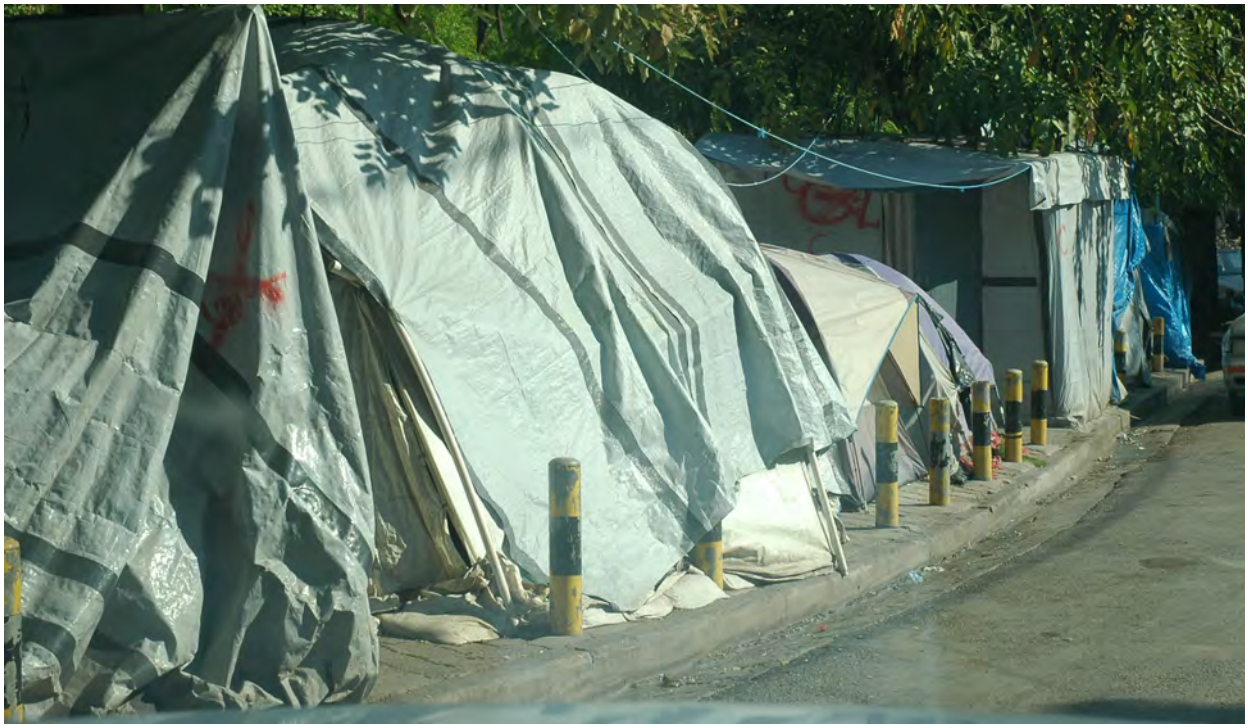
EMERGENCY SHELTER HAITI

FIELD NOTES APRIL 2011, IASC SHELTER CLUSTER



Emergency shelter at Place Boyer, Petionville.

INTRODUCTION

The IASC Shelter Cluster prioritised a review of the shelter needs of families in emergency shelter. A large number are expected to remain in emergency shelter during 2011 or longer.
The majority have managed to construct good shelters using salvage materials, distributed materials and a range of support, but accommodation conditions, performance and durability should be monitored, especially in the case of the most vulnerable.
Recent programmes by CARE and the British Red Cross to reinforce shelters have been successful in optimising the existing self made shelters with relatively small material support. This provides a model for future programming. Additional notes on specifications, programme evaluations and other information are available separately from the Shelter Cluster.
The risks of institutionalising camps, and the risks of consuming scarce resources in emergency measures at the expense of more durable permanent solutions must be considered in the planning of any emergency shelter support. Support should be strategic and targeted. Families should be afforded choice in and responsibility for their shelter solutions.
The Shelter Cluster Technical Advisor carried out a series of field visits, meetings with partners and technical working group meetings during April 2011 to arrive at the following outline observations on emergency shelter issues.

CONTENTS

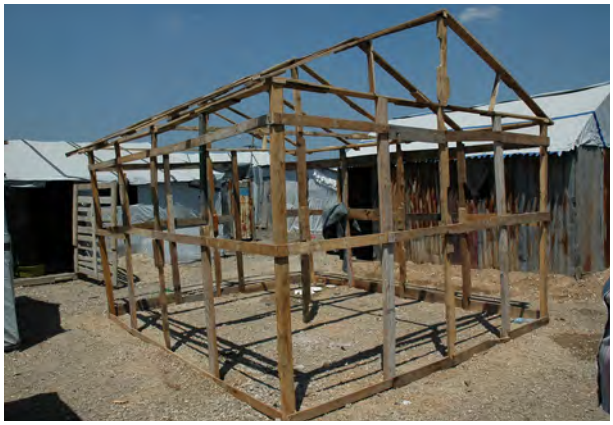
NOTES

- Framing in self made shelters ranges from small poles to better square timber sections, often from salvage. Greater supplies of timber usually allows larger shelter construction, where space is available. All timber section sizes are small. Roof batten timber is commonly used (4 x 1), or small square sections (2 x 2),
- Framing usually has a base and wall plate for fixing of plastic, these bands help to provide box action tying all vertical posts together. Many shelters have used salvage cgi sheets or plank timber, these also help to make the frame rigid.
- The strongest timber sections are used for the corners. The timber used in the walls is generally stronger than that used in the roof, for security of the walling materials. The frame is usually not braced, or fixed to the ground. The roof is usually not fixed to the walling.

