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Technical Information

Life Cycle Costing

Our philosophy regarding materials is to select a product that will last the useful life of the building with little or no maintenance. This usually results in the least long-term cost to the building owner. It also limits environmental impact. The Federal Highway Administration issued a report in 2001 estimating that in the United States alone, we spend $550 billion per year combating metallic corrosion. Of that cost, $113 billion per year is spent on construction related metal failures ranging from roof perforation to replacement of components that have become aesthetically unattractive. This suggests that to a significant degree, we are penny wise and pound foolish with the metals we specify. In terms of architectural applications, we argue that life cycle costing should be taken into account when selecting materials.

In order to evaluate the relative life cycle costs of different materials, it is necessary to estimate all expenses, and the dates these expenses are expected to occur. The analysis should take the following factors into account:

Acquisition Costs

- **Material** – High performance metals like ours represent higher up front costs than most alternatives. However, when considered in light of life cycle costing, their true value is determined.
- **Fabrication** – At times, fabricators will charge significant premiums for working with high performance metals. This is particularly true if the shop is not properly equipped to handle these materials. Some of these costs are well justified in terms of additional time for machining and welding, as well as a higher cost penalty for generating substandard pieces that need to be scrapped. A fabricator that is experienced in these metals, however, will have the proper tooling and will not feel the need to add contingency costs for unexpected outcomes.
- **Installation** – Essentially the installed price of the building system being evaluated with different materials is the objective in determining the acquisition cost.

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Operating Costs

- **Maintenance** – High performance metals make a significant contribution here. When these materials are properly specified and properly installed, there is no need to refurbish them as would be necessary in the case of painted finishes. To maintain a good appearance, periodic washing is appropriate. Areas where incidental debris can collect, like gutters should be cleaned more frequently.
- **Replacement** – When properly executed, a high performance metal building system will not require replacement. If the building is expected to last more than 50 years, a replacement expense or two is very likely to occur with other materials.
- **Service Disruption** – Very often overlooked, the cost of service disruption should be calculated. Even when the building can be occupied during construction, there are still costs that can include lost productivity due to noise and reduced business traffic.

DIsposal Costs

When it comes time to demolish the building, the relatively high value of high performance metal scrap can provide an offset. Limiting the volume of materials that end up in a land fill will also reduce disposal costs.

Once all of these costs are dated and estimated, they need to be factored to present dollar terms. (ie: A $5 million roof replacement 20 years from now would cost $1.8 million if the building owner put the money in the bank today at 5.25% interest. Therefore, a material upgrade costing, in this case, less than $1.8 million merits consideration.)

After a present value analysis is concluded for all of these costs, the different material choice options can be measured in like terms. The usual conclusion is that high performance metals are the low cost solution.

A life cycle costing model is available from the Specialty Steel Industry of North America at (202)342-8630 or www.ssina.com.

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