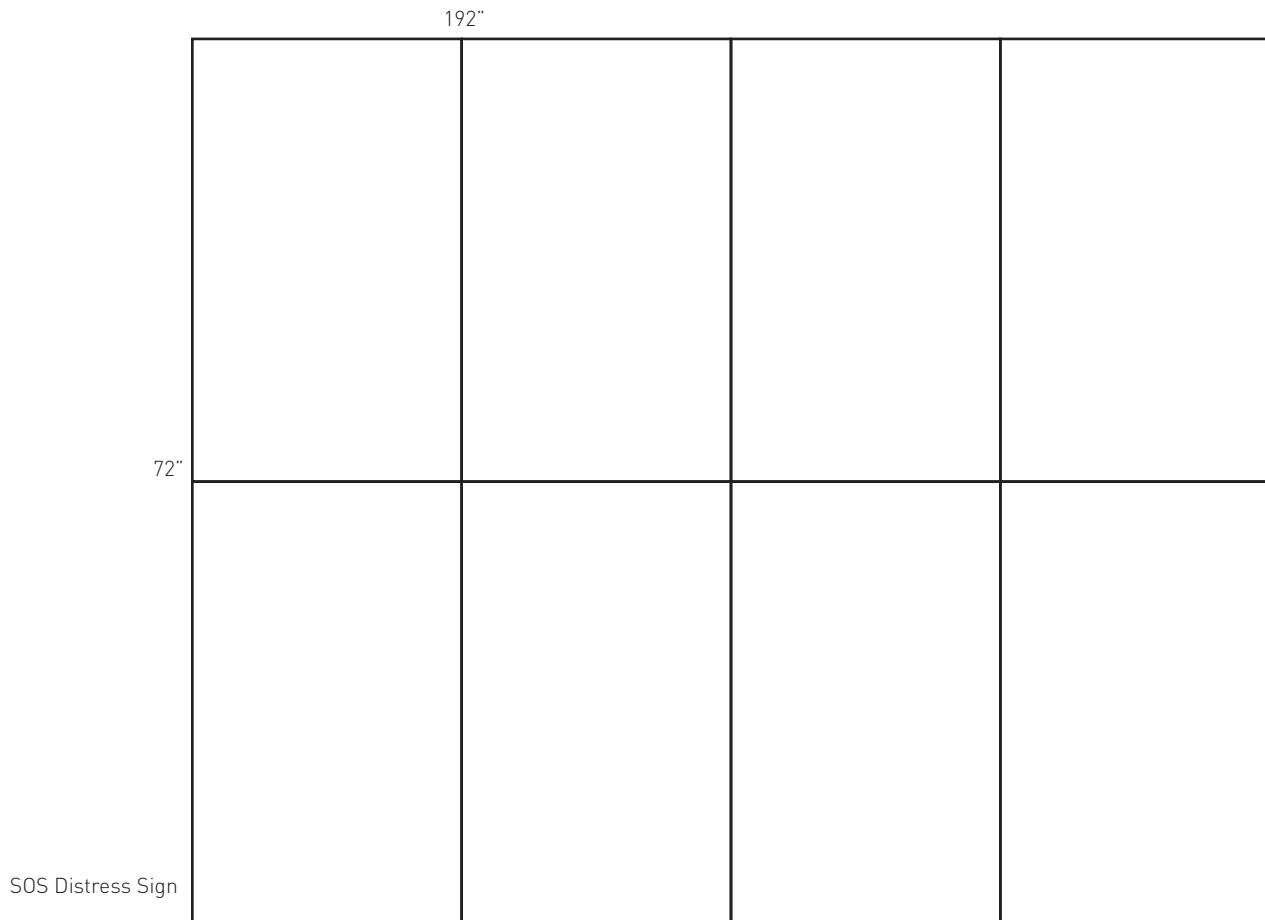
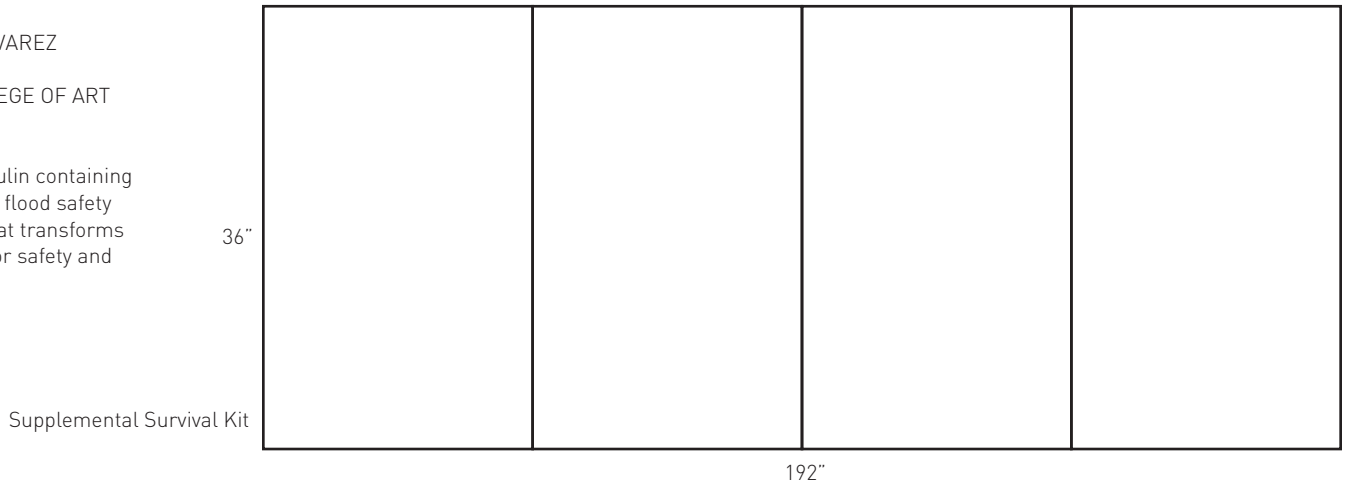


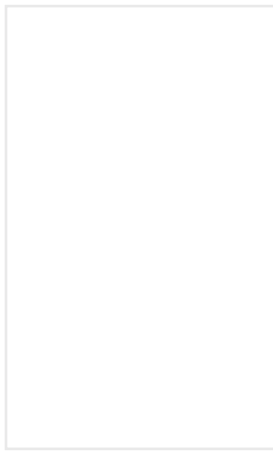
# FLOOD PREPAREDNESS KIT

by MELVIN ALVAREZ

for OTIS COLLEGE OF ART  
AND DESIGN

a 6 x 8 ft tarpaulin containing  
information on flood safety  
precautions that transforms  
into four kits for safety and  
education.





