Unit I
Building Design for Homeland Security for Continuity of Operations (COOP) Train-the-Trainer

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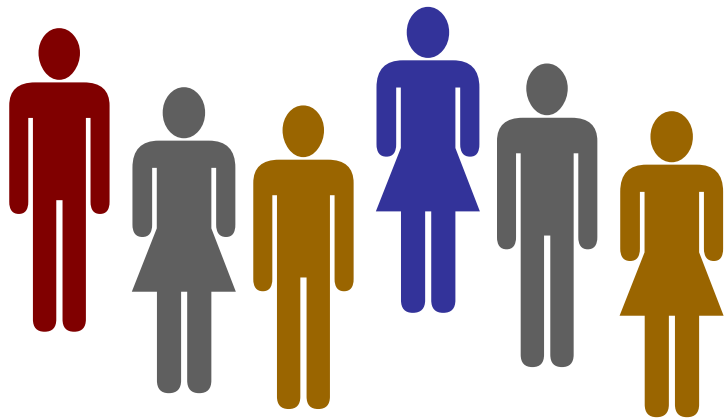
Student Introductions

Name

Affiliation

Area of Concentration

Course Expectations



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Purpose of Course and FEMA 426 Manual

- Provide guidance to COOP Planners/Managers to perform an assessment of their COOP sites
- Enable and encourage COOP Planners/Managers to apply measures and technology available to reduce risk from terrorist attack

Mitigation Information

  - Not mandatory
  - Not applicable to all buildings
  - Not applicable when it interferes with other hazards

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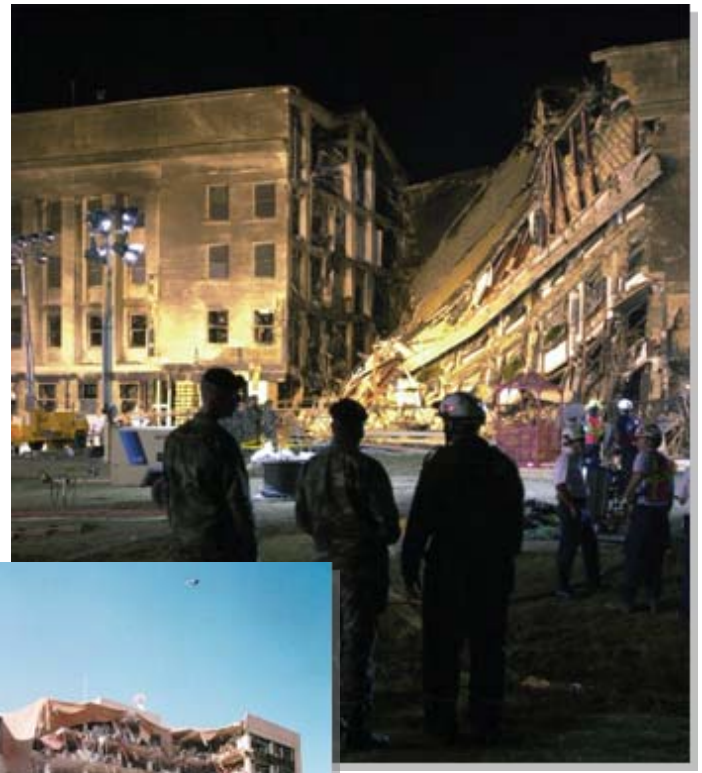
Course Goals

To enhance student understanding of the measures and technology available to reduce risk from terrorist attack.

To enhance student ability to assess a site for COOP requirements and natural and man-made hazards



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Course Objectives

Students will be able to:

1. **Explain** the basic components of the assessment methodology.
2. **Appreciate** the different assessment methodology approaches that can be used.
3. **Perform** an assessment for a building by identifying and prioritizing assets, threats, and vulnerabilities and calculating relative risk.

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Course Objectives

4. **Identify** available mitigation measures applicable to the site and building envelope.
5. **Understand** the technology limitations and application details of mitigation measures for terrorist tactics and technological accidents.
6. **Perform** an assessment for a given building by identifying vulnerabilities using the Building Vulnerability Assessment Checklist in FEMA 426.

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Course Objectives

7. **Select** applicable mitigation measures and prioritize them based upon the final assessment risk values.
8. **Appreciate** that designing a building to mitigate terrorist attacks can create conflicts with other design requirements.
9. **Understand** interfaces between assessing a facility for man-made and natural threats / hazards and for use as a COOP facility.

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Course Overview – Day 1

Unit I – Introduction and Course Overview
Unit II – Asset Value Assessment
Unit III – Threat / Hazard Assessment
Unit IV – Vulnerability Assessment
Unit V – Risk Assessment / Risk Management

Course Overview – Day 2

Unit VI – FEMA 452 Risk Assessment Database
Unit VII – Explosive Blast
Unit VIII – Chemical, Biological, and Radiological (CBR) Measures
Unit IX – Site and Layout Design Guidance

Course Overview – Day 3

Unit X – Building Design Guidance
Unit XI – Electronic Security Systems
Unit XII – Finalization of Case Study Results
Unit XIII – Train-the-Trainer
Unit XIV – Course Wrap-up

Course Materials

Federal Preparedness Circular – 65

FEDERAL EXECUTIVE BRANCH CONTINUITY OF OPERATIONS (COOP)

The June 15, 2004 version of FPC-65 has been integrated into this course from the building assessment standpoint

All Federal agencies, regardless of location, shall have in place a viable COOP capability to ensure continued performance of essential functions from alternate operating sites during any emergency or situation that may disrupt normal operations.

