OVERVIEW

The basic definitions used to assess the Threat associated with a terrorist attack are given in this chapter, along with detailed information and guidance on how to select the appropriate attribute options for each building characteristic related to Threat Rating.

THREAT RATING

The Threat Rating represents the relative likelihood that terrorists will attack the building with a given weapon and means of delivery. Information used to determine the Threat Rating typically comes from law enforcement and intelligence communities familiar with credible threats.

Threat rating is a function of the following building characteristics:

- Occupancy Use
- Number of Occupants
- Site Population Density
- Visibility/Symbolic Value
- Target Density
- Overall Site Accessibility
- Target Potential

The Threat Rating is based on a defined set of threat types and scenarios executed within a certain distance from the targeted building(s). These basic concepts are discussed in the sections below.

Although the building characteristics used for the Threat Rating are nearly identical to those used for Consequences, the screener should keep in mind that the Threat Rating is from the terrorist perspective, whereas the Consequence rating is from the owner/operator perspective.

Threat is defined as any indication, circumstance or event with the potential to cause loss of, or damage to an asset.

Page 4 of the Data Collection Form (Figure 5) is used to determine Threat Ratings for each of the nine threat scenarios, as a function of the subset of building characteristics and attribute options that pertain to the given threat. This organization has the advantage of enabling

this screening procedure to be easily expanded as additional threats are identified.

THREAT TYPES

Terrorist threats that have the ability to cause catastrophic losses in terms of damages, casualties and business interruption are considered in this rapid visual screening procedure. Specifically, the following three generic threat types are considered:

- *Internal Attack.* Intrusion into the building by a person or persons with the intent of executing an attack by means of an explosive, chemical, biological or radiological (CBR) release or other attack type. An internal attack could also refer to the introduction of a weapon or hazard into the building from the exterior. Examples of this include introduction through openings in the building exterior such as a door, window, utility line or air intake. Alternatively, it may be delivered into the building by mail.
- *External Explosive Attack.* A vehicle weapon (e.g., car bomb, VBIED).
- *External Chemical, Biological, Radiological (CBR) Release.* An exterior ground release of an airborne chemical, biological, or radiological agent. Radiological agent does not refer to a nuclear weapon. It refers to a "dirty bomb" or a radiological dispersal device combining a conventional explosive, such as dynamite, with radioactive materials.

ZONE DEFINITIONS

For commercial office or other standard-use buildings, it is likely that the building under consideration is not the target of attack, but is close to one or more high-profile targets. In this case, the building will be subject to collateral effects, which will vary in severity depending on the proximity to the target and the magnitude of the threat.

This rapid visual screening procedure has been designed to address both target and non-target buildings; however, it should not be used if the building is a one-of-a-kind iconic building, such as the White House or Pentagon. In these cases, the building would have a significantly greater likelihood of attack, and a higher level risk assessment procedure, such as is found in FEMA 452, should be used to evaluate the risk.

