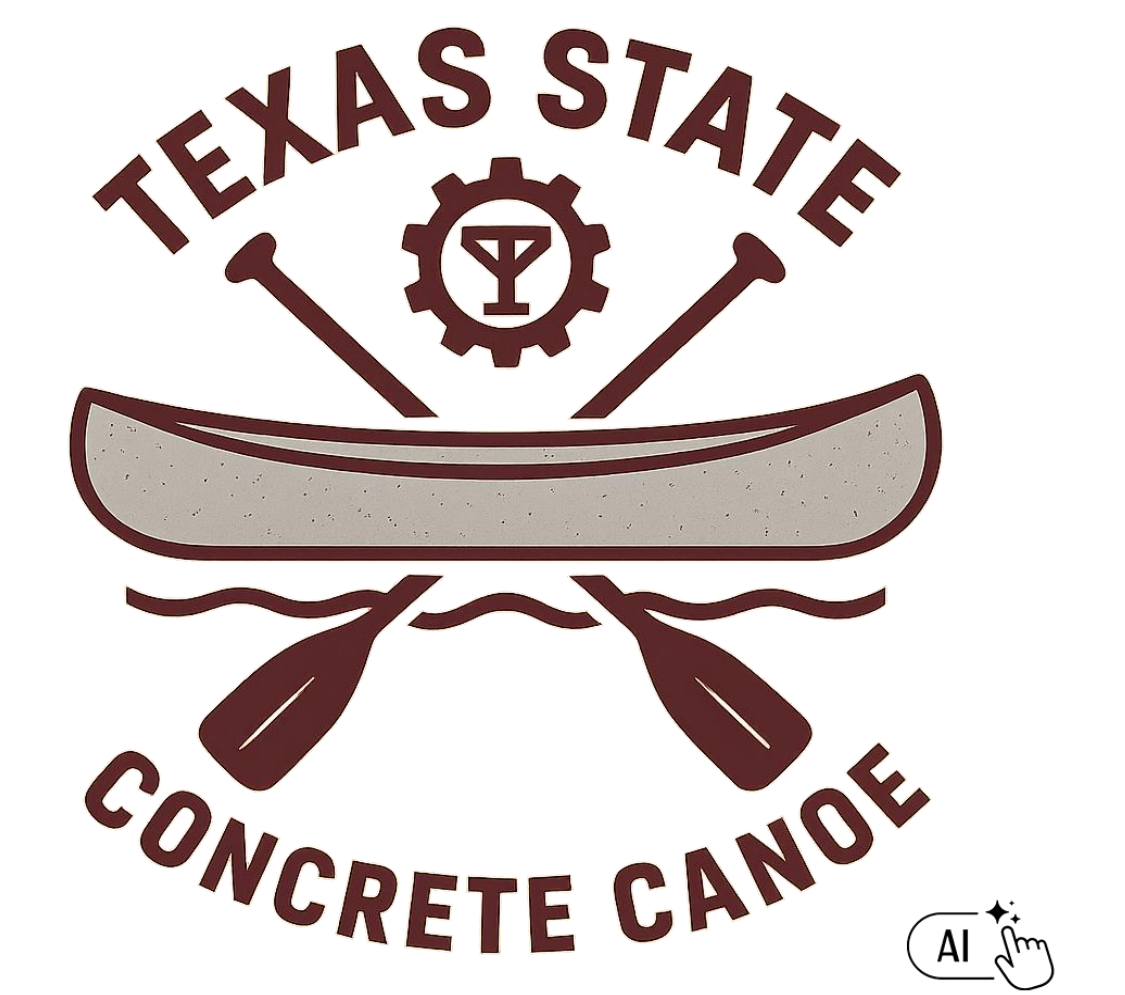


Group C2.06 – Texas State Concrete Canoe

Adan Guerra, Ama Afrane, Louis Smith, Daniel Tobon, Jorge Rodriguez
Texas State University College of Science and Engineering, ASCE Texas Section – Austin Branch,
WSB, Ritek, Texas Lehigh cement company, Sika, Pape Dawson Engineers
Faculty Advisor - Dr. Yongtao Dong



Project Overview

Texas State University's Civil Engineering Senior Design team will compete in the 2026 ASCE Concrete Canoe Competition against universities across the region. Our team is designing and constructing a lightweight, durable, and high-performance concrete canoe through innovative engineering and materials.

Design Dimensions

Categories	Design
Length	~ 19.5 (ft)
Height	~ 2.5 (ft)
Width	~ 3 (ft)
Hull Design	Semi-Round
Wall Thickness	~ 1 (in)
Bow Stem	Flare
Gunwale	6 (in)

Above are the finalized dimensions of the canoe after curing and sanding.

