

Proceedings of the

# Shelter Implementation Workshop

July 6-7, 2000

The Peabody Hotel - Orlando, Florida



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Division of Emergency Management  
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## VII. INTRODUCTION

Since the passage of the emergency management legislation following the devastation of Hurricane Andrew, Section 252.385, Florida Statutes has required the Department of Community Affairs to undertake activities designed to eliminate our public shelter deficit. This deficit is the result of years of rapid growth that has out paced the construction of facilities that can be used as shelter locations. Adding to the deficit is the imposition of nationally recognized safety guidelines for shelter selection.

There have been several strategies undertaken to reduce this shelter deficit. The Department of Community Affairs has been at the forefront of this issue. Shortly after the passage of the legislation requiring the elimination of the shelter deficit, the Department created a shelter survey section within the Division of Emergency Management, Bureau of Preparedness and Response for the expressed purpose of looking at the structural integrity of existing shelters, and helping local governments identify additional shelter space.

The net effect of this effort has been two-fold. The deficit has grown because standards, developed by the American Red Cross and Clemson University, have eliminated many shelters from current stocks because of their inability to meet the American Red Cross (ARC) 4496 standards and implementing guidelines developed by the Division of Emergency Management. ARC 4496 was developed in the early 1990s and refined several times since, for the purpose of helping the American Red Cross and state and local governments identify the safest spaces available for evacuees who have sought refuge from a natural disaster. Although it has reduced the overall number of public shelter spaces, it has helped eliminate spaces that may have been inappropriate or unsafe for the general public.

Yet, the fact remains that the shelter deficit has not been eliminated, but has grown to nearly 1.5 million spaces. This number is misleading because it reflects the effects of a worst case, Category 5 hurricane impacting the entire State of Florida at one time, and everyone who said they would seek public shelter, actually doing so. This is likely the highest this deficit will go, based on the number of shelter retrofit projects being undertaken, the construction of safe areas within school complexes, and the passage of key legislation making the use of private facilities more attractive to their owners.

The goal of the State's shelter program is to find safe, survivable space in facilities not necessarily built to specifically serve as shelters. There is a strain inherent in this effort because of the fact that such space is needed for a *low probability event*, with a *very high risk*. In the event public shelters are needed, it is unacceptable to congregate high numbers of evacuees in facilities with unknown structural integrity that poses a possibility of structural failure, injuries, or possibly the loss of life.

Therefore, the need for everyone to come together to discuss this process was evident. There are several factors that have expedited this need. First, last year's experiences with Hurricane Floyd,

which caused the largest evacuation in our nation’s history, is certainly in the forefront. If we can open more public shelters closer to home, we can theoretically reduce the number of evacuees seeking refuge over long distances, thus reducing our evacuation clearance times.

Second, the Department of Community Affairs, is required by statute to annually gather a list of facilities that, if retrofitted, could be used as public shelters. This mandate has had very limited funding through the years. Governor Jeb Bush proposed, and the 2000 Legislature budgeted \$13.5 million for this effort. When matched by local and federal sources, this amount could exceed \$30 million. These funds can now be used to bring non-conforming facilities up to the ARC 4496 standards. Therefore, knowing if a structure is meeting ARC 4496 standards is critical to its being retrofitted.

Third, if a region has a shelter deficit, an Enhanced Hurricane Protection Area is to be included in the construction of new educational facilities. This is an area within a school complex that will be able to serve as a safe shelter space. The Department of Education has promulgated construction standards for the Enhanced Hurricane Protection Area that meet ARC 4496 standards. Therefore, knowing the condition of the current shelter stock is critical to this effort.

Given these circumstances, providing a forum to ask questions, raise concerns and discuss state and local responsibilities concerning the shelter program became the focus of the Shelter Implementation Workshop. The expressed purpose of the Workshop was to inform participants of the origins of the ARC 4496 Shelter Selection Criteria; to investigate options to refine the selection process; and, to discuss a plan of action to survey future potential shelter facilities.

## II. DEMOGRAPHICS OF ATTENDEES

The following table represents the breakdown of those who attended from Division of Emergency Managements Regions (Attachment 1).

Area	Total	Emerg. Mgmt	Education Officials	Legislative	Local Elected Official	State ARC	Code Enforce't	Other
1	13	10	1	0	1	0	1	0
2	10	2	2	1	0	3	0	2
3	24	14	3	0	0	2	3	2
4	23	16	3	0	0	4	0	0
5	44	14	12	0	0	5	8	5
6	18	11	1	0	2	2	0	2
7	23	12	4	0	0	3	0	4
Consultants	15							
DCA/DEM	33							
FEMA	1							
National ARC	4							
Press/Media	2							
Total	210	79	26	1	3	19	12	15

### **III. SUMMARY OF SPEAKERS**

The Workshop was conducted on July 6 and 7, 2000, in Orlando, Florida. The first day was designed to give each participant a history of the shelter program; the genesis of the ARC 4496 standards and how it was intended to be implemented by the National and State American Red Cross; and, hear from wind engineers on the impacts severe winds have on building performance. Below is a summary of each speaker in the order as they appear on the agenda (Attachment 3).

#### **Craig Fugate, Chief Division of Emergency Management, Bureau of Preparedness and Response**

Craig Fugate opened the workshop and framed the issues to be discussed. He began by reminding the attendees that the shelter program as currently implemented, was established by Florida Statute, and cannot be dismissed. Likewise, he explained the need to spend limited shelter retrofit funds on those facilities which generate the most "survivable space." Mr. Fugate reviewed the American Red Cross' *Guidelines for Hurricane Evacuation Shelter Selection* (ARC 4496, July 1992).

To help the attendees understand the genesis of the state shelter program, he cited an excerpt from ARC 4496 concerning the need for a structural engineer to certify a building capable of withstanding wind loads according to American Society of Civil Engineers (ASCE) 7-88 or the American National Standards Institute (ANSI) A58.1-82. This must be done for the building to be considered suitable for sheltering people, barring the threat of a storm surge, flooding or hazardous materials event. Given the tremendous costs local governments would have to incur to meet this requirement, and that very few counties had conducted these analyses, the state program was implemented to meet this need. The goal was to create an evaluation program which could be implemented consistently throughout the state. To do this required consulting the experts who created ARC 4496, and others, to quantify some of the criteria, i.e., long span roofs and concrete masonry reinforcement.