3 ▶ **Research / Development**

4 ▶ **Multiple Functions**

5 ▶ **Materiality: No Waste**

6 ▶ **Materiality: Ductape**

7 ▶ **Information Design**

8 ▶ **Transformation: Calendar**

10 ▶ **Transformation: Information Board**

12 ▶ **Transformation: Survival Kit**

14 ▶ **Transformation: Distress Symbol**

Spring 2014 Senior Project

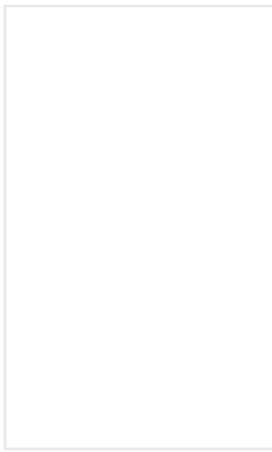
for OTIS COLLEGE OF ART  
AND DESIGN

Adviser: Ana Llorente

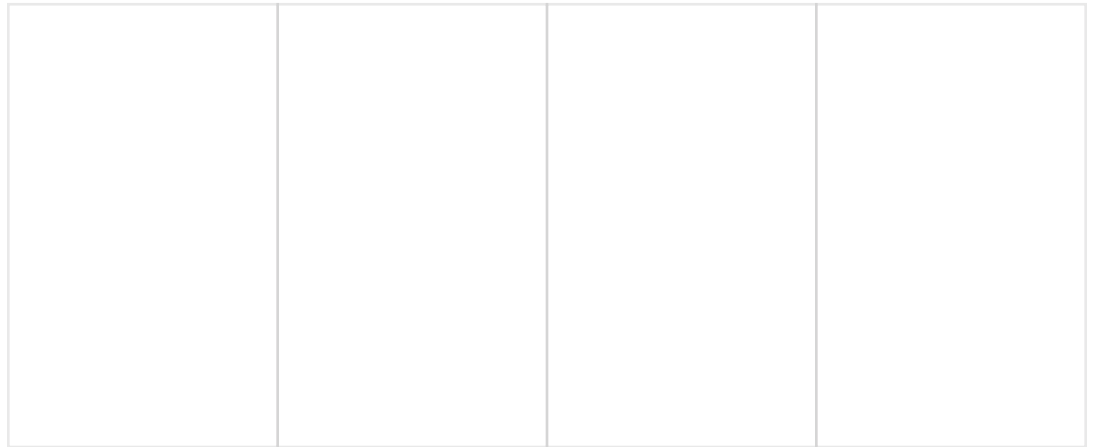
Research & Production  
January - May 2014

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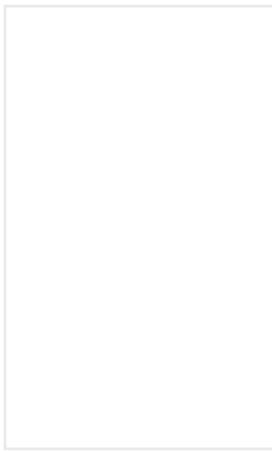
<p>My senior project is a flood preparedness kit made out of polytarp and ductape that provides multiple functions.</p> <p>It contains designed informaton, made out of black and white ductape strips, that aid in flood preparedness.</p> <p>The project is designed for public schools and other designated evacuation shelters in the Philippines.</p>			<p>This kit is intended to be placed in public schools as well as other designated evacuation centers to not only act as educational material, but also provide supplemental aid if ever the need arises.</p> <p>Materials readily available in the community were used in order to promote resourcefulness and to communicate the possibilities of re-creation and customization to optimize what it can offer towards communal safety.</p>



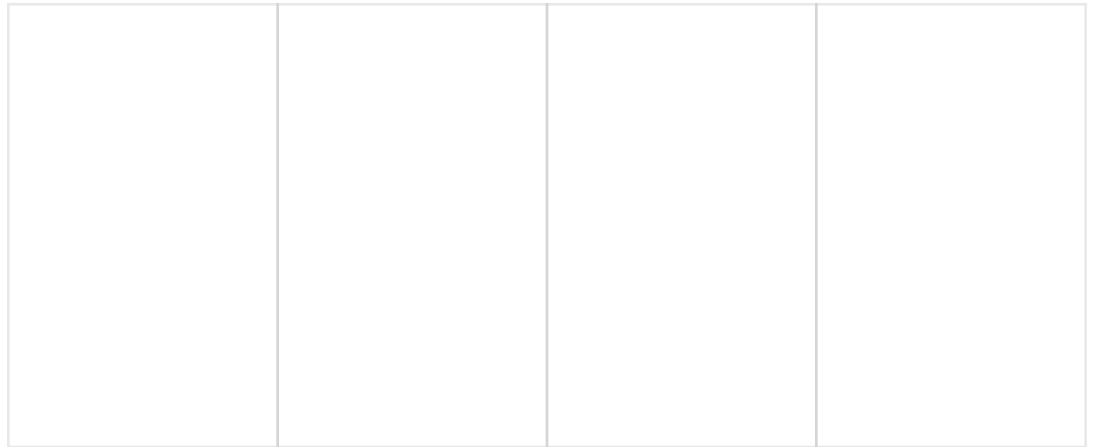
# RESEARCH / DEVELOPMENT



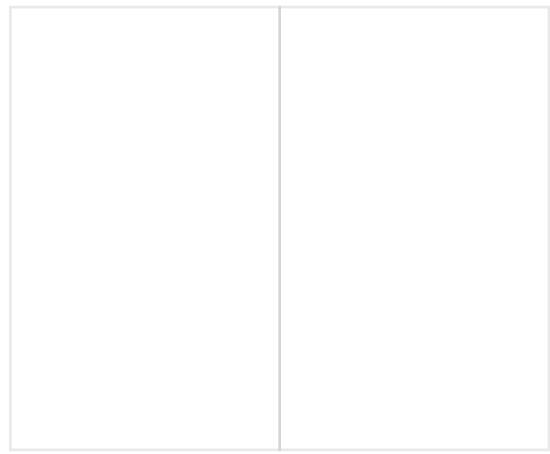
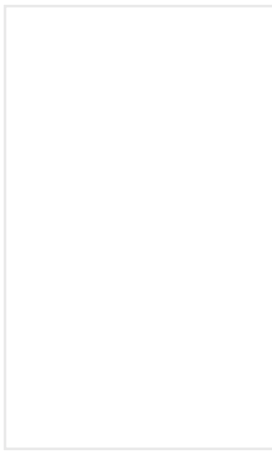
<p>My research revolved around the following: flood preparedness, information on storms and the factors that affect their strength as well as proper precautionary measures to prevent casualties.</p> <p>This also included safety kits and other informational materials that help prevent casualties during natural calamities.</p>			<p>Quality of material was taken into account, making sure that they withstand the elements as well as provide their purpose.</p> <p>I delved into multiple functions and different ways in providing information as well as exploiting the possibilities of the material, how it will function when it is folded in one way, and how its function will transform when it is expanded into another form.</p>
<p>I also researched on various materials and viable resources so that I can try to develop a design solution using resources that are readily available in the community.</p>			



