

UNC Charlotte – Lee College of Engineering Senior Design Program

Senior Design Project Description

Company Name	<i>Freightliner Custom Chassis Corporation</i>	Date Submitted	07/10/2019
Project Title	<i>Design of Material Handling Fixtures and Equipment for Large Steel Frame Rails</i> FCCC_RAIL	Planned Starting Semester	Fall 2019

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	5	Electrical	
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.



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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. We also hold more than half the market in Class A diesel motorhome chassis and more than a quarter of the market in conventional school bus chassis. One of the key components of FCCC's products are steel frames. This project will take on a design challenge for the equipment that handles these steel frames.

Project Requirements:



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FCCC handles a wide variety of steel frames which are the building blocks of all of their vehicle chassis. These frames vary in length from short bus configurations to long frames for motorhomes. The gage, width and height is also variable depending on chassis configurations. These frames are made in a different location and shipped to the Gaffney, SC FCCC site.

When they arrive, they must be off-loaded and stored in large metal racks until they are moved into the production process. The objective of this project is to study the current fixtures/tools and equipment and design new handling equipment that would allow the material handling of the frames to be done in manner that improves safety, quality and efficiency.

Examples of Storage Areas:



Examples of Material Handling Equipment



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Expected Deliverables/Results:

- Prototype tools, fixtures and equipment that can be integrated into the existing processes to achieve the stated objective.
- These are expected to be several items that are designed for the project to accommodate different



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frames. All may not be able to be built due to limitations of the budget, so it is envisioned that the deliverables will be a complete design package (drawings, bills of material, operating instructions) for all items, with a subset (based on available budget and discussion with the Industry supporter) of the designs being built as proof of concept, tested and verified.

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 other arrangements are made for delivery in the next few days after Expo.

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

- Mechanical design skills to ensure equipment designed can safely perform.
- Creativity in developing ideas for tools/equipment for improving this situation.
- Ability to travel to Gaffney SC as needed for the project.