WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

RESTORATION OF TALIYE GAON

**** Tanmay Poman[1], Shradha Badgire[2], Amol Pawar[3], Abhijeet Sarwade[4], Prof. Kiran Ghorpade[5]***

[1234]Graduation Students, Department of Civil Engineering, Trinity Academy of Engineering, Pune,India.
[5] Assistant Prof., Department of Civil Engineering, Trinity Academy of Engineering, Pune,India.

A B S T R A C T

The Study deals with the main aspects of geological hazard assessment by presenting a review of the GIS based methodology for identification and analyses of hazard. In India every year more than hundred disaster accrues. Whole Maharashtra effectuated from different disasters like a cyclones, tsunamis, earthquake, and volcanic eruption, etc. Landslide is one of the common threats in many parts of the word.

On this day 13th July 2021 landslide is occurred in Taliye Gaon on Mahad at Raigad district rain water is infiltrated in crunical depth of hill and the top soil layers moved under the influence of gravity and destroy the houses, roads and amenities Etc. We are visiting the village and discuss with the villagers and sarpanch Mr. Sampat Tandalekar to know the problem facing and which facilities Govt. can provide to village. Our project deals with the design the Houses in low-cost budget with new built-up technique Expanded Polystyrene Sandwich (EPS) and also design the amenities like primary healthcare villagers, water tank design for whole village, design the road with waste from plastic.

Keywords*: Taliye Gaon, EPS panel, construction, Primary Health Care, Water Tank etc.*

1. INTRODUCTION

In the INDIA every year more than hundred disaster accrues. In these main aspects of Geological hazard assessment by presenting the GIS-based methodology for identification and analyses of hazard. In INDIA Maharashtra State is one the Landslide hazard affected areas. Landslide is a Geological hazard accordin Taliye Gaon on 13th July 2021. The village is located in Mahad at Raigad district, lower reaches of their respective potential threating mountain slope, forest and hilly area, the settlement of the village is scatted butalong the hill slope. Our Research attempted to study understand the cultural, technical, structural, and economics complexities that were in rebuilding those dwellings and coming up with the cost-effective solution.

The dwellings have been designed with stand serve landslides to the best considering the above side aspects illuminated by natural light during the day with and provision for proper ventilation this house drafted foster a healthy living. This research is emphasis in cost effective construction This paper present and applies a conceptual frame work to deal with Nature`s Vulnerability action such as landslide, earthquake, floods, cyclone etc. and also design and preparing estimate the house, amenities like, Water Tank, Roads.

2. LITURATURE SURVEY / BACKGROUND

Expanded polystyrene (EPS) is one of the building material capable of enhancing the design and structural integrity of the building. Since its recognition as conventional insulating material in 1950s, EPS has been experiencing swift progress in other new implementations. Currently, EPS is utilized in many building structures owing to its sustainability benefit and improvement in terms of energy efficiency, durability, and indoor environmental quality.

Landslides are predominant naturally occurring disasters in hilly terrains, often characterized by rugged hills with steep slope associated with loose unconsolidated soil. With its peak occurrence during the monsoon season, the magnitude of its effects can be disastrous depending on certain additional control factors- both natural and manmade.

The present study encompasses the spatial analysis of the landslides prone areas nearby Malin Village using Satellite data along with the field data in a GIS Environment. Using GIS Technique, Thematic layers like lithology, geological structures, slope morphology, geomorphology and land use/land cover for deriving the landslides hazard zones.

This paper forms part of research to solve two main problems in Ghana: firstly, the management of municipal solid waste (MSW), particularly with regards to used plastics which have overwhelmed major cities and towns; secondly, the formation of potholes on roads due to excessive traffic and axle weight. This study examines the effect of blending waste thermoplastic polymers, namely High-density polyethylene (HDPE) and Polypropylene (PP)

in Conventional AC-20 graded bitumen, at various plastic compositions. The use of waste commodity plastics in binder modification carries the advantage of a cheap and effective means of enhancing conventional bitumen binder performance characteristics and is an alternative way to utilize plastic waste.

