Section 18. Explosive Blast

Contents

Why an Explosive Blast Is a Threat

Throughout human history, there have been many threats to the security of nations. These threats have brought about large-scale losses of life, the destruction of property, widespread illness and injury, the displacement of large numbers of people, and devastating economic loss.
Recent technological advances and ongoing international political unrest are components of the increased risk to national security.

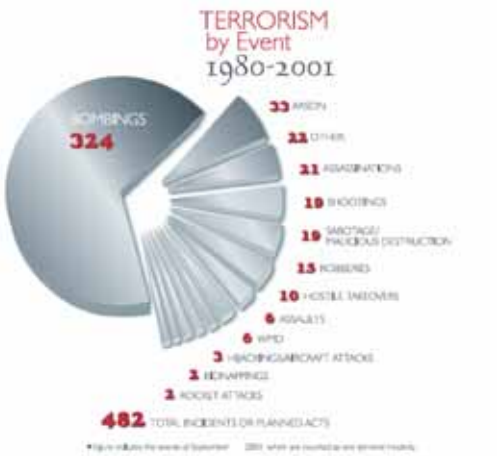

Figure 18-1. Nature of the Terrorist Threat, Terrorism by Event

Terrorism is the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion, or ransom. Terrorists often use threats to:

- Create fear among the public.
- Try to convince citizens that their government is powerless to prevent terrorism.
- Get immediate publicity for their causes.

Figure 18.2 - Terrorism by Group Class

Acts of terrorism include threats of terrorism; assassinations; kidnappings; hijackings; bomb scares and bombings; cyber attacks (computer-based); and the use of chemical, biological, nuclear and radiological weapons. As indicated in Figure 18-1, about two-thirds of terrorist events are bombings.

High-risk targets for acts of terrorism include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, and corporate centers. Further, terrorists are capable of spreading fear by sending explosives or chemical and biological agents through the mail.

Terrorists have frequently used explosive devices as one of their most common weapons. As noted in Figure 18-1, over 70% of the attacks against U.S interests have been explosive blasts. Terrorists do not have to look far to find out how to make explosive devices; the information is readily available in books and other information sources.

The materials needed for an explosive device can be found in many places including variety, hardware and auto supply stores. Explosive devices are highly portable using vehicles and humans as a means of transport. They are easily detonated from remote locations or by suicide bombers.

Conventional bombs have been used to damage and destroy financial, political, social and religious institutions. Attacks have occurred in public places and on city streets with thousands of people around the world injured and killed.

Detonation of an explosive device is generally made on or near the target, with delivery via a person, vehicle or projectile. Additional "secondary devices" may be used, lengthening the duration of the hazard until the attack site is determined to be clear. The extent of damage is determined by the type and quantity of explosive. Effects can include cascading consequences, such as incremental structural failure.

Overpressure at a given standoff is inversely proportional to the cube of the distance from the blast; thus, each additional increment of standoff provides progressively more protection. Terrain, forestation, structures, etc., can provide shielding by absorbing and/or deflecting energy and debris. Exacerbating conditions include ease of access to the target; lack of barriers/shielding; poor construction; and ease of concealment of the device.

Terrorist use of an RDD—often called "dirty nuke" or "dirty bomb"—is considered far more likely than use of a nuclear explosive device. An RDD combines a conventional explosive device—such as a bomb—with radioactive material. It is designed to scatter dangerous and sub-lethal amounts of radioactive material over a general area. Such RDDs appeal to terrorists because they require limited technical knowledge to build and deploy compared to a nuclear device. Also, the radioactive materials in RDDs are widely used in medicine, agriculture, industry and research, and are easier to obtain than weapons grade uranium or plutonium.

The primary purpose of terrorist use of an RDD is to cause psychological fear and economic disruption. Some devices could cause fatalities from exposure to radioactive materials. Depending on the speed at which the area of the RDD detonation was evacuated or how successful people were at sheltering-in-place, the number of deaths and injuries from an RDD might not be substantially greater than from a conventional bomb explosion.

The size of the affected area and the level of destruction caused by an RDD would depend on the sophistication and size of the conventional bomb, the type of radioactive material used, the quality and quantity of the radioactive material and the local meteorological conditions—primarily wind and precipitation. The area affected could be placed off-limits to the public for several months during cleanup efforts.

