REGION 6
ROCKY MOUNTAIN REGION
AK. AZ. CO. ID. MT. NV. NM. UT. WY

ASSOCIATED SCHOOLS ASC OF CONSTRUCTION

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

Region 7- Commercial Building Division

February 3-6, 2021

Problem Statement

Sound Transit
Operations & Maintenance Facility - East

PROBLEM STATEMENT
DAY 1

Bellevue, WA

Problem Sponsor:

HENSEL PHELPS
Plan. Build. Manage.

TABLE OF CONTENTS

PROBLEM SPONSOR

HENSEL PHELPS
Plan. Build. Manage.

Northern California District
4750 Willow Road
Pleasanton, CA 94588
(925) 494.9700

Southern California District
18850 Von Karman Avenue, Suite 100
Irvine, CA 92612
(949) 852-0111

Southwest District
8326 Cross Park Drive
Austin, TX 78754
(512) 834-9848

Southeast District
6557 Hazeltine National Drive, Suite 1
Orlando, FL 32822
(407) 856-2400

Plains District
12121 Grant Street, Suite 410
Thornton, CO 80241
(720) 592-2000

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

Western District
3125 E. Wood St, Ste 100
Phoenix, Arizona 85040
(480) 383-8480

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

Pacific Northwest Area Office
15375 SE 30th Place, Suite 110
Bellevue, WA 98007
(425) 646-2660

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

www.henselphelps.com

I. COMMERCIAL DIVISION TIMETABLE

WEDNESDAY, FEBRUARY 3RD
Day 1
Opening Conference / Distribute Problem /
Provide Presentation Order ..... 11:15 AM
First Progress Meeting / RFI's Due ..... 2:00 PM
Individual Team Check-In Meetings ..... 4:00 – 5:30 PM
Day 1 Content Due ..... 8:00 PM

THURSDAY, FEBRARY 4TH
Day 2
Opening Conference / Distribute Problem /
Establish Presentation Order ..... 7:00 AM
First Progress Meeting / RFI's Due ..... 9:00 AM
Subcontractor Interviews (10 min. / team)..... 11:00 AM – 2:00 PM
Day 2 Content Due ..... 5:00 PM

FRIDAY, FEBRUARY 5TH
Interview Materials Due (all teams)..... 6:45 AM
Interviews Start ..... 7:00 AM
Project Debriefing..... 6:30 PM

SATURDAY, FEBRUARY 6TH
Career Fair ..... 8:00 AM -12:00 PM
Awards Ceremony..... 1:00 PM

II. PREFACE

WELCOME to the 2021 ASC Student Virtual Competition. All participants are to be commended for the personal time and commitment made in preparing for and participating in this competition during a PANDEMIC. 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. PROBLEM SCENARIO

A few years ago, Hensel Phelps made a commitment to expend to the Pacific Northwest, and the Northern California District has been tasked with overseeing this endeavor. Recently, they were awarded a significant project in the Seattle region, but now it is time to expand and seek the next win. Sound Transit (ST) is the Owner for the light rail system surrounding Seattle and Bellevue and expansion is on the horizon. A recent ballot was passed and approved over $50 billion in transit expansion. The next project in sight is the design-build Operation and Maintenance Facility – East (OMFE). Your team is tasked with preparing our proposal for our first potential project with Sound Transit, and we are excited to bring our national expertise in transit to the region. The design-build project will be awarded based on a best value selection process which favors the technical solution significantly higher than the low bid.

Hensel Phelps has an extensive history of successful design-build transit projects and currently has three design-build OMFs actively under construction in other parts of the country. Your upper management assembled a strong team to lead the procurement effort. The project has gone through phase 1, RFQ, and Hensel Phelps was shortlisted as one of three firms selected to continue to the RFP phase. You must now show your skills by analyzing this challenging project in the best value selection process to show how strong you can be in the technical proposal and submit your cost component. Interviews were held over the past few months to develop the design concept with ST Stakeholders and were attended by the Hensel Phelps Design-Build team. The RFP included a Not-to-Exceed upset price of $222 Million.

Upper Management has requested a meeting to review the current status of the proposal. The review meeting will be your team's opportunity to present the current project strategy, overall risk mitigation measures and report back on the financial strength of the project. Your written overview is due by **8:00 PM tonight**.

Any questions should be delivered, in writing, on the Request for Information form (RFI) to the senior management team at the 2:00 PM meeting. The RFI form has been provided in the Supplemental Information (X.0.3).

Please note that some of the written questions occur later or earlier than the above stated problem timeline, at some future or past point in the project. Consider these a "Time Warp" and answer them with that understanding. This is to challenge the team on the full realm of construction issues.

IV. PROJECT INFORMATION

In 2008, voters of the Central Puget Sound region approved the Sound Transit 2 ballot measure. The ballot measure authorizes Sound Transit to expand the regional commuter system and build 26 additional miles of light rail to form a 55-mile regional system. Sound Transit is extending mass transit light rail service along the east side of Lake Washington from I-90 to Redmond. The East Link Extension will construct light rail service from the Central Business District of Seattle to the Overlake Transit Center, within the City of Redmond. Full service is scheduled to open in 2023.

