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24/7

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And now, we have created a series of 3 mini-GUIDEs to better serve you. These special issues will go deeper into a single content category such as facilities, technology, boardroom issues, human concerns, etc.

In the months to come, we will talk a lot about...

Working Together

Comprehensive protection of our businesses and communities requires working with others more effectively.

- What are the barriers to public and private coordination?
- How can Facilities, HR and IT avoid a silo mentality?
- Why should executives interface with the corporate response team?
- How can a mutual aid plan benefit neighboring businesses?
- What about your employees, their families, your community?

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- Prevention
- Response
- Mitigation
- Restoration
- Preparedness
- Recovery

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Back to you soon,

The Disaster Resource GUIDE Team

Tommy Rainey, Kathy Rainey, Alison Dunn, Daniel Herrera, Carlos Rincon
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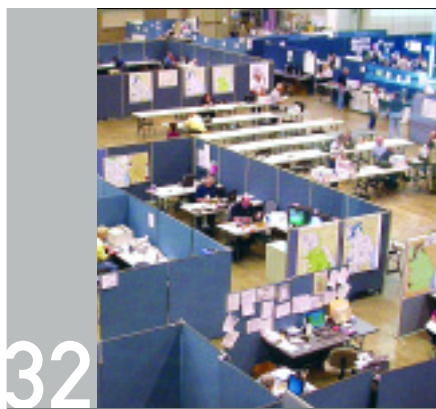
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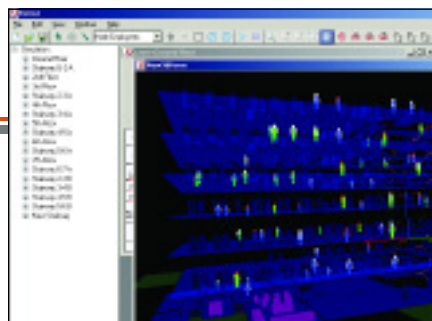
BY GLEN KITTERINGHAM, CPP

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PRIORITIZING YOUR PROTECTION STRATEGIES

BY GLEN W. KITTINGHAM, M.SC., CPP

What is a facility manager to do in these days of stagnant or, worse yet, shrinking budgets? With the cost of everything from electricity and gas to salaries and insurance skyrocketing, there is little left over for security and life safety-related expenses. Is there a way for facility managers to increase the level of protection without it costing significant dollars?

First and foremost, a manager must identify and prioritize assets to implement corresponding protection strategies. This is a must whether it is multiple properties or multiple assets within a single property involved. The easiest way to prioritize assets is to assign consistent recognizable values to them. This may sound obvious, but often protection strategies bypass this basic step.

Since all properties are not created equal, practicality necessitates managers assign their limited security and life safety dollars to those properties that are the likeliest targets. Take, for example, a company with two properties. One is located in Omaha, while the other is in New York City. In this case, common sense dictates the company invests a higher amount of money in the New York facility.

Unfortunately, it's not always that easy to determine which properties should be a priority for those limited funds. So what methodology can a facility manager use to determine risk

profiles for multiple properties? Quite frankly, the manager can use any criteria he or she wants, as long as they are practical, realistic and, most important, consistent. Without consistency, attempts to apply security and life safety measures are wasteful.

Many companies today must ensure the security and safety of commercial, office and industrial space spread throughout North America or worldwide. With facilities in large cities and/or high profile locations as well as

small to medium cities, prioritizing protection is critical. That's why an assessment tool such as a comprehensive threat and risk matrix model can assist in prioritizing protection strategies, and make the most of security budgets.

The Risk Profile

The first step is to do a risk profile of every building or facility. Figure 1 is a simplified version of a spreadsheet used to complete a risk profile, here ranking



Threat Indicator	Building A—Level 1	Building B—Level 3	Building C—Level 5
High-Profile Tenants	Local company Regional company Municipal Government	Regional company National company Provincial/State Government	National company International company National Government Embassies
Notable Building Characteristics (including total square footage)	Non-descript building, one of many exactly alike 500,000 square feet 30 stories high	Has Regional significance/signature status 1.5 million square feet 45 stories high	Has international status World-recognized landmark 5 million square feet 100+ stories high
Proximity to landmarks and other high profile areas	12 blocks away from downtown core Located in beltline between commercial and industrial zone	Located within five blocks of regional landmark Located on edge of financial district	Within immediate vicinity of national landmark Is a key pillar of its sector
Mass Transit and Public Accessibility	No major transit lines within two miles No general public accessibility	Is a major transit hub for region Public access with thousands visiting weekly	National/international transit hub Public access with thousands visiting daily
Incident History	Minor thefts Skateboarders	Minor and major thefts Bomb threats regularly received Bank Robberies annually	Thefts Bomb threats Fires on site Site experienced bombing Assaults & murder
Rating	5	15	25

three different buildings we'll call A, B and C.

In Figure 1, the three properties obtained final rankings of 5, 15 and 25, respective. Hence, building C, with the highest threat profile, should be the focus of the bulk of security and life safety efforts. Building B also requires funds, but obviously not as many as C. Finally, building A gets a corresponding smaller amount, because all three properties do require financial attention. There are always security and life safety issues present in every property, and the facility manager is responsible for providing a certain level of protection.

The Gap Analysis

Once you complete the risk profile, you then perform a gap analysis of existing asset protection programs to see if you need to consider any additional measures. A gap analysis is vital, as it will help determine the current status of existing programs. It's unlikely any building will have no security in place at all, and one facility may even have considerable security and life safety features already in place.

Then, itemize all the existing safety and security features in each building. For example, one building might already have a 24/7/365 security department, an access control system, bollards

surrounding the property and turnstiles in the lobbies. Get someone familiar with the various properties and security and life safety features involved in creating the itemized list – and don't be surprised if the list ends up with far more items than you thought.

The Threat and Risk Matrix

The next step is to create a threat and risk matrix where you place all potential threats according to criticality and probability. See Figure 2 for an example.

But don't be intimidated if you don't have the exact knowledge of the various incident types and their possible impacts when it comes time to insert the threats. In this case, often a 'best guess' is acceptable. Some incidents occur so rarely that it may be impossible to place them based on historical data.

There is a standard list of potential threats you can plot onto the matrix, using six simple categories. While there is some overlap, these six are quite comprehensive and yet still easy to plot. The six categories are natural, man-made, accidental, deliberate, internal and external.

Once you insert all the threats into the matrix, including the probability and criticality, the next step is to determine if any of the existing security measures can mitigate the individual

threats to an acceptable level or not. This is where the list of specific security and life safety measures created in the gap analysis comes in handy. You can now list each and every type of threat the company may face along with the corresponding countermeasure(s).

Threat Versus Risk

An introduction to two relevant terms is important, because, unfortunately, many people tend to incorrectly use the terms 'threat' and 'risk' interchangeably.

THREAT – An intent of damage or injury or an indication of something impending which if carried out could impact the integrity operations with consequences to the personnel, operations, and business interests of the company.

RISK – The possibility of loss resulting from a threat, security incident or event.

The remaining question is whether or not the threat is mitigated to an acceptable level. If it is mitigated, move onto the next threat. If not, you need to determine what it will take to mitigate a particular threat to an acceptable

Figure 2: Threat and Risk Matrix Model

Probability: Low, Medium of High probability of an incident occurring.

- Low: There is no or little history of the threat occurring and it is not considered likely the event will occur.
- Medium: There is a moderate history of the threat event occurring and/or information is available that would lead one to reasonably believe there is a 50/50 chance of the event occurring again.
- High: There is a significant history of the threat event occurring and/or information is available that would lead one to reasonably believe that the threat will occur in the foreseeable future.

Criticality: Low, Medium of High impact on the organization.

- Low: Little or no damage
- Medium: Damage that will require effort to overcome and return confidence in the organization's ability to conduct its operations in a secure and business-like manner.
- High: Damage that will severely injure the organization and its operations or serve to bring its business initiatives to a halt.

Risk (Risk (Probability))		Impact		
		Priority: Low Medium High 		
High	The threat event will more than likely occur than not			
Medium	50/50 chance the threat event could occur.			
Low	The threat event will not likely occur.			
Risk Level		Low—No substantial harm	Medium—Damage to reputation and finances but the damage can be overcome	High—Significant injury to organization and will be very difficult to overcome

level. All the outstanding issues requiring actionable items, whether they are one-time capital projects (hardware), the development of policies, procedures and training (documentation), an increase, decrease or change in human resources (personnel), or a combination of all three give the facility manager a blueprint for moving ahead.

Remember that along the continuum of risk, there are the high criticality/low probability events at one end while at the other there are the high probability/low criticality events or 'quality of life' issues we are all familiar with. While terrorism is certainly an issue all facility people must be aware of and plan for, there are many other issues occurring on a regular basis that have considerable impact on tenants. Wallets, purses, bicycles, laptops and other property are stolen on a regular basis. Fires, extreme weather events such as flooding, tornados, and hurricanes continue to occur. Autos are broken into and people are assaulted. Hence, security and life safety programs must be based both on 'stuff' which may occur sometimes, even if highly unlikely, and 'stuff' that is actually occurring.

While this exercise may appear somewhat intimidating to a facility manager who has not completed such work in the past, it is not overwhelming. While it does take some thought and research, most importantly, it takes time. Set aside a certain amount of time each day, until complete. Good luck.