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Course Materials

Federal Preparedness Circular – 65

Alternate Facility Objective:

- Ensuring that agencies have alternate facilities from which to continue to perform their essential functions during a COOP event

Course Materials

Federal Preparedness Circular – 65

Alternate Facility Requirements:

- Must be capable of implementation both with and without warning
- Must be operational within a minimal acceptable period of disruption for essential functions, but in all cases within 12 hours of COOP activation
- Must be capable of maintaining sustained operations until normal business activities can be reconstituted, which may be up to 30 days

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Course Materials

Federal Preparedness Circular – 65

Alternate Facility Requirements (continued):

- Must provide for a regular risk analysis of current alternate operating facility(ies)
- Must locate alternate operating facilities in areas where the ability to initiate, maintain, and terminate continuity operations is maximized
- Should consider locating alternate operating facilities in areas where power, telecommunications, and internet grids would be distinct from those of the primary

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Course Materials

Federal Preparedness Circular – 65

Alternate Facility Requirements (continued):

- Should take maximum advantage of existing agency field infrastructures and give consideration to other options, such as telecommuting locations, work-at-home, virtual offices, and joint or shared facilities
- Must consider the distance of alternate operating facilities from the primary facility and from the threat of any other facilities/locations (e.g., nuclear power plants or areas subject to frequent natural disasters)

Course Materials

FEMA Publication 426

Reference Manual
to Mitigate Potential Terrorist Attacks Against Buildings

FEMA Publication 452

Risk Assessment: A How-To Guide to Mitigate Potential Terrorist Threats Against Buildings

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FEMA 426 Reference Manual

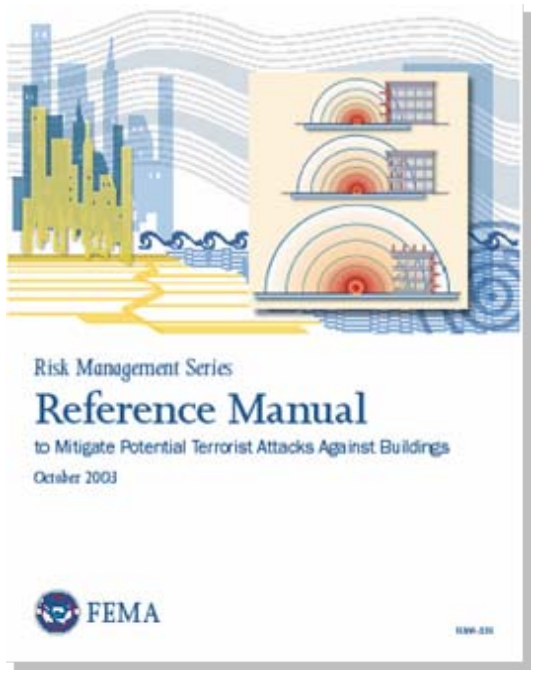
Chapter 1 – Asset Value, Threat/Hazard, Vulnerability, and Risk

