Appendix H:
Data Forms and Worksheets

1. 2013 Shelter Retrofit Proposal Submittal Form
2. 2013 Shelter Retrofit List Report Form
3. 2013 Project Priority Worksheet
Instructions and Clarifications

1. Please review ARC 4496 (found in Appendix C of prior Shelter Retrofit Reports) before beginning the project identification process. Note all construction deficiencies with respect to ARC 4496 for individual buildings, and address each deficiency with a corrective action.

2. Prepare an individual Shelter Retrofit Project Submittal form for each individual building being evaluated. DO NOT combine several buildings or a campus onto a single submittal form. An Open Plan building that has a common exterior wall and roof system (building envelope) may be considered a single building. If there are significant differences in construction found in the same building (i.e., major addition constructed to a more wind-resistant design), prepare separate forms and indicate structural separation barrier on a sketch.

3. For entries that provide a multiple choice format, choose the response that is “typical” for the individual building being evaluated. For buildings that have multiple construction materials (or characteristics) and can not be described with a single entry, provide a description (and sketches) of the building. Also assume the weakest materials will be a soft-spot, and therefore the limiting factor with respect to wind performance.

4. Multiple projects can be submitted for each individual building (e.g., window shuttering, door head and foot bolts, gable-end bracing, generator pre-wiring, etc.). Please describe the tangible benefits that will be provided by each individual project (e.g., 250 additional shelter spaces if shuttering is performed) and a cost estimate for each individual project.

5. Please note the definition of reinforced and partially reinforced masonry, as defined in Wall Construction Type descriptions, when determining applicable General Construction Type entries. For the purposes of this submittal form, use the following prescriptive definitions:

   Partially Reinforced Masonry - For 8-inch hollow concrete masonry units (CMU), the maximum spacing of vertical reinforcement (rebar) at exterior walls shall be 8'-0"; 12" CMU rebar can be extended up to 11'-4". Rebar shall be provided at each side of wall openings, corners and wall-to-wall intersections. An alternative to reinforced cell construction is tie-column (or pilaster) and beam systems. For 8-inch CMU, the maximum spacing between tie-columns shall not exceed 13'-6"; 12-inch CMU tie-columns can be extended to 20'-0". Horizontal reinforcement must be present at roof and floor levels, and above and below wall openings. Interior masonry bearing and/or “core area” walls shall meet the same reinforcement requirements as exterior walls.

   Reinforced masonry - Reinforced masonry has the same definition as partially reinforced masonry above, except the maximum spacing of the principal vertical reinforcement can not exceed six (6) times the wall thickness or 4'-0". The presence of tie-columns does not have an effect upon a masonry walls classification as reinforced masonry.

6. For the purposes of this report, standard weight (wgt) concrete will have a minimum density of 100 pounds per cubic foot and minimum compressive strength of 2500 pounds per square inch.
7. These additional limitations shall be applied to 2013 *Shelter Retrofit Report* projects:

a) $400 per shelter space, or

b) $200 per shelter space if constructed prior to 1998, or

c) Up to 5% of the total construction costs in the case of a project that is upgrading the design of new construction to meet enhanced hurricane protection area (EHPA) standards, or

c) Generators/electrical work shall be considered separately from the $400 per shelter space limit in item a) above.

d) Buildings designed to the Standard Building Code prior to the 1986 revision to the 1985 Standard Building Code must have been designed to ANSI A58.1-82 or ASCE-7-88 (or newer edition) to be recommended for retrofitting.
2013 SHELTER RETROFIT PROJECT SUBMITTAL (ARC 4496 Questionnaire)

County: ___________________________

Latitude: ______________________          Longitude: _________________________________

Facility Name:_________________________________________________________________

Building Number or ID: __________________________________________________________

Address: ______________________________________________________________________

Current Ownership of Facility: (Public, Private) _______________________________________

Is Facility currently used as a high wind shelter?    Yes _______  No _______

If answer is No, why? _____________________________________________________________

________________________________________

Is the facility located within one mile of the ocean or a large body of water (greater than 1 mile
in width or diameter)?    Yes _____  No ______

Is the building located on a coastal barrier island?    Yes _____  No _____

Storm Surge (SLOSH) Zone that Facility is located within, circle appropriate response:

   1*  2  3  4  5  None   *  includes Tropical Storm

NFIP Flood (FIRM) Zone that Facility is located within, circle appropriate response:

   A_____  B   C   D   X   V zones will not be considered!