ABOUT THE AUTHOR

Glen Kitteringham, M.Sc., CPP, has worked in the security industry since 1990. He has worked since 1997 for Brookfield Properties, one of North America's premier property management companies. He is currently responsible for security and life safety in nine million square feet of class AA commercial high-rise properties. He obtained his Master's degree from the University of Leicester in the United Kingdom in 2001 and his Certified Protection Professional designation from ASIS International in 2002. He is a member of the Calgary/Southern Alberta chapter, Commercial Real Estate Council and Business Practices Council, all of ASIS International. He is also a member of BOMA Canada. His first book, entitled 'Security and Life Safety in the Commercial High-Rise' was recently published by ASIS International.

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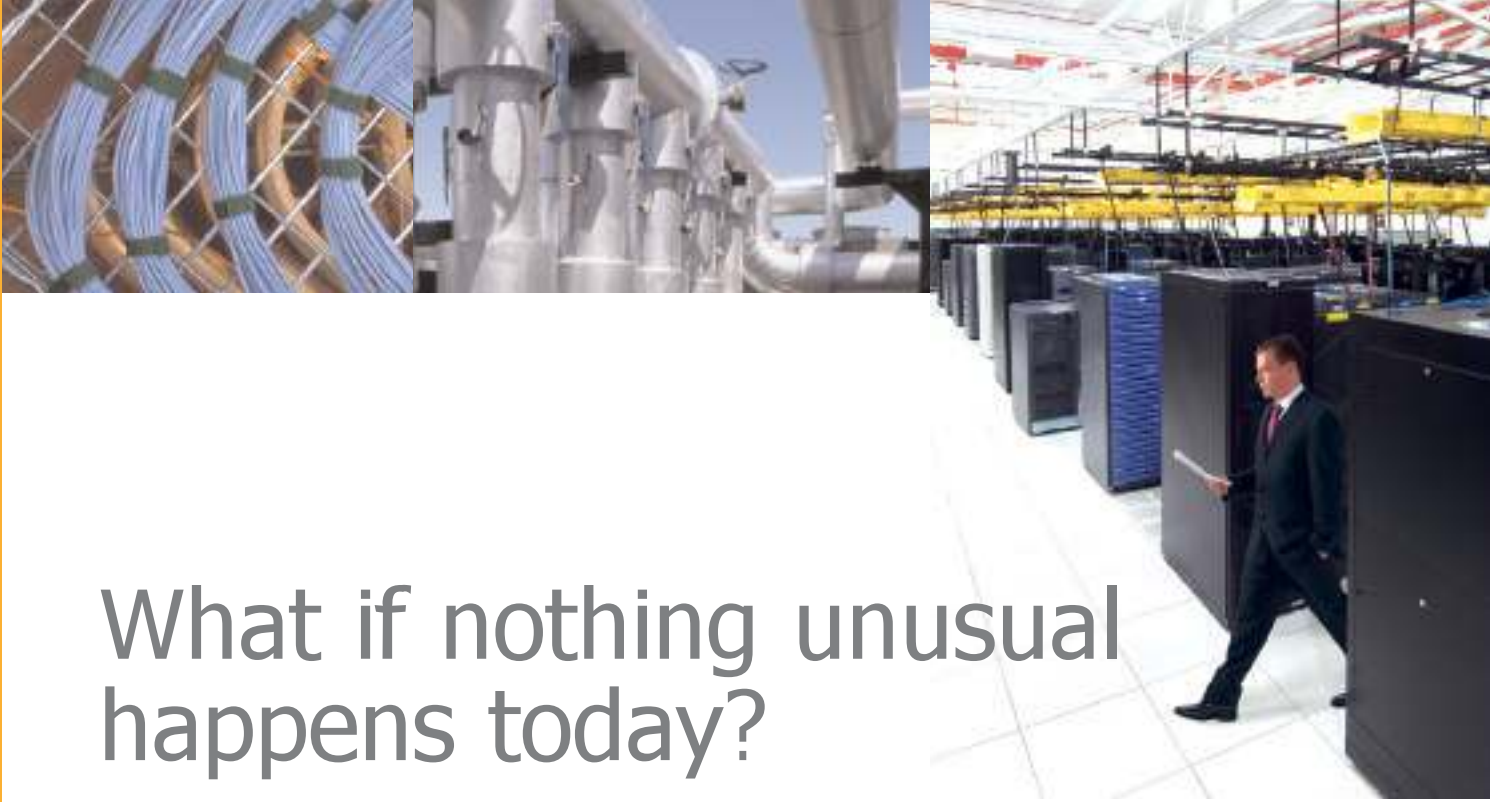
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A WINNING PARTNERSHIP: FACILITY MANAGEMENT AND BUSINESS CONTINUITY

BY EDWARD (TED) BROWN III, CBCP

Effective business continuity professionals are realizing that developing internal partnerships is the most productive way to achieve a comprehensive business continuity program.

One of the most important potential partnerships, and one BC professionals frequently overlook, is facilities management.

Potentially, there are many roles for facilities management to support the business continuity program. By involving facility management in the BC planning process, BC professionals can strengthen their programs. Here are some ways to incorporate facility managers into that process.

Mitigation: This is the most common contribution facility management makes to the BC program today. They're involved in acquiring and installing air conditioning, electric power, UPS's, emergency generators and fire suppression equipment. They work with security on limiting physical access. If BC managers develop an internal recovery solution, facility management has a key role in design-



Photo courtesy of FEMA.

ing, building and outfitting the alternate facility. Why, then, is it so rare facilities management is involved in the evaluation of commercial alternative facilities?

Alternate Facility Evaluation: Most BC plans include, or should include, a commercial alternate facility: a hot site, cold site, work group recovery facility, hosting or co-location facility. Many of these alternate site facilities claim to be disaster recovery facilities, but in reality they are not.

Your facility management team can help evaluate the viability of these alter-

nate facilities. Do they have redundant power and power generating capability? Do they have sufficient power, air conditioning and secure facilities? Is there enough parking? Do they own the building? Do they have a facility manager? Are their safety standards up to your facility standards? What kind of fire suppression do they have? What evacuation procedures do they have in place? What is their DR plan? Is it tested?

It is important to remember many of these facilities offering disaster recovery solutions often have none themselves. When your BCP team makes a site

visit, take someone from facility management along. And remember, the need for a site visit and disaster recovery evaluation applies to those systems that you have outsourced.

Testing: Inviting your facilities management to a traditional hot site test may not be accepted, but it is still a good idea if no one from facilities has ever been there. An exercise at your facility, however, must include facilities management. This exercise can take two forms: The “tabletop” and the “actual drill.” As the name “tabletop” implies, it’s done in a meeting room with a limited number of key players. The “actual drill” is much more like a real event, with role playing, actual execution of procedures and involving outsiders like police and fire.

Facility management has a key role to play in both types of exercises and it is critical you involve them. During “tabletop” and “actual drill” exercises, managers must make many decisions such as: Do we evacuate? Do we declare with our alternate site providers? Do we send people home? Do we send some to the alternate site? Clearly, if the subject building is in ashes, the decisions are obvious. But many disasters are of an indeterminate length. The forecasted length of outage will have a significant impact on decisions, and it is facilities management that will be the best source of information to guide those decisions.

There was a common theme in the messages from the fire chief speaker at BRPA (Business Recovery Planners Association) in Chicago in 2005 and the law enforcement leadership at the Liberty Valley ACP Chapter (Association of Contingency Planners) meeting in 2006. That theme was: “The more we know about you and your business, the better prepared we are to help.” Yet most Business Continuity teams have no experience with first responders, nor do they even know who they are. Facilities management can solve this. They may already know the key players. Your facility managers can recruit these critical resources to participate in either type of exercise. Local government officials are eager participants. They just need to be asked – by your facilities management team.

Recovery: If the unfortunate happens, facilities management has a key role to play in recovery. They can only play that role, however, if they have accepted this responsibility in advance, incorporated this responsibility into the plan and participated in the tests. Facility management is the key source of data concerning the potential length of the outage. They can be a key to developing solutions as to where all of the people go.

And, most importantly, facilities management has a critical role in assuring that the first disaster isn’t followed by a second one when you return to your old or a new facility.

Education: Testing is, of course, educational, but you need to start educating facilities management before the test. Below is a suggested agenda for a business continuity education session for the entire facility management team.

AGENDA

9:00 to 9:15 a.m.

Introduction and Welcome –
Facility Management Executive

9:15 to 9:30 a.m.

Business Continuity vs Disaster
Recovery – BC Management

9:30 to 10:00 a.m.

Industry Best Practices –
Outside speaker

10:00 to 10:15 a.m.

Break

10:15 to 10:45 a.m.

Role of First Responders –
First Responder leader

10:45 to 11:15 a.m.

Roles of BCP Team – BCP Manager

11:15 to 12:00 p.m.

Roles of Facility Management –
Facility Management BCP Team
Members AND BCP Manager

- Mitigation
- Evaluation
- Testing
- Recovery
- Restoration

12:00-12:15 p.m.

Next Steps – Facility Management

This education session assumes the facility management executive has bought into the BC program prior to the session. If this is not the case, the speakers would change to all BCP leadership and/or outside resources.

The odds of any business’ survival after it suffers a disaster are directly proportional to the quality of its business continuity program, including testing. Having facilities management participate in the planning, testing and execution of a plan will improve those odds and add incremental internal and external resources to the equation.

