**SECTION II - PROJECT MANAGEMENT**

**Los Angeles Lakers Headquarters**

**El Segundo, California**

**PREMISE**

You are a newly hired project engineer at Morley Builders and are a part of a challenging, high profiled project with a very strict schedule. The project team has personally made it their mission to deliver a successful project on budget, on time, and to the standards of the owner and organization. The project manager has given each team member specific roles and responsibilities to exceed these project goals.

The following challenges have been identified and you will need to find the best solutions to each task. Please complete the following assignments. Include all responses in the Solutions Binder as outlined in the instructions:

1. Plan Reading
* Using the project documents, provide answers to each question
1. Shop Drawing Review
* Mark up the shop drawings for submission to the Architect for approval
1. Subcontractor Buyout
* Compare subcontractor bids
* Write a subcontract for the selected subcontractor
1. Photo Hunt
* Provide an answer to each question shown on the photos

The following Exhibits are included for this section:

* Exhibit II.B.1: Glazed Aluminum Curtain Wall and Aluminum Storefront – Shop Drawings
* Exhibit II.B.2: RFI-149 – Visitor/Staff Entry Curtainwall
* Exhibit II.C.1: Subcontractor Proposals
* Exhibit II.C.2: Bid Analysis - Template
* Exhibit II.C.3: Bid Analysis - Sample
* Exhibit II.C.4: Sample Plumbing Subcontract
* Exhibit II.C.5: Sample Electrical Subcontract
* Exhibit II.D.1: Photo Hunt Pictures

**A. Plan Reading**

The project superintendent is responsible for keeping the project on schedule while leading field activities. As such, they often do not have the time to look up information in the plans during the course of the day. You, as the project engineer, are an essential resource for the superintendent. They rely heavily upon your abilities to research and resolve unexpected issues that arise in the field, while communicating important information back to them and related trades. In doing so, the superintendent is able to remain in the field, thus preventing further issues from arising. The purpose of this exercise is to simulate typical questions that a superintendent might ask of you.

*Deliverable* – For each question below, provide an answer based on the plans and specs. Please write your answer directly on this form and return it with the Solutions Binder.

1. How many lockers are in the project? Of these lockers, how many are ADA compliant?

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1. What type of wood are the wood slat benches made of?

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1. What dimension does the court area slab need to be depressed in order to accommodate the thickness of the court flooring system? Draw the symbol shown on the plans that indicates depressions or changes in elevation.

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1. Deferred submittals require approval from the design team as well as the city, thus prolonging the typical approval process. List five deferred submittals on this project.

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1. What is the maximum allowed sleeve size for piping through grade beams? What sheet gave you this information?

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1. What is the finish elevation of the first floor slab?

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1. How many television broadcast pedestals are located on this project? Identify the panel and circuiting information for each. What room is the panel located in?

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1. List the layers of the methane gas mitigation system.

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1. What is the wind design load criteria for the project?

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1. How many Tristania Confertas are to be planted on the project? What detail shows you how this tree is to be planted? What size lodge pole stake does this species require?

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1. At this point of the project most walls have been framed and interior hollow metal door frames have been installed. The superintendent realizes the plans at some locations show both the door opening and ceiling height to be the same, this is an issue. Knowing the frames need 2” of clearance from the height of the ceiling, you will need to reorder frames. Indicate which openings will need to be reordered.

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1. We just received a delivery for the ceramic tile for the Hydro Rooms. The superintendent believes the subcontractor may have ordered the wrong type and color(s). Please verify what tile type and color(s) should be installed in the Hydro Rooms.

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1. The superintendent just received a large shipment of metal decking. Some of the metal deck is slotted/vented, but there is no plan or key that describes where the vented metal deck goes (i.e. as opposed to the non-vented metal deck). Please verify where the vented metal decking goes. Make sure to reference the detail/note that provides you with this information.

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1. After the shower fixtures are installed, the superintendent seems to think the shower head and control valve look to be oddly high. What sheet provides you with the minimum allowed install clearance and what are these values?

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1. A shipment of F-12 light fixtures just arrived; you are being told this delivery is specific to the theater room. What is the actual make model and mounting type of the F-12 light fixture? It is also important to verify the color of the fixtures to ensure they match the color of adjacent finishes, so that you can verify the shipment is correct.

