J W CONSULTANTS

FOR ACME OZONE
Proposed Sale Buildings
Tower EUCALYPTIA & FENELIA

At
Manpada, Thane

Summary Information For Eucalyptia & Fenelia

Project Reference No. (HRC Folio No)	HRB –
Municipal Reference No. (Building Proposal	V.P. No. 88/142 TMC/TDD
Project Name	ACME OZONE
Project Address	PROPOSED BUILDINGS ON LAND BEARING GUT.NO. 61/1/1,2,3,4, 61/2/1,2,3 VILLAGE CHITALSAR - MANPADA, TALUKA DIST. THANE.
Project Proponent / Developer's Name	ACME HOUSING INDIA PVT. LTD.
Architect's Name, qualifications & License No.	Ar. Subhash Gupte, SCAPES
Structural Engineer's Name, Qualifications & License No	Mr. A. N. Watve B.E. F.I.E. Structural Engineer M.C.G.B. Reg.No.Str/W/10
Geotechnical Consultant's Name and qualifications & License No	Mr. Jaideep Wagh B.E,M.S, P.E (Geotechnical)

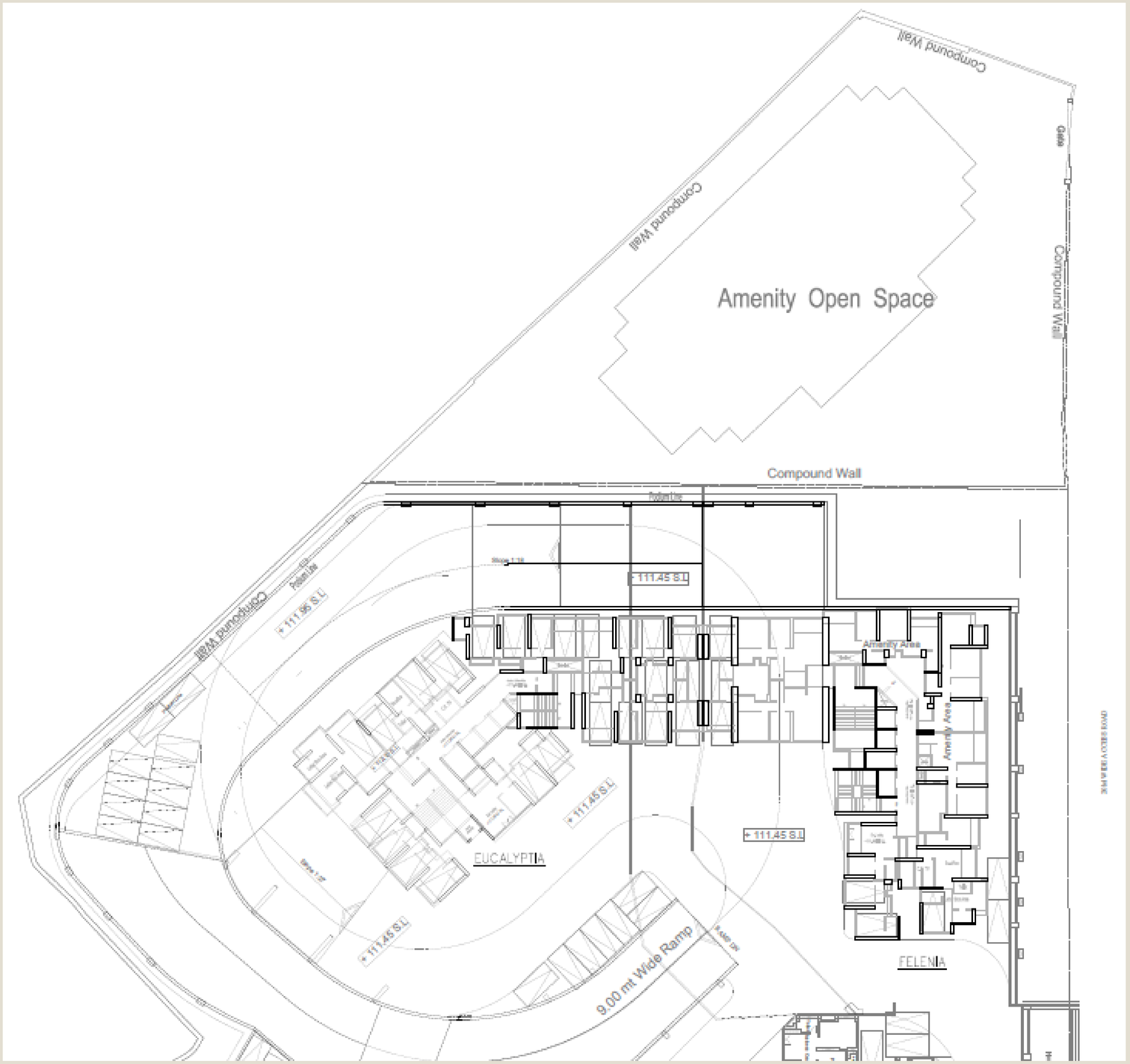
Summary Information For Eucalyptia & Fenelia

Total No. of Floors	43 floor slabs Basement 2 + Basement 1 + Ground + Podium 1 + Podium 2 + Stilt + 36 Typical Residential floors (including refuge) + 1 Fire Check + Terrace.
Number of Basement floors with height	2 Basement 2 = 3.5m, Basement 1 = 5.0m.
Ground floor	Height of floor - 5.20m
Number of Podium Floors along with height of floor	2 1st floor = 3.20 m 2nd floor = 3.55 m
Number of residential Floors	36 1st to 36th Typical floors = 2.9 m
Number of Refuge Floors	7 5th, 10th, 15th , 20th , 25th , 30th & 35th Part refuge floors Height of Floor = 2.9 m.

