



HEALING ENVIRONMENTS

Facility Design and Operation
Critically Impact Your Effectiveness and Efficiency



Facilities Quality Service

Principal Reasons for
Architecture and Engineering Services & Specifications
Design Guides, Manuals, and Plans
Construction Closeout Management
Operations and Safety Design
Construction and Life-Cycle Cost Estimating and Monitoring
Site Work, Cost and Schedule Analysis, Cost Programs
Architectural Engineering, Facility Evaluation and Selection
Physical Security, Threat Detection and Service Programs
Risk Assessment, Operational Issues

Environmental Programs Service

Policy Development and Technical Support for
Federal Environmental Policy Act Compliance (EIS/EIS-2)
National Emergency Management Program
Public Health Program
Water Withdrawal and Recycling
Environmental Analysis
Title Work - Loans and Credits
Integrated Plan Management
Resource Management

Program Resource Service

Contract Administration and Money Management for
International Agency Contracts
Healthcare Quality, Accreditation Programs Contracts
Construction Contracts
Medical Supply, Construction Contracts
Design-Build Contracts
Medical Planning
Medical Information
Medical History
Care Contracts

Technology Resource Service

Capital Asset Resource Management for
Capital Asset Inventory
Capital Asset Project Management

Capital Asset Management and Planning Service

Planning and Management of Capital Assets to Include
Major and Minor Capital Asset Acquisition Programs
Major Capital Inventory
Medical Procurement Program
Advanced Life-Cycle Program
Advanced Study of Base Program
Major Planning
Major Design Performance Contracting Program
Capital Asset Planning Program

Consulting Support Service

Principal Reasons for
Facility Condition Assessments
Building System Studies
Engineering and Architecture Consults
Water Flow Studies
Concept and Design Development
Expanding Capital Assets
Value-Prop Methods, Inventory and Training

Project Management Service

Professional Services for
Project Management
Construction Management

Consulting for
Professional services and Engineering Services
Construction Contracts
Construction Management
Design-Build Contracts

Real Property Service

Principal Reasons for
Leasehold Renewals
Lease and Building Acquisitions
Operations and Inventory of Buildings
Investment and Market Analysis
Leaseholds, Licenses and Property
Use Permits
Construction and Planning

