

Multistory Building Along And Across Wind Analysis

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Abstract- Wind is a perceptible natural motion of air relative to earth surface especially in the form of air current blowing in a particular direction .The major harmful aspect which concern to civil engineering structures is that, it will load any and every object that comes in its way. Wind blows with less speed in rough terrain and higher speed in smooth terrain present study is based an to determine .Wind load is really the result of wind pressures acting on the building surfaces during a wind event.

This wind pressure is primarily a function of the wind speed because the pressure or load increases with the square of the wind velocity. Structural walls, or shear walls, are elements used to resist lateral loads, such as those generated by wind and earthquakes .The effect of gust factor method multistory building along wind and across wind analysis of IS 875 part 3 (2015) on difference H/B ratio and different terrain category for along and across wind analysis. There are several model analysis using ETAB-2016.

Keywords- wind, terrain category, along wind , across wind , ETAB 2016

I. INTRODUCTION

T Movement of air with respect to the earth surface is known as wind. Earths" rotation and terrestrial radiation differences are the major causes of wind. The effects of the radiation are mainly accountable for either upward or downward convection. Generally at high wind speeds, the wind blows to the ground horizontally.

Vertical components of atmospheric motion are comparatively small. Thus the term wind almost exclusively means the horizontal wind. The capability of a structure to withstand enormous pressure of the wind depends on geography, nearness of other hindrances to the flow of air and also depends on the characteristics of the structure. The combined action of internal and external pressure acting on the structure as whole determines the effect of wind on it. In all cases, the computed wind load acts normally to the surface to which they apply.

Combined and separate effects of wind loads and imposed loads on vertical Mean plus a fluctuating component constitutes Wind velocity. Gust will be created if the momentary deviation of the fluctuating component occurs from the mean value. Both of these components of wind velocity depends upon the approach terrain and varies with the height. The irregular shapes and square RC 3-

- 1) D bare frame structures are studied for dynamic wind load cases. Wind analysis has been conducted as per IS: 875(part 3)-2015. The FEM software package ETABS 16 has been used for the modeling and analysis of the RC bare frames. Storey drift, Storey displacement and their variations are analyzed for dynamic wind load cases.

II. DESIGN PROCEDURE

Design Wind Speed

Speed of the wind in the atmospheric boundary layer increases with increase in height from ground level to top level at a height called as the gradient height. The variation with height depends mainly on the terrain conditions. However, the speed of the wind at any height never remains constant. It has also been found easier to determine its instantaneous magnitude to an average value and a fluctuating component near this average value. Peak gust velocity remains constant over a short period of time, of about 3 seconds for basic wind speed and corresponds to mean heights in an open terrain above ground level. As mentioned in the code, our country is divided into six different regions. As far as the basic wind speed is concerned, the basic wind speeds in six regions are 33, 39, 44, 47, 50 and 55 m/s respectively. The basic wind speed shall be modified to include risk level, terrain roughness, height of the structure and local topography to get the design wind velocity,

Vz given as:

$$V_z = V_b \cdot K_1 \cdot K_2 \cdot K_3 \text{ (of IS: 875 (Part 3) - 2015)}$$

Where,

VZ = Design wind speed at any height z in m/s

Vb = Basic wind speed for different zones
 K1 = Probability factor (risk coefficient)
 K2 = Terrain roughness and height factor
 K3 = Topography factor

1) Risk coefficient (K1):

The suggested life period to be assumed and the corresponding K1 factor for different class of structures as per IS: 875 (Part 3)

2) Terrain and height factor (K2):

Terrain categories shall be selected with due regard given to the effect of obstruction, which constitute the ground surface. The terrain category used in the design of structure varies depending on the direction of wind under consideration. Terrain in which a specific structure stands shall be considered as being one of the following terrain categories.

a) Category 1

Exposed open terrain with few or no obstructions in which the mean height of any object that surrounds the structure is less than 1.5 m. Open sea-coasts and flat treeless plains are included in this category.

b) Category 2

Open terrain having well scattered obstructions with heights usually between 1.5 to 10m. This is the criterion for measuring regional basic wind speeds and includes open parklands, airfields and undeveloped sparsely built outskirts of suburbs and towns. Open land adjacent to sea coast also comes under Category 2, because of the roughness of large sea waves at high wind speeds.

c) Category 3

Terrain with many closely spaced obstructions having the size of building structures this category includes well wooded areas and shrubs, towns and industrial areas full or partially developed.

d) Category 4

Terrain with plenty of large high closely spaced obstructions. This category includes large city centers, generally with obstructions above 25m and well developed industrial complexes.

3) Topography Factor (K3):

The basic wind speed Vb, considers general level of site above the sea level. This does not allow for local topographic features such as valleys, hills, cliffs, ridges or escarpments, which can significantly affect wind speed in their vicinity. The effect of topography is to accelerate wind near the summits of hills or crests of cliffs, escarpments or ridges and decelerate the wind in valleys or near the foot of cliffs, steep escarpments or ridges.

The effect of topography is of significant importance at a site when the required slope is greater than about 3°, and below that, the value of K3 may be taken as equal to 1.0. The value of K3 is confined in the range of 1.0 to 1.36 for slopes greater than 3°.

Design Wind Pressure

The design wind pressure at any height above mean level can be obtained by the following relationship between wind pressure and wind velocity:|

$$PZ=0.6 Vz^2$$

Where,

PZ = Design wind pressure in N/m² at height z m
 VZ = design wind velocity in m/s at height z m

Wind Load on Individual Members: (IS: 875 (Part 3))

$$F = (Cpe - Cpi) APz$$

Where, Cpe = external pressure coefficient,
 Cpi = internal pressure- coefficient,
 A = surface area of structural or cladding unit and
 Pz = design wind pressure.

Parameters considered for the study

Number of Storey 30

Bottom Storey height 3m

Storey height 3m

Type of building use residential buildings

Foundation type Isolated footing

Soil type Medium

Wind zone III

Shape of buildings rectangular shape and square shape

Material Properties

Grade of concrete M30

Young’s modulus of concrete, Ec

25.0*10⁶kN/m²

Grade of steel Fe 415

Density of reinforced Concrete

25 kN/m³

Poisson’s Ratio of reinforced concrete

0.25

Member Properties

Thickness of slab 0.125m

Beam size 0.45*0.75m

Column size 0.85*0.85m

Dead load (DL) intensities

Floor finish on floors 1.5 kN/m²

Floor finish on roof 2 kN/m²

Live load (LL) intensities

Live load on floors 3 kN/m²

Live load on roof 2 kN/m²

Linear Analysis

Bottom Storey height= 3m,

Each Storey height= 3m

The maximum dimension of the building is above 50m, hence it is classified in to “Class C”, and Terrain Category 1-4 has been considered for the bare frame models, k1=1 Slope below 30, k3=1, Where k2 value (IS: 875(part 3)-2015).

GUST FACTOR

A gust factor is defined as the ratio between a peak gust and mean speed over a period of time. It can be used to examine the structure of the wind along with other statistics. The magnitude of fluctuating component of the wind speed, called gust, depends on the averaging time. Gust factors are heavily dependent on upstream terrain conditions (roughness), and are also affected by transitional flow regimes (specifically, changes in terrain and the distance from the upstream terrain change to the measuring device), Anemometer height, stability

of the boundary layer, and potentially, the presence of deep convection.