Mix Design

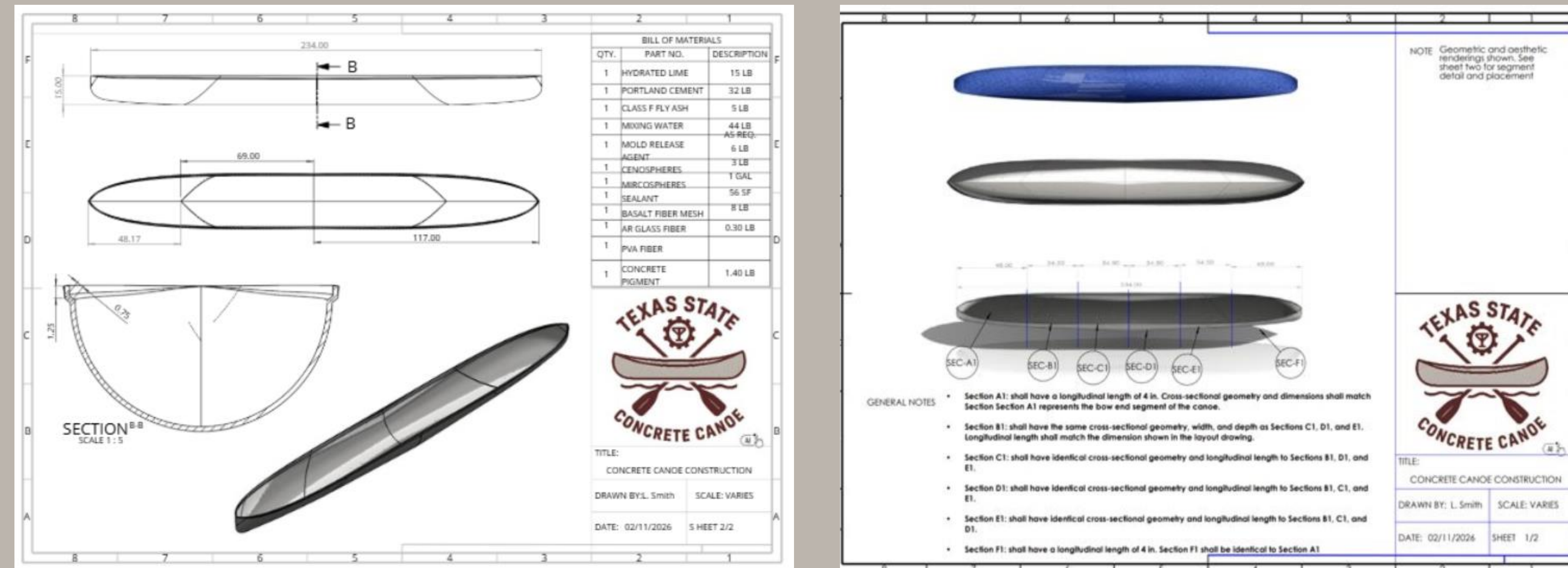
Outer Layer

Material	Amount
Latex	1479mL
Type ⅓ Cement	27lb
Slag	40.5lb
Water	18lb
Zeolite	50lb
Sand	45lb
A-train	60mL
VMA	100mL
Hydrastor	40mL
Plasticizer	40mL
CKIM	1-¼lb
Evotech2000	80mL
Metakaolin	2lb

Inner Layer

Material	Amount
Perlite	17.5lb
Cement	22.5lb
Water	16.9lb
Zeolit	12.5lb
Sand	30lb
Hydrastor	120mL
Atrain	60mL
VMA	80mL
Basalt Fiber mesh (¾")	3.5lb

