sup> Tier Subcontractor: 6%
- Max allowable 2<sup>nd</sup> Tier Subcontractor OH&P: 15%
- Max allowable 2<sup>nd</sup> Tier Subcontractor Bonds & Insurance: 2%
- o No allowable markup on engineering costs.

Trade Partner Pricing Received:

- o Structural Concrete: General Contractor
- Acoustical Floating Floor: Float Like a Slab, Sting Like a Bee, LLC
  - Reinforcing Steel: Rebar Kings
  - Delegated Design Submittal Included
- Electrical & Low Voltage: Jupiter Electric
- Plumbing: Mario Bros. Plumbing Inc.

Fitness Equipment Proposals Received:

- Fitness Equipment Vendor (includes mirrors and flooring)
  - Best Gym Supply Co.



- Elite Equipment Solutions
- GymCrafters
- Flawless Flooring
- ProAssemble Fitness Solutions

#### Change Management PART A Deliverables: None

#### PART B - Review and Select Proposals for Fitness Equipment

Your project estimator has finalized the bulletin pricing for all MEP trades and acoustical floating floor and has sent over those final costs to your team via email. He will be out of town on a hunting trip the rest of the week and did not get a chance to review the fitness equipment and flooring proposals that he received, and the Owner Change Order is due by the end of the week!

Your project manager has asked you to review the 5 proposals (X.07.5) that were sent over for accuracy and validity and to compare the pricing for each trade partner to procure and install the fitness equipment, gym flooring, and mirrors. Provide a narrative that explains why you chose the trade partner/s to complete this scope of work and enter the associated information on the owner COR tab.

#### Change Management PART B Deliverable:

 Submit one electronic copy of a brief narrative (500 words or less) of which fitness equipment vendor/s were chosen and why. This file should be named "X.07.5 – Change Management Narrative – (School Name)"

#### PART C - Change Order Request (COR) to the Owner

Using your estimators confirmed proposals and the pricing that you have confirmed yourself, complete the Owner Change Order Request form (X.07.6) for review with your Project Manager and Project Superintendent.

#### Change Management PART C Deliverable:

- 1. Submit an electronic copy (Excel) of the completed Change Order Request form (X.07.6)
- Submit all trade partner change requests as back-up, including any notes or revisions. Be sure to clearly mark up any revisions to the trade partner pricing. This file should be named "X.07.6 – Trade Partner Back Up – (School Name)"

#### ANSWER:

#### Part A – None

#### Part B – See notes for narrative.

Reviewing the 5 proposals there are 2 valid paths that can be chosen. The students must review sheet A10-100 – FF&E Schedule that was provided in the bulletin and recognize that equipment GYM-102, GYM-105, GYM-107, GYM-111, GYM-112, GYM-113, GYM-114, GYM-115, GYM-116 marked "EC – Existing Equipment provided by owner and installed by general contractor." GymCrafters included pricing for procuring all the equipment in the room so their proposal would be invalid. If the students want to strike



out the owner provided equipment from GymCrafters proposal, their labor fee would still be greater than Elite Equipment Solution so GymCrafters should not be chosen.

Out of the 4 remaining proposals there are 2 valid routes to choose from. Elite Equipment solutions can provide the complete scope and offers the benefit and time savings of only signing one new trade partner up for the project. This can significantly cut down the office team's time spent working on this scope. There is also a benefit for the field team with one point of contact and less coordination meetings required to complete room.

The other valid option is to combine Best Gym Supply Co, Flawless Flooring, and ProAssemble Fitness Solutions. This would be the cheapest option to capture all the scope, coming in about \$7,000 less than Elite Equipment Solution.

Part C – Reference attached X.07.2-4.a, X.07.6.a A/B.



## 8. PERSONNEL ISSUES

Written by Kiana Yamat

#### (Time Warp to Pre-Mobilization Meeting for HM Doors and Frames)

Taylor is a Project Engineer for the LAX Airport Police Facility Project and has been working at Hensel Phelps for five years. He was responsible for procuring the Hollow Metal Doors and Frames scope and has previously managed similar scopes for other projects. This includes estimating, procurement, and subcontractor management. In his current role, he supervises two Office Engineers eager to learn. Taylor has never faced any issues with his direct reports following instructions or training, asking for feedback, or receiving feedback.

Taylor's longtime friend Kris has recently joined the team as a brand-new Office Engineer. Kris had no previous experience in managing Hollow Metal Doors and Frames, so Taylor saw this as an opportunity for Kris to develop his subcontractor management skills while learning a new trade, knowing that he could assist with his own experience if needed. After assigning the scope, Taylor gave Kris two weeks to prepare for the pre-mobilization meeting with his new trade partner. Taylor scheduled a time to bring Kris up to speed by reviewing the plans, specifications, executed subcontract, and template agenda for the meeting to set Kris up for success. However, Kris, wanting to prove his competence to his friend, refused guidance and insisted on figuring it all out by himself.