India, being the sixth largest economy in the world still lacks in per capita income and provisions of fundamental establishments and assets. In that concern, Ministry of HRD, Government of India is trying to inculcate the socio- technological culture in rural India for rectifying these problems. This paper deals with provisions of one of such fundamental establishments, namely, water distribution system for Jambhali Village (Dist: Satara, Maharashtra). The design is based on use of EPANET 2.0 and comprise of a cost-optimized system so as to make it economical for villagers and other stakeholders to bear the expenses of implementation. The design follows various guidelines laid by various Indian Standards created by Bureau of Indian Standards for maintaining the quality of process.

3. PROPOSED WORK / SYSTEM

Natural Disasters, wars and development projects all lead to large scale impacts on social and cultural relationships. Disasters and their adverse impacts set societies back by decades and leave them vulnerable to physical, social and economic hardships. This may inhibit large sections of the affected society to come back even to the base level let alone develop at par with the rest of the nation. This article takes lessons from previous and on-going reconstruction and rehabilitation programs. It puts forward a post disaster response strategy to rebuild lives and livelihoods in a manner that paves a way for long term sustainable development. In both man-made and natural disaster situations the impacts can be mitigated to a large extent through adequate planning and preparedness.

Negative impacts of man-made disaster can be managed, if social, ecological and economic consequences of our actions are considered and development decisions made accordingly. On the other hand, while we can be adequately prepared for a natural disaster, we cannot totally eliminate its impacts. Exploratory meeting with Sarpanch Mr. Sampat Tandalekar for briefing planning &development, process and methodology to be followed for implementation and consent for going ahead with the village. Discuss with the all residents or villagers for understanding the problems, needs and priorities, their vision, participatory mechanism, suggestions from villagers. Carrying out a Socio-economic survey and asking for priorities of development / infrastructure in the village. Preparing the inventory of problems, deficiency in infrastructure, amenities, additional facilities needed. Preparing Development plan of the village based on studying made and analysis carried out, vision and priorities defined, problems identified, needs and requirements of the village in terms ofdevelopment/amenities/services quantified and cost development.

3.1 INTRODUCTION OF EPS PANEL

Introduction of EPS sandwich panel:

EPS (Expanded Polystyrene Board) cement wall panel is filled with polystyrene EPS, Cement and Sand, to form a non-load bearing light weight composite wall panel. The wall panel on both sides is 5 mm calcium silicate board, with the advantage of light weight, economic, environmental friendly, energy saving, anti- earth quake, fire proof , waterproof, sound insulation, heat preservation, enlarge using area, easy and fast installation, recycling use and 2440mm (length)*610mm (width)*75/90/100/120/150 (thickness) sizes are optional. Usually, we suggest to use 75mm thick for simple partition, 90~100mm thick for inner wall partition, 120~150mm thick for outer or exterior wall partition.

Features of EPS panel:

1. High weight the economic benefits, reduce project cost.

The light energy-saving composite wall plate is made of industrial residue fly ash, calcium silicate panel, Ceram site, silicate cement and EPS foam particles as main raw materials, the production process is simple, the cost is low, and the economic benefit is considerable.

2. Advanced technology level.

The industrialization of housing construction in this century has become irreversible. According to the analysis of the development of wall materials in developed countries, the product is in accordance with the development law, which overcomes the defects of other light wall panels and has unique performance, and will be the leader of the new wall material.

3. Sound insulation.

Lightweight sandwich panels have good sound insulation, it is 40dB for 90mm thick wall and much better for thicker panels, the sound effects in the line with national residential sound requirements, much higher than other excuses brick wall of sound effects.

4. Waterproof.

The light partition board can be filled with cement to form a pool body without making any waterproof decoration. The back of the light partition panel can persist in dryness, leave no trace, and will not show condensed water droplets in a humid climate. Light partition panel is a professional waterproof board, with good waterproof, moisture-proof performance, can be applied to kitchen, cleaning room, basement and other wet areas.