Canoe Design



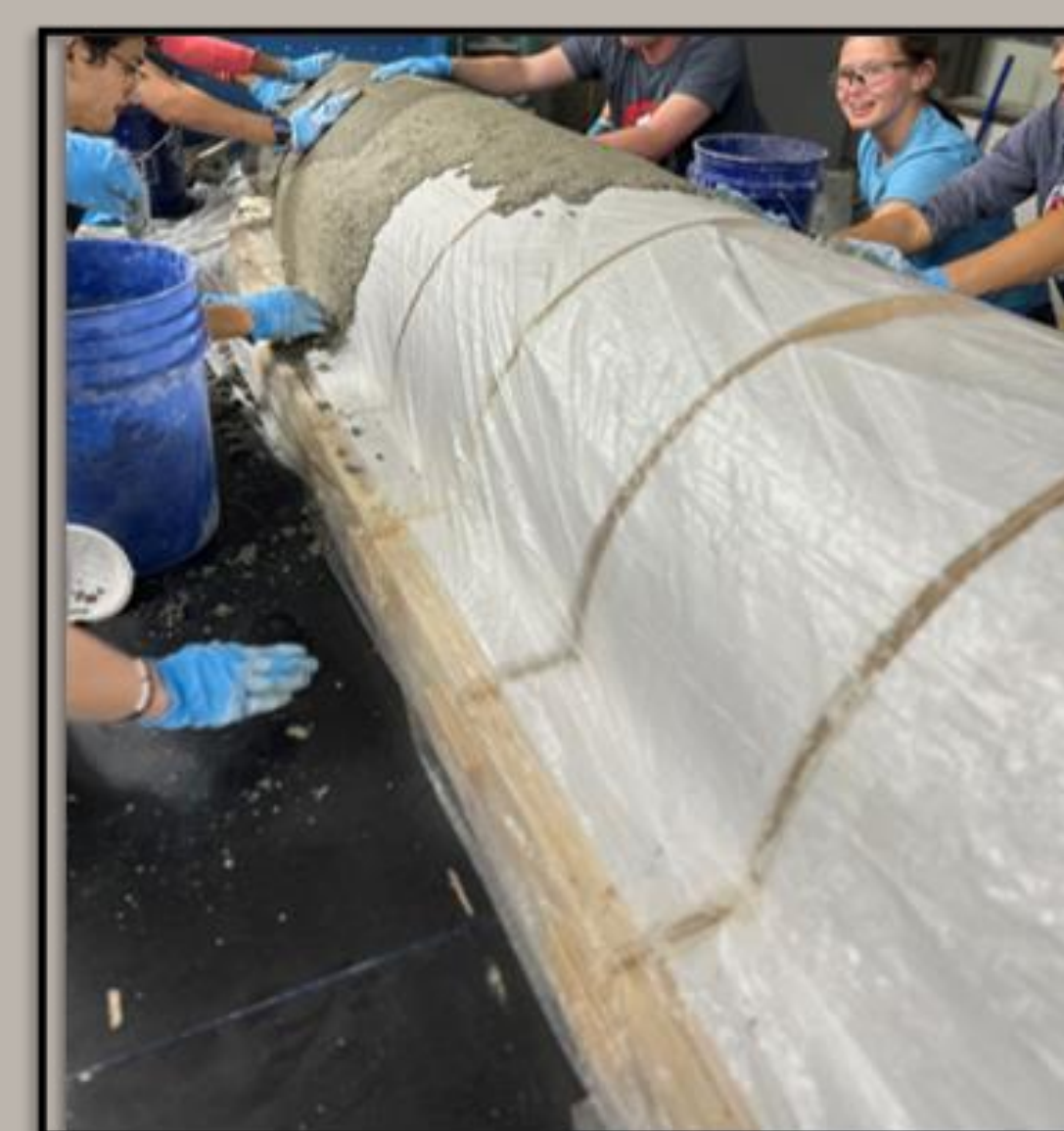
Cost Breakdown

Proposed Project Labor Costs				
Role	RLR	DEC	HRS	Extended
Principal Design Engineer	\$ 50.00	1.5	10	\$ 750.00
Design Manager	\$ 45.00	1.5	14	\$ 945.00
Project Construction Manager	\$ 40.00	1.5	25	\$ 1,500.00
Construction Superintendent	\$ 40.00	1.5	33	\$ 1,980.00
Project Design Engineer (P.E.)	\$ 35.00	1.5	0	\$ -
Quality Manager	\$ 35.00	1.5	16	\$ 840.00
Graduate Field Engineer (EIT)	\$ 25.00	1.5	13	\$ 487.50
Technician/Drafter	\$ 25.00	1.5	6	\$ 225.00
Laborer	\$ 25.00	1.5	200	\$ 7,500.00
Clerk/Office Admin	\$ 20.00	1.5	3	\$ 90.00
Outsourced Labor	\$ 200.00	1.5	0	\$ -
Labor Subtotal			320	\$ 14,317.50
Profit Multiplier (P)			18%	\$ 2,577.15
Proposed Direct Labor Total (DL)				\$ 16,894.65
DL Total				\$ 16,894.65
Expenses Total				\$ 9,265.95
Proposed Project Budget				\$ 26,160.60

Proposed Project Expenses		Cost
Materials / Other Cost		
Concrete Supplies		\$ 100.00
Safety Materials		\$ 200.00
Testing Equipment		\$ 100.00
Paddling Supplies		\$ 50.00
Mold (lump sum cost)		\$ 3,773.59
Display Costs		
Display Materials		\$ 500.00
Printing		\$ 200.00
Shipping / Travel Costs for Competition		
Shipping / Travel Costs for Competition		\$ 1,000.00
Accommodations		\$ 500.00
Outside Consultants		
	HRS	\$/HR
	10	200
		\$ 2,000.00
Expenses Subtotal		
\$ 8,423.59		
Markup (M)		
10%		
\$ 842.36		
Proposed Project Expenses (E)		\$ 9,265.95

Construction

The first picture shows the mold used to form the canoe. Second shows the pour of the concrete. Last one shows the sanding process



Team Photo



Team Members from left to right: Louis Smith, Daniel Tobon, Ama Afrane, Jorge Rodriguez, Adan Guerra

Key Roles and Collaboration

- Adan Guerra – CE Project Manager and Captain
- Louis Smith – Lead Designer
- Daniel Tobon – Scheduling lead
- Ama Afrane – Sponsorship Organizer
- Jorge Rodriguez – Structural Analysis

For this competition, we were grateful for the advisors and organizations that helped us carry out our goals and demonstrate our hard work.

Sponsorships



ASCE Symposium

