

An Educational Approach for Using Performance Criteria in the Roofing Industry

by

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## ABSTRACT

Utilizing the Arizona State University's Performance Based Studies Research Group, and their PIPS program, a roofing materials manufacturing company can evaluate performance of representatives, products and contractors. Service life of the systems can be tracked and customer satisfaction measured it provides an objective viable tool for the consumer to choose a quality product and contractor without the distractions of marketing, promises, or a salesman's hype. Facilities purchasing a new roof system, can benefit from the information gathered as a guide in making sound, value based decisions. Creating a historical, concise and accurate documentation of roofing systems is a benefit to all involved. The procurement process, installation and longevity of the roofing systems can be tracked and graded.

## DEDICATION

I would like to dedicate this paper to the company that I have had the honor of being employed by for the past 32 years. Tremco Incorporated gave me the opportunity to work in an industry that I have found to be most interesting, educational and financially rewarding. I have had the pleasure of working with individuals who are outstanding in the roofing, administration and product manufacturing field.

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## CHAPTER 1

### INTRODUCTION

The task of selecting a roof, roofing products manufacturer and the contractor proves to be one of the most important, and daunting tasks, facing a facilities manager, or architect. Aside from the aesthetic and architectural aspects the decisions are numerous. The considerations are cost, product performance, warranty, pro installation & project monitoring.

For the customer that is in charge of purchasing a roof, information and the experience of others can be invaluable. Sometimes the case is that the roofing decision maker has no prior experience in roof procurement. They lack information necessary about which is the most reputable company, and the best performing contractors. Armed with the understanding of what peers experience can reassure them that their decision is the best that can be made.

With the various aspects to approach such as quality, warranty, service, responsiveness and, the biggest one, price it is a difficult choice. The process is somewhat overwhelming. Their final decision needs to take all the variables into consideration. When presenting to their superiors, they need to have the background information to justify the choice.

As an aid to the procurement process Arizona State University has a Performance Based Studies Research Group that is administered by researchers and educators. Their Performance Information Procurement System, or PIPS, provides the research, survey administration and data analysis needed to evaluate a manufacturer or contractor. It gives clients information on which to base their decisions and gives them a solid performance rating of manufacturers and contractors. Their studies enable the decision maker to make decisions as to reliability of companies and the value they will receive. As stated on ASU website "best value procurement system provides an answer to measure output, and minimize risk."

## CHAPTER 2

### PRICE

Price can be defined as value, or worth, of a product or service. Most of the buyers rely solely on price. In many purchases value can be sacrificed in the name of price. Be it a large, or small roofing budget, the purchaser should expect value for the money spent. Just as the highest price does not guarantee higher value, lower prices do not mean financial savings, or a good quality product and a high performing contractor. The highest price can be an inflated amount to achieve a higher profit margin for the supplying company. The lowest price most often means that there is a lower initial cost but the maintenance, lost time, property damage and delays can add dramatically to the low cost, resulting in an inversion of value.

Hiring a reputable roofing professional gives the buyer an advantage. The best professionals will gather information pertinent to the project. They will determine the needs of the customer as to the roof system usage, other than the obvious. Examples being: What is the roof protecting? What are their energy savings priorities? What is the effect of the weather/climate in that geographical location? What roof mounted equipment is to be installed? Will the use of the roof be out of the ordinary (such as helipads, heavy equipment placement, venting of grease or chemical vapors)?

## CHAPTER 3

### WARRANTIES

"Today's commercial roof buyer usually relies<sup>c</sup> on a low price and a warranty to procure their roof purchase" (Fricklas, 1995; Kashiwagi, 2011) . These two factors are why roofing is the black eye of the construction trade. The client does not realize that the manufacturer's attorney has written the warranty<sup>c</sup> to protect them, not the customer (Murthy & Djamaludin, 2002). By accepting their warranty, they give up better protection that they would get through the Uniform Commercial Code (UCC). Long term warranties have no proven correlation to the performance and the quality of the product.

The number of lawsuits involving low slope roof systems equals or exceeds the total number of lawsuits filed over all other building systems combined (The Manual Of Low-Slope Roof Systems - (Griffin & Fricklas, 1982). Roofs were the single factor most commonly involved in architects' claims. (D.P.I.C.).

According to the NRCA (National Roofing Contractors Association) "roofing consumers, with the assistance of roofing professional, should focus their purchase decisions primarily on objective and comparative analysis of proven roof system options that best serve their specific roofing requirements, and not on warranty time frames."

The best measure with which to judge the worthiness of a service provider is to examine their past performance. In order to make an excellent choice in the roofing partnership, it needs to be verified that the servicing company delivers the services promised. The best way to resolve this is by an examination of the company's past projects. History can be an excellent predictor of the future.

Arizona State University's Performance Based Studies Research Group, and their PIPS program, can provide this information.

The concerns and key issues are entered and scored in the A.S.U. PBSRG Customer Service Satisfaction Survey. The results show the history and rating of the manufacturer and contractor. The data is confirmed, recorded and analyzed by



educational professionals and researchers. This combination of personal experience and accredited certification bodies reinforce the business decision.

