



Ready to compete?

SOUTHEAST DESIGN-BUILD CHALLENGE

Regional – There is no advancement to a Society-wide national competition for this competition.

Overview

Throughout your academic journey, you've delved into myriad courses to master the core tenets of engineering. This competition represents a chance to manifest those principles into practical application, emulating a real-world design-build project. For this endeavor, there are two pivotal roles: the judges, who will assume the guise of the "Owner", and your student ensemble, which will be designated as the "Design-Build Team".

On Friday, March 22, 2024, your team is tasked with delivering a presentation elucidating the design and preliminary budget of the project. Subsequently, on Saturday, March 23, 2024, you will showcase your completed constructed artifact to the "Owners". They will appraise

submissions based on uniqueness and the aptitude to encapsulate the essence of the project scope.

As the "Owner", we operate within a defined budget for projects. Hence, we invite you to compete by offering design and construction services that will stand out and impress our team. Your objective is to persuade us of the merits of your project and why it stands out compared to those of your competitors. Let's dive in!

Overview of Design and Construction Participants and Methods

Any successful building project relies on the collaborative efforts of several key participants:

1. The Owner/Developer: This entity is responsible for funding the project and outlining its main purpose, whether it's an



office complex, a restaurant, or any other facility.

2. The Design Team: Comprising architects and a variety of engineers (civil, structural, mechanical, electrical, plumbing, and specialty), this team translates the owner's vision into actionable designs ready for the permitting process.
3. The General Contractor: This role focuses on assessing design feasibility, estimating project costs, exploring value engineering avenues, and supervising the construction process.

Method 1: Design-Bid-Build Delivery Method

In traditional construction approaches, the Design-Bid-Build method is prevalent. Here is how it unfolds:

- The owner first collaborates with the Design Team, either by direct selection or through a competitive process.
- Once the design reaches a specific milestone, the owner then contracts a General Contractor, based on either selection or a competitive bid.
- The contractor's responsibilities encompass preconstruction aspects, including cost estimation and suggesting *value engineering possibilities. Once preconstruction is finished,

the general contractor will supervise the construction of the project.

**A note on Value Engineering: This process is about proposing alternative project specifics that, while aligned with the Design Team's vision, present cost or scheduling efficiencies. By staying attuned to market shifts and nuances, like the recent equipment shortages, the General Contractor can offer real-time pricing insights to the Design Team. Throughout the construction phase, the Design Team remains actively engaged, endorsing project materials and resolving RFIs (Requests for Information). An example of a value engineering option would be two products that meet the exact same technical and performance specifications, but one brand is currently more cost effective, not hindering the performance of the overall system.*

However, based on project complexity or timeline constraints, some stakeholders might lean towards the Design-Build Delivery model. This is the model that your competition will be based on.

Method 2 (Your Competition Method): Design-Build Delivery Method

Distinct from the Design-Bid-Build method, Design-Build brings together the Design Team and the Contractor under one umbrella. This method is recognized for its collaborative approach and is chosen for various inherent



benefits and operational specifics:

1. **Integrated Services:** By having both design and construction services integrated, there's a single point of responsibility. This can reduce the risks and overall timeline as the processes are more streamlined and can often overlap.
2. **Efficiency:** Because design and construction professionals are working side-by-side, decisions and revisions can be made more quickly. There's no waiting period between designing, bidding, and then building.
3. **Cost Savings:** The integrated team works together from the get-go, optimizing design decisions based on the available budget. This proactive approach can lead to more accurate initial budgeting and fewer unexpected costs or overruns.
4. **Enhanced Communication:** With fewer parties involved and a single team approach, there's a consistent line of communication. The owner communicates with one entity, ensuring clarity and reduced potential for misunderstandings.
5. **Flexibility:** As design and construction stages can overlap, there's an opportunity for flexible adjustments. If an unforeseen issue or a desired change arises during construction, the integrated team can address it without significant delays.
6. **Quality Control:** The unified team approach can lead to higher standards of quality. Since the same group oversees the project from concept to completion, there's an inherent vested interest in delivering a high-quality result.
7. **Risk Management:** Fewer contractual entities can lead to reduced legal and financial risks. Any challenges that arise are handled within the unified team, eliminating the "blame game" that might occur between separate designer and contractor entities.
8. **Timeline Advantages:** With concurrent design and construction processes, the overall project duration can be reduced, leading to faster project completion.

In essence, the Design-Build method offers an environment where every aspect of a project, from inception to completion, is under one integrated team's responsibility. This collaborative strategy often results in projects that are delivered faster, within or under budget, and with fewer challenges or disputes.

The Significance of Public Sculpture Art in Cities

Public sculptures breathe life into the heart of urban landscapes, standing as silent sentinels that narrate a city's tale. More than mere adornments, these artistic installations capture the essence of a city's history, culture, and aspirations. They provide residents with



a tangible link to their past, while offering visitors insights into the city's unique narrative and identity. As landmarks, they become focal points for gatherings, a backdrop for countless memories, and catalysts for introspection. In an ever-globalizing world, public sculptures anchor a city to its roots, ensuring its spirit remains palpable amidst the hustle of modern life. They're not just artworks; they're cultural cornerstones that define and differentiate every metropolis, underscoring the significance of artistic expression in the fabric of urban existence.