Chapter 2 – Site and Layout Design Guidance

Chapter 3 – Building Design Guidance

Chapter 4 – Explosive Blast

Chapter 5 – CBR Measures



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FEMA 426 Reference Manual

Appendix A – Acronyms

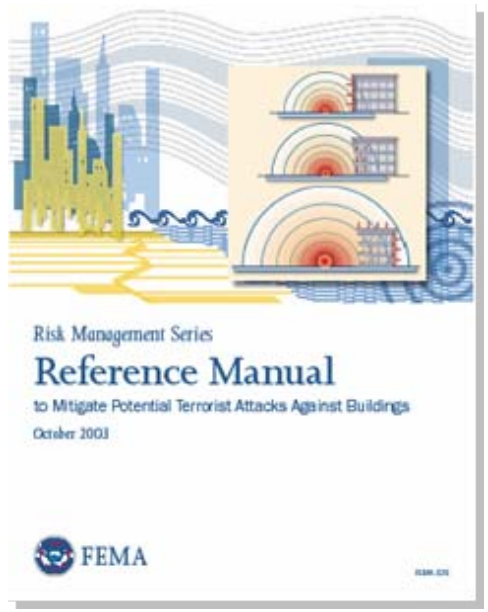
Appendix B – General Glossary

Appendix C – CBR Glossary

Appendix D – Electronic Security Systems

Appendix E – Bibliography

Appendix F – Associations and Organizations



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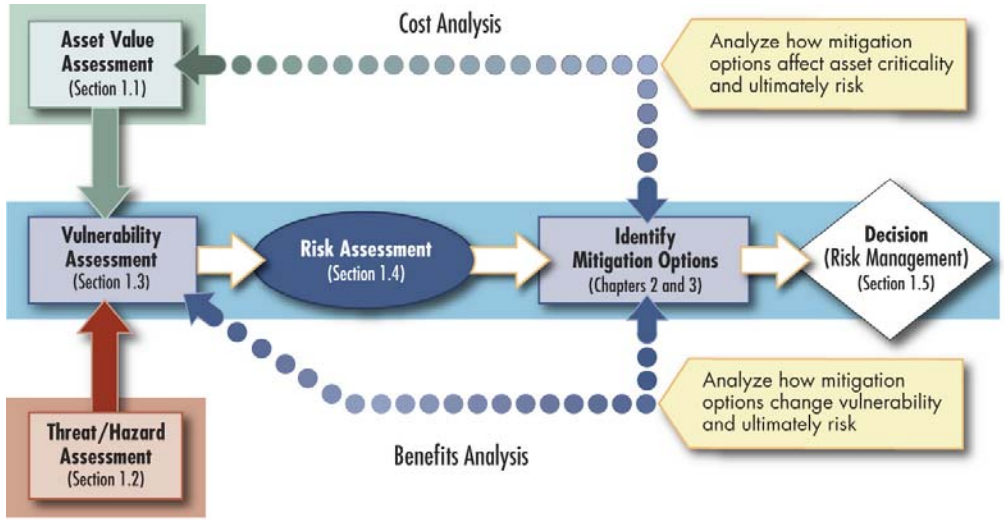
FEMA 426 – Chapter 1

- Asset Value Assessment
- Threat/Hazard Assessment
- Vulnerability Assessment
- Risk Assessment
- Risk Management
- Building Vulnerability Assessment Checklist

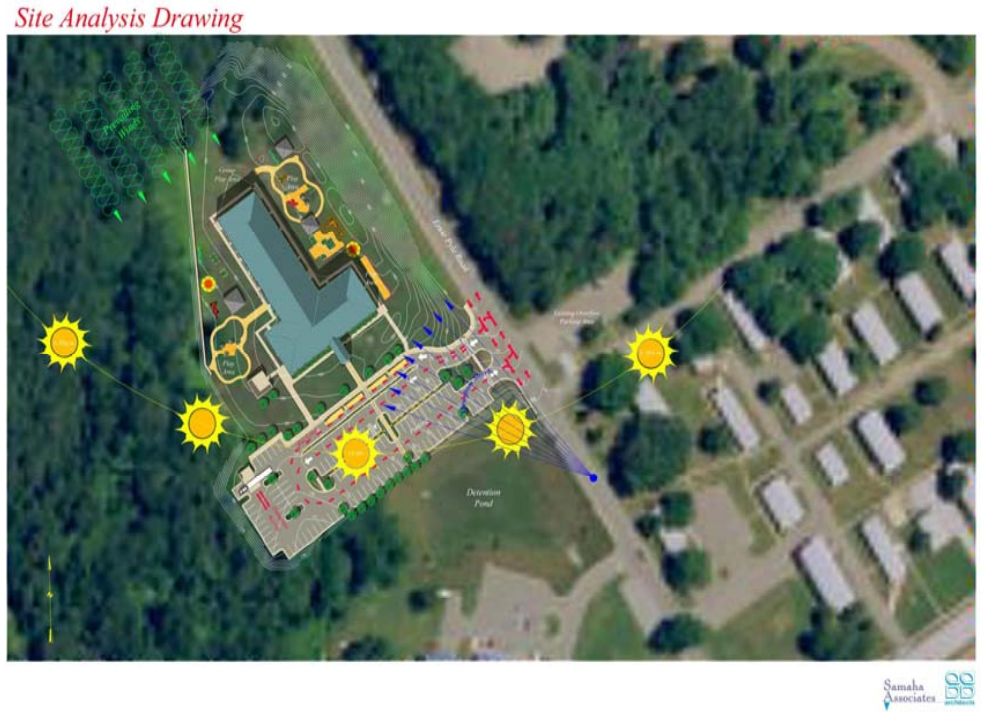


FEMA 426, Figure 1-3: The Assessment Process Model, p. 1-5

FEMA 426 – Chapter 2

Site and Layout Design

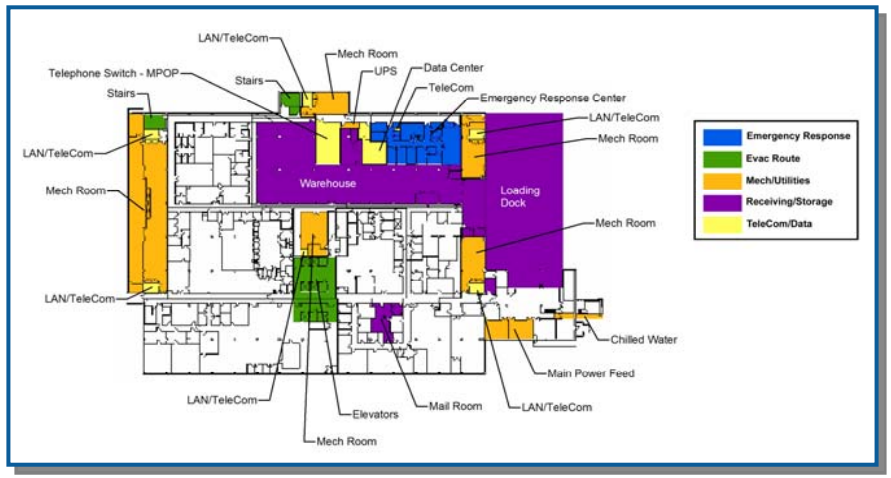
- Layout Design
- Siting
- Entry Control/Vehicle Access
- Signage
- Parking
- Loading Docks
- Physical Security Lighting
- Site Utilities



