



# SKANSKA

## ASC Student Competition

Virtual

February 3-4, 2021

### Open Competition: Sustainability Problem Statement

Building  
What Matters



## Introduction

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Welcome to the 2021 ASC Open Competition Problem Statement focusing on Sustainable Building.

Skanska continues to be an industry leader in sustainable construction. We strive to create projects that have minimal impact on the environment throughout their construction and lifecycle. We have set business goals that align with the United Nations Global Compact, of which we've been a member since 2001. Sustainable construction encompasses a wide reach of topics. Although energy and water efficiency have long been primary priorities, the construction industry is expanding the definition of sustainable to resilience, carbon neutralization, and occupant well-being, for instance. Utilizing the programs set forth by the U.S. Green Building Council, the International Living Future Institute, the Institute for Sustainable Infrastructure and other green certification agencies, along with forward-thinking project teams and design partners, we have sought to move farther down the path of green building. In participating in this problem statement, we hope that you will gain understanding and appreciation of the green building methods that the construction industry can employ in our day-to-day operations. More than that, we hope that you will look to implement these ideas into your careers and daily lives outside the workplace.

**No matter what you build, it can be built green**



**NOTE: All times are in PST (EST)**

**Thursday, February 4, 2021**

6am (9am) - Issue Thursday Problem Statement via Procore

8am (11pm) - Second technology assistance forum via Teams

2pm (5pm) - Third technology assistance forum via Teams

4pm (7pm) - Last RFI via Procore

6pm (9pm) - Thursday Problem Statement solution due via Procore, Release Oral Presentation problem statement via Procore

6-8pm (9-11pm) - RFIs open via Procore for oral presentation problem statement

**Friday, February 5, 2021**

6am (9am) - Presentation materials due via Procore

8am (11am) - Presentations start

5pm (8pm) - Presentations finish

6pm (9pm) - Problem Statement Recap in same Zoom Room; Zoom Bingo

6:30 (9:30) - Sustainability Problem Feedback via Teams

**Saturday, February 6, 2021**

1:30pm (4:30pm) - Awards Ceremony



## Project Information

**Project Title: St. Petersburg Pier**

**Project Location: St. Petersburg, FL**



This year's problem statement is going to look at seven sustainability values; carbon, certifications, contractor well-being, ecology, energy, resiliency, and waste. Student teams will evaluate these values on the St. Petersburg Pier project Skanska completed last year. Teams will provide a solution to a set of problems focusing on the different values. It is the hope of the judges that students will gain a better understanding of various aspects of building sustainably.

The New St. Petersburg Pier consists of a new 148,000-SF concrete deck supported on 426 concrete piles. This new deck supports interactive elements such as the coastal thicket, equipped with trees and landscaping as well as a boardwalk and a new sloped lawn bowl that will be used for events and general recreation. The pier also supports two buildings: the new Pier Head and the new Education Center. The Pier Head includes a 6800-SF restaurant and a 4500-SF Rooftop Observation Deck. The Education Center is a 2000-SF multipurpose space at the center of the new pier that provides both indoor and outdoor program space. Surrounding the new pier are breakwaters that provide erosion protection for the newly constructed Spa Beach.

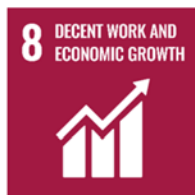
## Scoring

Point scales will be assigned to several elements of the written and oral presentations. Awards will be provided to the three teams scoring the most overall points; 1st Place, 2nd Place and 3rd Place. The judge's may, additionally, award a Judge's Selection award to a fourth team at their discretion.

Category	Points Possible
Prequalification Statement	5
Carbon	20
Certifications	20
Contractor Well-being	20
Ecology	20
Energy	20
Resiliency	20
Waste	20
Oral Presentation	20
Maximum Points Possible	165



**Goal 5**  
Achieve gender equality and empower all women and girls.



**Goal 8**  
Promote sustained inclusive and sustainable economic growth, full and productive employment and decent work for all.



**Goal 9**  
Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.



**Goal 11**  
Make cities and human settlements inclusive, safe, resilient and sustainable.



**Goal 12**  
Ensure sustainable consumption and production patterns.



**Goal 13**  
Take urgent action to combat climate change and its impacts.



**Goal 16**  
Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective accountable and inclusive institutions at all levels.