Wind load calculation as per IS: 875 (part – 3) – 1987 with gust factor method for 20 floors in zone-1 (33 m/s)

Time Period Calculation:

h = 60m (height of structure)

dx = 40m (dx = plan dimension in X- direction)

dy = 40m (dy = plan dimension in Y-direction)

Tx = 0.09h / d (From page – 48)

Tx = 0.853 sec Ty = 0.853 sec

*** Along wind**

$$1.F_z=C_fA_e P_d G$$

F_z= design peak along wind load on the building! structure at any height z

$$2. P_d=\text{design hourly mean wind pressure corresponding to } P_d=0.6V_z^2 \text{ (N/m}^2\text{)}$$

C_f = the drag force coefficient of the building! structure corresponding to the area Az

$$3.V_{z,H} = K_2v_b$$

K₂= hourly mean wind speed factor for terrain category

$$K_2=0.1423[\ln(z/z_{0i})] (z_{0i})^{0.0706}$$

4. r = roughness factor which is twice the longitudinal turbulence intensity, I_{h,i}

5. B_s= background factor indicating the measure of slowly varying component of fluctuating wind load caused by the lower frequency wind speed variations

$$\frac{1}{1 + \frac{\sqrt{0.26(h-s)^2 * 0.46bs}}{Lh}}$$

6. L_h= measure of effective turbulence length scale at the height, h, in m

$$85*(h/10)^{0.25} \text{ for terrain category 1 to 3}$$

$$70*(h/10)^{0.25} \text{ for terrain category 4}$$

7. Φ = factor to account for the second order turbulence intensity

$$(\frac{g_h I_{h,i} \sqrt{b_s}}{2})$$

8. H_s =height factor for resonance response

$$H_s=1+(s/h)^2$$

9. S =size reduction factor given by:

$$\frac{1}{[1 + \frac{3.5 f a h}{v h}][1 + \frac{4 f b h}{v h}]}$$

10. E =spectrum of turbulence in the approaching wind stream

$$\frac{\pi N}{(1+70.8N^2)^{0.833}}$$

11. β = damping coefficient of to be building/structure
Bolted steel/RCC structures β : 0.020

12. N = effective reduced frequency

$$F_a L_h / V_{hd}$$

13. G_R =peak factor for resonant response

$$\sqrt{[2 \ln 3600 f a]}$$

14. G = Gust Factor and is given by

$$G= 1+r \sqrt{[g_v^2 B_s (1+g)^2 + H_s g_R^2 SE/\beta]}$$

* Across wind

1. g_h =a peak factor

$$\sqrt{[2 \ln 3600 f a]}$$

2. P_d =design hourly mean wind pressure corresponding to

$$P_z=0.6 V_z^2 (N/m^2)$$

3. $V_z, H = K_2 V_b$

K_2 = hourly mean wind speed factor for terrain category

$$K_2=0.1423 [\ln (z / z_{0i})] (z_{0i})^{0.0706}$$

4. b =the breadth of the structure normal to the wind, in m;
 h = the height of the structure, in m;

5. f_a = first mode natural frequency of the building! structure in across wind direction, in Hz.

6. k = a mode shape power exponent for representation of the fundamental mode shape as represented by:

$$(z/h)^k$$

7. C_{fs} = across wind force spectrum coefficientgeneralized for a linear mode

Is 875 -2015 page no. (49,50)

8. across wind design peak base bending moment= M_c

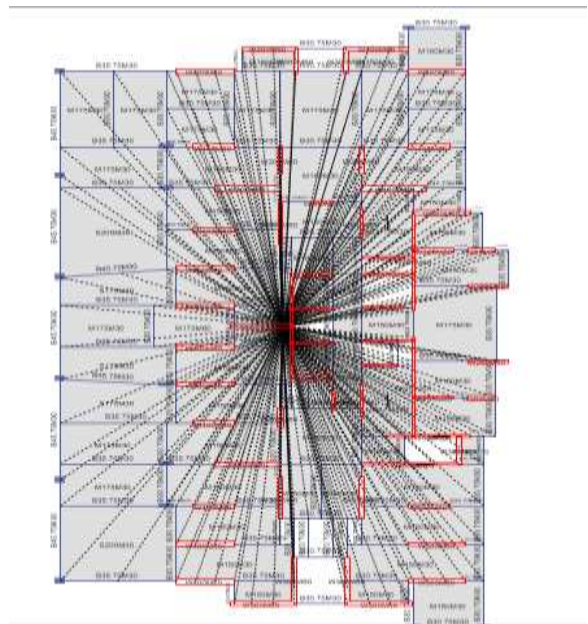
$$M_c =0.5 g_h p_h b h^2 (1.06-0.06k)(\Pi C_f)^{0.5}$$

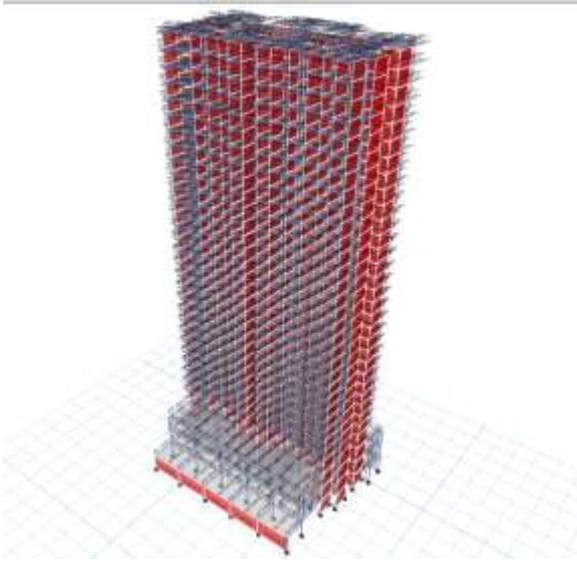
9. The across wind load distribution on the building structure can be obtained from M_c using linear distribution of loads as given below

$$F_{z,c}=(3M_c/h^2)(z/h)$$

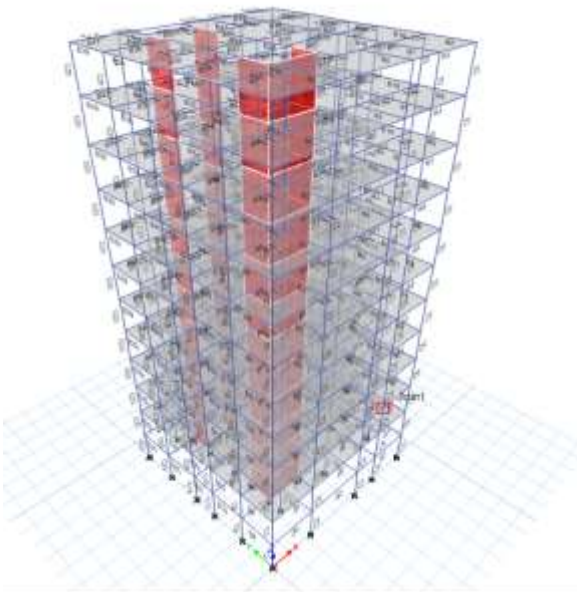
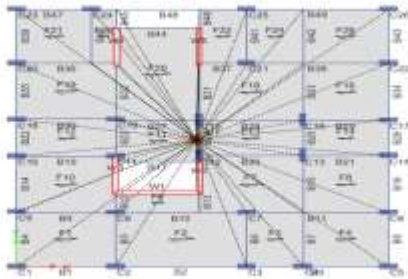
Modeling in ETABS 16

Rectangular model





Square model



Dynamic analysis

Wind load calculation with gust factor for 30 floors rectangular shape in as per IS: 875 (part-3) – 2015 terrain category 1 (along wind)