The function of the Operations and Maintenance Facility - East (OMFE) is to store, maintain and deploy the expanded light rail vehicle fleet to operate the east link and Lynnwood Link extensions in 2023. The facility will be in Bellevue, WA and will be fully staffed and operational to support the commissioning and pre-revenue service of those extensions during 2022.

This OMFE project is proceeding in the context of the redevelopment of the neighboring Spring District and Bel-Red neighborhoods, which will dramatically increase the intensity of commercial and residential uses nearby and offer opportunity for this project to contribute to the dynamic growth of the community.

Sound Transit has determined that this project will be delivered as a Design-Build project awarded based on a best value selection projection process with a not-to-exceed, maximum upset price. The project is a fully functional light rail maintenance and operations facility for the storage and maintenance of 96 light rail vehicles. The awarded team will also be responsible to develop the concept for a Transit Oriented Design (TOD) master plan to the property immediately to the south of the maintenance facility. The design-build scope includes planning and provisions for optimizing the potential surplus properties for future transit-oriented development (TOD) by others as well as the Master Development Plan that will need to be approved by the City of Bellevue and provided to Sound Transit.

PERSPECTIVE VIEW: AERIAL VIEW FROM SOUTH LOOKING NORTH (CONNECTION TO ERC AT BOTTOM LEFT)

PERSPECTIVE VIEW: APPROACH TO TOD FROM LINK STATION

PERSPECTIVE VIEW: ALONG 120TH STREET LOOKING WEST INTO TOD ACCESS ROAD

PERSPECTIVE VIEW: AERIAL VIEW FROM WEST LOOKING EAST TOWARD SPRING DISTRICT

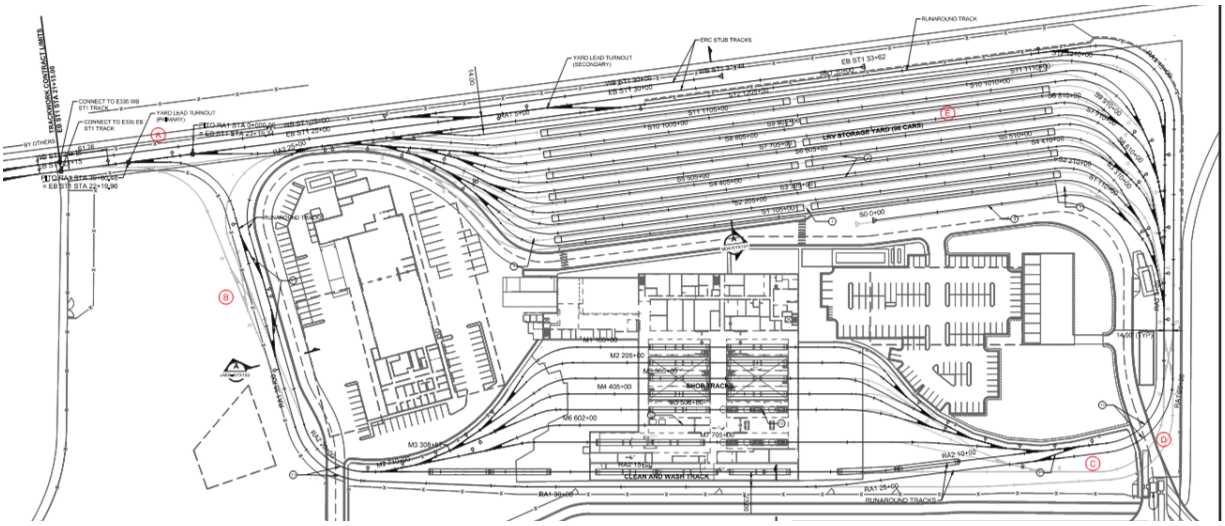
The scope includes an Operations and Maintenance (OMF) Building to service and maintain the Light Rail Vehicles (LRV) and a Maintenance of Way (MOW) Building to service the non-revenue vehicles (NRV) and other measures for the east link guideway. The OMF building is 140,000 SF and houses a variety of functions including ST Admin space, training space, a material storage facility with racking, two lower-level work areas to service the LRVs from below, mezzanines to service the top of the LRVs, overhead cranes, LRV and truck hoists, turntables, wheel truing equipment, an LRV wash bay, and a sanding system. The MOW building is 40,000 SF and houses ST Admin space, locker facilities, drive in work bays, and overhead cranes to service non-revenue vehicles.