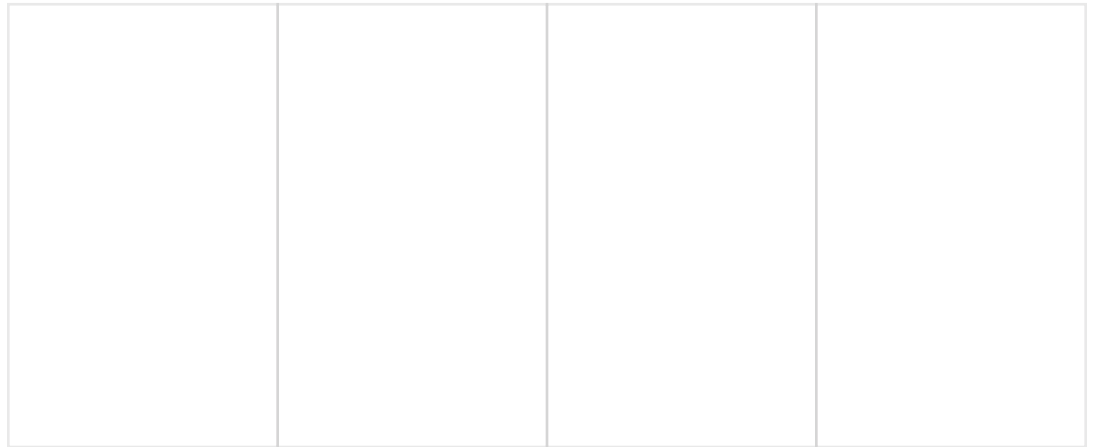
# MULTIPLE FUNCTIONS



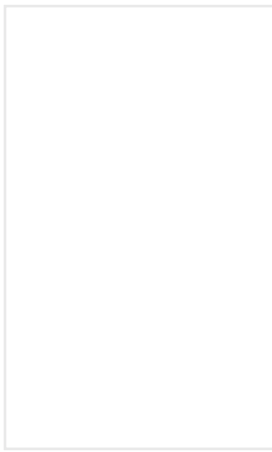
<p>The idea of a multi-purpose kit inspired me to think about how I can incorporate the benefits of multi-information.</p> <p>I thought about poster booklets and the use of print signatures and how they present information on different sections.</p> <p>This led me to consider how a large material such as a 6x8 foot industry-grade polytarp can mimic the same function:</p>			<p>Serving as a 24x36" calendar at first, then transforming into a 48x36" information board, into a supplemental survival kit, until it expands into a 6x8' distress SOS reflective symbol that can be useful for search and rescue if ever the need arises.</p> <p>The idea of having multiple functions also made me consider researching on the best materials that supports the concept.</p>



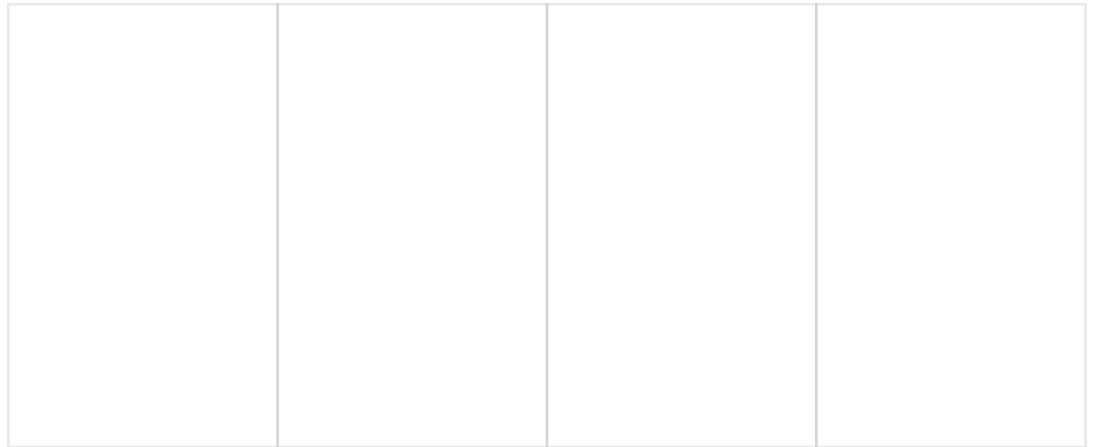
# MATERIALITY: NO WASTE



<p>My instructor, Ana Llorente, lent me the <i>No Waste</i> issue by Pentagram Papers. The book chronicled how various materials were repurposed in Cuba to eliminate waste and to provide new function for things that were already considered as junk.</p> <p>The book inspired me to take a closer look at the materials readily available in Filipino communities and consider their viability to be used as the materials for the kit.</p>			<p>These materials are also durable and are known to withstand harsh elements and have been used countless times for various purposes, increasing their popularity and familiarity of use.</p>
<p>Heavy duty tarpaulin and duct tape are readily accessible materials in developing Filipino communities.</p>			<p>Polytarp is known to repel any type of ink due to its protective coating. The use of a strong, durable, and waterproof adhesive such as ductape, adds flexibility in terms of designing scalable and easily modifiable information on the tarp.</p>



# MATERIALITY: DUCTAPE

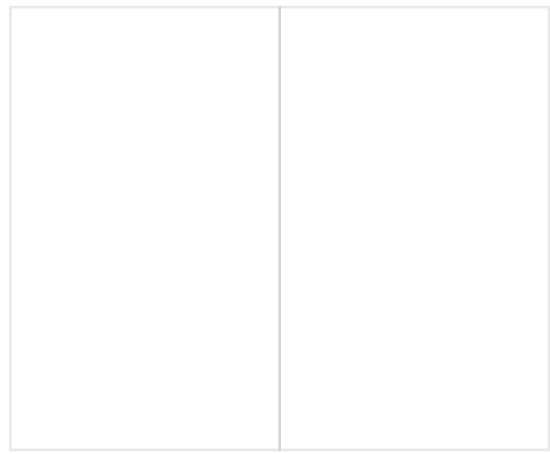
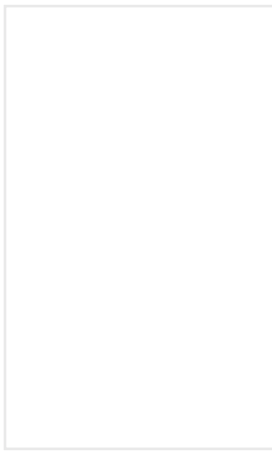


Industry-grade tarp is a weather resistant and durable material that resists any type of ink or moisture. This meant printing on the material is impossible.