If applicable, is the Facility/Shelter floor elevation above Base Flood Elevation (BFE) and
SLOSH Category 4 flood inundation elevation?    Yes ________  No ________

What is the finished floor elevation (above mean sea level) of the 1st floor of the bldg?  _____ft

Additional comments concerning flooding issues: _______________________________________

_____________________________________________________________________________

Facility Name ____________________________  Page ___1__ of ___
FACILITY DESCRIPTION:

Year Built _____________ , Major Addition(s) _____________ , ______________

Has building been inspected by structural engineer, architect, construction technician, or other knowledgeable building construction inspector?  Yes _________  No_________

Are construction drawings (architectural & structural) and specifications available?  Yes _________  No_________

Which wind design standard(s) was used in the design and construction of this facility?

☐  SBC or MBMA, Edition 19__  ☐  ANSI A58.1-1982


General Construction Classification, check only one response as appropriate:

Light Steel Frame* _____  Heavy Steel Frame ( I or W section)_____

Reinforced Concrete Frame _______  Reinforced Concrete or Tilt-up Wall _______

Fully or Partially Reinforced Masonry _______  Unreinforced Masonry wall-brg _______

Heavy Timber or Glulam Frame _______  Light Metal or Wood Stud wall-brg _______

*includes Preengineered Metal Building (PEMB) Frames.

Exterior Wall Construction, check only one response as appropriate:

Reinforced Masonry  (Rebar @ 4 ft. o.c. or closer) _______  Light Wood or Metal Stud w/ ½ inch or thicker plywood _______

Partially Reinforced Masonry (Rebar @ 8 ft. o.c. or closer) or reinforced pilasters @ 13.5 ft. o.c. _______  Light Wood or Metal Stud w/ light nonplywood sheathing (Includes EIFS) _______

Unreinforced Masonry (exceeds above listed spacings)/Rebar spacing unknown _______  Large Panel Glass or other Glazed Panel or Block System _______

Reinforced Concrete or Precast Concrete Panels (2” min. thickness) _______  Metal Sheets or panels or other Light Architectural Panel Systems _______

Facility Name ________________________________  Page 2 of ___
FACILITY DESCRIPTION (cont'd):

Do the exterior walls have a brick or stone veneer (3 to 4 inches thick) or ½ + thick stucco on metal lath?
Yes ________ No ________

What percentage (to the closest 5 %) of the total exterior wall area is glass? ___________%

Are there portions (softspots) of exterior walls consisting of gypsum wallboard and/or EIFS/vinyl finishes? Yes ____ No _____ If so, what percentage of exterior wall area is composed of this system (use worst-case wall face)? _________%

Are there "storefront", atrium, or clerestory sections of glazing in the exterior walls? Yes ________ No ________

Are there fixed or operable shutters or other window coverings that will protect windows from large debris impact?
Yes ________ No ________

Roof Construction, check only one response as appropriate:

Cast-in-place Reinforced Concrete (standard wgt concrete, 3 inch min.) _________ Plywood on wood or metal joist or truss _________

Precast Concrete Panels ("T's", "Double T's", Planks, etc.) _________ Wood boards or T & G deck on wood joist or truss _________

Metal Decking w/ standard wgt concrete (3 inch min.) on metal joist, truss or beam _________ Cement-fiber panels (i.e.,"Tectum"-type) on wood or metal joist or truss _________

Other Metal Decking Systems (insulating concrete and/or rigid insulation or other light coverings) _________ Poured Gypsum on Formboard Decking on wood or metal joist or truss _________

Roof Geometry, check appropriate response:

Flat or low slope (< 1:12) _________ Gable-end _________ Hip System _________

Shed System _________ Other ________________________________________________

Is the Roof Slope greater than 30 degrees (6:12)? Yes ______ No ________ N/A _____

Facility Name ________________________________________ Page 3 of ______
FACILITY DESCRIPTION (cont'd):

Does the roof have a long span area (span of greater than 40 ft. between vertical supports)?
Yes ________ No _______

If yes, what is the maximum span?_______________

Are Roof Eaves/Overhangs (width greater than 2 ft.) present that connect directly to the roof structure?
Yes ________ No _______   Width of overhang __________

Are appropriate loadpath connections present for the building's construction type?
(e.g., hurricane clips and straps for woodframe construction)
Yes ________ No _______

If Parapet(s) are present and roof ponding is a hazard, are emergency overflow scuppers present?
Yes ________ No _______

Are Skylights or other overhead glass or plastic units present?
Yes ________ No _______

Are there any tall structures/trees that are close enough and large enough, that if they fell over, they could strike the building with enough force to significantly breach the roof/walls?
Yes ______   No ______

If yes, describe the tree(s) or structures:______________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Facility Name _________________________________________  Page 4 of ___
FACILITY DESCRIPTION (cont'd):

Describe General Condition of the Building:

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Describe other construction features (features that enhance and detract from shelter usage) and/or site specific special hazards (e.g., close proximity debris sources or laydown hazards, etc.) associated with this facility that should be considered by the Division of Emergency Management:

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Describe wind or other storm effects damage history of this facility (e.g., severe roof leaks, etc.):

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
Which of the following descriptions best describes the food preparation capabilities of this facility?