Hazard Profile

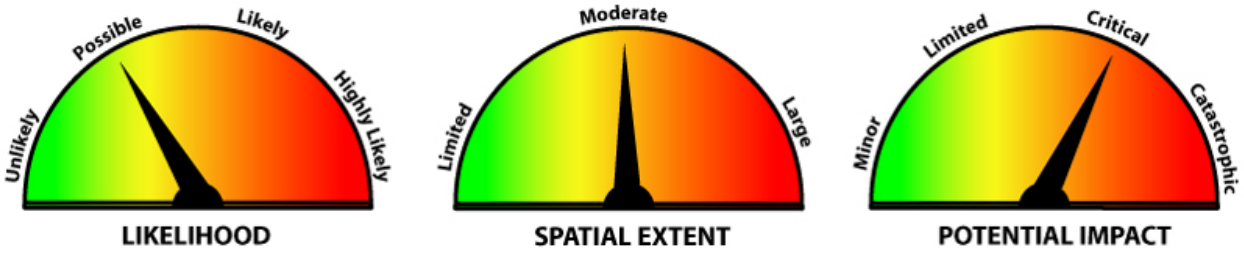

Figure 18-2. Conventional Explosive Blast Hazard Profile Summary for the City of Plano

The frequency, or likelihood, of a conventional explosive blast in the City of Plano is "Possible, " with an event possible in the next 2 – 3 years. Depending on its size, the spatial extent of an explosive blast would be "Moderate," expected to affect twenty-five percent or less of property.

If it occurs, however, it could affect a significant portion of the City's population with a potentially critical impact. "Critical" impacts may result in multiple deaths or injuries. More than 25% of property in the affected area is damaged or destroyed. There may be a complete shutdown of facilities for more than one week.

Location of Hazardous Areas

Improvised explosive devices could be used anywhere in the City of Plano to kill and maim people, destroy property and cause panic. There is no hazard boundary for explosive blast.

History of Explosive Attacks

There is no history of explosive attacks in the City of Plano. The most damaging attack using explosives in the United States occurred in 1995 when the Alfred P. Murrah Federal Building was destroyed in Oklahoma City by a truck bomb killing 168 people. This was the work of a United States citizen rather than a foreign terrorist.

People and Property at Risk

City of Plano officials assessed the potential magnitude and distribution of various sizes of explosive blasts in the City of Plano. Figures 18-3, 18-4 and 18-5 show the impact of a 50-pound bomb, a 200-pound bomb and a 1,000 pound bomb, respectively. In each of the three figures, the blast analysis indicates the area of structural damage (red ring), probable lethal injuries (orange ring), and severe injuries from glass (yellow ring).

