Environment, Health & Safety

LESSONS LEARNED

Incident ID	AU.OSHR2T.POTENTIAL.141221.00170964 AU.OSHR2T.POTENTIAL.230122.00171702	Incident Date	15/12/21 and 24/01/22
Incident Circumstance	Fall of Materials	Workplace Activity	Formwork – Climbing structures
Operation	One Sydney Harbour	Issued By	Phill Smith

Description of the Incidents

Recent incidents relating to the handling and placement of reinforcement bars within Jumpform and wall climbing systems has imposed the need to reinforce and highlight the requirements for Fall of Materials controls for Jumpforms and travelling climbing systems.

Incident 1

A steel fixer lost control of a 32mm x 4m reinforcement bar as it was being passed from the top jumpform platform. As the bar fell, it impacted a secondary plywood strip fixed onto the plywood piece to close the gap between the formwork wall climbing system and the edge of the wall. As the bar fell, it impacted the ply infill, it's fixings pulled out and the bar fell to the level below along the face of the wall. No injuries were sustained.

Incident 2

A 16mm reinforcement bar was being handled as part of a bundle, it was received by a steel fixer below. As the bars were placed on the lowest jumpform platform, a bar fell through a hole in the platform that had been filled with expandable foam void filler. The bar continued to fall, passing through the lobby deck below. No injuries were sustained.

Key Learnings

1. Jumpform and Wall Climbing Systems Design Considerations

- Jumpform and wall climbing system design documentation should include the type of material and the fixing methodology used to address any gaps in the platforms and the interface between the platforms and the structure.
- The design of the platforms and the required standard of protection must consider the location and additional overhead protection requirements (i.e.10kpa for internal platforms within lift shafts, with activities taking place below).

2. Jumpform Methodology Reviews

- Methodology reviews are to include the type of protection measures proposed to close gaps in the platforms or the gaps between the platform and the concrete structure.
- The methodology review must include controls and methods to address Fall of Material risk including (not limited to) how and where materials are passed from and to, the method (and material) of closing gaps, the type of material specified for the trailing platforms. All gaps whether vertical or horizontal must be covered as per the design/methodology review process prior to any works being undertaken on the decks below.

3. Reinforcement Handling

- Before passing reinforcement through various levels of the jumpform platform, an inspection of the condition of the platforms and the gap prevention controls must be conducted before reinforcement handling begins. **(Hold Point)**
- Where multiple bars are proposed to be passed vertically, a risk assessment must be completed to determine the number of bars to be handled based on diameter and length, to prevent uncontrolled release of the bars.

4. Jumpform or Wall Climbing Systems Gap Management

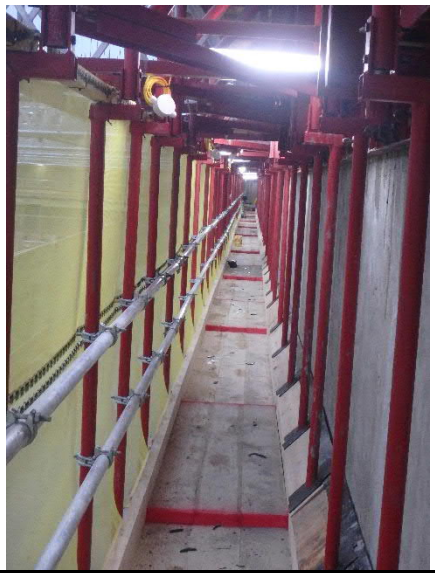
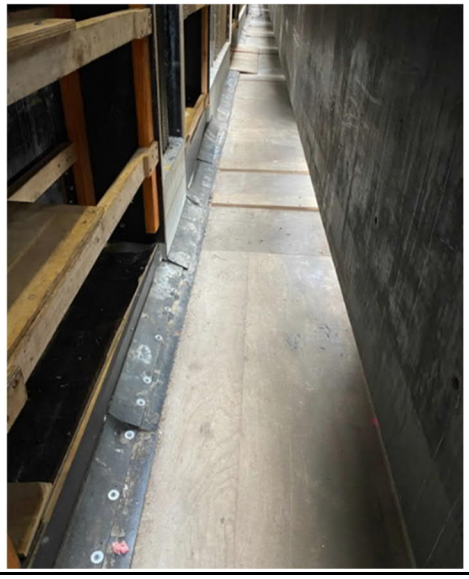
- Void filler or silicone **must not** be used to repair damage or holes to platforms or ply flaps and can only be used to close gaps to prevent dust falling (i.e., less than 5mm).
- Where void filler or silicone is proposed to be used to close gaps less than 5mm, a prior inspection must be completed to determine if there are any larger holes, damage, or gaps greater than 5mm (due to the deviation in the face of the concrete core or wall.
- The materials used for gap management should be angled, hinged, and secured from inadvertent dislodging. This material must be nominated at the design stage. This will be additional to the typical rubber protection used.

