ANNEXURE-III
[See Guideline No.5(vi)]

Structural Stability Requirements for a Building

1. The applicant shall to engage an Architect / Engineer, Structural Engineer, Geo-technical Engineer and Construction Engineer as per the guidelines.

2. For ordinary building, the applicant shall submit the required site plan and detailed structural plans duly prepared by the registered civil engineer.

3. The applicant shall get the building evaluated structurally and geo-technically by the relevant registered professional and submit a report on the stability of the building endangered by either the violation or otherwise, along with the application. The applicant shall also submit all the building and site details as per the proposed guidelines for evaluation as per Structural Design Format appended herein.

4. The Competent Authority will evaluate the building and site details submitted by the applicant and the Competent Authority shall decide on the corrective measures, if any, and communicate the same to the applicant for carrying out the corrections, within a time period as specified by the Competent Authority but not more than six months. The applicant shall carry out the corrective measures and submit compliance report to the competent authority within the stipulated time failing which the regularization application shall be rejected.

DHARMENDRA PRATAP YADAV
SECRETARY TO GOVERNMENT.

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Section Officer. 22/6/17

22/6/17

Structural Design Basis Report for repair / Retrofitting of proposed regularisation of building

Part 1	General Data		
S. No.	**Description**	**Information**	**Notes**
1	Site Address ……		
2	Name of Owner		
3	Name of Registered Developer along with the Registration Number		
4	Name of Registered Architect/Engineer along the Registration Number		
5	Name of Registered Structural engineer along with the Registration Number		
6	Use of the building		
7	Number of stories above ground level (including storeys to be added later, if any)		
8	Number of basements below ground level		
9	Type of structure Load bearing walls R. C. C. frame R. C. C. frame and Shear Walls Steel frame		
10	Soil data Type of soil Design safe bearing capacity		IS:1893 C1.6.3.5.2 IS:1904
11	Dead loads (unit weight adopted) • Earth • Water • Brick masonry • Plain cement concrete • Reinforced cement concrete • Floor finish • Other fill materials		IS:875 Part 1
12	Imposed (live) toads Floor loads Roof loads		IS : 875 Part 2
13	Cyclone/wind • Speed • Design pressure intensity		IS : 875 Part 3
14	Seismic zone		IS : 1893 (2002)
15	Importance factor		IS : 1893 (2002) Table 6
16	Seismic zone factor (Z)		IS : 1893 Table 2

17	Response reduction factor		IS : 1893 Table 7
18	Fundamental natural period-approx.		IS : 1893 C1.7.6
19	Design horizontal acceleration spectrum value (A_h)		IS : 1893 C1.6.4.2
20	*Expansion/Separation Joints		
21	Building is regular/irregular		IS 1893

* Enclose detailed drawings drawn to scale for each floor

Note:

In case terrace garden is provided, indicate additional fill load and live load along with the detailed drawings drawn to scale

Part 2	**Load bearing masonry buildings**		
S.No.	**Description**	**Information**	**Notes**
1	Building category		IS : 4336 C1.7 Read with IS : 1893 Zone / Bldg. | II | III | IV | V Ordinary | B | C | D | E Important | C | D | E | E
2	Basement Provided		
3	Number of floors including Ground Floor (all floors including stepped floors in hill slopes)		
4	Type of wall masonry		
5	Type and mix of Mortar		IS: 4326 C1.8.1.2
6	Re: size and position of openings (See note No.[i]) • Minimum distance (b5) • Ratio $(b_1+b_2+b_3)/1_1$ or $(b_6+b_7)/1_2$ • Minimum pier width between consequent opening ((b_4) • Vertical distance (h_3) • Ratio of wall height to thickness 4 Ratio of wall length between cross wall to thickness		IS: 4326 Table 4, Fig.7

7	Horizontal seismic band • at plinth level • at window sill level • at lintel level • at ceiling level • at eave level of sloping roof • at top of gable walls • at top of ridge walls	P / IP / NA	(see note No. 2) IS : 4326 C1 8.4.6 IS : 4326 C1 8.3 IS : 4326 C1 8.4.2. IS : 4326 C1 8.4.3 IS : 4326 C1 8.4.3 IS : 4326 C1 8.4.4
8	Vertical reinforcing bar at corners and T junction of walls at jambs of doors and window openings		IS : 4326 C1 8.4.8 IS : 4326 C1 8.4.9
9	Integration of prefab roofing/flooring elements through reinforced concrete screed.		IS : 4326 C1 9.1.4
10	Horizontal bracings in pitched truss in horizontal plane at the level of ties in the slopes of pitched roofs		

Notes :(i) Information in Item 6 should be given on separate A4 sheets for all walls with large number of openings

(ii) P indicates “Information provided”
IP indicates "Information to be provided”
NA indicates “Not Applicable”
Tick mark one box

Part 3	**Reinforced concrete framed buildings**		
S.No.	**Description**	**Information**	**Notes**
1	Type of building • Regular frames • Regular frames with Shear Walls • Irregular frames • Irregular frames with Shear Walls • Soft storey		IS : 1893 C1 7.1
2	Number of basements		
3	Number of floors including ground-floor		
4	Horizontal floor system • Beams and slabs • Waffles • Ribbed floor • Flat slab with drops • Flat plate without drops		

