Coverage for construction defect claims has been one of the most contentious and costly issues for contractors and insurers over the past 2 decades. The impact of these claims on contractors’ cost of risk and overall profitability has not gone unnoticed by construction industry leaders who are placing increasing emphasis on claim prevention. Construction Industry Institute (CII) research shows that the best defense against construction defects is a formal quality management system. This workshop examines common causes of construction defects, such as soil movement, water intrusion, and rework, and then it will outline best practices for developing or enhancing a formal quality management program that can effectively reduce construction defect claims.

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For more information about Aon Construction Services Group, visit us at the IRMI Welcome Reception or at the Tuesday breaks sponsored by Aon.
Terry Brickman  
Vice President—Quality Management & Lean Transformation  
PCL Construction Enterprises, Inc.

In his role in implementation of PCL’s quality management and lean transformation programs for its US operations, Mr. Brickman, vice president of Quality Management and Lean Transformation at PCL Construction Enterprises, Inc., is responsible for developing and fostering a “Culture of Quality” within PCL with regular educational seminars and site visits to project teams.

Mr. Brickman has spent more than 27 years in the construction industry, working on diverse projects across North America in the commercial, industrial, and manufacturing markets. He has progressed on projects from field operations through senior project management and currently oversees the quality and lean programs at PCL’s US headquarters in Denver, Colorado. He earned his bachelor of science degree in architectural engineering from Ryerson Polytechnic University in Toronto, Canada, in 1987.

Mr. Brickman also serves as vice president of the Construction Quality Executive Council and as a member of the Client Advisory Council for a leading construction software company.

Bruce Wiesner  
Sr. Risk Engineering Construction Consultant  
Zurich Services Corporation

Mr. Wiesner, who is senior risk engineering construction consultant at Zurich Services Corporation, has more than 20 years of experience in the construction industry, including 9 years of construction risk engineering, 10 years of construction management, and 3 years of bridge rehabilitation inspection services. His areas of expertise include construction defects/quality management, hazard analysis, and safety. Prior to joining Zurich in 2006, he served 10 years as project manager for Cincinnati United Contractors.

Mr. Wiesner holds a bachelor of science degree in construction management from the University of Cincinnati and an associate of applied science in construction engineering technology from Cincinnati State Technical and Community College. He has earned the Construction Risk and Insurance Specialist (CRIS) certification and is a member of various industry associations, including the Indiana Construction Association, the American Society for Healthcare Engineering, Allied Construction Industries, and the Construction Industry Institute.
Notes
Quality Management – Your Best Defense Against Costly Construction Defects is Prevention

Presented by:

Terry Brickman
National Director, Quality Management and Lean Transformation
PCL Construction

Bruce Wiesner
Senior Property Risk Engineer
The Zurich Services Corporation

Learning objectives

• Understand the background of construction defects (CDs)
• Identify key loss drivers involved in CDs
• Understand the relationship between safety and quality
• Recognize top quality management leading indicators
• Describe and implement lessons learned
Today’s outline

- Section 1 – Introduction to CD exposures
- Section 2 – Loss drivers
- Section 3 – Safety/Quality relationship
- Section 4 – Quality management leading indicators
- Section 5 – Quality management lessons learned

Quality in the construction industry

- Re-active vs. Pro-active
- Approximately 15% of General Contractors (GCs) have written and functional quality management systems
- Roughly 10% of trade contractors have written and functional quality management systems
- Average contractor makes 10% errors according to CII*

*Source: CII “Making Zero Rework a Reality”, November 2005
Construction/Insurance industry CD challenges

- NCCI or BLS can be used for worker injury statistics
- No industry statistical data source for CD claims
- Statue of repose, statute of limitations and construction contract law
- Full limit loss potential

Zurich’s CD claims statistics

- Zurich’s Construction Defect & Professional Liability claim team numbers over 100 employees
- This team manages more than 10,000 claims per year
- Zurich pays hundreds of millions to resolve CD claims in North America every year
- Most construction defect claims take 18 to 36 months to resolve
- The majority of defect claims involve allegations of improper and/or deficient design as well as construction

*Source: Information based on 2015 Zurich actual claims data
How construction defects happen

A construction defect is typically a combination of 3 things:

• Faulty materials
• Faulty workmanship
• Faulty design

Evolution of a quality program

• Claims
• Re-active vs. Pro-active
• “We could do better”
• Senior management commitment
• Quality Director position established
• Quality program established
Root cause analysis

Cultural change required

*Source: PCL data

Source: Terry Brickman, PCL Construction
Today’s outline

• Section 1 – Introduction to CD exposures
• Section 2 – Loss drivers
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• Section 5 – Quality management lessons learned