After discussing the origins of the shelter program, Mr. Fugate laid out the prominent issues that needed to be addressed throughout the workshop. These included clarifying state and local roles and responsibilities in providing safe shelters; determining if the shelter criteria and guidance needs clarification or revision; and, determining who should be performing shelter selections.

#### **John Clizbe, Vice President of Disaster Services National American Red Cross, Washington, D.C.**

Mr. Clizbe addressed the American public's expectations that American Red Cross hurricane shelters are "safe." Given this expectation, the American Red Cross assembled various wind and structural engineers, and other experts to develop a technical summary to guide those involved in the selection of hurricane shelters. ARC 4496 was intentionally designed to be a "broad view" or a set of general guidelines. Mr. Clizbe praised the Florida Division of Emergency Management for taking the next logical step in developing further guidance in the form of a checklist. Mr.

Clizbe also stressed that in some cases, an "exception" to the ARC 4996 criteria can be negotiated, but only after careful cooperation with all the parties involved in the process. Such an exception is granted only after a thorough "least-risk decision making process" has been exhausted. Mr. Clizbe also mentioned that the American Red Cross maintains an excellent working relationship with Florida Division of Emergency Management.

**Mr. Michael Logan, Officer, Chapter Enrichment Program  
National American Red Cross**

Mr. Logan spoke more in depth about the history behind the creation of ARC 4496. As far back as 1983, Mr. Logan explained entities such as the Southern Building Code Congress International researched and considered development of shelter selection criteria. He also cited early American Red Cross attempts to conduct shelter evaluations in North Carolina (1987) and Texas (1989). Only after an unfortunate incident during Hurricane Hugo, where a shelter in McClellanville, South Carolina was subjected to a 10-foot storm surge, did the American Red Cross assemble a task force of experts from the United State Army Corps of Engineers and Clemson University to develop hurricane shelter criteria. This task force released ARC 4496 in July 1992, just prior to the impact of Hurricane Andrew. Mr. Logan also stressed that there exists an "exception" process by which all the parties involved come to a joint agreement to use a shelter despite a noncompliant feature. Mr. Logan emphasized that there are no set exception criteria because each situation varies.

**Mr. David Rogero, Chairman, Florida State Service Council  
American Red Cross**

Mr. Rogero explained the American Red Cross' organizational structure in Florida. There are 24 local chapters, some single, and others that are multiple county areas, which are the conduit of the American Red Cross services to the public. All levels of the American Red Cross are volunteer led. Services are tailored to the local needs and conditions of the community. A State Service Council serves to coordinate and encourage cooperation between local chapters and to ensure a minimum level of service. Each American Red Cross service area has a lead chapter within the state, with the lead for Disaster Services being the Tampa Bay Chapter. The state lead chapter also acts as a yeoman to coordinate program activities statewide. In an added effort to coordinate the Disaster Services program in Florida, a Manager of State Disaster Services is being hired.

**Earl Peterson, Recovery Coordinator  
Miami-Dade County Emergency Management**

After Hurricane Andrew, Mr. Peterson led a team of 33 engineers who conducted over inspections of over 60,000 damaged structures and wrote almost 17,000 damage survey reports. He stated that the criteria identified in the shelter evaluation procedures very closely resemble the actual damage exhibited. Mr. Peterson believed that, despite the feelings one may have in regards to the results of a shelter survey, the fact remains that when an engineer says a building may perform poorly, it most likely will. Peterson repeatedly noted that the factors driving the need for

sheltering vary across the state. Some counties need to evacuate from storm surge, where some are more concerned about sheltering from the wind. Some need to evacuate thousands; some need to evacuate tens of thousands.

Mr. Peterson maintains that shelter selection should be based upon the greatest hazards and needs of each particular region. Peterson advocated sheltering for only those who need it, and shelter in-place for those who do not need to evacuate. Mr. Peterson emphasized that each county must take whatever steps necessary to achieve sheltering demands, such as new construction (3-5% added cost for hurricane safety) or through retrofitting. Peterson concluded with the comment that much of the engineering research and experience in the wind performance arena is still relatively new, and that many questions remain unanswered.

### **Wind Hazard Research Overview**

The American Red Cross' guidelines, ARC 4496, and the Department of Community Affairs' shelter survey procedures and selection criteria are based upon nationally recognized publications and standards. The wind hazards research overview presentations were formatted to provide workshop attendees with background information and field experience that is relevant to the shelter survey and selection process.

**Dr. James McDonald, Director  
Institute for Disaster Research  
Chairman, Department of Civil Engineering, Texas Tech University**

Dr. McDonald discussed the development and recommended "safe space" selection procedures set forth in the Federal Emergency Management Agency's *TORNADO PROTECTION – Selecting and Designing Safe Areas in Buildings* (FEMA TR-83B, October 1982). According to Dr. McDonald, though prepared to assist in tornado protection, the basic approach is consistent with selection of hurricane shelter spaces for major storms. (ARC 4496's wind hazards selection criteria is based upon FEMA TR-83B.)

**Dr. Tim Reinhold, Associate Professor  
Clemson University, Civil Engineering and Engineering Mechanics  
Board Member, American Association for Wind Engineering**

Dr. Reinhold discussed wind effects on buildings and the use of the American Society of Civil Engineers' design standard ASCE 7, with respect to the shelter selection process. The state-of-knowledge related to wind performance of buildings has improved significantly over the past three decades. ASCE 7 is considered the preferred design and construction standard for hurricane shelters, though other factors must also be considered; such as, wind resistance of cladding materials and window protection.

**John Pistorino, P.E., President**

**Pistorino and Alam Consulting Engineers, Inc.**

Mr. Pistorino discussed the shelter selection criteria that was used in Miami-Dade County prior to Hurricane Andrew. It was similar (if not equivalent) to the guidelines the Department currently follows. He discussed how they recommended over 50 percent of the school facilities identified as shelter sites in Dade County prior to Hurricane Andrew not be used. *(Note: 33 Dade County schools were razed because of the amount of Andrew damage they sustained. Some of these razed facilities had been identified as shelters prior to the report provided by Pistorino and Alam Consulting Engineers, Inc.)* The percentages of buildings removed from Miami-Dade's shelter inventory, and those that needed some degree of mitigation to remain on the inventory, are similar to the Department's final results when the selection process is followed through to completion. He also stated that several of the school buildings removed from the shelter inventory were damaged (or destroyed) by the failure mechanisms identified during the survey.

