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Navigating Construction's Central Risk: Defect

MODERN IDEAS, PRACTICES AND TECHNOLOGIES CAN HELP REDUCE RISK

Construction is a risky business. Multiple stakeholders, fragmented communication, variations in risk based on location of project, massive reliance on supply chain efficiency, and many other attributes contribute to the construction industry's leading position when it comes to risk. There are not many other industries with so many unknown unknowns, but of the many risks within the construction industry, the most prevalent is defect.

Defect comes in three primary categories: **design defect, material or equipment defect, and workmanship defect.** The defect peril is magnified as different stakeholders are often responsible for each of the three categories.

Design and engineering firms are responsible to remove or reduce the risk of design defect; supply chain manufacturers are responsible to remove or reduce the risk of material or equipment defect; and the various construction contractors responsible for the installation of the materials and equipment are doing their best to remove or reduce workmanship defect.

Evidence that defect risk is top tier within the construction sector is easy enough to find. Just turn to the industry which houses the largest repository of construction risk data, the insurance industry.

In a recent report from Allianz, it was indicated that, from a dollars paid out standpoint, 20% of all engineering and construction claims were the result of defective product or workmanship. That is the second-biggest risk after fires and explosions. Further, the report indicated that these risks accounted for 22% of all claims from a frequency of claim standpoint, making it the highest frequency risk in their data.

Bottomline, most stakeholders within the construction sector would agree we could dramatically improve the productivity and risk profile of the construction industry if we can find ways to remove or reduce construction defect risk.

The primary way to remove or reduce the defect risk issue, and the costs associated with it, is to put practices and tools in place that provide advanced warning of defect issues. Below is a simplistic way of evidencing how advanced or early warning can dramatically improve mitigation deltas when it comes to defect costs.

Practices and tools to reduce the impact of defect

Completed Design: The more complete the design and specification at the time of costing out the project, the greater the chance you discover design defects and minimize workmanship defects.

Construction Contractor Deep Review of Design:

All design and specification documents should be carefully reviewed by the contractors involved in the project to minimize defect risk.

Manufacturer Site Visits: These are especially important for critical path materials and equipment. A visit to the manufacturer's site can help ensure materials and equipment used in the project will meet the required specifications of design and lack defect.

Verification, Inspection and Storage: When delivered to the site, ensure materials and equipment are in line with design and specification, are inspected for defect, and are stored properly to minimize risk of damage.

Prequalification of Subcontractors and Suppliers:

Those that manufacture and install materials and equipment for the project should be vetted for financial, operational and safety practices. Quality of the subcontractor and supplier is vital to minimizing workmanship and material defects.

Utilize Mock-ups: Ensure mock-ups are used to validate that the material, system design and workmanship techniques are effective and free of defect, especially for critical components to the project, like curtain walls. Better to find defect issues in the mock-up phase than near the end of the job where rip, tear and replace cost will be significant.

Effective Communication Upon Defect Discovery:

Once defect of any type is discovered, ensure prompt and effective communication to all relevant stakeholders so that a prompt and effective response can be generated to minimize its impact.

Technology: Several technologies are proving highly effective at identifying and even mitigating defects early. The IoT backbone and associated IoT devices, along with reality capture – or 3D digital scans of the as-built – are having very strong success mitigating defect events. In addition, there are new technologies coming to market to vet the design and specification for error.

Choosing the Right Delivery Model: Delivery models that involve all stakeholders very early in the pre-construction and planning phase of the project will have improved ability to identify defect issues early. Further, procurement models that encourage improved collaboration and communication amongst key stakeholders will ensure early identification of issues and speedier resolution.

Using Off-Site Methodologies: The use of off-site (or manufactured) construction continues to grow. These methods offer a more controlled environment where contractors can more easily manufacture and install the various component parts of the construction project. Such control in construction also reduces risk of defect.

Reducing construction defect risk is not a one-time initiative but an ongoing commitment that requires alignment, accountability, and adoption of modern tools and processes across every stage of a project. By integrating early collaboration, rigorous verification, and emerging technologies, industry stakeholders can transform how risk is managed, from reacting to defects after they occur to proactively preventing them.

As the construction sector continues to evolve, those who prioritize quality assurance and innovation will not only minimize losses but also strengthen client trust, project outcomes, and the industry's overall reputation for excellence.

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