FEMA 455 DATA COLLECTION FORM, PAGE 4 **THREATS**

BUILDING CHARACTERISTICS		ATTRIBUTE OPTIONS					THREAT RATING FOR GIVEN THREAT SCENARIO								
							Internal			Explosive			CBR		
		a.	b.	c.	d.	e.	Intrusion	Explosive	CBR	Zone I	Zone II	Zone III	Zone I	Zone II	Zone III
2. THREAT	2.1 Occupancy Use	Occupancy Group I	Occupancy Group II	Occupancy Group III											
		0.14	1.13	1.4											
		0.11	0.89	1.1											
	2.2 # Occupants	< 200	≥ 200 - < 400	≥ 400 - < 600	≥ 600 - < 800	≥ 800 - < 1000									
		0.14	0.68	0.85	0.97	1.07									
		0.11	0.53	0.67	0.77	0.84									
		≥ 1,000 - < 2,000	≥ 2,000 - < 4,000	≥4,000 - < 6,000	≥6,000 - < 8,000	≥ 8,000 - < 10,000									
		1.11	1.17	1.23	1.28	1.33									
		0.87	0.92	0.96	1.00	1.04									
		≥10,000 - < 20,000	≥ 20,000 - < 40,000	≥ 40,000 - < 60,000	≥ 60,000 - < 80,000	≥ 80,000									
		1.35	1.36	1.38	1.39	1.4									
		1.06	1.07	1.08	1.09	1.1									
	2.3 Site Population Density (per sq ft)	Very Low (1/10000)	Low (1/1000)	Moderate (1/400)	High (1/40)	Very High (1/10)									
		0.11	0.81	0.93	1.02	1.1									
		0.30	2.21	2.53	2.78	3.0									
	2.4 Visibility/Symbolic	Very Low	Low	Moderate	High	Very High									
		0.29	2.14	2.45	2.69	2.9									
		0.24	1.77	2.02	2.23	2.4									
	2.5 Target Density: 2.5.1 Zone I (< 100 ft)	0	1	2	3	≥ 4									
		0.12	0.88	1.01	1.11	1.2									
	2.5 Target Density: 2.5.2 Zone II (≥100 - <300 ft)	0	1-3	4-6	7-9	≥ 10									
		0.30	2.21	2.53	2.78	3.0									
	2.5 Target Density: 2.5.3 Zone III (≥300 - ≤1000 ft)	0	1-6	7-12	13-19	≥ 20									
		0.80	5.89	6.75	7.43	8.0									
	2.6 Overall Site Accessibility	Inaccessible	Accessible												
		0.14	1.4												
		0.06	0.6												
	2.7 Target Potential: 2.7.1 Facility	No	Yes												
		0.15	1.45												
		0.13	1.25												
		0.20	2												
		0.10	1												
	2.7 Target Potential: 2.7.2 Facility Type	No	Yes												
		0.15	1.45												
		0.13	1.25												
		0.20	2												
		0.10	1												
T.1 TOTAL THREAT RATING (T): Sum values for each Threat Scenario in column T on Risk Scoring Worksheet															

Figure 5 Page 4 of Data Collection Form, Threats.

For Internal threats, the subject building is, by definition, the target building. Exterior threats may or may not be targeting the building. To make this distinction, three external zones are defined as shown in Figure 6.

Zone 1 refers to an attack occurring at a target less than 100 feet from the exterior envelope of the building under consideration; Zone 2 refers to an attack occurring at a target at least 100 feet and less than 300 feet from the subject building; and Zone 3 refers to an attack occurring at a target at least 300 feet but not more than 1000 feet from the subject building.

The Zone 1 distances are based on the distances required to cause catastrophic effects in terms of casualties, damages, and business interruption. Zone 2 distances are based on the distances required to cause a moderate hazard level and Zone 3 corresponds to a minor hazard level.

Not to be confused with FEMA 452 layers of defense, *Zones* are areas around the building under consideration, defined by the distances shown in Figure 6. *Zones* are used to inventory the number and location of potential targets in the vicinity of the subject building to define *Target Density*.

