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INNOVATION IN ACTION

The Hidden Costs of Rework: Protect Profit & Prevent Risk

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Have you ever been in a monthly progress meeting with project leaders only to discover they are over budget, behind schedule, or both, and no one is sure why? Or did your project team identify rework as the cause, but because an insurable event did not occur, they're now left to figure it out?

Did you track this uninsurable loss? Was a Five Whys or lessons learned analysis performed? Or is your organization destined to repeat the cycle?

This article examines the implications of rework, drawing insights from industry publications and expert analyses, and explores its correlation with safety. It also includes lessons from specific safety programs to help improve day-to-day quality on the jobsite.

UNDERSTANDING REWORK

Rework in commercial construction remains a persistent and costly challenge in the U.S. construction industry. A 2024 survey reported that 70% of survey respondents reported an increase in subcontractor distress or defaults compared to 2023. Quality of work was one of the top three reasons for subcontractor default.[1]

Construction financial professionals who not only understand the potential cost impacts of rework, but can also help their organization identify, track, and learn from rework are better situated to identify and reduce variances in accurate project cost assessments and conduct financial risk mitigation.

While rework can have varying definitions, for the purposes of this article, rework is defined as activities in the field that must be done more than once or corrected due to craftsmanship that fails to meet contractual requirements, specifications, design, safety, or quality standards and their associated direct and indirect costs.

There has been recent significant research into rework, its financial costs, and its leading drivers. The largest uninsurable loss on a commercial construction project is arguably the financial costs and impacts of rework, which have been found to vary between 0.05-20% of contract value.[2]

Rework is more than just the financial costs of redoing the work; it also impacts project schedule, which could lead to liquidated damage claims from the owner and delay claims for subcontractors.

There is also a correlation between rework and worker injury rates, further increasing costs.

Construction companies looking to improve their quality control programs should aspire to meet project specifications and reduce construction defect claims.

These quality improvements and rework prevention efforts must include the frontline skilled craft workers who are responsible for installing the work, much like effective safety programs.

This promotes a build-it-right-the-first-time culture that is critical to the project's success.

LABOR SHORTAGES & SKILLS GAPS

The 2008 financial crisis led to a decline in construction labor and the exodus of experienced workers the industry is still contending with today.[3] The construction sector continues to grapple with labor shortages, with the majority of contractors reporting difficulties in filling open positions.

The Associated General Contractors of America's *2024 Construction Outlook National Survey* indicated that some of the leading concerns for contractors include the insufficient supply of workers or subcontractors (56%) and worker quality (56%). In fact, 81% of surveyed contractors view inexperienced skilled labor or the workforce shortage as a challenge regarding worker safety and health.[4]

As of 2024, the U.S. Bureau of Labor Statistics reported that 22% of workers in the construction industry are 55 and older, while only 10% of the construction workforce are ages 16 to 24.[5]

Apprenticeships

On average, it takes 4-6 years to complete a construction apprenticeship, with completion rates as low as 53% in some regions, further compounding labor shortages.[6]

Apprentices and employees new to construction learn mostly on the job; however, inadequate teaching of their trade by journey-level skilled craftworkers can cause apprentices to leave the industry.[7]

Training

Training workers properly can reduce the likelihood of errors, which results in less rework, saving money, and improving budget performance.[8]

The National Center for Construction Education and Research (NCCER) is an advocate for construction education and training programs, supported by research. For example, inadequate technical knowledge and lack of training and experience are a significant causal contributors to rework costs.[9]

Additionally, loss of experienced workers results in a skills gap, increasing the likelihood of accidents, errors, unacceptable quality work, and consequently, rework.

To deliver quality built projects without increasing worker injuries, construction owners and contractors will need to work together to retain the institutional knowledge of departing skilled craftworkers.

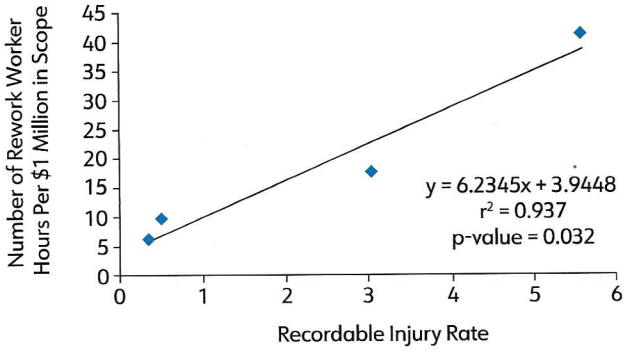
THE CORRELATION BETWEEN REWORK & CRAFT INJURIES

In commercial construction, it's a common practice for GCs to prequalify subcontractors. This prequalification process, often driven by financial risk management leaders, is an evaluation of a subcontractor's ability to perform based on scope and previous completion of like-valued projects.