Taylor trusted his friend Kris to work on the Pre-Mobilization Meeting alone and only checked in on him three days before the meeting. However, upon checking, Taylor found out that Kris had made no progress on the meeting agenda. When asked about the delay, Kris explained that he had attempted to understand the Hollow Metal Doors and Frames scope by doing his own quantity takeoff. However, since he didn't fully understand what he was looking at, this took up a lot of time and he hadn't read through the specifications or subcontract to understand the submittal requirements, which were the focus of the meeting.

Hensel Phelps holds its leaders to high expectations, as they are responsible for coaching and developing its employees. As the Project Engineer, it is important that you reflect on your leadership skills to ensure your Office Engineer is set up for success. Moving forward, explain your plan to identify the gaps in Kris's knowledge and skillset and how you plan to teach and develop those areas. As Taylor and Kris share a close friendship, it may be difficult for them to have an honest conversation about the situation. However, you are trained to handle such situations and ensure the project is moving in the right direction.

Put yourself in Taylor's position and write a one-page narrative explaining how to approach Kris regarding the issue and describe the steps he would take moving forward to ensure his success.

Hensel Phelps offers an extensive database of resources and training materials that you can utilize to enhance your leadership skills. Refer to the handouts below to make the most of these training opportunities.

- 'Coaching and Developing People' in Section X.08.1
- 'Mastering Difficult Conversations' in Section X.08.2

#### Personnel Issues 10:00 AM Deliverable:

1. Submit an electronic copy (PDF) of the completed X.08.3 – Personnel Issues Narrative.

Submit Early Deliverable to same email as RFI\*\*

ANSWER: Part A – Reference attached X.08.3.a



### 9. SAFETY

Written by Jack Plasencia

You are an Area Superintendent at the LAX Police Department HQ and your project superintendent has decided that they want you to develop the Crane Plan for the job for when the curtain wall crew mobilizes in a few months. It has been confirmed that the job will need two (2) cranes set up within the courtyard as illustrated in the package. Both cranes are to be the same type.

To begin, you must understand your loadings and assess if the proposed crane falls within the project estimate.

#### Part A – Crane Loading Review

In this attachment (X.09.1), you can find the crane information that your steel trade partner has put together as a basis of their needs. Within the package, you can find Hensel Phelps has a standardized form (C26.19) in the attachments for you to use to guide you in confirming that the selected crane will be sufficient per load requirements. The pre-selected crane is a Terez T340-XL-1 with a 105' main boom at 59.7 degrees and 50' lift radius.

#### Safety Deliverable Part A -

1. Submit a completed C26.19 (X.09.2) form with only the required information marked in green.

#### Part B – Curtain Wall Coordination

Your curtain wall crew has confirmed that they will rig and complete the curtainwall in 42 days. Collaborate with your scheduler to validate that the duration does not conflict/impact the job schedule. And collaborate with your job estimator and understand how much was allocated for the cranes on the original estimate.

You must perform a cost analysis of these two cranes and confirm that with their duration, you will not fall outside of budget.

Crane Rates:	Daily	Weekly	Monthly
Bare crane rental	\$3,200	\$14,000	\$54,000
11,000lb counterweight rental	\$800	\$3,200	\$12,000
Hook and ball rental	\$200	\$800	\$2,800
Operator Rate	\$1,300	\$6,500	\$26,000
Fuel Rate	\$600	\$1,100	\$3,800

#### Safety Deliverable Part B -

1. Submit an electronic copy of a brief narrative explaining your crane plan in a less than 250 words. This file should be named "X.09.3 – Safety Narrative – (School Name)"



ANSWER:

Part A – Reference attached X.09.2.a

Part B – See notes for Narrative

Reviewing the crane information package, looking for students to select based on the load criteria needed for the work as well as catch that the budget only allows for the team to get one crane ordered. Looking for students to make the determination that a one month + two week rental will be sufficient rather than two month rental period, but two month rental would be



## **10. SITE UTILIZATION**

Written by Andy Dorado & Gus Bueno

#### (Time warp to mobilization)

Site utilization plans provide an illustrative look into the construction team's logistical solutions to a project's challenges and constraints during different timelines of the project. Effective site utilization plans convey the planned routes of deliveries, material, and equipment laydown, and temporary facilities during different sequences of work throughout the project lifecycle. A poorly coordinated plan adds confusion and hinders the project team from succeeding on time and on budget due to double handling of material, poor crew morale, and lack of trust in the Hensel Phelps team. As the jobsite evolves, site utilization plans must be updated to meet the changing variables and constraints that develop as work is completed.