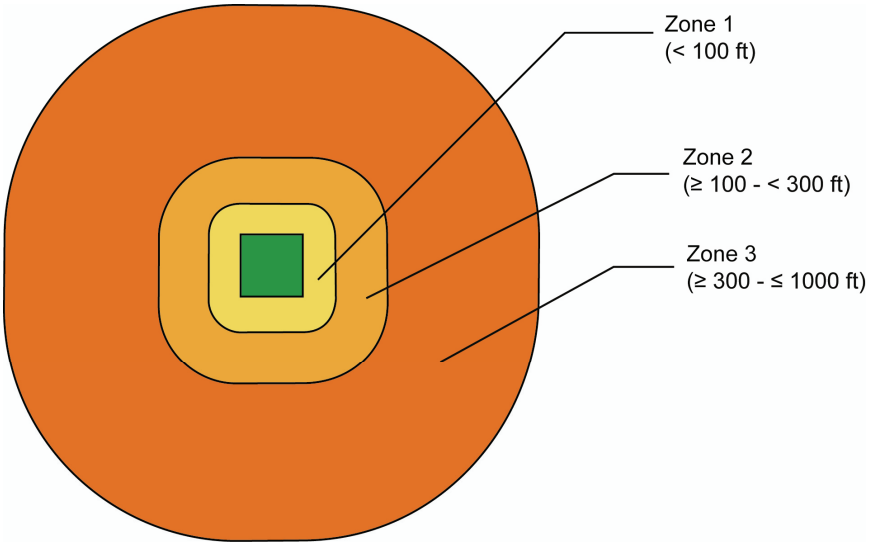


Figure 6 Zone Definitions.

THREAT SCENARIOS

To address both targeted and non-targeted buildings, nine distinct threat scenarios across three threat types are considered in this procedure, as summarized in Table 7.

Table 7. Threat Scenarios and Threat Types

Threat Scenario	Threat Type
1. Internal Explosive Attack 2. Internal CBR Release 3. Other Internal Attack	Internal Attack
4. External Zone I Explosive Attack 5. External Zone II Explosive Attack 6. External Zone III Explosive Attack	External Explosive Attack
7. External Zone I CBR Release 8. External Zone II CBR Release 9. External Zone III CBR Release	External Chemical, Biological, Radiological (CBR) Release

Threat scenarios 1 through 3 comprise the Internal threat, scenarios 4 through 6 comprise the External Explosive threat, and scenarios 7 through 9 comprise the External CBR threat. The final risk score reports risk ratings as a single overall risk assessment score encompassing all nine scenarios, and for individual scenarios or threat types.

CONDUCTING THE FIELD ASSESSMENT

As before, the Field Version is used to document (circle) the selected attribute option for each building characteristic that affects Threat Rating; this information is later transferred to the electronic database, where the risk scoring occurs automatically, or to the long form. When the long-form Data Collection Form containing scores is used, the score for the selected option is circled and inserted in the blank cell(s) to the right under one or more Threat Scenario columns; scores are then totaled at the bottom of the form and entered on the Risk Scoring Worksheet.

Guidance and information to how to choose between attribute options for the building characteristics pertaining to Threat Rating are provided in Table 8. This table is a useful tool to be used in the field to accurately evaluate the appropriate attribute option.

Table 8. Guidance on Threat Assessment: 2. Threat

2 Threat		
ID	**Building Characteristics**	**Attribute Options**
2.1	**Occupancy Use** This building characteristic is included on Page 1 of the Data Collection Form and it is recommended that it is researched prior to the field visit. In the field the use of the building may be verified by reviewing the directory in the lobby, speaking with a site representative, or from law enforcement familiar with the property. Examples of occupancy types within each group are given to the right. Because this procedure focuses on building structures, the examples are only for buildings in these categories. Note also that examples of occupancy types within these groups are arranged alphabetically. Based on historical data from past terrorist attacks (ref.: National Consortium for the Study of Terrorism and Responses to Terrorism, Global Terrorism Database (http://209.232.239.37/gtd2/Default.aspx), different occupancies have varying degrees of target attractiveness. For the purpose of determining the Threat Rating, this rapid visual screening procedure considers three occupancy groups, listed in order of increasing contribution to risk.	**Options** (with examples of occupancy types) a **Occupancy – Group I** • ***Agricultural*** - processing plants for meat, dairy or grain type foods (also see Group III). • ***Chemical*** – chemical processing plant buildings, petrochemical manufacturing, hazardous chemical transport (pipelines, pumping stations, control centers, tankers, freight rail, chemical warehousing and storage). • ***Critical Manufacturing*** – iron and steel mills, power transmission equipment, electrical equipment, transportation equipment. • ***Dams*** – maintenance and operation buildings. • ***Defense Industrial Base*** - buildings clearly marked with the name of a major defense contractor, manufacturing plants associated with the production of military munitions, aircraft, space industry, combat vehicles, troop support or other product used by the military. • ***Drinking Water and Treatment Systems*** - waste treatment facility buildings, maintenance and operations buildings.

