



आत्मनिर्भर भारत

भारत सरकार

केंद्रीय लोक निर्माण विभाग

तकनीकी अनुप्रयोग एवं मानक एकाई

कमरा सं० 418 ए-विंग, निर्माण भवन, नई दिल्ली।

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F. No. 17/SE(TAS)/BMTPC/2022/ 105-एडो
कार्यालय ज्ञापन

Dated: 24/03/2022

Subject: Adoption of New & Emerging Technologies in construction works undertaken by CPWD- reg.

- Reference:**
1. OM No. 133/SE(TAS)/DSR/2018-19/464-H dated 06.11.2018
 2. OM No. 133/SE(TAS)/DSR/2018-19/519-H dated 16.11.2018
 3. OM No. 133/SE(TAS)/DSR/2018-19/16-H dated 07.01.2019
 4. OM No. 133/SE(TAS)/DSR/2019/115-H dated 12.03.2019
 5. OM No. 17/SE(TAS)/BMTPC/2019/531-E dated 03.04.2019
 6. OM No. 133/SE(TAS)/DSR/2019/376-H dated 17.09.2019
 7. OM No. 17/SE(TAS)/BMTPC/2020/381-H dated 23.09.2020

Structural system of any building is based on the capacity of the materials used to bear the imposed loads and vulnerability of the site where the structure is to be constructed. Above referred OMs were issued from time to time to authorize use of new and emerging technologies in public works. In order to streamline and in supersession of above OMs, it is now decided to categorize these technologies as per structural systems into Permanent Structures-Concrete and Steel Structural Systems Table-1A & 1B respectively, Semi-permanent Structures-Structural Systems Table-2 and Construction Materials Table-3. The Tables 1A, 1B & 2 also show the suitability of the technology with respect to seismic zone and restrictions on number of storey for each technology for guidance.

Table-1A
Permanent Structures- Concrete Structural System Technologies

S. No.	Name of Technology	Seismic zone Suitability	Maximum number of Storeys
1	2	3	4
A. Precast Concrete Construction Systems			
1	Pre-cast concrete system with columns, beams, walls, slabs, hollow core slabs & also 3D Volumetric components- Technology needs special transport logistics	All zones except zone V	Any number
2	3D Modular casting using steel mould and high performance concrete of building modules in factory. These modules are transported to the construction site & assembled - Technology needs special transport logistics	All zones except zone V	Any number
3	Modules with 3D volumetric precast concrete unit, various units make a house - Technology needs special transport logistics	All zones except zone V	Any number
4	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	All zones except zone V	Any number
5	Industrialized 3-S system using RCC precast with or without shear walls, columns, beams, Cellular Light Weight Concrete Slabs/Semi-Precast Solid Slab.	All zones except zone V	Any number

6	Pre-cast sandwich panel system & light weight precast concrete slab (Wall is sandwich panel comprising of structural concrete inside panel, insulation layer & finishing external layer) Light weight concrete slab (comprises of bottom concrete / mortar layer, Light weight concrete blocks & reinforcement & in-situ concrete)	All zones except zone V	Any number
7	Large Hollow wall prefab concrete panel (Lightweight, interlocking, concrete panel) using factory produced large standard hollow interlocking concrete block	All zones except zone V	Any number
B. Cast-in-Situ Structural Systems			
8	'Tunnel form' construction technology, a cast-in-situ RCC system, based on the use of high-precision, re-usable, room-sized, steel forms or moulds for monolithic concrete construction	All zones	Any number
9	Monolithic Concrete Construction system using Aluminum formwork	All zones	Any number
10	Monolithic Concrete Construction system using Plastic Aluminum formwork	All zones	Any number
11	RCC framed structure system using steel formwork	All zones	Any number
12	Factory Produced PVC stay in place formwork with in-situ concrete & reinforcement in walling units and cast-in-situ RCC Slab	All zones	Any number
13	Stay in place preassembled PVC wall forms along with cast-in-situ RCC slab	All zones except zone V	Any number
14	Structural Stay in Place Galvanized Steel formwork system for walling with the same bottom single layer formwork for slabs/in-situ slab	All zones except zone V	G+3
C. Others			
15	Use of confined Masonry	All zones	G+3

Table-1B

Permanent Structures- Steel Structural System Technologies

S. No.	Name of Technology	Seismic zone Suitability	Maximum number of Storeys
1	2	3	4
D. Steel Structural systems			
16	Prefabricated Steel Structural systems with appropriate wall system -PEB- Pre-Engineered Buildings using a combination of built-up sections, hot rolled sections and cold formed elements with various options for walling & flooring	All zones	Any number
17	Factory made fast track modular building system -Hot rolled steel frame structure with different walling components	All zones	Any number
18	Speed floor System- Hot rolled steel frame with speed floor	All zones	Any number
19	Hot rolled steel section / frame with prefabricated fibre reinforced sandwich panels.	All zones	Any number

Table-2

Semi-Permanent Structures-Structural System Technologies

S. No.	Name of Technology	Seismic zone Suitability	Maximum number of Storeys
1	2	3	4
E. Light Gauge Steel Structural System			
20	Light Gauge Steel Framed Structure (LGSFS)	All zones except zone V	G+3