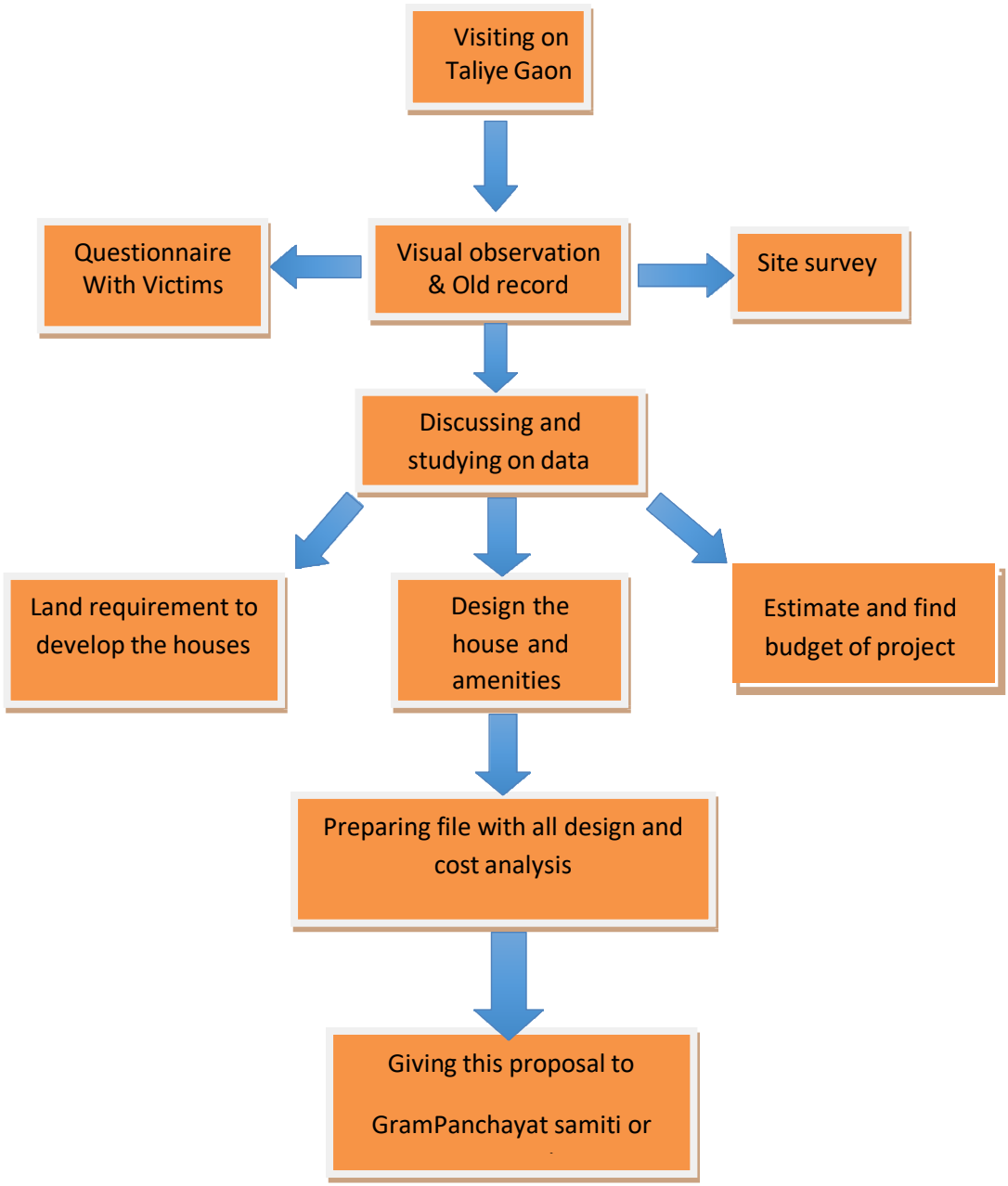
5. Easy to construct, transport and time saving.