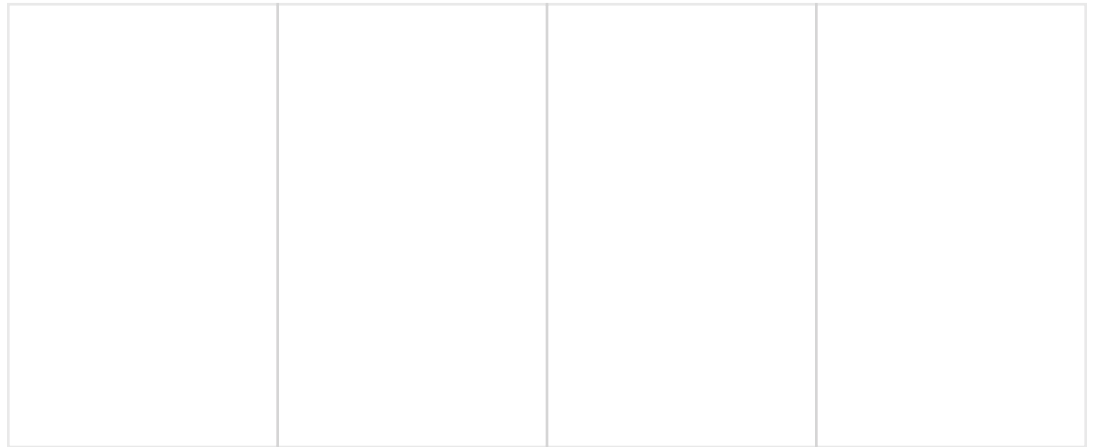
I thought about using adhesive materials such as vinyl stickers to translate the designed information on the polytarp.

However, the cost and the process involved with vinyl conflicts with one of my design goals, which is to create a kit made out of readily accessible resources.

This led me to use black and white ductape, which functions the same as a vinyl sticker, while also providing the necessary durability to withstand harsh elements.



# INFORMATION DESIGN

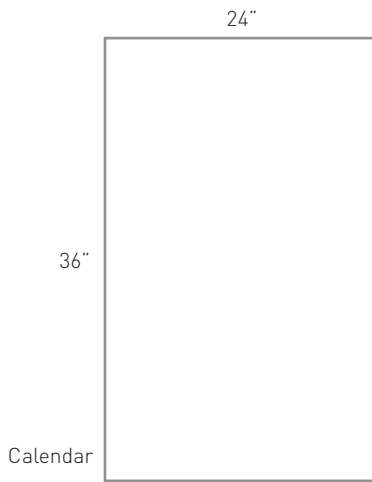


Each of the transformation contains relevant information on flood safety, storm warning signals, and safety precautions. The data I have gathered is designed to accommodate the use of ductape strips, which allows for large scale graphics without worrying about large format printing.

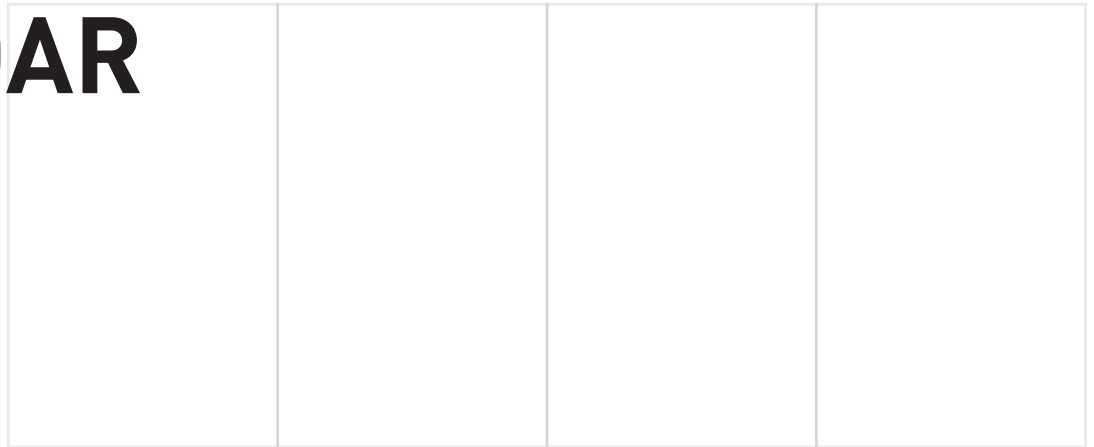
I have also decided to include comprehensive information as inserts to further inform the community about flood safety. Another goal for the inserts was to also inspire the community to add to the pre-existing design; improving it for their needs since the materials required to add on to the template is readily available.

To create large sheets of adhesive sticker out of the ductapes, the strips are lined on a semi-porous surface so the adhesive can still be easily removed. They are then cut out in order to create a large sheet that can be used to assemble the design on the polytarp.

The stencils I used for creating the type can be printed out to size to allow the replication of the kit. This can be an educational activity that students in public schools as well as the community can partake in to learn about the possibilities of information design as well as being creative in using materials that are available around them.

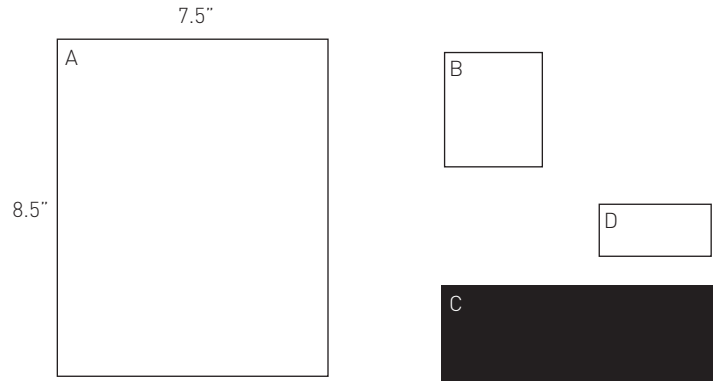
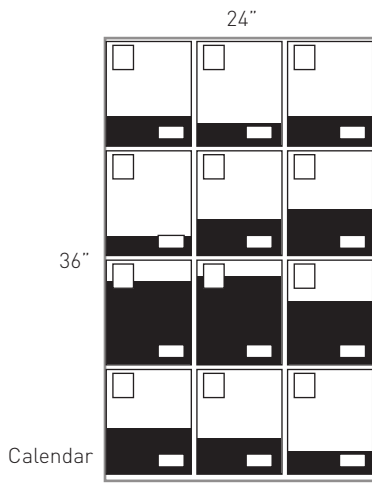


