Shielding buildings from the terrorist threat

With the threat of terrorism taking centre stage, experts have begun to think of ways of protecting buildings from terrorist acts. T. RAMACHANDRAN outlines the recent guidelines drawn up in this regard by the Indian Institute of Technology, Kanpur, and focuses on what experts say can be done more to deal with this threat.

The threat of terrorism has become serious enough for experts to actively think of ways to "razor-proof" buildings, or counter and minimize the damage caused to them by terrorist attacks. The Indian Institute of Technology, Kanpur (IIT-K), in the support of the Government of India's initiative on "National Security," has come up with guidelines on measures to mitigate the effects of terrorist attacks on buildings. For a long time, terrorism had not been regarded as a threat to be addressed from the engineering and construction standpoint. As new technologies evolved and structures became larger and complex, engineered solutions focused on dealing with natural disasters, such as earthquakes, and risks associated with human activity, such as storage of hazardous materials. Over time, regulations and guidance developed in concert with these had been put in place.

**Steps for risk reduction**

Terrorist attacks on buildings can take the form of an explosion, an armed attack, a biological, chemical, nuclear or radiological attack or arson. Convert acts of terror, such as cyber terrorism, are also on the rise.

- **Building construction:** The Indian Institute of Technology, Kanpur (IIT-K) has issued guidelines on measures to mitigate the effects of terrorist attacks on buildings. The guidelines cover measures to be taken during the design and construction stages, aiming to make buildings resistant to terrorist attacks. These guidelines cover measures such as reinforced concrete construction, use of blast-resistant materials, and design of buildings to resist blast loads. The guidelines also emphasize the importance of early detection and response to potential threats. The IIT-K guidelines are intended to be used by professionals involved in the design and construction of buildings.

- **Building operation and maintenance:** The IIT-K guidelines also cover the importance of regular maintenance and monitoring of buildings to detect and respond to potential threats. The guidelines recommend the use of security systems, such as cameras and sensors, to monitor buildings and detect potential threats. The guidelines also emphasize the importance of training and preparedness among building occupants to respond to terrorist attacks.

- **Building occupant response:** The IIT-K guidelines also cover the importance of educating and preparing building occupants to respond to terrorist attacks. The guidelines recommend training occupants on how to respond to terrorist attacks, including how to evacuate safely and how to assist others who may be injured.

- **Building demolition:** The IIT-K guidelines also cover the importance of ensuring that the destruction of buildings does not create new threats. The guidelines recommend that buildings that have been damaged by terrorist attacks be destroyed in a controlled manner, to prevent the spread of radiological or chemical threats.

**Clear and present danger:** A bite-sized danger example of the IIT-K guideline is the building of the National Stock Exchange after it was targeted by terrorists in 1993. The building was designed to withstand terrorist attacks, including the use of explosives. The building was designed with reinforced concrete construction, blast-resistant windows, and other features to resist blast loads. The building was also designed with multiple access points, to allow for easy evacuation in the event of a terrorist attack. The building was also equipped with security systems, such as cameras and sensors, to monitor the building for potential threats.

The guidelines issued by the IIT-K are a step in the right direction, and are an important resource for professionals involved in the design and construction of buildings. However, it is important to remember that no building is completely safe from terrorist attacks, and that building professionals must remain vigilant and prepared to respond to potential threats.