Table 8. Guidance on Threat Assessment: 2. Threat (continued)

2 Threat		
ID	**Building Characteristics**	**Attribute Options**
2.1 (contd)	The group definitions provided are based on the target attractiveness of the critical infrastructure sectors defined by the Department of Homeland Security. An abbreviated version of this taxonomy is provided in Appendix D (ref.: *Infrastructure Taxonomy*, Version 2, Risk Management Division Office of Infrastructure Protection, Department of Homeland Security, November 1, 2006). The groups are arranged in order of increasing target attractiveness. The electronic database version of this procedure allows the screener to identify the use by means of pull down menus to define not only the sector, but also sub-sectors of critical infrastructure. Note that the sectors may shift as the terrorist threat evolves or may vary in specific geographic regions. For a multi-use building, the highest risk occupancy should be selected, but in some cases using judgment may be more appropriate. For instance, if there is an automatic teller machine in the lobby of a multi-tenant office building, banking and finance would not necessarily be the appropriate occupancy group (unless the tenant base was dominantly in the banking and finance sector).	• ***Information Technology*** - data centers, microprocessor manufacturing facility, high-technology corporate office buildings. • ***Postal and Shipping*** - post offices, shipping processing plants. b **Occupancy – Group II** • ***Commercial Nuclear Reactors/Materials*** - processing plant buildings for nuclear materials and waste; research laboratories using nuclear materials. • ***Energy*** - power plant buildings, petroleum refinery buildings, maintenance and operation buildings. • ***National Monuments/Icons*** – Federally owned buildings that are significant to the national identity of Americans, e.g., Liberty Bell Center. • ***Public Health and Healthcare*** - hospitals, medical centers, clinics, medical research laboratories, and pharmaceutical facilities, medical educational facilities. • ***Telecommunications*** - telephone switching centers, telephone or internet related firm office facilities. c **Occupancy – Group III** • ***Agricultural/Food*** - restaurants, bars, nightclubs, supermarkets, convenience stores, gourmet food shops (also see Group I). • ***Banking and Finance*** - *clearly marked or commonly recognized* office building for a commercial bank, investment bank, insurance company, board of trade, mercantile exchange, stock exchange, or federal reserve building. Note that a store front bank branch or automated teller machine(s) is a low-risk example that falls within this group. • ***Commercial*** – A broad range of building types fall under this category. Some are listed below. – Community Organization Facilities – social advocacy, civic and social organization facilities. – Entertainment and Media Facilities – broadcasting (cable, radio, television), internet publishing, motion picture, sound recording, newspaper, magazine, publishing. – Gambling Facilities/Casinos (Resorts) – horse and dog racetracks, land-based casinos. – Industrial Assets – heavy manufacturing, operations and maintenance facilities, assembly plants, factory buildings. – Lodging Facilities – hotels, motels.

Table 8. Guidance on Threat Assessment: 2. Threat (continued)