**Mr. Bill Coulbourne, P.E.  
Greenhorne and O'Mara, Inc.**

Mr. Coulbourne discussed findings of recent high wind disaster events. He is a member of the Federal Emergency Management Agency's (FEMA) Building Performance Assessment Team. He discussed the fact that wind damage mechanisms are still consistent with findings from other surveys performed over the past few decades. New construction does tend to perform better than older buildings, though some features are still considered problematic (i.e., long span roofs). Given the damage mechanisms are sufficiently consistent, Greenhorne & O'Mara, Inc. has developed criteria for evaluating the performance of buildings and has prepared retrofit/mitigation measures to counter the failure mechanisms. The procedure they follow is consistent with the procedures the Department uses. He also stated that there is consistency in damage between moderate tornado events (F2) and major hurricane events (Category 3/4).

**Dr. Ernest W. Kiesling, Professor  
Texas Tech University, Department of Civil Engineering**

Dr. Kiesling took the knowledge gained through the various post-disaster assessments conducted by the Federal Emergency Management Agency (FEMA) and other engineering entities, and discussed the development of a "near-absolute protection" design criteria that is being prepared under a contract with FEMA. This is the state-of-knowledge that will be recommended for "community shelters" in the future. The design requirements for hurricane wind zones like Florida will include a 200 mile-per-hour wind speed, and a large missile impact standard for the building's envelope that is almost 16 times as stringent as the current South Florida Building Code's testing protocols.

**Danny Kilcollins, Engineer III  
Critical Infrastructure Section  
Division of Emergency Management**

Mr. Kilcollins completed the wind hazards research overview with a discussion of the Department's shelter survey process, selection criteria, and program implementation.

Mr. Kilcollins focused on the fact that the selection criteria and definitions are consistent with those utilized by other "safe shelter" survey procedures (e.g., FEMA TR-83B, FEMA TR-84, Air Force Manual AFM 32-1095, etc.) The Department's shelter selection procedures are formatted in such a way as to enable local governments to comply with the ARC 4496 guidelines. It was also emphasized that the selection criteria focused on "survivability" (i.e., acceptability of building damage and impairment of the shelter function, but necessity of catastrophic failure avoidance). The established limits (risk threshold) of the selection criteria are also consistent with building damage mechanisms seen in Hurricane Andrew and other severe wind storms.

Mr. Kilcollins explained that the shelter survey implementation process is dependent upon local input into the process (i.e., availability of documents, knowledgeable facilities' managers, and other sources of information). Also, the Division's training program was an essential component of the survey process. The training program provides an opportunity for the stakeholders (local emergency management, school board officials, American Red Cross, local building departments, etc.) to discuss the limitations of the procedure, how to interpret the survey results, the meaning of "noncompliant," the risk threshold established by the criteria, understand the process to develop a strategic plan for shelter selection and retrofit/mitigation, and provide locally trained staff to survey, evaluate and update hurricane shelter report files.

#### **IV. SHELTER SAFETY DISCUSSION SUMMARY**

*Thursday, July 6, 2000 3:30PM-4:30PM*

After the presentations by the experts in the field of wind engineering and shelter selection, the floor was opened to the general audience for questions, comments, or recommendations. The following is a comprehensive listing of all comments, organized into general subject areas. Staff from the Department of Community Affairs did not offer comments, but reserved this time for a free flowing discussion among the attendees.

##### **A. Strength of the Shelter Selection Criteria**

1. It is understandable to move people away from the storm surge so that they don't drown, but why should shelters be held to a higher wind standard than that of the residences we are asking people to stay in?
2. Upon structural evaluation of a facility, it should be rated to its capacity (i.e. Category 3) and then used based upon its capacity and the impending threat.
3. The structural criteria for shelters are being set by professional structural engineers. However, the shelter evaluations are being conducted by lay persons. If this is going to be an engineering issue, engineers should be used to do the evaluations. The credentials, education, experience, training, etc., of the evaluator will always come under fire.

4. The current shelter selection process is a marked improvement over tools emergency managers had available to them previously.
5. Regardless of the process or procedure, the day of an impending storm is not the time for all the parties involved to discuss shelter selection criteria.
6. The State of Florida needs to be commended on its progress on this issue as it has gone far beyond any other state in the shelter analysis and selection process.
7. Could we explore not surveying shelters, but instead handing a citizen a note that says this building complies with the building code, and therefore you are on your own? Under current shelter selection criteria, a building which has met building codes are noncompliant. In most cases, we are giving people a safer place than where they came from.

**B. Revise Shelter Terminology**

1. The use of the word “safe” in reference to shelters is misleading. Use of the word should be abolished when used in discussion with the topic of shelters.
2. Use of the terminology “noncompliant” in the current shelter evaluation process should be replaced with other terminology which provides a county greater ability to use the facility if no other is to be found.

**C. Political**

1. The parties who really are the decision makers on this issue, including the legislative bodies (State and local), school boards, etc., are not present at this workshop to hear the discussion. Until these parties are appropriately informed, there will never be any significant changes.
2. It seems that there is a need for a charismatic leader or spokesperson in the appropriate legislative bodies to let the decision makers know what the real issues are.

**C. Funding**

1. The State needs to come up with the money to help local school districts cover the additional construction costs to make schools into hurricane shelters.
2. Shelter retrofit and construction projects should **not** be funded out of EMPA grant funds.
3. In this litigious society, a high level of care is provided to citizens who are unwilling to fund such initiatives.