# TRANSFORMATION: CALENDAR



<p>One of the initial transformations of the flood preparedness kit is a 24x36" calendar that contains information on the average temperature and water level per month in the Philippines which is directly related to the intensity of flooding during the occurrence of a typhoon.</p>			<p>The temperature on the upper left corner signify the average highs and lows during the month, which directly affect storm intensity as well flooding levels.</p>
	<p>I designed the calendar to relay information without having to display the name of the month. I designed 12 blocks with varying black bar heights to signify the difference of water levels per month.</p>		<p>All of the information on the calendar are made from ductape strips, which allows easy modification when necessary.</p>





A - Month block

B - Average high and low temperature (in Celsius)

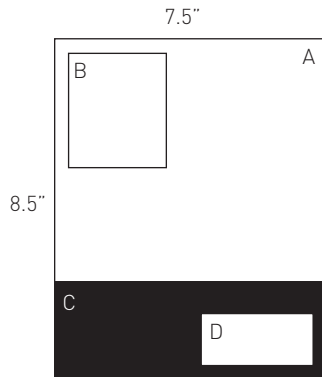
C - Average water levels

D - Average water level in mm (millimeters)

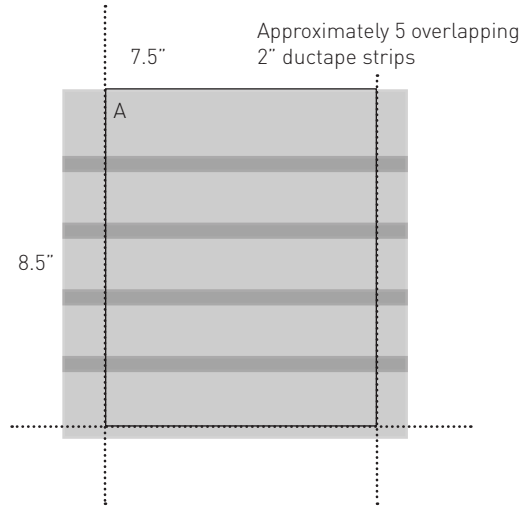
\* Water level (C) height is relative to the highest and lowest water level for the year and is represented with black or another color that contrasts the month block (A) and the the average water level mm type color (D)

When overlaying ductapes, it is best to use contrasting colors such as black on white or vice versa to maintain a clear display of information.

Overlaid ductapes can also be easily removed, allowing further modifications if changes in data or additional customizations are needed.

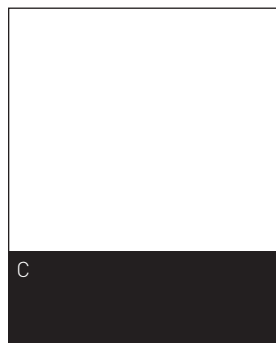


Text is approximately 140 pt which is roughly equivalent to 2 inches, making it fit inside a strip of ductape

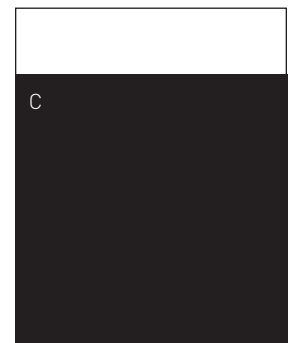
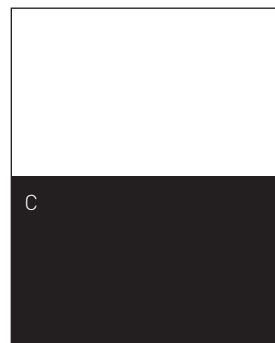


ductape can be overlaid on a semi-porous surface such as a cutting mat when assembling the block.

Water level height

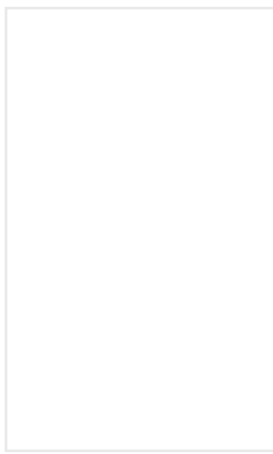


Contrasting ductape strips (black on white)



D **90mm**

The size of type equivalent (mm) of the water level height will stay the same.

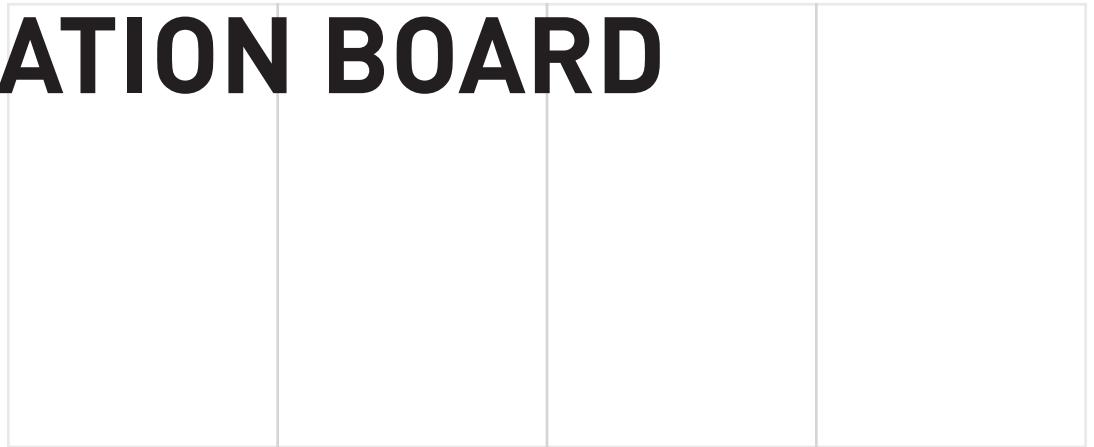


36"

Information Board

48"

# TRANSFORMATION: INFORMATION BOARD



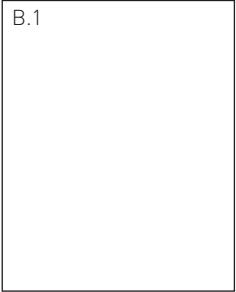
The information board is a 48 x 36" flood kit transformation that contains information about storm signals, emergency hotlines, and comprehensive precautionary measures to ensure safety during flooding and storms.

Storm intensity is also directly related to flooding. This particular transformation aims to inform the community on the storm signal levels set by PAGASA (Philippine Atmospheric, Geophysical & Astronomical Services Administration).

