The Ideal Third-Party Warranty: A Risk-Managed Approach

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Abstract

Design and construction of buildings are processes laden with potential risk for failure, whether as a result of poor design, material failure, or construction defects. In recognition of these risks, many manufacturers provide warranties, while third-party warranty programs provide the opportunity for owners and builders to further indemnify themselves against failures. The speaker will compare the effectiveness, advantages, and disadvantages of several warranty programs that use different risk strategies to prevent roof claims.

Speaker

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LORNE RICKETTS is a building science engineer specializing in new construction, investigation, and research work. Typical projects for Ricketts include building enclosure system design, hygrothermal and thermal analysis, and performance testing and monitoring. A combination of practical and theoretical expertise provides him with a unique perspective on building enclosure considerations that helps him deliver innovative yet practical solutions to complex problems.

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INTRODUCTION
The design and construction of buildings is a process with inherent risk of failure, whether as a result of poor design, material failure, or construction defects. In recognition of these risks, various product manufacturers provide warranties on their systems, and third-party warranty programs have also been developed to provide an opportunity for owners and builders to further protect themselves against failures. This paper will use the term “warranty” generally to describe both warranty and guarantee programs, although within the industry these terms are not used consistently. In this paper, the term “guarantee” is only used where the specific program name utilizes the term. This paper assesses different types of warranties that are available in the construction industry, noting potential advantages and disadvantages of various approaches.

In particular, while warranties in themselves offer value through reduced exposure to the financial impact of failures, there can also be significant added benefit in utilizing a risk-managed approach that can reduce risk for both warrantor and warrantee. To evaluate and quantify the potential risk reduction, a statistical analysis was completed for two such risk-managed warranty programs in British Columbia, Canada, to evaluate the impact of risk managed warranty programs on the frequency of observable issues and warrantable claims. One of these warranty programs focused on the building enclosure in general, while the other program is specific to roofs.

Based on this analysis, the various approaches to warranties are compared and contrasted with the aim of developing an approach to third-party risk management that reduces risk and enhances the overall long-term performance of building enclosures.

TYPES OF WARRANTIES
Building codes and standards are the legal documents that prescribe the minimum performance thresholds a building must achieve; however, these minimum performance requirements often provide an insufficient performance threshold, thereby motivating building owners to pursue a warranty that provides greater peace of mind regarding durable performance, or a higher level of performance. The requirement for a warranty can also be used as a tool in the tendering process to ensure that bids are comparable with respect to performance expectations.

Additionally, a warranty can be used to clearly identify the party responsible for the performance of a building system, which often simplifies restitution in the event of a failure and can help avoid costly and time-consuming litigation. The challenge of litigation can be magnified if the building has been sold, as the design and construction team typically has no contractual obligation to the new owners.

For the purposes of this paper, the term “owner” will be used to refer to an owner who is the end-user of the building (owner-user) unless otherwise stated. In reality, various types of “owners” exist with respect to buildings, and each would have different motivations with respect to risk management, warranties, and the quality of the building. Owners who are developing the property for sale (owner-developers), for example, do not necessarily have a significant interest in the performance of the building, and may use a warranty solely as a method of risk transfer.

As part of addressing these issues and managing risk, various different types of warranty programs are available with respect to the building enclosure. Four common types of warranties can be generally classified as contractor, manufacturer, third-party, and third-party risk-managed warranties. They are described below.

Contractor Warranty
Contractor warranties typically deal primarily with workmanship-related defects and provide a means for the owner and design teams to protect themselves against damages as a result of faulty fabrication or installation. (In this specific case, “owner” refers to the owner who hires the contractor.) Typically, whether a defect qualifies as warrantable and is the fault of the contractor will be evaluated against the construction documents based on the language of the warranty.

Manufacturer Warranty
Product manufacturers often offer warranties on their goods as a way of indicating the value of their product and providing the building owner, builder, and design team with assurance that the product is suitable for the intended application. While the warranty essentially provides a financial indemnity, in many cases, manufacturers will include some amount of risk management to reduce their own risk, and in doing so, likely also that of other parties. This risk management frequently includes approved systems, installers, and detailing methods. Like any warranty, manufacturer warranties are typically limited or prorated based on the age of the product, and may not include coverage for aesthetic defects, workmanship of others, labor associated with removing and replacing third-party materials, or consequential damage.

Third-Party Warranty
Warranties by a third party are an independent product provided for the benefit of owners to reduce their risk associated with failure of a building enclosure system. These warranties essentially act as insurance, and while the warrantor typically requires a basic characterization of the building type and systems to evaluate their risk, they have no other involvement in the project. As a result, the cost of this warranty is calculated based primarily on industry-wide statistics, rather than on building specifics, and it can be obtained post-construction. No effort is expended by the warrantor to reduce the risk of failure. Instead, the warranty is simply more costly for what they deem to be statistically higher-risk systems.

