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The WILLIAM STATES LEE COLLEGE *of* ENGINEERING

Senior Design Project Description

Company Name	Fontaine Modification	**Date Submitted**	4/27/18
Project Title	Modular Truck Scaffolding (FONT_MOD)	**Planned Starting Semester**	Fall 2018

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project. 250 hours are expected per person. Complete the following table if this information is known, otherwise the Senior Design Committee will develop based on the project scope:

Discipline	Number	Discipline	Number
Mechanical	5	Electrical	
Computer		Systems	1
Other ( )			

Company and Project Overview:

For more than 30 years, Fontaine Modification has been the truck modification leader. We are North America's most comprehensive provider of post-production truck modification services for OEMs, dealers and fleets. Our in-depth technical and engineering expertise, coupled with our process quality and service capabilities, enables our customers to move their trucks into operation faster and with greater reliability.

We have exclusive ship-thru agreements with the leading OEMs to maximize end-user convenience and minimize delivery costs. These ship-thru arrangements expedite final delivery time from orders anywhere in North or Central America and facilitate modification efforts with minimal financial impact. We provide engineering solutions to meet customers' unique requirements and specific applications, all while adhering to federal safety standards. Trucks can be modified for a variety of purposes, Some examples:

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When Fontaine Modification works on trucks, it is often important to be able to be safely above the ground in order to gain access to the cab sides, roof, air fairings and engine bay. The trucks that we receive come from a variety of OEMs, have different wheel and suspension packages and cab designs and heights. We may need to perform work, such as applying a decal to the top air faring of a sleeper cab, to marking and cutting the roof off an automotive transport truck. Each task we perform has certain desired heights and work station size for the technician and tool and materials needed in order to complete the task. Historically, we have had custom scaffolding systems designed and fabricated for each need, leading to a lack of consistency between designs and difficulty repurposing the scaffolding if production needs change. Additional task examples where scaffolding is needed:

- Painting cabs
- Performing body work to cabs prior to paint
- Installing antennas and communications equipment to the back wall and roof
- Installing decals to the sides and fairing of cabs
- Gaining access to the engine bay to install and route components including valves and air lines

Marking, cutting and rebuilding roof structure of car hauling trucks

Project Requirements:

Design a modular scaffolding system to replace the custom scaffolding systems that have been used in the past.

Modular “building-block” system that can be adapted to provide access to all major OEM cabs, regardless of suspension package or cab type.

The system will need to be easily adaptable, reconfigurable and able to accommodate varying tool and material storage depending on the job needs.

Portable enough to be able to be moved and quickly reconstructed at other areas of the shops.

Meet all OSHA safety standards for scaffolding and working at height.

Use common components for all scaffolding so that pieces can be shared among locations as needed.

Modular components should provide facility for accessories that would attach to the system. Accessories would be for part holding, tooling, etc. that needs to be readily available for the operators.

Incorporate Lean principles to allow for efficient completion of truck modification tasks.

Expected Deliverables/Results:

- Modular design – common components and assemblies
- Easy to move and adapt to new tasks
- OSHA compatible
- Able to be utilized for all tasks currently using customer scaffolding, and adaptable for future needs, including technician positioning and work space, tool storage, material storage
- Build a demonstration prototype or subset as able within project budget to demonstrate concept

Disposition of Deliverables at the End of the Project:

Handover following Expo is acceptable

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

- Fontaine has multiple sites around the US, two close by sites (Charlotte and Dublin, Virginia) represent a majority of the types of work that would be done. Field trips to the sites by the entire team will be required.