# Rules

- Students teams must comply with ASC Competition Rules (revised 9/18/20).
- Once the kick-off meeting concludes, and until a team's oral presentation is completed, only the students identified as being team members shall be present in the team's room(s) or shall collaborate on the team's response to the problem statement. No additional person(s) may perform as a helper, runner, or assistant for any team for either the regional or open competitions. Teams will be disqualified if any team has more than 6 members participating in the process of creating a competition solution in any way. This includes food and supply runs! The use of cell phones to contact outside persons is not permitted except in an emergency or as deemed appropriate by the problem sponsor. Faculty advisor(s) may not interact with their teams once the competition has begun.
- Use of the internet is allowable and may be necessary for certain components of the problem.
- 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.
- A one-half (1/2) point deduction will be taken for each minute that the solution statement is turned in past the time that it is due. Solution statements are due **Thursday at 6:00pm PST via Submittals in Procore**. Other deliverable items, if applicable, will be due as specified.
- Only registered participants accepted by ASC are allowed in a school's presentation virtual room per ASC 2021 rules. Violation of this rule shall be cause for immediate disqualification from the competition.
- Oral presentations are being done by Zoom this year. Your teams will get invites for your time slot from the ASC organization. Any additional equipment or software required for a presentation is the responsibility of the team.
- 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.

# Problem Statement Guidelines

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## Requests for Information:

RFIs will be asked and answered using the RFI tool in Procore. All RFI's submitted and answered will be viewable by the Skanska project team and all students participating in the sustainability competition.

## Technical Chats

Three question and answer periods have been scheduled during the day Wednesday and Thursday for questions related to the ability to use software. Skanska will make every effort to maintain an FAQ file on Procore to help all teams use the technology required for this year's problem statement. No questions related to problem content or process will be answered during these sessions. Skanska reserves the right to extend or cancel these sessions as needed.

## Supplemental Information:

Some of the problems have additional supplemental information, reference materials, drawings, etc. They can be located in the Documents tool on Procore

## Supplemental Problems:

Supplemental Problems may be provided during the problem statement competition. Supplemental Problems may be additional information about a changing condition that needs to be incorporated into a team's final solution statement. A Supplemental Problem may also be requiring a response and/or solution to accompany the solution statement or may have an earlier deadline during the day. Student teams will need to make note of the conditions and requirements set forth in the individual supplemental problems issued and provide an appropriate response. Note: Supplemental Problems are not 'extra credit' and are accounted for in the total possible points related to their respective category.

## Solution Submission Guidelines:

Solutions will be submitted as an attachment to the submittal assigned to your school. All electronic submissions must be in the form of a PDF or other electronic format as stipulated in the problem statement. Other formats may be excepted on a case-by-case basis. Requests for an alternate format should be made before the RFI deadline.

## Format of Submission:

In addition to the requirements for electronic submission noted above, the following proposal formats must be adhered to:

1. 12-point Arial font
2. 1-1/4" border around all documents, left justified
3. Maximum submission of 25 pages, including cover page, cover letter, schedules or other documentation necessary to support your submission. All pages submitted will count unless specifically excluded in the written problem statement.

**A two (2) point deduction from the overall team score will be assessed for each page over the page limit described above.**

## Problem Statement 1: Carbon

### 20 Possible Points

Improving energy efficiency has reduced operational carbon. The industry has shifted focus to embodied carbon and how to reduce a building's carbon footprint from construction. More Owners are offsetting carbon dioxide emissions and reducing embodied carbon in their buildings. Green certifications are addressing carbon in credits. This year's carbon problem statement is more involved with the Embodied Carbon Construction Calculator (EC3) Tool. We hope that you gain a better understanding of embodied carbon and how the tool can track it and a project's carbon reduction goals. Unless otherwise noted, any documents, narratives, etc. that you submit are included in your total page count.

**Part 1: Interactive Learning Session:** At least one person should have attended the session Wednesday February 3rd at 2pm (PST) (5pmEST). If no one from your team attended the EC3 learning session, you may not receive technical support for the tool from the Skanska team.