In an article authored by Nick Mafi and Jessica Cherner for Architectural Digest, 11 renowned public sculptures situated in cities worldwide are highlighted. These captivating pieces serve as the inspiration for this competition. For a detailed exploration of these sculptures, you can visit the article here: <https://www.architecturaldigest.com/gallery/11-most-fascinating-public-sculptures>

Scope of Services

Your Design-Build Team is tasked with crafting a scaled public sculpture that epitomizes the essence of the city where your university resides.

Dimension Criteria:

- The sculpture must be of a minimum dimension of 5'x5'x3' in any orientation.
- The sculpture must be entirely self-supporting and independent. There will be no provision for power, water, or other utilities. If your sculpture

necessitates a foundational plate for stability, its dimensions will not be counted in the required measurements.

Design Objectives:

- We encourage your team to explore diverse materials, innovative building methods, and considerations for "interactive features" (those that can engage pedestrians or observers).
- Your sculpture should echo the spirit and ethos of your community, making it evident in your final presentation.

Interdisciplinary Collaboration:

- This competition is an invitation to venture beyond your usual boundaries and grasp the symbiosis among various disciplines, spanning civil, structural, mechanical, electrical, plumbing, and specialized design. Incorporate insights from these fields into your design and resultant piece. This is your chance to fathom how these domains converge to realize a cohesive and functional masterpiece.

Budgetary Constraints:

- Your budget may not exceed \$750.00. Note that donated or recycled materials and second-hand products are exempt from this budget, provided they are not acquired through purchase.



Eligibility

Our goal is to immerse students in the collaborative dynamics between designers (Architects/Engineers) and builders (General Contractors). Consequently, your Design-Build Team should mirror this professional structure.

Your team should consist of:

- (1) Design Executive
- (1) Designer
- (1) Construction Executive
- (1) Construction Project Manager

Each individual can only assume one role.

While these are the foundational roles, we heartily recommend expanding your team with specialized designers or builders to encompass a broader spectrum of expertise. Your Design-Build proposal should enumerate all members, from core design and construction personnel to niche experts. For example, a project like a performing arts center would engage specialists like acoustic engineers, lighting technicians, and community engagement coordinators in addition to the standard slate of personnel.

Given the delineation between design and construction roles, each subgroup should devise a unique company name and profile. For instance, in real-world Design-Build collaborations, a general contractor like "ABC" might ally with a design firm like "XYZ",

culminating in a joint venture titled "ABC-XYZ". We advise adopting a similar nomenclature for this competition.

Presentation of Concept Design to Owner

Date: Friday, March 22, 2024

Duration: Presentation – 10 Minutes | Q&A – 10 Minutes

Location: Conference room to be determined. Screen and plug-in support to be provided.

Requirements:

- **Team Introduction:** Begin by introducing your project team and their affiliated companies.
- **Concept and Visuals:** Outline and showcase your design concept without revealing images or the physical constructed piece. Examples of design concepts would be artistic drawings or renderings. This segment is your platform to enthuse the "Owner" about your vision. For an impactful delivery, consider leveraging tools like Fiverr to craft a visual impressive presentation. Integrate any pertinent renderings or illustrations to give depth to your presentation.
- **Local Connections:** Elucidate on how your sculpture relates and resonates with the city housing your university.



- **Technical Analysis:** Dive into the details of the materials you've chosen. Explain the reasoning and functionality behind any integrated plumbing, electrical, lighting, or other specialty systems.
- **Calculations and Foundation Design:** While ensuring the safety of the public is paramount, we acknowledge that this is a student competition. Therefore, we do not require detailed wind calculations on the sculpture's structure itself. However, an essential aspect we'd like you to explore is the foundational design in the context of wind loading, self-weight, and the geometry of the structure. Remember this art piece must withstand potential weather events and it's crucial that the sculpture and public remain safe. While you will not build an actual foundation, we would like your team to describe how the piece will be secured if constructed.
- **Initial Budget:** Furnish a detailed preliminary budget for the "Owner's" review.
- **Final Construction Drawings:** Introduce the detailed set of 24"x36" prints. The Q&A will probe into the content of your presentation and the depth of these drawings. They should be formatted akin to traditional permitted construction sets, featuring:
 - Cover Page/Borders
 - Specifications (materials, colors, brands, etc.)
 - Architectural, Structural, and any relevant sections (like electrical or plumbing).
 - Comprehensive Plan, Elevation, and Section cuts.
 - Your team's insignia, cementing both ownership and assurance of the design's integrity.

Presentation of Constructed Product to Owner

Date: Saturday, March 23, 2024

Duration: Informal Discussion – 5 Minutes

Location: Place your sculpture at your school tent at the Concrete Canoe Races.