Alternatives for Work Group Recovery

Facilities management may help in the evaluation of alternative solutions, especially for work group or “people recovery”. The 2006-2007 Disaster Resource GUIDE (www.disaster-resource.com) has an extensive article on those various solutions, although it doesn’t include some alternative solutions worth considering such as tents, hotels, and RVs. Here is a brief look at the traditional alternatives for work group recovery:

1. Traditional Hot Site Vendors
 - Pros – Single vendor solution, technical support, telecom, testing, experience
 - Cons – Not in every city, terms and conditions, cost
2. Mobile Recovery
 - Pros – Solution for every city
 - Cons – Travel restrictions, power, lack of support and testing
3. Local Niche Provider
 - Pros – One in every city, pricing, flexibility
 - Cons – Lack of back-up to the back-up, little experience
4. Internal
 - Pros – Best control, standards, testing
 - Cons – If done right, most expensive
5. Teleworking
 - Pros – Solves many people issues, (e.g. avian influenza)
 - Cons – HR issues, cost
6. Other Alternatives (e.g. tents, hotels, RVs)
 - Pros – Anywhere, lower cost
 - Cons – Lack of support and testing, lack of track record

ABOUT THE AUTHOR

Edward (Ted) Brown III, CBCP, is President & CEO of KETCHConsulting, a BCP Consulting firm headquartered in Pennsylvania, but international in scope. KETCHConsulting's team includes all senior, certified (CBCP/ MBCI), experienced consultants. Ted is a member of the Contingency Planning and Management Hall of Fame. You can reach Ted at (570) 563-0868, at tedbrown@KETCHConsulting.com, or on the web at: www.KETCHConsulting.com

MULTI-HAZARD FACILITY RISK ASSESSMENT STRATEGIES

WITH WINDOW HAZARD MITIGATION EXAMPLES

BY NANCY A. RENFROE, PSP AND JOSEPH L. SMITH, PSP



Photo courtesy of FEMA.

Today's environment of increased risks requires protective design and risk management for most facilities. This article presents an overview of facility risk assessments and focuses on the critical area of window hazard mitigation.

Because glass often causes the majority of injuries from a bomb blast, mitigation can significantly reduce those risks for employees or building visitors.

The Basics of Facility Risk Assessments

All facilities face some risks associated with natural events, accidents, or intentional (criminal or terrorist) acts to cause harm. Regardless of the nature of the threat, facility owners have a responsibility to manage associated risks. Introducing properly designed hazard mitigation measures can both protect occupants and significantly

reduce facility recovery by maintaining the facility's envelope during an event.

The best course of action is to start with a multi-hazard risk assessment performed by a qualified security professional. The following are descriptions of assessment types:

- *Threat Assessment:* A threat assessment evaluates the potential aggressors and the type of tactics they are most likely to employ. Consider a complete spectrum of threats including natural (earthquakes, floods, etc.) and man-made (accidents, terrorist acts, etc.). For threats involving explosives and

CONTINUED ON PAGE 16

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other weapons of mass destruction, quantify the type and/or size of device. The result of the threat assessment is a list of credible threats and/or attack scenarios.

- **Physical Security Assessment:** A physical security assessment consists of an evaluation of the existing countermeasures. These include fixed countermeasures (i.e., locks and barriers) as well as operational and procedural countermeasures. Include suggestions for upgrades to existing countermeasures to meet a protection goal. Often, a physical security assessment uses a set of minimum standards to evaluate existing conditions and make upgrade recommendations.
- **Vulnerability Assessment:** A vulnerability assessment quantifies the potential impact of specific threat scenarios based on existing or planned conditions. The vulnerability assessment should evaluate potential damage to assets and injury to people from each attack scenario. This provides a baseline for determining the potential benefits from security and structural upgrades. The vulnerability assessment may include detailed analysis of the loss from an explosive, chemical or biological attack. You will need professionals with specific training and experience in these areas to perform these detailed analyses. Figure 1 shows a sample of the type of output you can generate from a detailed

explosive analysis. It shows the potential damage to a facility from an explosive attack before and after a window mitigation project. You can model similar assessments for other risks and mitigation projects.

- **Risk Assessment:** A risk assessment incorporates the threat assessment, the physical security assessment and the vulnerability assessment to evaluate the potential risks associated with each threat. The objective of the risk assessment is to pair the impact of loss with vulnerability to help the owner evaluate the acceptability of different levels of overall risk. This allows someone to effectively manage their risks. A risk assessment may or may not include detailed vulnerability assessments experts perform (a blast assessment, chem/bio assessment, etc.). Obtaining these detailed assessments may be part of the recommendations from a risk assessment. For planned facilities, you can use a risk assessment to help develop design criteria.

You can apply threat/vulnerability assessments and risk analysis to any facility or organization. Most risk assessments include the following steps:

1. Identify the asset(s) to protect
2. Perform a threat assessment to determine potential threats
3. Perform a vulnerability assessment to evaluate the existing hazard mitigation measures

4. Quantify the level of risk associated with each threat or asset
5. Identify potential upgrades to reduce risks
6. Re-evaluate risk reduction based on potential upgrades

You should repeat the risk assessment process every three to five years, or when significant changes occur. This could include changes in facility occupancy or mission, neighboring facilities, crime rates in the area, etc.

While the best defense against death and injury from hazardous events is prevention, this is not always possible. Therefore, we must learn how to mitigate the hazards associated with specific events.

Mitigating the Risks from Hazardous Window Failure

Hazardous glass fragments are undeniably a major source of injury and death in many explosive attacks. A total of 759 people were injured in the bombing of the A.P. Murrah Federal Building in Oklahoma City. Of those, 319 were inside the building and 440 were outside or in neighboring buildings. An Oklahoma State Department of Health survey found among the 405 injured respondents, 66 percent attributed their injuries to flying glass or falling on broken glass.

The department also found slightly more than five percent of the people injured from hazardous glass and wall



Mitigating the risk of flying glass can significantly reduce injuries from a blast. The first step is to ensure a balanced window system design.

fragments died. Ten percent of those exposed to high-hazard glass or wall fragments suffered serious injury with permanent disabilities and 85 percent sustained serious but recoverable injuries. Not only that, but glass-related injuries aren't limited to the targeted facility. There was widespread glass breakage for more than a mile around the Murrah Building.

Mitigating the risk of flying glass can significantly reduce injuries from a blast. The first step is to ensure a balanced window system design. For the overall system to provide adequate protection, the glazing, frames and anchorage must all be able to survive the blast loading. If any one part of the system fails, the entire system fails. Similarly, the supporting wall must be able to handle the loads the window

system transfers to it. If the window system has a higher capacity than the supporting wall, when the wall fails it may blow the entire window system into the facility.

The United States General Services Administration developed a method of evaluating the protection various window configurations offer. This National Standard is similar to the rating schemes the British use. The standard uses five performance conditions to indicate the location of fragments and/or shards after failure. We have defined those performance conditions in

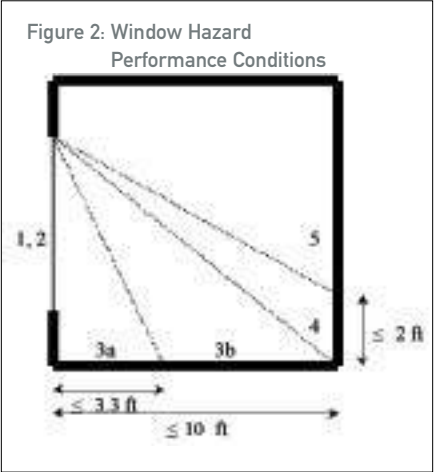


Figure 2. Most highly critical at risk facilities such as a military headquarters or power plant operations room would require a performance condition of 1. Childcare centers require a performance condition of 2 or better. Major office buildings or courthouses typically require a performance condition of 3.

There are several options for increasing the capacity and/or reducing the hazards from the glazing portion of a window system. These include: selecting an appropriate type of glass, applying security window film, installing blast curtains/shields and using laminated glass.

Types of glass include:

- Plain-float annealed glass is the most common glass type commercial construction uses. It has an ultimate design stress of 4000 psi and is the most hazardous.
- Heat-strengthened glass is partially tempered, which increases the ultimate design stress to 7600 psi. It gives a higher strength and slightly reduces the hazard.
- Thermally-tempered glass is fully

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Table 1: GSA/ISC protection levels for glazing response to blast.			
Performance Condition	Protection Level	Hazard Level	Description of Window Glazing Response
1	Safe	None	Glass does not break. No visible damage to glazing or frame.
2	Very High	None	Glass cracks but the frame retains it. Dusting or very small fragments near sill or on the floor is acceptable.
3a	High	Very Low	Glass cracks. Fragments enter space and land on floor no more than 3.3 ft from the window.
3b	High	Low	Glass cracks. Fragments enter space and land on floor no more than 10 ft from the window.
4	Medium	Medium	Glass cracks. Fragments enter space and land on floor and impact a vertical witness panel at a distance of no more than 10 ft from the window at a height no more than 2 ft above the floor.
5	Low	High	Glass cracks and window system fails catastrophically. Fragments enter space impacting a vertical witness panel at a distance of no more than 10 ft from the window at a height more than 2 ft above the floor.

tempered glass, which increases the ultimate stress to 16000 psi. It fails in small cube shaped fragments that are the least hazardous.

Tests have shown applying security window film on the interior glazing surface can significantly reduce the hazard. Security windows film is typically 4, 6, 7, or 11 mils (1/1000th of an inch) thick. There are four basic methods to apply this film, which we illustrate and

explain in Figure 3.

Daylight installation is the lowest cost and mechanically attached is generally the highest. The range is roughly \$6-8 per square foot for daylight installation and \$10-20 per square foot for mechanically attached.