4. Apply resources to newly identified partners, including universities, community colleges, and state owned/leased facilities to identify new shelter space.
5. Every time a local school board attempts to pass a bond referendum in order to build new schools, including Enhanced Hurricane Protection Areas, the increasing majority of older citizens who have no school age children refuse to approve them. The fact is that a large number of those citizens live in manufactured or mobile homes and make up most of the potential hurricane shelter population.
6. In reference to having the Internet accessible in shelters, some counties use churches as shelters. Who is going to fund the internet in these church-shelters considering separation of church and state? Why can't the State use its SUNCOM to come up with the internet service (ISP) for these churches?
7. The Division of Emergency Management should update the status of and expedite the distribution of HMGP Shelter Retrofit dollars.
8. Twenty-five percent or even 12.5 percent match for mitigation projects is too difficult for locals to achieve. Shelter retrofit projects should be 100 percent funded by federal and state resources.
9. The new Florida Building Code allows Miami-Dade and Broward counties to maintain their current local codes. It also adopts ASCE 7 as the basis for wind design statewide. Individual communities will have the opportunity to adopt more stringent local criteria for their communities as well.
10. Funding for shelter retrofits should be shifted in developing areas of the state, to funding construction enhancements of new facilities.
11. Funds spent by local school boards, counties, and municipalities in construction of new facilities should be considered a "soft match" for additional funding to enhance facilities to hurricane standards.
12. Rule 9J-5, Florida Administrative Code, requires a developer to mitigate the effects of construction to transportation and other similar items. Yet, there are threshold limits in the rule which exempt a developer from mitigation projects if he or she builds below that threshold. Perhaps threshold limits should be replaced by simply calculating the overall affects of the community, regardless of its size.
13. The Florida Supreme Court has shot down "impact fees" based upon the argument that schools are used as shelters.
14. It is constitutional for a county, not just a school board, to assess an impact fee on all new

construction to fund sheltering issues.

## **E. Change Expectations**

1. What happened to the days when we used to say “A shelter is a lifeboat, not a cruise ship?” The public expects too much in terms of comfort and services from shelters which sole purpose is survivability.
2. Keep in mind that school boards build schools, not shelters. They are intended and designed for educational purposes.
3. Early inhabitants of Florida (Native Americans, colonists) maintained some simple shelter selection criteria. They did not build on the oceanfront but sought high ground. It was a common sense criteria.
4. Should there be a level of risk management in our decisions? Is it necessary to make our schools look like bunkers, to level the trees all around them, etc. and not be hit by a storm in 20 years? The needs of schools are fresh air, windows, playgrounds, etc. and not something to look like the “Beaches of Normandy.”
5. The citizens need to take responsibility for their actions in deciding to build and live on the coastline.
6. Local school boards expend a tremendous amount of resources in support of emergency management issues, especially when utilized as shelters. School boards are in the business of providing education and most often have no objection to the civic duty of serving as shelters, but do not want to build their schools like bunkers.
7. Shelter residents coming into shelters have a false expectation of what services are provided. They come in expecting a Holiday Inn. Likewise, they bring truckloads of their valuables expecting storage space in the shelters. Better education of the public as to the purpose of shelters and the services provided, and not provided in them is needed.
8. It should be noted that schools are not hurricane shelters, they are tornado shelters for our children while they are in school and should be designed to keep them safe in even worse conditions than a hurricane.
9. Inland counties are not concerned about getting their people away from storm surge. There is no need in those areas to make shelters stormproof. The decision to go to a shelter should be made by the citizen based upon whether or not they will be safer than where they live.

## **F. Construction Standards**

1. Why is 80 percent of the population asked to fend for themselves in their homes with minimal standards applied; while 20 percent of the population seeks shelter which is held to a much higher standard?
2. The Red Cross has set standards that are intangible and then turned around and state it will not staff shelters which do not meet those intangible standards.
3. Does the new Florida Building Code necessitate a review of the school shelter requirements or will they continue to be constructed to a higher standard?
4. State Department of Education and the Board of Regents should impose standards upon local school districts in reference to use, construction and retrofit of schools as shelters. It should not be up to the local emergency management agency to argue these issues with their local school boards.
5. Schools built to Enhanced Hurricane Protection Areas (EHPAs) in Brevard County do not look like bunkers; in fact, they are the most beautiful schools ever built there.
6. Many times, a school which has been well designed by an engineer as a shelter, is value engineered by an architectural firm or school board to reduce costs.
7. Previous Department of Education rule in reference to an exemption from building an EHPA within three miles of a pre-existing shelter has been eliminated, effective October 15, 2000.
8. In conjunction with Governor Bush's request to have internet access in shelters, EHPA areas of schools should be designed and equipped with computers and internet access. Also provide local amateur radio organizations to incorporate needed wiring, etc. to facilitate communications equipment in shelters.

**G. Shelter Demand/Reduction**

1. Make it more attractive for citizens to protect themselves, thus reducing the shelter demand.
2. Current planning numbers for shelter demand is 20-25 percent of the population. Historically, the demand is much less than that (10-15 percent). A study to determine more accurate shelter demand should be conducted to generate a more realistic shelter need.
3. Many good hurricane shelters are churches or other private facilities. Research into legal issues in reference to separation of church and state should be conducted to find a way to fund mitigation projects in these facilities for use as public shelters.
4. Investigation into providing incentives to citizens for building in-home shelters should be

conducted to encourage people to stay in their own homes.

5. We need the staff to run hurricane shelters. The Governor should require state workers that are not in emergency status to be trained for managing shelters.
6. People in high rise condominiums are typically a large portion of shelterees. Most of these condominiums are unlivable after a storm. Construction of these high-rise condominiums should be associated with some form of impact fee to fund construction of shelters for its residents.

