INDUSTRIAL SOLUTIONS LABORATORY

Company Information

Company Name	*Thomas Built Buses*	**Date Submitted**	*4/7/2022*
Project Title	*Design for Improved Flooring System* **(TBB_FLOOR)**	**Planned Starting Semester**	*Fall 2022*

Senior Design Project Description

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills.

Discipline	Number	Discipline	Number
Mechanical	4	Electrical	
Computer		Systems	1

Company and Project Overview:

Thomas Car Works started out as a builder of streetcars. By the late 1930s, cars and buses were beginning to make streetcar transportation obsolete. Perley A. Thomas Car Works adapted, and in 1936 ceased production of streetcars and launched a new product: school buses. By the early 1960s the company had built a national reputation in the school bus business. In 1972, to better reflect its core business, the company changed its name to Thomas Built Buses. In 1977 Thomas introduced its first bus chassis and began producing the popular Saf-T-Liner® transit-style bus. Thomas expanded to manufacture a smaller school bus, the Minotour®, and in the 1980s entered the commercial transit market.

In 1998, Thomas Built Buses became a wholly-owned subsidiary of Freightliner LLC, a Daimler company. The strength of Freightliner LLC, now known as Daimler Trucks North America LLC, has helped Thomas Built Buses grow and adapt to changes in the transportation industry.

INDUSTRIAL SOLUTIONS LABORATORY

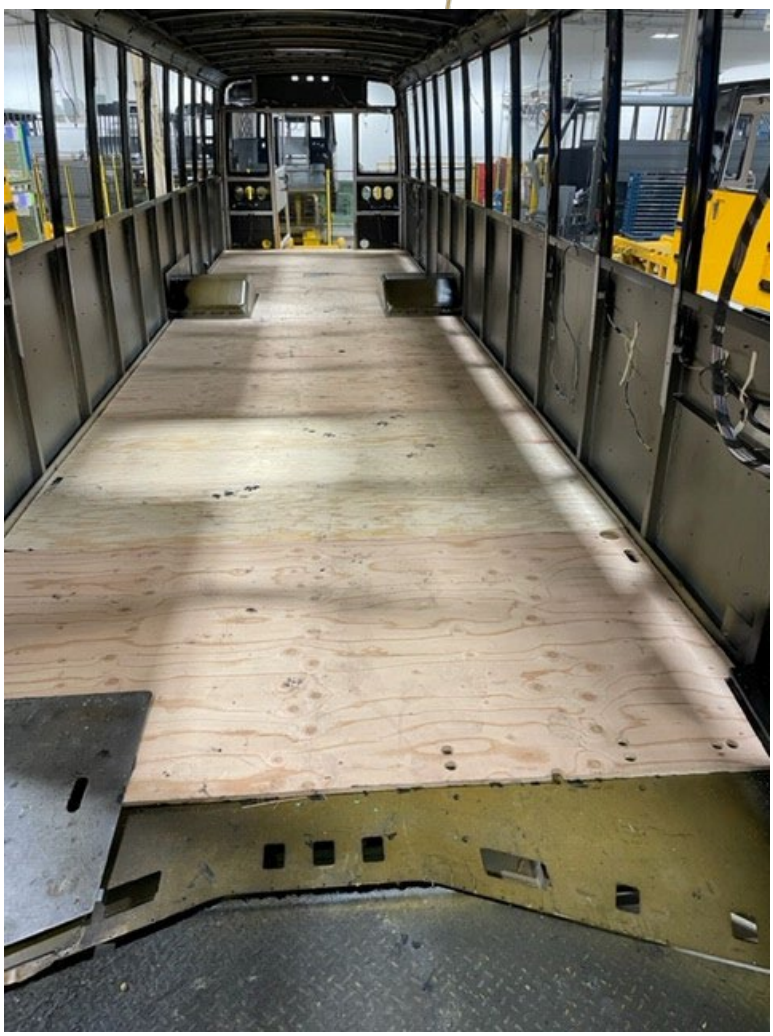
In 2011, Thomas Built Buses became the first school bus manufacturer to achieve Zero-Waste-to-Landfill operations, demonstrating its industry leadership as a driving force in facility waste management and environmental commitment. Since then, Thomas Built Buses also has developed the C2 Propane and C2 CNG, which allow customers to determine which fuel best fits their needs.

Today, Thomas Built is more than a leading North American manufacturer of school buses. Born of hard work, inspired to innovate, Thomas Built continues its forward-thinking legacy of excellence to create intelligent advancements that meet the needs of transportation directors, drivers, and most important, students. It's this commitment that has sustained Thomas Built Buses for the last 100 years. It's what will drive innovation for the next 100 years.

Project Requirements:

School bus flooring systems are primarily plywood flooring over steel framing (See photos below)

INDUSTRIAL SOLUTIONS LABORATORY



Plywood has been used due to its historical low cost and functional design. However, plywood prices are rising. The objective of this project is to find an alternative material that is less expensive but still maintains required properties such as resistance to water absorption and material rot while providing the necessary strength and insulation value. The project team will do a broad search for a replacement material and perform qualifying tests to prove performance improvement against all specifications developed by the team with TBB.

Expected Deliverables/Results:

- Exhaustive survey of plywood replacement material options
- Purchase cost and life cycle cost comparison for alternatives
- Performance testing design of experiments for specifications
- Recommendations for replacement material

Disposition of Deliverables at the End of the Project:

Students are graded based on their display and presentation of their team's work product. It is mandatory that they exhibit at the Expo, so if the work product was tested at the supporter's location, it must be returned to campus for the Expo. After the expo, the team and supporter should arrange the handover of the work product to the industry supporter. This handover must be concluded within 7 days of the Expo.

List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):

- SEGR 4141 for SEGR student