21	Light Gauge Steel Frame structure with infill concrete Panel—the light weight concrete (using a special mixing & pumping machine) is filled in between two prefabricated concrete panels	All zones except zone V	G+3
F. Precast Concrete Construction Systems			
22	Vertical Structural modules cast in plant/casting yard are assembled together through casting of floor panel at site-Technology needs special transport logistics	All zones except zone V	G+3
23	Prefabricated interlocking Technology (without mortar) with Roofing as Mechanized Precast R.C. Plank & Joist system	All zones except zone V	G+3
G. Cast-in-Situ Structural Systems			
24	Expanded-steel panel reinforced with all-galvanized steel wire-Struts serving both as load-bearing steel structures and as stay-in-place steel formwork filled with EPS-alleviated concrete	All zones except zone V	G+3
25	Factory made prefab Glass fibre reinforced Gypsum (GFRG) cage panels suitable for wall & slab with reinforcement & concrete in cavities as per the requirement	All zones with specified restrictions on number of storeys	1. G+9 for all seismic zones except seismic zone IV & V 2. G+5 storeys in seismic zone-IV& V.
26	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 interlocking blocks which fit together to form shuttering system	All zones with specified restrictions on number of storeys	1. Higher than G+3 as per structural design for all seismic zones except seismic zone V 2. G+3 storeys in seismic zone-V.
27	Fast Bloc, insulated Concrete Form (ICF), acting as formwork for concrete and rebar, Column/post and beam construction, creating a strong skeleton in the walls	All zones with specified restrictions on number of storeys	1. Higher than G+3 as per structural design for all seismic zones except seismic zone V 2. G+3 storeys in seismic zone-V.
28	Formwork system "Plaswall" with Two fibre cement boards (FCB) & HIMI (High Impact Molded Inserts) bonded between two sheets of FCB and erected to produce a straight-to-finish wall with in-situ concrete	All zones with specified restrictions on number of storeys	1. Higher than G+3 as per structural design for all seismic zones except seismic zone V 2. G+3 storeys in seismic zone-V.

H. Prefabricated Panel System			
29	Advanced building system-EMMEDUE – Factory made panels consisting of self-extinguishing expanded EPS sandwiched between two welded high strength galvanized wire fabric mesh	All zones except zone V	G+ 3
30	Rapid panels–It is a prefabricated assembly of high-strength steel wire, which is bent into a zig-zag shape	All zones except zone V	G+ 3
31	Reinforced EPS Core Panel System	All zones except zone V	G+3
32	Concrewall panel system	All zones except zone V	G+3
33	Bau panel system	All zones except zone V	G+3
34	Fly ash EPS (Beads) cement sandwich panels	All zones except zone V	G+1
35	Pre-fab PIR (Poly-isocyanurate) based Dry wall panel system as non-load bearing wall- Suitable with Steel frame.	All zones	G+1
36	SRPL Building System (Waffle- Crete)	All zones except zone V	G+3
37	Robomatic Hollow concrete wall panel	All zones except zone V	G+1
38	Wall tech Hollow core concrete panel	All zones except zone V	G+1
39	Quick Build 3D panels	All zones except zone V	G+3
40	EPS Cement sandwich wall/roof/floor light weight solid core panel	All zones except zone V	G+1
41	Sandwich panels as wall & slab	All zones except zone V	G+3

Note: Any Prefabricated panels can be used as non load bearing partitions, paneling etc. in steel frame or RCC frame buildings irrespective of number of storeys depending upon the design and functional requirements.

Table-3
Construction Material Technologies

S. No.	Name of Technology
42	Use of self compacting concrete
43	Use of C&D waste Products in Constructions
44	Block Masonry using AAC blocks
45	Brick Masonry using fly-ash bricks
46	Reinforced soil Technology using Technical Textiles
47	Stamping Concrete
48	Rigid EPS (Cellular plastic material) blocks
49	Crushed Sand (As per IS 383 :2016 amended from time to time)
50	Manufactured Sand (The extent of utilization shall be as per IS 383:2016 amended from time to time).

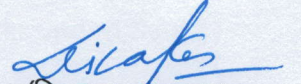
Note:

1. G+3 may be read as “Ground storey (stilt is ground storey) plus three storeys above ground storey.
2. Basements, if to be provided, shall invariably be of cast-in-situ reinforced cement concrete.
3. Seismic zone suitability and number of storey restriction is based on MoHUA OM No. I-11019/05/2019-HFA-V-UD-(FTS-9058698) dated 28.05.2019 & BMTPC OM No. BMT/ED/Misc./2021 dated 24.11.2021, BMTPC PACS of corresponding technology and BMTPC publications.

4. As per NDMA guidelines on Hospital safety; flat slab, pre-stressed floor systems, precast construction, pre-engineered structures, large cantilever, long span and unreinforced masonry structural systems shall be prohibited for use in new hospitals.
5. This OM shall be applicable for NITs uploaded /invited after the date of issue of OM.


This issues with the approval of competent authority.

e/c


(दिवाकर अग्रवाल)

अधीक्षण अभियंता(टास)

केलोनवि तथा लोनवि दिल्ली के सभी अधिकारियों को आवश्यक सूचना एवं कार्यवाही हेतु।
(केलोनवि वेबसाईट के माध्यम से)


24/03