### **Part 2: Working with the EC3 Tool**

- 1) Input quantities given for the restaurant into the EC3 project. What is the overall embodied carbon for the building? Be sure to save your work! EC3 does not automatically save, you will lose your progress if you close the tab or hit refresh.
  - a. Fill in the quantities on the provided template. There may not be rows in the template for all finish materials you see on the takeoff spreadsheet. Enter the quantities asked for in the template.
  - b. Use Ready Mix for any Concrete materials. EC3 does not have a wide base of specific materials and products yet, such as foundation piles.
  - c. You will need to perform your own takeoff for structural steel framing. Include the columns, roof beams and roof joists and bridging in your calculation.

Your completed EC3 project will be graded for this question. The EC3 tool portion will not count toward your page count.

- 2) Roofing membranes are not yet included in the EC3 tool. For this question, we'll focus on TPO membrane. Find EPDs for TPO membrane products online. Several of the major roofing manufacturers have EPDs available online for download. Calculate an average embodied carbon using the information in the EPDs you found. Enter your answer into the appropriate line of the building in the EC3 tool.
  - a. Show your calculations in your problem statement solution submission. This narrative will count toward your page count.
  - b. Include with your solution submission the EPDs you collected. The EPDs will not count toward your page count.





## **Problem Statement 1: Carbon (continued)**

20 Possible Points

- 3) Find a gypsum board product in the EC3 tool that has an embodied carbon lower than the baseline. Select this product to include in your project's embodied carbon calculation. Submit which product you selected.
  - a. Use the following filters for your search: USA, Type X fire rating and 5/8" thickness
  - b. Download the Quantity Summary Report in Excel. Ensure this includes your selected gypsum board product. This does count toward your page count.
  - c. Download the EPD for the product you select. Include this with your submission; however, it will not count toward your page count.
- 4) Describe at least 3 ways the project could lower the overall embodied carbon of the building.

### **Part 3: Material Comparison**

Owners and designers have several choices of materials for outdoor hardscape. There are many factors to consider when selecting a material: cost, aesthetics, permeability, heat transfer, and durability to name a few. We will focus on the embodied carbon aspect and look at three materials – concrete, wood and composite decking.

- 1) List the baseline embodied carbon for each material generated by EC3.
  - a. Concrete: use the filters of Lightweight and USA
  - b. Wood: use dimensional lumber as the category, no additional filters
  - c. Composite Decking: use the composite lumber category, no additional filters
- 2) Which material has the lowest embodied carbon? What are some other advantages and disadvantages to using this material? Which material would you recommend the Owner use? Defend your answer with specific reasons.
- 3) What would you need to do in order to achieve 10 points with Envision's CR1.1 credit? Describe the steps required as well as calculate the maximum embodied carbon the specific product you select can have in order to meet the required reduction percentage.

### **Part 4: Operational vs. Embodied Carbon**

- 1) How does the embodied carbon for the solar panels compare to the operational carbon savings from renewable energy? How long will it take to zero out the embodied carbon of the solar panels in the array on the pier's parking lot, using the savings in operational carbon from the renewable energy source?
  - a. Use the resources provided with the problem statement to calculate the embodied carbon of the solar panels. Assume monocrystalline solar panels. (Hint – you will need to know the size of the solar array.)
  - b. Additional Resources:
    - i. The electric utility provider is Duke Energy. (Hint: you'll be looking for the closest power plant to the pier. This is where the energy would come from if there were no solar array.)

<https://www.duke-energy.com/Our-Company/About-Us/Power-Plants>

- ii. <https://www.eia.gov/tools/faqs/faq.php?id=74&t=11>

## Problem Statement 2: Certification

### 20 Possible Points

There are several certification programs now available to projects: LEED, Living Building Challenge, WELL, Green Globes, SITES, and Envision to name a few. LEED is the most familiar for building projects. There are programs that focus on other types of projects or specific aspects, such as infrastructure, sitework, and quality of occupant life. Owners have many options now in certifying projects as sustainable. The problem statement below centers around three certifications: LEED BD+C v4.0, Envision v1 and SITES v2. The first part relates only to the Doc Ford restaurant while Part 2 focuses on the entire pier project.