FEMA 426 – Chapter 3

Building Design Guidance

- Architectural
- Building Structural and Nonstructural Considerations
- Building Envelope considerations
- Other Building Design Issues
- Building Mitigation Measures



FEMA 426, Figure 1-10: Non-Redundant Critical Functions Collocated Near Loading Dock, p. 1-41

FEMA 426 – Chapter 4

Explosive Blast

- Building Damage
- Blast Effects and Predictions
- Stand-off Distance
- Progressive Collapse

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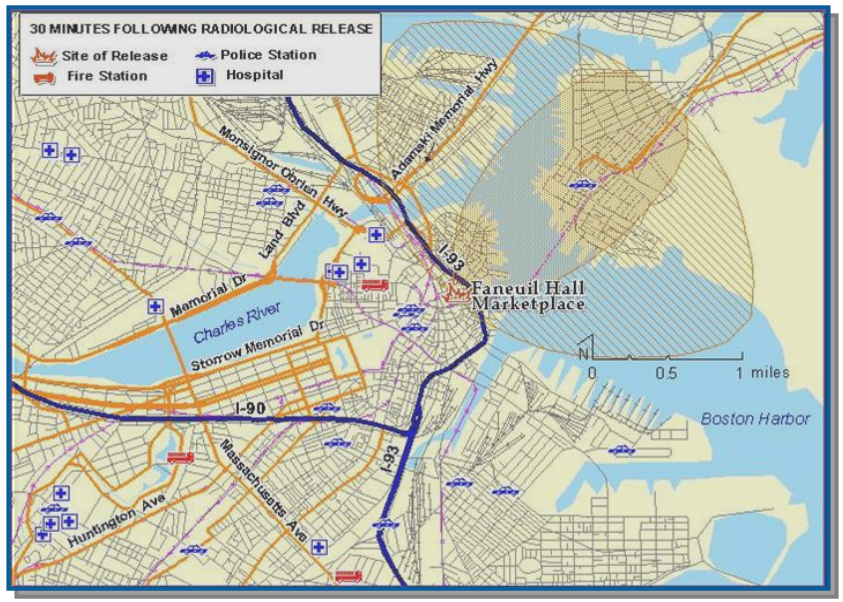
FEMA 426 – Chapter 5

CBR Measures

- Evacuation
- Sheltering in Place
- Personal Protective Equipment
- Filtering and Pressurization
- Exhausting and Purging



FEMA 452 Risk Assessment How-To

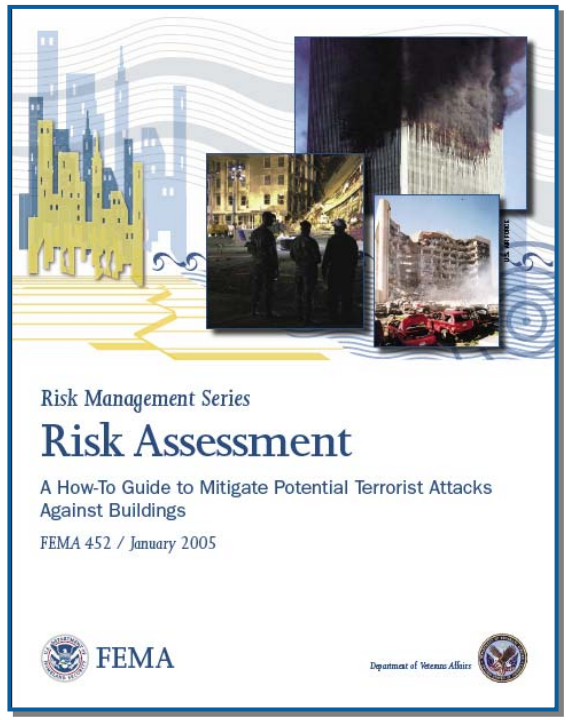
Step 1 – Threat Identification and Rating

Step 2 – Asset Value Assessment

Step 3 – Vulnerability Assessment

Step 4 – Risk Assessment

Step 5 – Consider Mitigation Options



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FEMA 452 Risk Assessment How-To

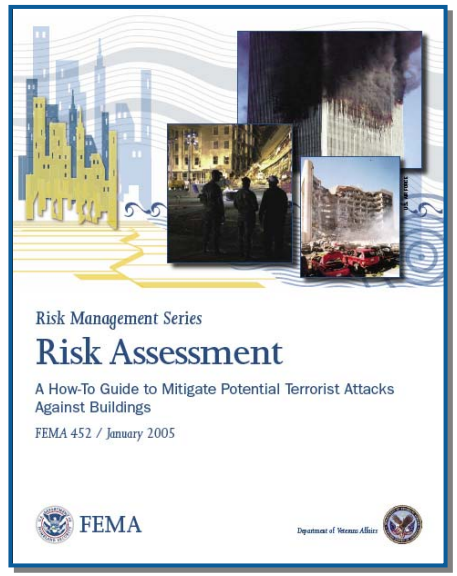
Appendix A – Building Vulnerability Assessment Checklist

Appendix B1 – Risk Management Database v1.0: Assessor's User Guide

Appendix B2 – Risk Management Database v1.0: Database Administrator's User Guide

Appendix B3 – Risk Management Database v1.0: Manager's User Guide

Appendix C – Acronyms and Abbreviations



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Summary

FEMA 426 and 452 are intended for building sciences professionals.