AERIAL VIEW OF THE OMF BUILDING'S ROOFSCAPE, LOOKING NORTH

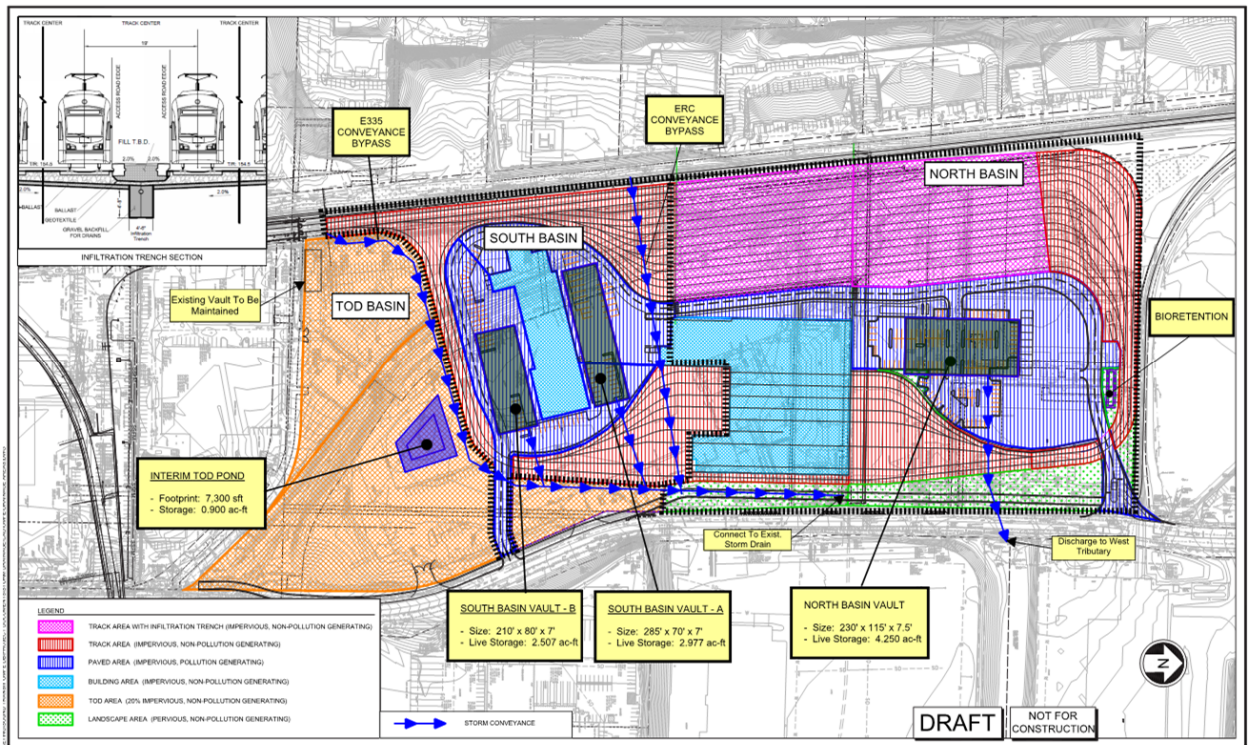
AERIAL VIEW OF THE MOW BUILDING'S ROOFSCAPE, LOOKING NORTH

The project is located on a 23-acre site, that outside of the two buildings is extremely tight and filled with many supporting elements. To kick off the project before construction, demolition is necessary to remove the existing (6) buildings currently on the premises, before performing site grading to level the site. The scope includes all track required to store the LRVs as well as provide access through a run-around track serving the maintenance and wash bays, and a mainline access track to East Link on the south and a future mainline access track to the north. Storage and Maintenance track "fans" provide access to the OMF maintenance bays and storage track

area. The site also includes staff parking areas, parking for NRVs, a smoker's enclosure, hazardous material storage, bulk material storage, access roads, bike storage enclosure, landscaping, emergency generator, equipment storage yard, site fencing and gates, site lighting, ST Artwork, a guard shack building, and above grade and below grade storm water facilities. The trains are powered by an Overhead Catenary System (OCS) power system; therefore the scope includes all OCS power poles and cabling, Traction Power Sub-Station (TPSS), and Signal Houses to support the train power, control and signalization systems.



1.03.7.2 STORMWATER STRATEGY



Outside the project fence, several improvements will be required to maintain vehicle and pedestrian access around the new facility including roadway work, sidewalk construction, urban improvements and landscaping, utility work, replacement of the King County regional sewer line,

Interim Trail improvements in the Eastside Rail Corridor along 120th St NE and north of the OMF-East and coordination with the ST Public art program.

The project is anticipated to start design in 2021 after contract execution and begin construction later in 2021. The OMFE project shall be substantially complete during October 2024, inclusive of Sound Transit controlled float. All commissioning and testing must be complete for Sound Transit to deliver light rail vehicles to the site in January 2025.

The Design-Build Team must consider not only the RFP project requirements that have been stipulated by the Owner but must also work with stakeholders to ensure the design meets their expectations. Hensel Phelps' previous experience in leading Design-Build projects similar in nature in other regions of the country provides your team with confidence in its ability to deliver this project on time and within budget.

V. PROBLEM OUTLINE

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

VI. SUBMISSION REQUIREMENTS:

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

0.1 EARLY DELIVERABLE - BIOGRAPHIES

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

0.2 QUALITY OF SUBMITTED PROPOSAL

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

0.3 TIMELINESS OF PROPOSAL

Unless stated otherwise, one electronic copies of your proposal are due at **8:00 PM for Day 1 and 5:00 PM for Day 2,** as per the Timetable in Section I. A ½ point penalty will be deducted from the team's score for each minute the proposal is turned in late.

1. GENERAL SUMMARY

Written by Tolu Dayo

Hensel Phelps has been shortlisted as one of the three firms to continue to the RFP Phase for the OMF-East project. As the project estimates and budgets are finalized, the Estimator team will compile a General Summary spreadsheet of all project costs which shall total up to the complete proposal price. Upon award of the project, the Estimator and Project Manager will use the General Summary to organize and develop the cost management tools for the project.

