No. I-11019/05/2019–HFA-V-UD (FTS-9058698)
Government of India
Ministry of Housing and Urban Affairs
(HFA-V Section)
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Room No.3, Technical Cell, Gate No. 7,
Nirman Bhawan, New Delhi-110011,
Dated: 28.05.2019.

OFFICE MEMORANDUM

Sub: **Technical Evaluation Committee (TEC) report for shortlisting of Proven Technologies for Participation in bidding for construction of Light House Projects (LHPs) – reg.**

The undersigned is directed to state that the Ministry of Housing and Urban Affairs (MoHUA) has conceptualized the Global Housing Technology Challenge – India (GHTC-India) as a platform with which a holistic eco-system can be facilitated such that appropriate technologies from around the world and relevant stakeholders can be catalyzed towards effecting a technology transition in the country's housing and construction sectors. The challenge has three components i.e. (i) Conduct of a biennial Construction Technology India, Expo-cum-Conference, to provide a platform for all stakeholders to exchange knowledge and business, (ii) Identifying Proven Demonstrable Technologies from across the world, and mainstreaming them through use in Light House Projects (LHPs), (iii) Promoting Potential Future Technologies through the establishment of Affordable Sustainable Housing Accelerators- India (ASHA-India) for incubation and accelerator support.

2. GHTC-India was launched by Hon'ble Minister of State (Independent Charge), MoHUA on 14.01.2019 at Press Conference Hall, National Media Centre, Press Information Bureau, New Delhi. Subsequently, Construction Technology India – 2019 (CTI-2019): Expo-cum-Conference was held at Vigyan Bhawan, New Delhi during 02-03 March, 2019 to bring together multiple stakeholders involved in innovative and alternative housing technologies, for exchange of knowledge and business opportunities through an exhibition, thematic sessions, panel discussions and master classes. The Expo was inaugurated by Hon'ble Prime Minister of India in the presence of Hon'ble MoS (I/C), MoHUA.

3. The applications were invited online globally through a dedicated websitefrom proven technology providers, potential technology providers, Indian partners and delegates consisting representatives from various Academic Institutes, representatives of technology providers and Government officers/ officials. The last date for submission of forms online for Proven Technology was 28 February 2019.

4. CTI-2019 had about 3500 visitors including 2500 delegates from 32 countries. The exhibition had 188 stalls in which 60 Proven Technology Providers, 72 Potential Technology Providers and 51 Indian Partners applied and participated in CTI-2019. 23 States/ UTs also exhibited progress of PMAY(U) in the Expo through showcasing prototypes of housing projects constructed. The stalls of various Missions such as Smart City,Atal Mission for Rejuvenation and Urban Transformation(AMRUT), Heritage City Development and Augmentation Yojana(HRIDAY), Swachh Bharat Mission (SBM) and National Urban Livelihoods Mission (DAY-NULM) of MoHUA were also exhibited in the Expo.

5. A Technical Evaluation Committee (TEC) under the chairmanship of the Director General, CPWD has been constituted for detailing the technical parameters for inviting and evaluating the eligibility of applicants for the various streams including LHPs. TEC interacted with applicants, who submitted online applications under Proven Demonstrable Technology category for GHTC-India. Technical presentations of their technologies were made before the TEC during CTI-2019. Out of 60 applications, 54 applications were for Proven Technologies, which were finally evaluated as per eligibility criteria. The remaining 6 applicants were mainly equipment/product manufacturers which did not qualify under Proven Technology.

6. Based on the TEC recommendations, 54 technology providers were found eligible for participating in bidding for construction of LHPs. The list of 54 eligible technology providers is attached herewith.

7. This issues with the approval of competent authority.

28/5/19

(B.K. Mandal)
Under Secretary to the Government of India
Tel: 23061825
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Encl: As above.