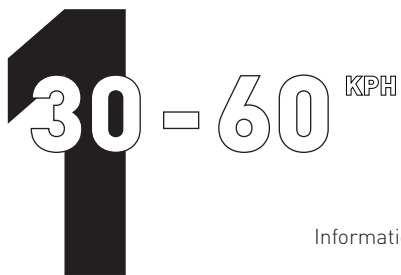
The top part of the board provides information on the four storm signals and their respective wind intensities. The bottom left corner shows emergency hotline numbers.

The bottom right corner of the board is an insert that contains comprehensive information on proper precautionary measures during specific storm signals. The information is available on both English and native Filipino (Tagalog) language.

Adequate space is also provided for additional information to be added by the community.

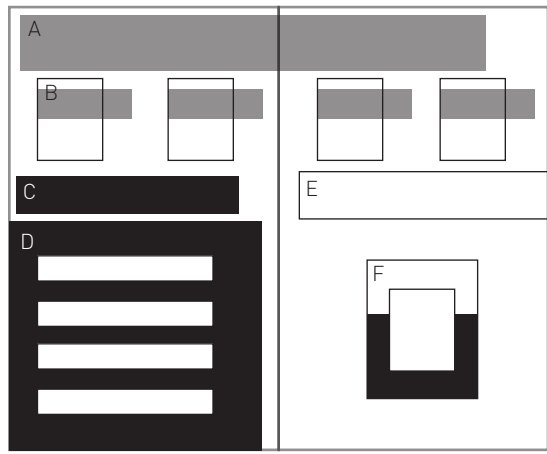


Contrasting ductape strips can overlap and still remain legible.



36"

Information Board



48"

The 24x36" calendar expands into the information board

A - Info board header is made up of 3 strips of ductape to create 3.5 inch type

B - Storm Signal Level (B.1) is laid over wind intensity (B.2) using contrasting ductape strips

C - Hotlines Section Header

D - The hotline numbers section act as the base for multiple emergency contact information (D.1) overlaid on top.

E - The additional information section allows the community to add in relevant information

F - Transparent pouch for additional inserts. The pouch is a combination of 30% black ductape strips and 70% white ductape strips to represent capability for holding supplemental materials. The clear vinyl that acts as a pouch will be overlaid on top of the black section.



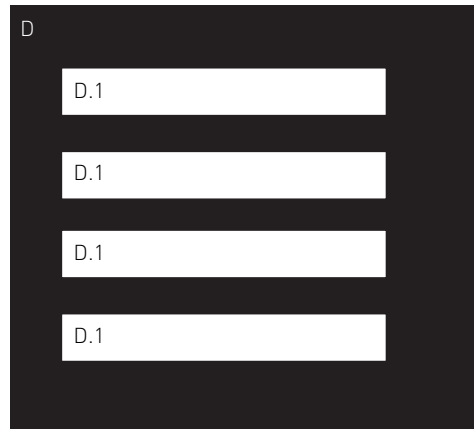
3.5"

# WARNING SIGNS

approximately 3 strips of 2-inch ductape

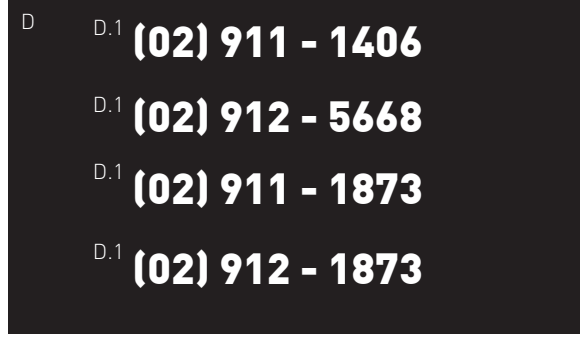


## EMERGENCY HOTLINES



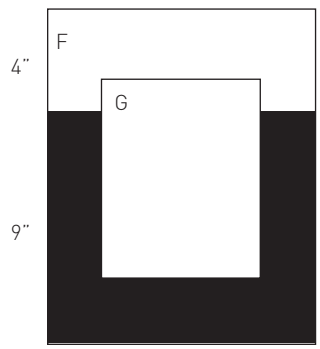
18"

21"



5"

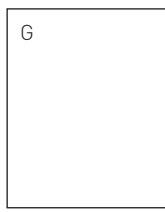
21"



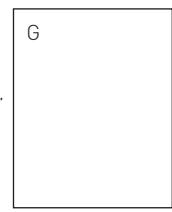
4"

9"

9"



G

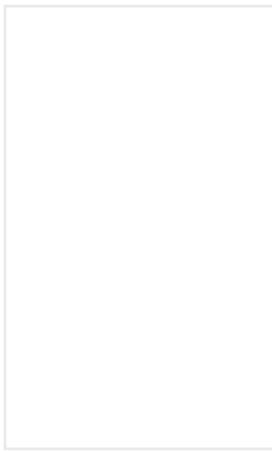


G

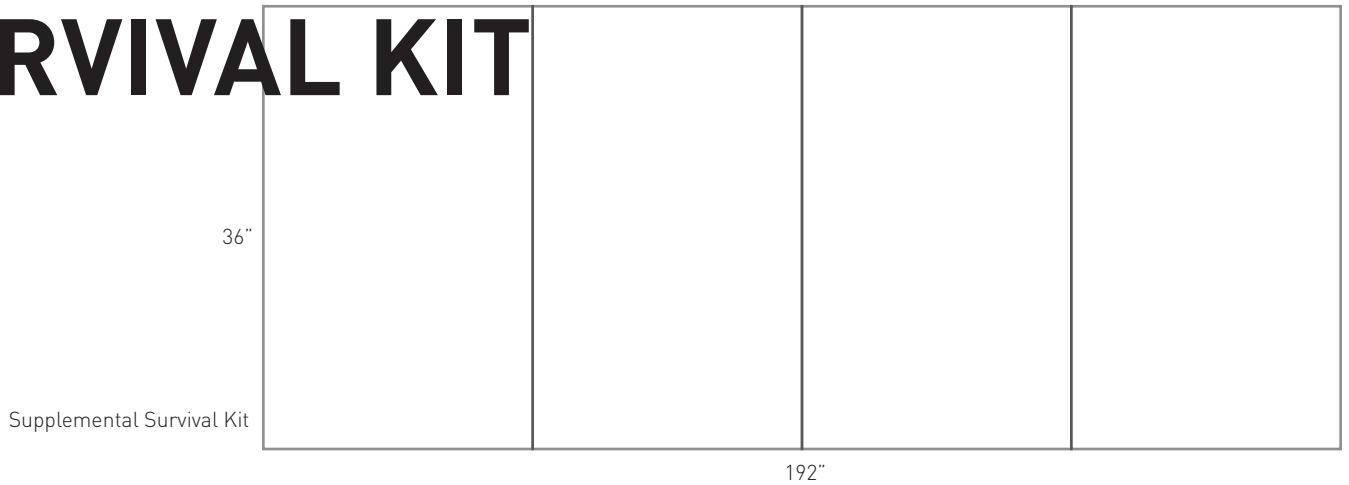
11"