## **V. SUMMARY OF REGIONAL BREAKOUT REPORTS**

*Friday, July 7, 2000 10:15AM-11:30AM*

The Shelter Workshop participants were asked to break into groups corresponding to the Division of Emergency Management's regions. Each group was facilitated, and the following represents the collective recommendations from each of the groups. They have been listed by general categories. *(Please note that there were no staff from the Division of Emergency Management present in the break out sessions to ensure the attendees had every opportunity to freely express their ideas. Because of this, there are some technical inaccuracies in the information contained in the following statements.)*

### **REGIONS 1 & 2\***

*(\* Due to the low attendance from counties in Region 2, those participants present joined the Region 1 discussion group.)*

#### **A. Shelter Survey Criteria**

1. The criteria is okay but the language is lacking. The State needs to improve the verbiage in the 15 point site selection criteria.
2. Perhaps there should be a meeting, or series of meetings, with school boards and superintendents to discuss the ARC 4496 criteria.
3. Can we get exceptions on buildings surveyed under ARC 4496 when the access roads are not compliant under the 15 point criteria because of trees?
4. Why should the criteria or standards be the same for different areas?
5. What standard does the engineer use to certify the shelter facility - the wind speed for that particular area or something higher?
6. Category III and Category IV storms - Why should we be concerned (shelter criteria) when we've only encountered Category I storms in the past?
7. The ARC 4496 selection standard has not changed - the enforcement standards have changed and that is the issue.
8. Who is enforcing this? The State has identified the criteria for what is considered a usable shelter - Red Cross isn't going to manage the shelters unless ARC 4496 criteria has been met after the survey has been conducted. The enforcement and coordination with other agencies is lacking in the enforcement arm.

## **B. Communications**

1. We will benefit better if the State's intention to use the internet is clearly communicated to other state agencies and to the Board of Regents.
2. Further seminars and discussion of the topic is wanted.
3. The local emergency operations center should work with local schools to provide updates during storms.
4. What happens when we tell people that buildings commonly used as storm shelters are no longer usable because of compliance issues?
5. We are providing shelter space that is "safer" than the structure they have evacuated from. We cannot guarantee that no injury will occur in the shelter, which needs to be communicated to the public.
6. The Governor should contact all school boards and let them know what type of cooperation is needed for emergency management before the storm hits!

## **C. Terminology**

1. The use of the word "safe" is foolish - no one can guarantee safety. Use of the word "safer" instead of "safe" is preferred because it does not imply a 100 percent guarantee.
2. If a school is deemed "noncompliant" as a hurricane shelter, the public perception about daily school and children safety is also bad.
3. "Noncompliant" doesn't always mean "unsafe."
4. Understanding of the criteria is confusing when it's interpreted to determine what is or is not compliant.
5. The wording in the criteria concerning access routes is ambiguous.

## **D. Funding**

1. Who pays the 25 percent matching funds for retrofitting? The School Board, the County, etc.? The State should provide 100 percent funding for retrofitting facilities to create additional shelter spaces.
2. What are the results of the \$18 million pending appropriation for retrofitting? Who is getting the money?
3. There should be a creative way to use enhancement funds as the matching funds for retrofitting grant.
4. Funds allocated for tourist development should be used to provide for retrofitting cost.

## **E. Policy**

1. Take the State resources and the site selection criteria and use it with new partners (colleges, universities, state owned facilities) and accept current shelter lists from counties.
2. If schools are not compliant, why should the kids be housed in noncompliant buildings and evacuees be sheltered in a compliant facility?
3. If the Red Cross used ARC 4496 and not the State's 15 point site selection criteria in surveying a building, would that be acceptable and would they manage the shelter without the reviewing the building plans?
4. Participation of the Division of Emergency Management personnel in breakout sessions would have been helpful.

5. Area 1 has a tremendous difference and variety in demographics and geography from rural to tourist to metropolitan. Consider a regional approach to the shelter issue versus a “one size fits all” approach.
6. Overall, there is good coordination going on between the Division of Emergency Management and the American Red Cross on the shelter process.

**F. Risk/Host Sheltering**

1. When inland counties are contacted to host evacuees, what happens when a shelter has not been surveyed to meet the criteria?
2. Who makes the determination when an inland county is deemed to be a “risk” county, which can differ from warning to warning?
3. Inland counties will be classified as a risk county under criteria, however the inland county may be identified as a host county until the storm hits the coast. Resulting problem: shelters are no longer compliant because the buildings are not certified to meet Category II storms. Will the Red Cross manage the shelter in a host county, even though it becomes a “risk?”

## REGION 3

**A. Shelter Survey Criteria**

1. Need more than one set of criteria, and it should be based upon the storm event.
2. Should we attempt to have the shelters meet Category 5 site selection criteria? This is too stringent.
3. Should safe survivable areas within buildings be considered when a facility is surveyed?
4. Use the school’s original design as the criteria to determine suitability as a shelter.
5. If a shelter is deemed noncompliant for any reason, the Red Cross will not open the shelter. This creates problems.
7. The Department of Community Affairs and Red Cross should come to an agreement on what guideline should be used.
8. Local attempts to conduct surveys with State trained evaluators were overturned by Division of Emergency Management staff.
9. We are getting conflicting information from the State about what the criteria means.
10. Does it take an engineer to survey shelters? An engineer should be used to determine design wind loads in facilities surveyed for shelters.
11. Preliminary surveys should be done by a technician, but the final survey should be done by a.) professional engineer, b.) building inspector, c.) Red Cross.
12. Getting a structural engineer to sign off on shelter surveys is not practical.

**B. Terminology**

1. Choice of words “noncompliant” and “marginal” is bad and creates problems. We need better terminology.
2. Propose terminology that would be more conducive to the least risk decision making process.
3. Change categories to “Preferred,” “Partially Preferred,” or “Least Preferred.”

### **C. Funding**

1. Counties have applied for five years for retrofit monies and received nothing. This has been a burden on our time and resources.
2. Define what could be counted as match, if one is to be required.
3. Any local match to retrofit projects should be a “soft match.”
4. School Board refuses to provide any match because they feel this is emergency management’s responsibility.
5. Since the shelter surveying is a State mandate, the State needs to be responsible for conducting the surveys, or paying to have them done.
6. If Professional Engineers are to be used, the State should send them out or provide the money for locals to contract for their services.

### **D. Policy**

1. Use common sense to make least risk decisions on shelters.
2. Who is the least risk decision maker?
3. If a shelter is identified as “marginal,” who will be fiscally liable if the facility is used and the untoward happens?
4. The State process is resulting in a reduction in shelters and increased liability.
5. Is there sovereign immunity with government running shelters?

### **F. Risk/Host Sheltering**

1. Identify shelters as “hurricane shelters” or “other shelters.” This is a local decision.
2. Need procedures to determine which shelters will be used. We need more than just a list of shelters.
3. We need to identify what shelters can be used for what events.
4. How do you host adults in a school shelter when the building was designed for children?