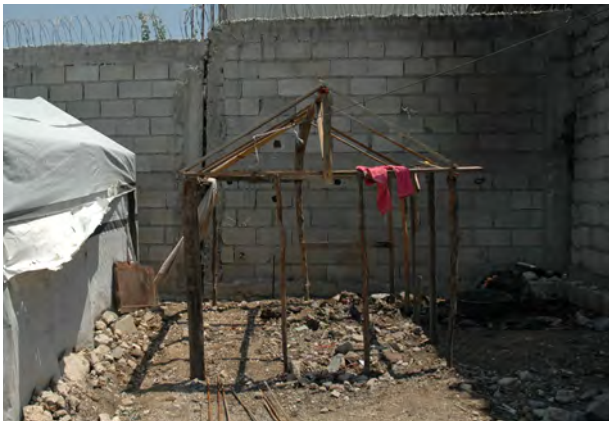
RECOMMENDATIONS

- The most important framing improvement are: to provide a slope to flat roof shelters, to strengthen corners and roofs and fix roofs to walls. Where feasible the heights should be raised to improve interior living conditions and ventilation. Small timber section sizes are adequate and economical (2 x 2). Short pieces can be used for bracing and improving connections. Metal hurricane straps and other fixings can add strength and can be reused later. Technical assistance is as important as materials.

New shelter under construction, showing recycled roof battens and wooden pallet timber used for framing. Usually no bracing in the wall or roof frame.

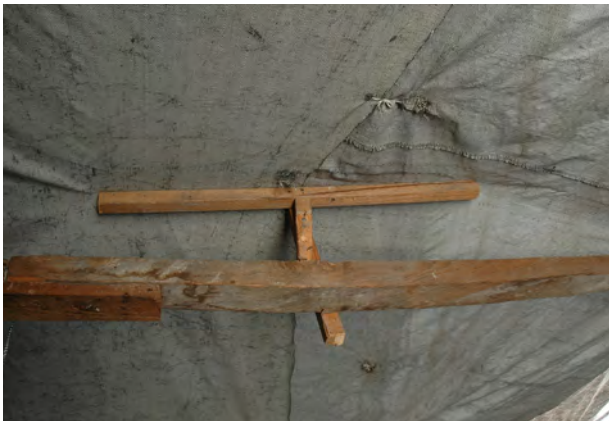


New shelter showing typical timber section sizes and spacing. Rudimentary wall plate and base plate for continuous fixing of plastic. Pitched roof.

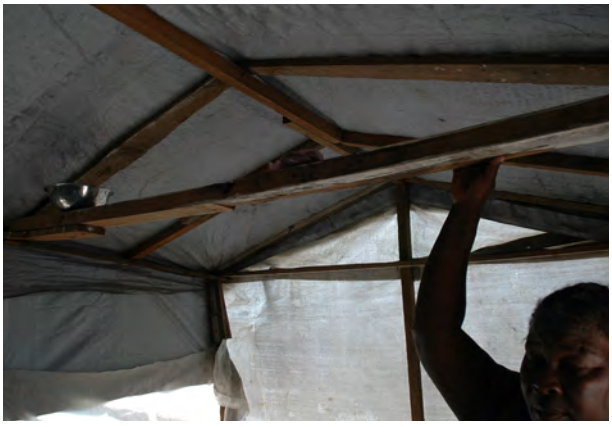


Small new shelter under construction, showing a greater constraint in availability and quality of framing materials, limiting shelter area, height and strength.

4 x 2 inch timber provided by CARE for shelter reinforcement, predominantly used to strengthen walls. Some families cut the timber to 2 x 2 inch sections.



Small pieces of timber used to raise the centre of the roof to provide a fall for drainage on an shelter with a flat roof.



Flat roof roof upgraded to a pitched roof by carpenter support team. tie beam used to hang curtains. Higher roof also improves ventilation and thermal comfort.

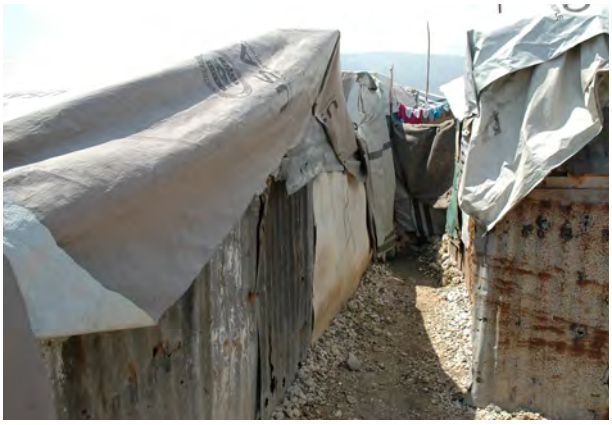
PLASTIC SHEETING EMERGENCY SHELTER HAITI

NOTES

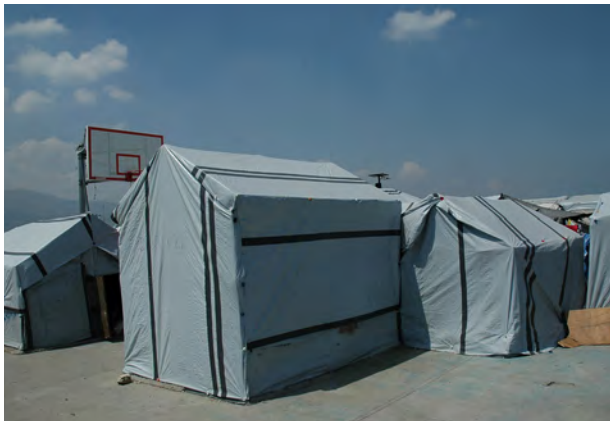
- Plastic sheeting (tarpaulins) of varying quality and durability was used from in the emergency response during 2010. This has been replaced or supplemented in many cases by better quality plastic.
- The fixing and framing of plastic has affected the performance, poor fixing causing holes, tears and other damage.
- Shelter grade plastic produced and distributed by a number of experienced organisations should be expected to last for up to 3 years if deployed correctly. it is important to optimise the lifespan of the material and avoid the financial and environmental cost of additional material or waste of material.
- Shelter plastic sheeting is widely available in local markets and at low resale cost, enabling shelter improvement.
- E-shelter reinforcement programmes visited included 1 plastic sheet additional per shelter, this is will cover small but not large shelters. The preference is to use plastic to completely seal the shelter making it rain and wind proof.