PART A: General Summary

Your task on day one will be to compile a General Summary in the provided spreadsheet (X.1.1). To complete this spreadsheet please refer to the proposal summary for key information and, reference:

1. Section 2 – Estimate
2. Section 3 – General Conditions
3. Section 7 – Change Management

Utilizing the information gathered in the sections listed above, please provide a complete project general summary with all blank cells highlighted in yellow filled out. Be sure not to unlock any cells within the excel file and only input to the yellow highlighted sections.

Remember to pay attention to the problem scenario, ensure to keep the required maximum value for the total cost proposal in mind. With the above background in mind, it is time to delve into developing a bid that not only accounts for all scopes on the project, but also forecasts risks and provides the owner the best quality project.

PART B: Contingency & Fee

As part of the general summary spreadsheet, your team will also be tasked with determining the appropriate contingency and fee percentages to carry on your proposal. The project contingency is a bucket of money set aside by the project team for potential design, buyout, and unforeseen construction risks. The fee is a percentage of the entire contract value that is the profit you forecast to make on the project. FYI any unforeseen costs will come out of your fee and eat into your margin.

In a 1-page document (200 words) provide responses to the questions below summarizing how your team decided on the contingency value and fee percentage:

1. Provide a brief explanation of one construction or design risk that you foresee and how/if it affected your contingency and fee percentages.
2. Provide justification for the contingency value and fee percentage you have chosen.

General Summary Deliverables:

1. Submit an electronic copy of the native format (Excel) of a complete General Summary (X.1.1).
2. Submit an electronic copy of the narrative for the contingency and fee percentages used (X.1.2).

2. ESTIMATE

Written by Alexa Watanabe & Eric Freedman

The Senior Estimator has the important task of leading the estimating team to an estimate that is competitive with other short-listed contractors. As a new branch of the Northern California District, it is imperative that Hensel Phelps win projects to establish a new base of repeat customers to ensure our growth in a new market. While winning the project is clearly the objective, the dollar value submitted to the Owner will ultimately determine if Hensel Phelps wins the job and is set up to be profitable.

As an experienced Lead Estimator, you have been assigned specific scopes to estimate which will help determine a final price to submit to the Owner. Because Hensel Phelps is new to this region of the country, there is a limited number of subcontractors you have relationships with and can call on to provide estimates you can fully trust in this important pursuit. Because of this, Hensel Phelps will be taking off most of the scopes on the project and are confident we can land on a submission price that is reliable. You will be required to determine what fee to use on self-work concrete as well. Remember that we need to be competitive to win this pursuit.

PART A: MOW Estimate

The MOW building is comprised of many distinguished scopes that need to be estimated accurately. As the Lead Estimator you are very well rounded and have demonstrated that you can produce a final product that leads to project victories and ultimately profitable projects. You will be in charge of estimating the following scopes:

- Exteriors
  - Metal Panel System Only - Square Footage of Each Type of MP
- Concrete Per Breakdown Below, Only:
  - Spot Footings
  - Continuous Footings
  - Starter Walls
  - Thickened Edges
  - Slab On Grade
  - 2nd Level Slab on Deck
- Door Frames
  - Insulated Hollow Metal Frames
    - 3x7 IHM
    - 3-6x7 IHM
    - 6x7 IHM
  - MFR
    - 10x10 MFR
  - Hollow Metal Frames
    - 3x7 HM
    - 4x7 HM
    - 6x7 HM
  - Aluminum Door Frames
    - 6x7 AL
    - 6x8 AL
  - Overhead Sectional
    - 9 10 x12 N2
    - 10x10 N1
    - 12x12 2 N1
    - 12x14 N1

- Partitions – 1st and 2nd Floor Only
  - Interior Drywall Only (GWB and Ply) – assume wall height to be 10' if not listed.
  - Interior CMU Only – assume wall height to be 10' if not listed.

Use the provided contract drawings to quantify the value for the above listed scopes and use the Estimate Spreadsheet (X.2.1) to formulate your estimate. The spreadsheet has been formulated for your use in compiling data, all teams will use the same format. Please fill in the quantities and concrete fee on this spreadsheet.

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 to account for framing or drywall waste.
- Do NOT include additional material or labor to account for patching of exposed concrete.
- Do NOT include reinforcing bar in your estimate, as it is included in the General Summary
- Do NOT provide any other concrete components other than the items listed above, i.e. Site Concrete, Exterior Stairs, Site Seat Walls, etc.
- Do assume excavations for footings are neat dug
- For General Conditions, please round up to the nearest whole number.
- No additional drawings are required to complete this estimate.

Estimate PART A Deliverable:

1. Submit an electronic copy in native format (Excel) of your Estimate (X.2.1).

3. GENERAL CONDITIONS

Written by Isaac Gilles

General Conditions (GC's) are real construction costs that are not immediately quantifiable by the untrained eye and are associated with on-site management, material handling, 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. Put simply, General Conditions are the costs required for a contractor to operate that do not directly integrate to the project itself (i.e., trailer offices, dumpsters, toilets, salary personnel, etc.)

During procurement, the estimating team developed a job staffing matrix in an effort to be competitive. You are the Operations Manager, and you will have to prepare an estimate that will cover all of your general conditions risk. Once the project has been awarded, you will be tasked with assembling a team to effectively manage the OMFE project and forecast the associated cost of salary personnel. As personnel are not just idly waiting for jobs to go to, you will have to analyze the district staffing matrix in order to see who is available to join your roster. Keep in mind there will be a mixture of experience and inexperience and the estimate job staffing matrix may not match the staff required for this job. It is up to you to put together the best staff possible.