## **REGION 4**

### **A. Shelter Survey Criteria**

1. Survey structures according to the building code at the time the structure was built and verify the structure is built to the engineering diagram. The Red Cross and school board should look for the safest areas in those buildings.
2. Survey entire campus in addition to pre-designated areas to determine safest areas.
3. Acknowledge survivability issue in shelters. A shelter is a “life boat,” not a “cruise ship.” No place is 100 percent safe.
4. The shelter evaluation program should be supervised by a professional engineer who will determine the qualifications of those working under them.
5. Separate out “show stopper” criteria from remaining items.
6. Determine the buildings’ wind load capacity.

### **B. Communications/Public Education**

1. State should put money into public service announcements for a host/home campaign,

then broaden it into a public education campaign. Coordinate to ensure that announcements are aired during high visibility times, rather than "midnight."

**C. Terminology**

1. Eliminate the term "noncompliant" and use "needs mitigation" instead.
2. Use term "not able to evaluate" for inaccessible areas or when documents are not currently available. This leaves the facility available as a refuge.
3. Additional terms recommended: preferred/not preferred; needs improvement; needs further evaluation.

**D. Funding**

1. Funding for the Department of Education for shelter enhancements when building new schools is a real issue. Some places have been mandated by 2001 to eliminate all portables (Hillsborough County) which leads to more new construction, and competition for limited resources for building Enhanced Hurricane Protection Areas in new schools.
2. Continue to expedite funding for shelter retrofits from state and federal sources.
3. Eliminate match requirement or develop creative match component.
4. Eliminate Hazard Mitigation Grant Program application requirements at local level; place responsibility at the state level.
5. Involve school board (or other appropriate building owners, churches) in all phases of retrofit process.
6. Shelter retrofit contract requires Red Cross shelter compliance for entire building; modify to shelter area only.

**E. Risk/Host Sheltering**

1. Develop a "Host Home" program.

## REGION 5

**A. Shelter Survey Criteria**

1. Should have different criteria for those buildings not built as shelters.
2. Engineers and architects need to be advising as to how to bring criteria to code, not those who surveyed the building.
3. Need more inspections during construction to make sure building meets specs.
4. Criteria such as roof spans may need further delineation to allow for variances in building codes.
5. These lists should only be used as a screening tool rather than calling them noncompliant.
6. Have an engineer (structural) survey buildings to confirm safety.
7. Part of eligibility for retrofit funding will be engineer sign-off paid for by mitigation money.
8. All new construction of any buildings should meet standards of Enhanced Hurricane Protection Area to offset marginal buildings.
9. If it meets Enhanced Hurricane Protection Area standards, it should be automatically compliant.

10. Different areas may have different wind load requirements.

**B. Terminology**

1. Instead of calling something “noncompliant,” should call it “Recommended Retrofit.”
2. Is the term “storm surge” accurate in the criteria? Is rising water (flooding) more appropriate? Perhaps add words “or flooding” for inland counties.

**C. Funding**

1. The Federal government, state, and the counties need to be working together to help fund retrofits of churches and private buildings. Difficult to justify this because of constitutional separation of church and state. Designated shelters should have funding for these private groups. May require a Constitutional amendment.
2. Could State support regional funding of structural engineers?
3. Retrofitting funds should not require a match of county funds. Some counties are not submitting requests for retrofit funding due to inability to meet the match.
4. Smaller school districts may need assistance with inspections/surveys, so that they do not have to pay contractors. Also, may need more training from the State.
5. Unfunded mandates: need to cover these costs.
6. Legislature needs to “put their money where their mouth is” - provide more funding.

**D. Policy**

1. Exceptions, such as for round structures, should be made by engineers rather than deeming them noncompliant.
2. Need more review time of draft reports. They need to be understandable to non-engineers, or at least have an interpretation.
3. Allow counties (as many as possible) to evaluate shelters via engineering studies paid for by mitigation money.
4. State should set up certification system (standards) for local staff and evaluators - should be licensed with minimal staff and expertise.
5. Make sure information from these sessions are disseminated to all participants.

**E. Risk/Host Sheltering**

1. Host shelters may not need such high classifications.
2. Host shelters should be kept separate from schools.
3. American Red Cross does not have adequate staffing. Issue is being addressed through other sources.
4. Have different classifications of shelters based on category of storms.

**REGION 6**

**A. Shelter Survey**

1. State standards are not consistent with ARC 4496 guidelines; they are too high.
2. Evaluation standards should reduce the deficit.
3. Define the shelter selection criteria.
4. Base storm surge specifications on climatology, not storm category.

5. Base evaluations on climatology.
6. Survey using new of different standards.
7. More survey training for local officials.
8. Analyze survey data in more depth and detail to isolate and identify survivable space.

**B. Communications/Public Information**

1. Educate the public on sheltering in-place.

**C. Terminology**

1. Define and identify “survivable space.”
2. Change the mind set from “No Risk” to “Low Risk.”

**D. Funding**

1. Balance the surveys with funding opportunities.
2. Establish a statewide shelter fee (funding fees).

**E. Policy**

1. Prioritize retrofit projects according to survivability.
2. Tie retrofits to the school maintenance schedule.
3. Recognition that the problem is state and local responsibility to solve.
4. Maintain the “partnership, partnership, partnership” and not throw it to the counties and say “It’s your problem. You fix it.”
5. “The people have created the problem in this state. We didn’t start the problem. The people who chose to come here... at a time when hurricanes were not coming as frequently, doesn’t mean that it is going to last forever. This is a statewide problem which needs a statewide fix.”

**F. Risk/Host Sheltering**

1. “Please give me, and maybe there is an example, of a place where someone died as a result of a collapsing building in a hurricane shelter. Where? Which one was it? Show me that building. Did people have to go to the smallest space of that building? Maybe. Did they die? No.”
2. “Safe - what is safe? What is survivable? What is noncompliant? Put a big smiley face up on any building that is away from the coast, which would say ‘A Better Place’.”
3. “What is reasonable for a community under its very limited resources is to retrofit the survivable space within these sometimes sprawling structures. It’s not right to blanket the whole thing and paint the campus of a school with one broad brush.”

