Design and Fabrication of Survival pod

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Keywords:

Earthquake, Tsunami, Safety, Survival pod, Natural disaster

Introduction:

A tsunami is a series of wave in a water body caused by the displacement of a large volume of water, generally in an ocean or a large lake. Earthquakes, volcanic eruptions and other underwater explosions (including detonations of underwater nuclear devices), landslides, glacier carvings, meteorite impacts and other disturbances above or below water all have the potential to generate a tsunami. Unlike normal ocean waves, which are generated by wind, or tides, which are generated by the gravitational pull of the Moon and the Sun, a tsunami is generated by the displacement of water. Life guard shell is to be mounted inside or outside the home or business establishment. The shell is targeted at communities along coastlines, at sea level and within a potential Tsunami event zone. The shell can be built in different sizes to cater to families ranging from four on upwards. The shell would be especially valuable during a night time event. Reaching high ground may not be an option for many residents. The shell will ensure survivability and is not restricted only to Tsunamis; it is also effective in any potential flooding scenario. Recent studies have shown that increasing populations in coastal areas will expose 2.75 billion people worldwide to the effects of sea level rise and other coastal threats posed by global warming.

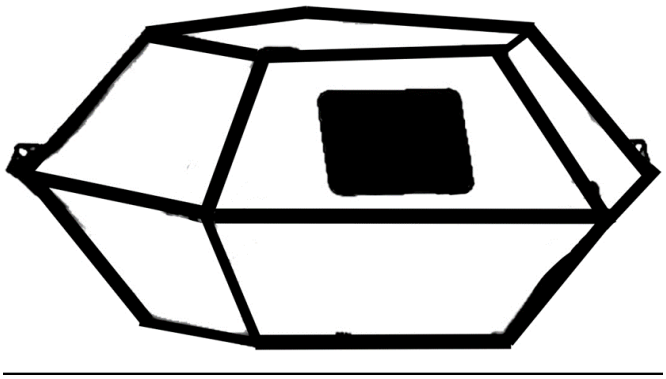
Objectives:

1. To design and fabrication of survival pod.
2. To develop a life guard shell that provides shelter when tsunami occurs.
3. The pod will be designed and stressed using Engineering methods of analysis for load cases such as initial tsunami impact, large debris impact, sharp object penetration and many more.
4. The internal hallow structure combined with external fiber shield will be specially designed for high strength and low weight.

Methodology:

1. The design of the survival pod setup requires manual arc welding for making the frame strong.
2. The sheet should be water proof and it should withstand the wear and tear caused by the heavy water.
3. The survival pod should be designed in such a way that it should keep floating and the structure should be conical so that it would prevent the pod from rotating upside down also anchoring lungs should be provided at the sides to prevent the dislocation of the survival pod.
4. The survival pod should be equipped with GPS system and Oxygen cylinder.

Design Of The Survival Pod

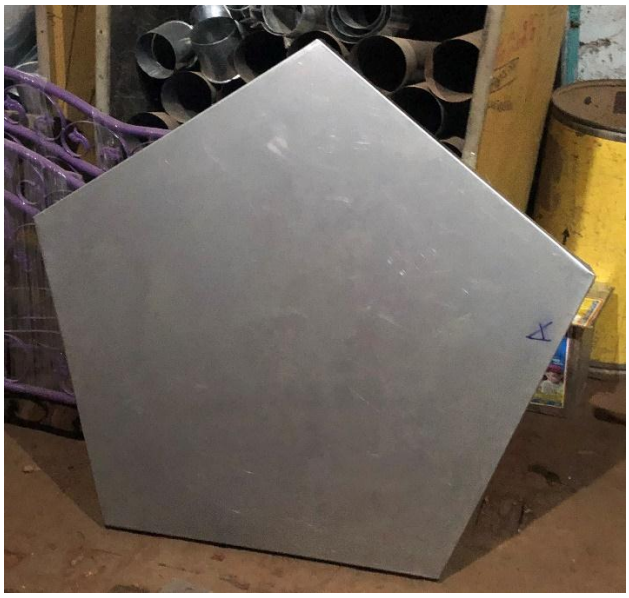


Materials used

Materials used to make the project are listed below

Component	Material
Square pipe for frame	Galvanized iron
Sheets	Galvanized iron
Seat	M.S
Welding rods	M.S
Flat rods	M.S
Solar panel	solar
Cutting and Grinding wheels	M.S

Frame: The frame is made by using galvanized iron of square shape pipes.



Galvanized iron sheets

Result And Conclusion:

1.The survival pod will provide personal safety system that could save life of people during a tsunami event.
2.The survival pod will reduce the search and rescue effort during the post tsunami phase, which will reduce the costs substantially for government and local authorities.
3.The survival pod will be very useful for those people who are living near the coasts of sea.

Scope for future work:

- Although, we consider that the goal of the survival pod has been accomplished, there are plenty of improvements that could be done in order to achieve better results.
- As we have opted galvanized iron for the fabrication of the survival pod, we can use duralumin alloy for more durability and weight reduction of the survival pod.
- Moreover, regarding the mapping and navigation, a satellite phone or a wireless back country device can be used.
- A periscope can be installed to detect the safety environment around the survival pod before exiting.
- Gyroscopic seating arrangement can be installed for more comfort and less stressing of the victim inside the pod