UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE of ENGINEERING
Industrial Solutions Laboratory

## ***Company Information***

| | | | |
|---|---|---|---|
| **Company Name** | *Thomas Built Buses* | **Date Submitted** | *3/24/2021* |
| **Project Title** | *Re-design of a Common Luggage Compartment for Buses* **(TBB_LUGGAGE)** | **Planned Starting Semester** | *Fall 2021* |

## ***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 | 1 |
| Computer | | Systems | |
| Other ( ) | | | |

**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 company had built a national reputation in the school bus business. In 1972, to reflect better 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.

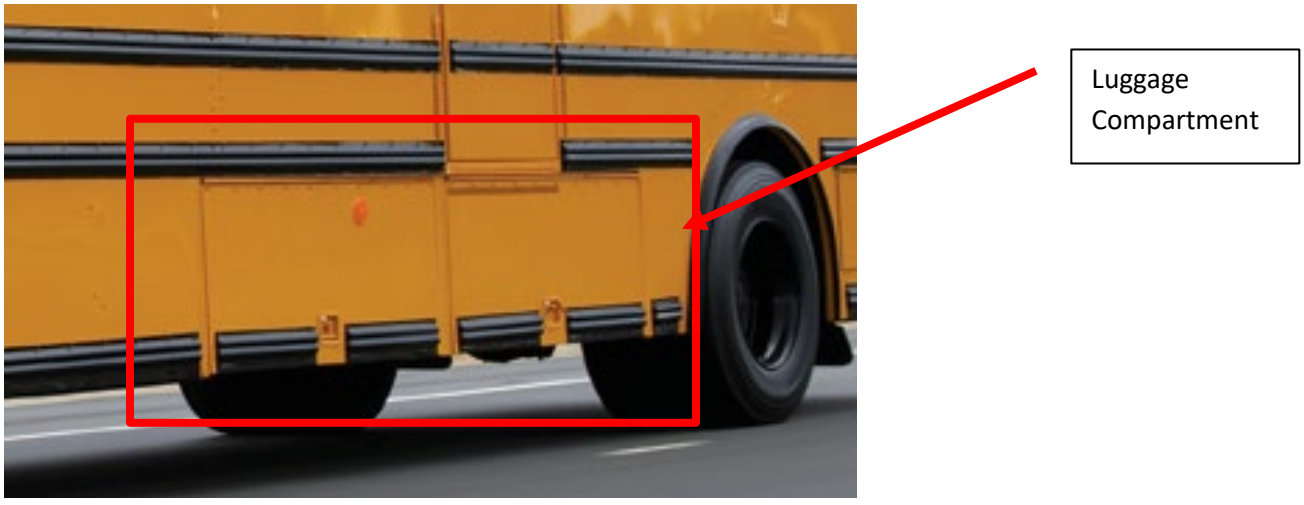
UNC CHARLOTTE
*The* WILLIAM STATES LEE COLLEGE *of* ENGINEERING
Industrial Solutions Laboratory


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

**Project Requirements:**

Thomas Built Buses has a full product line of bus products with varying characteristics such as length, passenger capacity, powertrain, etc. Currently, there are a variety of designs for luggage compartments in the various bus product lines. The goal if this project is to develop a standardize luggage compartment design that can be used for all of the models.




This design must be scalable to different sizes of buses using the same design baseline. The design must be

leak proof. From an electrical standpoint, lights and associated electrical harness' are required and the student team should consider other electrical enhancements that could be offered as an option considering things like power, connectivity, alarms, etc. Since this design is planned for production usage, the student team should consider how volume production requirements influences the design characteristics. Resulting design should be within the cost envelope provided by TBB and facilitate production assembly.

**Expected Deliverables/Results:**

- Scalable design for a luggage compartment that can be extended to the entire TBB product line.
- Design to a production cost target defined by TBB.
- Prototype build of an agreed number of configurations for testing as allowed by budget and time.
- Complete drawing package of all component parts and a bill of material
- Water spray testing plan developed and implemented on prototypes to prove leak proof design

**Disposition of Deliverables at the End of the Project:**

Hardware developed is the property of the Industry Supporter. The work product will be displayed at the last Expo then immediately handed over to the supporter unless arrangements have been made to deliver at a future date.

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

- Interest in material selection for mechanical design
- Interest in design for production and manufacturability