Full Kitchen ________   Warming Kitchen ________   HomeEc clrm ________   None ________

Which of the following descriptions best describes the food serving capabilities of this facility?

Restaurant ________   Cafeteria ________   Other ________   None ________

Seating Capacity, if known? ______________ persons

Are Sanitary Facilities directly accessible from the shelter area(s)?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toilets</td>
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<td></td>
</tr>
<tr>
<td>Showers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potable Water</td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

Which of the following descriptions best describes the potable water source of this facility?

Public Utility ________   Onsite Well ________   Other ________

Which of the following descriptions best describes the sanitation utility of this facility?

Public Utility ________   Onsite Septic ________   Other ________

Describe normal/daily function and availability of this facility for use as a shelter:

_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
Facility Name ____________________  Page 6 of _____
FACILITY DESCRIPTION (cont'd):

SHELTER RETROFIT/MITIGATION PROJECT PROPOSAL:

Describe type of project(s) to be undertaken and what impact it will have upon the shelter characteristics of the facility (e.g., shuttering, generator pre-wiring, roof bracing, etc.); indicate the pre and post retrofit shelter capacity and whether the retrofits will only improve the safety of existing spaces; describe what impact the project will have upon the local and regional shelter deficit situation; provide cost estimates (+/- 15%), source of cost estimates, copies of cost estimate takeoffs if available; and, the time period necessary to complete all projects if construction is performed concurrently. Also provide detailed information on availability of other cost-sharing sources (local or other). Attach additional sheets if necessary.

Project Description              Impact (safety/capacity)     Cost estimate
1. __________________________      ________________________ __________________
2. __________________________      _______________________ __________________
3. __________________________      _______________________ __________________

Is this project listed in the County’s Local Mitigation Strategy?  □ Yes  □ No

If yes, is the project listed by specific building _________,  or by campus only_________?

Can the project be completed in a fiscal year [i.e. 12 months]?  □ Yes  □ No

Facility Name ___________________________                              Page 7 of _____
## Project #1

**Descriptive Title:**

<table>
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<tr>
<th>Line</th>
<th>Item Description</th>
<th>Cost Estimate</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>B</td>
<td>Vendor Contractual Services</td>
<td>$</td>
</tr>
<tr>
<td>C</td>
<td>A &amp; E Service Fees</td>
<td>$</td>
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<tr>
<td>D</td>
<td>Materials</td>
<td>$</td>
</tr>
<tr>
<td>E</td>
<td>Installation/Force Account Labor</td>
<td>$</td>
</tr>
<tr>
<td>F</td>
<td>Permitting &amp; Inspections Fees</td>
<td>$</td>
</tr>
<tr>
<td>G</td>
<td>Packing &amp; Freight</td>
<td>$</td>
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<tr>
<td>H</td>
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<td>$</td>
</tr>
<tr>
<td>I</td>
<td></td>
<td><strong>SUB-TOTAL</strong></td>
</tr>
<tr>
<td>J</td>
<td>Contingency (1% Maximum*)</td>
<td>$</td>
</tr>
<tr>
<td>K</td>
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<td><strong>TOTAL ESTIMATED PROJECT COST</strong></td>
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*-Contingency is limited to 1% unless detailed justification provided.

## Project #2

**Descriptive Title:**

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<tr>
<td>H</td>
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<td>$</td>
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<td><strong>SUB-TOTAL</strong></td>
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### Project # ____

**Descriptive Title:** ________________________________

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### Project # ____

**Descriptive Title:** ________________________________

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Facility Name ________________________________  Page____ of _____