In some applications of this type of warranty, there is actually no risk transferred between the owner-developer or builder and the warranty provider. In this model,
the owner-developer or builder indemnifies the warrantor against losses and is ultimately responsible for covering the cost of a claim. This approach has been used in British Columbia, Canada, to fulfill the legal requirement to have a warranty, while not transferring risk to the warrantor. Despite this, this model does provide some benefit to the owner-users of the building by allowing them to claim against a warranty provider rather than against the builder or developer who may have gone out of business.

**Third-Party Risk-Managed Warranty**

Risk-managed third-party warranty programs generally provide an owner similar financial protection as a non-risk-managed warranty, but also provide additional value through specific measures intended to reduce the risk of failure. These measures not only reduce the risk to the owner, but also reduce the risk for the warrantor and the builder. In some cases, this type of warranty is referred to as a “risk transfer model,” as risk is transferred from the owner-developer or builder to the warrantor, who then manages their risk by exerting some influence on the design and construction process.

While this type of warranty is provided by an independent organization not directly responsible for design or construction of the building, in the risk-managed approach, the warrantor or their representatives are typically involved throughout the design and construction process, providing independent risk review. The risk review process is established by the warrantor and often includes prescribed design and construction standards, set intervals for review of construction documents, and on-site reviews during construction. The independent nature of these standards and reviews is intended to ensure that a certain level of quality is achieved so as to reduce the risk of failure.

It is important to realize that warranties are a risk management tool for both the warrantor and the warrantee. That is to say, while the warrantee may view a warranty as reducing risk, this is not always the case. In fact, the language of a warranty can be used to limit the risk of the warrantor by providing a means by which to specifically limit the scope of liability, to set performance expectations and limits that may not be clearly defined elsewhere, and to define the maximum monetary value at risk. For example, a “leak-proof” roof guarantee may indicate that the warrantor is not responsible for roof defects that do not result in a leak, even if those defects impact the overall service life of the roof system, so long as the roof performed to the end of the warranty period. Or, a warranty up to a maximum monetary value may prevent claims greater than that value. A warranty is a contract, and the terms of the contract should be reviewed carefully by all parties so that the value being provided can be accurately assessed.

In addition to the contractual obligation associated with a warranty, it is also important to recognize that warranties can be used as a sales tool. By highlighting specific advantages of their system as compared to a competitor’s within the warranty, product manufacturers can create the perception that one system is superior to another. Furthermore, if the warranty program includes specified detailing and material requirements, this can act as a method for selling product while limiting the opportunity to use potentially more budget-friendly or even higher-performance alternatives. Third-party warranties provide an advantage in this regard in that they can use performance specifications rather than material specifications, which allows flexibility in the design and limits the potential for conflicts of interest.

**Case Studies**

While warranties of all forms can potentially offer value, risk-managed warranty programs provide a particularly interesting case in that they provide the opportunity to not only provide financial indemnification, but also to reduce the risk of a failure occurring. Two such risk-managed warranty programs have been broadly applied in British Columbia, Canada, and provide a unique opportunity to evaluate the impact that these types of programs can have on the performance of the building enclosure.

One of these warranty programs is a “Third-Party Building Enclosure Warranty,” which covers the entire building enclosure; the other program, a “Third-Party Roof Guarantee,” addresses only the performance of the roof system. Descriptions of the application of these warranty programs are provided below, followed by a statistical analysis of their impact on the frequency of building enclosure performance issues and claims.

**Case Study 1 – Third-Party Building Enclosure Warranty**

The Third-Party Building Enclosure Warranty Program for which data was analyzed is a program that was available in Canada between 1999 and 2013 in response to a local requirement for warranties on residential buildings as a result of widespread systemic building enclosure

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**Figure 1 – Venn diagram illustrating overlap of data sets that was used to perform the analysis of issue frequency and value.**

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failures (HPO, 2013). As part of participation in this warranty program, a third-party building enclosure design review was provided on behalf of the warrantor to identify potentially high-risk aspects of the design. This was then followed up with third-party field reviews during the construction phase of the project. For this program, the third-party risk reviewer was not a member of the design team, and their reviews were in addition to any review already being provided by members of the design team.