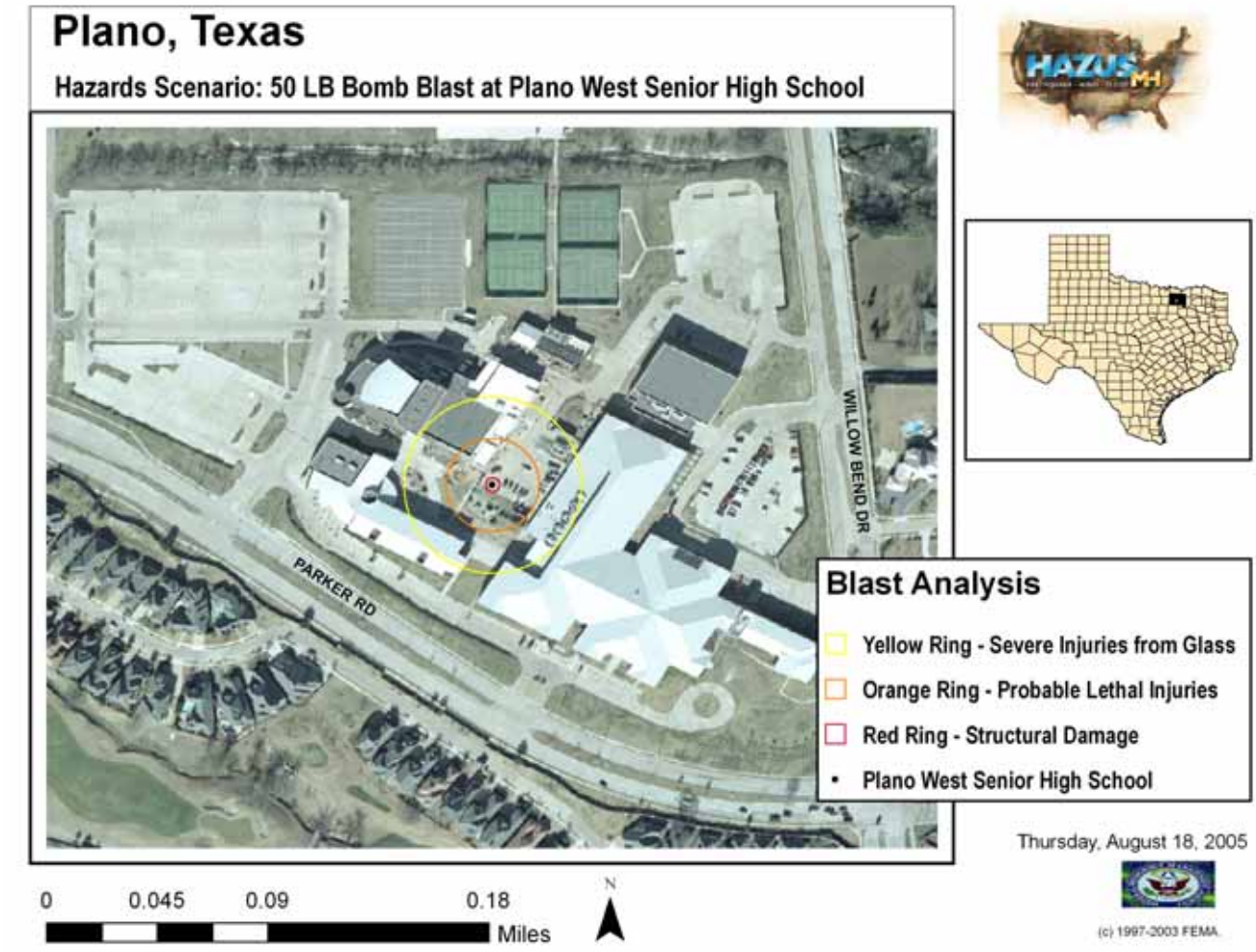

Figure 18-3. Impact of 50-Pound Bomb Blast at Plano West Senior High School

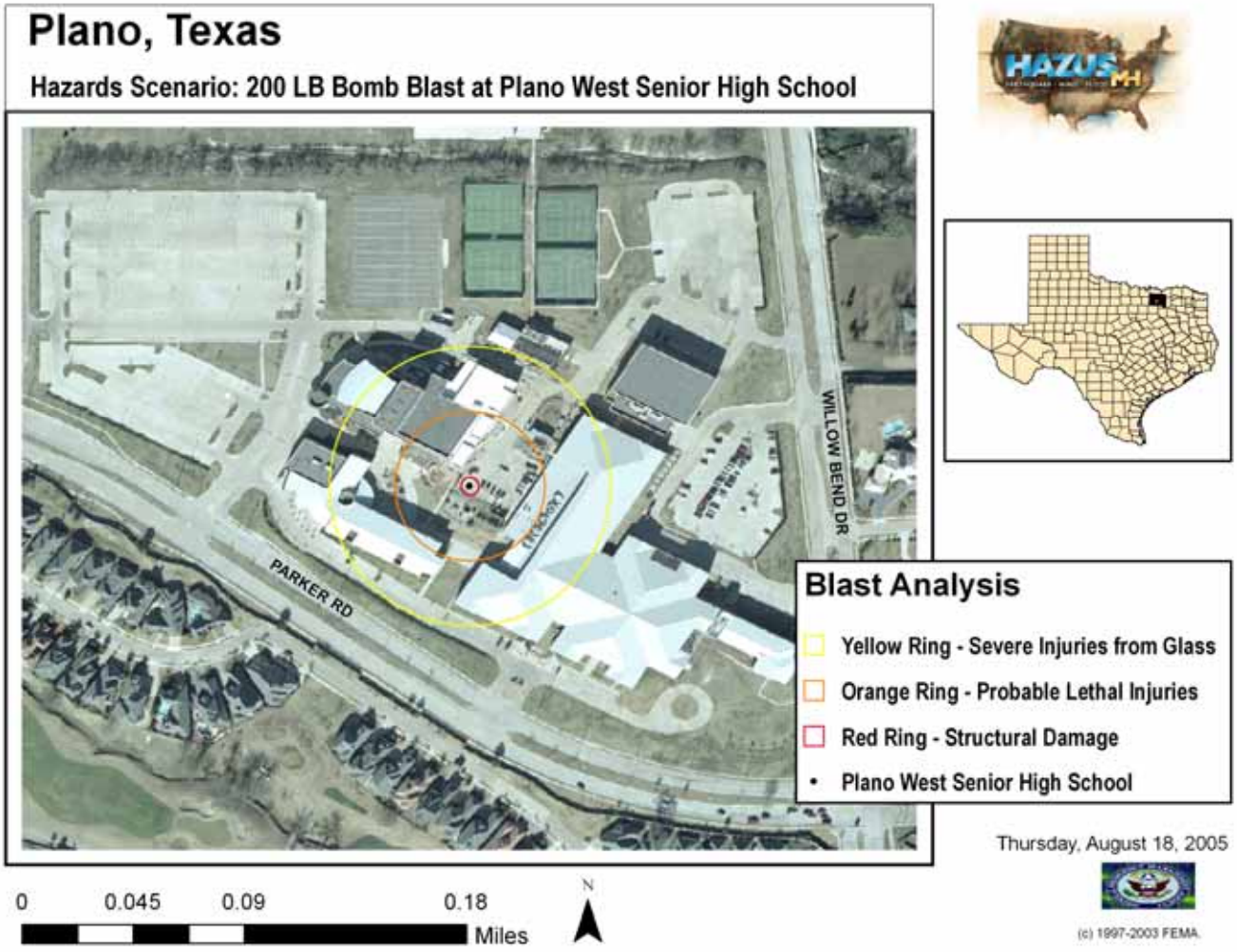