At the LAX Police Headquarters, three main structures will be built: the headquarters building, a firing range and a parking structure. Once complete, the overall site will sit up on berm in respect to surrounding roadways. This means large amounts of soil will be shuffled throughout the jobsite and expected to all be used once completed (offsite staging and/or importing of soils is not acceptable).

Assuming the foundations for the parking structure and headquarters start simultaneously, you're asked to create a site utilization plan for the first 6 months of the project that includes the 12 items below. Additionally, you are to consider the following:

#### **Consideration A**

During buyout, a survey was given to all trades to identify the amount of waste that it expected to be generated within the first six months. A projected amount of 2,100 cubic-feet of waste is expected to be generated each week.

#### **Consideration B**

During buyout, a survey was given to all trades to identify the amount of personnel on-site within the first six months. A cumulative total of 13,600 man-hours are expected each month.

#### **Consideration C**

After issuance of construction documents, it has been communicated that there is a maximum height restriction for the building/crane.

#### **Consideration D**

All concrete placements will be occurring between 2am and 8am. Staging of concrete trucks can only occur at Westchester Pkwy (the south entrance). The city has communicated that Westchester Pkwy must have both lanes operational between 8am and 6pm. You are to develop a traffic control plan that will be implemented during concrete placements.

#### Utilize X.10.1 – Site Utilization Plan

- 1) Material laydown
- 2) Crane operating area with cover radius (indicate size of crane and max height)
- 3) Stabilized construction driving path at the perimeter of all 3 structures
- 4) Site fencing
- 5) Jobsite trailer
- 6) Porta Potties



- 7) 3 construction entrances
- 8) 3 person gates
- 9) Dumpster/s (indicate the size of dumpster on plan)
- 10) Lunch tent/break area
- 11) Stockpile at 120'x200'
- 12) Traffic Control Plan (Concrete truck, cones and flagger)

#### Safety Deliverable Part A -

1. Submit an electronic copy (PDF) of a site utilization plan using template X.10.1

#### ANSWER:

Part A – Reference attached X.10.1.a

Consideration A: (2) 40-yard dumpsters Consideration B: 5 porta potties Consideration C: 140-ton Crane with maximum height of 130' Consideration D: Reference "Final — Site Utilization Plan"



#### 11. Sustainability

Written by Jack Plasencia

LEED (Leadership in Energy and Environmental Design) is the world's most widely used green building rating system. LEED certification provides a framework for healthy, highly efficient, and cost-saving green buildings, which offer environmental, social and governance benefits. LEED certification is a globally recognized symbol of sustainability achievement, and it is backed by an entire industry of committed organizations and individuals paving the way for market transformation.

The LAX Police Department HQ job is chasing a Silver LEED certification, which requires meeting compliance with a number of standards. Some of those standards are maintaining an average of 75% waste diversion for the job, as well submitting and installing LEED compliant interior finishes. As one of the OEs on the job, you have recently been tasked as the "LEED Champion." First thing that you do as the "LEED Champion" is understand the project requirements.

#### Part A:

As the champion, you now need to start packaging the LEED reporting for the job, which includes the waste management reports. Reference X.11.1 - Waste Tickets

1. Using attachment X.11.2, create a waste management report for December based on the waste tickets submitted from the off hauls on the job. In the following pages, fill out the requested information on each table for #1-4.

#### Sustainability 10:00 AM Deliverable Part A -

1. Submit an electronic copy (PDF) of a waste management report using template X.11.2

#### Submit Early Deliverable to same email as RFI\*\*

#### Part B:

You're an OE that has started packaging finish submittals for the AOR to approve. Part of the expectation when submitting product data is that LEED documentation needs to be included. Your trade partner has sent you all the back up documentation and testing reports for the ProMar 200 paint that will be utilized on the job (X.11.3).

#### Sustainability Deliverable Part B -

1. Submit an electronic copy (PDF) of the LEED-NC v4 Material Reporting Form (X.11.4) for the paint and flooring based on the product data and LEED documentation provided to you.