V A Physical Security Assessments

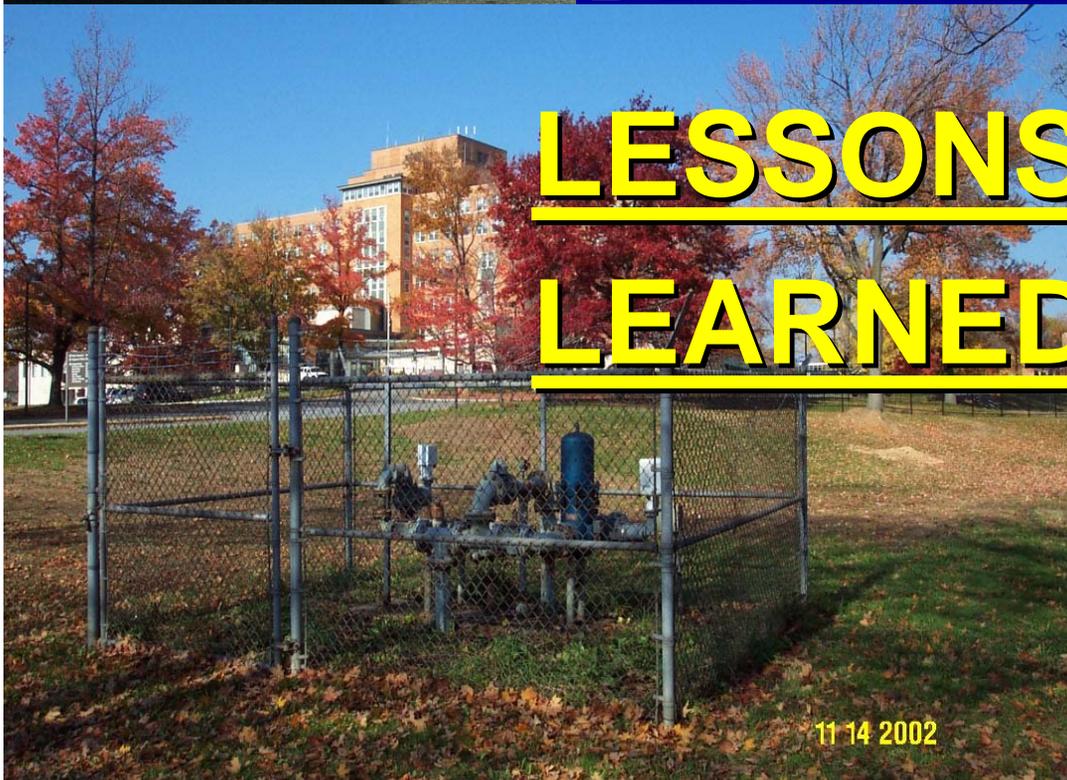
SPANDREL
FLOAT
GLASS
BEHIND
WALL

TEMPERED GLAZING
NOT DESIGNED
FOR BLAST LOADS



LESSONS LEARNED

11 14 2002



Program Goals

- What threats should be guarded against?
- How best to evaluate **healthcare**, cemetery, as well as office facilities against these threats?
- How to enable critical facilities to remain in operation after extreme events?

NIBS Assembled Multidisciplinary Task Group for

- Identification and assessment of
 - Threats
 - Criticality
 - Vulnerabilities
- Recommendations for program implementation
- Implementation methodologies
 - What to assess
 - How to assess
- Mitigation costs

Assessments

- **Prioritized by:**
 - Mission Criticality
 - Location
- **Completed:**
 - 124 Pre-Assessments
 - 52 Full Assessments
- **Site Visits by Teams of Discipline Experts**
 - Pre: 2 Persons for 2 Days
 - Full: 5 Persons for 3 Days
- **Controlled Reports on Findings**
 - With Potential Mitigations and Costs for Full

Threat Scenarios (x-axis)

- Criminal Activity
- Personal Assault
- Accidents
- Contamination
- Natural Disasters
- Terrorist Act
- Cyber Attack
- Collateral Damage
- Power/Telecom Outage
- System Failure
- Public Mass Hysteria

Functional Elements (y_1 axis)

- Mission Critical Areas
- Vulnerable Areas
- Other Areas

Site & Building Subsystems (y_2 axis)

- Site
- Architectural
- Structural
- Building Envelope
- Utility Systems
- Mechanical Systems
- Plumbing and Gas Systems
- Electrical Systems
- Fire Alarm System
- Communications and IT Systems
- Security Systems
- Equipment Operations and Maintenance