The prequalification process may also require the submittal and review of a *contractor's experience modification* rating and participation in safety, health, environmental, and quality assurance and control programs.

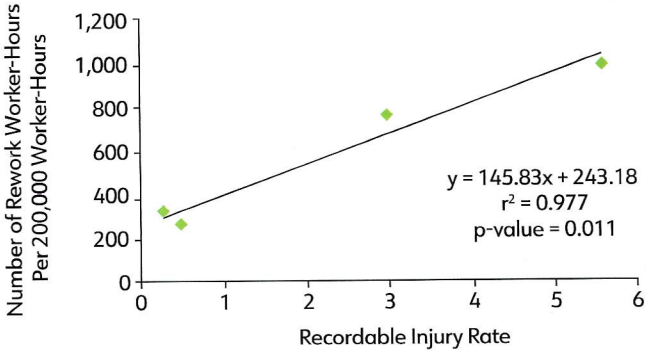
The experience modification rating — a standard financial marker of a contractor's past safety and health performance — isn't a strong future performance indicator when used alone.

Exhibit 1: INJ1 vs. Q5



Recordable injury rate per 200,000 worker-hours (INJ1) vs. the number of worker-hours related to rework per $1 million of scope of project completed (Q5).

Exhibit 2: INJ1 vs. Q6



Recordable injury rate per 200,000 worker-hours (INJ1) vs. the number of worker-hours related to rework per 200,000 worker-hours (Q6).

Safety and health programs are generally designed to address the active installation of work rather than the removal and correction of errors. Therefore, it's no surprise that rework can have a direct effect on construction safety and worker injury rates.

Researchers collected data from 32 projects ranging in value from $50,000 to $300 million, conducting an empirical inquiry into the relationship between safety and quality.

The findings showed that there are two statistically significant relationships, or direct correlations, between rework and Occupational Safety and Health Administration (OSHA) recordable injury rates and the first aid rate and number of defects (Exhibits 1 and 2).[10]

With the direct correlation established in these exhibits, it is reasonable for the construction industry to expect rework and injury rates to move together.

Travelers Insurance's *2025 Injury Impact Report,* which analyzed workers' comp claims filed over the past decade, reported that first-year employees accounted for "nearly half of all injury claims and 52% of the industry's claim costs."[11]

USING THE SAFETY MODEL TO UNDERSTAND & TRACK REWORK COSTS

Today, contractors are beginning to include inquiries about rework during incident investigations as a safety-driven step to identify root causes of accidents.

Most construction companies in the U.S. operate as for-profit organizations, with losses significantly affecting the bottom line.

To fully understand the financial impact of accidents, construction financial professionals should get reports that identify both the direct and indirect costs of accidents. This should be tracked and incorporated into management cost reporting processes.

By providing a fuller picture of incidents, safety professionals and company leaders can make better, more informed decisions about where to focus prevention efforts and spend limited resources.

This incident/injury cost-tracking worksheet can be used not only to report losses, but also to educate personnel ranging from company owners to project supervisors on the financial impacts of injury accidents.[12]

This sheet has been modified to allow contractors to identify and track costs of rework by project, scope of work, or event so financial leaders can incorporate it into their project progress reports.

Once project leaders report rework costs to financial leaders, the project supervision will recognize its full impact.

Encouraging this will lead to the recognition of the importance of sharing lessons learned and educating craft workers in quality expectations.

THE CORRELATION BETWEEN SAFETY & HEALTH PROGRAMS & QUALITY CONTROL PROGRAM FRAMEWORKS

An accident is defined as an "unexpected event, typically sudden in nature, and associated with injury, loss, or harm."[13] It's critical to track accidents, assign loss values, investigate, institute corrective actions, and hopefully identify and share lessons learned to prevent recurrence.

Because the rate of serious injury and fatality has not statistically declined in alignment with non-serious or less-than-fatal injuries, contractors have begun identifying and tracking near misses with serious injury and fatality potential – investigating them, instituting corrective actions, and sharing lessons learned.

This process can assist industry and organizational safety improvements and help safety culture progress from reactive to interdependent. The key is to be transparent and share information when events occur.

When it comes to quality errors or rework, the event and costs may only

Zero Accidents Task Force

The Construction Industry Institute's Zero Accidents Task Force researched which safety strategies have the greatest effect.