**REGION 7**

**A. Define a Better Process**

1. County: The counties should be responsible for designating to the state which buildings to be used as shelters. Counties would perform evaluation on all parts of the structure except for structural MFRS-C (Main Force Resisting System - Cladding). Once completed, the county would ship evaluation and shelter packages to State.

2. State: The State would then assign a structural inspector (qualified as an engineer) to review the: a) Integrity of MFRS and Cladding; b) develop a retrofit proposal if needed, reviewed by locals and State; c) Determine costs; d) Conduct cost/benefit analysis. The state would also: prioritize all projects based on risk/deficit; develop funding obligation money; prepare funding contract; and, send to county for review.
3. County: County would then execute the contract
4. State: State would provide for a timely reimbursement and close out.

**B. Shelter Selection Criteria:**

1. There is too much gray area in the criteria. They are also too subjective. “One size fits all” doesn’t work
2. County personnel are not available to do the work
3. A two-day course is not adequate to learn about shelter selection.

**C. Terminology**

1. There is a need for using better terminology in shelter selection report.

**D. Funding**

1. State must obligate the funding before the locals can approach the county commission for any kind of match.
2. Do not expect us to go out and spend tens of thousands of dollars to hire engineers to examine problems which were not caused by us. They were caused by the Department of Education.
3. How do we get the \$18 million available for retrofitting facilities?

**E. Policy**

1. When schools/universities were built, they used lower standards. The Department of Education should evaluate existing buildings to determine if they meet current standards.

**F. Risk/Host Sheltering**

1. There is confusion over who is responsible for shelter spaces in schools. Is it the Department of Education, the State, or the locals?
2. A governor level task force needs to be established to determine who is going to be responsible.

**VI. RECOMMENDED SHORT AND LONG TERM PLAN OF ACTION**

In reviewing the lists of recommendations and statements made during the shelter workshop, the following list of short and long term action items are RECOMMENDED. The Secretary of the Department of Community Affairs will approve the final list of recommendations for immediate

and long term implementation. As the information provided in this report is further analyzed, additional action items may be recommended for approval.

### **Short Term Recommendations:**

Recommendation 1: Review and change the terminology currently used in the *State of Florida Model Hurricane Evacuation Shelter Selection Guidelines*, especially use of the term “noncompliant.”

Recommendation 2: Request that FEMA institutionalize a “global match” concept for shelter retrofit projects funded with Hurricane Floyd and Irene Hazard Mitigation Grant Program (HMGP) funding. Under this concept, the state, as the applicant, would get credit for post-event investments in shelter retrofit or other shelter deficit reduction projects. As an example, the \$2.3 million in Florida Hurricane Catastrophe Funds committed by the State for shutters on school shelters could be applied against the required non-federal share of Hurricane Floyd and Irene HMGP funds.

Recommendation 3: Request direction from the Office of Planning and Budget on pursuing a similar “global match” policy for the 25 percent local match requirement for shelter retrofit projects funded in the FY 2000-01 budget.

Recommendation 4: Schedule additional shelter implementation workshops or similar opportunities to discuss the shelter selection process with state and local practitioners.

Recommendation 5: Change the title of the current Critical Infrastructure Section supervisor from an “Engineer” to a “Planning Manager” to avoid discrepancies between the state classification system and professional titles.

Recommendation 6: Investigate the legality of allowing the use of federal and state funds for shelter retrofit projects in churches serving as public shelters.

Recommendation 7: Schedule additional training for local officials on the site selection survey for public shelters; retrofit grant availability; and recent statutory changes.

Recommendation 8: Assist local governments to convert shelter selection results into the project applications for inclusion in the Shelter Retrofit Report.

Recommendation 9: Continue to use private engineering consultant firms to assist local governments with the shelter selection process.

Recommendation 10: Redefine what the state shelter deficit is in more realistic terms that represent actual operational applications rather than planning assumptions.

Recommendation 11: Disseminate information gathered at the Shelter Implementation Workshop quickly.

### **Long Term Recommendations**

Recommendation 1: Request a legal opinion on who is statutorily responsible for sheltering residents from all hazards. Are we currently achieving the intent of Section 252.385, Florida Statutes? Should the State be involved in shelter survey process, or should this be a local responsibility?

Recommendation 2: Schedule future meetings with the American Society of Civil Engineers and the American Red Cross to thoroughly re-review the State's shelter selection guidelines.

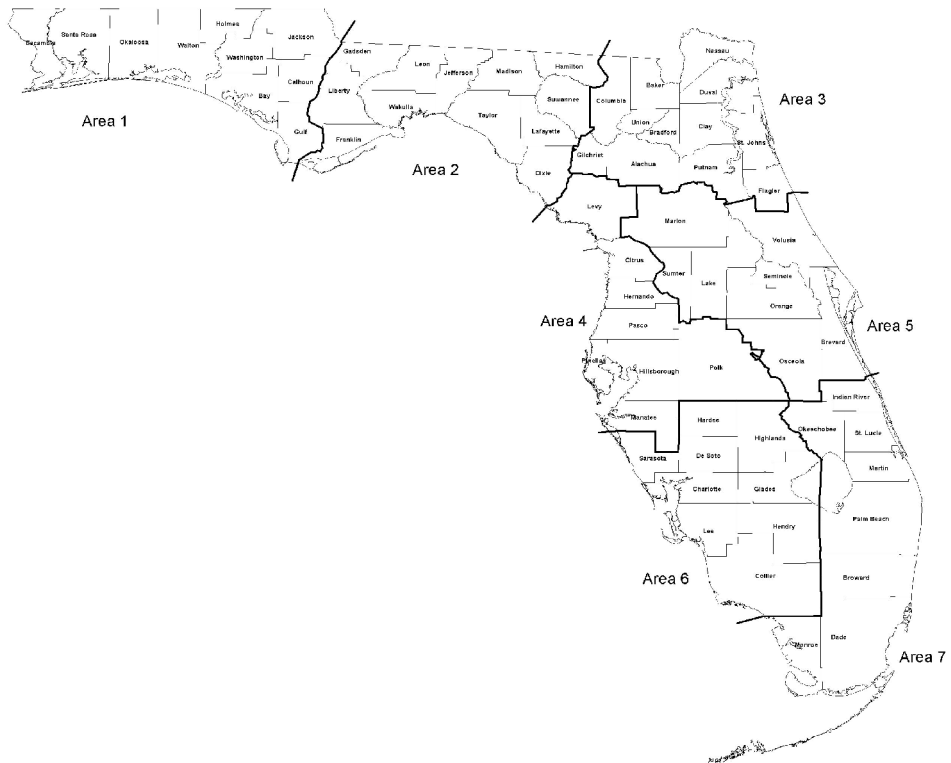
Recommendation 3: Investigate the parameters and implications of:

- a. Distributing funds to local governments to complete shelter surveys.
- b. Using a professional engineer/firm to oversee the current or revised shelter survey program. If needed, determine at what level of intervention they should get involved.