Requirements:

- **Constructed Product:** Display and explain the final, tangible project at the designated venue. Ensure the product is safely installed and easily viewable by the judges.
- **Construction Final Cost:** Present an 11"x17" printed summary that includes:
 - Initial budget drafted by the Design Team.
 - Adjustments made through the Value Engineering process.
 - A breakdown of the final total construction cost, additionally itemizing:



- Cumulative hours and costs of both Design and Construction Teams.
- Hourly wages (actual hours worked will be emphasized): Design and Construction Managers at \$100/hour and Designers/Builders at \$40/hour.
 - These values will not count towards your \$750 budget, just placed to show that every project is made up of materials and invaluable expertise from all parties.
- **RFI Log:** Assemble and present a comprehensive log detailing all questions and clarifications exchanged between the Construction and Design Teams. This can be manifested in the form of a spreadsheet or document. The log should encapsulate inquiries related to design drawings, approvals from the Value Engineering process, and any other relevant discussions.

For those unfamiliar with RFIs (Requests for Information): Picture a scenario where your sculpture demonstrates unforeseen deflection in a critical component. The general contractor might then pose an RFI to the design team: "A/E, we've observed unexpected deflection in a specific material. Could you recommend an alternative material or an additional support mechanism to address this deflection?" The RFI log would meticulously record both the posed question and its subsequent answer, which might resemble: "GC, consider integrating an additional wooden support

approximately 4 inches from the affected connection point. Secure it to the designated location using a specified adhesive." As a professional reminder: RFIs carry contractual implications and demand the utmost rigor and precision. Each RFI merits scrupulous attention, ensuring every query is aptly addressed with due diligence.

- **Redline Drawings:** Submit a version of your 24"x36" Final Construction Drawings where modifications from the original design to the actual constructed piece are literally marked up in red. When we say "redlined," we mean this quite literally: use a red pen or marker to indicate on the drawings where changes or deviations occurred during construction. In scenarios where your team stayed true to the original design without any alterations, clearly annotate "Constructed Per Specifications" at the top of the sheet.

Understanding the intricate dance between RFIs and redlines is crucial. For instance, if an engineer's original plans specified screw placements every 4" on center, but on-site challenges—like unforeseen electrical wiring or structural barriers—made such placements unworkable, the contractor would typically raise an RFI. Once the design team responds and suggests a solution, this new change should be redlined on the drawings, marking exactly what was constructed as opposed to the original design. This practice ensures that everyone, from the project manager to the field worker, is on the same page about what was actually built. Through this competition,



we're aiming to instill the importance of this process in you. Both RFIs and redlining are foundational elements of construction, ensuring accuracy and communication. We hope you emulate this practice with the seriousness and meticulous attention it merits in the professional world.

- **Safety Considerations:** Briefly discuss any safety precautions taken during construction and any safety features of the final product.

Scoring Criteria

- 1. Quality of Craftsmanship of Sculpture – 10%**
 - Evaluation of the finish and overall quality of the constructed sculpture.
- 2. Building Techniques & Innovation – 10%**
 - Implementation of advanced or unique building methods, like 3D modeling and innovative construction solutions.
- 3. Cost Estimate Thoroughness – 10%**
 - Detail and clarity of the initial and final cost projections.
- 4. Constructability Collaboration (Design & Construction Teams) – 10%**
 - Integration and synergy between design and construction teams, emphasizing the feasibility of the design. This includes the RFI and redline process.
- 5. Design Intent Thoroughness & Completeness – 15%**
 - Detail, clarity, and completeness of the provided plans, calculations, and construction documents.
- 6. Interdisciplinary Integration – 10%**
 - Effective use of various disciplines (e.g., architecture, structural engineering, electrical/plumbing design) in the sculpture's design and execution.
- 7. Design Innovation – 10%**
 - Originality, creativity, and forward-thinking aspects of the sculpture's design.
- 8. Pedestrian Engagement – 5%**
 - How the sculpture interacts with and is used or appreciated by pedestrians and the general public.
- 9. Integration of Local Community Elements – 5%**
 - Reflection and incorporation of local culture, history, and symbolism in the sculpture.
- 10. Conformance to Submission Requirements – 5%**

Final Thoughts

This competition aims to shed light on aspects of engineering that might remain unexplored



at this juncture of your academic journey. Our goal is to acquaint your team with the multifaceted stages and deliverables inherent to real-world projects, some of which you might not yet have encountered. Whether your future lies in design engineering or construction engineering, mastering the nuances of detail in your drawings — ensuring that what you design is both constructible and economically viable — is crucial. Such mastery distinguishes the truly outstanding engineers and designers. We encourage you to delve deep into the rationale behind the deliverables we've outlined. Embrace this challenge, enjoy the process, and strive to produce a piece that both you and your team can look back on with pride.

Important Dates

- Release of Student Symposium Competition Rules and Regulations on October 1, 2023.
- 2024 Southeast Student Symposium Regional Competition March 21-23, 2024 in Orlando, FL.
 - Competition time and location will be released closer to event.

Questions

Requests for information (RFI) must be sent to 24southeastsym@gmail.com with the subject line "Southeast Design-Build RFI".