Manmade hazards risk assessments use a "Design Basis Threat."

Site and building systems and infrastructure protection are provided by layers of defense.

Multiple mitigation options and techniques.

Use cost-effective multihazard analysis and design.

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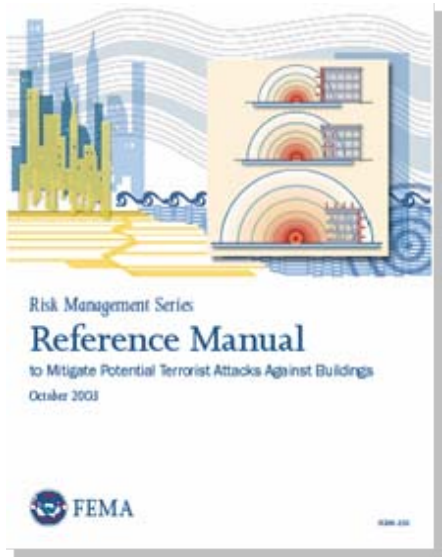
Case Study Activities

In small group settings, apply concepts introduced in the course.

Become conversant with contents and organization of FEMA 426.



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COOPERVILLE INFORMATION / BUSINESS CENTER (CI/BC)

Case Study

Small information technology company which also operates a Business Center at same location

- Occupies portion of building rented in Suburban Office Park
- Data center and communications for off-site clients
- Computer and office support for Business Center clients

Cooperville Information / Business Center

Cooperville Information / Business Center (CI/BC)

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Mission

Regional Computer / Business Center

- Real-time IT support
- Backup services
- 24 x 7 operations
- Temp office / computer space

Customers

- Government and commercial
- Some classified work

Layout

- Downstairs: Business Center, Computers, Communications, Loading dock, Storage
- Upstairs: Executive offices, Staff

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Threat Analysis

Terrorist Threat

Intelligence Threat

Criminal Threat

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FEMA 426, Figure 2-1: An Example of Using GIS to Identify Adjacent Hazards, p. 2-5