RECOMMENDATIONS

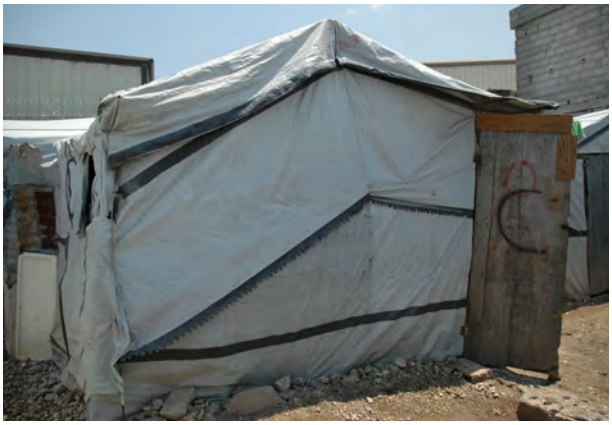
- Ensure better fixing and use of existing and new plastic. Replace only torn or poor quality plastic. Allow for more than 1 sheet per shelter in the case of larger shelters. Prioritise roofing as the most exposed surface to weather.



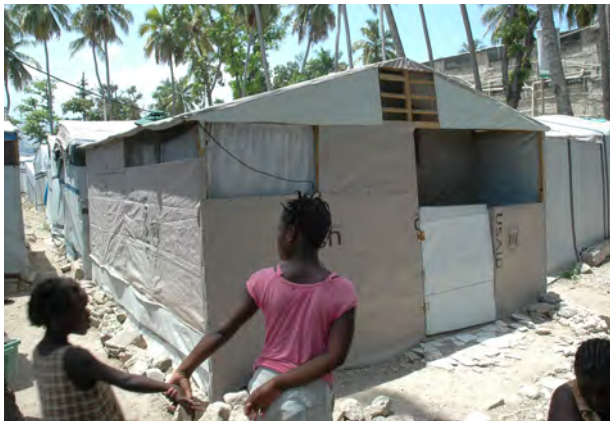
Good quality shelter grade plastic over self made shelter, used for roofing as waterproofing priority. Plastic damaged due to inadequate fixing.



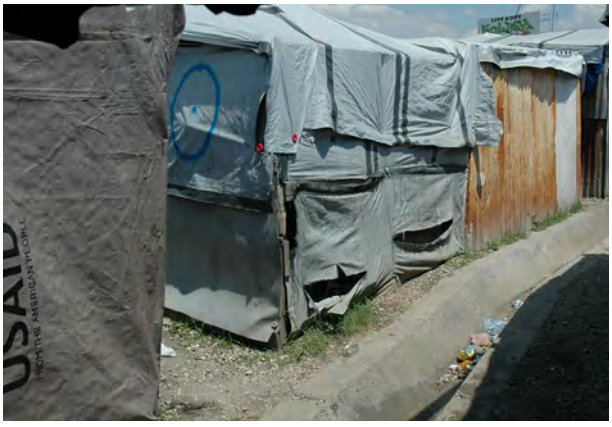
Makeshift shelters upgraded by IFRC, new plastic sheeting outside mixed material walls, to provide weather proofing as priority over ventilation and other issues.



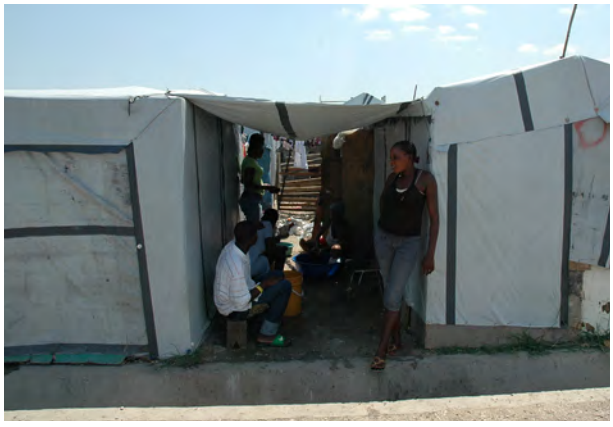
Larger shelters may require at least 2 standard plastic sheets or tarpaulins to enclose the walls and roof.



Large welll framed shelter with well fixed plastic walling and windows. 'emergency shelter' which meets many of the performance criteria of t- shelter.



Poor quality plastic, poorly fixed and degraded. The shelter was slashed after the occupants had abandoned it.



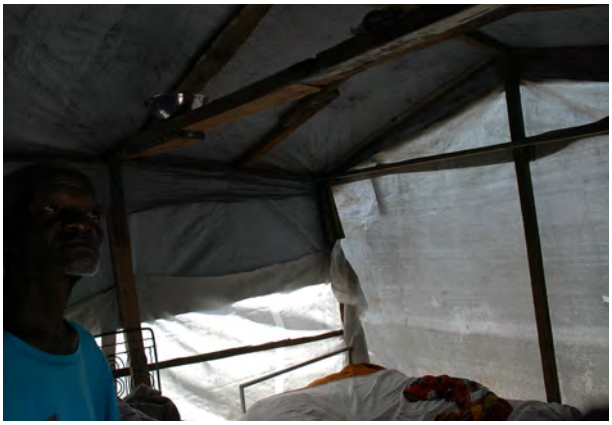
Use of plastic sheeting to cover space between shelters as additional shaded living and social space. Priorities are not only the shelter structure itself.