Figure 18-4. Impact of 200-Pound Bomb Blast at Plano West Senior High School

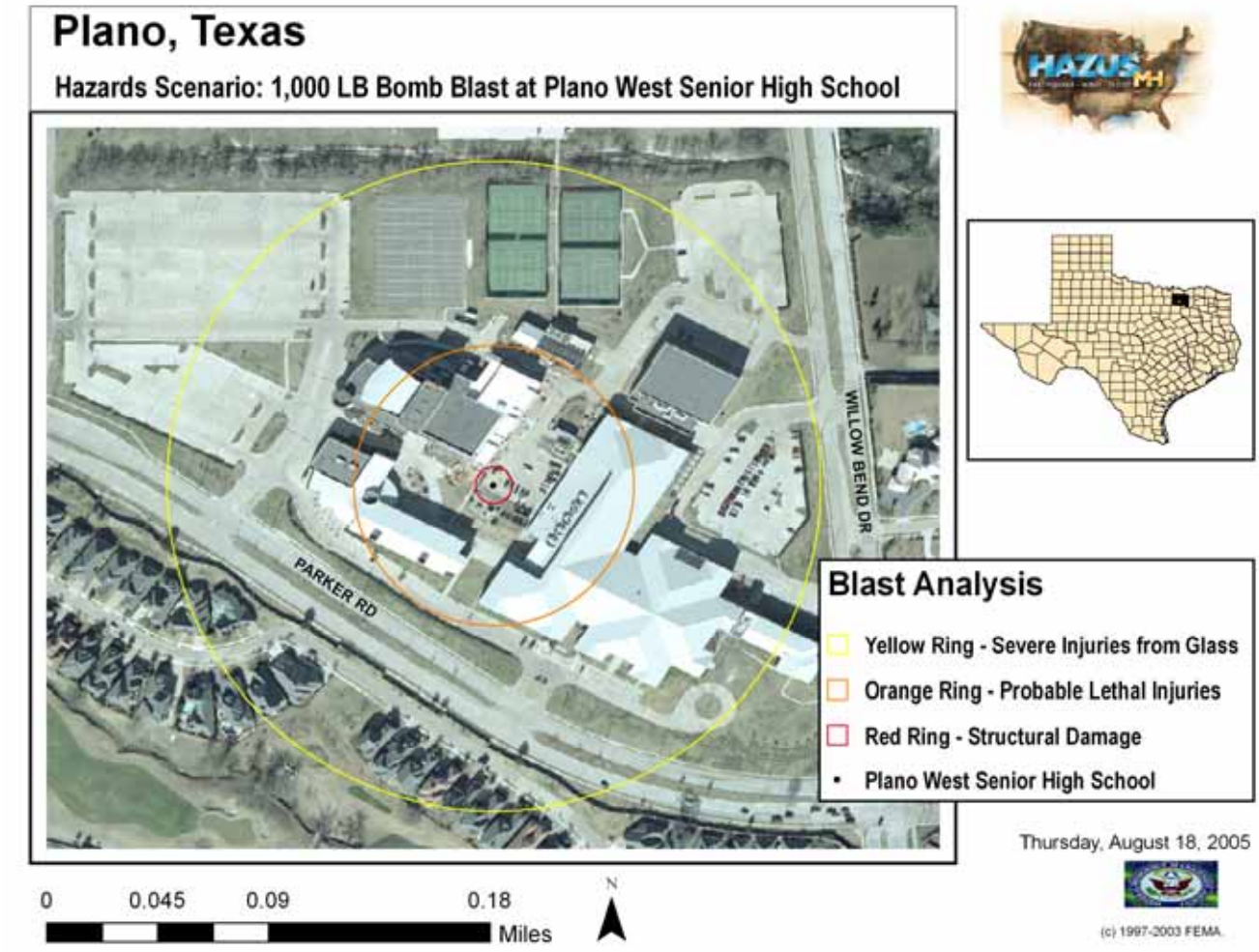

FIGURE 18-5. Impact of 1,000-Pound Bomb Blast at Plano West Senior High School