Brick masonry construction capacity of 12 individuals for eight hours a day, if use EPS cement wall panel in construction, three people could complete in 60 minutes, so efficiency advantage is very significant

6. Application of cement sandwich panel

It can be used as both interior and exterior partition walls and all kinds of decoration and building construction, and also the best materials for plants, apartments, hotels, office buildings and public constructions, etc.

3.2 METHODOLOGY



3.3 DESIGN PHILOSOPHY AND METHODOLOGY

In this discusses about the structural design of non-load bearing wall panel, load bearing wall panel, floor panel along with the design of EPS panels

General Requirements

- The design shall satisfy the standards of IS 456, IS 1905, IS11447, IS875 (Part 1-5), IS 1893 (Part 1), IS 4326, IS13920.
- Cutting drawings shall be prepared with clarity to facilitate the cutting at the manufacturing plant of the various wall or floor panels to appropriate sizes. In case of wall panels opening for doors, windows etc. shall be suitably marked in the respective panels.
- Plinth beams shall be supported on appropriate foundations, typically comprising spread footings or raft foundations suitably designed.
- In construction using EPS panels as load-bearing structural walling, the walls in the ground floor shall be typically founded on the reinforced concrete (RC) plinth beam, Plinth beams shall be supported on appropriate foundations, typically comprising spread footings or raft foundations suitably designed.
- EPS panels used as walls or floors shall be shotcrete with a concrete of grade not less than M20 using aggregate of size less than 5mm with 40 mm of shotcrete applied to both sides, each panel achieves a fire rating of 90 minutes [EVG].
- The insulation core of expanded polystyrene (EPS) must comply with ASTM C578 and IS 4671: 1984, reinforcement mesh with steel wires shall be used in accordance with ASTM A185 [EVG], the diagonal truss wires, as well as the wire used in the manufacture of welded wire fabric, must be in conformity with ASTM A82 [EVG].
- Special care shall be taken during construction to ensure proper connections at the junction such as plinth to wall panels, wall panel to wall panel, wall panels to slab panel etc.

Specification of EPS wall panel

- Standard panel size of 1200 mm (width) X 3000mm (height) x custom thickness in mm
- Custom sizes available in 2700mm, 2400mm or as required
- Electro-welded high tensile steel wire mesh on both sides of the EPS core which acts in composite with the shotcrete to perform as a stress-skin panel capable of bearing both axial and lateral wall loads
- 3.0mm high tensile steel wire @ 70mm spacing transversely and 2.5mm high tensile steel wire @ 100mm spacinglongitudinally.
- EPS density >15kg/m3
- Panel weight is approximately 15kg
- Max. Wall thickness of 150mm with shotcrete of 35mm on both sides

Fig no. 3.1 construction of EPS wall panels in load bearing structure

Specification of EPS floor panels

- Standard panel size of 1200mm (width) x 3000mm (length) x Custom thickness in mm
- Thickness available in 150mm, 190/200mm, 260mm, 290mm or as required/specified by the Client or his/her engineer
- Electro-welded high tensile structural steel wire mesh on both sides of the EPS core for meeting requirements of BS 8110: Structural use of Concrete. Therefore, no need for specifying separate BRC mesh reinforcement
- 3.0mm high tensile steel wire @ 70mm spacing transversely (As=101mm2/m; fy>600N/mm2)
- 2.5mm high tensile steel wire @ 100mm spacing longitudinally
- EPS density >15kg/m3.

