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INNOVATIVE LITHIUM/ION BATTERY FIRE PROTECTION DESIGN FOR MULTIFAMILY BUILDING BIKE STORAGE ROOMS PROPOSED BY NOTED ARCHITECT

New York, NY—March 16, 2023—An architect responsible for scores of successful multifamily projects has revealed an innovative design, engineering and materials solution to reduce the risk of fires from lithium/ion batteries on electric bikes in apartment building storage rooms.

"Recent fatal fires in multifamily buildings started by lithium/ion batteries on electric bicycles are a lethal threat that can be greatly reduced through effective design and engineering solutions," said Ariel Aufgang, AIA, principal of Aufgang, **an architecture and engineering design and consulting group.**

Aufgang's engineering team has designed a bicycle storage room with a fire protection system that reduces the threat posed to building residents from such fires.

"Lithium Ion batteries burn very hot without the presence of oxygen due to a chemical reaction within the battery cell," said Sam LaMontanaro, PE CEM, Director of Engineering and head of the Building Systems Advisory Unit at Aufgang.

"We designed a bike storage room for apartment buildings that is fully encapsulated within cinderblock—Concrete Masonry Units (CMU)—to contain and limit the potential for fire and heat spread," said LaMontanaro.

"As the first line of defense, sprinklers will slow the spread of fire allowing time for fire fighters to get to the site. To maximize sprinkler speed and effectiveness our design increases their density within bike the room to provide 0.3 gallons of water per minute (gpm) per square foot using standard k=5.6 sprinkler heads, with their spacing decreased to a 10ft x 10ft grid, coordinated

with the racks and structure. That's well beyond most building code requirement," said LaMontanaro.

Two floor drains are installed in the bike storage room to prevent flooding in the event of sprinkler discharge, and the room is designed to provide clear access to allow responding fire fighters safe entrance into the space to fully extinguish the fire with heavy hose streams.

Technology also plays a role, said LaMontanaro.

"Our design specifies smoke and heat detectors, including infrared sensors, that trigger fire alarms and alert building staff in the event of a fire in the bike room," he said.

"Building residents must be required to keep electric bicycles in the building's designated bike storage room and never in their apartments, hallways or lobbies," said Ariel Aufgang.

"We recommend that municipal and county building departments and fire departments update and revise their codes to contend with the increased risk of fires in multifamily buildings from lithium/ion batteries on electric bicycles. Our safer dedicated bike room design is an excellent model for new construction requirements as well as retrofits," said Aufgang.