### Part 1: Doc Ford Restaurant LEED

- 1) The restaurant is currently in the DD phase, and the Owner would like to explore options for LEED Certification. Would you recommend Core and Shell or New Construction and why? (Hint: USGBC has a specific rule to help with this question.) Provide backup explaining your choice.
- 2) What would be the fees associated to register and certify the project for a separate design and construction review? How much would the project save if they registered as a member vs. non-member?
- 3) Complete the scorecard template provided to reflect 43 targeted points in the “Yes” column. Include a brief narrative backup for each credit you add. These narratives should be added to the notes column. The scorecard will count as 1 page in your solution’s total page count.
  - a. Your answer should include:
    - i. An assigned responsible party for each credit targeted (Contractor, Engineer, Owner, Civil or Architect
    - ii. Explanations of any additional scope for each credit targeted. You can add these in the “Notes” column
  - b. Resources:
    - i. Construction documents via Procore
    - ii. LEED v4 Reference Guide
    - iii. <https://stpetepier.org/faq/>
    - iv. <https://www.usgbc.org/leed-tools/rating-system-selection-guidance#bdc>
    - v. <https://www.usgbc.org/regional-priority-credits>
  - c. Assumptions for the scorecard:
    - i. You cannot add scope to the project to achieve points that would increase costs. Policies or items that will not be added costs are acceptable. Use the information you can find through the given resources and the assumptions listed here.
    - ii. Building is metered for water and energy use, no additional submetering is included.
    - iii. Enhanced commissioning was done, but envelope was not in the scope.
    - iv. The building uses 20% less energy than a baseline building of its type.
    - v. No irrigation is needed for the site and the building uses 37% less water than baseline use.



#### **4) Problem Statement 2: Certification (continued)**

##### 5) 20 Possible Points

- i. The Owner is a member of Duke Energy's demand response program in Florida.
  - ii. Construction waste was separated onsite and 50% of the construction waste was diverted.
  - iii. Assume 1 point each for MR credits 2, 3 and 4.
  - iv. All interior wet-applied products comply with CDPH Standard Method v1.1 2010.
- 6) The Owner has asked you to help them understand the process needed for review and certification. Write a description of what the Owner can expect and generate a timeline for certification to provide the Owner. Include specific milestones: review times, documentation gathering, etc.

#### **Part 2: St. Petersburg Pier Envision vs. SITES**

- 1) What parts of the pier could be Envision certified? On C.3 Master Site Plan, draw your proposed project boundary line in Blue. Provide a narrative explaining what is specifically excluded and why.
  - a. Reference Envision Verification Guide
- 2) What would be the fees associated to register and certify the project using verification pathway A? How much would the project save if they registered as a member vs. non-member?
- 3) What parts of the pier could be SITES certified? On C.3 Master Site Plan, draw your proposed project boundary line in Red. Provide a narrative explaining what is specifically excluded and why.
  - a. Reference SITES v2 Guidebook
  - b. The drawing you submit with project boundaries for questions 2.1 and 2.3 will count as 1 page toward your page count.
- 4) What would be the fees associated to register and certify the project using the combined path? How much would the project save if they registered as a member vs. non-member?
- 5) Can the pier project meet all the prerequisites for either SITES or Envision? Choose four SITES prerequisites to discuss in a narrative some of the challenges the project may face and what the team can do to mitigate those challenges.

## **Problem Statement 3: Contractor Well-Being**

### 20 Possible Points

During this unprecedented time of the COVID-19 pandemic, our company and others have been forced to re-evaluate how we can promote subcontractor wellbeing while adhering to social distancing requirements and complying with changing federal, state & local CDC guidelines. We have been forced to think about the implications of questions like:

***In this new normal, how can we re-envision previously common jobsite events and scenarios to make everyone feel safe and secure on our jobsites?***

***How can we better communicate with our subcontractors & the owner that proper health & safety measures are being taken while maintaining privacy and confidentiality?***

In each of the below normal jobsite events and situations, please describe in detail your proposed COVID-19 mitigation strategies. Ensure your answer for each topic addresses social distancing, evaluates possible constraints, and includes cost of implementation.

