

RESEARCHING PRE-CONSTRUCTION INTELLIGENCE:

2026-2071179-01 AI in Commercial Flooring & Pre-construction

A New Framework for Artificial Intelligence in Commercial Flooring

By Compass Global | Powered by SQUARES AI™

Executive Summary

For more than thirty years, technological advancement in commercial flooring estimating has focused primarily on one objective: improving the speed and accuracy of quantity extraction.

Digitizers became software.

Software became take-off platforms.

Take-off platforms became cloud-based systems.

Today, artificial intelligence is being introduced into construction with similar promises of increased speed, automated counting, and accelerated quantity generation.

Compass Global believes this approach is fundamentally misaligned with the actual sources of project risk.

Through ongoing research into commercial flooring pre-construction, Compass Global is investigating a different hypothesis:

Most financial losses in commercial flooring projects are not caused by quantity errors. They are caused by information failures.

The purpose of this research is to determine whether artificial intelligence can be used to identify, classify, and communicate these information failures before bid submission.

The result is the development of a new discipline known as Pre-Construction Intelligence.

The Industry's Incorrect Assumption

The construction industry often assumes estimating is primarily a mathematical exercise.

This assumption has influenced software development for decades.

As a result, nearly every major technological advancement has focused on answering one question:

"How much material is required?"

Compass Global's research suggests this question is incomplete.

Commercial flooring projects fail financially for reasons that are frequently unrelated to quantity calculations.

Examples include:

- Contradictory finish schedules
- Incomplete room finish schedules
- Uncoordinated specifications
- Undefined floor preparation requirements
- Ambiguous waterproofing responsibilities
- Missing transition details
- Stair detailing conflicts
- Addendum-driven scope movement
- Contract administration requirements
- Incomplete substrate definitions
- Unassigned trade responsibilities

In many cases, the quantities are correct.

The project still loses money.

This observation serves as the foundational premise of Compass Global's research program.

The Emergence of Information Risk

Compass Global research introduces the concept of Information Risk.

Information Risk is defined as:

The probability that project documents contain incomplete, contradictory, uncoordinated, or commercially undefined conditions capable of producing financial exposure during project execution.

Unlike traditional estimating risk, Information Risk cannot be identified through take-off software.

It exists between documents.

It exists within specifications.

It exists within omissions.

It exists within coordination failures.

Most importantly, it exists before construction begins.

Research conducted throughout the broader construction industry increasingly supports the concept that artificial intelligence delivers its greatest value through prediction, pattern recognition, and risk identification rather than simple automation.

Compass Global's research seeks to determine whether Information Risk can be systematically measured and communicated before bid submission.

Beyond Quantity Extraction

Current construction AI systems primarily focus on:

- Quantity extraction
- Cost forecasting
- Schedule optimization
- Productivity improvements
- Progress monitoring

These applications provide meaningful value.

However, Compass Global's research explores a separate category of intelligence.

The research asks:

Can artificial intelligence identify conditions that estimators know create risks but are difficult to locate consistently within thousands of pages of project documentation?

Examples include:

- Specification conflicts
- Finish schedule inconsistencies
- Undefined expansion joint responsibilities
- Missing substrate preparation language
- Waterproofing scope ambiguities
- Attic stock inconsistencies
- Contractual flow-down exposure
- Undefined alternates
- Addendum-generated scope shifts

Rather than counting flooring, the system evaluates the relationships between documents.

This represents a shift from quantity intelligence to contextual intelligence.

Human Intelligence Remains Central

A significant finding emerging from the research is that artificial intelligence alone is insufficient.

AI can identify patterns.

AI can identify inconsistencies.

AI can identify anomalies.

AI cannot determine commercial significance without human expertise.

Studies across construction applications continue to demonstrate that AI performs best when augmenting professional decision-making rather than replacing it. Human oversight remains essential whenever contractual, financial, safety, or technical judgments are required.

For this reason, SQUARES AI™ is being developed as a decision-support system rather than an autonomous estimating platform.

The estimator remains accountable.

The estimator remains responsible.

The estimator remains the final authority.

The AI functions as an analytical force multiplier.

Developing a Commercial Flooring Risk Model

The primary objective of the research is the creation of a repeatable Commercial Flooring Risk Model.

The model seeks to evaluate:

- Document completeness
- Coordination quality
- Scope definition quality

- Architectural consistency
- Specification consistency
- Contract administration exposure
- Addendum volatility
- Trade responsibility clarity

The long-term goal is to generate measurable project risk scores before bid submission.

Similar predictive approaches are increasingly being adopted throughout construction to forecast delays, cost overruns, and execution risk using historical and real-time project data.

Compass Global's research extends that concept into commercial flooring pre-construction.

The Birth of Pre-Construction Intelligence

The conclusion emerging from Compass Global's research is that the future of estimating is not estimating.

The future is intelligence.

Historically, estimators have been evaluated by:

- Speed
- Production
- Quantity accuracy

Future estimators may increasingly be evaluated by:

- Risk identification
- Information analysis
- Scope intelligence
- Document governance
- Commercial protection

This transition represents the emergence of Pre-Construction Intelligence as a distinct discipline.

Within this framework, the estimator evolves from quantity producer to risk analyst.

Artificial intelligence becomes a tool for expanding human awareness rather than replacing human expertise.

Conclusion

Compass Global's research into artificial intelligence is not focused on replacing estimators, automating take-offs, or reducing human involvement in the bidding process.

The research is focused on understanding how technology can improve the industry's ability to identify information failures before they become financial failures.

The central findings guiding the research are simple:

Projects rarely fail because someone counted incorrectly.

Projects fail because someone trusted information that should not have been trusted.

The future of commercial flooring pre-construction will not be determined by who can count the fastest.

It will be determined by who can identify risk before anyone else sees it.