Case Study 2 – Third-Party Roof Guarantee

The Third-Party Roof Guarantee Program for which the data analysis was completed is a program available specifically for roofs constructed in British Columbia, Canada. The program provides a combination of risk management and financial indemnification. (RCABC, 2016)

The program manages risk through a comprehensive system that influences all aspects of the design and construction of the roofing system. To be warranted, roof systems must be designed per detailed standards produced by the warranty provider. These standards specify particular roof systems from various manufacturers that are acceptable and also provide prescribed detailing approaches for various roof transition and penetration details. The roof must then be installed by program-certified contractors and installers, and inspections are to occur at regular intervals by a third-party inspector who is also certified by the warrantor. Through this process, a minimum level of performance and quality control is specified to reduce risk for both the warrantor and warrantee.

Data Analysis

To evaluate the relative impact of these two different risk-managed warranty programs on the frequency of building enclosure and roofing issues, a large sample of data was analyzed. The data sample for this analysis was taken from RDH Building Science Inc.’s (RDH’s) in-house Building Asset Management software (BAMs) database. This database is populated with building information collected by RDH staff as part of building investigations and assessments, and includes photos and documented observations of various building assets, including building enclosure assets. At the time the analysis was completed, the BAMs database included 2024 buildings, with detailed information available for 838 of those buildings.

Both the Third-Party Building Enclosure Warranty and Third-Party Roof Guarantee were broadly applied within British Columbia. The buildings in BAMs for this geographical area range in size, type, and age, and the majority of the buildings are multifamily buildings (both noncombustible and wood-frame), though other building types are also present within the database.

Assessment of the impact of these two warranty programs was performed based on the frequency of observed defects by selecting subsets of the buildings in the BAMs database based on whether the building had participated in either of these warranty programs, or if no third-party warranty was provided. These subsets were then compared and contrasted to evaluate any observable difference in performance. Figure 1 graphically illustrates the overlapping of the data sets.

Note that all observations of building enclosure condition were used for evaluation of the Building Enclosure Warranty Program, while only observations of low-slope roofs (less than 2:12 slope in both conventional and protected membrane arrangements) that were less than ten years old at the time of review by RDH staff or

<table>
<thead>
<tr>
<th>Guarantee Program</th>
<th>Observed Issue</th>
<th>No Observed Issue</th>
<th>Total Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Enclosure Warranty Provided</td>
<td>63 (21.1%)</td>
<td>236 (78.9%)</td>
<td>299</td>
</tr>
<tr>
<td>Roof Guarantee Provided</td>
<td>15 (5.0%)</td>
<td>284 (95.0%)</td>
<td>134</td>
</tr>
<tr>
<td>Both Building Enclosure and Roof Warranty/Guarantee Provided</td>
<td>1 (20.0%)</td>
<td>4 (80.0%)</td>
<td>5</td>
</tr>
<tr>
<td>No Warranty/Guarantee Provided</td>
<td>63 (54.8%)</td>
<td>52 (45.2%)</td>
<td>115</td>
</tr>
<tr>
<td>Roof Issues</td>
<td>43 (37.4%)</td>
<td>72 (62.6%)</td>
<td></td>
</tr>
<tr>
<td>Complete Data Set</td>
<td>201 (36.3%)</td>
<td>352 (63.7%)</td>
<td>553</td>
</tr>
<tr>
<td>Roof Issues</td>
<td>87 (15.7%)</td>
<td>466 (84.3%)</td>
<td></td>
</tr>
</tbody>
</table>

*For the Building Enclosure Warranty these issues indicate an warrantable claim that was made as opposed to only an observed issue as is indicated for the Roof Guarantee program.

Table 2 – Frequency of observed issues depending on presence of warranty program.
Figure 2 – Chart of the frequency of observed enclosure issues depending on the presence of a warranty program. (Note that issues for the Building Enclosure Warranty Program are claims reported by the warrantor.)

Figure 3 – Chart of the frequency of observed roof issues depending on the presence of a warranty program. (Note that issues for the Building Enclosure Warranty Program are claims reported by the warrantor.)

roof guarantee inspectors were used for the evaluation of roofing issues. Reviews were performed at various times over the life of the roofs, typically before milestone warranty expiration dates or during other reviews. This restriction to the dataset was made for roof issues to better reflect issues that would likely be covered as part of the Roof Guarantee Program. Further research could be performed to better assess the impact of the guarantee on long-term performance, and it is anticipated that this would correlate well with performance within the first ten years. All roof membrane types were included in the dataset, including liquid-applied and single-ply membranes, though the majority are two-ply SBS roof membranes as they are the most prevalent in this market.

As part of RDH’s data collection process, potential building enclosure-related issues were categorized on a five-point scale as shown in Table 1. Categories 1 and 2 are the most severe and were considered to indicate the presence of an issue for the purposes of this analysis, while less severe categories (3, 4, and 5) were not considered to indicate an issue. If there were multiple Category 1 or 2 issues reported at the same building, the building was only counted once.

