

Engineering Design & Communications (EGR 101L) - Fall 2019

Client: Skanska USA Building

Project Name: Elevating Scissor Lift Safety - Creating an Injury-Free Environment in Construction

### **Problem**

Construction workers are at a higher risk of injury or death than those in many other occupations. Accidents on the jobsite related to the use of scissor lifts for accessing overhead spaces are a growing concern in the building industry. In reality, workers often ignore strict OSHA safety guidelines and resort to unsafe practices, such as standing on the mid-rails, planks, buckets or makeshift stools, or using extension ladders.

Currently, the major scissor lift manufacturers, Genie and JLG, offer extension decks that attach to their standard scissor lift units. A company called [Man Lift Manufacturing](#) (MLM) has also designed a scissor lift platform attachment called the “[SHU](#)” for increased vertical access. The main issue is that it doesn’t provide sufficient height more than 2 ft and is too complicated to install.

### **Solution**

As a leader in safety and innovation culture, Skanska is always looking for new ideas to improve worker safety, job satisfaction, comfort and productivity. We want to challenge the Duke engineering students in the FYD program to design a device to help workers access equipment and installations in narrow spaces above ceiling obstructions that would provide an additional **48” to 84”** of vertical working height **through an approx. 24” clearance between pipes.**

We believe there is an exciting opportunity for a student team to work on solving a real-world design problem in the construction industry, in response to customer and market needs. The

timing of this initiative is highlighted by the ongoing construction of new Pratt engineering building and the proximity of the jobsite to the “Pod” classroom.

### **Requirements**

The below criteria and features apply to this project:

- Assume a 30” wide scissor lift as the basis of design.
- No modifications of existing scissor lift equipment is permitted – the new device should be an attachment.
- Quick and simple installation.
- Must provide independent fall protection anchorage without any additional tie-off points to surrounding structures.

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