By evaluating owners and contractors that achieved "zero injury," the task force identified safety orientation and training as the second-best method for promoting safety on jobsites.[1]

Endnote

1. *"Zero Injury Techniques." Construction Industry Institute. May 1, 1993. construction-institute.org/zero-injury-techniques.*

Case Study

For three months, while working for a large commercial GC, the author ran a test project tracking the hidden costs of craft injury incidents of subcontractors. The goal of this test was to share the hidden costs of craft injuries with the various subcontractors' management.

The core information was gathered through meetings with the involved subcontractor supervisors to document the hours involved with each incident (utilizing the rework cost worksheet[1]).

Packets including a copy of the first report of employee injury and the corresponding cost of incident worksheet were sent to each subcontractor's management team. A simple note stating a big number was also attached.

Responses received from subcontractors ranged from "I had no idea" to "Am I getting invoiced for these costs?" However, the real unexpected engagement came while preparing the documents for distribution to project subcontractors.

One member of the board of directors walked into the copy room and asked the safety professional, "What are you doing with all these spreadsheets?" After a short explanation, the board member was asked if he wanted to see the performing subsidiary's hidden costs of employee injuries worksheets for this project.

After a short review, he requested a copy of every single cost report be sent to his office. He was unaware of the high hidden costs of incidents and rework.

Notably, this board member was responsible for the corporation's estimating and bidding departments.

Endnote

1. *"Rework – Cost Sheet (Detailed)." Quality Safety Times. qualitysafetytimes.com/rework-cost-worksheet.*

be identified, reported, and shared if the cause can be attributed to a design change, drawing error, or delayed request for information. For many, the fear of admitting a mistake that could cost you a job or the organization money may result in covering up the mistake. This eliminates any potential to learn a lesson from the mistake.

Safety and health programs and quality control program frameworks are similar in design and implementation. In fact, many smaller construction organizations may even assign quality management responsibilities to their safety and health professionals.

This is a logical progression as both professions have many similarities, most directly the prevention of loss.

The parallels between these two separate but related roles extend far past the procedural aspect of writing policy, developing and conducting training classes, and conducting inspections and incident investigations.

A safety professional is most likely also involved with:

- Developing corporate- and project-specific contract documents
- Subcontractor prequalification
- Claims investigations and settlements with claims adjusters
- Working with project teams on 30-, 60-, and 90-day look-ahead schedules for possible impacts and identification of prevention strategies
- Attending pre-award and pre-mobilization meetings

Most contractors' quality control programs mirror contractor safety programs in process and program structure.

Both include written policy statements, inspection checkoff lists and required documentation, contract language, investigation protocol, standards, and professional development expectations for salaried staff.

What is often missing is the incorporation of quality discussions during craft meetings and in the work procedures plan (e.g., standard operating procedures or pre-task plans).

Training & Certification for Quality Control

According to the American Institute of Architects (AIA), "Quality control in construction involves multiple components that ensure each phase of the project adheres to established standards." One vital component of this is training and certification.[14]

The AIA states: "It's vital to ensure that construction personnel are properly trained and certified for their roles. This includes safety training, technical certifications, and ongoing education to keep up with evolving industry standards and best practices."[15]

Given the complexity of construction projects and rotating craftworkers, weekly safety meetings, often called toolbox talks or tailgate meetings, have served as a best practice for communicating with craftworkers.

These meetings often include what's going on that day, any site restrictions due to crane work, traffic control, high hazards, emergency procedures, company or site policy expectations, accident reviews, lessons learned, and safety topics.

OSHA document requests should include meeting minutes in the compliance inspections and accident investigations. These meeting minutes can support contractors' training and communication efforts during these inspections and investigations. Many insurers will include this in their audits as well.

By following this model, organizations can raise the standard of craft quality and share quality issues, expectations, and lessons learned – all of which serve to educate the craftworker.

RECOMMENDATIONS

The following are recommendations to help improve quality on the jobsite.

- Contractually require trade contractors to hold weekly quality trade-specific training meetings during the same time as the weekly craft safety meeting.
- Include case studies of company-specific rework losses in foreperson training programs, using the cost of rework worksheet to personalize cost impacts to individuals whose training is most likely concentrated on production.
- Educate project leaders on rework: what it is, what it costs, how to document it, and how to prevent it.
- Develop an environment and culture that fosters sharing lessons learned related to craft and construction errors so your organization can learn and improve.
- Incorporate project-specific quality requirements in new hire orientations, and invest in frontline supervision, increasing workers' ability to clearly communicate expectations in stressful environments.
- Identify and invest in quality-related certifications and education for leaders to facilitate mentoring craftworkers.
- Communicate quality expectations to craftworkers in the same manner as you communicate safety expectations on the job during weekly meetings.
- Update pre-task plans to include quality concerns in planning same as safety concerns.

CONCLUSION

It can be difficult for organizations to address a problem they did not know existed.

