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Prefabricated Sandwich Panel System in India

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***Abstract*—** *In a recent period, construction sector is fastest growing sector in India because day by day population increases in rapidly which needs the shelter. The construction sector use vast amount of natural recourses and produce significant quantity of construction and demolition waste. These wastages lead lots of environmental effect. This result requires new technology to overcome this problem which is Prefabricated Sandwich Panel System in India.*

I. INTRODUCTION

Prefabrication is nothing but to collect segment for manufacturing the structure which is prepared in factory and transporting and fixing at site. In china, Australia, Africa and Gulf countries already established factory made prefabricated sandwich panel system. Prefabrication method gives designer for assembling their structure in short period of a time. It also allows the designer to use different kind of material, mostly prefer to light weight ones. Generally woods and steel combination is used but these technology needs high level of knowledge and experience. This system replace conventional brick and mortar in load bearing and non load bearing walling for residential and commercial building. In this system cement panel are manufactured at the factory in controlled condition which are dispatched to the site and reduced the erection work at site which one is headache part of construction site. It gives more help to clean and dust free site.

In India, under a global housing technology challenge ministry of housing and urban affairs using this type of technology in INDOR, MADHYAPRADESH to make light house. RISING JAPAN INFRA is technology provider and contract with KPR PROJRCTCON PVT. LTD.

II. OBJECTIVE

The aim of this type of technology is to the efficiency of construction system that is sustainable, eco-friendly and disaster resilient. This technology is to be cost effective and speedier with quality construction of building to meet the desirable functional needs

III. METHODOLGY

In this technology, Factory made pre fabricated sandwich panel system is made out of cement or calcium silicate boards and cement mortar with EPS (Expanded Polystyrene) granules balls and act as wall panel. Prefabricated channel system can be divided according their uses is materials, methods and structural configuration. In structural configuration have also sub part which is frame, panel and cells system. In this paper discussed about how it works. In this technique firstly steel column may be hoisted. Hoisting sequence should be reasonably arranged to prevent structural tilt. After secondary beam and column bracing need to be assembled by floor steel stair case installation firstly column and beam installation. Secondly platform will be placed at last pound rail and stair step installation, laying rebar trust deck. Welding stud bind rebar and other pipe line before pouring concrete. When concrete reaches the

design strength remove the bottom templates of the truss deck.

Fig.1: Steel structure installation

Wall installation:

(i) Interior wall installation:

Cement EPS sandwich panel fixing U-type clips into pre-determined position. Bonding Adjacent seams with polymer mortar. This is shown in fig.2.

Fig.2: Insert the wall -brush mortar in adjacent surface-install two pair U type clip up and down with nailing-insert the wall

Light steel keel partition firstly installing vertical and then horizontal. Fixing calcium silicate board on one side, filling rock wool and other pipe line at last. Fixing the calcium silicate board on the other side. This is shown in fig.3

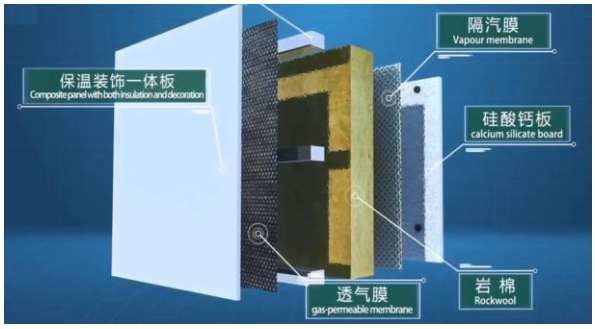

Fig.3: layers of panel system

(ii) Exterior wall installation

Autoclave aerated concrete strip board at first installing fixing the clip then lifting the board to pre determined position and fixing with book bolts adjacent seams with polymer mortar.

Light steel keel exterior wall first installing it gives exterior insulation; decorative board with specific clips them laying waterproof and breathable film inside and filling Rockwool afterwards. Laying other breathable film and sealing interior wall with calcium silicate board which gives water proofing and roof insulation and lighting protection facilities. This is shown in fig 4.

Fig.4: Exterior wall installation

This type of technique has some special core features like;

- Being dry waling system increases the speed of construction and there is no use of water for curing means water conservation.
- The sandwich panels have light weight material as core material, which brings resource efficiency, better thermal insulation, acoustics and energy efficiency. Because of light weight results in lower dead load building and foundation size.
- This system provides less formwork, fast and easy installation that is cost effective and time saving.

- This novel technique gives fast and aesthetic solution and budget friendly for its longevity.
- The lightness of sandwich panel allows to gain advantage of expansion and renovation work without interrupting everyday activities in the building.
- The panel are both economic and practical as they can be dissembled and reused.
- Tranportaion and handling is easy due to light weight.

IV. RESULTS

This technology is familiar but not used in India, Pre fabricated sandwich panel system represent better thermal performance, light absorbing, water proofing and material saving. Therefore investment in the precast construction, taking account high demand to save environment and recycle or reuse of material of building. This type of technology is the best solution of revival of construction sector and economic recovery.

V. CONCLUSION

Now a days world facing a global crisis and environmental protection which requires a new or innovative technology, reuse of wastages, cost effective material, and economic structure as a whole. This type of innovative techniques gives sustainability, more eco-friendly and cost effective. To meet the demand civil engineer and architect dealing with this technique gives a better, fast and standard construction.

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