Floor	X[m]	Y[m]	Z[m]	Zc	Vc	Vr	Zs	Zd	Zp	Zq	Zr	Along Wind	
												X	Y
1st F	4.1	4.2	2.1	0.3267	17065	4079	0.180	579	585	1482	53.4		
2nd F	4.1	8.4	2.1	0.4747	24889	4248	0.180	489	499	148.5	85.5		
3rd F	4.1	12.6	2.1	0.5203	29156	4332	0.180	407	404	268.3	148.8		
4th F	4.1	16.8	2.1	0.5628	34702	4388	0.180	428	435	259.6	177.6		
5th F	4.1	21.0	2.1	0.6028	41522	4426	0.180	485	458	186.7	172.8		
6th F	4.1	25.2	2.1	0.6408	49622	4449	0.180	489	456	177.3	146.1		
7th F	4.1	29.4	2.1	0.6768	59022	4459	0.180	458	466	221.6	188.1		
8th F	4.1	33.6	2.1	0.7113	70722	4457	0.180	463	476	256.6	176.6		
9th F	4.1	37.8	2.1	0.7448	84822	4445	0.180	487	475	246.8	176.6		
10th F	4.1	42.0	2.1	0.7778	101422	4424	0.180	471	479	252.9	158.9		
11th F	4.1	46.2	2.1	0.8103	120622	4395	0.180	475	483	262.3	159.9		
12th F	4.1	50.4	2.1	0.8423	142622	4359	0.180	478	487	271.4	148.8		
13th F	4.1	54.6	2.1	0.8738	167622	4317	0.180	482	490	280.6	149.5		
14th F	4.1	58.8	2.1	0.9048	195822	4270	0.180	485	494	289.8	158.8		
15th F	4.1	63.0	2.1	0.9353	227422	4219	0.180	488	498	298.5	158.8		
16th F	4.1	67.2	2.1	0.9653	272822	4165	0.180	492	501	306.3	148.6		
17th F	4.1	71.4	2.1	0.9948	332422	4108	0.180	495	504	313.9	148.7		
18th F	4.1	75.6	2.1	1.0238	406622	4049	0.180	498	507	321.3	178.7		
19th F	4.1	79.8	2.1	1.0523	496822	3988	0.180	501	511	328.5	178.6		
20th F	4.1	84.0	2.1	1.0803	603422	3925	0.180	505	514	335.5	178.6		
21th F	4.1	88.2	2.1	1.1078	738022	3860	0.180	509	517	342.3	188.1		
22th F	4.1	92.4	2.1	1.1348	902222	3793	0.180	513	520	348.8	188.1		
23th F	4.1	96.6	2.1	1.1613	1098222	3725	0.180	517	523	355.2	178.7		
24th F	4.1	100.8	2.1	1.1873	1328222	3657	0.180	521	526	361.4	178.3		
25th F	4.1	105.0	2.1	1.2128	1594222	3589	0.180	525	529	367.4	268.6		
26th F	4.1	109.2	2.1	1.2378	1898222	3521	0.180	529	532	373.3	268.7		
27th F	4.1	113.4	2.1	1.2623	2244222	3453	0.180	533	535	379.0	268.6		
28th F	4.1	117.6	2.1	1.2863	2736222	3385	0.180	537	538	384.4	268.6		
29th F	4.1	121.8	2.1	1.3103	3378222	3317	0.180	541	541	389.7	268.6		
30th F	4.1	126.0	2.1	1.3338	4184222	3249	0.180	545	544	394.9	268.6		

Wind load calculation with gust factor for 30 floors rectangular shape in as per IS: 875 (part-3) – 2015 terrain category 1 (across wind)

Floor	X[m]	Y[m]	Z[m]	Zc	Vc	Vr	Zs	Zd	Zp	Zq	Zr	Across Wind	
												Along X	Along Y
1st F	4.1	4.2	2.1	0.3267	17065	4079	0.180	579	585	1482	53.4		
2nd F	4.1	8.4	2.1	0.4747	24889	4248	0.180	489	499	148.5	85.5		
3rd F	4.1	12.6	2.1	0.5203	29156	4332	0.180	407	404	268.3	148.8		
4th F	4.1	16.8	2.1	0.5628	34702	4388	0.180	428	435	259.6	177.6		
5th F	4.1	21.0	2.1	0.6028	41522	4426	0.180	485	458	186.7	172.8		
6th F	4.1	25.2	2.1	0.6408	49622	4449	0.180	489	456	177.3	146.1		
7th F	4.1	29.4	2.1	0.6768	59022	4459	0.180	458	466	221.6	188.1		
8th F	4.1	33.6	2.1	0.7113	70722	4457	0.180	463	476	256.6	176.6		
9th F	4.1	37.8	2.1	0.7448	84822	4445	0.180	487	475	246.8	176.6		
10th F	4.1	42.0	2.1	0.7778	101422	4424	0.180	471	479	252.9	158.9		
11th F	4.1	46.2	2.1	0.8103	120622	4403	0.180	475	483	262.3	159.9		
12th F	4.1	50.4	2.1	0.8423	142622	4382	0.180	478	487	271.4	148.8		
13th F	4.1	54.6	2.1	0.8738	167622	4361	0.180	482	490	280.6	149.5		
14th F	4.1	58.8	2.1	0.9048	195822	4340	0.180	485	494	289.8	158.8		
15th F	4.1	63.0	2.1	0.9353	227422	4319	0.180	488	498	298.5	158.8		
16th F	4.1	67.2	2.1	0.9653	272822	4298	0.180	492	501	306.3	148.6		
17th F	4.1	71.4	2.1	0.9948	332422	4277	0.180	495	504	313.9	148.7		
18th F	4.1	75.6	2.1	1.0238	406622	4256	0.180	498	507	321.3	178.7		
19th F	4.1	79.8	2.1	1.0523	496822	4235	0.180	501	511	328.5	178.6		
20th F	4.1	84.0	2.1	1.0803	603422	4214	0.180	505	514	335.5	178.6		
21th F	4.1	88.2	2.1	1.1078	738022	4193	0.180	509	517	342.3	188.1		
22th F	4.1	92.4	2.1	1.1348	902222	4172	0.180	513	520	348.8	188.1		
23th F	4.1	96.6	2.1	1.1613	1098222	4151	0.180	517	523	355.2	178.7		
24th F	4.1	100.8	2.1	1.1873	1328222	4130	0.180	521	526	361.4	178.3		
25th F	4.1	105.0	2.1	1.2128	1594222	4109	0.180	525	529	367.4	268.6		
26th F	4.1	109.2	2.1	1.2378	1898222	4088	0.180	529	532	373.3	268.7		
27th F	4.1	113.4	2.1	1.2623	2244222	4067	0.180	533	535	379.0	268.6		
28th F	4.1	117.6	2.1	1.2863	2736222	4046	0.180	537	538	384.4	268.6		
29th F	4.1	121.8	2.1	1.3103	3378222	4025	0.180	541	541	389.7	268.6		
30th F	4.1	126.0	2.1	1.3338	4184222	4004	0.180	545	544	394.9	268.6		

Wind load calculation with gust factor for 30 floors rectangular shape in as per IS: 875 (part-3) – 2015 terrain category 2 (along wind)

Floor	Z	Z ₁₀	Z ₁₀₀	K _z	V _z	V _z	K _z	Along Wind	
								X	Y
1st Floor	4.1	4.2	2.1	0.267	17.915	17.915	0.19	482	488
2nd Floor	4.1	8.1	2.1	0.274	20.089	20.089	0.19	425	430
3rd Floor	4.1	12.1	2.1	0.282	23.055	23.055	0.19	375	380
4th Floor	4.1	16.1	2.1	0.291	26.822	26.822	0.19	330	335
5th Floor	4.1	20.1	2.1	0.301	31.399	31.399	0.19	290	295
6th Floor	4.1	24.1	2.1	0.312	36.786	36.786	0.19	255	260
7th Floor	4.1	28.1	2.1	0.324	42.983	42.983	0.19	225	230
8th Floor	4.1	32.1	2.1	0.337	50.000	50.000	0.19	200	205
9th Floor	4.1	36.1	2.1	0.352	57.947	57.947	0.19	180	185
10th Floor	4.1	40.1	2.1	0.368	66.834	66.834	0.19	165	170
11th Floor	4.1	44.1	2.1	0.385	76.671	76.671	0.19	155	160
12th Floor	4.1	48.1	2.1	0.404	87.468	87.468	0.19	145	150
13th Floor	4.1	52.1	2.1	0.424	99.225	99.225	0.19	135	140
14th Floor	4.1	56.1	2.1	0.446	112.042	112.042	0.19	125	130
15th Floor	4.1	60.1	2.1	0.470	126.019	126.019	0.19	115	120
16th Floor	4.1	64.1	2.1	0.496	141.256	141.256	0.19	105	110
17th Floor	4.1	68.1	2.1	0.524	157.853	157.853	0.19	95	100
18th Floor	4.1	72.1	2.1	0.554	175.810	175.810	0.19	85	90
19th Floor	4.1	76.1	2.1	0.586	195.227	195.227	0.19	75	80
20th Floor	4.1	80.1	2.1	0.620	216.214	216.214	0.19	65	70
21st Floor	4.1	84.1	2.1	0.656	238.881	238.881	0.19	55	60
22nd Floor	4.1	88.1	2.1	0.694	263.328	263.328	0.19	45	50
23rd Floor	4.1	92.1	2.1	0.734	289.665	289.665	0.19	35	40
24th Floor	4.1	96.1	2.1	0.776	318.002	318.002	0.19	25	30
25th Floor	4.1	100.1	2.1	0.820	348.549	348.549	0.19	15	20
26th Floor	4.1	104.1	2.1	0.866	381.506	381.506	0.19	10	15
27th Floor	4.1	108.1	2.1	0.914	417.083	417.083	0.19	5	10
28th Floor	4.1	112.1	2.1	0.964	455.490	455.490	0.19	0	5
29th Floor	4.1	116.1	2.1	1.016	496.927	496.927	0.19	0	0
30th Floor	4.1	120.1	2.1	1.070	541.604	541.604	0.19	0	0

