

CATEGORY

BUILDING SYSTEMS



PRODUCT / TECHNOLOGY



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Technology Detail

CONTAINER HOUSING

An affordable alternative for EWS & LIG housing



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Video

CONTACT DETAILS

IIT Kharagpur

Contact Person: Prof. Subrata Chattopadhyay, Dr. Haimanti Banerji
Address: Department of Architecture and Regional Planning,
Kharagpur-721302, West Bengal
Email: schat@arp.iitkgp.ernet.in, haimanti@arp.iitkgp.ernet.in
Tel: +91-9434005801; +91-9830469410



BRIEF

Abandoned Railway and Shipping Containers of sizes 20' (L) X 8' (B) x 8'6" (H) are repurposed to be used as housing. The available container sizes are suitable for modular construction of EWS and LIG housing units of 30 sqm. and 60 sqm. of carpet areas respectively.

The technology is suitable for individual /scattered & low to medium height (G+3) houses. The container architecture is increasingly accepted with a great variety of applications, from simple emergency temporary housing to multi-functional, complex layout of various building types. In addition to affordable housing solutions, the technology also has scope for application for high end housing & various other building spaces with suitable internal and external treatment.



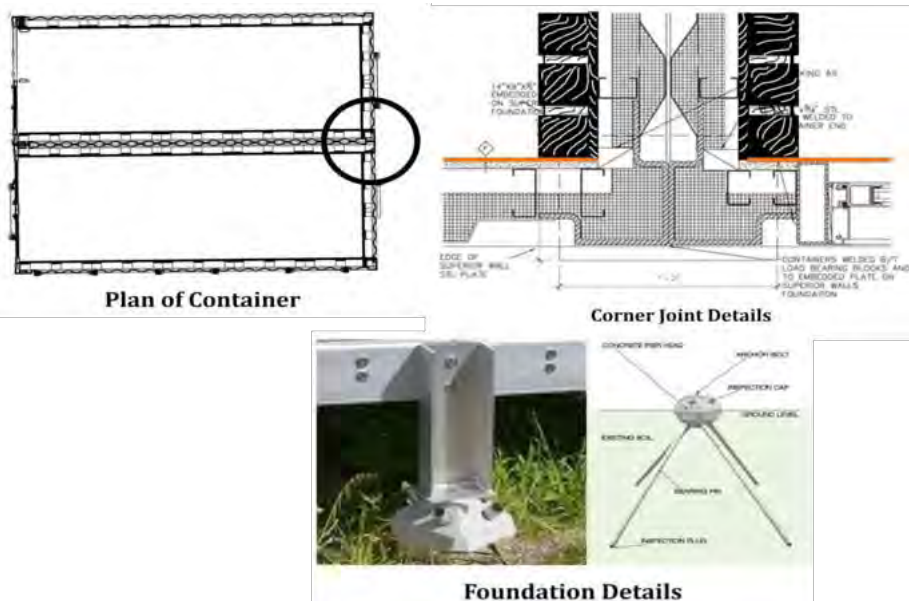


SALIENT FEATURES

- Upcycling and repurposing of abandoned container is eco-friendly option.
- Containers are strong and durable, will enable housing units to support high live & dead loads. Other qualities include earthquake resistance, less maintenance requirement, and termite resistance.
- The housing units can be dismantled and reused at a different site.
- This is a modular construction system with minimum requirement for cutting and welding. It is easy to assemble and no skilled workmanship required.
- High construction speed, it requires 3 weeks time for making ready a container home.

ECONOMIC ASPECTS

- The technology will ensure approximately 30 - 40 % reduction in cost over conventional construction of similar categories. Construction cost per unit is independent of economy of scale which does not depend upon the volume of work/number of units constructed.
- Reuse of containers for buildings results into a significant decrease in embodied energy.





SUSTAINABILITY ASPECTS

- There is a win-win situation since the containers are put to re-use beyond the 'active service age' with a new lease of life. The housing units can be dismantled and reused in a different site. Global warming potential (GWP) impact of the container house is at about 14.2 kg CO₂ eq./m²/year, over the whole life cycle, which is lesser than for timber and concrete houses at 22.3 and 38 CO₂ eq./m²/year, respectively.
- Huge expenses are otherwise involved in destructing or transporting back the containers. Also, containers are disposed to some landfill site, wherein huge space is occupied since the material is non-degradable.

SUITABILITY & AVAILABILITY

- Applicable to all climate conditions. However, proper treatment for thermal insulation is essential for enhancing indoor livability.
- Though containers are more readily available in locations close to railway and shipping yards, however used containers can be purchased online for any site across the country.



Photo source: World Wide Web



LIMITATIONS, IF ANY

- Sensitization and confidence building measures are required for social acceptability.
- There is a lack of standards for connection methods between containers and container to foundation which needs to be developed individually according to each project.
- The technology is resistant to earthquake, cyclone, flood and flash flood. However, field validation is required.

MARKET LINKAGES

The proposal is at academic research stage at IIT Kharagpur.

DETAILS OF PROJECTS

- No projects at this stage, further research is required.

CERTIFICATION/INDIAN STANDARD/ ENDORSEMENT

- Proposal is in embryonic stage, with academic research work at IIT, Kharagpur in 2012 and 2019. It requires further study, evaluation & Certification.



Photo source: World Wide Web