To:

All the concerned technology providers

Copy for information to:

i. PS to Hon'ble MoS (I/C), MoHUA
ii. PSO to Secretary, MoHUA
iii. PS to JS&MD (HFA), MoHUA
iv. PA to Director (HFA-V), MoHUA
v. GHTC-India website for information

TEC's recommendations on technologies along with recommended locations for Light House Projects:

S. No.	Technology broad specification	Applicants	Recommendations	Recommended Locations for Lighthouse Projects
A. Precast Concrete Construction System - 3D Precast volumetric (4)				
1	Pre-cast concrete system with columns, beams, walls, slabs, hollow core slabs & also 3D Volumetric components	Katerra	Suitable up to seismic zone IV.	1.Lucknow, Uttar Pradesh 2.Rajkot, Gujarat 3.Ranchi, Jharkhand 4.Indore, Madhya Pradesh, 5.Chennai, Tamil Nadu(with external wall insulation)
2	Vertical structural modules cast in Plant/Casting yard are assembled together through casting of floor panel. The unit is transported & installed at site.	Moducast Pvt. Ltd	Suitable up to seismic zone IV. Requires proper access to site & special transport logistics. Suitable up to G+3 due to limited hoisting capacity	
3	3D Modular casting using steel mould and high performance concrete of building modules in factory. These pods are transported to the construction site & assembled	Magicrete Building Solutions,	Suitable up to seismic zone IV. Site must have accessibility & technology needs special transport logistics	
4	Modules with 3D Volumetric Precast concrete unit, various units make on house	Ultratech Cement Ltd,	Suitable up to seismic zone IV. Site must have accessibility & technology needs special transport logistics	
B. Precast Concrete Construction System – Precast components assembled at site (8)				
5	Precast Large Concrete Panel (PLCP) System with structural members (wall, slab etc.) cast in a factory/ casting yard and brought to the building site for erection & assembling	Larsen & Toubro	Suitable up to seismic zone IV.	1.Lucknow, Uttar Pradesh 2.Rajkot, Gujarat 3.Ranchi, Jharkhand 4.Indore, Madhya Pradesh, 5.Chennai, Tamil Nadu (external wall insulation needed in case brick/block masonry not used in external walls)
6	Pre-cast Concrete Structural system comprising of pre-cast column, beam, precast concrete / light weight slab, AAC blocks/ infill concrete walls.	B.G. Shirke Construction Technology Pvt. Ltd	Suitable up to seismic zone IV.	
7	Optimal Pre-cast concrete System through structural Analysis, design & equipment support	Elematic India,	Suitable up to seismic zone IV. The firm needs to tie up with a construction Agency.	
8	Precast concrete construction system using precast walls with precast plank floor	PG Setty Construction Technology Pvt Ltd,	Suitable up to seismic zone IV	
9	Pre cast components comprising of beams, coloumns, staircase, slab, hollow core slab etc. manufactured in plant & erected on site	Teemage		
10	Pre-cast sandwich panel system & Light weight Pre cast Light Weight concrete slab	Nordicflex		
11	Prefabricated Interlocking Technology (without mortar) with Roofing as Mechnized Precast R.C. Plank & Joist system	Adalakha Associates Pvt. Ltd	Suitable up to G+3 storeys & Seismic Zone – IV	

