Enhancing Worker Safety during Off-Site Construction of Energy-efficient, Low-carbon Exterior Envelope

**INTRODUCTION**

The construction industry is not doing enough to embrace off-site modular construction. It is a missed opportunity for optimized energy efficiency because prefabricated exterior wall envelopes are lower in cost and faster and easier to install.² Factory off-site construction offers improved safety for construction workers because work is done in a controlled environment, but lack of intent, understanding, and data is also a missed opportunity for enhancing worker safety.³ My research looks specifically at the prefabricated wall exterior envelope in the context of safety.

**Research Question:**

Off-site factories build with ease of energy efficiency and lower carbon emissions, but is the process safer?

**Motivation:** Encourage prefabricated wall envelope in factory vs. site construction

**Energy efficiency**

**Lowered carbon emissions**

**Construction worker safety**

**BACKGROUND**

Prefabricated wall exterior envelope

**Exterior Insulation and Finish System (EIFS)**

1. Metal framing
2. Substrate
3. Wall proofing
4. Adhesive
5. Foam insulation
6. Mesh
7. Base coat
8. Primer
9. Finished texture
10. Water proofing

**REFERENCES**

5. OSHA. "Occupational Safety and Health Administration.” 2021.
9. OSHA. "Occupational Safety and Health Administration.” 2021.

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