Fig no. 3.2 Construction of Floor in EPS panel

3.4 COST COMPARISON OF EPS CORE PANEL CONSTRUCTION VS. RCC CONSTRUCTION:

Sl. No.	Item of Work	Conventional Type			EPS Panels Type		
		Quantity	Rate as per DSR 2014	Amount (In Rs.)	Quantity	Rate as per SoR	Amount (in Rs.)
	Walling Material						
1.	230 mm thick Brick Masonry inSuper Str.: [(4x76.56x0.23x2.7) - (4x31.92x0.23)] = 160.81 cu.m	160.81 cu.m	5483.55 as per 6.3.1	**881809.70**	888.0 sq.m	1350.00 as per Item No.1 SoR	**1198800.00**

	180 mm thick EPS Panels: [(4x84.64x3.0) - (4x31.92)] = 888.0 sq.m						
	115 mm thick Brick Masonry inSuper Str.: [(4x40.08x2.7) - (4x25.2)] = 332.06 sq.m	332.60 sq.m	665.80 as per 6.13.2	**221085.50**	378.7 sq.m	1124.00 as per Item No.3 SoR	**425658.80**
	130 mm thick EPS Panels: [(4x39.96x3.0) - (4x25.2)] = 378.7 sq.m						
2.	Extra for joining two sheets/ corners strengthening on bothsides EPS Panels: Length = (888.0+378.7)x4.2/3.6= 1477.8 m	-	-	-	1477.8 m	283.00 as per Item No.5 SoR	**418217.40**
3.	Extra for strengthening aroundwall openings on both sides EPS Panels: Length = 4x4x38.9 = 622.4 m	-	-	-	622.4 m	120.00 as per Item No.6 SoR	**74688.00**
	RCC Columns (300 mmx300 mm)						
4.	Quantity of Concrete in s/str.: 4x26x0.3x0.3x3.0 = 28.08 cu.m	28.08 cu.m	7014.55 as per	**196968.56**	-	-	-

			5.33.2				
5.	Centring & Shuttering of Columns in s/str.: 4x26x2x(0.3+0.3)x3.0 = 374.4 sq.m	374.4 sq.m	453.35 as per 5.9.6	**169734.24**	-	-	-
6.	Reinforcement in Columns ins/str.:	4408.6 kg	68.10 as per 5.22A.6	**300222.94**	-	-	-
	L.S. 2% of quantity of conc. i.e. 2x28.08x78.5 = 4408.6 kg						
7.	Quantity of Concrete in s/str.: 4x4x32x0.23x0.3 = 35.33 cu.m	35.33 cu.m	7014.55 as per 5.33.2	**247824.05**	-	-	-
8.	Centring & Shuttering of Beams in s/str.: 4x4x32x(0.23+0.3+0.23) = 389.1 sq.m	389.1 sq.m	332.15 As per 5.9.5	**129239.57**	-	-	-
9.	Reinforcement in Beams ins/str.: L.S. 1.5% of quantity of conc. i.e. 1.5x35.33x78.5 = 4160.0 kg	4160.0 kg	68.10 asper 5.22A.6	**283296.00**	-	-	-
	Roof Slab						
10.	Quantity of Concrete in s/str.: 4x4x32.98x0.11 = 58.04 cu.m EPS Panel Roof: 4x4x32.98 = 527.68 sq.m	58.04 cu.m	7014.55 As per 5.33.2	**407158.15**	527.68	1332.00 as perItem No.2 SoR	**702869.76**

Sr. No.	**Item of Work**	**Conventional Type**			EPS Panel s Type		
		Quantity	**Rate as per DSR 2014**	**Amount (in Rs.)**	**Quantity**	**Rate asper SoR**	**Amount (in Rs.)**

	Roof Slab						
8.	Centring & Shuttering of Slabsins/str.: 4x4x32.98 = 527.68 sq.m EPS Panel Roof ***** : 4x4x32.98 = 527.68 sq.m ***** Since only centring is required for EPS, hence 50% cost of item No. 5.9.3 is being considered.	527.68 sq.m	401.65 as per 5.9.3	**211942.67**	527.68 sq.m	200.83 as per 50% of 5.9.3	**105973.97**
9.	Reinforcement in Slabs in s/str.: L.S. 1% of quantity of conc. i.e.,1.0x58.04x78.5 = 4556.1 kg	4556.1 kg	68.10 as per 5.22A.6	**310270.41**	-	-	-
Total Cost of 527.68 sq.m Covered Area				**3359551.79**			**2926207.93**
EPS Panel Type Structures are 12.9 % Cheaper than Conventional Type Structures (Fig.3.3)							