Tests also show that engineered laminated glass can provide very high levels of protection at blast pressure/impulse levels far greater than blast curtains

and/or films. Manufacturers are also developing new technologies to reduce the hazards from an explosive event. These innovative and cost-effective products and procedures will significantly enhance our ability to protect people. Include a qualified blast and security specialist in the earliest stages of project design to help you obtain the desired levels of protection and to minimize the impact on architecture and cost.

For more information on protecting facilities from blast, wind and other hazards visit the following websites:

www.protectiveglazing.org

www.araseas.com

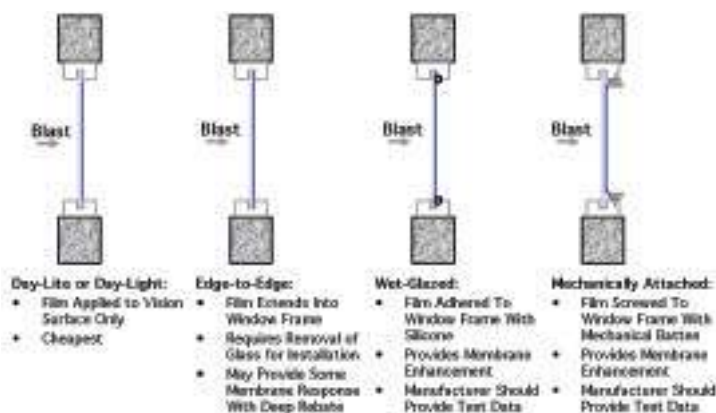
www.oa.gsa.gov

www.wbdg.org

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Figure 3: Security Window Film Application Methods



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This system is intended to help safeguard office workers by providing them a safe haven under their desk with an emergency kit and will protect them from falling rubble and debris. This will reduce risk and enhance probability of survival in the event of a structural ceiling collapse due to natural disaster, criminal activity or terrorist acts as well as facilitating and accelerating rescue operations.

Void Search
"A considerable amount of the search effort following a building collapse is dedicated to searching void spaces in the rubble. These locations provide the highest probability of human survivability."
* Taken from the "International Fire Service Training Association Manual"

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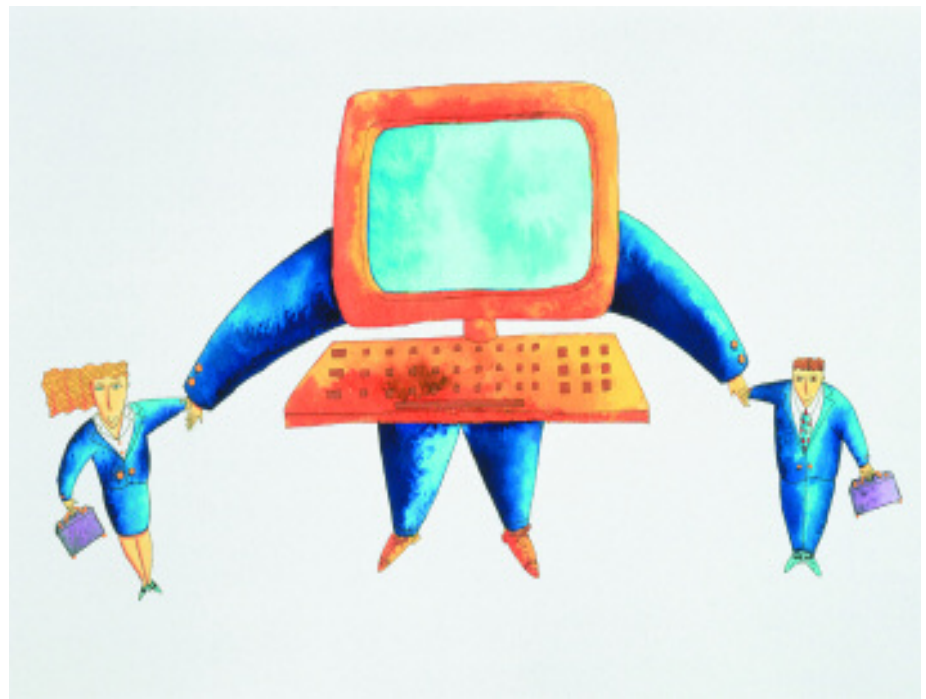
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WHY IT AND FACILITIES MUST WORK CLOSELY TOGETHER

KENNETH G. BRILL

When 2% of all failures represent 25% of all losses, management should focus significant attention on reducing the 2%! Major disasters, including extreme weather, leaks, fires, or other catastrophic events cause the majority of DR declarations and are the focus of most business continuity and disaster recovery planning.

However, when looking at actual historical losses of information availability, 25% of information downtime is caused by extremely rare events (2% of the total) caused by momentary losses of site infrastructure availability. This author argues that many of these 'facility' malfunctions escalate into failures due to inadequate coordination between IT and Facilities personnel. The escalating environmental demands of today's



rapidly changing IT equipment often outpace the capability and capacity of the existing underlying infrastructure. When IT and Facility personnel work closely together to develop realistic strategies to accommodate increasing demands for power and cooling, information availability and uptime can improve significantly. Information availability is critical to business continuity and this close coordination between Facility and IT departments should play an important role in BC/DR planning.

Funding for business continuity efforts is often limited, with ROI's difficult to quantify and demonstrate to upper management. However, the time and resources dedicated to this IT/Facility coordination can reduce both capital and operating expenses while reducing risk. New organizational models are emerging for IT and Facilities to work more effectively together.

This Article

- Provides background on how site infrastructure reliability dramatically

CONTINUED ON PAGE 20

- affects business continuity and identifies how failures have occurred historically
- Explains how the economics of Moore's Law now result in 3-year site operating expenses exceeding the acquisition cost of the servers supported
 - Identifies the need for IT/Facility teams to deal with both business continuity and the changing economics of IT
 - Outlines how these efforts can improve availability and reduce business continuity risks, while also reducing future operating and capital expenditures.

Background

A momentary facility interruption which affects all platforms, all databases, and all applications can translate into at least 4 hours of user downtime while IT restarts hardware, recovers databases, and processes forward from the last checkpoint. The downtime can extend beyond the "normal" 4-hours if a previously unknown IT architectural or procedural failure is discovered.

For the last 13-years, the Uptime Institute has been tracking environmental failures.¹ The data indicates that site availability failures are never the result of a single factor. At least 5 to 8 things must simultaneously occur to cause a failure. While the probability is low, the cost in information availability,

and sometimes excess capital expenditures to prevent future occurrences, can be very high. Based on Institute research, it is possible to reliably predict site failures.

While server performance continues to increase exponentially, less obvious is that the power consumed per computer equipment rack or cabinet has also jumped dramatically. The expense of providing and maintaining the physical space, power, cooling, and environmental support has also risen steeply.

The Invisible Consequences of Moore's Law's Economic Breakdown

Along with increasing performance, the power consumed per \$1,000 of IT hardware investment over the last 6 years is the root cause of escalating data center costs. This dramatic change and its implications are just now becoming fully recognized. The consequences of this change are typically invisible to most "C-level" executives—until the capacity of existing data centers has been consumed. The same dollar spending for new servers today embeds two to four times more power consumption in the same (or less) space than equipment being replaced.

The Five Gold Nuggets

The Institute has identified five things many organizations can do now to reduce power consumption with existing equipment layouts in their data

centers. Ten percent is almost assured, and 30+ percent is often achievable without affecting computing performance and without significant new expenditures. However, for a number of legitimate reasons, plus corporate inertia, many organizations will not take the risk of picking this gold up from the computer-room floor without a major push from senior management.

The Five Gold Nuggets are

- Server consolidation, optimization, virtualization
- Enabling server power saving features
- Turning off servers no longer in use
- Pruning bloated code to allow use of less powerful servers
- Improving the coefficient of data-center energy efficiency

When Being Risk-Averse can be Risky

In this list, the first four are IT-driven, while the fifth is Facilities-driven, but requires close participation by IT. None of the five will be accomplished without a serious management push. Today, the technical expertise required to do this work is widely dispersed within the organization and at a fairly low org-chart level, with no one person accountable for savings.

Critical Physical Layer Defined

What is often overlooked is the critical physical layer—the foundation for everything IT does. The IT equipment requires a physical location with power, cooling and other environmental services like fire detection and suppression. Historically, the facility organization provided these "site" infrastructure services with some dividing line between where Facilities stopped and IT started (typically at the Power Distribution Unit). As densities grow, IT and Facilities, to harvest the Five Gold Nuggets, must work together as a boundary-less team.

Many User Organizations Are Not Optimally Structured For The Challenges Ahead

The interdependencies between IT technology decisions and critical physical layer operations are often overlooked

Facilities/Corporate Real Estate		Information Technology
Strategic	<ul style="list-style-type: none">• Strategic implications of high-density on the real estate data center portfolio• Capital budgeting and lifecycles for high-density infrastructure• Strategic planning for the Critical Physical Layer™• Chartering of Integrated Critical Environment™ (ICE™) Teams	<ul style="list-style-type: none">• Strategic implication of data center facility costs increasing to be 5% to 15% of IT's budget• Incorporating Critical Physical Layer costs into new application economic decisions• Strategic actions to reduce the invisible consumption of remaining site capacity• Chartering of ICE Teams
Operations	<ul style="list-style-type: none">• Managing and optimizing Critical Layer Dashboard (Actuals, Remaining Capacity, Projected Exhaustion Point)• Cooling science• Data Center Energy Efficiency• Tactical Critical Physical Layer implementation• ICE Team operations	<ul style="list-style-type: none">• Managing and optimizing Critical Layer Dashboard (Actuals, Remaining Capacity, Projected Exhaustion Point)• Adoption of best practices for managing high-density computing• Tactical Critical Physical Layer implementation• ICE Team operations

or poorly understood. Similarly, corporate real estate executives are puzzled that 30,000 square foot data centers that previously cost \$20 million may now cost \$100+ million, and this was not included in their budgets. The result is confusion, delay, increased downtime risk, and sub-optimal decisions. The preceding four-quadrant table outlines some of the critical physical layer interests of each user stakeholder.