Wind load calculation with gust factor for 30 floors rectangular shape in as per IS: 875 (part-3) – 2015 terrain category 3 (along wind)

Floor	Z	Z ₁₀	Z ₁₀₀	K _z	V _z	V _z	K _z	Along Wind	
								X	Y
1st Floor	4.1	4.2	2.1	0.267	17.915	17.915	0.19	482	488
2nd Floor	4.1	8.1	2.1	0.274	20.089	20.089	0.19	425	430
3rd Floor	4.1	12.1	2.1	0.282	23.055	23.055	0.19	375	380
4th Floor	4.1	16.1	2.1	0.291	26.822	26.822	0.19	330	335
5th Floor	4.1	20.1	2.1	0.301	31.399	31.399	0.19	290	295
6th Floor	4.1	24.1	2.1	0.312	36.786	36.786	0.19	255	260
7th Floor	4.1	28.1	2.1	0.324	42.983	42.983	0.19	225	230
8th Floor	4.1	32.1	2.1	0.337	50.000	50.000	0.19	200	205
9th Floor	4.1	36.1	2.1	0.352	57.947	57.947	0.19	180	185
10th Floor	4.1	40.1	2.1	0.368	66.834	66.834	0.19	165	170
11th Floor	4.1	44.1	2.1	0.385	76.671	76.671	0.19	155	160
12th Floor	4.1	48.1	2.1	0.404	87.468	87.468	0.19	145	150
13th Floor	4.1	52.1	2.1	0.424	99.225	99.225	0.19	135	140
14th Floor	4.1	56.1	2.1	0.446	112.042	112.042	0.19	125	130
15th Floor	4.1	60.1	2.1	0.470	126.019	126.019	0.19	115	120
16th Floor	4.1	64.1	2.1	0.496	141.256	141.256	0.19	105	110
17th Floor	4.1	68.1	2.1	0.524	157.853	157.853	0.19	95	100
18th Floor	4.1	72.1	2.1	0.554	175.810	175.810	0.19	85	90
19th Floor	4.1	76.1	2.1	0.586	195.227	195.227	0.19	75	80
20th Floor	4.1	80.1	2.1	0.620	216.214	216.214	0.19	65	70
21st Floor	4.1	84.1	2.1	0.656	238.881	238.881	0.19	55	60
22nd Floor	4.1	88.1	2.1	0.694	263.328	263.328	0.19	45	50
23rd Floor	4.1	92.1	2.1	0.734	289.665	289.665	0.19	35	40
24th Floor	4.1	96.1	2.1	0.776	318.002	318.002	0.19	25	30
25th Floor	4.1	100.1	2.1	0.820	348.549	348.549	0.19	15	20
26th Floor	4.1	104.1	2.1	0.866	381.506	381.506	0.19	10	15
27th Floor	4.1	108.1	2.1	0.914	417.083	417.083	0.19	5	10
28th Floor	4.1	112.1	2.1	0.964	455.490	455.490	0.19	0	5
29th Floor	4.1	116.1	2.1	1.016	496.927	496.927	0.19	0	0
30th Floor	4.1	120.1	2.1	1.070	541.604	541.604	0.19	0	0

Wind load calculation with gust factor for 30 floors rectangular shape in as per IS: 875 (part-3) – 2015 terrain category 2 (across wind)

Floor	Z	Z ₁₀	Z ₁₀₀	K _z	V _z	V _z	K _z	Across Wind	
								X	Y
1st Floor	4.1	4.2	2.1	0.267	17.915	17.915	0.19	482	488
2nd Floor	4.1	8.1	2.1	0.274	20.089	20.089	0.19	425	430
3rd Floor	4.1	12.1	2.1	0.282	23.055	23.055	0.19	375	380
4th Floor	4.1	16.1	2.1	0.291	26.822	26.822	0.19	330	335
5th Floor	4.1	20.1	2.1	0.301	31.399	31.399	0.19	290	295
6th Floor	4.1	24.1	2.1	0.312	36.786	36.786	0.19	255	260
7th Floor	4.1	28.1	2.1	0.324	42.983	42.983	0.19	225	230
8th Floor	4.1	32.1	2.1	0.337	50.000	50.000	0.19	200	205
9th Floor	4.1	36.1	2.1	0.352	57.947	57.947	0.19	180	185
10th Floor	4.1	40.1	2.1	0.368	66.834	66.834	0.19	165	170
11th Floor	4.1	44.1	2.1	0.385	76.671	76.671	0.19	155	160
12th Floor	4.1	48.1	2.1	0.404	87.468	87.468	0.19	145	150
13th Floor	4.1	52.1	2.1	0.424	99.225	99.225	0.19	135	140
14th Floor	4.1	56.1	2.1	0.446	112.042	112.042	0.19	125	130
15th Floor	4.1	60.1	2.1	0.470	126.019	126.019	0.19	115	120
16th Floor	4.1	64.1	2.1	0.496	141.256	141.256	0.19	105	110
17th Floor	4.1	68.1	2.1	0.524	157.853	157.853	0.19	95	100
18th Floor	4.1	72.1	2.1	0.554	175.810	175.810	0.19	85	90
19th Floor	4.1	76.1	2.1	0.586	195.227	195.227	0.19	75	80
20th Floor	4.1	80.1	2.1	0.620	216.214	216.214	0.19	65	70
21st Floor	4.1	84.1	2.1	0.656	238.881	238.881	0.19	55	60
22nd Floor	4.1	88.1	2.1	0.694	263.328	263.328	0.19	45	50
23rd Floor	4.1	92.1	2.1	0.734	289.665	289.665	0.19	35	40
24th Floor	4.1	96.1	2.1	0.776	318.002	318.002	0.19	25	30
25th Floor	4.1	100.1	2.1	0.820	348.549	348.549	0.19	15	20
26th Floor	4.1	104.1	2.1	0.866	381.506	381.506	0.19	10	15
27th Floor	4.1	108.1	2.1	0.914	417.083	417.083	0.19	5	10
28th Floor	4.1	112.1	2.1	0.964	455.490	455.490	0.19	0	5
29th Floor	4.1	116.1	2.1	1.016	496.927	496.927	0.19	0	0
30th Floor	4.1	120.1	2.1	1.070	541.604	541.604	0.19	0	0

Wind load calculation with gust factor for 30 floors rectangular shape in as per IS: 875 (part-3) – 2015 terrain category 3 (across wind)