Hazard Analysis

HazMat

- Facilities
- Highway
- Rail

Liquid Fuels

Air Traffic

Natural Hazards

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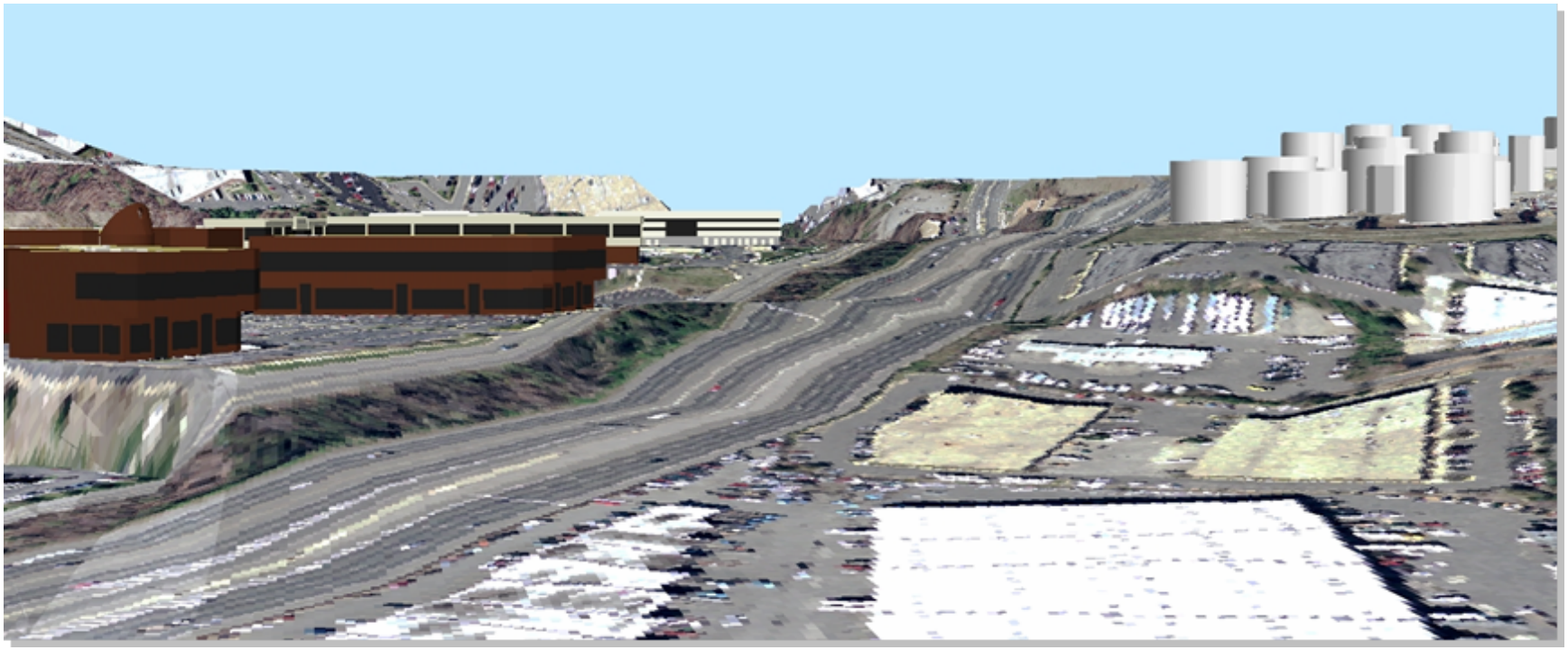
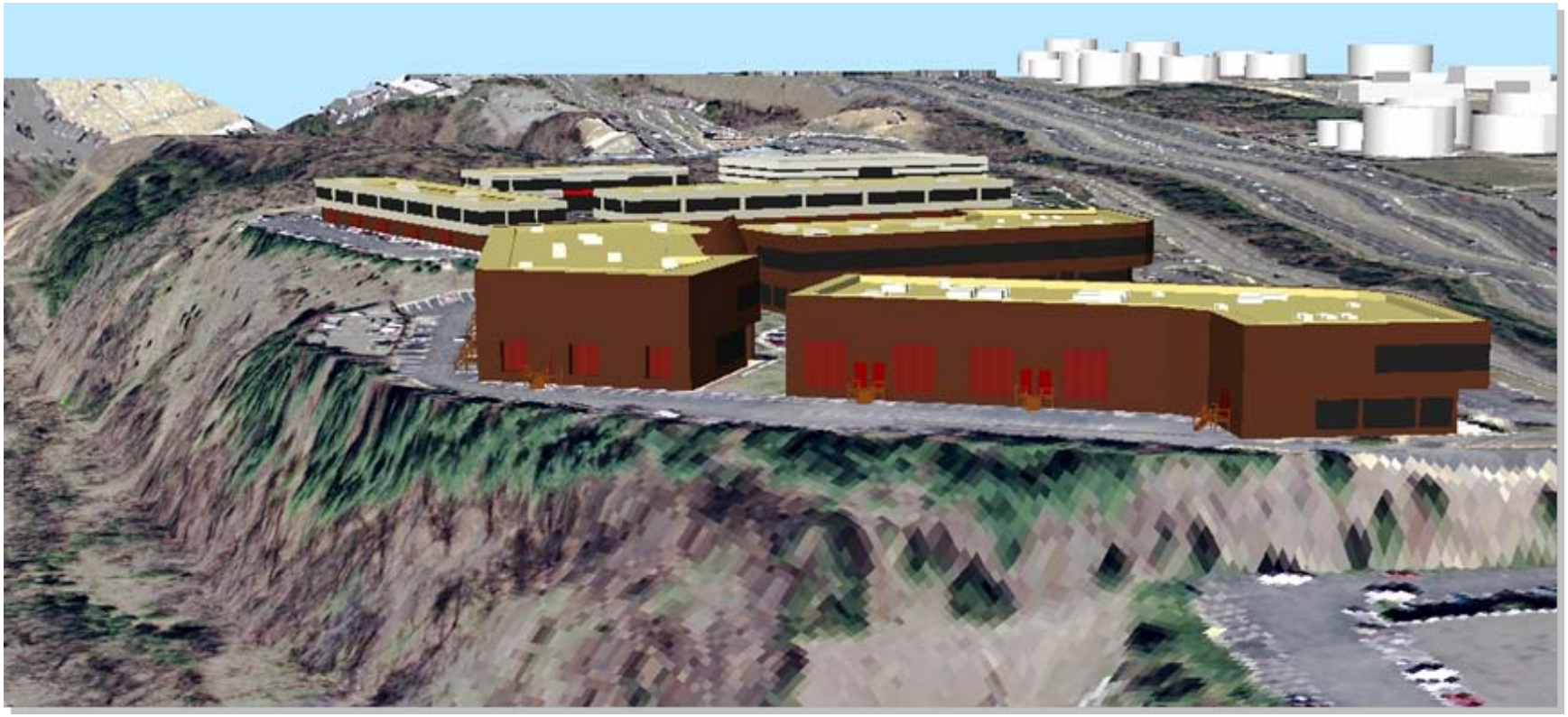
Computerized Elevation Looking Northwest



Computerized Elevation Looking Northeast



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Building Data

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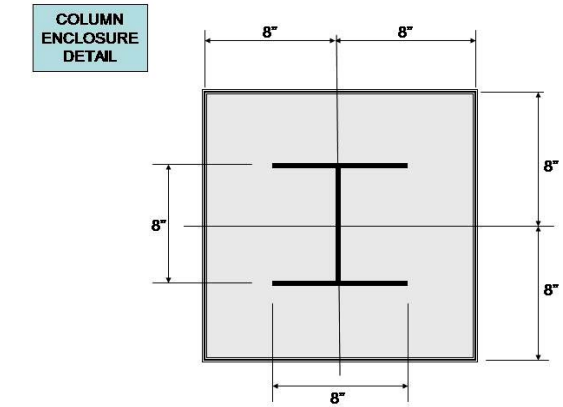
Building Structure