Please Note:

- General Conditions include all the operating costs and expenses for your on-site salaried supervision.
- Project Executives are to be carried by District overhead and not included in GCs.
- Home-office overhead is not included in GCs. However, satellite project office and relocation costs will be billed to the project.
- Supervisory staff positions should be allocated to the project as the team sees fit to complete the work and closeout.
- All General Conditions associated with direct work such as subcontracts and specific costs of work are carried within the specific scope budget; therefore, those costs are not to be included in the overall General Conditions breakdown.
- The number of interns allowed at each project is up to your team's discretion. All costs associated with the moving and housing of interns are provided by the jobsite.
- Assume each person on the job will get a new computer except the Admin and General Foreman.
- For the purposes of the General Conditions, Construction duration is approximately 1196 days.
- Assume Material Sales Tax of 10.1%
- Permit Fees are carried by the Owner
- Contractor's Fee is not carried within the General Conditions, see FSR in Section 1
- Bonding and Insurance Fees are not carried within the General Conditions, see FSR in Section 1
- For the purpose of this exercise, do not add or delete line items from the GC Estimates provided

PART A: Staffing Organizational Chart (Pre-Award)

Prepare a detailed General Conditions estimate projecting all GC costs through the duration of the project. Utilize the staffing member numbers shown in the job staffing matrix provided in X.3.1 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.3.3. Note that this serves as an example of how an organizational chart should be arranged; the scopes and responsibilities for each staff member should be developed through your own breakdown of the staffing plan and understanding of the scopes required for the project. Include the position, and role (interiors, MEP, etc.) of the staff member in the matrix.

Through your evaluation of the staffing plan and allocation of roles and responsibilities, provide an evaluation to upper management as to whether the current staffing plan is sufficient. Provide an explanation for your reasoning as well as any revisions (if necessary) showing which staffing adjustments are needed to more efficiently run this project. Update the GC Estimate Matrix provided in X.3.4 and reflect these revisions in your final staff organizational matrix. The GC budget number should be carried into the FSR section.

General Conditions PART A Deliverables:

1. Submit an electronic copy in native format (Excel) of your Staffing Plan (X.3.1A).
2. Submit an electronic copy (PDF) of your Staff Organizational Chart (X.3.2A).
3. Submit an electronic copy in native format (Excel) of your General Conditions matrix (X.3.4A).

4. PROPOSAL SUMMARY (TAB ANALYSIS)

Written by Marvin Perez

DAY

2

ONLY

5. SCHEDULE

Written by Nick Kawamoto & Anna Cummins

During the Request for Proposal (RFP) process, the Owner of the Operations and Maintenance Facility East (OMFE) project has requested that each contractor submit a Proposal Schedule that outlines the project timeline from Notice to Proceed (NTP) through Final Acceptance. The procurement team understands in order to gain advantage over other competitors and develop a great relationship with the Owner group, the schedule must be aggressive and accurate while maintaining flexibility to manage and mitigate risks that will occur during the construction process. The Proposal Schedule is a tool used to provide an outline of the project phases to show the coordination and sequencing of the project and to prove to the Owner that your team understands the complexities and risks associated with the project.

As the Project Superintendent during the RFP process, you have been tasked to develop a Proposal Schedule that satisfies the Owner provided project requirements. Using the RFP drawings and specifications provided, you are to submit a Proposal Schedule for review by the Owner group. You schedule presentation, written and oral, will be comprised of:

1. Building a Proposal Schedule, to outline the major milestones, design and preconstruction activities, high level construction activities and commission and testing activities for the OMF and MOW buildings, Track and Site, and ancillary structures.
2. Risks and Mitigation matrix

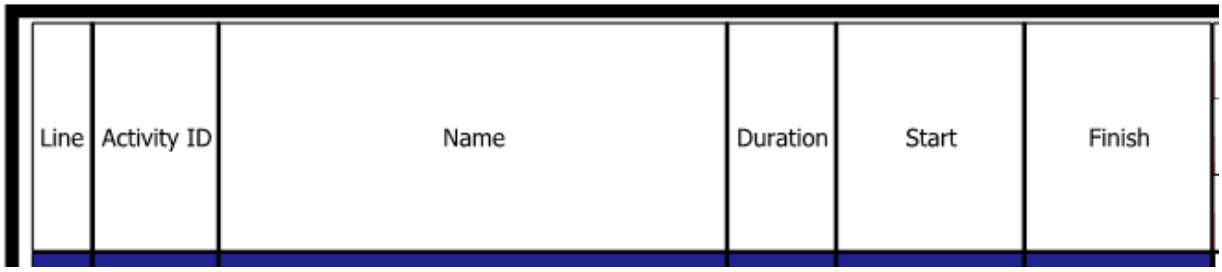
The following information provides clarification of the expected components of the Proposal Schedule and Risks and Mitigation Matrix.