Floor	Z	Z ₁₀	Z ₁₀₀	K _z	V _z	V _z	K _z	Across Wind	
								X	Y
1st Floor	4.1	4.2	2.1	0.267	17.915	17.915	0.19	482	488
2nd Floor	4.1	8.1	2.1	0.274	20.089	20.089	0.19	425	430
3rd Floor	4.1	12.1	2.1	0.282	23.055	23.055	0.19	375	380
4th Floor	4.1	16.1	2.1	0.291	26.822	26.822	0.19	330	335
5th Floor	4.1	20.1	2.1	0.301	31.399	31.399	0.19	290	295
6th Floor	4.1	24.1	2.1	0.312	36.786	36.786	0.19	255	260
7th Floor	4.1	28.1	2.1	0.324	42.983	42.983	0.19	225	230
8th Floor	4.1	32.1	2.1	0.337	50.000	50.000	0.19	200	205
9th Floor	4.1	36.1	2.1	0.352	57.947	57.947	0.19	180	185
10th Floor	4.1	40.1	2.1	0.368	66.834	66.834	0.19	165	170
11th Floor	4.1	44.1	2.1	0.385	76.671	76.671	0.19	155	160
12th Floor	4.1	48.1	2.1	0.404	87.468	87.468	0.19	145	150
13th Floor	4.1	52.1	2.1	0.424	99.225	99.225	0.19	135	140
14th Floor	4.1	56.1	2.1	0.446	112.042	112.042	0.19	125	130
15th Floor	4.1	60.1	2.1	0.470	126.019	126.019	0.19	115	120
16th Floor	4.1	64.1	2.1	0.496	141.256	141.256	0.19	105	110
17th Floor	4.1	68.1	2.1	0.524	157.853	157.853	0.19	95	100
18th Floor	4.1	72.1	2.1	0.554	175.810	175.810	0.19	85	90
19th Floor	4.1	76.1	2.1	0.586	195.227	195.227	0.19	75	80
20th Floor	4.1	80.1	2.1	0.620	216.214	216.214	0.19	65	70
21st Floor	4.1	84.1	2.1	0.656	238.881	238.881	0.19	55	60
22nd Floor	4.1	88.1	2.1	0.694	263.328	263.328	0.19	45	50
23rd Floor	4.1	92.1	2.1	0.734	289.665	289.665	0.19	35	40
24th Floor	4.1	96.1	2.1	0.776	318.002	318.002	0.19	25	30
25th Floor	4.1	100.1	2.1	0.820	348.549	348.549	0.19	15	20
26th Floor	4.1	104.1	2.1	0.866	381.506	381.506	0.19	10	15
27th Floor	4.								

Wind load calculation with gust factor for 30 floors rectangular shape in as per IS: 875 (part-3) – 2015 terrain category 4(along wind)

Floor	Height	Wind Dir.	Wind Spd.	Kz	Vr	Vt	G	S	Q	Along Wind	
										X	Y
1st F	4.2	4.2	2.1	0.865	12805	48.74	0.938	296	888	230.5	1828
2nd F	4.2	8.4	2.1	0.865	20889	42.92	0.938	287	789	263.7	1461.8
3rd F	4.2	12.6	2.1	0.865	25136	45.32	0.938	278	709	300.8	1200.6
4th F	4.2	16.8	2.1	0.865	29572	47.88	0.938	271	642	340.5	1000.5
5th F	4.2	21.0	1.85	0.865	34232	49.58	0.938	268	579	382.7	840.5
6th F	4.2	25.2	1.85	0.865	39042	50.38	0.938	268	525	427.2	710.8
7th F	4.2	29.4	1.85	0.865	43928	50.38	0.938	268	472	473.8	600.2
8th F	4.2	33.6	1.85	0.865	48898	50.38	0.938	268	420	521.5	500.0
9th F	4.2	37.8	1.85	0.865	53950	50.38	0.938	268	368	570.2	410.0
10th F	4.2	42.0	1.85	0.865	59082	50.38	0.938	268	316	619.8	330.0
11th F	4.2	46.2	1.85	0.865	64292	50.38	0.938	268	264	670.2	260.0
12th F	4.2	50.4	1.85	0.865	69580	50.38	0.938	268	212	721.2	200.0
13th F	4.2	54.6	1.85	0.865	74944	50.38	0.938	268	160	772.8	150.0
14th F	4.2	58.8	1.85	0.865	80384	50.38	0.938	268	108	825.0	110.0
15th F	4.2	63.0	1.85	0.865	85890	50.38	0.938	268	56	877.8	80.0
16th F	4.2	67.2	1.85	0.865	91462	50.38	0.938	268	4	931.2	60.0
17th F	4.2	71.4	1.85	0.865	97090	50.38	0.938	268	-48	985.2	60.0
18th F	4.2	75.6	1.85	0.865	102772	50.38	0.938	268	-100	1039.8	60.0
19th F	4.2	79.8	1.85	0.865	108500	50.38	0.938	268	-152	1095.0	60.0
20th F	4.2	84.0	1.85	0.865	114272	50.38	0.938	268	-204	1150.8	60.0
21th F	4.2	88.2	1.85	0.865	120090	50.38	0.938	268	-256	1207.2	60.0
22th F	4.2	92.4	1.85	0.865	125952	50.38	0.938	268	-308	1264.2	60.0
23th F	4.2	96.6	1.85	0.865	131860	50.38	0.938	268	-360	1321.8	60.0
24th F	4.2	100.8	1.85	0.865	137812	50.38	0.938	268	-412	1379.8	60.0
25th F	4.2	105.0	1.85	0.865	143810	50.38	0.938	268	-464	1438.2	60.0
26th F	4.2	109.2	1.85	0.865	149852	50.38	0.938	268	-516	1497.0	60.0
27th F	4.2	113.4	1.85	0.865	155940	50.38	0.938	268	-568	1556.2	60.0
28th F	4.2	117.6	1.85	0.865	162072	50.38	0.938	268	-620	1615.8	60.0
29th F	4.2	121.8	1.85	0.865	168250	50.38	0.938	268	-672	1675.8	60.0
30th F	4.2	126.0	1.85	0.865	174472	50.38	0.938	268	-724	1736.2	60.0

B - 4.2
 C - 37.888
 H - 1008
 Gh - 0.6
 Gz - 0.1

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 I - 1
 Pk - 0.038

Wind load calculation with gust factor for 30 floors square shape in as per IS: 875 (part-3) – 2015 terrain category 1(along wind)

Floor	Height	Wind Dir.	Wind Spd.	Kz	Vr	Vt	G	S	Q	Along Wind	
										X	Y
1st F	4.2	4.2	2.1	0.865	12805	48.74	0.938	486	486	38.7	23.7
2nd F	4.2	8.4	2.1	0.865	20889	42.92	0.938	438	438	36.8	24.8
3rd F	4.2	12.6	2.1	0.865	25136	45.32	0.938	407	407	34.9	26.0
4th F	4.2	16.8	2.1	0.865	29572	47.88	0.938	389	389	33.0	27.3
5th F	4.2	21.0	1.85	0.865	34232	49.58	0.938	375	375	31.1	28.8
6th F	4.2	25.2	1.85	0.865	39042	50.38	0.938	364	364	29.2	30.5
7th F	4.2	29.4	1.85	0.865	43928	50.38	0.938	355	355	27.3	32.5
8th F	4.2	33.6	1.85	0.865	48898	50.38	0.938	348	348	25.4	34.8
9th F	4.2	37.8	1.85	0.865	53950	50.38	0.938	342	342	23.5	37.5
10th F	4.2	42.0	1.85	0.865	59082	50.38	0.938	338	338	21.6	40.5
11th F	4.2	46.2	1.85	0.865	64292	50.38	0.938	334	334	19.7	44.0
12th F	4.2	50.4	1.85	0.865	69580	50.38	0.938	331	331	17.8	48.0
13th F	4.2	54.6	1.85	0.865	74944	50.38	0.938	328	328	15.9	52.5
14th F	4.2	58.8	1.85	0.865	80384	50.38	0.938	326	326	14.0	57.5
15th F	4.2	63.0	1.85	0.865	85890	50.38	0.938	324	324	12.1	63.0
16th F	4.2	67.2	1.85	0.865	91462	50.38	0.938	323	323	10.2	69.0
17th F	4.2	71.4	1.85	0.865	97090	50.38	0.938	322	322	8.3	76.5
18th F	4.2	75.6	1.85	0.865	102772	50.38	0.938	322	322	6.4	85.5
19th F	4.2	79.8	1.85	0.865	108500	50.38	0.938	321	321	4.5	96.0
20th F	4.2	84.0	1.85	0.865	114272	50.38	0.938	321	321	2.6	108.0
21th F	4.2	88.2	1.85	0.865	120090	50.38	0.938	321	321	0.7	121.5
22th F	4.2	92.4	1.85	0.865	125952	50.38	0.938	320	320	-1.2	136.5
23th F	4.2	96.6	1.85	0.865	131860	50.38	0.938	320	320	-3.1	153.0
24th F	4.2	100.8	1.85	0.865	137812	50.38	0.938	320	320	-5.0	171.0
25th F	4.2	105.0	1.85	0.865	143810	50.38	0.938	319	319	-6.9	190.5
26th F	4.2	109.2	1.85	0.865	149852	50.38	0.938	319	319	-8.8	211.5
27th F	4.2	113.4	1.85	0.865	155940	50.38	0.938	319	319	-10.7	234.0
28th F	4.2	117.6	1.85	0.865	162072	50.38	0.938	318	318	-12.6	258.0
29th F	4.2	121.8	1.85	0.865	168250	50.38	0.938	318	318	-14.5	283.5
30th F	4.2	126.0	1.85	0.865	174472	50.38	0.938	318	318	-16.4	310.5

