

## **2021 Concrete Canoe**

“Paving the Wave”

### **Team members:**

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### **Abstract**

The primary objective of the 2021 New Mexico Institute of Mining and Technology (NMT) concrete canoe team was to plan, design, and construct a concrete canoe in compliance with the rules and regulations provided by the 2021 American Society of Civil Engineers (ASCE) Concrete Canoe Competition (CCC). Due to the impacts of COVID-19, the construction of the concrete canoe was no longer required. Instead, the team was expected to develop a 2-year long concrete canoe project that would begin in September 2020 and end in March 2022. The theme that was selected was *Paving the Wave*. To complete the project, the team of seven members was divided into three smaller groups: Hull and Mix Design Team, Construction Team, and the Management Team. The Hull and Mix Design Team were responsible for researching, selecting, and proportioning materials in the mix, determining the geometric properties of the design and conducting the structural analysis on the canoe. The team’s hull design aimed to increase the displaced volume of water and reduce the drag. To do so, the team designed the canoe with a round-bottom and increased the dimensions of the previous year’s (*Coffin ’s*) design. The structural analysis calculations were performed to estimate the stress demands and to ensure that the design could adequately withstand the loads being applied. The Construction Team was responsible for the research and development of construction techniques for the fabrication of the canoe. The Management Team was responsible for coordinating the general production process of the concrete canoe to ensure that the entire team completed the primary objective. The whole team met twice every week to make note of any updates, verify completed tasks, and discuss any tasks that still needed to be completed.