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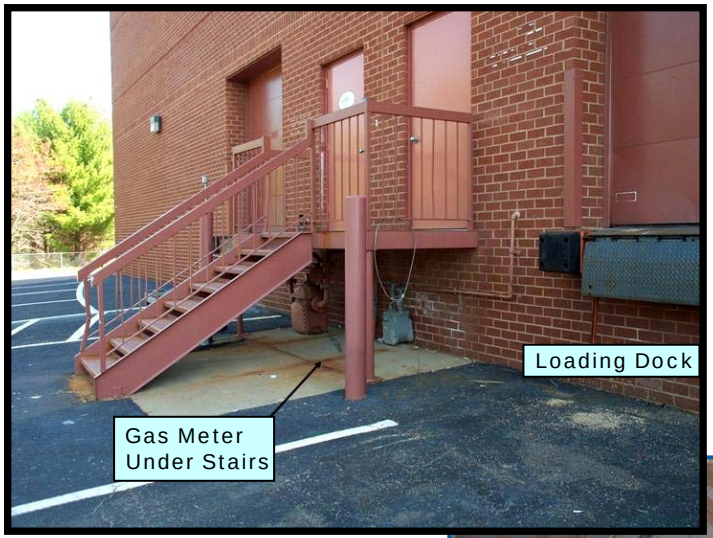
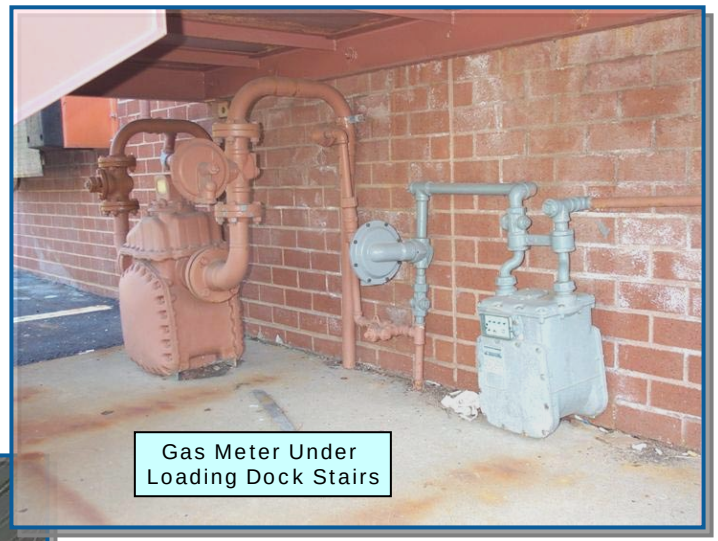
Mechanical Systems





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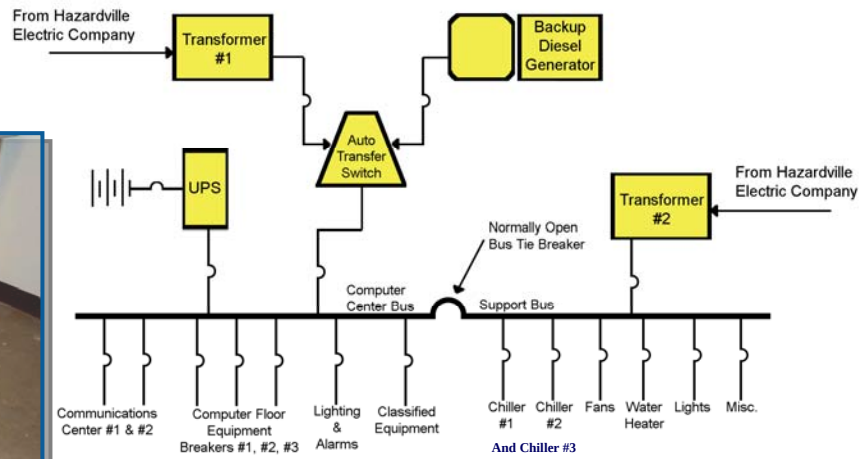
Electrical Systems



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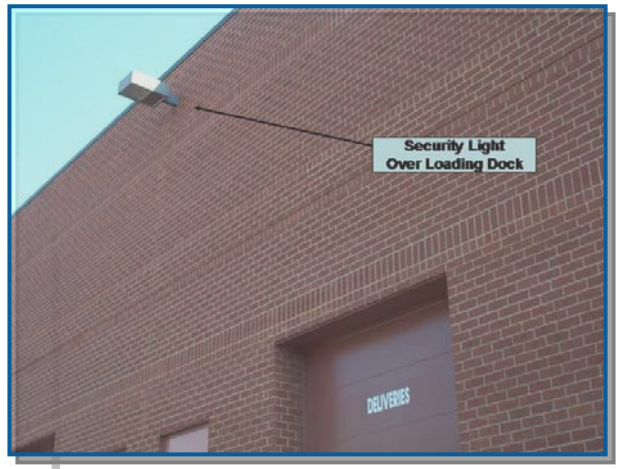
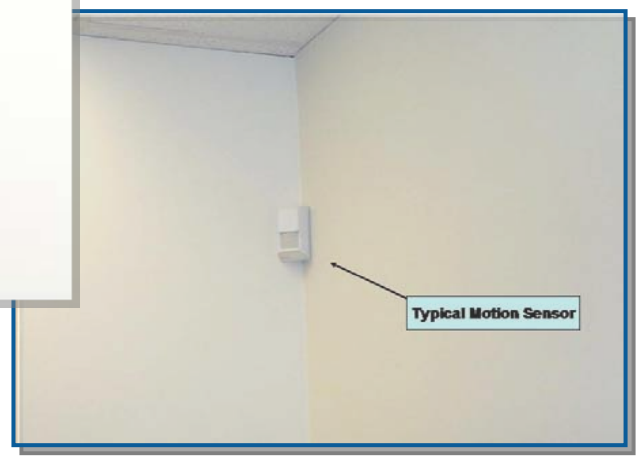
Physical Security