Station No:		Station Name:		AssessmentDate: 02/27/2006		AssessmentType: Pre																			
		Accidents (spills, flood)			Contamination (food, drug, water)			Criminal Activity (arson, rape, robbery)			Cyber Attack (IA, hacking)			Patient Assault (staff, doctor, infrastructure)			Public Mass Hysteria (civil disorder, vaccination)			Natural Disaster (hurricane, tornado, flood)			Armed Attack		
No.	Critical Function	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk	Imp./Like./Miti/Risk							
1	Administration	3 4 3 36	3 3 3 27	3 4 5 60	5 8 3 120	3 7 3 63	8 2 4 64	8 5 4 160	9 5 4 180																
2	Pharmacy	5 4 3 60	10 8 3 240	3 4 4 48	10 8 3 240	7 7 3 147	9 2 4 72	8 5 4 160	9 5 4 180																
3	Engineering Operations	4 6 3 72	4 5 3 60	3 6 5 90	4 8 3 96	6 5 3 90	8 2 4 64	8 5 4 160	9 3 4 108																
4	Clinical Laboratory	4 4 3 48	9 6 4 216	3 4 5 60	8 8 3 192	7 5 3 105	8 2 4 64	8 5 4 160	9 3 4 108																
5	In-Patient Care	3 7 4 84	8 7 3 168	3 3 5 45	7 8 3 168	5 4 3 60	8 2 4 64	8 5 4 160	9 3 4 108																
6	Out-Patient Care	4 5 3 60	8 8 3 192	3 4 5 60	7 8 3 168	5 6 3 90	10 2 4 80	8 5 4 160	9 5 4 180																
7	Psychiatric	2 3 3 18	8 8 3 192	3 5 5 75	7 8 3 168	5 6 3 90	10 2 4 80	8 5 4 160	9 7 4 252																
8	Warehousing	4 6 3 72	4 7 3 84	3 5 5 75	4 8 3 96	3 3 3 27	8 2 4 64	8 5 4 160	9 2 4 72																
9	IT/Telecom Switch	3 7 4 84	3 3 4 36	3 3 4 36	9 8 3 216	8 2 3 48	3 2 4 24	8 5 4 160	9 2 4 72																
10	Data Center	3 7 8 168	3 3 4 36	3 3 4 36	10 10 3 300	8 2 3 48	3 2 4 24	8 5 4 160	9 2 4 72																
11	Canteen Food Service	3 8 3 72	10 7 4 280	3 5 6 90	2 4 3 24	4 4 3 48	4 2 4 32	8 5 4 160	9 5 4 180																
12	Nutrition Food Service	3 5 3 45	10 5 3 150	3 4 5 60	8 8 3 192	8 4 3 96	3 2 4 24	8 5 4 160	9 3 4 108																
13	Security	3 4 3 36	9 4 3 108	7 3 3 63	2 2 3 12	8 7 3 168	9 2 4 72	8 5 4 160	10 5 3 150																
14	Housekeeping	7 5 3 105	3 7 3 63	3 5 5 75	2 8 3 48	3 3 3 27	8 2 4 64	8 5 4 160	9 2 4 72																
15	Office of Cyber Security	3 3 3 27	3 2 3 18	3 3 5 45	9 8 3 216	3 2 3 18	3 2 4 24	8 5 4 160	9 2 4 72																
16	Security Operations	8 3 3 72	9 3 3 81	7 3 3 63	7 8 3 168	8 7 3 168	9 2 4 72	8 5 4 160	10 5 4 200																
17	Nuclear Med/Radiology	4 4 3 48	9 6 3 162	8 3 6 144	10 8 3 240	7 4 3 84	8 2 4 64	8 5 4 160	9 3 4 108																
18	Domiciliary	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0																
19	Day Care	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0																
20	Drug Cache	3 3 4 36	9 4 3 108	8 3 3 72	2 1 3 6	8 2 3 48	8 2 4 64	8 5 4 160	9 3 4 108																
21	Research Lab	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0																
22	Emergency Room	7 5 4 140	9 8 4 288	3 4 5 60	8 8 3 192	6 7 3 126	10 2 4 80	8 5 4 160	9 6 4 216																
23	Decontamination Area	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0																
24	Long Term Care	3 7 4 84	8 7 3 168	3 6 5 90	7 8 3 168	5 6 3 90	8 2 4 64	8 5 4 160	9 3 4 108																
25	Secretary's Office	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0																
26	Inspector General	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0																
27	General Counsel	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0																
28	Office of Appeals	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0																
29	VHA	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0																
30	VBA	3 4 3 36	3 3 3 27	3 4 5 60	8 8 3 192	3 7 3 63	8 2 4 64	8 5 4 160	9 6 4 216																
31	NCA	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0																

Rollup Close

Site

- Adjacent risks
- Perimeter
- Site access control
- Vehicle circulation
- Parking
- Anti-ram devices
- Landscaping/vegetation
- Exterior lighting

Access Control



Architectural

- Building entrances
- Building access control
- Lobby area
- Critical assets
- Emergency rooms
- Mailrooms
- Loading docks
- Emergency egress

Loading Docks



Structural

- Stand off
- Blast resistance
- Progressive collapse
- Critical elements
- Discontinuities
- Detailing
- Parking garages

Blast Protection



Building Envelope

- Exterior walls
- Fenestration systems
- Atria
- Roofs

Utility Systems

- Entry points
- Accessibility
- Storage capacity
- Emergency supplies
- Water towers
- Redundancy