2 Threat		
ID	**Building Characteristics**	**Attribute Options**
2.1 (contd)		– Industrial – heavy manufacturing, operations and maintenance facilities, assembly plants, factory buildings. – Museum/Library – buildings of great historical value due to contents. – Office – office buildings typically housing clerical and management functions. – Public Assembly/Sports Leagues Facilities – convention centers, movie theaters, museums, performing arts centers and auditoriums, arenas. – Recreational – gymnasiums, amusement arcades, bowling alleys, indoor swimming pools, indoor tennis courts, pool and billiard parlors. – Religious – places of worship, buildings housing religious objects or functions. – Residential – houses, townhouses, apartment complexes, multi-family dwellings. condominiums, dormitories, single family homes. – Retail – shopping centers, department stores. • ***Educational*** – pre-kindergarten, licensed day care facilities, K-12 schools, higher education facilities, specialized education facilities. • ***Emergency Services*** - police stations, emergency operations or control centers, fire command stations, armories. • ***Government*** - federal, state, county or city buildings including city halls, state capital buildings, federal office buildings, courthouses, or governmental service agency center. • ***Military*** – army, navy, marine corps, air force and coast guard bases. National guard facilities, joint and combined military installations and reservations. • **Transportation Systems** – port, airport, and light rail terminals; rapid transit stations.
2.2	**Number of Occupants** (See 1.2).	**Options** Use same option as was used for Building Characteristic 1.2. When using the electronic database version of the procedure, this building characteristic is automatically filled in using the same option as was used in 1.2. **NOTE**: THIS BUILDING CHARACTERISTIC IS HEAVILY WEIGHTED IN THE SCORING. A MINOR CHANGE IN THE CHOICE OF ATTRIBUTE OPTION SELECTED MAY CAUSE A DISPROPORTIONATELY LARGE CHANGE IN THE FINAL RISK SCORE.

Table 8. Guidance on Threat Assessment: 2. Threat (continued)

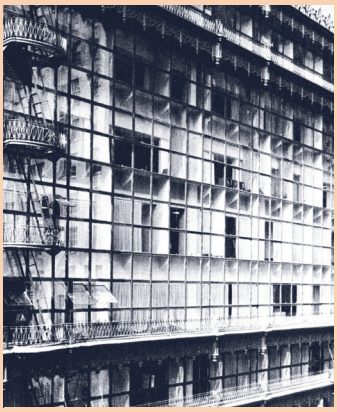
2 Threat		
ID	**Building Characteristics**	**Attribute Options**
2.3	**Site Population Density** Refers to the population that are not in the building, but are nearby on the sidewalk, in vehicles, in adjacent or nearby buildings and below ground, for example, in pedestrian tunnels, or subway train stations. The time of peak population density is to be considered, for instance, during rush hour, or during an event when there is a public gathering.	**Options:** a **Very Low** (1 person per 10,000 sq. ft.) b **Low** (1 person per 1,000 sq. ft.) c **Moderate** (1 person per 400 sq. ft.) d **High** (1 person per 40 sq. ft.) e **Very High** (1 person per 10 sq. ft.) **NOTE**: THIS BUILDING CHARACTERISTIC IS HEAVILY WEIGHTED IN THE SCORING. A MINOR CHANGE IN THE CHOICE OF ATTRIBUTE OPTION SELECTED MAY CAUSE A DISPROPORTIONATELY LARGE CHANGE IN THE FINAL RISK SCORE.
2.4	**Visibility/Symbolic**  **Example of Very Low Option (a):** Hallidie Building, San Francisco, 1906: first true glass curtain wall building in the U.S. **Example of Low Option (b):** Flatiron Building, New York City, 1903, on triangular site, a very significant early skyscraper; many similar buildings exist in other cities.	**Options:** a **Very Low** - The facility is unrecognizable to locals. Its significance can be recognized by experts only. No information is available to the general public. It has no media value or symbolism to the general public. b **Low** - The facility is recognizable but can be confused with other similar facilities. Insider information is required. The facility is rarely featured in the mass media at any level. c **Moderate** - The facility is easily recognizable around the state and somewhat regionally. The facility has media value and events at the site that are televised regionally and sometimes nationally. d **High** - The facility is recognizable to state and local residents. The facility is featured in the mass media on a regional and sometimes on a national level. Some events at the facility are televised internationally. e **Very High** - The facility is easily recognizable, and is featured in the mass media internationally. Its media value guarantees its recognition and events at the site are almost always televised nationally and internationally. **NOTE**: THIS BUILDING CHARACTERISTIC IS HEAVILY WEIGHTED IN THE SCORING. A MINOR CHANGE IN THE CHOICE OF ATTRIBUTE OPTION SELECTED MAY CAUSE A DISPROPORTIONATELY LARGE CHANGE IN THE FINAL RISK SCORE.