NOTES

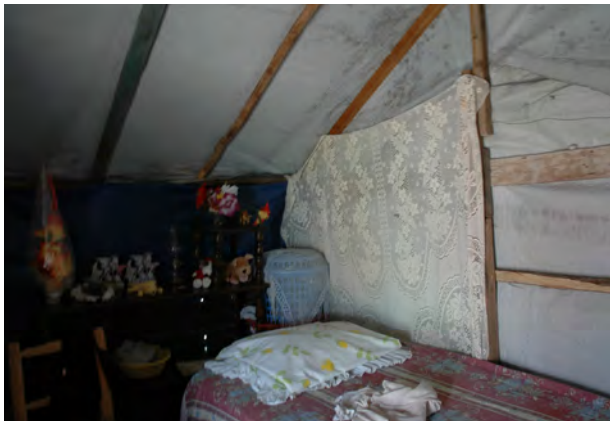
- Carpenters are the key technical support to improve the condition and performance of shelters or to construct new shelters.
- Previous programmes have employed professional outside carpenters or skilled workers from within camps and communities.
- The provision of technical support helps to increase the lifespan, durability and performance of shelters including rain proofing, wind resistance and strength, security and privacy.
- Technical advice including posters for residents to improve their own shelter is useful, but depends on skill levels and materials available. Technical support should be focused to assist vulnerable households or communities.
- Without strong coordination, community mobilisation, demonstration shelters and technical support materials provided in distributions will likely be sold in the market rather than used to improve the shelter situation of the target community.

RECOMMENDATIONS

- Identify skilled workers from within the camp or community along with local assistants to carry out technical support for and optimise the performance of existing self made shelters and to optimise the use of any additional materials provided.
- Plan for the cost, time and activities required to provide technical support as essential to any reinforcement or improvement programme for emergency shelters.



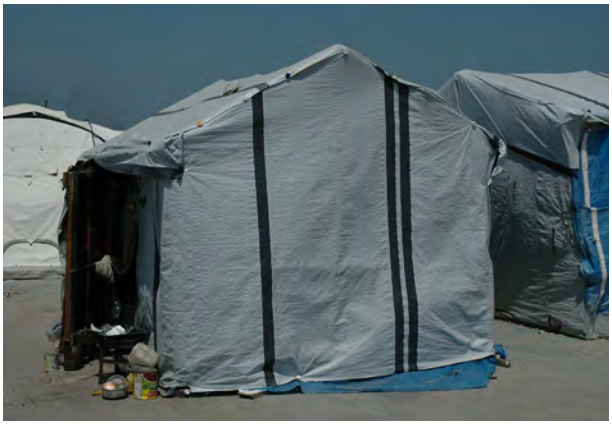
Technical support carpenter reviewing roof improvements optimising the various size timber pieces the shelter occupant had available.



Roof and gable improved by technical support team, closer spacing of rafters.

IFRC technical support team, carpenters from the camp, employed to improve all makeshift shelters, minimal material support, priority was weatherproofing.

Self made shelter upgraded by CARE technical support team with material support for sheeting, framing and fixings.



Self made shelters constructed by families with no technical support. Good local supplies of framing materials and skills. A series of distributions of plastic sheetings had taken place leading to continuous upgrading,

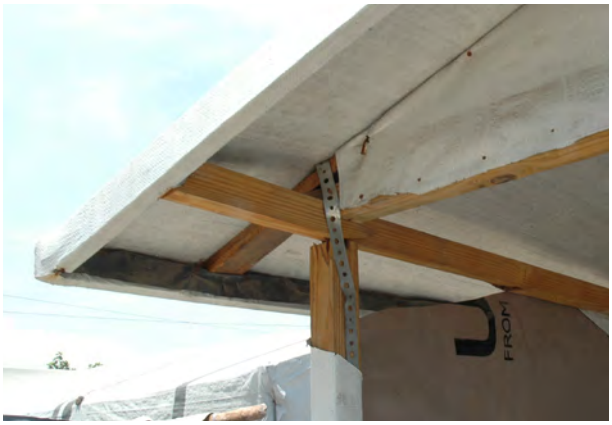
Self made shelters showing the continuous process starting with salvage materials and adding shelter plastic for roofing and weatherproofing. No technical support provided.

NOTES

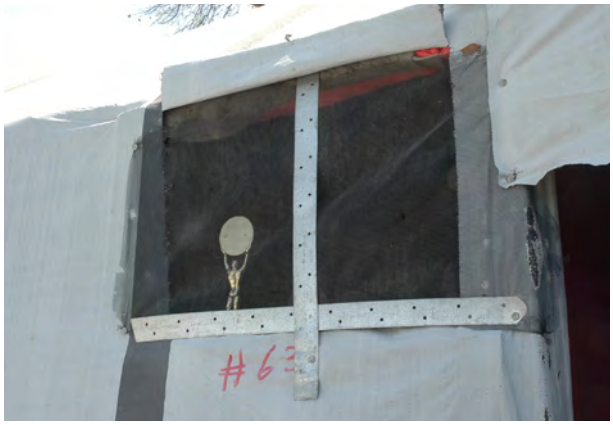
- Reinforcement programmes included the provision of pre-drilled hurricane straps, steel pegs for anchoring, timber for framing, nails, nylon rope, plastic sheeting and duct tape. The objective was to improve the performance of self made shelters including in the event of hurricane winds and heavy rain. Technical support was provided to ensure residents were aware of the importance and correct use of the the hazard resistance items.
- Hurricane straps were used in a variety of ways and locations in the structure, most commonly to strengthen corners.
- Improving the strength of the frame and adjusting roofs from flat to pitched greatly improves the wind and rain resistance, even without the use of straps and other measures. Small timber bracing pieces, nailing and anchoring can help.
- The specialised items for hurricanes are likely to be misused or resold in the market if there is not community mobilisation, awareness, technical support or monitoring to ensure their correct use.