B - 4.2
 C - 34.71
 H - 1008
 Gh - 0.6
 Gz - 0.1

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 I - 1
 Pk - 0.038

Wind load calculation with gust factor for 30 floors rectangular shape in as per IS: 875 (part-3) – 2015 terrain category 4(across wind)

Floor	Height	Wind Dir.	Wind Spd.	Kz	Vr	Vt	G	S	Q	Across Wind	
										X	Y
1st F	4.2	4.2	2.1	0.865	12805	48.74	0.938	24000	24000	14.000	14.000
2nd F	4.2	8.4	2.1	0.865	20889	42.92	0.938	21000	21000	13.000	13.000
3rd F	4.2	12.6	2.1	0.865	25136	45.32	0.938	18500	18500	12.000	12.000
4th F	4.2	16.8	2.1	0.865	29572	47.88	0.938	16500	16500	11.000	11.000
5th F	4.2	21.0	1.85	0.865	34232	49.58	0.938	14500	14500	10.000	10.000
6th F	4.2	25.2	1.85	0.865	39042	50.38	0.938	13000	13000	9.000	9.000
7th F	4.2	29.4	1.85	0.865	43928	50.38	0.938	11500	11500	8.000	8.000
8th F	4.2	33.6	1.85	0.865	48898	50.38	0.938	10500	10500	7.000	7.000
9th F	4.2	37.8	1.85	0.865	53950	50.38	0.938	9500	9500	6.000	6.000
10th F	4.2	42.0	1.85	0.865	59082	50.38	0.938	8500	8500	5.000	5.000
11th F	4.2	46.2	1.85	0.865	64292	50.38	0.938	7500	7500	4.000	4.000
12th F	4.2	50.4	1.85	0.865	69580	50.38	0.938	6500	6500	3.000	3.000
13th F	4.2	54.6	1.85	0.865	74944	50.38	0.938	5500	5500	2.000	2.000
14th F	4.2	58.8	1.85	0.865	80384	50.38	0.938	4500	4500	1.000	1.000
15th F	4.2	63.0	1.85	0.865	85890	50.38	0.938	3500	3500	0.000	0.000
16th F	4.2	67.2	1.85	0.865	91462	50.38	0.938	2500	2500	-1.000	-1.000
17th F	4.2	71.4	1.85	0.865	97090	50.38	0.938	1500	1500	-2.000	-2.000
18th F	4.2	75.6	1.85	0.865	102772	50.38	0.938	500	500	-3.000	-3.000
19th F	4.2	79.8	1.85	0.865	108500	50.38	0.938	-500	-500	-4.000	-4.000
20th F	4.2	84.0	1.85	0.865	114272	50.38	0.938	-1500	-1500	-5.000	-5.000
21th F	4.2	88.2	1.85	0.865	120090	50.38	0.938	-2500	-2500	-6.000	-6.000
22th F	4.2	92.4	1.85	0.865	125952	50.38	0.938	-3500	-3500	-7.000	-7.000
23th F	4.2	96.6	1.85	0.865	131860	50.38	0.938	-4500	-4500	-8.000	-8.000
24th F	4.2	100.8	1.85	0.865	137812	50.38	0.938	-5500	-5500	-9.000	-9.000
25th F	4.2	105.0	1.85	0.865	143810	50.38	0.938	-6500	-6500	-10.000	-10.000
26th F	4.2	109.2	1.85	0.865	149852	50.38	0.938	-7500	-7500	-11.000	-11.000
27th F	4.2	113.4	1.85	0.865	155940	50.38	0.938	-8500	-8500	-12.000	-12.000
28th F	4.2	117.6	1.85	0.865	162072	50.38	0.938	-9500	-9500	-13.000	-13.000
29th F	4.2	121.8	1.85	0.865	168250	50.38	0.938	-10500	-10500	-14.000	-14.000
30th F	4.2	126.0	1.85	0.865	174472	50.38	0.938	-11500	-11500	-15.000	-15.000

B - 4.2
 C - 27.76
 H - 1008
 Gh - 0.6
 Gz - 0.1

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 I - 1
 Pk - 0.038

Wind load calculation with gust factor for 30 floors square shape in as per IS: 875 (part-3) – 2015 terrain category 1(across wind)

Floor	Height	Wind Dir.	Wind Spd.	Kz	Vr	Vt	G	S	Q	Across Wind	
										X	Y
1st F	4.2	4.2	2.1	0.865	12805	48.74	0.938	30000	30000	14.000	14.000
2nd F	4.2	8.4	2.1	0.865	20889	42.92					

Wind load calculation with gust factor for 30 floors square shape in as per IS: 875 (part-3) – 2015 terrain category 2(along wind)

Floor	Wind Dir.	Z	K _z	K _{zt}	K _d	V _z	V _z	G _f	Wind Direction		Along Wind	
									X	Y	X	Y
1st FLD	4.1	4.2	2.1	0.9867	0.7805	48.257	48.257	0.9867	429	429	380	380
2nd FLD	4.1	8.4	2.1	0.9747	0.8089	48.32	48.32	0.9747	432	432	383	383
3rd FLD	4.1	12.6	2.1	0.9582	0.8376	48.376	48.376	0.9582	435	435	386	386
4th FLD	4.1	16.8	2.1	0.9378	0.8664	48.424	48.424	0.9378	438	438	389	389
5th FLD	4.1	21.0	1.85	0.9136	0.8952	48.464	48.464	0.9136	441	441	392	392
6th FLD	4.1	25.2	1.85	0.8856	0.924	48.496	48.496	0.8856	444	444	395	395
7th FLD	4.1	29.4	1.85	0.8538	0.9528	48.52	48.52	0.8538	447	447	398	398
8th FLD	4.1	33.6	1.85	0.8182	0.9816	48.536	48.536	0.8182	450	450	401	401
9th FLD	4.1	37.8	1.85	0.7788	1.0104	48.544	48.544	0.7788	453	453	404	404
10th FLD	4.1	42.0	1.85	0.7356	1.0392	48.544	48.544	0.7356	456	456	407	407
11th FLD	4.1	46.2	1.85	0.6888	1.068	48.536	48.536	0.6888	459	459	410	410
12th FLD	4.1	50.4	1.85	0.6384	1.0968	48.52	48.52	0.6384	462	462	413	413
13th FLD	4.1	54.6	1.85	0.5844	1.1256	48.488	48.488	0.5844	465	465	416	416
14th FLD	4.1	58.8	1.85	0.5268	1.1544	48.44	48.44	0.5268	468	468	419	419
15th FLD	4.1	63.0	1.85	0.4656	1.1832	48.376	48.376	0.4656	471	471	422	422
16th FLD	4.1	67.2	1.85	0.4008	1.212	48.288	48.288	0.4008	474	474	425	425
17th FLD	4.1	71.4	1.85	0.3324	1.2408	48.184	48.184	0.3324	477	477	428	428
18th FLD	4.1	75.6	1.85	0.2604	1.2696	48.064	48.064	0.2604	480	480	431	431
19th FLD	4.1	79.8	1.85	0.1848	1.2984	47.928	47.928	0.1848	483	483	434	434
20th FLD	4.1	84.0	1.85	0.1056	1.3272	47.776	47.776	0.1056	486	486	437	437
21th FLD	4.1	88.2	1.85	0.0228	1.356	47.608	47.608	0.0228	489	489	440	440
22th FLD	4.1	92.4	1.85	-0.0528	1.3848	47.416	47.416	-0.0528	492	492	443	443
23th FLD	4.1	96.6	1.85	-0.1224	1.4136	47.192	47.192	-0.1224	495	495	446	446
24th FLD	4.1	100.8	1.85	-0.1872	1.4424	46.936	46.936	-0.1872	498	498	449	449
25th FLD	4.1	105.0	1.85	-0.2472	1.4712	46.648	46.648	-0.2472	501	501	452	452
26th FLD	4.1	109.2	1.85	-0.3024	1.500	46.328	46.328	-0.3024	504	504	455	455
27th FLD	4.1	113.4	1.85	-0.3528	1.5288	45.976	45.976	-0.3528	507	507	458	458
28th FLD	4.1	117.6	1.85	-0.3984	1.5576	45.592	45.592	-0.3984	510	510	461	461
29th FLD	4.1	121.8	1.85	-0.4392	1.5864	45.176	45.176	-0.4392	513	513	464	464
30th FLD	4.1	126.0	1.85	-0.4752	1.6152	44.728	44.728	-0.4752	516	516	467	467