Best Practice ICE Teams

Harvesting the gold will be much faster with the adoption of a new planning process and functional team approach first explored during the Institute's 2006 High-Density Computing Symposium called Integrated Critical Environment (ICE) Teams. When properly constituted and empowered, ICE Teams become an essential part of an overall strategy for reducing computer-room power consumption and optimizing overall performance.

Business Continuity Benefits of ICE Teams

In addition to the economic benefit of boundary-less cooperation between IT and facilities, there are also significant reliability benefits. IT's computer room layout choices dramatically affect both zone and vertical hot spots. Simple layout changes can double the amount of hardware that can be cooled consistently which directly supports business continuity by avoiding intermittent ghosts and other reliability problems. Installation of blanking plates and other best practices can also reduce equipment temperatures dramatically. As densities continue to rise, these issues will become more and more important to assure computer hardware receives optimal critical environment conditioning.

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¹White papers and supporting studies by *The Uptime Institute* are available at www.uptimeinstitute.org/whitepapers



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DISASTER ~~RECOVERY~~ PREVENTION

A PROACTIVE APPROACH FOR BUSINESS CONTINUITY FOR CRITICAL FACILITIES

BY RICK EINHORN & KFIR GODRICH



Business continuity is the ultimate goal of critical facilities. Therefore disaster recovery planning is essential. However, an effective reactive plan for an unavoidable failure is not the only answer. Taking a proactive approach to preventing disasters before they even occur is not only an alternative to what is widely utilized today, but also a complementary philosophy for facilities that cannot afford downtime. The basic idea is: plan for the moment after a failure, but first—fight not to fail at all!

The first assumption of every Disaster Recovery and Business Continuity (DR & BC) plan must be this: a disaster will happen. From unpredictable mother nature to the vulnerable power grid, we cannot calculate the “when”, but by effectively hardening facilities and implementing DR & BC plans we can

be ready for the “what now.”

The DR & BC plan covers both the hardware and software required to support the critical business applications in the event of a disaster. The list (right) shows the causes of critical failures: 3% natural disasters, 28% technology reasons, and the remaining 69% somehow related to a human factor. The human factor includes design, maintenance, testing and, of course, human error.

The DR & BC plan is not limited to finding a space to restore the critical processes, but should also take a proactive/preventive approach to address each risk factor. A gap analysis that follows an all-levels risk assessment should generate action items such as: geo-redundancy considerations, reliability improvements, maintenance and operational procedures, and human

error minimization. This approach should not be local or sub-system oriented, but all-inclusive in order to generate a good value for the investment. Ultimately, the continuity of business and operations must always answer to the bottom line.

The proactive BC strategy must include three major targets for hardening at the facility level: a risk assessment, an implementation procedure, and improved operational processes.

The first target, a risk assessment, is a four-step process that includes: a site evaluation, a vulnerability assessment, benchmarks, a gap analysis and of course recommendations.

Causes of Critical Failures in Data Centers

• Equipment Failure	28%
• System Design	20%
• Human Error	18%
• Equipment Design	13%
• Installation Error	10%
• Maintenance Oversight	4%
• Commissioning or Test Deficiency	4%
• Natural Disaster	3%

The first step in the risk assessment is to develop resiliency metrics for mechanical, electrical, server, service, and application components. It is imperative to quantify reliability and recovery expectations at the multiple levels of power delivery.

Second, all single points of failure

(SPOF) must be identified within all the critical systems. Ideally this should include not only the facility infrastructure, but also the computational, communication and software/application layers. While identifying SPOF, a probabilistic risk assessment (PRA) model must be developed that includes an evaluation of all redundancy requirements. Along with this important step, a significant database must be created and should be carefully organized in order to be effective for the following steps.

The third step is the gap analysis, which compares the database with the findings.

The fourth step is the outlining of recommendations for upgrades or alterations to optimize facility, plant, IT system, IT services, and application performance and resiliency.

The goal is to implement the recommendations presented in the risk assessment. Using reliability modeling, each design option needs to quantify performance (reliability and availability) against cost to make design decisions in the initial phase of the project. Since the costs associated with each reliability enhancement or redundancy increase are significant, sound decisions can only be made by quantifying the performance benefits and by analyzing the options against the respective cost estimates. An overall schedule must be developed containing all the project phases. Here, commissioning is a key component to complement the implementation phase. Commissioning, simply stated, is the documented and systematic process of ensuring that all building subsystems perform interactively according to their intended design and operational function. Why is this so important? Because commissioning minimizes the occurrence of hidden malfunctions...ie: FAILURE. The commissioning process is site-specific for verifying the performance of individual system components. Test procedures must be uniquely designed for each manufacturer's equipment and application to measure and verify specific performance parameters.

Following the verification of individual modules, integrated testing of

major systems must be performed. This testing procedure is a cumulative exercise to verify the reliability of the design and compatibility among all critical systems (electrical, mechanical, IT and environmental) and it must be tested not only in standard operating modes, but also in failure and safety modes to ensure there is redundancy within and among all systems. The intent of such testing is to simulate any "real life" disaster conditions that the facility could undergo.

The improvements at the operational level should include comprehensive maintenance procedures that correlate with the understanding of the failure mechanism of the equipment.

A proposed all-inclusive methodology for facility maintenance should be implemented during the proactive BC program. This program combines preventive maintenance, reliability-oriented maintenance and corrective maintenance in the various stages known as total maintenance.

Developing the BC strategy at the facility level is not enough. It should be planned for at the enterprise/plant level. The best analogy here is the idea of a Local Area Network (LAN) versus a Wide Area Network (WAN). Global financials or major ISPs are operating facilities able to work in "stand-alone" or "cooperative" modes. The geo-redundancy concept was created as a proactive approach to BC and DR. This concept has been popular lately as there has been a movement from the off-DR facilities to fully active redundant sites. The stand-alone mode includes building a facility with all the capabilities described above, including the comprehensive hardening process the facility underwent in order to be able to accomplish the business profile. But what if this is not enough and the hardened facility "A" must be able to cooperate with facility "B"? The requirements of cooperation may include:

- Sharing databases
- Real time mirroring of data
- Distributed H/W
- Complementary coding systems
- Access to distributed sensor networks

Thus the questions raised are:

- Does Facility B have the same survivability standards as Facility A?
- Does Facility B have the same protection to vulnerabilities as Facility A?
- Did Facility B pass the same hardening process as Facility A?
- Are there any circumstances under which one of the facilities will be unavailable for the other facility's needs during the mission?

The methodology suggests that the facilities must have the same hardening capabilities to accomplish the business objective.

An example of this is an Internet shopper. Users hitting the "BUY" button are immediately sent from a low availability platform to a high availability platform to complete the sale. In the event of a server failure at the facility, the high availability platform will switch to a mirrored facility to complete the sale with no significant delays (unbeknown to the satisfied shopper).

Experience has shown that one of the most important pieces in the whole geo-redundant scheme that can really boost the proactive BC plan is the availability of the IT fail-over mechanism between facilities.

The best approach to BC is to take proactive steps to ensure operational continuity as opposed to concentrating a facility's efforts on disaster recovery after the fact.

Yes, disaster recovery planning is a must, but it is just another piece in the BC plan, which of course is the overarching goal. Additional practices suggested are the hardening of the facilities, improving operational availability and physical spread with a high resiliency, fail-over mechanism.

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EVACUATION PLANNING: FOUR MISTAKES MANAGERS MAKE

BY PATRICIA L. BENNETT, FBCI

When New York Yankees pitcher Cory Lidle accidentally crashed a plane into a New York City high-rise this past fall, it once again raised awareness of the need to safely and quickly evacuate buildings in an emergency.

With the tragic accident the latest example of this need, you would think business continuity professionals, facility managers and tenants would do a better job of implementing proper evacuation plans. And while some are doing a great job, for many this is just not the case.



Photo courtesy of FEMA.

The blame for this inadequate planning can, in most cases, be shared by both facility and business continuity managers. The problem has two parts: The first is the lack of communication between facility managers and their tenants. The second is many managers lack an understanding of the complexity of evacuations. While on the surface, evacuations seem relatively simple, the truth is it is a complex procedure managers need to plan well in advance.

To understand how both facility managers and BC planners can improve evacuations, we've broken down facility evacuation into four major mistakes. Are you guilty of making them?

Mistake #1: Not Communicating About Roles in an Emergency

Remember the old Abbott and Costello routine about "who's on first?" Often, facility managers and their tenants encounter the same type of

communication breakdown – only the result isn't funny. Both parties can make very dangerous assumptions about who is responsible for managing an evacuation. This disconnect can cause confusion and panic in an emergency. You could have the wrong people giving people the wrong directions, or even multiple people giving conflicting

cause an even greater loss of life or injury than sheltering them in a protected part of the building. Similarly, if the building faces a biological threat, the last thing you want to do is to evacuate your tenants. You need to keep them safe inside the building until the emergency response team tells you how to proceed.

Remember the old Abbott and Costello routine about “who’s on first?” Often, facility managers and their tenants encounter the same type of communication breakdown – only the result isn’t funny.

directions. This can cause either a stampede of confused and frightened people or it can cause people to hesitate, losing the window of opportunity they need to escape harm.