1. **Stretch & Flex:** daily routine with 15 minutes of stretching & announcements on the jobsite before commencing work
2. **Lunch Breaks:** sometimes indoors or outdoors, using shared appliances (toasters, microwaves, coffee machines)
3. **Subcontractor Appreciation Events:** BBQs, buffets, packed lunches, announce special awards, distribute swag & merchandise, etc.
4. **Ceremonies – Groundbreaking & Topping-Out:** usually involves group photo ops, speeches, celebrate important milestones when project starts and when last structural member is placed
5. **Weekly Owner or Subcontractor Meetings:** sometimes in conference rooms, sometimes people call in or host virtually
6. **Site Tours for Visitors:** group tours of students, community members, owners, shared PPE equipment (hard hats, gloves, vests, glasses)
7. **New Person Safety Orientations:** safety briefing presentation given by Skanska Safety professional to each new visitor to the jobsite, typically inside at conference room table



*For reference, please see example photos on Procore using the Photos tool, under the photo album titled “Contractor Wellbeing”.*

Please provide text or photos to support your responses.

## **Problem Statement 4: Ecology**

20 Possible Points

The new \$92 million St. Petersburg Pier replaced the previous pier that stood for four decades. This new 1,400 ft. pier consists of a 148,000 sqft concrete deck that supports two buildings, a coastal thicket, boardwalk, and sloped lawn bowl. With the construction of this concrete comes potential harm from the surrounding saltwater to the hardscapes, as well as the potential to harm the surrounding ecosystems. As a builder, it is important to acknowledge and mitigate potential negative impacts on the local environment.

### **Part 1: Landscape**

- 1) Reference Landscape plan L-400 under the Drawings tool in Procore. Choose (5) plants that are native to the local environment. On Procore, download and use the landscape submission template located under the Documents tool and in submittal format, please submit nursery/source information for each plant you choose using the submission template. **Only this question is due at 12pmPST/3pmEST.**
  - a. In addition to the help resources on the Procore website itself, we have added a guide for creating submittals in the Documents tool in.

### **Part 2: Water**

- 2) As stormwater travels over the land surface, a variety of pollutants can accumulate and become harmful to the surrounding environment.
  - a. Using drawing C-5.05, illustrate with arrows the direction of stormwater runoff. Reference the Civil site, grading, and utility plans (C-4.05, C-5.05, and C-6.05).
  - b. In the city of St. Petersburg, the stormwater systems flow directly into lakes and creeks, and eventually into the Tampa Bay, and the Gulf of Mexico<sup>1</sup>. The public is encouraged to reduce the level of pollutants that enter the stormwater system. Determine ways stormwater can be filtered/recycled/reused to reduce the pollution levels before entering the system. Should the City mandate the pollution level in stormwater? Explain why and how this would be regulated.



<sup>1</sup>[https://www.stpete.org/city\\_departments/stormwater\\_operations/stormwater\\_education.php](https://www.stpete.org/city_departments/stormwater_operations/stormwater_education.php)



## **Problem Statement 4: Ecology (continued)**

20 Possible Points

### **Part 3 - Ecology**

- 3) Per the drawings and specifications, the team is to build one rubble mound breakwater with an oyster reef plateau on the landward side with an option to construct a second rubble mound breakwater without an oyster reef. The team needs to determine the cost impacts of constructing breakwaters.
  - a. Perform a takeoff of breakwater material prices based on the provided 355000 specification quantities. How much would it cost to build the required breakwater and the optional breakwater? Please provide websites/resources.
  - b. Reference drawing B.1 and identify (5) benefits of building the breakwaters in relation to the underwater ecosystems and beach environment. Illustrate the relationship between breakwaters, oyster reefs, and seagrass beds, and the shoreline.



Bending Arc, St. Petersburg Pier

## **Problem Statement 5: Energy**

20 Possible Points

In order to maximize energy production and provide clean energy throughout the 3,065 ft long pier, the team constructed a solar canopy over the parking lot that will reduce the Pier's electricity bill, efficiently utilize the sun's energy, and provide shade from the intense Florida sun. This is an effective way to take advantage of unused space and is essential to reducing the ever-growing problem of climate change.

### **Part 1**

Assume the pier consumes 1,200,000 kWh per year.