#### ANSWER:

Part A – Reference attached X.11.2.a

Part B – Reference attached X.11.4.a



## 12. 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.



## 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.	General Summary	6
2.	Estimate	16
3.	General Conditions	8
4.	Proposal Summary	14
5.	Schedule	20
6.	Coordination of Work	12
7.	Change Management	8
8.	Personnel Issues	6
9.	Safety	6
10.	Site Utilization	10
11.	Sustainability	12
Subtotal		120
Oral E	Procontation	80
GRAND TOTAL		

**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:** ½ 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.



## VIII. LIST OF JUDGES

Wade Chance, Project Manager (480) 789-2359 wchance@henselphelps.com

Austin Thornburg, Area Superintendent (408) 499-7782 <u>athornburg@henselphelps.com</u>

Collin Englebrecht, Area Superintendent (573) 578-9554 <u>cenglebrecht@henselphelps.com</u>

Amanda Schilling, Area Superintendent (951) 203-6318 <u>aschilling@henselphelps.com</u>

Nick Kawamoto, Project Engineer (425) 785-8025 <u>nkawamoto@henselphelps.com</u>

Kiana Yamat, Project Engineer (808) 298-3588 kyamat@henselphelps.com Northern California Region 4750 Willow Rd | Suite 100 Pleasanton, CA 94588

Northern California Region 4750 Willow Rd | Suite 100 Pleasanton, CA 94588

Southern California Region 18850 Von Karman Ave | Suite 100 Irvine, CA 92612

Southern California Region 18850 Von Karman Ave | Suite 100 Irvine, CA 92612

Pacific Northwest Region 15375 SE 30<sup>th</sup> Place | Suite 110 Bellevue, WA 98007

Pacific Region 841 Bishop St | Suite 2001 Honolulu, HI 96813

#### Alternate:

Jacqulin Plasencia, Project Engineer (530) 761-3735 jplasencia@henselphelps.com

## Administrator / Executive Judge:

Andrew Cameron, Project Manager (609) 405-3511 acameron@henselphelps.com

Northern California Region

4750 Willow Rd | Suite 100

Pleasanton, CA 94588

Norther California Region 4750 Willow Rd | Suite 100 Pleasanton, CA 94588





## 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** Two (2) electronic copies of the proposal must be turned into the judges. Two (2) thumb drives will be provided at the start of the competition for your use. Your final submission must be submitted on the provided thumb drives. 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. Some proposals may be available for students to re-claim at the conclusion of the competition but may have marks from the grading effort in certain sections.

**Rule No. 2** The equipment usage for each 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. 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. 3** 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. 4** 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. 5** A one-half (½) point deduction will be taken for each minute the proposal is turned in past the time it is due. <u>Written proposals are due Thursday at 10:00PM</u>. Location of proposal delivery will be announced at opening conference. Other deliverable items, if applicable, will be due as specified elsewhere herein.

**Rule No. 6** Oral interviews will begin at 7:00 AM on Friday, February 10th. **Presentation** materials for <u>ALL TEAMS</u> are to be given to the Judges by <u>6:45 AM Friday</u>. 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 thumb drive for use on the Hensel Phelps provided presentation computer; this will save on set-up time. Hensel Phelps' computer will utilize Microsoft Office 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. 7** Teams are to turn in their evaluations forms on a thumb drive to Hensel Phelps prior to their oral presentation on Friday. Hensel Phelps will download the evaluation forms and will save a copy of the Answer Key. Thumb drives will be returned to the team after their oral presentation.



**Rule No. 8** 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. 9** 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 Confidentially 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. 10** 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 refrain from including 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. These Rules are subject to change; and, the final version will be included in the Problem Statement distributed at the opening conference.



## X. SUPPLEMENTAL INFORMATION

Note: Documents are provided in electronic format only on thumb drive(s):

X.0.1	Drawings
X.0.2	Specifications
X.0.3	Request for Information Form
X.0.4	Evaluation Form
X.1.1	Financial Status Report Template
X.1.2	Financial Status Report Narrative
X.2.1	Concrete Estimate Template
X.2.2	Cost Data Sheet
X.2.3	Formwork Quotes
X.3.1	Staffing Plan Matrix
X.3.2	Staff organization Chart Example
X.3.3	Personnel Positions and Responsibilities
X.3.4	GC Estimate Matrix
X.3.5	Vivarium Buildout GC Estimate Template
X.3.6	Vivarium Buildout Drawings
X.3.7	Vivarium Staffing Plan Template
X.4.1	Subcontractor Proposals
X.4.2	Proposal Summary Template
X.6.1	Parapet Install Map
X.6.2	Roofing Shop Drawings
X.6.3	Roofing Build-Up
X.7.1	Change Order Request Template
X.8.1	Coaching and Developing People
X.8.2	Communicating Effectively
X.9.1	Safety Discipline Plan
X.11.1	Compatibility Matrix Template
X.11.2	Exterior Skin Details
X.11.3	Exterior Skin Product Data
X.11.4	Initial Inspection Checklist Template
X.11.5	Cold Formed Metal Framing Specifications
X.11.6	Cold Formed Metal Framing Product Data