PART A: Proposal Schedule

General Proposal 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 Description, Duration, Start Date, and Finish Date (see Figure “A” example below).:

Figure A:



   ii. Activity Count: No less than 80 items, no more than 125 items
   iii. There should be a continuous logic flow of critical path activities from the Notice to Proceed through to Project Acceptance.
   iv. Organize your activities so they are easy to read, grouped intuitively and follow proper sequence to present a nice schedule “flow.”

The following (i.- ix.) is the schedule base provided by your procurement team. There are material procurement durations shown after certain activities for assistance. The Proposal Schedule should contain a breakdown of activities which will demonstrate your knowledge of the entire project. The main activities have been provided to assist in building your schedule, you will need to further outline the schedule as necessary and most importantly incorporate the activities required to show the full flow of work from start to finish.

i. Milestones (Constrained Dates)
   a. Contract Award – 1/15/21
   b. Notice to Proceed – 5/4/21
   c. Mobilization Complete – 1/12/22
   d. Interim Milestones as necessary
   e. Substantial Completion – 10/25/24
   f. Project Acceptance – 11/25/24
ii. Preconstruction and Design
iii. Construction
   a. Building Structures
   b. Ancillary Structures
   c. Commissioning
iv. Trackwork
v. Sitework
vi. Closeout

Milestones:

i. Contract Award Notice – This milestone marks the date that the project has been awarded and the owner has issued a contract to begin design. This will be the date utilized for the start of the contractual durations.
ii. Notice to Proceed - The NTP marks the date in which the second contract with the owner has been issued. This contract acknowledges the acceptance of the design intent and allows Hensel Phelps to begin developing the construction documents for permitting as well as actual work on the project such as purchasing, preconstruction, and mobilization for construction.
iii. Mobilization Complete – This milestone marks the date that the project team along with the key trade partners and Owner group begins working out of the project trailer.
iv. Substantial Completion – Defined as “the building can be used for its intended purpose.” To satisfy this requirement, all construction activities shall be substantially complete, the building systems must be energized and operational.
v. Final Acceptance – Designates the date that trainings, close out documentation, and final billings (Subcontractor and Owner) have been completed and submitted to the Owner.

v. Calendar
   1. The schedule should be on a standard 5-day work week calendar.

vi. Material Procurement:
   1. Material procurement is a very important aspect of any Project. In many cases, the material cannot get on site fast enough to facilitate the Schedule. The schedule should depict material procurement (fabrication and delivery) of the following items:

a. Special Trackwork (Turnouts and Curves) (80 WD)
b. Overhead Catenary System (OCS) Poles (100 WD)
c. TPSS Building (250 WD)
d. Heavy Shop Equipment (180 WD)
e. Generators (60 WD)
f. Elevators (80 WD)
g. Metal Panels (100 WD)

Schedule PART A Deliverables:

1. Submit an electronic copy of the Proposal Schedule in Native File Format (i.e. XER file).
2. Submit an electronic copy of the Proposal Schedule in PDF format.

PART B: Risk Mitigation Matrix

General Matrix Criteria:

i.Matrix Overview:

a. The Risk Mitigation Matrix should show your understanding as the contractor of the key risks your team may encounter during the project. These risks may include any activity from Contract Award through Project Acceptance and should be clearly definable.

i.Presentation Criteria:

a. Column Formatting:

i.At a minimum, show the following columns: Risk Description, Potential Consequences, Risk Likelihood, Responsible Party, Risk Mitigation Strategy.

Figure B:

Item	Risk Type Catagories:	Risk Description Provide: List of Descriptions	Potential Consequence Provide: List of Consequences	Likelihood High/Mod/Low	Responsible Party Owner/Arch/GC/Sub	Risk Mitigation Strategy Provide: List of Strategies

b. Activity Count: No less than 5 activities and no more than 15 activities.

Schedule PART B Deliverables:

1. Submit an electronic copy of the Risk Mitigation Matrix (X.5.2) in PDF format.

6. COORDINATION OF WORK

Written by Nadine Rivera

PART A: Coordination of Wall Framing at Level 1 Restroom/Locker Rooms

(Time warp to Level 1 Restroom construction. Consider this section independent of other sections.)

You are the Office Engineer managing light gauge metal framing on the project. The Area Superintendent coordinating the level 1 Men's and Women's Restrooms and Locker Rooms has asked you to verify that the framers have all the necessary information needed to start layout in the next few weeks. You experienced on your previous job that there are usually several missing dimensions, wall type clarifications, and other confirmations needed clarified on the drawings. With the framing schedule start date quickly approaching, submitting RFI's in a timely manner for discovered design busts are crucial.

1. Utilizing the provided contract documents (X.6.0A), mark up sheet M04.APP113 (X.6.1) and note corresponding questions (X.6.2) for wall clarifications needed at the following rooms: Men's RR/Shower/Lockers (M04116), Women's RR/Shower/Lockers (M04117), Women's RR/Shower (M04119), and Men's RR/Shower (M04120). Please note drawing details and sheets referenced in each question, as necessary.

Coordination of Work PART A Deliverables:

1. Submit an electronic copy (PDF) of completed review (X.6.1 & X.6.2)

PART B: Coordination of Metal Backing & Rough Openings at Level 1 Restroom/Locker Rooms

As you continue framing coordination at the level 1 Restrooms and Locker Rooms, the Foreman is asking you to provide backing and rough opening requirements throughout the area. You notice that there are several packages that were submitted on for items that need backing and certain rough openings, however you want to provide your Foreman clean drawings on the different elevations and RCP's as needed in the following rooms: Men's RR/Shower/Lockers (M04116), Women's RR/Shower/Lockers (M04117), Women's RR/Shower (M04119), and Men's RR/Shower (M04120).