RECOMMENDATIONS

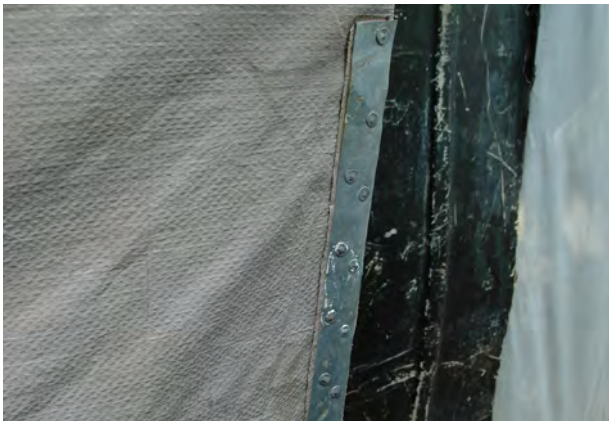
- Cost benefit analysis should be considered for all specialised items and cost effective improvement measures prioritised.
- Technical support, demonstration and awareness and assistance is as important as material support to improve hazard resistance and to optimise material investment. This is particularly valuable for vulnerable households.



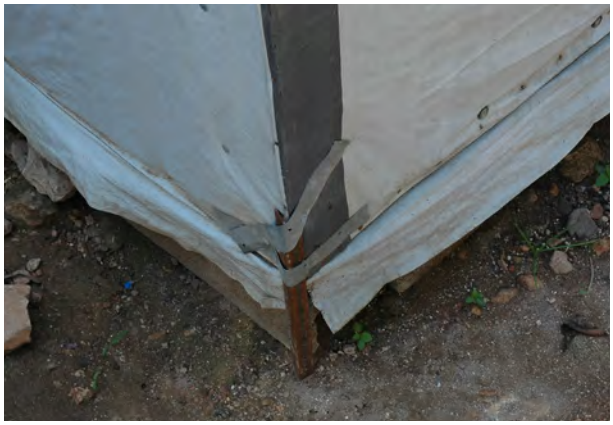
Hurricane strap used to tie roof trusses to posts. Ties, timber and carpentry support provided in reinforcement programme.



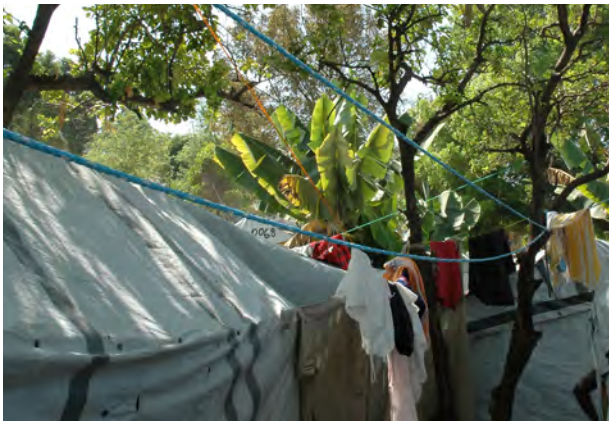
The same straps provided for hurricane reinforcement used to strengthen a window frame in a shelter. Residents used the straps in many ways.



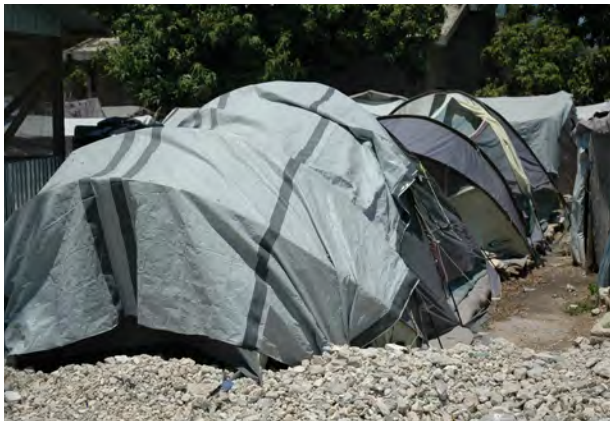
Hurricane strap used at the corner. Strengthening walls and corners in particular was the priority for most people.



Steel peg to anchor shelter to ground, secured with hurricane straps. Pegs were relatively expensive and considered less priority by residents.



The nylon rope provided to improve fixing and hazard resistance was often used as washing line.



Tent with light framing and additional shelter plastic to improve rain protection. Although low rise, they are vulnerable in driving wind and rain.

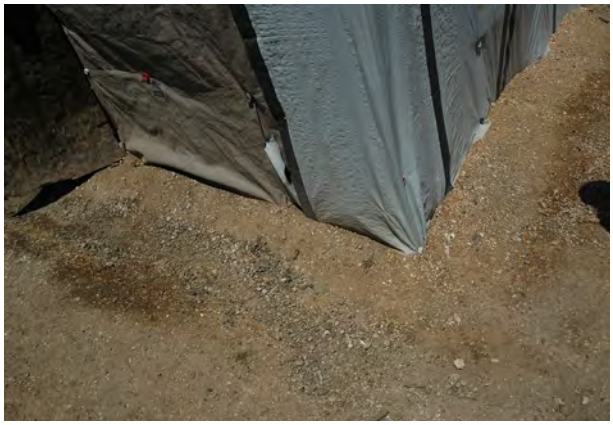
NOTES

- Many emergency shelters are situated in locations with overcrowding, site drainage, exposure or other challenges. These issues affect living situations as much as the condition and performance of individual shelters themselves.
- It may or may not be feasible or advisable to address site conditions depending on topography, location, ownership and cost. Improvements may be done for shelters, for groups of shelters or for overall sites.
- Access to sanitation, water supply, security, safety and other factors also affect shelter conditions but the appropriateness and feasibility of measures will vary widely from site to site. In camps these issues are addressed through CCCM teams, and will require consideration of status, time frame, budget, operation and maintenance among other concerns.