- 1) Using <https://pvwatts.nrel.gov/pvwatts.php>, determine how much energy (in kWh) can be produced by each of the (3) PV roofs.
- 2) What is the cost per kWh of the solar panels you highlighted in PVwatts?



### **Part 2**

Reference the Department of Energy for average cost per kWh.

- 3) What percentage of the total Pier's annual energy consumption are these PV Panels able to offset?
  - a. The Owner wants your team to identify another location where solar panels can be built to produce the required 1,200,000 kWh per year. Mark-up the provided drawing (A1.00) to show where your team proposes to put these remaining panels. Please also include the location of the panels in the original design.
  - b. The owner wants to evaluate and compare alternative renewable energy generation strategies. Identify 3 alternatives that would apply to this project. Think about aesthetics, feasibility, constructability, geographical location and the long-term benefit of the project. Compare the three strategies and explain which one is the overall best option.

### **Part 3**

- 4) Explain why the tilt angle of the PV panels needs to match the latitude.
- 5) Fill in the highlighted spaces in the excel sheet to determine the 'breakeven point' on the solar panel investment.

## **Problem Statement 6: Resiliency**

### 20 Possible Points

Resilience captures a wide scope of project design elements and is important to ensuring a longer useful life of a project. Programs like Envision (v3) by the Institute for Sustainable Infrastructure break resilience into two primary areas of consideration: the ability to withstand short term risks, and the ability to adapt to changing long-term conditions.

In this problem, we will be looking at the Resiliency of the St. Petersburg Pier.

### **Part I: Evaluate Risk and Resilience**

- 1) Please identify threats and hazards to this project.
  - a. Please classify each threat and hazard as either a short-term or a long-term threat/hazard. List at least 5 short-term and 5 long-term threats/hazards that are applicable to this project.
  - b. For assistance, please refer CR 2.3 Evaluate Risk and Resilience from the Envision Guidance Manual.
- 2) Of the threats and hazards identified, which do you think this project is most vulnerable to? List at least 5 and provide a brief explanation of your reasoning for each of them, describe potential vulnerabilities associated with each threat/hazard.



### **Part 2: Establish Resilience Goals and Strategies**

- 3) Of the risks identified in Part 1, Question 2, what are the best strategies for mitigating these risks?
  - a. For assistance, please refer to CR 2.4 Establish Resilience Goals and Strategies from the Envision Guidance Manual. Strategies should be classified as Vulnerability Reduction, Impact/Consequence Reduction, No Action, or a combination of these strategies.
- 4) What would the implementation of these strategies look like? How would your team ensure the risks and vulnerabilities to this project are being appropriately addressed?



## **Problem Statement 6: Resiliency (continued)**

20 Possible Points

### **Part 3: Project Design Criteria**

- 5) What are the design parameters of this project?
  - a. Please identify the gravity (Dead Loads and Live Loads), and wind loads for this project.
    - i. How do these design criteria correlate to specific natural disasters like hurricanes?
    - ii. What types of natural hazards is this project susceptible to, based on its location? Use both FEMA Resources and The National Risk Index to help guide your answers.
  
- 6) Based on your team's risk assessment of this project, and the project's design criteria, do you think this project is designed with long-term risk in mind? Will it continue to meet the needs of the population it serves over the next 50-100 years?



Market area, St. Petersburg Pier

## **Problem Statement 7: Waste**

20 Possible Points

Construction can generate lots of waste from defective materials, over ordering, and changes in design. Skanska values the minimization of waste and seeks to reduce or eliminate waste by finding ways to salvage and reuse materials, recycle, donate, or repurpose. The TRUE (Total Resource Use and Efficiency) certification program encourages and challenges projects and events to do just this.