1. Utilizing the provided contract documents (X.6.0) and product data/shop drawings (X.6.3), provide backing and rough opening drawings with dimensions to center of flat strap (elevations) and TA and lighting rough opening sizes at needed locations with the template provided (X.6.4).

Coordination of Work PART B Deliverables:

1. Submit an electronic copy (PDF) for the backing and rough opening drawings.

7. TECHNICAL PROPOSAL

Written by Grant Potter

Hensel Phelps is an industry leader in the design-build delivery method that continues to become more prominent in today's markets. One of the benefits of design-build is the ability for the contractor and designer to work together early on during the RFP phase to come up with project Enhancements, or creative ideas and concepts that elevate the value of the final product. Sound Transit has written into their RFP the ability for each bidding company to include Alternative Technical Concepts (ATC) that they developed and can implement if approved. Hensel Phelps has already submitted several ATCs, some of which Sound Transit finds to be beneficial in some form.

Through a series of meetings with Sound Transit the months leading up to the bid submission, their stakeholder group have dropped a few hints on which ATCs could bring better value in their opinion. In addition, your team has been focusing on the weighted point break down of how ST will score the final proposal. Both technical solutions, and your teams Transit Oriented Development (TOD) conceptual design are worth more points than total price as indicated in the Project Information section.

It is your teams' task to analyze each of ATCs found in section X.7.1 and evaluate if you are going to include in your final proposal. Some may provide a lower cost, others a more efficient design at a premium, and some could be no value to ST but beneficial to Hensel Phelps. Each ATC has the price impact indicated as well as the level of priority that your team has identified during the early on meetings with ST. Your team will select 3 ATCs to incorporate, one of each priority; low, medium, and high. Your team may also come up with 1 new ATC to select.

Your team will need to indicate which ATCs have been selected, provide a narrative of why they were selected, and incorporate those changes into your final proposal. Your team will need to ensure other aspects of your proposal incorporate these changes, there could be potential General Summary and Schedule impacts. Submit an electronic copy (PDF) of your selection and analysis.

Technical Proposal Deliverable:

1. Submit an electronic copy of the ATC template identifying the ATCs that will be included in your final proposal.
2. Submit an electronic copy of a narrative showcasing why they were selected and incorporate those changes into your final proposal.

8. PERSONNEL ISSUES

Written by Lissette Flores

PART A: Relocation Concerns

The Pacific Northwest region is known for its dramatic coastline, snow-capped mountains, lush forests, as well as unique and independent towns and cities with locals that prize outdoors adventure and local cuisine. The awarding of the Sound Transit Operations and Maintenance Facility: East (OMFE) project in Bellevue, Washington increased Hensel Phelps long-term commitment to this area of the country. With the desire of expanding our work to this new territory came the need to develop a team of builders that would support the influx of new work in the Pacific Northwest. The senior staff pursuing projects in the PNW had moved from Northern California, they saw potential in the area and believed in it. They now face the challenge of building a new team who should consist of existing employees to sustain the company's culture, experience, knowledge, etc. and at the same time hire local people with experience that can support the growth of the area.

In this scenario you are the Project Engineer for the OMFE project who has recently transferred from Northern California to Seattle. You have just been given the opportunity to recruit students at San Francisco State University for summer internships and permanent hire positions. In preparation for your info session and conversations with students you begin to think about all the benefits relocating has brought to your life. Some of these include exciting work challenges, beautiful scenery to explore, and creating new friendships. However, you are also ready to mention some of the tough decisions you had to make such as leaving your family behind.

During one of your interviews, you are asked by a graduating student about the good and the bad about relocating to the PNW, as you noted this possibility in your information session. Even though you are aware of the need at the PNW and the great opportunities, you also realize it is a sensitive subject. You want to encourage this recruit to join the company and relocate as necessary to further their career and build the work procured.

1. How would you respond to during the interview?

For another interview, one of your top intern candidates mentioned that they intend on pursuing a career in Northern California because of how close they are to their family and friends. However, they would like an opportunity to intern in the PNW to experience a new area for the summer and come back as a full time hire in Northern California.

2. How would you respond to this recruit regarding internship opportunities in the PNW?

Personnel Issues Deliverables:

1. Submit an electronic copy (PDF) of the answers to both questions 1 and 2.

9. SAFETY

Written by Andrew Van Steinburg

This problem shall be considered independent; No information contained within this problem section shall be considered outside of this section.

PART A: Environmental Hazards

Throughout the course of a project, the jobsite undergoes a myriad of environmental changes—not only resulting from shifting seasons, but also from phases like dirt work evolving into structure and eventually finishes. Because of this, environmental hazards must be assessed on a regular basis to ensure the team has a plan developed that adequately addresses said hazard. If these plans are not updated with the changing environment, or if workers do not observe the updated plans, there is a greater likelihood that accidents or injuries will occur.