Table 8. Guidance on Threat Assessment: 2. Threat (continued)

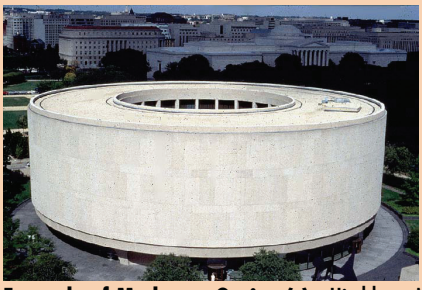
2 Threat		
ID	**Building Characteristics**	**Attribute Options**
2.4 (contd)	 **Example of Low Option (b):** World Market Center in Las Vegas is recognizable to locals and interior designers who go to events there, but it is away from the main tourist area and is not well recognized by the general public. Photograph by Paulette Nelson, July 2005.  **Example of Moderate Option (c):** Hirshhorn Museum in Washington DC is well known in the local region with occasional national exposure. Photograph by Charles Phillips,1995. **Example of High Option (d):** Transamerica Pyramid, San Francisco, is generally recognized nationally as a symbol of San Francisco. **Example of High Option (d):** Mandalay Bay Casino and Hotel in Las Vegas; this hotel is shown in the opening sequence of a television show that is popular internationally. Photograph courtesy of Mandalay Bay Casino and Hotel.	

Table 8. Guidance on Threat Assessment: 2. Threat (continued)

2 Threat		
ID	**Building Characteristics**	**Attribute Options**
2.4 (contd)	**Example of Very High Option (e):** The Empire State Building is recognized nationally and internationally as symbol of USA. Photograph courtesy of www.empire.state.ny.us.	
2.5	**Target Density** Target density is defined as the number of *high-value targets* within *a certain distance of the building under consideration.* This information is included on Page 1 for pre-field assessment. Potential targets are grouped into Zones 1, 2, or 3, depending on their distance from the exterior face of the building. The number of targets within these zones is referred to as the target density. Note that this building characteristic refers to the facilities around it, not the building itself. It is important to do the research for this building characteristic before visiting the building. The quality of the risk score is a function of the quality of input that goes into the scoring. Sources of information include the internet (e.g., Googlearth) or the local building department. When performing the site visit, it is also valuable to take the time to walk around the area and gather additional information that is not accessible through other methods. Note that the definition of a target refers to a structure that is commonly known or recognized within the community or clearly marked as a facility that is considered significant to the economy, health or welfare of the community. This may be a building structure or other type of structure such as a bridge or dam. A list of the Critical Infrastructure and Key Resources sectors defined by the Department of Homeland Security is provided as a reference tool for evaluating target density (ref.: *National Infrastructure Protection Plan*, DHS, 2006). Sub-sectors within each category should also be reviewed as a part of the research for this characteristic and have been included within the pull down menu of the electronic version of the procedure.	**Options:** **Zone 1-** less than 100 ft **Zone 2 –** equal to or more than 100 ft less than 300 ft **Zone 3 –** more than or equal to 300 ft less than or equal to 1000 ft **NOTE**: THIS BUILDING CHARACTERISTIC IS HEAVILY WEIGHTED IN THE SCORING. A MINOR CHANGE IN THE CHOICE OF ATTRIBUTE OPTION SELECTED MAY CAUSE A DISPROPORTIONATELY LARGE CHANGE IN THE FINAL RISK SCORE. Critical Infrastructure and Key Resources Sectors: 1. Agricultural/Food 2. Banking and Finance 3. Chemical 4. Commercial 5. Critical Manufacturing 6. Dams 7. Defense Industrial Base 8. Emergency Services 9. Energy 10. Government Facilities 11. Information Technology 12. National Monuments/Icons 13. Nuclear 14. Postal and Shipping 15. Public Health and Healthcare 16. Telecommunications 17. Transportation Systems 18. Water Supply (See building characteristic 2.1 for building examples)