5	Soil Data • Type of soil • Recommended type of foundation -Independent footings -Raft -Piles • Recommended bearing capacity of soil • Recommended type, length, diameter and load capacity of piles • Depth of water table • Chemical analysis of ground water • Chemical analysis of soil		IS : 1498
6	Foundations Depth below ground level Type Independent Interconnected Raft Piles		
7	System of interconnecting foundations Plinth beams Foundation beams		IS : 1893 C1 7.12.1
8	Grades if concrete used in different parts of building		
9	Method of analysis used		
10	Computer software used		
11	Torsion included		IS : 1893 C1 7.9
12	Base shear a. Based on approximate fundamental period b. Based on dynamic analysis c. Ratio of a/b		IS : 1893 C1. 7.5.3
13	Distribution-of seismic forces along the height of the building		IS : 1893 C1. 7.7 (Provide sketch)
14	The column of soft ground storey specially designed.		IS : 1893 C1. 7.10
15	Clear minimum cover-provided in • Footing • Column • Beams • Slabs • Walls		lS : 456 C1. 26.4

16	Ductile detailing of RC frame • Type of reinforcement used • Minimum dimension of beams • Minimum dimension of columns • Minimum percentage of reinforcement of beams at any cross section • Maximum percentage of reinforcement at any section of beam • Spacing of transverse reinforcement in 2-d length of beams near the ends • Ratio of capacity of beams in shear to capacity of beams in flexure • Maximum percentage of reinforcement in column • Confining stirrups near ends of columns and in beam-column joints Diameter Spacing • Ratio of shear capacity of columns to maximum seismic shear in the storey.		IS: 456 C1.5.6 IS: 13920 C1.6.1 IS: 13920 C1.7.1.2 IS: 456 C1. 26.5.1(a) IS: 13920 C1.6.2.1 IS: 456 C1.26.5.1.1(b) IS: 13920 C1.6.2.2 IS : 13920 C1.6.3.5 1S: 456 C1.26.5.3.1 1S : 13920 C1. 7. 4
17	Does the features require clearance by SDRP Example : Multistory building Prefab building Building in hazard prone areas		

Foundation

i. In case raft foundation has been adopted, indicate K value used for analysis of the raft.
ii. Incase pile foundations have been used, give full particulars of the piles, type, dia, length, capacity
iii. In case of high water table, indicate system of countering water pressure, and indicate the existing water table, and that assumed to design foundations.

Idealization for Earthquake analysis

i. In case of composite system of shear walls and rigid frames, give distribution of base shear in the two systems on the basis of analysis, and that used for design of each system

ii. Indicate the idealization of frames and shear walls adopted in the analysis with the help of sketches.
iii. Submit framing plans of each floor
iv. In case of basements, indicate the system used to contain earth pressures.

Part 4	**Buildings in structural steel**		
1	Adopted method of design	o Simple o Semi-rigid o Rigid	IS:800 C1 3.4.4 IS:800 C1 3.4.5 IS:800 C1 3.5.6
2	Design based on	o Elastic analysis o Plastic analysis	IS: 800 Section-9 SP; 6 (6)
3	Floor Construction	o Composite o Non Composite o Boarded	
4	Roof construction	o Composite o Non Composite o Metal o Any other	
5	Horizontal force resisting system adopted	Frames Braced frames Frames & shear walls	Note: Seismic force As per IS:1893 Would depend on system
6	Slenderness ratios maintained	Members defined in Table 3.1, IS:800	IS 800; C1.3.7
7	Member deflection limited to	Beams, Rafters Crane Girders, Purlins Top of columns	IS:800 C1.3.13
8	Structural members	o Encased in concrete Not encased	IS: 800 Section-10
9	Proposed material	o General weld-able o High strength o Cold formed o Tubular	IS: 2062 IS: 8500 IS: 801, 811 IS: 806
10	Minimum metal thickness Specified for corrosion protection	o Hot rolled sections o Cold formed sections o Tubes	IS: 800, C1.3.8 C1.3.8.1 to C1.3.8.4 C1.3.8.5
11	Structural connections	o Rivets o CT Bolts o S H F G Bolts o Black Bolts o Welding field Shop (Specify welding type proposed) Composite	IS: 800, Section-8 IS: 1929, 2155, 1149 lS: 6639, 1367 lS: 3757, 4000 lS: 1363, 1367 IS : 816, 814, 1395, 7280, 3613, 6419, 6560, 813, 9595

12	Minimum Fire rating proposed, with method	o Rating.....hours o Method proposed - In tumescent painting - Spraying - Quilting - Fire retardant boarding	IS: 1641, 1642, 1643

Part-5

Any special weakness in the building making It vulnerable for stability related failure and the precaution to be taken during execution/completion and finishing to be indicated.

Part-6

Recommendations of structural Engineer with respect to special requirements needed with respect to structural safety and stability to be taken note of by Competent Authority feature like incorporation of swimming pool, heavy load on roof, prefabricated structure or any other hazardous features should be included.