

Reinforcing Bar – Designing to Reduce Hazards

The Problem / Challenge

A project design team recognised that the installation of cast in-situ concrete could lead to exposed projecting ends of steel reinforcement bars during construction. In particular, the safeguarding of starter bars in vertical elements could be difficult to manage.

The Risks

They were aware of a serious accident involving impalement on another site and concerned about the risk of lacerations from the exposed cut rebar ends.

The Solution

There are number of options available in order to reduce the risks:

1. The use of bent 'bob bars'

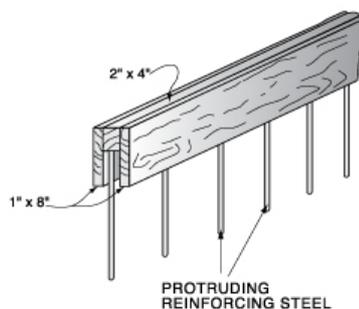
- This was an effective solution in that it did not need management control or supervision on site to implement it.

However

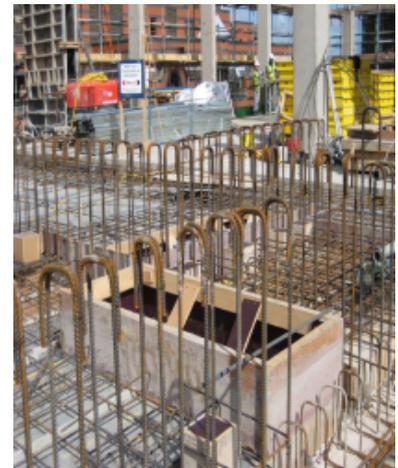
- This was not always appropriate as in certain locations it had the potential to cause rebar congestion and compromise concrete quality, especially in columns.
 - To be successful it needed to be adopted by the designer undertaking the rebar detailing
2. Building inverted timber formwork boxes.
- The effectiveness of this was dependant on the contractor and required active management intervention. The boxes could be re-used for standard sections.
3. Providing plastic 'mushroom' caps.
- This was a less effective measure dependent on the contractor maintaining control.
 - The caps were known to be prone to falling off and needed regular replacement. Their effectiveness relied upon the contractor keeping the caps up with the pace of the work.



Rebar End Caps



Inverted Timber Formwork



Bent 'Bob bars'

The Benefits

Effective control of a known but often overlooked hazard during the construction phase was achieved using a combination of control measures. Priority was given to those measures that most effectively dealt with the hazard. Where it was practicable, permanent protection was put in place during construction (bob bars), reducing the likelihood of cuts and impalement.

Key Points

- Effective communication was required between the design team and the contractor.
- The range of control measures was discussed with the contractor.
- There were cost implications which required contractual agreement