Wind load calculation with gust factor for 30 floors square shape in as per IS: 875 (part-3) – 2015 terrain category 3(along wind)

Floor	Wind Dir.	Z	K _z	K _{zt}	K _d	V _z	V _z	G _f	Wind Direction		Along Wind	
									X	Y	X	Y
1st FLD	4.1	4.2	2.1	0.9867	0.7805	48.257	48.257	0.9867	218	218	191	191
2nd FLD	4.1	8.4	2.1	0.9747	0.8089	48.32	48.32	0.9747	222	222	194	194
3rd FLD	4.1	12.6	2.1	0.9582	0.8376	48.376	48.376	0.9582	226	226	197	197
4th FLD	4.1	16.8	2.1	0.9378	0.8664	48.424	48.424	0.9378	230	230	200	200
5th FLD	4.1	21.0	1.85	0.9136	0.8952	48.464	48.464	0.9136	234	234	203	203
6th FLD	4.1	25.2	1.85	0.8856	0.924	48.496	48.496	0.8856	238	238	206	206
7th FLD	4.1	29.4	1.85	0.8538	0.9528	48.52	48.52	0.8538	242	242	209	209
8th FLD	4.1	33.6	1.85	0.8182	0.9816	48.536	48.536	0.8182	246	246	212	212
9th FLD	4.1	37.8	1.85	0.7788	1.0104	48.544	48.544	0.7788	250	250	215	215
10th FLD	4.1	42.0	1.85	0.7356	1.0392	48.544	48.544	0.7356	254	254	218	218
11th FLD	4.1	46.2	1.85	0.6888	1.068	48.536	48.536	0.6888	258	258	221	221
12th FLD	4.1	50.4	1.85	0.6384	1.0968	48.52	48.52	0.6384	262	262	224	224
13th FLD	4.1	54.6	1.85	0.5844	1.1256	48.488	48.488	0.5844	266	266	227	227
14th FLD	4.1	58.8	1.85	0.5268	1.1544	48.44	48.44	0.5268	270	270	230	230
15th FLD	4.1	63.0	1.85	0.4656	1.1832	48.376	48.376	0.4656	274	274	233	233
16th FLD	4.1	67.2	1.85	0.4008	1.212	48.288	48.288	0.4008	278	278	236	236
17th FLD	4.1	71.4	1.85	0.3324	1.2408	48.184	48.184	0.3324	282	282	239	239
18th FLD	4.1	75.6	1.85	0.2604	1.2696	48.064	48.064	0.2604	286	286	242	242
19th FLD	4.1	79.8	1.85	0.1848	1.2984	47.928	47.928	0.1848	290	290	245	245
20th FLD	4.1	84.0	1.85	0.1056	1.3272	47.776	47.776	0.1056	294	294	248	248
21th FLD	4.1	88.2	1.85	0.0228	1.356	47.608	47.608	0.0228	298	298	251	251
22th FLD	4.1	92.4	1.85	-0.0528	1.3848	47.416	47.416	-0.0528	302	302	254	254
23th FLD	4.1	96.6	1.85	-0.1224	1.4136	47.192	47.192	-0.1224	306	306	257	257
24th FLD	4.1	100.8	1.85	-0.1872	1.4424	46.936	46.936	-0.1872	310	310	260	260
25th FLD	4.1	105.0	1.85	-0.2472	1.4712	46.648	46.648	-0.2472	314	314	263	263
26th FLD	4.1	109.2	1.85	-0.3024	1.500	46.328	46.328	-0.3024	318	318	266	266
27th FLD	4.1	113.4	1.85	-0.3528	1.5288	45.976	45.976	-0.3528	322	322	269	269
28th FLD	4.1	117.6	1.85	-0.3984	1.5576	45.592	45.592	-0.3984	326	326	272	272
29th FLD	4.1	121.8	1.85	-0.4392	1.5864	45.176	45.176	-0.4392	330	330	275	275
30th FLD	4.1	126.0	1.85	-0.4752	1.6152	44.728	44.728	-0.4752	334	334	278	278

Wind load calculation with gust factor for 30 floors square shape in as per IS: 875 (part-3) – 2015 terrain category 2(across wind)

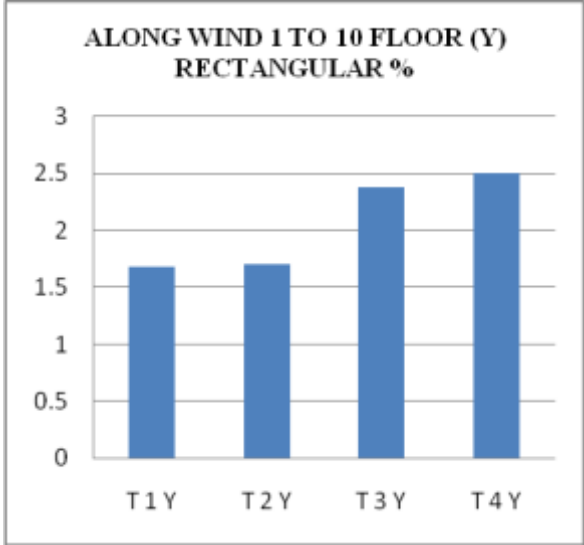
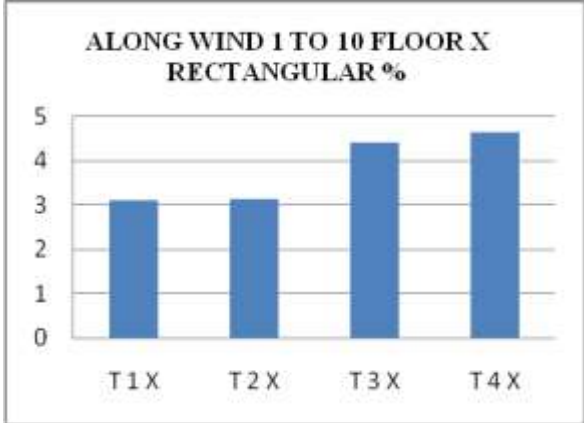
Floor	Wind Dir.	Z	K _z	K _{zt}	K _d	V _z	V _z	G _f	Wind Direction		Across Wind	
									X	Y	Wind Dir.	Wind Dir.
1st FLD	4.1	4.2	2.1	0.9867	0.7805	48.257	48.257	0.9867	429	429	380	380
2nd FLD	4.1	8.4	2.1	0.9747	0.8089	48.32	48.32	0.9747	432	432	383	383
3rd FLD	4.1	12.6	2.1	0.9582	0.8376	48.376	48.376	0.9582	435	435	386	386
4th FLD	4.1	16.8	2.1	0.9378	0.8664	48.424	48.424	0.9378	438	438	389	389
5th FLD	4.1	21.0	1.85	0.9136	0.8952	48.464	48.464	0.9136	441	441	392	392
6th FLD	4.1	25.2	1.85	0.8856	0.924	48.496	48.496	0.8856	444	444	395	395
7th FLD	4.1	29.4	1.85	0.8538	0.9528	48.52	48.52	0.8538	447	447	398	398
8th FLD	4.1	33.6	1.85	0.8182	0.9816	48.536	48.536	0.8182	450	450	401	401
9th FLD	4.1	37.8	1.85	0.7788	1.0104	48.544	48.544	0.7788	453	453	404	404
10th FLD	4.1	42.0	1.85	0.7356	1.0392	48.544	48.544	0.7356	456	456	407	407
11th FLD	4.1	46.2	1.85	0.6888	1.068	48.536	48.536	0.6888	459	459	410	410
12th FLD	4.1	50.4	1.85	0.6384	1.0968	48.52	48.52	0.6384	462	462	413	413
13th FLD	4.1	54.6	1.85	0.5844	1.1256	48.488	48.488	0.5844	465	465	416	416
14th FLD	4.1	58.8	1.85	0.5268	1.1544	48.44	48.44	0.5268	468	468	419	419
15th FLD	4.1	63.0	1.85	0.4656	1.1832	48.376	48.376	0.4656	471	471	422	422
16th FLD	4.1	67.2	1.85	0.4008	1.212	48.288	48.288	0.4008	474	474	425	425
17th FLD	4.1	71.4	1.85	0.3324	1.2408	48.184	48.184	0.3324	477	477	428	428
18th FLD	4.1	75.6	1.85	0.2604	1.2696	48.064	48.064	0.2604	480	480	431	431
19th FLD	4.1	79.8	1.85	0.1848	1.2984	47.928	47.928	0.1848	483	483	434	434
20th FLD	4.1	84.0	1.85	0.1056	1.3272	47.776	47.776	0.1056	486	486	437	437
21th FLD	4.1	88.2	1.85	0.0228	1.356	47.608	47.608	0.0228	489	489	440	440
22th FLD	4.1	92.4	1.85	-0.0528	1.3848	47.416	47.416	-0.0528	492	492	443	443
23th FLD	4.1	96.6	1.85	-0.1224	1.4136	47.192	47.192	-0.1224	495	495	446	446
24th FLD	4.1	100.8	1.85	-0.1872	1.4424	46.936	46.936	-0.1872	498	498	449	449
25th FLD	4.1	105.0	1.85	-0.2472	1.4712	46.648	46.648	-0.2472	501	501	452	452
26th FLD	4.1	109.2	1.85	-0.3024	1.500	46.328	46.328	-0.3024	504	504	455	455
27th FLD	4.1	113.4	1.85	-0.3528	1.5288	45.976	45.976	-0.3528	507	507	458	458
28th FLD	4.1	117.6	1.85	-0.3984	1.5576	45.592	45.592	-0.3984	510	510	461	461
29th FLD	4.1	121.8	1.85	-0.4392	1.5864	45.176	45.176	-0.4392	513	513	464	464

