# 4. [SUMMARY OF STANDARD INDUSTRY-WIDE QUALITY METRICS (RS313-1)](https://www.construction-institute.org/summary-of-standard-industry-wide-quality-metrics)

**Report Summary:** This study created a quality metric that can be used to effectively measure, categorize, and benchmark quality performance across the project delivery process. The capital facilities delivery industry recognizes the need to measure quality, but its organizations and projects utilize different execution models, which makes it difficult to standardize quality metrics. This lack of standardization leads to variability in performance assessment, which can negatively affect an organization’s bottom line.

Project quality activities can be viewed as a series of planned activities, unplanned outcomes of planned activities (unplanned outcomes), and unplanned events, arranged in ascending order commensurate with the severity of their consequences. In this study, worsening potential outcomes were structured into a Quality Pyramid (similar to the Safety Pyramid). Severity levels of unplanned events were used to define a metric called the quality performance rate (QPR). The QPR enables comparative assessments of project quality performance in the areas of front-end engineering, engineering and design, procurement, construction, construction management, and the commissioning and start-up of new or modified facilities. The metric uses currently available data and is scalable, simple to capture, and sustainable.

**Key Takeaways:**

## (1) Offer a novel but standardized approach to measuring quality using the Quality Pyramid.

## (Project Phase: Detailed Scope through Construction)

* Develop a project-specific Quality Pyramid framework that aligns with the organization's capital facilities delivery industry standards.
* Implement the top half of the pyramid across all projects and phases, focusing on unplanned events and outcomes, to measure quality performance consistently.
* Classify key quality outputs at handover points between groups using the Quality Pyramid steps to ensure a standardized approach to measuring quality.
* Apply the principles from the Quality Pyramid to add value by analyzing action items from key reviews within the organization's capital project management processes.
* Monitor the effectiveness of the Quality Pyramid implementation and adjust as needed to ensure continuous improvement in quality performance.

## (2) Use the Quality Performance Rate (QPR) as a quantified and objective indicator of organization- and project-level quality performance to enable benchmarking and continuous improvement of the quality management system (QMS).

## (Project Phase: Detailed Scope through Construction)

* Calculate the QPR by dividing the total number of unplanned events by labor hours spent, using normalization factors to ensure comparable results across projects.
* Benchmark the organization's overall QPR against industry standards and best practices to identify areas for improvement and optimize the organization’s QMS.
* Regularly monitor project-level QPRs to track progress, detect trends, and make data-driven decisions to enhance quality performance and reduce unplanned events.
* Analyze the correlation between the QPR and other key performance indicators to gain insights into the root causes of quality issues and to develop targeted improvement strategies.
* Improve the organization’s QMS by implementing changes based on lessons learned from analyzing QPR data, thereby ensuring continuous improvement and reducing the risk of unplanned events.

## (3) Report quality data to be categorized correctly in the Quality Pyramid.

## (Project Phase: Detailed Scope through Construction)

* Collect project data from various sources such as project management software and documentation.
* Translate the collected data into a format that aligns with the Quality Pyramid categories (such as the Valuable/Targets Met? category).
* Categorize reported data according to the Quality Pyramid structure and include unplanned outcomes and events.
* Map company-specific quality metrics to the corresponding levels of the Quality Pyramid for accurate reporting.
* Summarize the categorized data into a comprehensive report, such as a Quarterly Performance Report, to track project performance.

## (4) Quantify quality performance across an entire project or organization using the proposed quality metrics system.

## (Project Phase: Detailed Scope through Construction)

* Develop and implement standardized quality metrics that align with the Quality Pyramid structure.
* Collect data on planned outcomes and events to track progress against targets.
* Categorize unplanned outcomes and events into Valuable/Targets Met? category for accurate reporting.
* Calculate performance rates, such as the QPR, using the collected data.
* Analyze and report quality performance metrics regularly to identify trends and areas for improvement.

## (5) Implement the Quality Pyramid definitions in the organization’s QMS.

## (Project Phase: Detailed Scope through Construction)

* Define and document organizational quality metrics that align with the Quality Pyramid structure.
* Map existing quality processes to the corresponding levels of the Quality Pyramid (Valuable/Targets Met?).
* Categorize and track unplanned outcomes and events using the top half of the Quality Pyramid.
* Develop training programs for project teams to apply Quality Pyramid principles in their daily work.
* Establish a system to regularly review and update QPRs based on the Quality Pyramid metrics.

## (6) Consistently utilize the metrics practices and the Quality Pyramid.

## (Project Phase: Detailed Scope through Construction)

* Classify key quality outputs at points where one group hands off a deliverable to another group using the top half of the Quality Pyramid.
* Review and update QPRs regularly based on the Quality Pyramid metrics.
* Apply the principles of the Quality Pyramid to add value by analyzing action items from key reviews within capital project management processes.
* Use the steps in the top half of the pyramid consistently across projects to measure quality performance.
* Establish a system for tracking unplanned outcomes and events using the Quality Pyramid structure.

## (7) Focus on measuring unplanned events as a standardized measurement of quality performance.

## (Project Phase: Detailed Scope through Construction)

* Identify and categorize unplanned events that occur during project execution using the top half of the Quality Pyramid.
* Assign weighted severity levels to each defect or failure based on its consequences.
* Normalize data across different projects sizes and industries for comparison purposes.
* Enter event category information into the reporting system, allowing for tracking and analysis of quality performance.
* Use the metrics practices and the Quality Pyramid as standardized measurements of quality performance.

## (8) Establish goals to continuously improve the QMS and the quality performance of capital projects.

## (Project Phase: Detailed Scope through Construction)

* Set specific, measurable, achievable, relevant, and time-bound (SMART) targets for improving quality performance across all capital projects.
* Establish key performance indicators to track progress towards these goals and to identify areas for improvement.
* Conduct regular reviews and assessments of the QMS to ensure that it remains effective in achieving desired outcomes.
* Develop a continuous learning culture by utilizing data from past projects to improve work processes and personnel training.
* Implement changes to the QMS based on lessons learned, best practices, and industry developments.

## [(9) Tool: Implementing Standard Industry-wide Quality Metrics (IR313-2)](https://www.construction-institute.org/implementing-standard-industry-wide-quality-metrics)

## (Project Phase: Detailed Scope through Construction)

This tool is designed to:

* Establish a common quality metric: Introduces the QPR to benchmark quality in construction projects, thus promoting industry-wide standardization.
* Define the Quality Pyramid framework: Structures quality issues by severity into the Quality Pyramid, which has categories ranging from preventive actions to failures for consistent reporting.
* Outline the QPR calculation and use: Details the QPR calculation method and incorporates weighted severity levels of unplanned events normalized by labor hours for cross-project comparability.
* Provide implementation steps: Includes a roadmap to implement the QPR, with phases for data collection, categorization, normalization, and quality performance tracking.
* Highlight industry impact: Emphasizes the QPR's potential to drive improvements in cost, schedule, and quality performance across the construction industry.