8.5"

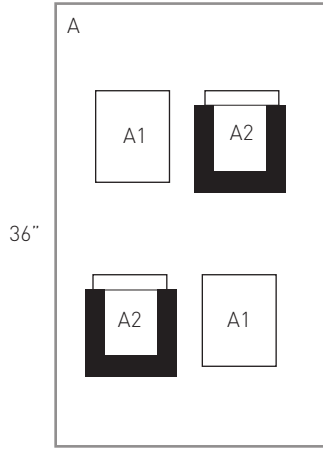
letter-sized insert containing comprehensive precautionary measures along with a translated version



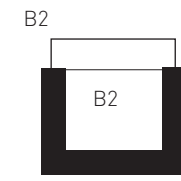
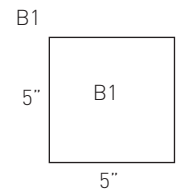
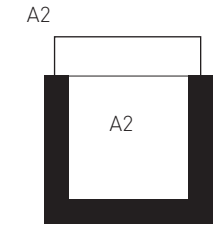
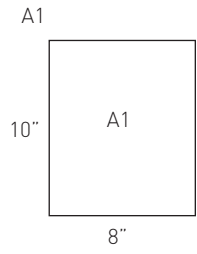
# TRANSFORMATION: SURVIVAL KIT



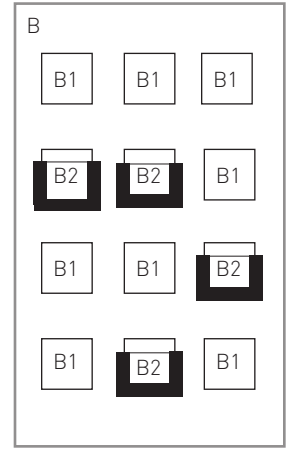
<p>The next transformation is a 48 x 36" supplemental survival kit that contains various sized pouches. These pouches can be divided into four sections and can be used to store tools for flood preparedness.</p>			<p>This supplemental survival kit offers flexibility in terms of the tools that can be stored. It allows the community to add in materials and tools they deem essential for safety precaution.</p>
<p>The pouches are made from ductape strips and clear durable vinyl, commonly used in shower curtains. These allow safe storage of various tools and safely holds a significant amount of weight.</p>			<p>Some of the sections are predesigned with essential item icons made out of ductape strips while some are left intentionally blank for the community to add on to.</p>
		<p>This particular transformation acts as a supplemental survival kit that aims to provide additional supplies together with a sturdy survival toolkit that is pre-packaged with life-saving essentials.</p>	



10 x 8" pouches (A) can hold medium sized tools and materials such as shirts and communication devices



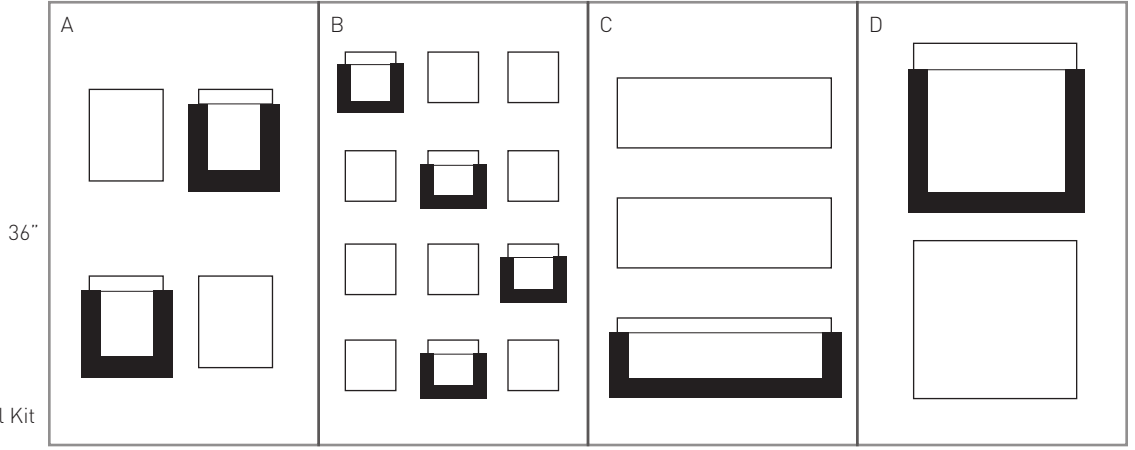
5 x 5" pouches (B) can hold small valuables and tools such as bandages and other medical supplies



The information board expands into a 4 column supply kit that can hold tools in various sizes.

- A - 10 x 8 inches
- B - 5 x 5 inches
- C - 5 x 18 inches
- D - 12 x 12 inches
- E - Pouch

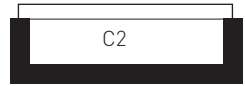
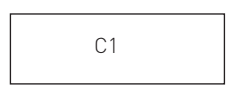
Supplemental Survival Kit



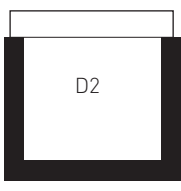
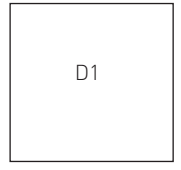
Pouch Installation:

The pouch is made from strips of black ductape (E1) and clear vinyl (E2) equal to the size of the base ductape block.

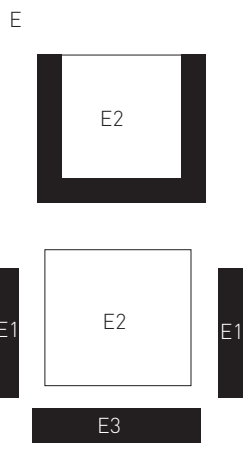
The vinyl is secured around the edges with the ductape and is proofed with additional strips inside the formed pouch.