The items recorded by RDH as issues may or may not result in a warranty claim. Anecdotal evidence suggests that many roofing problems and other enclosure issues—even critical ones that shorten the service life of the component—may go unreported for years. Many more may be addressed by the contractor or owner directly without involving the warranty provider. Issues noted for the Building Enclosure Warranty Program are, in fact, claims reported by the guarantor, and it is expected that the frequency of these claims would be less than the frequency of observed issues.

Table 2 provides the frequency of observed enclosure and roof issues for buildings with and without participating in the enclosure and roof warranty programs. This data is also presented graphically in Figures 2 and 3 for ease of interpretation. For this analysis, roof issues are classified as a subset of enclosure issues (i.e., enclosure issues include roof issues).

Note that the method for determining the intersection of these datasets differed for the Building Enclosure Warranty and Roof Guarantee Programs. For the Building Enclosure Warranty Program, a list of buildings with the warranty was provided by the warrantor, including identification of whether related claims had been made. This was then compared with the BAMs database to identify any overlap. For the Roof Guarantee Program, however, a complete list from the BAMs database was provided to the roof warrantor, who then identified buildings on the BAMs list for which the Roof Guarantee had been provided. As a result of the difference in this process, while the total number of buildings participating in the Roof Guarantee Program as compared to buildings with no warranty provides an indication of market penetration of the program, a much larger list of Enclosure Warranty participants was provided, so it would tend to indicate greater market penetration than is actually present in the general building stock.
This data clearly indicates that the Building Enclosure Warranty Program is associated with 61% fewer observed enclosure issues as compared to buildings where no warranty was provided (21.1% versus 54.8%). The Roof Guarantee appears to have a similar impact for roofing issues, with roof issues being observed in 21.6% of buildings with the warranty and in 37.4% of roofs without the warranty, a 42% reduction in observed roof issues. Interestingly, the Building Enclosure Warranty Program appears to have reduced the frequency of roof issues to only 5% of roofs; however, this value is not directly comparable to the 21.6% achieved by the Roof Guarantee Program as the former reports claims, while the latter reports observed issues which may or may not have resulted in a claim against the warrantor.

To evaluate whether the perceived impact of these warranty programs on the frequency of observed issues is statistically significant, a chi-squared test was performed based on this data. (A chi-squared test is a statistical method used to evaluate the difference between theoretically expected and observed outcomes. In this case, it was used to evaluate whether the difference in frequency of issues between the buildings with and without warranties/guarantees is statistically significant.) The results of this chi-squared analysis indicate that both the Building Enclosure Warranty Program and the Roof Guarantee Program have a statistically significant impact on the frequency of observed issues (enclosure and roof related respectively) at the 95% confidence interval.

One will note that the frequency of enclosure issues for buildings with and without the Roof Guarantee are relatively similar (55.2% and 54.8%, respectively). This finding indicates that the overall quality of the buildings to which the warranty was applied is similar for both data sets, and consequently, that the comparison of the sets is likely appropriate. In fact, one would anticipate that the frequency of enclosure issues for buildings with the Roof Guarantee would be reduced since roof issues are a subset of enclosure issues.

While there were relatively few buildings in the data set that participated in both the Building Enclosure Warranty Program and the Roof Guarantee Program (five buildings), assessment of these buildings indicates that the risk of roof issues was even further reduced by participation in both programs, as no roof issues were observed in this set of buildings.

The data can also provide insight into the frequency of roof issues as a proportion of overall building enclosure issues. For buildings where no warranty was provided, 68% of observed enclosure issues were related to the roof, indicating that there is substantial risk associated with this particular building enclosure system, and consequently substantial value in warrantying its performance. For buildings that participated in the Roof Guarantee Program, the proportion of observed issues was reduced to 39% of the total observed building enclosure issues, again clearly demonstrating the reduced frequency of roof issues as a result of the risk-managed warranty program.

The results of this analysis clearly indicate that these types of third-party risk-managed warranty programs can have a significant impact on the frequency of observed issues and reported claims.

**CONCLUSION**

From the perspective of a building owner (in this case the end-user), a number of key benefits of warranty programs can be identified, and certain types of warranties are structured such that they can provide all of these benefits, while others are not. Table 3 indicates the benefits of different types of warranty programs to a building owner as they are typically applied. It is important to realize that the table provides only a broad generalization; each warranty and warrantor is different, and consequently, it is important that each be evaluated on its specific merits.

Overall, warranties are an integral aspect of the building enclosure industry and offer a valuable risk management tool for all parties. It is clear from the results of the data analysis that third-party risk-managed programs provide a unique and valuable opportunity for building owners to not only financially protect themselves against failure, but also to reduce the risk of failure, to the benefit of both the warrantee and the warrantor.

### REFERENCES