There are many measures that can be taken to reduce the risk of explosive blast. They are summarized in Figure 18-6.

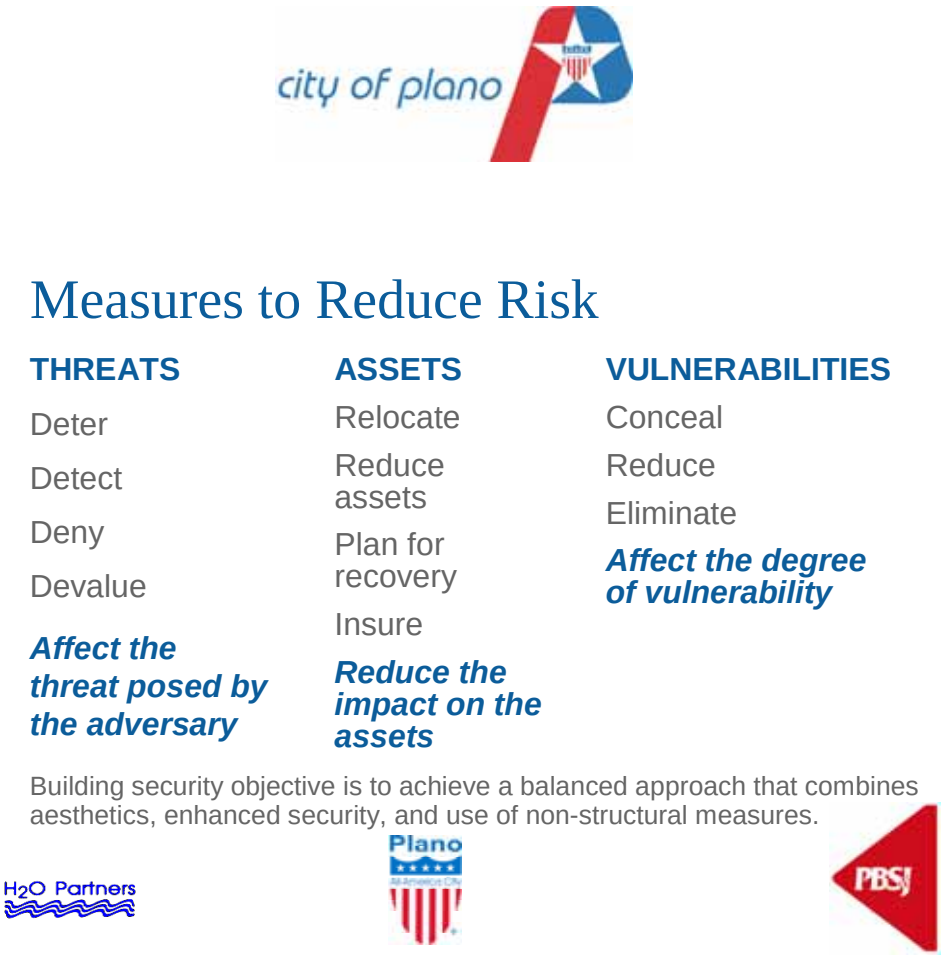

Figure 18-6. Measures To Reduce Risk