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1. List the size(s) and types(s) of duct to be installed in the court area. Be sure to indicate which rooftop unit(s) will control the airflow over this space.

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1. What is the purpose of the HSS 6x6x1/4 columns and the continuous HSS 8x6x5/8 at the sand pit? What is the approximate height of the HSS columns at this location? Assuming a 3’-0” door opening, what is the length of the continuous HSS 8x6x5/8 tube?

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1. What types of light fixtures are shown in the two (2) hydrotherapy pool rooms? What special requirement is needed to be installed to control these lights as indicated by the plans? What panel(s) are they connected to and where is/are the panel(s) located? What other rooms are connected along this same circuit?

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1. Your framing subcontractor is requesting information regarding what type of paper towel and waste dispenser is to be installed in room [1057]. Indicate the code number that signifies this accessory and specify what the type, manufacture, and product number to be installed. (One (1) point extra credit will be awarded if you can provide the framing subcontractor with the R.O. to be framed)

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1. What substrate material is to be installed directly below the carpet at the theater room podium seating? Draw the section cut (based on the image below) through the podium seating including full detail with all finishes. (Excluding the chair)

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Sketch:

**B. Shop Drawing Review**

The integration of high end finishes and state-of-the-art technology into the new training facility is a key focal point for the organization. You are responsible for managing the exterior enclosure which includes reviewing the exterior curtain wall glazing systems (spec section 084413) and storefront entrances (spec section 084113) along with the related hardware (spec section 087100). These are not only major aesthetic features of the project, but will create an open workplace environment for office employees. It is your job to coordinate the finish product between the owner, design team, and adjacent trades. With a busy market place and today’s industry, material procurement is tracking longer than it traditionally has. It is important you complete the following tasks and get them off your desk by the end of day today.

Shop drawings are produced by the subcontractor or installer for a specified system or product. These drawings detail the architect’s design intent in the proposed way of constructability while indicating materials, dimensions, and assembly based on the contract documents. Such drawings explain the intent of installation. Accurate review of shop drawings is very important to make sure that the items represented match the information provided in the construction documents.

1. Verify that the glazing subcontractor’s shop drawings are accurate based on the information shown in the IFC set of drawings and specifications. Intent of the review is to fully markup the shop drawings, in red, as a pre-approval process before submitting to the design team. Please verify all dimensional information, material types, and hardware information. With tight schedule constraints, this will allow for an expedited review from the Architect. Provide all markups directly on the 11x17 Exhibit II.B.1 shop drawings (included in this section) indicating anything that does not comply with the contract documents.

*Reviewer Note:* Please note that there are more mistakes and corrections to be made beyond those clouded in red. The clouded dimensions are examples of where revisions need to be made. In such cases, you are required to revise that dimension only and not the preceding dimensions that in all make up the overall clouded dimension.You are only reviewing the shop drawings in plan and in elevation.

Deliverable - Provide markups in red on Exhibit II.B.1 and turn in with the Solutions Binder

1. As part of the trade management process, it is vital to pass along key information to adjacent and interfacing trades. Coordination amongst the drawings is one thing, but coordination amongst trades is another. In such cases, it is common to provide marked up or approved shop drawings to each overlapping trade. For example, you would want to provide the approved concrete shop drawings to the reinforcing steel subcontractor. Aside from the glazing subcontractor, provide a list of all affected trades associated with the shop drawings. Include a brief narrative explaining how each trade is affected.

*Deliverable -* Provide a typed response and turn in with the submission of the Solutions Binder

For your reference, use the following exhibits:

* Exhibit II.B.1: Glazed Aluminum Curtain Wall and Aluminum Storefront – Shop Drawings
* Exhibit II.B.2: RFI-149 – Visitor/Staff Entry Curtainwall

**C. Subcontractor Buyout**

Your Project Manager has determined that you will manage the gymnasium equipment and finishes. Your first responsibility will be to understand subcontract scopes, analyze subcontractor bids, write subcontracts, and award each scope to the lowest and most qualified bidder(s). Subcontractors should be awarded on factors beyond price alone, for example, variables determined by the specifications such as the manufacturer of the system being provided. Although it is possible that one subcontractor may have the lowest cost to provide and install all gymnasium equipment (backstops, bleachers, and scoreboards), you will focus on only the scoreboard related scope of work.