2013 Shelter Retrofit List Report
Project Priority Worksheet

County: _____________________________

Building Name: ________________________

Address: _______________________________

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MAX POINT</th>
<th>SCORE</th>
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<tbody>
<tr>
<td>1. Regional Shelter Deficit</td>
<td>(75)</td>
<td></td>
</tr>
<tr>
<td>2. County Shelter Deficit</td>
<td>(50)</td>
<td></td>
</tr>
<tr>
<td>3. Facility Currently Conforms to ARC 4496</td>
<td>(75)</td>
<td></td>
</tr>
<tr>
<td>4. Proposal Will Improve Structural Integrity</td>
<td>(25)</td>
<td></td>
</tr>
<tr>
<td>5. Proposal Will Correct Identified Deficiencies</td>
<td>(25)</td>
<td></td>
</tr>
<tr>
<td>6. Numerical Increase in Shelter Capacity</td>
<td>(75)</td>
<td></td>
</tr>
<tr>
<td>7. Building Ownership and Availability</td>
<td>(50)</td>
<td></td>
</tr>
<tr>
<td>8. Shutters Only Projects</td>
<td>(50)</td>
<td></td>
</tr>
<tr>
<td>9. Cost-Effectiveness Considerations</td>
<td>(50)</td>
<td></td>
</tr>
<tr>
<td>10. Proposal Demonstrates Impact Upon Shelter Deficit</td>
<td>(75)</td>
<td></td>
</tr>
<tr>
<td>12. Project Specified in Local Mitigation Strategy</td>
<td>(50)</td>
<td></td>
</tr>
<tr>
<td>13. Project can be completed in a fiscal year [12months]?</td>
<td>(25)</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL POINTS  (650)  _______

COMMENTS:  _____________________________________________________________
________________________________________________________________________
________________________________________________________________________
1. Proposed project is located within a region with a shelter deficit situation:
   (Maximum: 75 points)
   - Regional shelter deficit 200,000 spaces or greater (75) ________
   - Regional shelter deficit 100,000 to 199,999 spaces (50) ________
   - Regional shelter deficit 10,000 to 99,999 spaces (25) ________
   - Regional shelter deficit 9,999 to 1 space (15) ________
   - No regional shelter space deficit (0) ________

2. Proposed project is located within a county with a shelter deficit situation:
   (Maximum 50 Points)
   - County shelter deficit 50,000 spaces or greater (50) ________
   - County shelter deficit 10,000 to 49,999 spaces (25) ________
   - County shelter deficit 9,999 to 1 spaces (15) ________
   - No county shelter space deficit (0) ________

3. Current status of facility is demonstrated to conform to ARC4496 guidelines:
   (Maximum 75 Points)
   A. SLOSH Zone Considerations
      - Outside Cat 5 evacuation zone (25) ________
      - Inside Cat 4/5 evacuation zone, floor above Cat 4 flood (15) ________
      - Inside Cat 3 evacuation zone, floor above Cat 4 flood (5) ________
      - Inside Cat 3 evacuation zone, floor below Cat 4 flood (0) ________
   B. NFIP Flood Considerations
      - FIRM Zones B, C, D, X (15) ________
      - FIRM Zone A (See Note 1) (0) ________
C. Building Construction

Heavy Construction (25) ________
Moderate Hurricane Resistance (15) ________
Some Hurricane Resistance (5) ________
Light Construction/ Info not available (0) ________

D. Other Considerations (Building Certification, in-place shutters, etc.)
__________________________________________ (10) ________

4. Proposed project will serve to improve the structural integrity of the building envelope from wind and/or flood effects? (Maximum 25 Points)
   YES (25) ________
   NO (0) ________

5. Facility has been identified for potential use as a hurricane shelter by ARC or other sheltering agency, but is not currently in local inventory due to deficiencies to be corrected by this proposal. Will this project(s) mitigate the identified deficiencies? (Maximum 25 points)
   YES (25) ________
   NO (0) ________

6. Numerical increase in shelter capacity due to this retrofit project: (Maximum 75 Points)
   500 or greater additional spaces (75) ________
   499-150 additional spaces (50) ________
   149-1 additional spaces (25) ________
   No increase in shelter capacity (0) ________

7. Building ownership and availability for use as a public shelter: (Maximum 50 Points)
   Public Facility/ Full Availability (50) ________
   Private Facility/ Full Availability (25) ________
   Public Facility/ Limited Availability (15) ________
   Private Facility/Limited Availability (0) ________
8. Shutters ONLY Project(s) (Generators/electrical work not considered)
(Maximum 50 Points)

Only Shutters (fenestration/door protection/latch) required/listed (50) ______
Shutters and Engineer certifications only required (25) ______
More structural work than shutters/engineer certificates (0) ______

9. Cost-effectiveness of project(s):
(Maximum 50 Points)

$50 or less per total shelter spaces (50) ______
$51 to $75 per total shelter spaces (25) ______
$76 to $100 per total shelter spaces (15) ______
In excess of $100 per total shelter spaces (0) ______

10. Project proposal has been demonstrated to have a significant impact upon the local, regional and statewide shelter deficit situation: (Maximum 75 Points)

11. Project Specified in Local Mitigation Strategy (Maximum 50 Points)

Specific Building referenced in LMS (50) ______
Specific Campus/Complex referenced in LMS (25) ______
No Specific references to project(s) in LMS (0) ______

12. Project can be completed in a fiscal year [i.e. 12 months]?

Yes (25) ______
No (0) ______

13. Is Building a Designated Special Needs Risk Shelter?

Yes (25) ______
No (0) ______