You may be surprised by the erroneous assumptions both facility managers and tenants may make. For example, I once encountered a client who assumed the building management staff would help evacuate handicapped employees. The facility manager, on the other hand, assumed his job stopped at providing the appropriate equipment for handicapped tenants on the stairways and the tenant would actually assist the person down the stairs.

Recommendation: Start a dialogue! Communication between facility managers and tenants is critical. Facility managers should explain to their tenants how they will manage such events. Tenants need to discuss their assumptions about evacuation with their facility manager.

Issue #2: Not Identifying the Real Risks

Every facility is unique. In putting together an evacuation plan, you need to know more than simply where the exits are located. A building's size, tenant makeup, visitor makeup, location, security needs, community infrastructure and the type/timing of a disaster all impact how you should design your evacuation plan. For example, sending people out into severe weather could

Recommendation: Create a joint emergency response team for the building. Get the facility manager, tenants, security staff, local emergency response and experts in crisis management to develop this team. Then, the team can develop evacuation procedures for multiple scenarios and educate everyone involved on those procedures.

Issue #3: Not Knowing Your Audience

A friend and colleague was proudly showing me his building one day, highlighting all the new signs he had just installed explaining the facility's evacuation procedures. There were several problems with the implementation, the biggest being that the signs were only in English. Since this was a major downtown building with a food court and retail stores, about 40 percent of the employees and customers did not speak English.

Recommendation: Take a good, hard look at who uses your building. For example, are there patients visiting medical offices for treatment, day care centers, high security areas, government offices, high profile targets, large tour groups or visitor populations? A museum that has a thousand children visiting each day needs to understand how those kids would react to an emergency evacuation. Talk to each tenant and ask what barriers there may be to employees and visitors evacuating safely.

Issue #4: Not Finding the Right “Muster Area”

Both facility managers and contingency planners define “muster areas” for evacuees to gather. This is a great idea. It helps emergency responders determine who may still be trapped within the facility. The problem is most muster areas are totally inappropriate for that function. One facility manager took me out to his parking lot and showed me how he had placed department / tenant names on every lamp post. The theory was everyone exiting the building would find their lamp post and the facility's team could safely do head counts. Unfortunately, he did not take the needs of the emergency response teams into account, nor the fact the extreme cold in the winter would make this an impossible area to use during evacuations. You can't ask people with no coats, keys, wallets or purses to stand outside in bad weather.

Another problem is when multiple tenants decide to use the same small internal area to muster their employees. Facility managers often fail to take into account the amount of outside traffic that may choose to seek shelter within their facility, thereby putting an additional strain on already inadequate resources.

Recommendation: Facility managers, tenants and emergency response personnel need to jointly develop plans to direct people to safe muster areas. You may need to establish a combination of internal and external areas where everyone can meet safely. You may want to preposition portable structures that can be setup quickly.

The Bottom Line

Once you have developed your emergency evacuation plans, don't forget to test them. Start with desktop walkthroughs, and then perform actual drills. Develop scenarios for different types of disasters. Solicit feedback from participants in these drills. Make sure you provide a detailed report on what worked and needs improvement to both your tenants and the emergency response teams.

Also, develop an awareness program for both tenants and visitors to your building so everyone has the correct information. I once visited a building where they gave every visitor a small card telling them what to do and where to go in the event of an emergency – a smart idea.

Here is a checklist to help get you started:

- Create a formal project (get all interested parties involved).
- Develop an event management strategy that defines roles and responsibilities.
- Develop an event management team to monitor events as they unfold and actually manage the actual evacuation.
- Conduct safety and security audits on a regular basis (at least twice a year).
- Conduct an infrastructure audit to identify risks with the building and the surrounding location (at least once a year).

- Develop evacuation plans and coordinate them with your tenants.
- Create an awareness/training program for everyone who will be involved in the evacuation.
- Create an exercise and status reporting strategy. Include all the most likely disaster scenarios.
- Conduct evacuation exercises (desktop at least twice a year and actual drills at least once a year).

Having truly effective evacuation plans is one of the most important tasks you can do to protect the health and lives of

your tenants and employees. It's up to you to ensure everyone is on the same page when it comes time to evacuate.

ABOUT THE AUTHOR

Patricia L. Bennett, FBCI, is the president of the Patricia Bennett Group, Inc., located in Bellmawr, New Jersey. For the past ten years, the Patricia Bennett Group has provided both government and commercial clients with a variety of contingency and network security solutions. You can contact Patricia at pbennett@bennettgrp.com, by visiting www.bennettgrp.com or by calling 856-931-1604, x112.

Having truly effective evacuation plans is one of the most important tasks you can do to protect the health and lives of your tenants and employees. It's up to you to ensure everyone is on the same page when it comes time to evacuate.

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AUTO INJECTOR TYPE ☐ 1 ☐ 2 ☐ 3

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MORGUE **MORGUE**

IMMEDIATE **IMMEDIATE**

DEAD **DEAD**

MINOR **MINOR**

UNDERSTANDING THE IMPORTANCE OF DAMAGE ASSESSMENT IN CONTINUITY PLANNING

BY PAT MOORE, CBCP FBCI (RET.)



Photo courtesy of FEMA.

Many business continuity planners don't completely understand what damage assessment entails. You can't assume you'll get your building back the minute the fire is out, or the water is contained.

Until your local health department declares your building "safe for re-occupancy," you should not operate your business there.

Do you know what your organization's responsibilities are versus those of the municipal authorities and first responders? Who is responsible for performing a damage assessment and mitigating the loss? Where does your

organization's responsibility for cleanup begin?

The National Fire Protection Association (NFPA) says that depending on the circumstances and the type of facility, most fires are extinguished in approximately four hours and most buildings are not burned to the ground. In many cases, however, it can take 12 to 72 hours until officials perform the initial

damage assessment. This will take even longer if they suspect any hazardous materials and call in a HazMat team.

Your BC program must then help you facilitate a quicker damage assessment of your facility. A well-designed and maintained site and damage assessment plan that includes pre-loss site safety audits, along with disaster avoidance, mitigation and good loss control and

CONTINUED ON PAGE 28

waste management practices should be an integral part of any organization's business continuity planning effort.

Do you know what your organization's responsibilities are versus those of the municipal authorities and first responders?

Creating a Pre-Loss Site Safety Plan

Can you really make a damage assessment quicker before disaster even strikes? You can, with some proper pre-planning before a loss.

First, build a relationship with your local emergency first responders (i.e. fire, police, etc.). For example, take a first responder representative on a pre-loss walk through your mission critical facility or facilities. Familiarize them with your facility's drawings, including any improvements you've made. Make your Material Safety Data Sheets (MSDS) available to them. Get them to understand your time-sensitive business and service recovery needs. This process can greatly expedite the process of first responders getting you the emergency damage assessment information you need after the incident.

Next, take your facility's unique environment into account. In many cases, manufacturing operations, healthcare facilities, museums, storage warehouses and other facilities require a more complicated damage assessment and restoration than other types of facilities.

Manufacturing and distribution facilities, for example, often have diverse risks and complex processes which combine to create a planning conundrum for BC professionals. Just as we plan for recovery and continuity from natural and man-made disasters such as fires, floods, earthquakes, tornadoes, hurricanes and power outages, these facilities also must deal with exposure to hazardous materials, storage rack collapse, a clean room environment penetrated, vehicular impact, vandalism, malicious

mischievous and supply chain or labor interruptions.

The Basics of Damage Assessment

Good pre-planning will only take you so far in speeding up a damage assessment. The real key is how well you mobilize after the disaster. Here, we outline the elements of a damage assessment.

1. *Examine equipment and electronics*

Identify items that require lab packing (containing and removing hazard classes of material such as flammable liquids and corrosives). You will also need to profile and dispose of those materials.

Carefully examine electronics and, if necessary, have experienced technicians test them to ensure they meet the manufacturer's operating and performance specifications. For example, if electronic equipment has suffered thermal damage or been exposed to excessive heat, it's unlikely you can restore it. If equipment was exposed to just smoke for a short time, however, there may be very little damage.

A moist, humid environment can severely corrode equipment within 48 to 72 hours. Ideally, you would be able to clean all of the equipment and remove the contaminants at the same time, but the volume of equipment, restoration versus replacement decisions, insurance coverage issues and re-certification requirements can delay the process.

You should also have pre-qualified specialists do the proper testing as quickly as possible to determine the quantitative and qualitative corrosivity. Emergency mitigation procedures, such as removing surface contamination and applying corrosion inhibitors, can buy you the time you need to make the necessary replace-or-restore decisions.

2. *Perform a structural damage assessment*

Have a state-licensed structural engineer (or a professional engineer who specializes in structural integrity) perform a thorough investigation of

the structure as quickly as possible. Be sure the engineer complies with your state requirements.

After a fire, the engineer needs to look at structural conditions, including: distortions in structural columns, beams and slabs, fracturing of connections, spalling of concrete members and cracking of concrete members.

"If these conditions exist extensively, perform material tests to determine if the strength of the structural materials has been affected by the fire," recommends Ian R. Chin, SE, AIA of the Chicago, Illinois firm Wiss, Janney, Elstner Associates, Inc. "Perform surveys of columns and beams to determine the extent of their distortions and to evaluate the affect of the distortion on the load carrying capacity of the structural members."

3. *Test for hazardous material contamination*

OSHA requires every individual who enters the building to wear protective clothing and have special training, depending on the type and level of non-routine contamination experts find or suspect at the facility (including PCBs, asbestos, lead, cadmium, mercury, etc.).