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IT Systems

Emergency Response

Source: Mine Safety Appliances Company

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Design Basis Threat

Explosive Blast: Car Bomb 250 lb TNT equivalent. Truck Bomb 5,000 lb TNT equivalent (Murrah Federal Building class weapon)

Chemical: Large quantity gasoline spill and toxic plume from the adjacent tank farm, small quantity (tanker truck and rail car size) spills of HazMat materials (chlorine)

Biological: Anthrax delivered by mail or in packages, smallpox distributed by spray mechanism mounted on truck or aircraft in metropolitan area

Radiological: Small “dirty” bomb detonation within the 10-mile radius of the CI/BC building

Design Basis Threat

Criminal Activity/Armed Attack: High powered rifle or handgun exterior shooting (sniper attack or direct assault on key staff, damage to infrastructure [e.g., transformers, chillers, etc.])

Cyber Attack: Focus on IT and building systems infrastructure (SCADA, alarms, etc.) accessible via Internet access

Levels of Protection and Layers of Defense

Levels of Protection for Buildings

- Interagency Security Committee (ISC) Level II Building
- DoD Low – Primary Gathering Building

Elements of the Layers of Defense Strategy

- Deter
- Detect
- Deny
- Devalue

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Risk Matrix

Infrastructure	Cyber attack	Armed attack (single gunman)	Vehicle bomb	CBR attack
Structural Systems	**48**	**128**	**192**	**144**
Asset Value	8	8	8	8
Threat Rating	3	4	3	2
Vulnerability Rating	2	4	8	9

	Low Risk	Medium Risk	High Risk
Risk Factors Total	1-60	61-175	≥ 176

Risk = Asset Value x Threat Rating x Vulnerability Rating

Asset: You x Threat: Intruder x Vulnerability: Open Door

FEMA 426, Adaptation of Table 1-21: Site Infrastructure Systems Pre-Assessment Screening Matrix, p. 1-39

FEMA 426, Table 1-19: Total Risk Color Code, p. 1-38

Summary

FEMA Publication 426

Reference Manual
to Mitigate Potential Terrorist Attacks Against Buildings

FEMA Publication 452

Risk Assessment: A How-To Guide to Mitigate Potential Terrorist Threats Against Buildings

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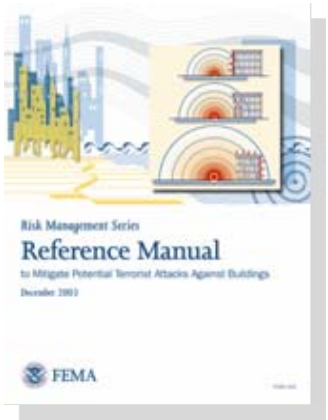
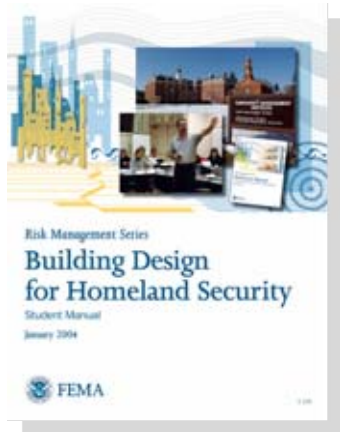
RMS Publications – 2003 - Present



CHEMICAL,
BIOLOGICAL,
RADIOLOGICAL AND
EXPLOSIVES
&
RISK ASSESSMENTS



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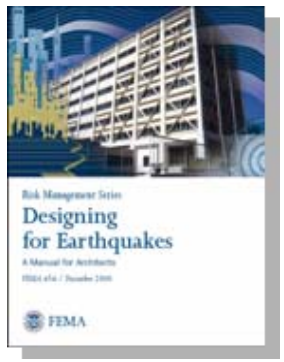
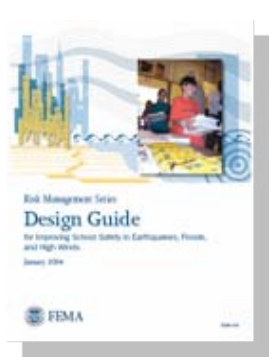
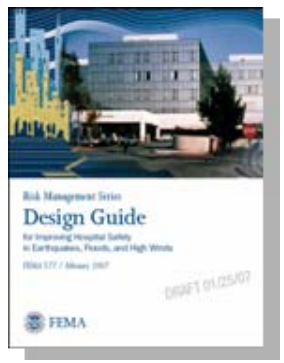
RMS Publications – 2003 - Present







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Earthquakes

Multihazard

RMS Publications – In Development

FEMA 452 (enhanced) – A How-To Guide to Prepare Multihazard Risk Assessments

FEMA 430 – Site and Urban Design for Security

FEMA 455 – Rapid Visual Screening for Building Security

FEMA 549 – Incremental Rehabilitation to Improve Building Security

FEMA 582 – Design Guide to improve Commercial Building Safety for Earthquake, Flood, and Wind

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Unit I Case Study Activity

Introduction and Overview

Background

- Answers to FEMA 452 database COOP questions applicable to Case Study found in student activity
- Note additional COOP information at end of activity

Requirements

As a team, determine if sufficient square footage is available for DAI essential functions

- Needed information contained in student activity
- Ask instructors any clarifying questions based upon your experience

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