## CHAPTER 4

### SURVEYS

**Surveys** are a common tool in this society. Consumers have begun seeing the advantage of having reviews from their peers on which<sup>c</sup> to base their decisions (Forbes, 2002; Gajjar et. al, 2012). It aids them when buying products and/or services. In years past people relied on publication such as Consumer Reports, The Better Business Bureau, or the experiences of friends and neighbors. Most on-line retail stores ask customers to fill out a survey form regarding the product that they have purchased. The grades and comments are then available on-line to consumers wanting to purchase these items. It aids in the decision making process by addressing an individual's needs and features desired in a product. The internet furnishes purchasers with reviews by their peers, on a specific product. People are accustomed to availing themselves of this valuable tool. Today's buyers then have comprehensive value expectations and can make informed decisions based on all of the information supplied to them by other people like themselves. They can compare cost, value and service based on real experiences. This demonstrates the confidence that consumers have come to place in the opinions of others. This demonstrates the strength of information used to determine product value.

## CHAPTER 5

### CUSTOMER SATISFACTION SURVEY

**Customer Satisfaction Survey** is a measurement tool designed to provide an assessment of performance. It strips off marketing while asking 5 questions that can be rated on a 1 - 10 scale, and 4 questions that are yes/no. The purpose of this process is to determine the performance of roofing systems, internal managers and contractors.

Surveys are only as reliable as the agency administering them. The interviewer must be educated and well trained. The information gathered needs to be properly compiled in order to be of the most value. With the resources and expertise behind ASU's construction division and research group, it makes them especially qualified to provide a comprehensive, realistic and viable report. The beneficiaries of these reports can experience a high level of trust with this prestigious university conducting the nonbias report.

The data collected from the surveys benefit the consumer. It also benefits the manufacturing company and the contractors. The use of ASU's Performance Based Procurement Model can direct a company's attention to areas in need of improvement and/or their attention. When used nationwide this program it can evaluate the performance by area, rep and contractors. This allows the company to analyze, and develop a strategy for improvement. A survey will expose the cause of problems in specific geographical areas. It identifies the weak component whether it is the contractor, the rep or a combination. Problems and concerns can be narrowed in on, and measures can be taken correct deficiencies in performance of Company, reps, products and contractors. This can amount to enormous financial savings as the company can focus on problems such as call backs for leaks, rework and warranty claims. The biggest loss is when we do not perform, or respond, and we lose a customer.

**Tremco Inc.**, Established in 1928, specializes in the manufacturing and sales of roofing materials and related services. The company participates in the ASU Performance Based Procurement Program and benefits from the surveys.

## CHAPTER 6

### HOW IS IT ADMINISTERED?

On a monthly basis, Tremco Warranty Department provides a nationwide list of completed roof projects to ASU PBSRG with all pertinent contact information. Two demographic groups are used. One group is comprised of recent roof completions; the other group is older installations. The list is assigned to undergraduate students who work for A.S.U. PBSRG. The client is contacted, results are tabulated, and a report made available to Tremco.

## CHAPTER 7

### WHAT DO THE MEASUREMENTS MEAN?

The questionnaire focuses on measuring performance. Customer survey results are more significant with historical data rather than with only recent installations. A newly installed roof that is free of leaks could be fairly predictable. However, roof systems that are 14-22 years old, and performing leak-free is more impressive in the arena of value.

The customer rating system is based on a 1 to 10 scale, with 10 being the highest. There are 5 questions that require this numerical rating. There are 4 questions that are yes/no.

## CHAPTER 8

### CUSTOMER SURVEY RESPONSES

Based on 90 responses, totaling almost 3.5 million square feet of roof area, Larry Greenfeld, Tremco Sales Rep in the Phoenix AZ area, received the following ratings:

#### Contractor's Performance

- Quality of workmanship 9.4
- Professionalism 9.5
- Level of honesty 9.8
- Response time to emergencies 9.1
- Overall customer satisfaction 9.3

#### Tremco's Overall Performance

- Ability to resolve issues 9.8
- Responsiveness 9.8
- Ability to coordinate with facility personnel 9.7
- Overall customer satisfaction 9.7

#### Overall Roof Performance

- Customers that would purchase again 99%
- Roofs that do not currently leak 99%
- Oldest roof surveyed 22 years
- Average age of roof 14 years
- Largest roof area 260,000 square feet
- Average roof area 38,570 square feet
- Total roof areas surveyed 3,471,321
- Number of roofing surveys returned 90