Table 8. Guidance on Threat Assessment: 2. Threat (continued)

2 Threat		
ID	**Building Characteristics**	**Attribute Options**
2.6	**Overall Site Accessibility** Site access provides a general assessment of the physical and operational security measures in place. It refers to the ability of the terrorist to become well-positioned to successfully execute a major attack against the building under consideration. It is a function of the site, the building layout, and the security measures in place. Site in this context refers to everything that is outside the building, but is on the property. In the case of urban environments, it also includes the sidewalk. Site access by pedestrians and vehicles are both to be considered. Landscaping features, parking restrictions, street configuration, sidewalk width as well as perimeter security are all factors to include in this evaluation. This is a general access of the accessibility of the site taking into consideration the overall effectiveness of the design features of the site to deter, delay or otherwise facilitate the execution of a terrorist attack. **Example Inaccessible Option (a):** water feature and steps as effective barrier to vehicles. Photograph by Frank Ooms, NBBJ Architects. **Example Accessible Option (b):** easy access to building security office.	**Options:** a **Inaccessible** b **Accessible**

Table 8. Guidance on Threat Assessment: 2. Threat (continued)

2 Threat		
ID	**Building Characteristics**	**Attribute Options**
2.7	**Target Potential** This building characteristic addresses the likelihood of a terrorist attack occurring at the Facility under consideration or for the Facility Type represented in the context of the 18 critical infrastructure categories (see list of sectors for building characteristic 2.5 and the examples shown for building characteristic 2.1). Facility refers to the campus, compound, base, installation, etc. on the same property where the building under consideration is located. Facility Type refers to the Critical Infrastructure and Key Resources (CI/KR) sector corresponding to the primary type of business that is conducted within the building. For instance, if the facility is occupied primarily by tenants who are in the banking industry, then the Facility Type is "Bank". If, based on open source material, the Facility Type is currently, or has in the past been, targeted within the continental United States, then the attribute option is YES. For instance, if the Facility Type is "Bank", and Banking/Finance, Government and Commercial HAVE been targeted, then the option selected would be YES. This building characteristic is partially based on available factual information. However, in many cases judgment is required. It has been included on Page 1 for pre-field assessment. Information is most reliably obtained from a senior security representative for the building. Other sources include law enforcement officials in the area, newspapers and internet searches. The Target (threat) potential may change rapidly based on new information that becomes available. The screener is to base their response on the best available information at the time the screening is conducted. Target Potential refers to past AND present potential. The screener is to attach detailed information to the form explaining the reasoning behind the selection of YES or NO. Note that the area or district within the vicinity of the facility is NOT to be considered for this building characteristic. This concept is addressed under Target Density.	**Options:** **2.7.1 Facility** a No b Yes Yes or No for the Facility is based on a credible threat to a subunit within the facility. For example, if a major tenant in the building under consideration has been targeted, then the facility has been targeted (i.e., the attribute option is Yes). Similarly, if a building within a compound of buildings has been threatened, then the compound (facility) has been threatened. **2.7.2 Facility Type** a No b Yes Yes or No for the Facility Type is based on a credible threat against the sector. For example, if the Las Vegas strip has been targeted or received a credible threat, all casinos may be considered to have the same target potential (i.e., the attribute option is Yes) **NOTE**: THIS BUILDING CHARACTERISTIC IS HEAVILY WEIGHTED IN THE SCORING. A MINOR CHANGE IN THE CHOICE OF ATTRIBUTE OPTION SELECTED MAY CAUSE A DISPROPORTIONATELY