FOCUS on FACILITIES
Diocese of Cleveland Facilities Services Corporation

Roofs—New & Replacement Options

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INTRODUCTION

After reading this month's *Focus on Facilities* column on preventive maintenance of roofs there will come a time that roofs will need to be replaced. Roofs can be flat or pitched and there are several types of roofs to choose from so let's start the discussion by identifying the various types of roof and finish up the column with a brief discussion on roof replacement, noting furnish and installation cost as **$$$-premium cost, $$-reasonable premium cost, and $-least costly** (excluding remove of existing cost).

TYPES OF ROOFS:

- **Asphalt** for flat roof: Better defined as a modified bitumen or built-up roof, is an excellent fire retardant surface and is ideal for those who have a roof deck to walk out on. It is a heavy type of roof often requiring additional support below especially if it is a walk-out deck installation. This type of roof has a 20-30 year useful service life and can be patched relatively easy. **$**

- **Asphalt shingled** for pitched roof: Is the most common roof shingle and it can be installed by a knowledgeable property owner although a qualified, licensed roofing contractor should be considered. This type of roof has an 18-25 year useful service life. **$**

- **Slate shingles** for pitched roofs: A natural stone product, slate shingles provide an appealing look, have a significant useful service life (beyond 50-years), are fire resistant and are environmentally friendly. This is a heavy type of roof requiring skilled, experienced installers. **$$$**

- **Metal roof** (copper, aluminum, zinc, steel, and tin) used on pitched roofs: Becoming more popular in the past 15-years, metal roofs are fire resistant and are often installed in heavy snow regions. Each metal has its pros and cons while all three types of metal roof can be considered attractive. **$$**

- **PVC** (polyvinyl Chloride) used on flat roofs and on occasion pitched roofs: Easy to work with when installed by an experienced roofer, the material is light-weight and

recommended when exposed to grease e.g., kitchen hood exhaust onto roof. Fire resistant and chemical resistant, PVC roofs have a 20-30 year useful service life. It cannot be installed over an existing shingled roof. **$**

- **TPO** (Thermoplastic Polyolefin) used on flat roofs and on occasion, pitched roofs. Similar to PVC roofs and EPDM roofs. **$**

- **EPDM** (ethylene propylene diene terpolymer) usually used on flat roofs and pitched roofs. Similar to PVC and TPO but is the least costly of the three roof types. **$**

SELECTING THE ROOF FOR THE APPLICATION:

Choosing a specific roof for the application, whether for a new building or renovating an existing building, there are seven categories to consider in the selection process starting with:

1. *What will be the **preferred "useful service life"**?* How long will the roof material hold up to the outdoor elements including excessive solar heat, below freezing temperatures, ultraviolet light, and expansion and contraction from this weather? Is the project investment

to be for more than 20 years of building "useful service life" e.g., school, healthcare facility, etc.? Or, is the roof upgrade/replacement a "quick-fix" because the building itself will sold within a few years? Those involved in choosing the roofing should be asking these two questions as part of the roof selection.

2. *What will be the **weight impact** on the roof, especially existing roofs*? Will the new or replacement roof impact the structural support below the roof?

3. *What **type of equipment** will be on the roof*? If specialized exhaust e.g., kitchen hood grease exhaust this will reduce the roof choices the building owner will have for options. Also, depending on the equipment, e.g., air-conditioning units requiring routine service will eliminate the choosing of a pitched roof.

4. *How much **foot traffic** will the roof be exposed to*? Depending on the need to be servicing equipment on a regular basis, the roof may need additional roof pads to be incorporated into the roofing installation.

5. *Will the project be **LEED** (Leadership in Energy and Environment Design) certified?* Building certifications such as LEED™ and other environmental and/or healthy building certifications may have an impact on the type of roofing to be specified. Those involved in choosing the roofing that meets certification requirements will need to be researched for acceptable material e.g., slate, as well as to it's sustainability and environmental impact.

6. *How will the **roof appear** from an architectural point of view?* It may be desirable for the roof to be part of a new building appearance. On the other hand, it may be desirable for a new addition have its roof match the existing roof.

7. ***Weather endurance** a concern?* If the new roof or replacement roof is going to be exposed to extreme weather conditions e.g., storms coming off Lake Erie, a specific type of roof material may be preferred.

SUMMARY

Choosing the optimum roof for the application, whether the project is a new building, a building addition, or the renovation of an existing building, there are a lot of factors to consider. Quite often the roof selection is assigned to a consultant or an architect, but the "end-user" should have some input based on their professional experience e.g., servicing the equipment that will be installed on the roof.

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Howard McKew is a registered engineer and president of Building Smart Software. Howie has a ton of experience to draw from the various industry jobs he's held and often writes about that experience in his columns in Engineered Systems Magazine. He is the author of 3-books, contributor to other author's books, lectures, and is an active member and Fellow in ASHRAE.

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