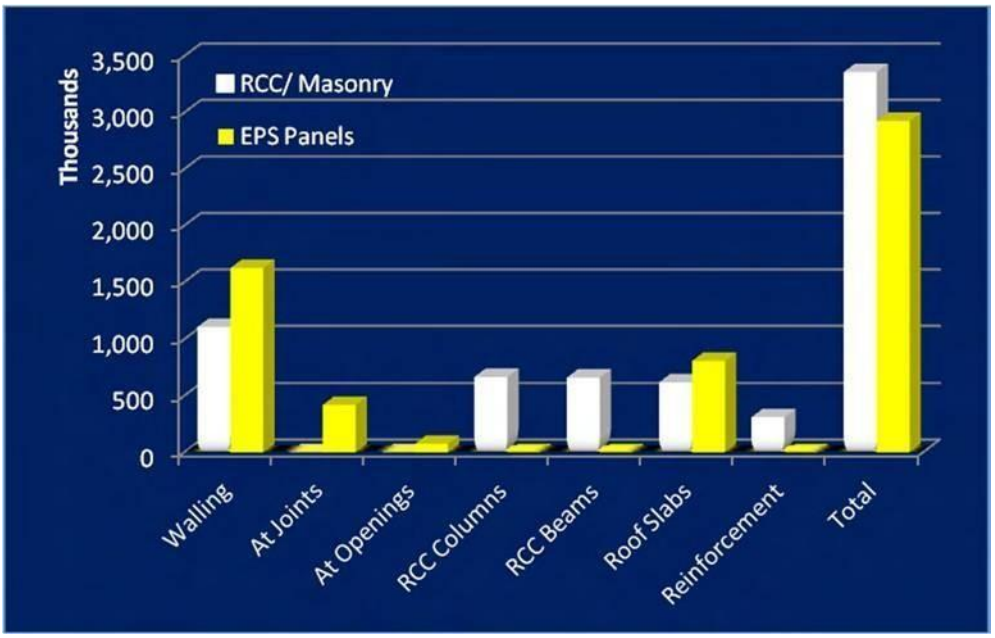


Fig. 3.3 Cost comparison of Conventional type brick masonry & RCC framed structure Vs. EPSCore Panel System

4. CONCLUSION

EPS core Panel system is a modern, efficient, safe and economic construction system for the construction of buildings. It has got the potential in achieving the Government of India's ambitious project "Housing for all by 2022.

After carrying out extensive research, EPS Core panel system is

1) 3 times faster than conventional RCC construction
2) 12 – 14 % cheaper than conventional RCC construction
3) Low carbon footprint, as the material used in the construction is sustainable in nature.

The houses and amenities are designed in low cost at govt. budget providing fund. The product designed iseco-friendly or economical.

A water supply system for a per houses as per need per house and also designed a road for transport.

REFERECNES

[1] Benaradj, Struck (2013)," Rehabilitation of the steppe lyceum in the region of Nama (western Algeria) (vol. no 36, page no. 349).

[2] J.L.Gonzalez Acosta, P.J.Vardon, M.A.Hicks. Study of landslide problems and soil structureScience Direct Engineering Geology 285 (2021) 106043.

[3] Johnson KwabenaAppiah, Victor Nana Berko- Boateng, Trinity AmaTagbor Use of plastic waste materials for road construction in ghana Science Direct Case studies in Construction Materials 6(2017)1- 7.

[4] Kulkarni, Kaleka, Murthy, Duala, (2015) "Forensic analysis of malign landslide in India" International Symposium on Geohazards and Geomechanics (ISGG2015) IOP Publishing IOP Conf Series: Earth and Environmental Science (vol. no. 26, page no. 2-4).

[5] Central Building Research Institute Roorkee. Manual for Exapnded Polystrene Sandwhich (EPS) core panel system pand its field application. Ministry of Housing and Urban poverty alleviation, Government of India, pp 1-152, June, 2017