TITLE: Rooftop Equipment Including Communication Equipment

DESIGNATION: IIBEC TA-021-2021

OBJECTIVE: To provide commentary on roof design and maintenance considerations where rooftop equipment, including communication equipment, are present.

BACKGROUND

Rooftop spaces commonly house heating, venting, and air-conditioning (HVAC) equipment, security camera equipment, and related items. Similarly, some buildings lease rooftop space to outside utility companies, such as cellular phone service providers, who use that space to install their own communication equipment. Equipment owned by the lessee is usually serviced by the lessee and not by building personnel. Special consideration during the design phase and maintenance of a roof assembly is important when such equipment is present or planned for inclusion.

DISCUSSION

Due to the need to routinely maintain rooftop mechanical equipment, roof membrane protection is recommended at areas where the roof membrane is susceptible to damage from frequent access. While other areas may be considered for roof membrane protection, areas around roof access points (for example, hatches, ladders, doors, and the like), areas around rooftop equipment, and the pathways between roof access points and the equipment are recommended to receive roof membrane protection. Protection can take many forms including walk pads specific to the roof membrane type (such as, EPDM walk pads on an EPDM membrane; TPO walk pads on a TPO membrane), more robust walk pads such as rubber pads or concrete pavers, or elevated walkways (for example, steel grating over steel dunnage). Some roof assemblies, such as protected membrane roof (PMR) systems, may have sufficient membrane protection by design and thus may not need additional protection at high traffic areas. Special consideration should be made for areas where the operation of the rooftop equipment itself may damage the roof assembly. One example of this is a rooftop scaffolding rig that will be rolled across the roof between davits. In this case, a robust membrane protection system is recommended and should be designed to meet unique project-specific needs. Additional special considerations should be made at equipment that discharges/exhausts materials that may physically or chemically damage the membrane (for example, at kitchen exhausts where fats, oils, and greases may be deposited onto the roof membrane). Access points for wires, cables, and service-line penetrations to enter the building, as well as proper support and control of rooftop service lines is required. While these are a few examples, other scenarios where membrane protection is recommended at rooftop equipment exist.

DISCLAIMER

Roof maintenance plans should consider the nature and frequency of rooftop equipment maintenance. Roof membranes where the roof is commonly accessed may require more thorough and frequent maintenance inspections and/or repairs than those that are less commonly accessed. Similarly, roof areas that are leased to outside utility companies, such as cellular phone service providers, may also need to be more frequently maintained as the personnel accessing these roof areas are not the ones who are maintaining the roof and may not know to comply with the building's roof-protection protocols. Building owners may choose to go a step further, establishing roof maintenance programs for leased roof spaces by writing the lessee's responsibility for roof maintenance and repairs in the lease agreement. Such agreements should include repairs to other roof components, such as insulation and roof decks, that could suffer consequential damage. Spelling out the lessee's responsibility for roof maintenance and repairs in the lease agreement may be particularly advantageous to owners should the lessee remove or replace equipment, and/or when roof repair and flashing work may be required around new, abandoned, or modified roof-membrane penetrations. As with any roof system, thorough and timely maintenance helps to ensure roof performance and longevity. In addition, the safety of those accessing the roof and equipment must be included in the design or retrofit to accommodate such equipment.

Finally, some rooftop equipment may pose unique safety hazards. While many hazards are inherent to any type of roof work—such as fall hazards, sun exposure, extreme heat and cold—additional hazards specific to rooftop equipment may be present. While other types of hazards exist, some commonly encountered safety hazards related to rooftop equipment include hazardous vent exhaust (for example, exhaust from hospital confinement rooms) and hazardous electromagnetic signals (for example, radio frequencies emitted from antennae). Rooftop space occupants should be aware of any potential hazards prior to entering the roof space and be prepared with the means to mitigate these hazards as appropriate. Warning and caution signs with adequate information are advised when such unique hazards exist on the rooftop. Protecting the roof with an access-control protocol and barriers specific to the building is also advised.

SUMMARY

Roof spaces with mechanical equipment, as well as other types of equipment including communication equipment, should be designed and maintained to accommodate the equipment, and operation thereof, in an effort to promote a successful, long-lasting roof and safe work environment. Some rooftop equipment may pose unique safety hazards that persons accessing the roof should be aware of and prepared for prior to entering the roof space.