Wind load calculation with gust factor for 30 floors square shape in as per IS: 875 (part-3) – 2015 terrain category 3(across wind)

Rectangular plan:

Floor	Height	Wind Dir.	Wind Spd.	K _t	V _w	V _z	I	G _f	Along Wind		
									X	Y	
1st F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
2nd F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
3rd F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
4th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
5th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
6th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
7th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
8th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
9th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
10th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
11th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
12th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
13th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
14th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
15th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
16th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
17th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
18th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
19th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
20th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
21th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
22th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
23th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
24th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
25th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
26th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
27th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
28th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
29th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
30th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1

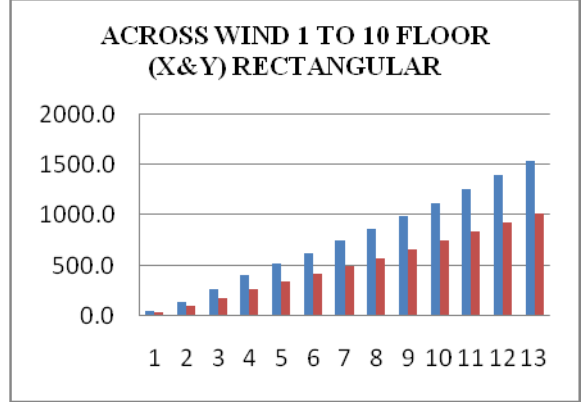
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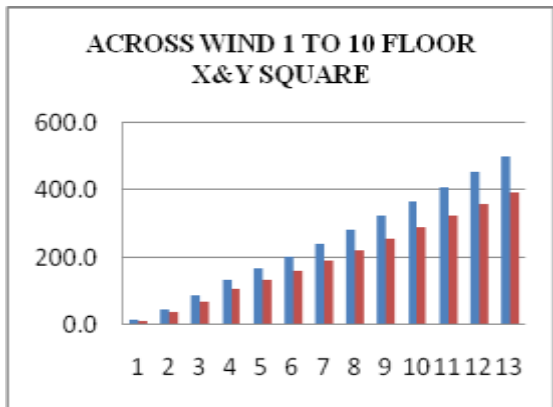
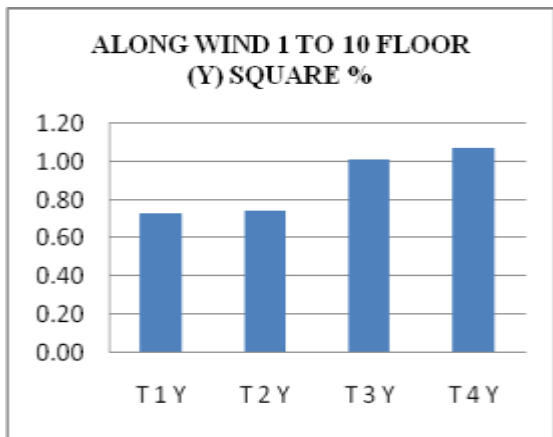
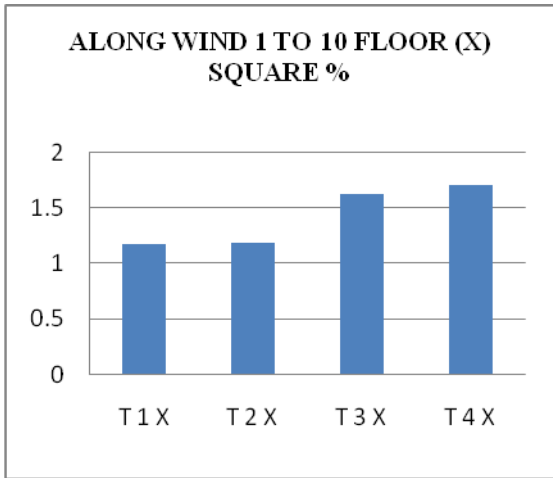
Wind load calculation with gust factor for 30 floors square shape in as per IS: 875 (part-3) – 2015 terrain category 3(across wind)

Floor	Height	Wind Dir.	Wind Spd.	K _t	V _w	V _z	I	G _f	Along Wind		
									X	Y	
1st F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
2nd F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
3rd F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
4th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
5th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
6th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
7th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
8th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
9th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
10th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
11th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
12th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
13th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
14th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
15th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
16th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
17th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
18th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
19th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
20th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
21th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
22th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
23th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
24th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
25th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
26th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
27th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
28th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
29th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1
30th F	4.1	4.2	2.1	0.855	12805	48.74	0.938	0.88	0.88	22.1	45.1

S	4.71
D	4.71
R	1000
C _{pe}	0.8
C _{pe}	0.8
Wind Load Ig=3	
Wind Load Ig=4	
z ₀	4
Exposure Category	3



Square plan:



III. CONCLUSION

- As the height of the model increases, deflection on top storey also increases
- The determine wind analysis study high rise building are done MS EXCEL as per is 875 2015 for this purpose wind loading in term of along and across analysis done different condition the results of the analysis are show below in this graph.

IV. FUTURE SCOPE

- Building analysis is done here by taking different condition height of building but it is suggested to exclusive experimental test building will be carried out in wind tunnel test to check and compare the analytical and experimental results.
- Infill walls may be considered and the effect of which can be observed.
- Analysis can be carried out for different heights and remaining wind zones.

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