

CONSTRUCTION INTEGRITY ALERT #2 – AVOIDING PITFALLS OF SUBSTANDARD REBAR FIXING WORKS

INTRODUCTION

Fixing of reinforcement bars (rebars) in reinforced concrete works is considered “hidden works” in construction, as the rebars are embedded in concrete and cannot be visually inspected or easily checked by site supervisory staff after concreting. Currently, site supervisory staff heavily rely on visual inspections to verify compliance of these works with design requirements (e.g. the size and quantity of materials, workmanship). If the integrity of site supervisory staff is compromised, substandard works may occur, putting building quality and public safety at stake.

POTENTIAL INTEGRITY RISKS

- 🔥 Unscrupulous workers deliberately carry out rebar fixing works that fall short of the required standards (e.g. size, quantity, workmanship) for saving cost (e.g. reducing the number of rebars) or avoiding delay (e.g. skipping certain steps in the fixing processes).
- 🔥 Devious site supervisory staff accept bribes as rewards for conniving at the above malpractice.

The malpractice will also bring disrepute to the project clients and arouse great public interest from the building safety perspective when it has come to light. Project clients will need to bear substantial costs and time implications for rectification (e.g. carry out structural strengthening works) arising from the substandard rebar fixing works.

RECOMMENDED PREVENTIVE MEASURES

To address the risks, project teams of construction projects with rebar fixing works are recommended to adopt the following good practices –

- Require site supervisory staff to, including but not limited to –
 - Inspect rebars layer by layer as far as practicable for critical structural elements (e.g. transfer plate), having regard to the accessibility and visibility of items under inspection (e.g. lap length of rebars), etc.;
 - Set “hold points” for installation of each layer of rebars and disallow subsequent installation of rebars save for satisfactory inspection result for the preceding one; and
 - Maintain essential inspection records with necessary information recorded (e.g. inspection date/time, inspecting officer(s), photos, locations, inspected items) to enhance accountability and traceability.
- Install CCTV at strategic locations, store footage for a certain period, and use analytics to detect suspicious activities (e.g. moving untested rebars to bending yards for cutting).
- Utilise technology to assist in inspections and detection of anomalies, e.g. –
 - Body worn cameras – capture photos/videos when carrying out inspections to detect substandard works;
 - Artificial Intelligence technology – detect deviations between design requirements and actual installation; and
 - Digital Works Supervision System – keep quality and inspection records.
- Detect anomalies by on-site verification of as-built quantities of rebars, for example, by non-destructive test (e.g. concrete scanner) and/or destructive test (e.g. open-up inspection) and audits to check compliance with the inspection system.

The ICAC has developed Integrity Risk Management (IRM) plans on individual work activities (e.g. general site supervision) to assist consultants and contractors in identifying risk prone activities and devising detailed control measures. The IRM plans are available in the Corruption Prevention Advisory Service (CPAS) portal –

The ICAC is working on the IRM plan on rebar fixing. Subscribers of CPAS portal and Construction Industry Integrity Charter 2.0 will receive email alert once the plan is ready. The plan will also be uploaded to the CPAS portal.



FURTHER ADVICE

For enquiry, please contact the CPAS (hotline: 2526 6363; email: cpas@cpd.icac.org.hk), or visit its designated website at <https://cpas.icac.hk> for on-line corruption prevention resources and subscription. You are also welcome to subscribe our Construction Industry Integrity Charter 2.0 for more resources.