An internal or external certified industrial hygienist must test for any health, safety and environmental concerns that may exist. Once the hygienist performs an in-depth site assessment and analyzes samples, your pre-qualified hazardous material decontamination specialists can identify and perform the proper cleaning and decontamination protocols.

4. *Perform a fire damage assessment*

Determine if any routine contamination exists, such as the by-products of a fire. In the event of fire, you may assume some areas of the building are unaffected. They can still suffer heat- and soot-related damage, however. The initial damage assessment should always address both indirect as well as direct fire-damaged areas. Contamination, such as fire combus-



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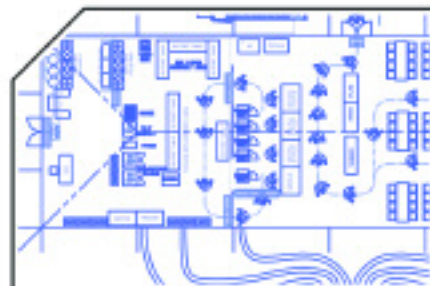
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tion by-products, may lie hidden behind the obvious physical damage.

Other building materials can form sulfates and nitrates. Since each fire leaves its own unique chemical fingerprint in the soot, what burns in what quantities under what conditions will determine the chemical components.

5. *Check water for residual chemical damage*

Water from either floods or fire suppression can also carry contaminants. That water can deposit inorganic salts from building materials and atmospheric particulate matter on exposed circuit boards. Also, chilled-water systems often contain glycol, which can adversely affect certain types of paper and magnetic media. You should always analyze the water's ionic content, acidity, suspended solids and organic content.

6. *Inspect for mold and mildew* You need to be concerned about the growth of mold and mildew spores anywhere there was standing water or moist, humid conditions for more than 48 hours. Mold affects not only the structure, HVAC systems and critical documents and magnetic media, but can produce "sick building syndrome" as well.

Have a certified industrial hygienist conduct a thorough damage assessment and decontamination of the HVAC systems. With today's technology, it is unlikely you will need to replace the ductwork. Instead, you can apply the proper EPA-recognized biocide through various fogging and cleaning applications. In compliance with your local and state regulations, it will be necessary to do follow-up clearance sampling as the final step in returning the facility to a safe and healthful condition.

7. *Care for wet vital records* With major water damage, you can lose vital records very quickly. In dealing with paper in moist, humid conditions, you have about 48 hours before damaging mold and mildew grow.

Reduce high temperatures and vent the areas as soon as the water has

receded or been pumped out. Keep water-soaked materials as cool as possible by good air circulation until you can stabilize them.

You should also complete certain procedures such as washing away accumulated mud, sewage and dirt prior to freezing the documents. When removing wet documents from file cabinets or shelving, do not attempt to pull them apart while wet. Remove all documents in blocks, if possible, so you do not increase deterioration. Leave a space about the size of your fist in the packing box for proper air circulation.

Once the documents are frozen and/or in cold storage, choose the proper drying method. Freeze-drying, a process involving freezing the documents immediately and then sublimating them, is the most effective way to restore water-soaked documents.

If the documents are not soaking wet, you can also air dry them through dehumidification. In this process, you introduce dry air (by using either desiccant or refrigeration dehumidification equipment) into the moist environment which absorbs the water vapor.

Successfully recovering vital records on magnetic media requires many of the same considerations as hard copy documents. Water can erode through the substrate, destroying data in the process. To be effective, you must employ proper recovery procedures, such as restoring a relative humidity below 50° Fahrenheit and use proper drying and cleaning protocols within 72 to 96 hours of damage.

The cleaning and drying methods you use will also depend on the type or degree of damage. You usually open and dry water-damaged floppy diskettes, for example, using isopropyl alcohol, then inserting them into empty jackets and copied onto new media. Depending on the situation, you can either freeze-dry or machine-dry magnetic tapes. While you must freeze-dry cartridge tapes,

you can dry open-reel tapes on tape cleaning machines. You can then use tape drives with recovery software to copy the information onto new media, however you need to ensure the tapes are dry and clean before you make any attempt to copy the data.

You can lose data on wet microfilm through improper handling, such as allowing it to dry on its spool. In most cases, it is best to leave the microfilm in water until you can properly pack it and send it to the appropriate recovery location.

Flood waters can contain hazardous materials and therefore you must perform the proper health and safety procedures during retrieval and recovery of your vital records.

Being knowledgeable in what is required in a thorough damage assessment, utilizing personnel who are trained in this field and executing this part of the plan in a timely manner allows senior management to gain the critical initial damage information they require to make executive recovery decisions.

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Pat Moore, CBCP (Certified Business Continuity Professional), ret. FBCI (Fellow of the Business Continuity Institute), Contingency Planning & Management's 1999 Hall of Fame inductee, and the Federal Emergency Management Agency's (FEMA) "Outstanding National Business Person" award winner for 1999–2000, is one of the world's leading educators on business and service continuity planning, physical property restoration and loss mitigation. Pat's numerous professional credentials include: Chairperson of the Education Task Force of the National Fire Protection Association (NFPA) Disaster Management Committee; Chairperson of the Disaster Recovery Institute International Education & Standards Council from 1995–1998 and Co-Chair of the International Association of Emergency Managers Public/Private Partnership Committee from 1999–2001. You may contact Pat directly at her office at (830) 598-1587, on her cellular phone at (830) 385-4833 or by e-mailing pmooretex@aol.com.

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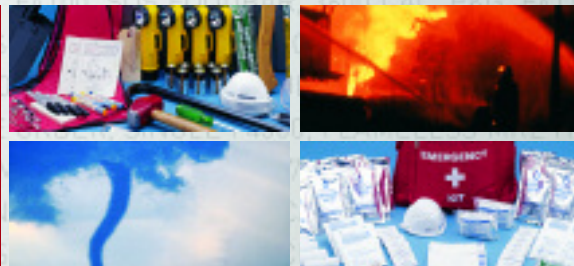
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WORK GROUP RECOVERY: WHERE WILL YOUR EMPLOYEES WORK AFTER A DISASTER?

BY ALISON DUNN



Photo courtesy of FEMA.

When your facility is no longer operational following a large-scale disaster, it's not enough to simply invoke a disaster recovery plan. Where – and how – will your employees respond and recover if your building isn't operational?

That's where work group (or work area) recovery plans come into play. While disaster recovery plans generally focus more on the physical assets or data side of the business, a work group recovery plan focuses on having a place for people to work to get the business back up and running. "The concept of corporate work group recovery is actually much different from disaster recovery, although the terms are often mistakenly interchanged," says Robert J. Alcorn, chief operating officer of Indianapolis-based nFrame, Inc. "Work group emphasizes restoring employee operations and productivity, while disaster recovery typically focuses on salvaging physical assets. Companies require both efforts to fully recover from devastation."

There are many options for work group recovery, including:

- **Hot sites:** Paying monthly subscriber fees to an independent vendor for the availability, space, equipment, and services of a fully operational facility
- **Cold sites:** A computer-ready space an independent vendor holds in reserve for the company's own systems.
- **Mobile recovery centers:** Custom-designed, transportable structures outfitted with the necessary computer and telecommunications equipment which you can transport to your facility after the disaster
- **Temporary facilities onsite,** including tents or modular buildings, medical, catering facilities, etc.
- **Telework (Telecommuting):** Staff works remotely from home or alternate locations via computer and telephone

"The emergence of work area recovery as a high priority DR requirement is driving demand for more comprehensive, high availability services, similar to what customers traditionally associate with hot-site programs," says Sandy Guidera, of Recovery Point Systems. "The result is a fully integrated service delivery model in which all of the components necessary for immediate resumption of full business functionality, including the work area facilities, hot-site services, recovery connectivity,

secure hosting and data storage options from replication to tape storage are provided by one vendor at all inclusive locations. Work area recovery is the centerpiece of this approach." And so with many options, and new vendor offerings, how do you develop a work group recovery plan? We spoke to a number of industry experts to discover what you

CISM, vice president of consulting product development for SunGard Availability Services. "Every issue probably has a straightforward answer, but only if the question is considered in advance of the crisis."

In other words, the time to plan for work group recovery is not after a disaster has wiped out your facility. Instead,

While disaster recovery plans generally focus more on the physical assets or data side of the business, a work group recovery plan focuses on having a place for people to work to get the business back up and running.

need to consider when designing your own plan. Here, we outline the strategic issues of the plan, what important elements you should include, the guidelines you should use to create your plan and some common mistakes you should avoid.

Strategic Issues

"From a strategic perspective, each organization needs to evaluate how a work group strategy compliments its business processes," says Jim Grogan,

you need to plan that recovery well ahead of time, evaluating exactly who and what needs to be where after a disaster.

But where do you start? Marv Wainschel, of Eagle Rock Alliance, says the first step is to determine how many people you will need within specific time frames after the disaster.

"The obvious reason for this is to limit pre-disaster expense," Wainschel says. "The fewer resources an organization needs to allocate pre-disaster, the less the expense."

CONTINUED ON PAGE 34



Next, once you understand which functional work groups you must recover first and the time it will take to recover them, you need to create a map of what people will work in what recovery place. Perhaps you can use a combination of facilities or alternatives until your primary facility is up and running. Would temporary facilities onsite, such as modular buildings, help restore work areas nearby employees' homes, saving the inconvenience of commuting to an alternate facility?

