



INSIGHT

ISSUE NO. 4

A technical newsletter by Rath, Rath & Johnson, Inc. for the construction industry.

“Insight: to see into and understand; an item of knowledge gained by this power.”

This issue of *RRJ Insight* highlights the range of services provided by RRJ to the insurance industry and the benefits of considering RRJ when engineering expertise is required. Three separate types of insurance claims are discussed relating to professional liability, collapse recovery, and surety bonds.

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Snow load causes warehouse roof to collapse.

Raths, Raths & Johnson, Inc.

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Structural Engineers Architects Building Scientists

Consulting Services Aid the Insurance Industry

In 1977, an article entitled “**Construction Claims - The Structural Engineer’s Role,**” was authored by RRJ and appeared in the Losses and Claims section of Best’s Review. It remains as relevant today as it was then. The article focuses on the question of whether an independent structural engineering firm should be retained to make an investigation for the determination of relevant facts, related to construction insurance claims. The article also outlines general **guidelines for when expert structural engineers should be engaged**. The reasons given and explained for retaining structural engineers are intended to assist the insurance manager in selecting the appropriate professionals. Outlines for services frequently required are also presented. **Prerequisites of structural engineering firm that should be considered include a firm’s emphasis on independence, thoroughness, professionalism, experience of staff, capabilities with investigation techniques and the ability to present and communicate findings and results.** If you are interested in a copy of this article, contact Barbara Smith.

RRJ’s services to the Insurance Industry are widely recognized and include a range of primary investigative and remedial services that are highlighted in this issue of *RRJ Insight*.

- **Professional liability claims assistance** provided to architects and engineers draws on RRJ’s experience in design, evaluation, investigation skills, and participation in the development of industry standards and practices.
- **Damage and remedial repair services** are provided to insurers, bonding agencies, contractors, governmental agencies and owners in need of competent and swift response.
- **Surety bond claim services** provided to insurance carriers are based on RRJ’s fundamental understanding of modern and historical construction, engineering and architectural practices.

- Otto C. Guedelhoefer, S.E.

Professional Liability Assistance

RRJ was retained to investigate and evaluate a 55-story office building **in response to an errors and omissions insurance claim** against the Architect. The structure is unique in that its exterior is clad by large A36 steel plate panels which were typically 10 feet wide by 30 feet high, with gasketed seals at the panel joints. The purpose of the investigation was to determine the cause of panel perimeter gasket non-performance, as well as to develop possible remedial solutions.

Measurement procedures using laser instruments were specially developed for this project in order to determine: panel plumbness, erection alignment, and erection tolerances. The laser instrument and other measuring devices were used to make detailed measurements (to the near-

est hundredth inch) of the panel fabricated dimensions and panel-to-panel fit-up. This information allowed RRJ to evaluate the as-built structure for conformance with the project-specified tolerances and to ascertain in-place variations in gasket compression. These variations were compared with the design-required and theoretical compressions allowed

by the building construction tolerance specifications. Additional engineering work encompassed an analysis of the field collected data; a study of construction documents to determine the panel construction, materials and requirements; and in-depth laboratory tests of the gasket materials to establish performance characteristics and to identify defects.



The end result of the document study, field measurements and material testing allowed RRJ to make recommendations for remedial repairs as well as to **successfully support the Architect** in his battle against the errors and omissions claims.

-Barbara Smith, S.E., P.E.

Laser measurements were used to evaluate construction tolerances on this 55-story office building.

Collapse Recovery Strategy

Structural collapse is a very rare event, but one that can lead to tragic loss of life and property.

Following a collapse, there are three primary engineering functions which must be performed by experienced structural engineers:

(1) securing and stabilizing the collapse area for safe cleanup, salvage and investigation; (2) documentation of the loss and determining the cause of the collapse; and (3) developing repair requirements and assisting with the repair. The last two functions are particularly important and closely related.

Deficiencies which caused the collapse may exist in other parts of the structure. A latent deficiency, combined with the trauma to the structure caused by partial collapse, makes it vital to understand the cause of the collapse in order to prevent its recurrence elsewhere in the building.

Human psychology also plays a significant role in the recovery process. When small portions of large, similarly framed construction have collapsed, **those who use the facility will require assurance that the cause of the collapse has been**



Distribution center roof collapsed during heavy rains.

identified and steps have been implemented to prevent a recurrence. Normal activities and necessary productivity will not be re-established until such assurances can be made.

Often, the economic well being of the facility affected by the collapse is directly related to the efficiency of the recovery response, and the consequential losses greater than the cost of replacing the structure involved can result if the response is not swift. **A team approach is**

absolutely essential in collapse recovery, and the insurance companies play a significant role in bringing together the necessary parties. In these situations, an Engineer with appropriate experience and technical knowledge is frequently the most important ingredient to an economical, efficient recovery. Experience in dealing with disasters and strong practical skills, spell the difference between swift recovery and protracted repairs.

-Robert J. Kudder, S.E.

Surety Bond Claims

Modern contracts for larger construction projects inevitably contain provisions for surety bonds. **Performance bonds are designed to protect the Owner** in the event the Contractor is unwilling or unable to complete the project, resulting in a breach of contract. If the surety elects to finish construction themselves by hiring another contractor (instead of forfeiting the bond), an **engineering consultant is often retained** to provide assistance relative to the structural and architectural aspects of the project. Typical work scope items include: reviewing the percentage of completion, workmanship, and compliance with plans and specifications; estimating completion costs; preparing contract documents for completion; locating qualified contractors to perform the remaining work; and providing construction management services.

When surety companies are contacted on issues related to excessive outstanding punch list items, engineering consultants provide technical reviews and evaluations of the project history and non-performance claims, and provide advice regarding available options for remediation and resolution. If corrective work is required, **experienced remedial design firms can develop practical approaches to fulfill the project requirements and surety obligations while minimizing costs.**

In practice, however, disputes sometimes arise over the legitimacy of purported breaches of contract. In the event a surety elects to contest a bond claim, engineering consultants can perform independent reviews, evaluations, and analyses of the disputed issues. **Consultants with design and litigation experience,** coupled with knowledge of industry standards and practices can provide further assistance as expert witnesses and assist parties in resolving such disputes.

-Kurt R. Hoigard, P.E.



On behalf of the cladding subcontractor's surety, RRJ developed economical strategies for damaged stone panel repair on this 50-story office building.