### **Part I – TRUE Zero Waste<sup>1</sup>**

- 1) The TRUE Zero Waste certification is a newly developed program that rates the performance of facilities and events in minimizing their solid, non-hazardous waste and promoting the efficient use of their materials and resources. With this certification program, the goal of the project is to divert 90% or more overall diversion from the landfill, incineration (waste-to-energy), and the environment for waste in the most recent 12 months.
  - a. TheZero-Waste Audit chart located under Documents in Procore displays some typical materials used in homes. Fill out (7) lines under Option 2 describing typical items that could be found in a construction office trailer and what the “zero waste action” could be. Just the page with the table that you’re filling out should be submitted as part of your answer and page count.
- 2) The TRUE certification program aims to restructure the product and distribution system to manufacture materials to be reused or recycled at the end of its lifecycle. This helps to keep unnecessary materials out of landfills and encourages users think about how these products could continue to be used beyond their original purpose.
  - a. What are the major categories of materials that end up as Construction and Demolition waste? Which ones are the most controversial to the environment, and what makes the most controversial materials so difficult to recycle?



<sup>1</sup>[https://true.gbci.org/sites/default/files/resources/TRUE%20Zero%20Waste\\_one-pager.pdf](https://true.gbci.org/sites/default/files/resources/TRUE%20Zero%20Waste_one-pager.pdf)



## **Problem Statement 7: Waste (continued)**

20 Possible Points

- b. Reference the demo plans (C3.00 - C3.05) under the Drawings tool in Procore. These drawings list the proposed demolition materials. Identify (5) materials that can be diverted away from the landfill and explain how they can be salvaged or reused. Categorize these materials into a TRUE material stream (reference TRUE Rating System Guide under Documents on Procore). Are there any local manufacturers or materials recovery facilities that will take back material for reuse in their production cycles? If so, list the manufacturer and the type of material they will take.
- c. C3.00 demo plan calls out on Note 3 to remove materials in a lawful manner. What are the requirements in the city of St. Petersburg for removing and disposing of materials correctly? What permits would be required for demo and disposal of structure/materials?

### **Part II - Mockups**

- 3) Mockups are a great way to visualize a part of the project. If any unforeseen conflicts arise, the design team and subcontractors can work to implement revisions on a smaller scale and test the system before installing the permanent structure. Mockups are typically a small portion of the project (not just a mini version of the entire project) - an exterior façade, waterproofing system, window system, concrete slab or wall, etc. Often, these mockups are demolished and sent to the landfill after the full-scale portion has been constructed, compared to the mockup, and bought off by the design team. Provide ways in which mockups could be recycled, upcycled, reused, or donated.
  - a. Would it be beneficial from a sustainability standpoint to build out the mockup? If so, how would you pitch this to the owner assuming it isn't part of the original scope of work (pros and cons)?
  - b. Sometimes mockups are done in-place. Discuss the benefits and drawbacks from a design, cost, constructability, and sustainability standpoint.



## **Oral Evaluation**

### *OAC Meeting Presentation*

20 Possible Points

The Oral Presentation Format will be in the style of a virtual Owner-Architect-Contractor (OAC) Meeting. Teams will be given a list of topics that due to the needs of the project will have to be discussed at your next progress meeting between the Owner, Architect and Contractor. Your team will be representing the Contractor needing to explain decisions or actions that have taken place on the project and justifying any impacts to cost or schedule as they impact the Owner's budget or the Architect's design.

Your team will be responsible for preparing the meeting agenda and any additional documents, that may be needed to illustrate your decision-making process. Unlike a presentation, the Owner and Architect may ask questions during the meeting topic. There is also a stiff time constraint on the OAC meeting, as the Owner is busy interviewing other Contractors for another upcoming project. If a resolution cannot be reached, or if the owner is unsatisfied with your decision-making, the conversation may be tabled for further discussion at a later date in order to get through all of the equally important topics being covered in the meeting.

**Additional Details regarding content and format of the OAC Meeting will be provided at a later time.**

#### **Presentation Timeline:**

- Presentations begin on the hour.
- Teams will be allowed a set-up period—this will include any troubleshooting of connections, software, etc.
- Teams will be allotted thirty (30) minutes in which to; introduce their team, present their information, and explain the expected challenges. Judges will be able to ask questions during this period.
- A ten (10) minute period for feedback will follow the presentation.

Any other presentation materials required are to be provided by the team.

**ALL ELECTRONIC AND HARDCOPY PRESENTATION MATERIALS ARE TO  
BE DELIVERED AT 06:00 AM PST TO PROCORE  
ON THE MORNING OF FEBRUARY 5, 2021.**