

New Ferrocete Technology in Construction Industries

Ganesh O. Lonagre1

Assistant Professor, Department of Civil Engineering Mauli Group of Institute Collage of Engineering and Tech., India

ganesh.lonagre66@gmail.com

Abstract—In this era of development and industrialization when number of countries in the world are facing housing problem. Ferrocete technology properly designed and constructed ferrocement structures have proved to be highly durable in normal environmental condition. Ferrocement is emerging as an economical, light weight and durable material in construction industry. In spite of their thin wall walled construction if proper care and precaution are taken in design and casting of these structure and porosity is controlled to make it impervious. Ferrocement is highly versatile composite material which is made up of rich cement mortar and layers of wire mesh closely bound together to create stiff structural form.

The case study relating to the ferrocete technology implementation by various contractors and adopting in the construction industry. It is found that choose appropriate engineering technology identify and mitigation risks that may arise manage based on the practical practice according to the practice they may prevent the risk this technology achieve economy best in construction industry.

Keywords- *Ferrocete*

I. INTRODUCTION

Ferrocement technology is quite popular thought out the world. Ferrocement is a thin element and used as a building construction as well as repair material. Depending upon the nature of work the cement, fine aggregate and water with or without suitable admixture are mixed in specific proportion to produce fresh mortar. Ferrocement combines the properties like less thickness mouldability of ferrocete; lightweight and durable needs no formwork or shuttering for casting and high degree of impermeability so it can be used as variety of structural element like may be used in foundations, walls, roofs. The strength and durability of ferrocement will be fully developed only if it cured. Curing is the process of maintaining the proper moisture content to promote optimum cement hydration immediately after placement.

II. LITERATURE REVIEW

A. Fernandez :

Fernandez and others developed small resistant and low-cost houses which can resistant to natural phenomena and large enough for a family of three adults and three children. The first one prototype had

an octagonal floor with one large space and covered terrace. Suitable for hot climates. The second one 9 square meter, square in plane having privacy and adequate for temperature climates. It is concluded that the use of ferrocement as a building material in seismic zone is advantageous and can provide safety to the occupants and also greater amount of cost reduction.

B. Lau Joo Ming :

Lau Joo Ming briefed the development of ferrocement product for public housing construction the housing development board (HDB) experience. In Singapore since 1999. Where a massive public housing upgrading programmed was in place. Ferrocement water tank. Ferrocement as a cost-effective cladding material, service ducts and they have also offered various suggestion for improving mix design. Use of high-performance acrylic polymers in ferrocement and use of colored ferrocement.

III. PROBLEM STATEMENT & OBJECTIVE

In this case studies ferrocete technology use in construction industry in all over country researchers and contractor some problem and achieve economy are

discussed and steps to be adopted achieve economy in use of this technology.

OBJECTIVE

1. To adopt and suggest ferrocrete technology to achieve economy in construction of banglow and farm houses.
2. To use practical experience, achieve economy in construction

A. Adopting the ferrocrete technology :

Nandkumar Shankar Jadhav At. Post Gove Tq. Satara Dist Satara is an self ferrocrete contractor of constructed to the own Banglow area 2377 sq. feet in use of ferrocrete technology is one of the most inexpensive and alternative construction technique as compare to the conventional technology.