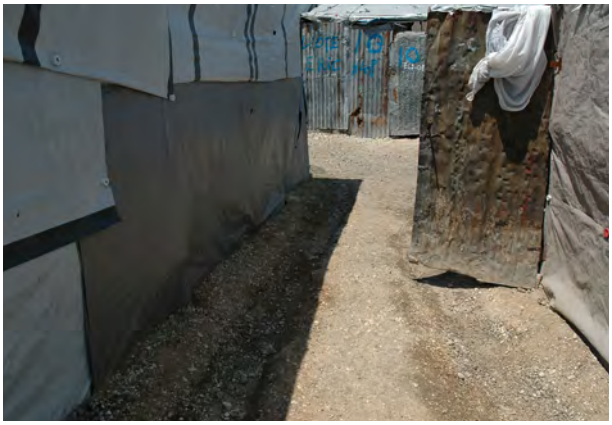
RECOMMENDATIONS

- Site drainage can be improved around tents and shelters by protection from water ingress, provision of a slope and drainage channel or other measures as per the pictures below. Additional protection can control site and settlement drainage.
- Decongestion, restructuring to provide access routes, services or open areas can significantly improve overall shelter conditions. The improvement of shelters should take opportunities to also improve site and layout issues.

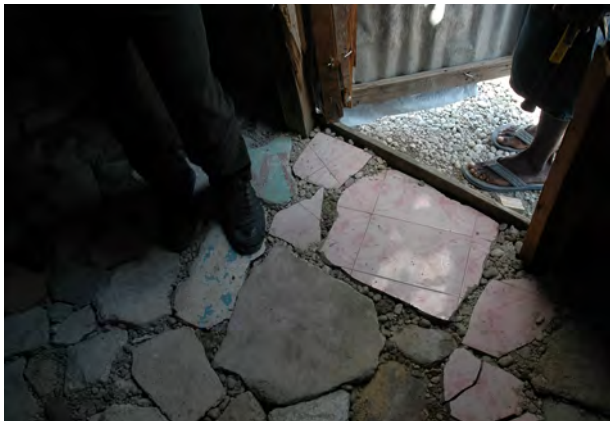
Site drainage improvements, protection for shelters at risk of water ingress along the slope.



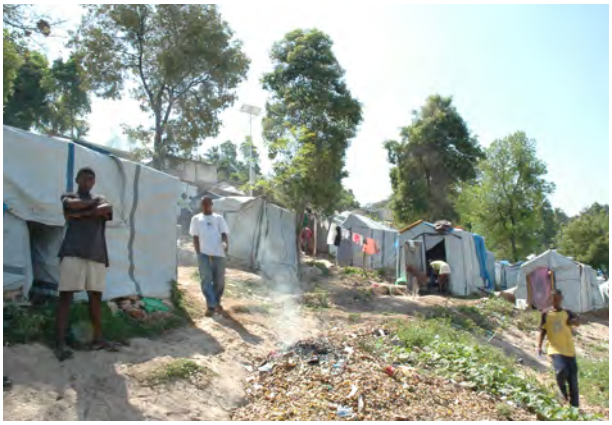
Base of shelter anchored with sand and soil. Drainage fall constructed to divert site water away from the shelter.



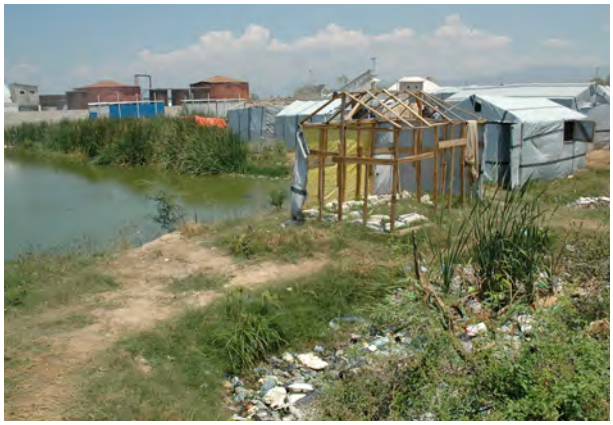
Drainage channel along the side of shelter. Low lying site at risk of slow drainage of standing water.



Doorway provides a threshold protecting the interior from site water. Internal floor leveled and raised with salvage materials.



Camp on steep slope, running site water drainage difficult to mitigate. Other constraints include slope constraining shelter plan size.



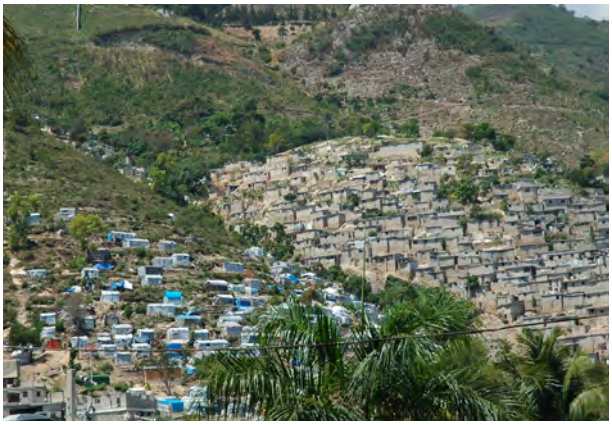
Shelters constructed on poorly drained site. Areas of the site were previously waste disposal and made ground.

NOTES

- The majority of emergency shelters and tents are located in official or recognised camps.
- A smaller number of shelters are located in a range of informal locations including: 1.on private property by the owners or with their consent, occupying the site of a destroyed or damaged property, 2. on private unbuilt land, 3, on streets and public thoroughfares, 4. in ravines, on hillsides and other hazardous marginal areas.
- On private property many people in shelter also use existing buildings, for storage, cooking, bathing and other activities.
- The occupation of ravines or hazardous hillsides by constructing emergency shelters can lead to incremental new settlements. This needs to be addressed in the context of local planning and sustainable development.
- Without strong coordination, community mobilisation, demonstration shelters and technical support materials provided in distributions will likely be sold in the market rather than used to improve the shelter situation of the target community.