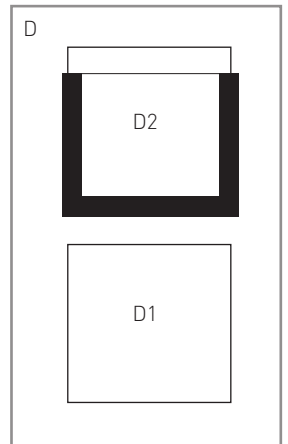
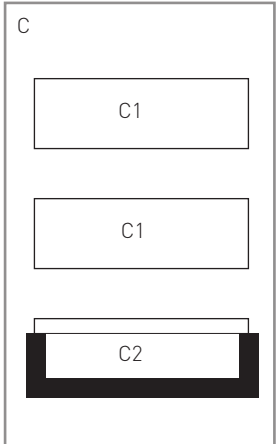
5 x 18" pouches (C) can hold long tools and materials such as ropes

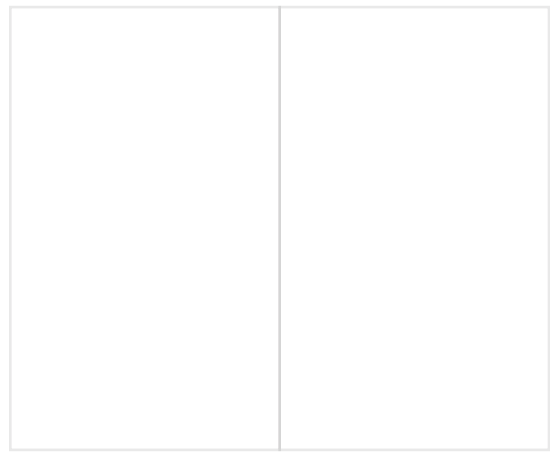
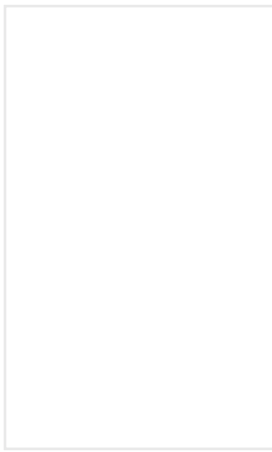


12 x 12" pouches (D) can hold fairly large materials that would not fit on other pouches

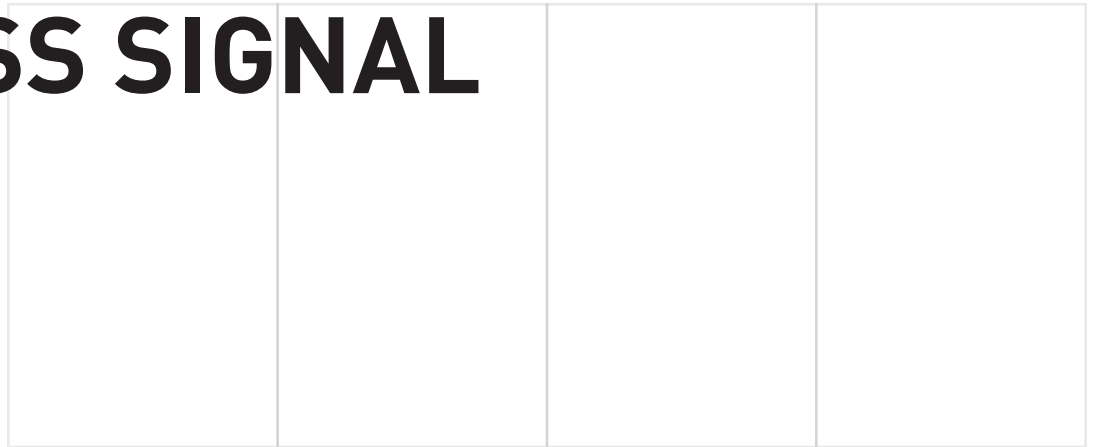


Add a one inch margin to length of the bottom strip (E1) for added strength





# TRANSFORMATION: DISTRESS SIGNAL



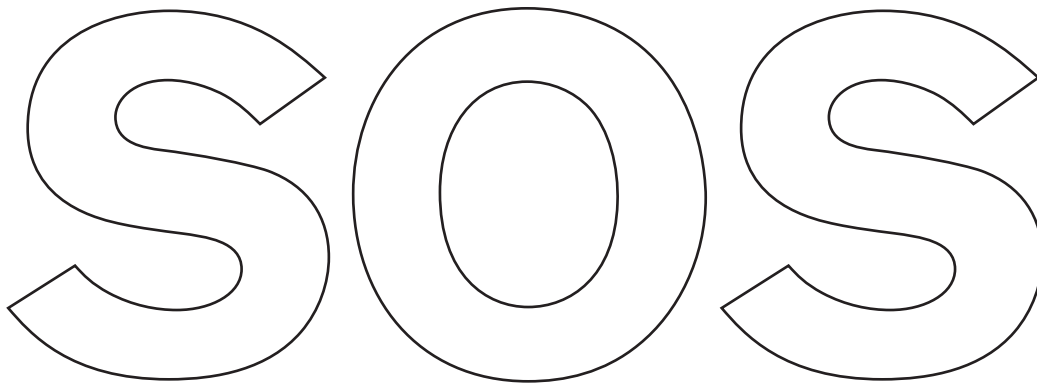
192"

The final transformation is a 6x8 foot SOS distress signal utilizing the entire length of the polytarp. The letters are open for customizations such as adding reflective spray paint so they react to light and become visible in the dark, making the transformation helpful when it comes to signaling for attention.

Tarps have been a common material used by Filipino communities in creating temporary shelters as well as additional protection against harmful elements. This makes it an intuitive choice when it comes to keeping themselves safe during the storm and flooding season.

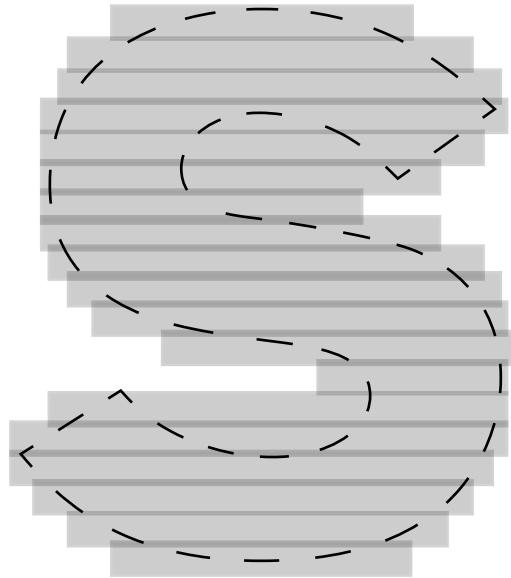
72"

The size and color of the polytarp makes it ideal for air search and rescue operations while also providing additional protection against harmful elements present during the storm as well as its aftermath.



The SOS distress signal transformation contains 36" text that can be read from afar.

Additional enhancements such as attaching reflective adhesive on the letterforms can be applied to make it more functional.



192"

72"