Scenario:

You are an area superintendent responsible for Scoopz, Inc.—the Heavy Civil trade partner—who has a couple of connex boxes in the designated material laydown space about 50 yards south of the MOW. Access to this area has largely been open and Trade Partner A often uses a rough terrain forklift to take the shortest possible path to retrieve materials from said connex at the beginning of every shift. Some time goes by and Scoopz demobilizes from the site temporarily until a new portion of their work becomes available for install. During this time, much of the track on the south side of the MOW has been installed and has been deemed a controlled access zone. Some of the track is energized and requires a special track permit, filled out with Sound Transit in tandem with Hensel Phelps, for any and all access into the zone. Reference Track Access Plan (X.9.2).

More time goes by and Scoopz has returned to the site to begin the next phase of their work. After stretch and flex, their foreman hops into the rough terrain forklift to head over to the same connex area to retrieve the tools the crew requires for the day. The foreman is halfway across the tracks when you spot him from the west side of the MOW. You're unable to stop him in time and he makes it all the way to the connexes, having crossed over the tracks. When you catch up to him you ask him about the track permit and ask him if he knew that he just crossed into an energized area with a giant metal piece of machinery. He expresses bewilderment and immediately apologizes for having done so, saying that he wasn't aware it was a controlled access zone.

1. What could have been done differently by the area superintendent and trade partner to prevent this from happening upon their return to the site? Provide a minimum of 3 different ideas and provide reasoning for each.
2. What consequence should the foreman of Scoopz, Inc. face for violating the controlled access zone and permitting process? Hensel Phelps' Safety Discipline Plan (X.9.1)—which is incorporated into all trade partner contracts--and the Sound Transit Track Access Plan/Permit (X.9.2) have been provided for reference.

Safety PART A Deliverables:

1. Submit one electronic copy (PDF) of the answers to both questions 1 and 2.

10. SITE UTILIZATION

Written by Matt Rickert

DAY 2 ONLY

11. 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/Financial Status Report	7
2.	Estimate	16
3.	General Conditions	10
4.	Proposal Summary	14
5.	Schedule	24
6.	Coordination of Work	10
7.	Technical Proposal/Change Management	10
8.	Personnel Issues	10
9.	Safety	7
10.	Site Utilization	10
Subtotal		120
Oral Presentation		80
GRAND TOTAL		200 POINTS

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

Note 2: **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

Oral Presentation Judges:

Wade Chance, Project Manager
(408) 452-1800
wchance@henselphelps.com
Western District
3125 E. Wood Street, Suite 100
Phoenix, AZ 85040

Anna Cummins, Project Engineer
(360) 930-4207
acummins2@henselphelps.com
Pacific Northwest Area Office
15375 SE 30th Place, Ste 110
Bellevue, WA 98007

Lissette Flores, Project Engineer
(408) 452-1800
lflores@henselphelps.com
Northern California District
4750 Willow Rd. Suite 100
Pleasanton, CA 94588

Isaac Gilles, Project Engineer
(480) 383-8480
igilles@henselphelps.com
Western District
3125 E. Wood Street, Suite 100
Phoenix, AZ 85040

Matt Rickert, Electrical QC Specialist
(706) 941-1356
mrickert@henselphelps.com
Western District
3125 E. Wood Street, Suite 100
Phoenix, AZ 85040

Alexa Watanabe, Project Engineer
(408) 607-2021
awatanabe@henselphelps.com
Southern California District
18850 Von Karman Ave., Suite 100
Irvine, CA 92612

Alternates:

Monica Ashley, Project Manager
(408) 452-1800
mashley@henselphelps.com
Northern California District
4750 Willow Rd. Suite 100
Pleasanton, CA 94588

Administrator / Executive Judge:

Ryan Piper, Operations Manager
(425) 646-2660
rcpiper@henselphelps.com
Pacific Northwest Area Office
15375 SE 30th Place, Ste 110
Bellevue, WA 98007

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 Electronic copies of the proposal deliverables must be turned into the judges. Your final submission must be submitted electronically through OneDrive. No proposals will be formally returned. If you desire a copy for yourself or need one for your oral presentation preparation, please make copies prior to the submission of the proposal.

Rule No. 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.

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. 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. Written proposals are due Wednesday at 8:00 PM and Thursday at 5:00 PM. 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 5th. Presentation materials for all teams are to be turned in by 6:45 AM. No other presentation material will be allowed into the presentation that is not turned into the judges by this time - NO EXCEPTIONS WILL BE ALLOWED.

Rule No. 7 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. 8 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. 9 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 One Drive:

X.0.1	Drawings
X.0.2	Specifications
X.0.3	Request for Information Form
X.0.4	Evaluation Form
X.1.1	General Summary Template
X.1.2	General Summary Narrative Template
X.2.1	Estimate Contract Documents
X.2.1	Estimate Template
X.3.1A	Project Staffing Matrix
X.3.2A	Organizational Matrix
X.3.3	Staff Organization Chart Example
X.3.4A	GC Estimate Matrix
X.5.2	Risk Mitigation Matrix
X.6.0A	Coordination of Work Contract Documents
X.6.1	Blank Drawing for Markup
X.6.2	Wall Clarifications Worksheet
X.6.3	Coordination of Work PD & SD
X.6.4	Coordination of Work Elevations & RCP
X.7.1	Alternative Technical Concepts (ATCs)
X.9.1	Hensel Phelps Discipline Plan
X.9.2	Track Access Safety Slides