5. Operational Monitoring

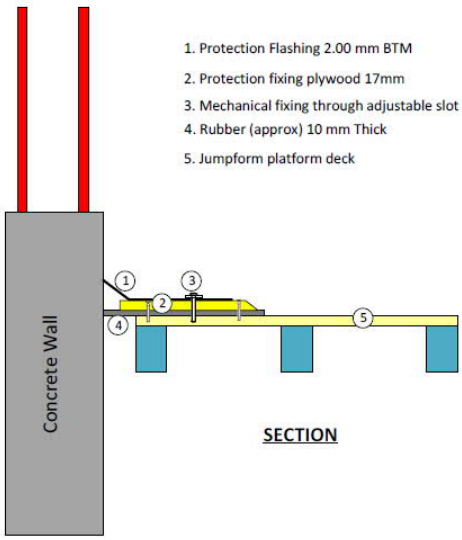
- The condition of the platforms must be inspected during pre-and post-climb inspections, routine inspections and any inspections undertaken by 3rd party engineers to identify any damage or dilapidation that could affect the design intent of the platform material.

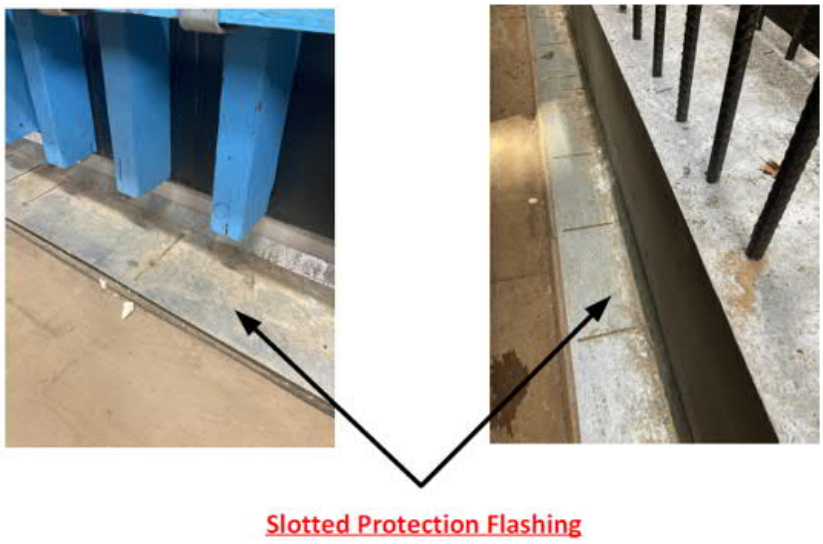
- Inspection of the Jump Form and Wall Climbing Systems, including internal working platforms and decks must be carried out at maximum monthly intervals and coincide with any change(s) in wall thickness and required management considerations.
- Regular Inspections of works areas is essential as materials used in construction of the Jumpform, or other climbing structures (slip form or wall climbing systems can become damaged, worn or weathered over time.
- It is important that the workers involved, their EHS Committee, Engineers and Supervisors all undertake inspections and reviews of the Jumpform during its operation to ensure there is no risk of injury.

More detailed guidance, and implementation requirements can be found in the Lendlease Formwork Good Building Guide and the Workplace Delivery Code.


Examples of Jump Form Gap Management Controls





GMR Reference

4.2 Fall of Material / Object
4.9 Failure of Temporary or Permanent Structure

Key Lendlease and Government Documents along with operation manuals should be consulted sourced in how to best plan to for safety, some of these documents are:

- Lendlease Global Minimum Requirements
- Lendlease Workplace Delivery Code
- Lendlease Good Building Formwork Guide
- Safework Australia Guide to Slip, Jump and Travelling Formwork Systems
- WorkSafe, Victoria- Compliance Code- Prevention of falls in General Construction
- WorkSafe Victoria Guidance Note-Jump forms and slip forms - Developing a safe system of work.