John A. Jackson, executive vice president of Fusion Risk Management, Inc., says there are a few other strategic issues to take into account while planning, including:

- *Logistics*: How far must employees travel to reach the alternate facility, and how long will they stay?
- *Communication*: How will you tell employees who must go to the site, when to go and how to get there?
- *Information*: How will you protect and access non-digital information?
- *Growth*: How long will the recovery take? How will you grow the work force as the recovery proceeds?
- *Public relations*: How will you handle the press and the media?

Qwest Hosting's Laurel Burton sums it up: "At the most fundamental level, an effective response and recovery plan is comprehensive, clearly outlines each group's critical functions and its priority in the event of a disaster and provides processes that are achievable in the event of a disaster."

Elements of the Plan

"A good plan identifies everyone's critical functions, the time frames of recovery and the resources you'll need to meet those requirements," says Monica Goldstein, executive vice president of CAPS Business Recovery Services.

What else should your plan include? According to our experts, it should take into account:

- Communication with employees during the response and recovery
- Identifying critical personnel and when you will need them
- Coordination with outside

organizations such as shipping, mail service, supply vendors, etc.

- Travel to the alternate site and commuting considerations
- The infrastructure available (food, rest areas, washroom facilities and more)
- Documentation, including production equipment, home phone numbers, cell numbers, e-mail addresses
- OSHA and NFPA regulations, as well as local codes for evacuation and shelter-in-place
- Prioritizes functions within the operation (you can't keep everything up and running in a crisis situation)



The plan should also insert a heavy dose of reality into the planning scenario, says Steve Crimando, managing director of Extreme Behavioral Risk Management LLC.

"It's difficult to model how people will actually respond during real events," he says. "Have all members of the work group consider the emotional

pulls that may accompany various scenarios. Their ability to stay, physically and mentally, on task can be critical to both response and recovery efforts."

Finally, don't forget to test the plan. "The most important issue is making sure people know what to do," says Vin D'Amico, founder and president of Damicon LLC. "In many cases, time is a brutal adversary. This is why the best-prepared groups are those that practice to keep response time to a minimum."

"A work group response and recovery plan is only as good as the planning and testing that goes into it," agrees Scott Ridell, product marketing manager for LightEdge solutions Inc. "Each business unit is ultimately responsible for analyzing its critical processes and ensuring these activities are brought into the full business recovery plan."

Guidelines for Planning

Once you've determined what you need in your plan, it's time to choose the alternative, or alternatives, that best fit your needs. Do you choose a hot site, cold site, a mobile recovery service, telecommuting or a combination of more than one?

The following is a list of guidelines to help you choose.

- Does the solution meet both your office and technical requirements?
- Transportation: How will employees get there? Is there parking? A reasonable commute?
- How close is the solution to your facility? Will an area-wide disaster affect its operation also? Is there power redundancy?
- Is the solution shared? What if another company uses the location first?
- Is it expandable? Safe? Comfortable? Amenities close by?
- Recovery time vs. Cost (i.e. it can be either cheap or fast, but not usually both.)

If it seems complicated, try having an expert assist in the decision-making process, says Chris Alvord, CEO of COOP systems. "Vendors have a different vocabulary for the same features, and tend to obfuscate the issue to try for advantage," he says. An expert can help



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you cut through the lingo and determine which option is right for you.

And remember, a work group recovery plan is about just that: Recovery. “Think simple and economical,” says Jim LaRue, president and senior consultant of Dreamcatcher Disaster Resilience, LLC. “Don’t worry about glamour, since this is survival mode.”

Mistakes to Avoid

When we polled the experts, they, not surprisingly, had seen plenty of planning errors over the years. Many reported the same mistakes happening again and again. Here are the most common pitfalls to avoid.

You overlook change management. Business processes change, workflows are adjusted and staff come and go. But a lot of companies don’t take that into account when either writing or updating plans. For each company change, you should review and update your plans, as well as ensure everyone who acts on the plan understands the changes.

You don’t plan for growth. It’s one thing to have a plan that allows mission-critical employees to work temporarily for the standard 72 hours. But you can’t assume your facility will be back up and running by then – and that everyone can return to work. Instead, your plan should include a scenario for the timely re-introduction of employees to the temporary work space.

You forget about security. You can’t just be so grateful for getting connected after a disaster that you forget security issues. Your plan should have adequate security to ensure your critical information isn’t available to the world. Don’t forget physical security either. The alternative work space should be safe for employees, as well as keep out anyone you don’t want there.

You don’t give employees a voice in the plan. You can’t assume, particularly after a large-scale disaster, that every employee is going to have restoring your business as his or her top priority. By not involving them in the plan, you may be missing some key interdependencies between the functions you deem critical and the different work groups. Without

employee input, you might not be able to execute the solution as planned.

Your plan is too limited. Unfortunately, too many companies only plan for one type of disaster, such as a small fire, a leaky roof, or even losing only the facility. But a large-scale disaster can often mean you have to deal with more than one issue. For instance, after Hurricane Katrina, companies experienced multiple layers of failures, including wind damage, flooding, power outages, phone outages, cell phone outages, fuel shortages, infrastructure damage and more. The best way to deal with these issues is with an extensive business needs analysis and a complete recovery plan you test on a regular basis.

ACKNOWLEDGEMENTS

The Disaster Resource GUIDE would like to thank the following contributors:

Robert J. Alcorn, n\Frame, Inc.
Chris Alvord, CBCP, COOP Systems
Patricia Bennett, FBCI,
The Patricia Bennett Group Inc.
Laurel Burton, Qwest Hosting
Mark Conron, FSI North America
Steve Crimando, MA, BCETS,
Extreme Behavioral Risk Management LLC
Vin D’Amico, Damicon LLC
Greg Emry, Nor E First Response
Karl Forster, Lockstep Systems Inc.
Tommy Gardner, Remote Backup Systems
Monica Goldstein,
CAPS Business Recovery Services
Jim Grogan, CISM,
SunGard Availability Services
Sandy Guidera, Recovery Point Systems
Robert Hamilton, Cummins Power Generation
John A. Jackson, Fusion Risk Management, Inc.
Chuck Johnson, Unlimited Resources
Mark Kryzanowski,
Asset Recovery Technologies
Jim LaRue, MBCP, CISSP,
Dreamcatcher Disaster Resilience, LLC
Jim McFadden, VoiceGard
Bob Meeker, Preferred Communications
Mike Montgomery, Montgomery & Associates
Scott Riedel, LightEdge Solutions, Inc.
Jerry Shammas, AT&T
Rich Stapleton, Deployed Resources
Larry L. Smith, Institute for Crisis Management
Travis Thompson, LightEdge Solutions, Inc.
Marv Wainschel, Eagle Rock Alliance, Ltd.
Rob Wilson, Recovery Squad

Pre-planning for Temporary On-site Facilities

Businesses and government agencies are taking a hard look at enormous potential needs for temporary on-site facilities that can be quickly set up on-site or nearby in the event of a disaster. Flexibility is one major advantage. The need may be for temporary hospitals, an EOC, or sleeping quarters. Temporary facilities are also being looked at for work group recovery – a place for employees to work when the building is no longer operational.

Some Questions to Ask

- Where will your key executives work if a disaster has impacted your facility?
- What about the media?
- How to configure facilities to accommodate business units?
- Could a temporary facility be used for a business manufacturing process?

Pros & Cons of Temporary Facilities

Pros...
Light weight, simple and compact. Often there is little training needed to set up or tear down. Inexpensive, tough and durable. Expandable and dividable into offices and work rooms. Usually insulated; options allow air conditioning, heating and power.

Cons...
Even though tough and durable, they are not permanent structural units. May be susceptible to wind, snow, cold, heat, etc. Must be stored until needed, thus there are care and maintenance issues.

Types of Temporary Shelters

- Used ISO containers modified with finished interior walls, electrical distribution and HVAC.
- Hybrid shelters are mobile trailers with fold down walls with fabric wings to create expansive interior space.
- Tension arch or air beam shelters are often utilized for temporary facilities.
- Trailers, motor homes and campers provide another option

Pre-Planning Considerations

- Furnishings and equipment should include communication and wireless computer systems.
- Plan for satellite communications (for voice and data) in case land lines or cell phone service is down.
- Mobile restrooms (not port-a-potties) can be set up.
- Generators, air conditioning, and heat will be important
- Hand wash stations, showers and laundry units may be needed.
- Mobile kitchens can be set up to feed employees and their families.
- Day care centers can be built into the plan.
- 24 hour security should be considered.
- Sanitation and cleaning staff should be pre-contracted.

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DISASTER RESOURCE GUIDE

Published by Emergency Lifeline Corp.

PO Box 15243
Santa Ana, CA 92735
Tel: (714) 558-8940
Fax: (714) 558-8901
info@disaster-resource.com
www.disaster-resource.com

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Executive Publisher: **W.T. Rainey**
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Production Coordinator: **Daniel Herrera**
Advertising Sales: **Janice Evans**,
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Circulation: **Carlos Rincon**

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Disaster Resource GUIDE – Volume 11 Issue 2, November 2006 – is published quarterly (February, May, August and November) by Emergency Lifeline Corporation, 1510 East Edinger Ste D, Santa Ana CA 92705 and mailed/distributed to qualified individuals who have requested a copy and who have oversight or responsibility for business continuity, enterprise risk, crisis management, emergency response, and/or homeland security. Individual copies are available for \$20.00. Application to Mail at Periodicals Postage Rates is Pending at Santa Ana, CA.

Views expressed by contributors are not necessarily those held by the publishers. The publishers do not accept responsibility for the veracity of statements made by the editorial or advertising contributors. The information is printed in good faith.

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