S. No.	Technology broad specification	Applicants	Recommendations	Recommended Locations for Lighthouse Projects
12	Large Hollow wall prefab concrete Panel (lightweight, interlocking, concrete panel) using factory produced large standard hollow interlocking concrete block	William Ling,	Suitable up to seismic zone IV.	
C. Light Gauge Steel Structural System & Pre-engineered Steel Structural System (16)				
13	LGS Framing with various walling & roofing options	Mitsumi Housing Pvt. Ltd,	Suitable for G+ 3 storeys. Hybrid with steel frame for high rise Panelling materials to be used should meet the site specific quality and durability requirements .	1.Lucknow, Uttar Pradesh 2.Rajkot, Gujarat 3.Ranchi, Jharkhand 4.Agartala, Tripura 5.Indore, Madhya Pradesh, 6.Chennai, Tamil Nadu
14	LGS Framing with various walling & roofing options	Everest Industries Ltd,		
15	LGS Framing with various walling & roofing options	JSW Steel Ltd.,		
16	LGS Framing with various walling & roofing options	Society for Development of Composites,		
17	LGS Framing with various walling & roofing options	Elemente Designer Homes,		
18	LGS Framing with various walling & roofing options	MGI Infra Pvt. Ltd.,		
19	LGS Framing with various walling & roofing options	RCM Prefab Pvt. Ltd,		
20	LGS Framing with various walling & roofing options	Nipani Infra and Industries Pvt. Ltd.,		
21	LGS Framing with various walling & roofing options	Strawcture Eco		
22	LGS Framing with various walling & roofing options	Visakha Industries Ltd.		
23	Prefabricated steel structural system with Dry wall system as AAC panels, Puf panels etc	RCC Infra Ventures Ltd.	Suitable technology	
24	Hot rolled steel frame with speed floor	Jindal Steel & Power Ltd.	Suitable technology with accepted walling components.	
25	Hot rolled steel section with AAC Panels as floor & slab	HIL Ltd.		
26	AAC wall and roof panel system to provide integrated solution. AAC products are reinforced and used in both load and non-load bearing applications.	Biltech Building Elements Ltd	Suitable up to G+1 (Load bearing) Suitable with steel frame for high rise	
27	AAC Panels are Wire mesh/ steel reinforced for use as wall & slab. Appears to be non load bearing panels to be used with structural framing.	SCG International India Pvt Ltd		
28	Precast Light Weight Hollow-core wall Panel is a non-structural construction material with framed structures.	Pioneer Precast Solutions Private Limited	Suitable with steel frame	
D. Prefabricated Sandwich Panel System (9)				
29	Reinforced Expanded Polystyrene sheet core Panel with sprayed concrete as wall & slab	Worldhaus	Suitable for G+ 3 storeys.	1.Lucknow, Uttar Pradesh 2.Rajkot, Gujarat 3.Ranchi, Jharkhand 4.Agartala, Tripura 5.Indore, Madhya Pradesh, 6.Chennai, Tamil Nadu
30	EPS Cement sandwich Panel): wall & slab with EPS Cement sandwich Panel to be used with RCC or Steel structural frame. Load bearing upto G+1 storey	Bhargav Infrastructure Pvt.Ltd	Suitable up to G+1 (Load bearing) Hybrid with Steel/RCC frame for multi storey	

S. No.	Technology broad specification	Applicants	Recommendations	Recommended Locations for Lighthouse Projects
31	EPS Cement sandwich Panel): wall & slab with EPS Cement sandwich Panel to be used with RCC or Steel structural frame. Load bearing upto G+1 storey	Rising Japan Infra Private Limited		
32	Reinforced Expanded Polystyrene sheet core Panel with sprayed concrete as wall & slab	Bau Panel Systems India Pvt Ltd,	Suitable for G+ 3 storeys.	
33	Reinforced Expanded Polystyrene sheet core Panel with sprayed concrete as wall & slab	BK Chemtech Engineering		
34	Reinforced Expanded Polystyrene sheet core Panel with sprayed concrete as wall & slab	MSN Construction		
35	Reinforced Expanded Polystyrene sheet core Panel with sprayed concrete as wall & slab	Beardshell Ltd.		
36	Pre-fab PIR (Poly-isocyanurate) based Dry Wall Panel System" as non-load bearing wall	Covestro India Pvt. Ltd.,	Suitable with steel frame	
37	Sandwich panels as wall & slab	Project Etopia Group	Suitable for G+ 3 storeys.	
E. Monolithic Concrete Construction (9)				
38	Aluminium form work system for Monolithic Concrete construction	Maini Scaffold Systems	Suitable technology	1.Lucknow, Uttar Pradesh 2.Rajkot, Gujarat 3.Ranchi, Jharkhand 4.Agartala, Tripura 5.Indore, Madhya Pradesh, 6.Chennai, Tamil Nadu(with external wall insulation)
39	Aluminium form work system for Monolithic Concrete construction	KumkangKind India Pvt. Ltd		
40	Aluminium form work system for Monolithic Concrete construction	S-form India Pvt. Ltd.,		
41	Aluminium form work system for Monolithic Concrete construction	ATS Infrastructure Ltd.		
42	Aluminium form work system for Monolithic Concrete construction	Innovative housing & Infrastructure Pvt. Ltd		
43	Aluminium form work system for Monolithic Concrete construction	MFS formwork Systems Pvt. Ltd.		
44	Aluminium form work system for Monolithic Concrete construction	Knest Manufacturers LLP		
45	'Tunnel form' construction technology, an cast in situ RCC system, based on the use of high-precision, re-usable, room-sized, steel forms or moulds for monolithic concrete construction	Outinord Formworks Pvt. Ltd.	Suitable technology	
46	Aluminium form work system for Monolithic Concrete construction	Brilliant Etoile	Suitable technology	
F. Stay In Place Formwork System (8)				
47	Expanded-Steel Panel reinforced with all-galvanised Steel Wire-Struts serving both as the load-bearing steel structure and as the stay-in-place steel formwork filled with EPS-alleviated concrete	JK Structure	Suitable for G+3 storeys	1.Lucknow, Uttar Pradesh 2.Rajkot, Gujarat 3.Ranchi, Jharkhand 4.Agartala, Tripura 5.Indore, Madhya Pradesh,

