



**Company Information**

<b>Company Name</b>	<i>Freightliner Custom Chassis</i>	<b>Date Submitted</b>	<i>11/16/2021</i>
<b>Project Title</b>	<i>Design of an Improved Chassis Transfer Method (FCCC_TRANSFER)</i>	<b>Planned Starting Semester</b>	<i>Spring 2022</i>

**Senior Design Project Description**

**Personnel**

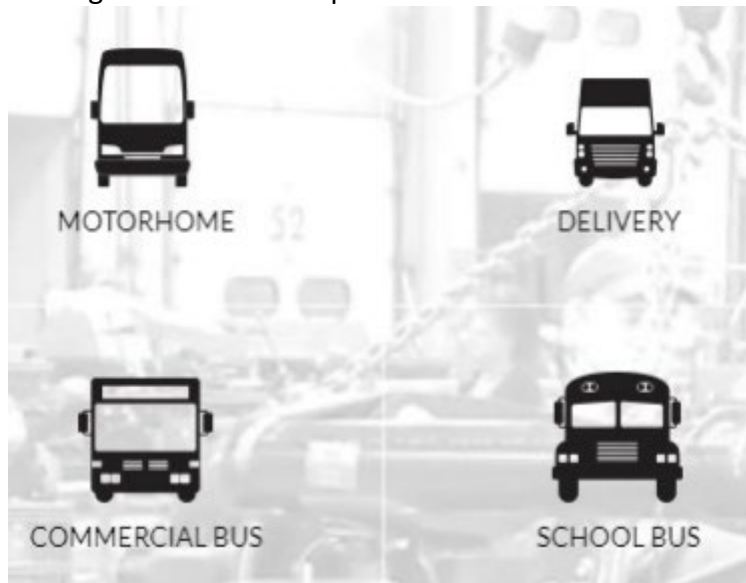
Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

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

<b>Discipline</b>	<b>Number</b>	<b>Discipline</b>	<b>Number</b>
Mechanical	4-5	Electrical	2
Computer		Systems	
Other ( )			

**Company and Project Overview:**

Established in 1995 and trusted by some of the most respected names in the RV, walk-in van, commercial bus and school bus industries, Freightliner Custom Chassis Corporation (FCCC) is a leading manufacturer of premium vehicle chassis.





As part of the Daimler family, Freightliner Custom Chassis shares the heritage and engineering excellence of Freightliner and Mercedes-Benz – leveraging expertise in heavy-duty durability and precision performance to infuse each of our chassis with the best of all worlds. Located in Gaffney, South Carolina, FCCC employs more than 650 employees in our manufacturing, customer support and retail facilities. As the world’s largest manufacturer of diesel walk-in van chassis, nearly two-thirds of all diesel walk-in van chassis sold today are made by FCCC.



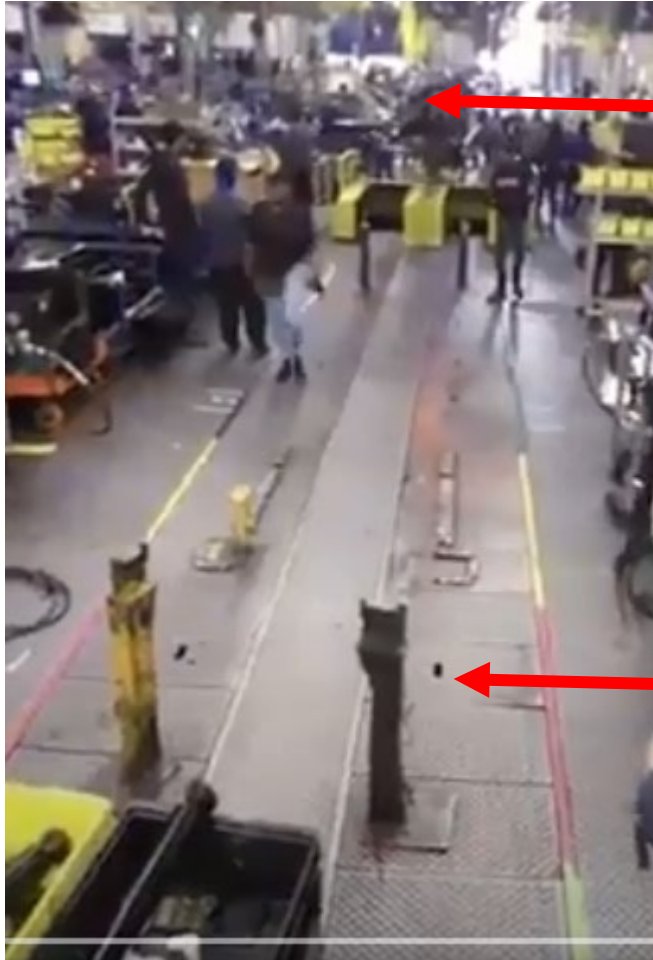
FCC holds more than half the market in Class A diesel motorhome chassis and more than a quarter of the market in conventional school bus chassis. Freightliner Custom Chassis is committed to delivering superior quality and a key component is operator training for assembly operations. This project will design an improved method for chassis transfer on the assembly line.

### **Project Requirements:**

Large trucks are built upon large, steel frame rails. At the beginning of the truck assembly line, frame rails are initially placed on work surfaces for assembly. After the final work surface assembly, the unit is picked up by a chain hoist and moved to moving assembly line. The moving assembly line is a series of pedestals that support the unit as it now progresses down the line at the set conveyor speed. When all assembly steps are completed the unit rolls off the conveyor line. The conveyor line is a loop – at the end of the line, the pedestals rotate below grade and move back to the front of the process. As the pedestals emerge from below grade, the next frame assembly is transferred off the table onto the conveyor pedestals via the chain hoist. See the following series of photos that further explain the flow:



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Frame being transferred  
off table to the pedestal

Pedestal

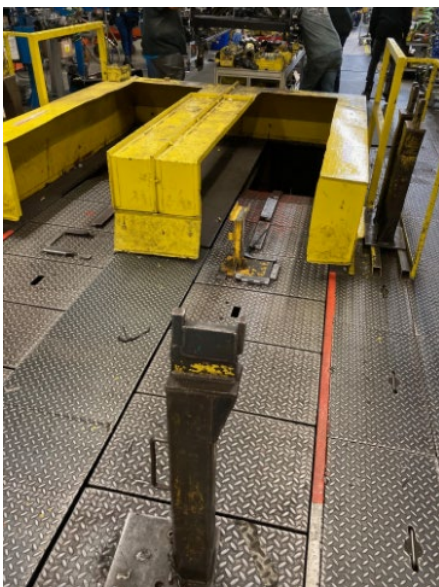


Frame assembly  
being carried by  
hoist to moving  
line



In the photo above, the frame is in the pedestal conveyor and the assemblers start conveyor line assembly.

In this photograph, you can see the below grade area where the pedestal conveyer emerges from:





During the hoist transfer process, no assembly work can be performed due to the instability of the chain hoist. This wastes over 30 seconds of production time. An alternate transfer method is desired that will transfer the frame assembly from the last table station to the pedestal conveyer such that the unit can allow safe assembly operations during the transfer. The transfer method must be very secure, so it is safe for the assemblers to work on it during movement.

**Expected Deliverables/Results:**

- Design that allows for secure transfer and simultaneous safe assembly operations.
- 3D Cad models for all components and assemblies
- 2D drawings of all components
- Prototype system or model to extent possible within project budget
- Operations and maintenance instructions

**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):**

- Ability to travel to Gaffney, SC as required.