Facing Up to a Reroofing Project

Considerations for an Improved Outcome

By Bill Burger and Veronica Martin

Reroofing project using EPDM single ply membrane.

Sooner or later the owner or manager of a building will face the prospect of reroofing. Perhaps the building engineering staff is constantly chasing after leaks; or, according to the Capital Expenditure Plan for the building, the expected service life of the roof has been reached. At this point there are two approaches to consider: Call a local roofer and request that his firm replace the roof to match the existing; or work with a roof consultant to consider reroofing options.

What opportunities are there? First, a professional roofing consultant can confirm that replacement, as opposed to repair, is recommended. Considerations going into this decision include the feasibility and cost effectiveness of spot-repairing leaks, or replacing a discreet area of roof if the areas of leaking can be isolated. Another question is whether the general condition of the roof is good enough that it has some useful years left in it.

Correcting Existing Problems

One of the benefits of reroofing is the opportunity to correct problems that have contributed to past localized leaking or to premature failure of the roof membrane. A reroofing design could correct poor drainage, lack of roof drain overflows, inadequate equipment mounts, wet insulation, deteriorated flashings, and inadequately spaced penetrations. Often conduits or equipment added since the original roofing are not properly tied into the roof membrane and have an elevated risk of leaking. Good roofing design also allows easier replacement in the future by, for example, using two-piece flashings that can be removed for access, and mounting equipment high enough that roofing can take place below.

Maintenance

Further considerations during reroofing design involve maintenance issues. One consideration involves the maintenance of the roof itself. For example, are there pitch pockets requiring regular inspection and renewal of pitch pocket sealant, or are there

flashings and copings that rely on sealant or roofing cement, which need regular replacement? A second consideration is how much traffic the roof receives for maintenance of rooftop equipment. A heavily trafficked roof requires a tougher, slip-resistant membrane or walkpads.

Sustainability

Sustainable roofing design addresses energy consumption and optimizes life-cycle costs through choosing materials with lower environmental impact and energy embodiment, higher durability, and lower maintenance requirements. Considerations for a sustainable roof include the choice of color/reflectivity of roofing material, the use of insulation to optimize the thermal performance of a roof, and the use of materials with recycled content. Minimizing waste generation is also an important consideration.

The United States Environmental Protection Agency (EPA) started the *Energy Star Roof Products Program* to encourage and identify roofing products that meet strict energy efficiency guidelines set by the EPA and the United States Department of Energy. The United States Green Building Council started the *LEED* (Leadership in Energy and Environmental Design) rating system that outlines performance criteria to help building owners measure the degree of environmental performance of their new or existing building/building components.

These entities help building owners and the roofing industry to adopt roofing system choices and practices that generate positive life-cycle costs and lessen environmental effects.

Standards

The use of standards in the design of a roof can greatly affect its quality and performance by requiring the use of certain materials and methods.

Underwriters' Laboratory (UL) is a comprehensive building materials standards agency which tests materials and systems of materials to develop classifications (A, B, and C) describing roof system performance.

The Factory Mutual Research Corporation (FM) tests materials and systems of materials to determine if they meet certain performance criteria. If they comply with preset standards, they receive FM approval and are listed in the FM Approval Guide. FM utilizes different classifications than UL, and for roofing includes such listings as "Class I" Fire Rating (which deals with fire resistance) and I-60 Windstorm Rating (which deals with wind uplift resistance and specifies acceptable insulations, roof system fasteners, patterns, etc.).

The American Society for Testing and Materials (ASTM) develops standards for all types of materials and installation methods.

Warranties

The most common types of roof warranties are *material warranties* which only cover the performance of the materials, and *material and workmanship warranties* which cover both the contractor's work and the manufacturer's material. Some warranties cover just certain components of the roof system (such as the roof membrane); *Full System Warranties* cover all components of a system (membrane, insulation, etc.). These warranties guarantee that both the workmanship and the materials or just the material will be watertight for a specific period of time, which typically translates into the repair of a specific localized leak(s), not total replacement of the roof, if leakage occurs.

Longer term warranties may require that specific materials and/or construction methods be utilized and require a manufacturer inspection to determine if the roof is being installed correctly. All warranties have exclusions, and they must be carefully considered. If there are any questions about what the warranty covers, it would be prudent to have an attorney review it.

Bidding Approaches

Once the decision to reroof has been made and the roof design established, either a price must be negotiated with a chosen contractor or a bidding process must be undertaken with two or more contractors. The type of roof membrane specified may decide which contractors in your area will be willing to offer a bid. Manufacturer's representatives are often helpful in generating a list of approved or recommended contractors. The use of a prequalification process is helpful as well. The American Institute of Architects has a prequalification form that requests pertinent information regarding the experience, past performance, and financial strength of the contractor. The bidding process should include a mandatory pre-bid walk through of the roof. Once bids are received, a careful analysis should be made to determine if the bids are "apples to apples," or if exclusions or non-satisfactory substitutions have been made.

Avoiding Past Failures

Ultimately, the well designed reroofing project will avoid past failures. Reroofing is an opportunity to select the best product to meet the owner's or manager's goals, be it short term cost, longevity, energy savings, or minimal maintenance.

Bill Burger and Veronica Martin are roofing and waterproofing consultants at Wiss, Janney, Elstner Associates, Inc. in Denver and San Francisco, respectively.