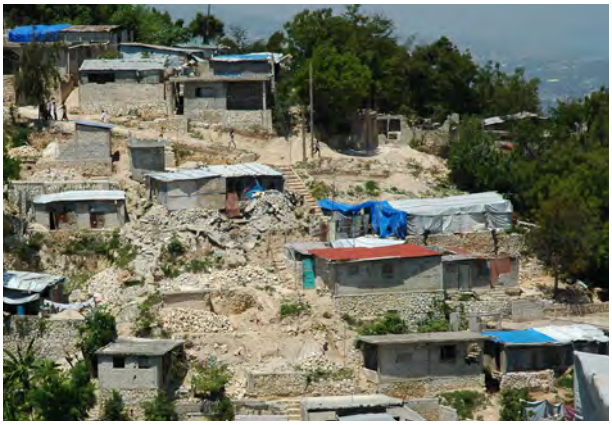
RECOMMENDATIONS

- Where possible ensure people can invest in and accelerate repair and reconstruction. Assistance should support options.
- Do not formalise vulnerability by reinforcing emergency shelter in hazardous locations, support more sustainable solutions.

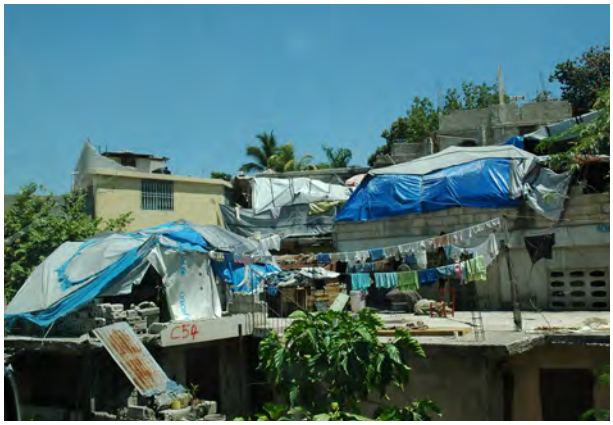


Growth of infomal settlements establishing emergency shelter on previously uninhabited hillside.

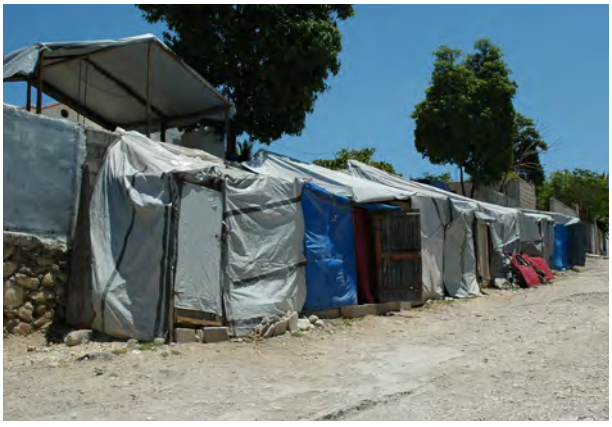
Self made shelters on steep urban site, risk of environmental degradation and risk of incrementally long term settlement on hazardous land.



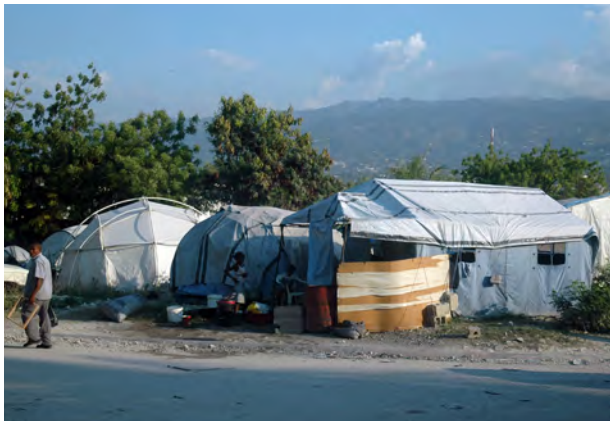
Emergency shelters constructed on the site of destroyed houses, longer term solutions may include restructuring of hazardous neighbourhoods.



Two emergency shelters constructed on the roof of a damaged private house. Residents using the old house for storage and other activities, sleeping in shelter.



Self made shelters on quiet roadway.



Edge of a spontaneous camp along a busy roadway, showing issues of security, privacy and safety.

EMERGENCY SHELTER HAITI

NOTES

- From 1-27 April over 30 site visits were made to review the condition and performance of emergency shelters in camps and outside camps in Port au Prince metropolitan area, Carrefour, Leogane and in Jacmel.
- These visits coincided with the Spring rainy season and episodes of very strong wind as well as rising temperatures.
- Site visits and community discussions were conducted to review the impact of reinforcement programmes by CARE international and the British Red Cross which represented the most substantial interventions in upgrading, both organisations also provided their own evaluations and lessons learned.
- A TWiG was convened to discuss emergency shelter reinforcement, minutes are recorded separately.
- CCCM cluster coordinates targeted shelter support to most vulnerable households on an ongoing basis and implementation, maintenance and upgrading of sites and services.