S. No.	Technology broad specification	Applicants	Recommendations	Recommended Locations for Lighthouse Projects
48	Factory made prefab Glass fibre reinforced Gypsum cage panels suitable for wall & slab with reinforcement & concrete as infill as per the requirement	FACT RCF Building Products Limited,	Suitable up to 10 storeys in seismic zone–III, & up to 6 storeys in seismic zone-V if conforming to design requirements.	6.Chennai, Tamil Nadu
49	Structural Stay In Place Galvanized Steel formwork system for walling with the same bottom single layer formwork for slabs/ in-situ slab	Coffor Construction Technology Pvt.Ltd	Suitable for G+3 storeys.	
50	Factory produced PVC Stay in place formwork with concrete & reinforcement in walling units with cast in-situ RCC Slab	Joseph Jebastin (Novel Assembler Private Limited),	Suitable Technology	
51	Fully load bearing walls with 150 mm monolithic concrete core sandwiched inside two layers of EPS as walling The forms are open ended hollow polystyrene iterlocking blocks which fits together to form shuttering system	Reliable Insupack	Suitable up to G+3 in Seismic Zone V and higer storeys in Seismic Zone IV as per design	
52	Ready to use Stay in place polymer formwork, light weight, with flooring slab (combination of ferro cement and natural stone) placed on RCC precast joists)	Kalzen Realty Pvt. Ltd	Not suitable as the system presented by the applicant does not qualify as a proven technology. However, it is suitable Technology as Stay in place preassembled PVC wall forms along with cast in-situ RCC slab.	
53	Fast Bloc, Insulated Concrete Form (ICF), acts as formwork for concrete and rebar, Coloumn/post and beam construction, creating an strong skeleton in the walls.	Fastbloc Building Systems	Suitable up to G+3 in Seismic Zone V and higher storeys in Seismic Zone IV as per design	
54	Formwork system "Plaswall" with Two fibre cement boards (FCB) & HIMI (High Impact Molded Inserts) bonded between two sheets of FCB in situ and erected to produce a straight-to-finish wall with in-situ concrete	FTS Buildtech Pvt.Ltd	Suitable up to G+3 in Seismic Zone V and higher storeys in Seismic Zone IV as per design	

Eligible technologies grouped by TEC in six broad categories

S. No.	Broad Technologies	Number of Applicants
A.	Precast Concrete Construction System - 3D Precast volumetric	04
B.	Precast Concrete Construction System – Precast components assembled at site	08
C.	Light Gauge Steel Structural System & Pre-engineered Steel Structural System	16
D.	Prefabricated Sandwich Panel System	09
E.	Monolithic Concrete Construction	09
F.	Stay In Place Formwork System	08
	Total	**54**

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