Protection of Utilities



Mechanical Systems

- Air intakes
- Air filtration
- Air handling units
- Building automation
- Building zoning
- Modularity
- Redundancy

Air Intakes



Plumbing and Gas Systems

- Redundancy
- Accessibility
- Storage and reserves

Electrical Systems

- Redundancy
- Accessibility
- Critical systems
- Emergency power
- Building lighting
- Alarm monitoring

Communications and IT Systems

- Redundancy
- Entry points
- UPS
- Accessibility
- Protection
- Backup

Lack of Redundancy



Operations and Maintenance

- Documentation
- Monitoring
- Emergency procedures
- Repair and service agreements

Security Systems

- Redundancy
- Perimeter
- Building
- System standardization
- System integration
- Alarm systems
- Lock systems
- Security operations center
- Secure areas
- Security master plan

Security Systems

Standardization, Integration, and Integrity



Recurring Systemic Vulnerabilities

- **Site and Building Access Control**
- **Blast Protection**
- **Loading Docks**
- **Utility Alternate Sources**
- **Protection of Utilities**
- **Lack of Redundancy**
- **Lack of Modularity**
- **Air Intakes**
- **Mail Rooms**
- **Critical Function Areas**
- **Security Operations Centers**
- **Security System Equipment**
- **Building Documentation**

Security Operations Center



Security Assessment Data Base System

- Controlled Access
- Store & View Results
- Analyze Results
- Track Mitigations

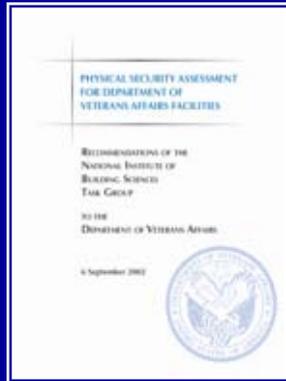
LESSONS LEARNED:

- **New Thinking for Design and Operation**
 - **Decentralization**
 - **Redundancy**
 - **Modularity**

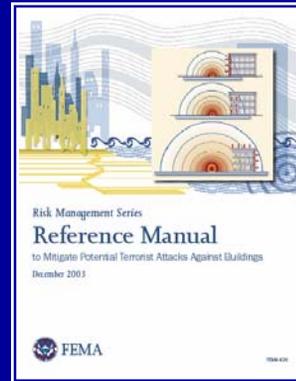
 - **New Strategies**
 - **New Standards**
 - **Funding**

Methodology Evolution

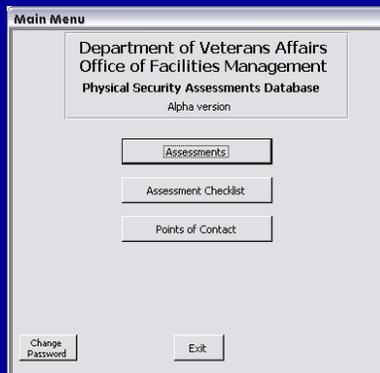
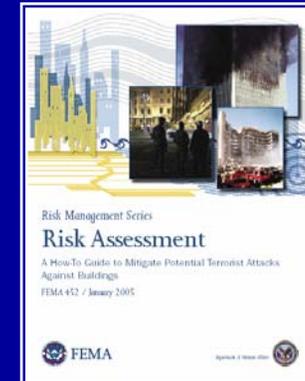
NIBS Physical Security Assessment For Department of Veterans Affairs Facilities,
6 September 2002



FEMA 426:
Reference Manual to Mitigate Potential Terrorist Attacks Against Buildings,
December 2003



FEMA 452:
Risk Assessment: A How-To Guide to Mitigate Potential Terrorist Attacks,
January 2005



VA database:
-SQL Server
-Linked to VA systems
-VA defined threats and questions

FEMA 452 database:
-MS Office based
-Standalone system
-FEMA defined threats and questions





LESSONS LEARNED

Department of Veterans Affairs
Physical Security Assessment Program

Federal Facilities Council
Physical Security & Hazard Mitigation Committee
14 March 06

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