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CRITICAL STUDY ON EMERGENCY TEMPORARY SHELTER FOR EARTHQUAKE DISASTER

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Abstract: - India is an earthquake prone country. Many big earthquakes took place in the past. In many states the frequency of earthquake was very high and as earthquake is a natural event its time and intensity cannot be predicted. Due to earthquake many structures have collapsed so by this study we will try to construct emergency temporary shelter which can be transported very easily. Also it can be packed in small size.

Keywords: Earthquake; Emergency Shelter; Temporary shelter; Portable Structure; Light Weight Structure.



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INTRODUCTION

Earthquake history

An earthquake is the shaking of the surface of the earth, resulting from the sudden release of energy in the earth's lithosphere that creates seismic waves. Earthquake can range in size from those that are so weak that they cannot be felt to those violent enough to toss people around and destroy whole cities.

Total loss:

Table 1: Earthquake history in India

	Place	deaths	Date, time and year	magnitude
1.	Indian ocean	>2,83,106	24/12/2004, 8:05 AM	9.1 - 9.3
2.	Kashmir	1,30,000	8/10/2005, 8:50 AM	7.6
3.	Bihar and Nepal	>30,000	14/01/1934 2:13 PM	8.7
4.	Gujarat	20,000	26/01/2001 8:50 AM	7.7
5.	Nepal	8,964	25/04/2015, 11:56 AM	7.8

Frequency of earthquake

India has had a number of the world's greatest earthquakes in the last century. In fact, more than 50% area in the country is considered prone to damaging earthquakes. The north-eastern region of the country as well as the entire Himalayan belt is susceptible to great earthquakes of magnitude more than 8.0

Service provided till date after earthquake

The government does not directly get involved in the rescue mission but they indirectly help by providing funds to the NGO's and other organizations as mentioned below.

Table 2 services provided by NGO's

Sr.no	Services provided	NGO's	Agencies
1	Health	WHO	UNICEF, UNFPA
2	Shelter and survival	UNDP	UNICEF UNV
3	Livelihoods	UNDP	UNICEF, ILO, UNV, FAO

Type of structure:

1) Folding bamboo house:

Folding bamboo house are relatively cheap in construction as compared to current shelter because of heavy materials are used in this type of construction. Ming tang in China designed the folding bamboo house after the earthquake in 2008 which had 7.9 magnitude. Ming tang used cheap and lightweight materials such as paper fiber, water, cement and bamboo for the construction of folding bamboo house. Main purpose of this folding house was to provide shelter for those who were affected by earthquake and who were homeless after the earthquake.



Fig 1: Bamboo structure post disaster

2) The accordion recover shelter:

This type of emergency shelter is designed by Matthew Malone, Amanda Goldberg, Jennifer Metcalf and Grant Meopham. They use polypropylene as a material. The shelter can form many shapes and provide relief for up to 4 people, while rainwater can be collected from the folds.

(1)



Fig 2: Accordion recovery shelter

3) Portable, retractable tent

Its PVC cover is always attached to the frame, preventing the fabric from becoming dirty or damaged from contact with the ground.

The tent's design is currently testing the durability of the membrane. This is - Flexibility in form - foldability.



Fig 3 : portable retractable tent

Materials:

- Paper fiber
- rope
- Bamboo

- polypropylene
- PVC pipes

Costing

Table 3: materials cost

Sr. no	Materials	Amount (Rs.)
1.	Paper fiber pr sq.meter	550
2.	Bamboo	100
3.	Polypropylene per kg.	250
4.	Rope (3 meter)	150
5.	PVC pipes (1 meter)	75

6. CONCLUSION

There are some drawbacks of the material discussed in research paper. Untreated bamboo is prone to breaking down if it comes in contact with excess moisture. Moreover these materials are costly and they are quite difficult to transport. Hence as a result it is necessary to replace these materials.

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