The 10 most common construction defects

• Building envelope and structure
  • Door and window, window wall, curtain wall
  • Exterior cladding (stucco, EIFs, brick/stone veneer, siding)
  • Roof
  • Damp proofing and waterproofing
  • Deck and balcony
The 10 most common construction defects

- Infrastructure
  - Drainage and compaction
- Structural
- Electrical and HVAC (condensation)
- Plumbing
- Sound, vibration, odor/vapor transmission and code compliance deficiencies (“health & safety issues”, ADA)

Internal water leaks

Source: Terry Brickman, PCL Construction
100% water test and inspection policy

Source: Terry Brickman, PCL Construction

Internal water leaks

Source: Terry Brickman, PCL Construction
Exterior water leaks

Today’s outline

• Section 1 – Introduction to CD exposures
• Section 2 – Loss drivers
• Section 3 – Safety/Quality relationship
• Section 4 – Quality management leading indicators
• Section 5 – Quality management lessons learned
## Safety/Quality comparison

### Safety
- Management Commitment
- Safety Director
  - Safety Staff
- Safety Manual
- Pre-Project Planning
- Pre-Task Planning
- Education
  - Orientation
  - Job-Specific Training
  - Tool Box talks
- Inspections
- Safety Audit
- Leading/Lagging Indicators

### Quality
- Management Commitment
- Quality Director
  - Quality Staff
- Quality Manual
- Expectations Meeting
- Pre-Installation Meetings
- Education
  - Quality Orientation On-Site
  - Sequential Mock-ups
  - Quality Lessons Learned
- Inspections
- Quality Audit
- Leading/Lagging Indicators

### Safety and quality in a box

Source: Terry Brickman, PCL Construction
Safety and quality in a box

Think safety and quality together

Source: Terry Brickman, PCL Construction

#IRMI2015
Think safety and quality together

Source: Terry Brickman, PCL Construction

Today’s outline

• Section 1 – Introduction to CD exposures
• Section 2 – Loss drivers
• Section 3 – Safety/Quality relationship
• Section 4 – Quality management leading indicators
• Section 5 – Quality management lessons learned
Quality management leading indicators

• Pre-install meeting and first-work-in-place inspections

• 100% material verification

• Zero defect program

• Pre-closure inspection sign-off procedure including digital photographs

Pre-install meetings, first-work-in-place inspections

• Originated by the US Army Corps of Engineers

• Hold meetings for each CSI division and subdivision

• Review the specs, drawings, submittals and manufacturer’s installation instructions at the pre-install meeting

• Hold first Work-in-Place inspections in the field to verify install

• Conduct follow-up inspections daily
Pre-install meetings, first-work-in-place inspections

100% material verification

- Compare material delivered to the jobsite with the approved material submittal
- Assign responsibility on the job
- Pass down requirement to trade subcontractors
- Obtain a listing and certification of all materials delivered
- Spot check listing and material certification on a regular basis
Wrong material leaving site

Source: Terry Brickman, PCL Construction

Root cause analysis

Source: Terry Brickman, PCL Construction
Zero defects program

- Incorporate zero defect language into all subcontracts
- Start at the beginning of the job
- Conduct a zero punch list kick-off meeting
- Schedule weekly walkthroughs and publish weekly
- Track and correct non-conforming items during the course of the project

Zero defects achieved

Source: Terry Brickman, PCL Construction
Pre-closure inspection sign-off procedure

- Conduct pre-closure inspection
- Determine hold point in the construction schedule
- Correct identified defects and inspect corrected work
- Conduct a final pre-closure walk-through
- Take and store digital photographs

Source: Terry Brickman, PCL Construction
Today’s outline

- Section 1 – Introduction to CD exposures
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Aesthetic mock-ups

- Typical mock-up we see in the field
- This mock-up is for aesthetics only
  - Should be more functional
- More than “a pretty picture”

Source: Terry Brickman, PCL Construction
Functional mock-ups

- Understand the science of the wall
- Train your staff in what to look for
- Develop sequential mock-up installation
- Photograph each step
- Follow-thru in the field

Source: Terry Brickman, PCL Construction

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Wall lab test – Be there

Source: Terry Brickman, PCL Construction
Water testing in the field

Source: Terry Brickman, PCL Construction

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Quality management lessons learned

• Standardize, simplify and train
• Hire consultants if the owner does not
• Implement an effective warranty call-back process
• Have an effective document retrieval system
• Select subs based on past quality performance, not just price
• Provide adequate supervision of sub’s installed work

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Quality management lessons learned

- CD claims happen to large and small contractors alike
- No project is immune from CD claims
- Contractors with written and functional quality management systems should reduce their CD claims and minimize rework
- Be pro-active vs. re-active

Thank you

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Rating scale for all questions:
4 = Excellent  3 = Very Good  2 = Average  1 = Somewhat Disappointing  0 = Very Disappointing

Overall rating for this workshop?  4  3  2  1  0

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