Fig No. 1 as below

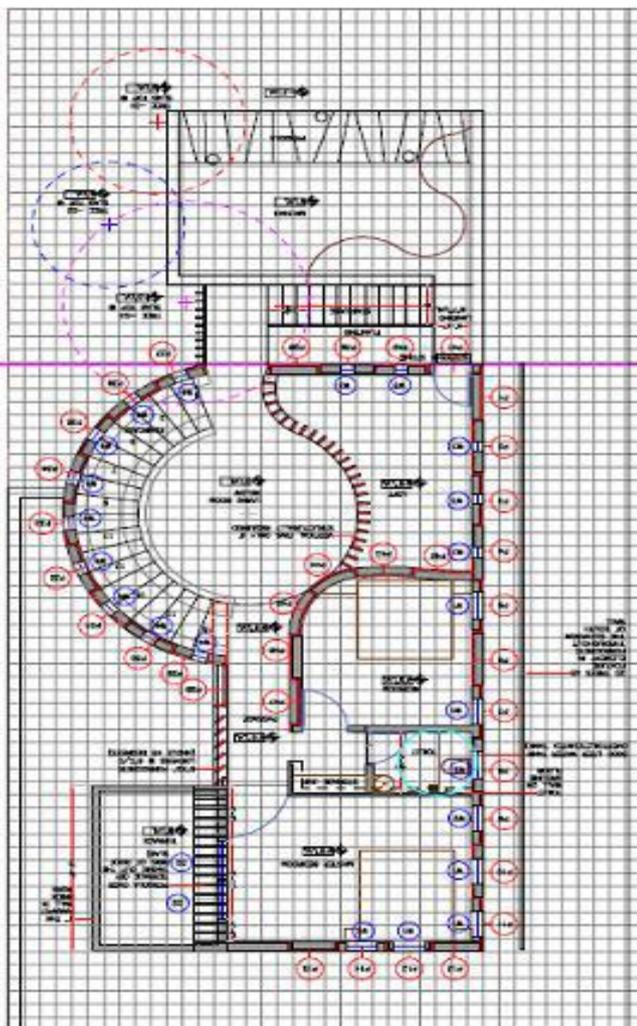


Fig. No.1 Plan of Case study

B. Need of ferrocrete technology

Ferrocement is highly versatile form of reinforced concrete made up of wire mesh, sand, water, and cement which possesses unique qualities of strength and serviceability. It can be constructed with a minimum of skilled labour and utilizes locally available material. There is several applications of ferrocement which include building industry, irrigation sector, and water supply and sanitation areas. Studies indicate that it appears to be excellent composite in the case of seismic resistant structure.

Ferrocement is a building material composed of a relatively thin layer of concrete, covering such reinforcing material steel wire mesh. Because the building technique is simple enough to be done by unskilled labour, ferrocement is an attractive construction method in areas where labour costs are low. There is no need for the complicated formwork reinforced cement concrete (RCC) construction, or for the welding needed for steel construction, everything can be done by hand and no expensive machinery is needed. The thickness of ferrocement generally ranges from 25-50 mm.

Architects in practice about the use of ferrocement are one of the flexible solutions to develop their ingenious and aesthetic design.

C. Taking decision of selection of ferrocrete technology

Developing country is experience huge population growth in cities due to rapid urbanization resulting in urban congestion and increased demand of mass accommodation in face of frequent natural disasters and climate change impart. This ferrocrete technology. Achieve economy construction of houses and banglows so

the material required should be locally available and strong enough to make durable building material. There is considerable reduction in self-weight of the structure and saving in foundation cost. Transportation cost is also less few suggestions of this study on ferrocement are that care should be taken to mix the cement mortar and apply to the reinforcing mesh as per the required technical specifications, and more emphasis should be paid in selection of a rich cement-sand ratio and lower water-cement ratio for the ferrocement mortars, as specified by the ACI Codes.

D. Case study findings

By systematic adopted of ferrocete technology and many researchers work on this technology also contractor practices many benefits related to the economy to reduce the project cost. from the drawing the quantities of the material steel, sand, mesh, cement can be calculated also this are used for casting for skeleton steel, form the bar diameters and their spacing in two direction the weight per unit area can be obtained.

- What is ferrocete
- Raw material, skills, tools, and plants.
- Design of ferrocete structures.
- Structural properties of ferrocete.
- Methods of constructing ferrocete structure.
- Strength through shapes.
- Cost analysis.

This will help architects to form a baseline to liberate his creativity in design. Ferrocement technology user lesser amount of material thus reducing the natural resources consumption. It is also observed that avoid bad compaction and poor workmanship Better business course. According to the ACI define thin wall reinforced concrete.

V. RECOMMENDATIONS & CONCLUSIONS:

A. RECOMMENDATIONS :

Ferrocete technology is the technology providing the ample opportunity for business to complete globally. In construction industry have very different requirement and procedure to using this technology managing requirement of clients regarding their own houses and banglows are constructed and archives expenses of all the activity regarding the construction. The practices to this technology are more beneficial to the clients.

B. CONCLUSION

It is found that to use that appropriate ferrocement engineering technology this technology user lesser amount of materials thus reducing the natural

resources consumptions. The efficiency of the construction process is increased due to the methods employed at every stage of the process. Ferrocete structure can be produced using various available technique but all the available techniques may not be suitable for particular structure at the place. A technique for which facilitate are locally available could be selected and used precautions and proper supervision is necessary for ablonging the quality of the structure.

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