Rework costs may only be tracked if they can be turned into a change order or if it is an insurable event — and most rework that occurs during the project is neither.

Tracking rework and its associated costs brings focus to prevention and educates supervisors. The rework cost sheet can help contractors identify rework losses and narrow their focus.[16]

Contractually requiring all craft to attend weekly quality meetings is an opportunity to reduce rework costs and reduce the probability of contractor default.

In these meetings, experienced and inexperienced craftworkers can clarify expectations, learn from experienced craftworkers, and share lessons learned.

Environments where quality conversations — much like those around safety — are the norm must become standard practice.

Fostering workplaces where industry professionals can openly admit mistakes and learn from them increases the knowledge of the industry's new skilled craftworkers.

In practice, people often learn more from their mistakes than from their successes. The more an organization learns from what went wrong, the more reliably work goes right. **BP**

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Endnotes

1. *"Unveiling the Reality: Subcontractor Defaults in Construction." AGC 2024 Surety Bonding and Construction Risk Management Conference. agc.org/sites/default/files/Files/Construction%20Risk%20Management/2024%20AGC-FMI%20Survey%20and%20PPT_Subdefault.pdf.*
2. *Love, Peter; Matthews, Jane; Sling, Michael; Porter, Stuart; & Fang, Weili. "State of Science: Why Does Rework Occur in Construction? What Are Its Consequences? And What Can be Done to Mitigate Its Occurrence?" Engineering. November 2022. sciencedirect.com/science/article/pii/S209580992200426X.*
3. *"Construction Industry Is Still Recovering from 2008 Financial Crisis." National Roofing Contractors Association. September 11, 2018. nrca.net/RoofingNews/construction-industry-is-still-recovering-from-2008-financial-crisis.9-11-2018.7085/details/story.*
4. *"2024 Construction Outlook National Survey Results." Associated General Contractors of America. 2024. agc.org/sites/default/files/users/user21902/2024_Outlook_National_FINAL.pdf.*
5. *"Labor Force Statistics from the Current Population Survey." U.S. Bureau of Labor Statistics. January 29, 2025. bls.gov/cps/cpsaat18b.htm.*
6. *Kelly, Maura & Benitez, Molly. "2022 Needs Assessment for Oregon's Highway Trades Apprenticeship." Portland State University. November 2022. oregon.gov/odot/Business/OCR/SiteAssets/Pages/Workforce-Development/Needs_Assessment_November_22_FINAL.pdf.*
7. *Rege, Gauri; Curnow, Christina; & Campbell, Chelsi. "Improving Apprenticeship Completion Rates." American Institutes for Research. October 2023. air.org/sites/default/files/2023-10/Improving-Apprenticeship-Completion-Rates-Brief-October-2023.pdf.*
8. *Clark, Matthew. "A Compelling Case for Construction Craft Training: The Return on Investment Is Real." National Center for Construction Education and Research." February 7, 2024. nccer.org/newsroom/a-compelling-case-for-construction-craft-training-the-return-on-investment-is-real.*
9. *Fayek, Aminah Robinson; Dissanayake, Manjula; & Campero, Oswaldo. "Measuring and Classifying Construction Field Rework: A Pilot Study." University of Alberta. May 2003. coaa.ab.ca/wp-content/uploads/2022/10/COP-RRT-RPT-01-2003-v1-Measuring-and-Classifying-Construction-Rework-Final-Report.pdf.*
10. *Wanberg, John; Harper, Christofer; Hallowell, Matthew; & Rajendran, Sathyanarayanan. "Relationship between Construction Safety and Quality Performance." Journal of Construction Engineering and Management. May 6, 2013. ascelibrary.org/doi/full/10.1061/(ASCE)CO.1943-7862.0000732.*
11. *Araullo, Kenneth. "Workplace injury costs climb despite decline in claims — Travelers." Insurance Business. June 4, 2025. insurancebusinessmag.com/us/news/workers-comp/workplace-injury-costs-climb-despite-decline-in-claims--travelers-537964.aspx.*
12. *"Incident/Injury Cost Tracking Worksheet." Quality Safety Times. qualitysafetytimes.com/injury-cost-tracking-worksheet.*
13. *Anderson, Julie. "Accident." Encyclopedia Britannica. britannica.com/topic/accident.*
14. *"Quality Control in Construction Contracts: Ensuring Safety, Compliance, and Client Satisfaction." American Institute of Architects. September 26, 2023. learn.aiacontracts.com/articles/ensuring-excellence-quality-control-in-construction-contracts.*
15. *Ibid.*
16. *"Rework – Cost Sheet (Detailed)." Quality Safety Times. qualitysafetytimes.com/rework-cost-worksheet.*