Recommendation 4: Investigate the impact of the new Unified Building Code on ARC 4496 and the *State of Florida Model Hurricane Evacuation Shelter Selection Guidelines*.

Recommendation 5: Investigate the promotion of, and statewide replication of a "home to home" shelter program, similar to the one currently in use in Pinellas County.

# Attachment 1: Map of Division of Emergency Management Regions



## Attachment 2:

### SUMMARY OF WORKSHOP EVALUATIONS

The following questions were asked of the attendees on an evaluation sheet. There were 12 responses, with the following results.

<b>Evaluation Questions:</b>	<b>% Yes</b>	<b>% No</b>
Were printed materials provided sufficient?	80	20
Were presentations the proper length?	50	50
Was session format satisfactory?	70	30

#### Specific Comments Offered:

1. It's the states' responsibility to build, inspect and retrofit shelters without cost to local government.
2. The shelter problem in Florida will require a long term solution.
3. Suggest members of the Legislature members should have been present at the workshop so that they could be educated and propose legislation to solve the problem. (Take away all responsibility from local government on funding, liability and place it with the state.)
4. Assign a Governor's Task Force to get to the bottom of this very important issue. Hire engineers, not technicians to perform surveys. State should pay the costs of engineers to survey the 67 counties.
5. Too many locals look to the state and up to the federal level to "fix" rather than assume responsibility to take care of own.
6. Questions concerning the shelter survey process: (1) Is the current criteria (as is) adequate to determine hurricane shelters? (2) If not, what should the criteria be? (3) Whatever the criteria, who is going to implement it? (4) If it is necessary to be technical, should an engineer conduct the survey? (5) How or what is the process to get funding for conducting the surveys and/or retrofitting those shelters which are not "ideal?" (6) Who is liable?
7. This was primarily a waste of time. The speakers provided little information that was useful as related to the issues that were on the table.
8. Need a mechanism for follow up to this workshop. If no action results or no communication back, more damage was done by holding the workshop.

#### Attachment 3: Agenda

## ***Shelter Implementation Workshop Agenda***

The Peabody Hotel, Orlando, Florida  
July 6 and 7, 2000

**The purpose of this Shelter Implementation Workshop is to inform participants of the origins of the American Red Cross 4496 Shelter Selection criteria, and to investigate options to refine the survey and selection process for future public shelters.**

<b><u>Wednesday, July 5, 2000</u></b>	<b><u>Topic</u></b>	<b><u>Facilitator/Speaker Location</u></b>
3:00 -	Participant Arrival and Hotel Check-in	Peabody Hotel Staff
3:00-6:00	Early Registration	DCA/DEM Florida Foyer
<b><u>Thursday, July 6, 2000</u></b>		
7:00-8:00	Registration	DCA/DEM Florida Foyer
8:00-8:30	Workshop Opening Remarks	Plaza A & B Joe Myers
8:30-9:15	Workshop Objectives	Craig Fugate
9:15-9:35	Shelter Criteria - Pre Hurricane Andrew	John Clizbe, National American Red Cross
9:35-10:00	Post Andrew "Lessons Learned"	David Rogero, American Red Cross
10:00-10:30	Break	Florida Foyer

### **Thursday, July 6, 2000 - Continued**

**Wind Hazards Research Overview**

*Plaza A & B*

10:30-11:00	Building Performance in Severe Winds and Selection of Safe Areas; TR-83B,1982 (Dr. James McDonald, Texas Tech Univ.)	
11:00-11:30	Wind Effects on Buildings and the ASCE 7 Standard (Dr. Tim Reinhold, Clemson Univ.)	
11:30-12:00	Severe Wind Damage to Buildings in Hurricane Andrew, and Lessons to be Applied to Shelter Selection (John Pistorino, P.E., Pistorino & Alam Consulting Engineers, Miami)	
12:00-1:30	Lunch (On your own)	<i>All</i>
1:30-2:00	FEMA's Building Performance Assessment Team and Field Application of Results (Bill Coulbourne, P.E., Greenhorne & O'Mara, Inc.)	
2:00-2:30	Trends in Severe Wind Shelter Designs (Dr. Ernst Kiesling, Texas Tech Univ.)	
2:30-3:00	Florida's Hurricane Shelter Selection Criteria and Survey Procedures (Danny Kilcollins, Division of Emergency Management)	
3:00-3:30	Break	<i>Florida Foyer</i>
3:30-5:00	Shelter Safety Discussion	Facilitator <i>Plaza A &amp; B</i>
5:00-	Administrative Remarks	Facilitator <i>Plaza A &amp; B</i>

**Friday, July 7, 2000**                      **Topic**    **Facilitator/Speaker**

8:20-8:30	Administration	Facilitator
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**Friday, July 7, 2000** - Continued

8:30-10:00	Facilitated	Facilitators
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	Break-out Sessions	<i>Plaza A &amp; B</i>
	Area 1.	<i>Bayhill I</i>
	Area 2.	<i>Bayhill II</i>
	Area 3.	<i>Bayhill III</i>
	Area 4.	<i>Bayhill IV</i>
	Area 5.	<i>Bayhill V</i>
	Area 6.	<i>Windermere</i>
	Area 7.	<i>Sweetwater</i>
10:00-10:15	Break	<i>Florida Foyer</i>
10:15-12:00	Shelter Safety Discussion: Options for Survey and Selection Criteria	Facilitator <i>Plaza A &amp; B</i>
12:00 -	Closing remarks	DCA/DEM <i>Plaza A &amp; B</i>