## CHAPTER 9

### USING THE SURVEY AS A SALES TOOL

The most difficult part of selling a roof system is that the customer cannot see, taste, hear or hold the end product. The raw products do not give them the vision of how well their system will perform. They are in essence, buying “blue sky”, and trust that they put in sales representative, the manufacturer and the contractor. Tremco only uses approved contractors that have earned the privilege through their years in the business & financial stability. The survey and their results serve to reassure the customer that they will be getting the quality and value that they anticipate and deserve. The strength and creditability of the results lies within the administration by an independent studies group that does not stand to gain financially by the outcome of the surveys. Administering the program are researchers and educators in ASU's Del E. Webb School of Construction Program, in the Performance Based Studies Research Group. The scores provided by such a prestigious university validates the buyer's decision, reassuring them of the value that they will receive. The survey results are an extraordinarily powerful tool to utilize when endeavoring to assure a customer to trust Tremco and their products. In the beginning, when giving a presentation to a facility, I show the survey results. Clients are impressed with the excellent scores, and are more open to believing that they too will receive service and value. From this point on they are more convinced that what I have to tell them is factual, and not an empty sales pitch. Every Tremco representative should be availing themselves of this convincing data. The positive grades make their job easier when it comes to selling Tremco's service and products.

## CONCLUSION

What was documented, using the summation of the feedback from the ASU PBSRG questionnaire, is that it provides an objective viable tool for the consumer to choose a quality product and contractor without the distractions of marketing, promises, or a salesman's hype. The impact of this information is that it provides a nonproprietary conclusion that directs the decision maker to a high performance choice.

The surveys used nationally will provide information on who are the best performers. The results of the study will publicly expose those geographic areas where contractors' installations were defective; it will also expose where manufactures have not met customer expectations.

The results of Arizona State University Performance Based Studies Research Group minimize the risk in selecting a roof system. The fact that such information is available for the owner can reassure them that they are making the right decision.

Manufacturers benefit from the information that they receive. It enables them to determine which areas are highest and which are lowest in areas of customer representatives, product, services and support service. With history, durability and life span of the roofing systems installed, value is factually charted.

Arizona State University Performance Based Studies Research Group is of benefit to consumers, manufacturers and contractors.





	If no, explain ( <i>insert notes here</i> ) –		
6	Satisfaction Rating of the Tremco Representative	(1-10)	
7	Satisfaction Rating of the Value Relative to the Overall Project Cost	(1-10)	
8	Overall Satisfaction Rating of the Project	(1-10)	
9	Repeat Customer (for internal use)	(Y / N)	
10	<p>Ask if interested / know of Tremco's Additional Services</p> <ol style="list-style-type: none"> <li>1. Roof Restoration Options (<i>Yes / No / Not Sure</i>)</li> <li>2. Roof Maintenance Programs (<i>Yes / No / Not Sure</i>)</li> <li>3. Energy Audits</li> <li>4. Basic Energy Audit (<i>Yes / No / Not Sure</i>) <ol style="list-style-type: none"> <li>a. Comprehensive Energy Audit (<i>Yes / No / Not Sure</i>)</li> <li>b. Air Barrier Testing (<i>Yes / No / Not Sure</i>)</li> <li>c. Thermographic Building Inspection (<i>Yes / No / Not Sure</i>)</li> </ol> </li> </ol>		
11	Notes: Everything was adequate, would not say it was outstanding		

## REFERENCES

### Books:

- C.W. Griffin & R.W. Fricklas (1982), *Manual of Low-Slope Roof Systems*, McGraw-Hill Professional
- Crowell, R.D. (1999) *A Risk Management Handbook For Architectural, Engineering And Environmental Professionals*, [DPIC Companies](#).
- Kashiwagi, D. (2011) *PIPS / PIRMS: The Best Value Standard*. 11th ed. Tempe: KSM.

### Academic & Research Papers:

- Forbes, L. H. (2002). Continuous Learning in Construction through Quality-Based Post Occupancy Evaluation. *IIE Annual Conference. Proceedings*, 1-7.
- Gajjar, D. R., Kashiwagi, D. T., & Kashiwagi, J. (2012). Manufacturer's New Approach To Risk. *RICS COBRA 2012*, 1859-1868.
- Kashiwagi, D. ASU, "Arizona State University Performance Based Studies Research Group." Accessed July 2012. <http://pbsrg.com/> Arizona State University Performance Based Studies Research Group.
- Murthy, D. N. P., & Djamaludin, I. (2002). New product warranty: A literature review. *International Journal of Production Economics*, 79(3), 231-260.

### Website or Electronic Resource:

- Burg, B. (2011) Author & Speaker  
(Accessed: 8/2012)  
<http://www.burg.com/2011/02/a-deeper-look-at-price-vs-value/>  
(Accessed: 8/2012)
- Fricklas, D. (1995) Contributing Editor - Spectroscopy  
<http://www.spectroscopyonline.com/spectroscopy/author/authorInfo.jsp?id=>
- Lee, Bill (2006) Author, Consultant & Seminar Leader  
<http://ezinearticles.com/?Selling-Value-vs.-Price&id=202419>  
(Accessed: 8/2012)
- <http://www.nrca.net> (Accessed: 8/2012)
- <http://pbsrg.com/> Arizona State University Performance Based Studies Research Group (Accessed: 8/2012)