OBSERVATIONS

- The majority of emergency shelters were constructed by people themselves directly after the earthquake in January 2010, using timber to make rudimentary frames and using various salvage materials along with plastic sheeting for walling. Almost all shelters have been incrementally improved benefiting from subsequent distributions of plastic sheeting and shelter NFIs or by acquisition of plastic and other materials by the residents themselves.
- Shelters ranged from 6 sqm to over 24 sqm generally according to site constraints and availability of materials. Most larger shelters had subdivisions to accommodate family needs and strengthening the shelter structure. Most families had salvaged household items from their previous homes.
- Site congestion was a concern in many locations where circulation, cooking areas and space for household and social activities are extremely limited. This congestion does reduce the exposure of shelters to high winds, but increases local temperatures and reduces normal ventilation. Congestion has an impact on privacy, security, fire risk and other issues.
- Many shelters did not provide full protection from heavy rain, due to poor quality plastic, poor fixing, flat roofing, and due to inadequate protection from or management of moving or standing site water. The solutions to improve performance depend on the various problems, but generally require a combination of targeted material support, technical assistance for framing and fixing and site improvements. This problem is seasonal, but experience from previous wet seasons should help with carrying out improvements during dry seasons in preparation.
- Lower quality and durability tents have been generally replaced by emergency or t-shelter or by higher quality tents including steel framed multi ply tents. Rapid assessments show residents satisfaction equal between e shelters and good quality tents, though it is unlikely that they would provide the equal hazard resistance in the event of a hurricane.
- The incremental improvements by families and agencies has greatly enhanced the performance of emergency shelters, with many at standards normally associated with t-shelter after disasters elsewhere. The cost and benefit to further improve e-shelters has to be considered in the context of other housing sector concerns. For example, owners of green or yellow houses may opt for investment in return through housing repair or community infrastructure rather than further investment in e-shelter and camps.
- Providing wholescale material and technical support for all in emergency shelter is not required, as many shelters are already adequate, space is too constrained to use additional materials or solve deficiencies, materials are likely to be sold by beneficiaries who have more pressing livelihood needs than shelter needs, and for less than cost.

RECOMMENDATIONS

- **E-Shelter, T-Shelter and Contingency:** E-shelter is expected to meet normal shelter needs until more durable solutions can be implemented, T-Shelter is expected to meet normal shelter needs and to withstand hurricane or other local hazards. The difference is a critical one. It is not cost, space, environmentally or socially affordable or desirable to invest in upgrading all E-Shelter to Haiti T-Shelter standards including withstanding major hazards or providing up to 10 years durable shelter. This would divert resources from repair and permanent reconstruction, from infrastructure rehabilitation and development, and would sterilise land from permanent and sustainable reconstruction. The responsibility for these choices need to lie with households and communities themselves as well as assistance agencies and Government authorities.
  Recommendations for investment in upgrading of E-shelter are in part to ensure all shelter meets basic needs, but it is also a mitigation measure to reduce most serious exposure to losses in the event of a major disasters. This should be done in close coordination with contingency planning, so that in the event of a disaster there are resources and capacities available to replace and rehabilitate shelters.
- **Feasibility:** Improvements to shelter and sites depend on several constraints, include topography, space and status of the land and property apart from cost and capacity. This makes it difficult to implement one size fits all standards, or to implement standardised assistance approaches. The variations in social and economic situations of displaced famiies and communities also results in a wide range of concerns and priorities. As far as possible improvement measures should tailor decision making according to these factors and allow for flexibility.
- **Targetting:**
  Improvements to e-shelter will make a greater difference for
  Those who do not have options to return to their homes or neighbourhoods of origin, or to long term housing solutions, and do not have options to access t-shelter solutions.
  Those in worst conditions: poor space standards, low quality framing and plastic, inadequate sites.
  Agencies and communities will need to decide whether all shelters in a camp or group need equitable support packages or it is also feasible to target support for the most vulnerable in the context of mixed shelter conditions and needs.
- **Needs:** Initial estimates from rapid review indicate approximately 20% of e-shelters require support through improvement measures, this includes various needs including shelter materials, technical support or site improvements. For planning purposes this is outlined as 34,000 shelters in camps and 6,000 shelters outside camps.

RECOMMENDATIONS

- **Framing:** The most important framing improvement are: to provide a slope to flat roof shelters, to strengthen corners and roofs and fix roofs to walls. Where feasible the heights should be raised to improve interior living conditions and ventilation. Small timber section sizes are adequate and economical (2 x 2). Short pieces can be used for bracing and improving connections. Metal hurricane straps and other fixings can add strength and can be reused later.
  Note: It is difficult to undertake a programme of replacement of shelters as the self made shelters have been incrementally constructed and of varying size and quality. Replacement shelters may be appropriate in the event of new settlements or where shelters are totally substandard, otherwise it is a fraught exercise likely to need substantial materials and cost for marginal improvement.
- **Sheeting:** Ensure better fixing and use of existing and new plastic. Replace only torn or poor quality plastic. Allow for more than 1 sheet per shelter in the case of larger shelters. Prioritise roofing as the most exposed surface to weather.
- **Technical Assistance:** Identify skilled workers from within the camp or community along with local assistants to carry out technical support for and optimise the performance of existing self made shelters and to optimise the use of any additional materials provided. Technical support, demonstration and awareness and assistance is as important as material support to improve hazard resistance and to optimise material investment. This is particularly valuable for vulnerable households.
- **Integrated Support:** Plan for the cost, time and activities required to provide technical support as essential to any reinforcement or improvement programme for emergency shelters.
- **Drainage:** Site drainage can be improved around tents and shelters by protection from water ingress, provision of a slope and drainage channel or other measures as per the pictures below. Additional protection can control site and settlement drainage.
- **Planning:** Decongestion, restructuring to provide access routes, services or open areas can significantly improve overall shelter conditions. The improvement of shelters should take opportunities to also improve site and layout issues.
- **Cost Benefit:** Cost benefit analysis should be considered for all specialised items and cost effective improvement measures prioritised.
- **Options and Choice:** Where possible ensure people can invest in and accelerate repair and reconstruction. Assistance should support options. Assistance may include cash or part cash options for families to replace household or personal items in stead of strictly structural materials, as part of shelter and accommodation solutions.
- **Vulnerable Sites:** Do not formalise vulnerability by reinforcing emergency shelter in hazardous locations, support more sustainable solutions through engagement of residents in a local planning process if available.