Your goal is to award the Scoring Display Systems scope of work for the project. After reviewing the different subcontractor proposals (Exhibit II.C.1), the plans and specifications, you will identify the items that are important for comparing bids. These items are what you believe the selected sub(s) will need to perform. This information can be entered into the bid analysis template provided in Exhibit II.C.2. Please reference Exhibit II.C.3 - Bid Analysis Sample for clarification. This will allow you to analyze the different subcontractor proposals. Ultimately, the intent would be to hire the best suited subcontractor(s), based on not just cost, but also complete scope, quality, performance, and reputation.

Subcontractor “buyout” is the process that leads up to successfully finalizing and awarding a subcontract for a particular trade scope. During this process, the project team decides what portions of the job should be the responsibility of a particular subcontractor (Inclusions), and what portions of the job will not be the responsibility of that subcontractor (Exclusions). For example, a plumber’s scope would probably include all floor drains inside a building, but may exclude drains on site, which would be picked up by a site utilities subcontractor. Special attention should be given to inclusion items which need to be properly delineated between coordinated trades, such as where piping, conduit, etc. meet with another subcontractor’s work. The subcontractor will be held responsible for all plans and specifications. There is no need to include/exclude items listed on the plans and/or specification, unless you believe there is a need to specifically reference it. Collectively, the list of inclusions and exclusions is called a “scope”. Please see the included sample subcontracts (Exhibit II.C.4 & Exhibit II.C.5) included in the Solution Binder. The intent is to develop scopes for each trade, and to not have any omitted items, called “scope gaps”, between all of the combined scopes.

*Note: Each subcontract sample includes “boilerplate” language on items such as insurance, payment terms, safety, general cleanup and site rules, etc. For clarification, reference pages 1 through 11 in Exhibit II.C.4 and Exhibit II.C.5. This does not need to be included in your scope, as it automatically gets added into each Subcontract. For the purposes of this exercise, you only need a list of trade specific inclusions and exclusions. Please see “Section C” in Exhibit II.C.4 and Exhibit II.C.5 which starts at the second half of page 12.*

Deliverables –

1) Complete the bid analysis by comparing costs/scope of work for the subcontractor proposals in Exhibit II.C.1 for the Scoring Display systems. Please use the template provided in Exhibit II.C.3 and return with the Solutions Binder.

2) Based on your findings, award the best suited subcontractor. You are to write the Scoring Displays subcontract that includes a complete scope, listing all inclusions and exclusions (assume subcontract boilerplate and General Clauses will already be included) and turn in with the Solutions Binder.

For your reference, use the following exhibits:

* Exhibit II.C.1: Subcontractor Proposals
* Exhibit II.C.2: Bid Analysis - Template
* Exhibit II.C.3: Bid Analysis - Sample
* Exhibit II.C.4: Sample Plumbing Subcontract
* Exhibit II.C.5: Sample Electrical Subcontract

**D. Photo Hunt**

The photos included in Exhibit II.D.1 were taken by your superintended throughout the day. He has sent these to you to verify for quality control purposes. Please review the attached photos and verify each item based on your review of the drawings. Each question below is listed in the photos.

*Deliverable* – Include your answers on this form and turn in with the Solutions Binder.

**Photo 1:**

1. What is the height of the opening here?
2. What room is this?
3. What size rebar is being installed?

**Photo 2:**

1. Provide opening dimensions, size of tube framing, and hardware set number. What detail gives you this information?
2. What is the finished floor in this area?

**Photo 3:**

1. What gridline is this CMU wall located on?
2. What is the size of this duct?
3. What is the height and ceiling type in this room?

**Photo 4:**

1. Which glazing type is this?
2. What is the finish material to be installed here?
3. Name one type of tree planted here.
4. What size storm drains are installed here?

**Photo 5:**

1. What is the size and type of this grade beam?
2. What size column gets installed here?
3. How far below grade is the bottom of this footing?

**Photo 6:**

1. Who is the President’s Office [2001] for?
2. How many NBA Finals trophies will be displayed here?

**II - PROJECT MANAGEMENT**

**Los Angeles Lakers Headquarters**

**El Segundo, California**

**EXHIBITS**

The following exhibits are included in this section:

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* Exhibit II.D.1: Photo Hunt Pictures