Case study:

Morrisroe: Drill-Free Environments

Summary

We established that on a particular project of ours called the Greenwich Peninsula, a building that consisted of 25 floors, required approximately 3,500 anchors for edge protection.
For each anchor, a 70mm deep, 20mm diameter hole would have to be drilled. This would create 0.08m3 of concrete dust equating to 192kg. Taking an average of 50% silica dust, this would mean operatives would come into contact with approximately 96kg of silica dust. In addition to this, the worker would be exposed to vibration from the tool and on several occasions, would have to drill a hole that clashes with the reinforcement in the slab and a new drill would have to be created, therefore increasing exposure even further.

On our projects, we identified there was the potential to eliminate any need to even expose ourselves to these risks by finding a solution to pre-install these anchors.

Problem statement

On reinforced concrete frames, we find that there is a lot of drilling into concrete slabs to install anchors for edge protection systems. By carrying out this drilling, there is the exposure to silica dust which puts operatives at risk of silicosis as well as hand-arm vibration from using power tools.
We have control measures to reduce exposure to below harmful amounts but felt more was needed to be done to eliminate the risks altogether.

Solution / what you did

We carried out some research of precast anchors which was completed by our buying department and reviewed by our technical department. Once it was calculated that these anchors were suitable and sufficient, we trialled them on site.
We marked up a plan of the site where edge protection needed to be installed and detailed the positions they needed to be to allow the edge protection we were using to be installed correctly.

We briefed the team installing them on their use and ensured they were installed at the correct centres apart and distance from the slab edge to meet the manufacturers requirements.

Once the concrete was cast, we installed the edge protection successfully without the need to drill into the concrete.

For many of our buildings, there is a lot of repetition of the footprint as each floor progresses, so the same plan can be followed up the building.

After a successful trial, we continued to roll this out to the rest of the sites in the company.

Additional pre-planning is required, particularly where there were other elements installed on the edges of buildings, i.e. halfens, safety fans and falsework which could clash with the anchors and edge protection. To prevent clashes with these elements, it was critical that the drawings were marked up by engineers on site to strategically position the anchors so that they were effective.

Key challenges faced

The idea and implementation were embraced by the site teams. However, there is a lot of pre-planning work involved which can take time but it is ultimately more beneficial as the hazards workers were exposed to are now eliminated.

In addition, if the building shape or size change on levels as the building advances, new plans need to be developed for each change to ensure the edge protection can be installed to manufacturers guidance and avoid edge clashes.

Outcomes and benefits

Exposure to dust and vibration for installation of edge protection is eliminated which is the main benefit.

The actual installation of anchors on site is also quicker and easier than when traditionally installing

them which has improved production time and cost on site.

Measures of success

- Visibly dust levels improved
- Feedback from the workforce was positive.
- The use of the precast anchors has been very successful with evidence of use on site.

Lessons learnt

All our sites have been shown the precast anchors and all of them use them where necessary. Anchors for edge protection have been embraced by all site teams and are used as a priority.

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