Details of Substructure For Eucalyptia & Fenelia

Building		Eucalyptia	Fenelia
NO. OF BASEMENTS		2 NOs	2 NOs
Minimum clearance between outermost basement retaining wall and compound wall		As per soil investigation report	As per soil investigation report
Has a shoring system been installed? Submit sectional detail of the shoring system		As per soil investigation report	As per soil investigation report
Give details of Methodology used to resist uplift pressure due to ground water for Wing portion as well as the portion outside the Wing.	Bottom Level of Raft w.r.t. ground level in mts.	10.50m	10.50m
	Total downward load of self weight of raft + Counter weight over raft	48.25 kN/m2	48.25 kN/m2
	Water level assumed for uplift calculation	2 m below ground level	2 m below ground level
Description of the foundation for the tower block			
Nature of Foundation		Raft foundation	Raft foundation
SBC assumed T/sq.mt.		300 T/M2	300 T/M2
Sub-grade Elastic Modulus		25000 T/m3	25000 T/m3
Retaining wall types & Sequence of backfilling	Whether propped cantilever, Cantilever Supported between Buttresses / Counter forts, etc.	Propped cantilever Back Filling should be done after casting of respective basement labs.	Propped cantilever Back Filling should be done after casting of respective basement labs.
If rock anchors are used, are they grouted after installation and stressing?		NA	NA

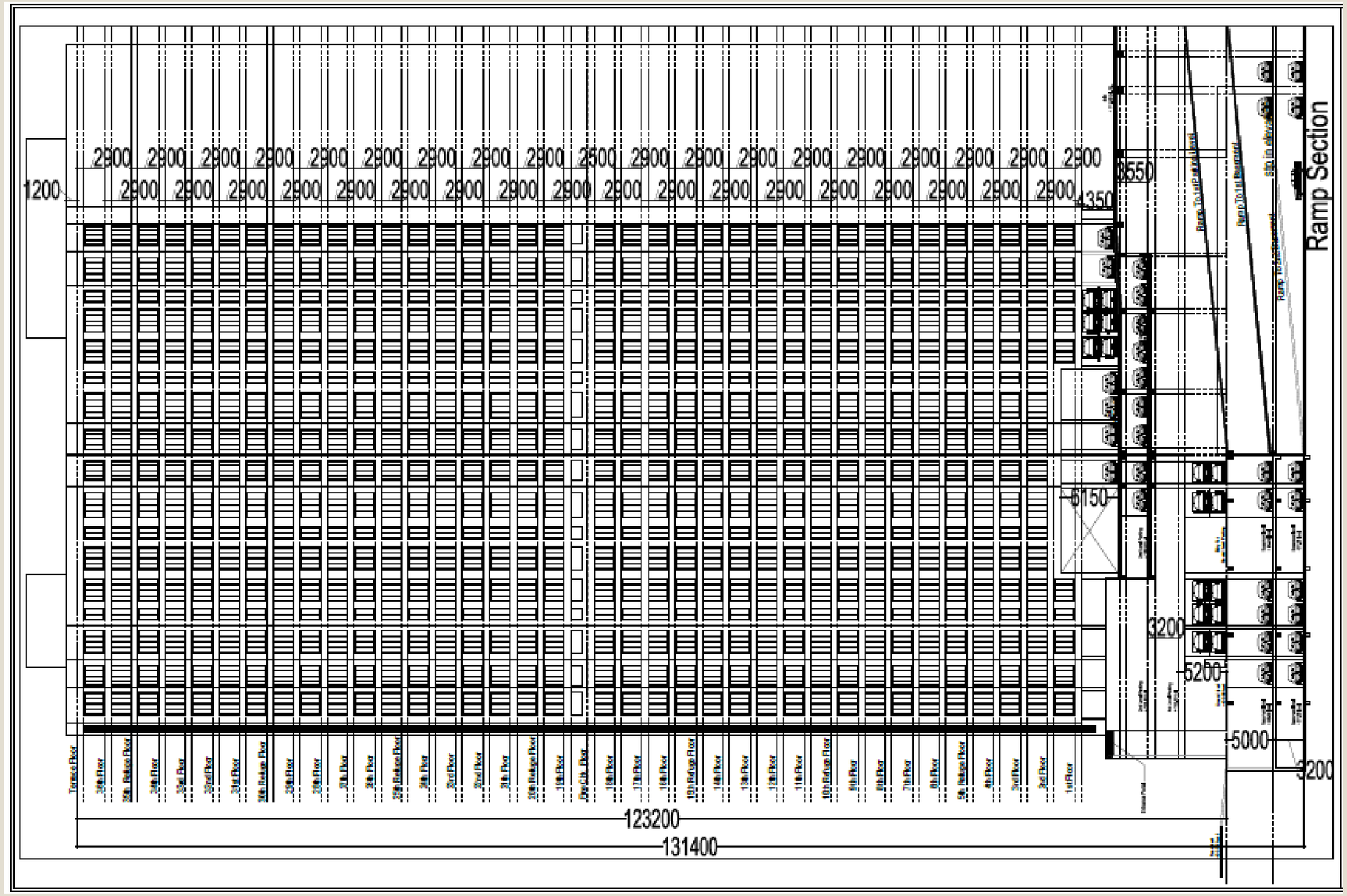
Building Layout



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Building Section

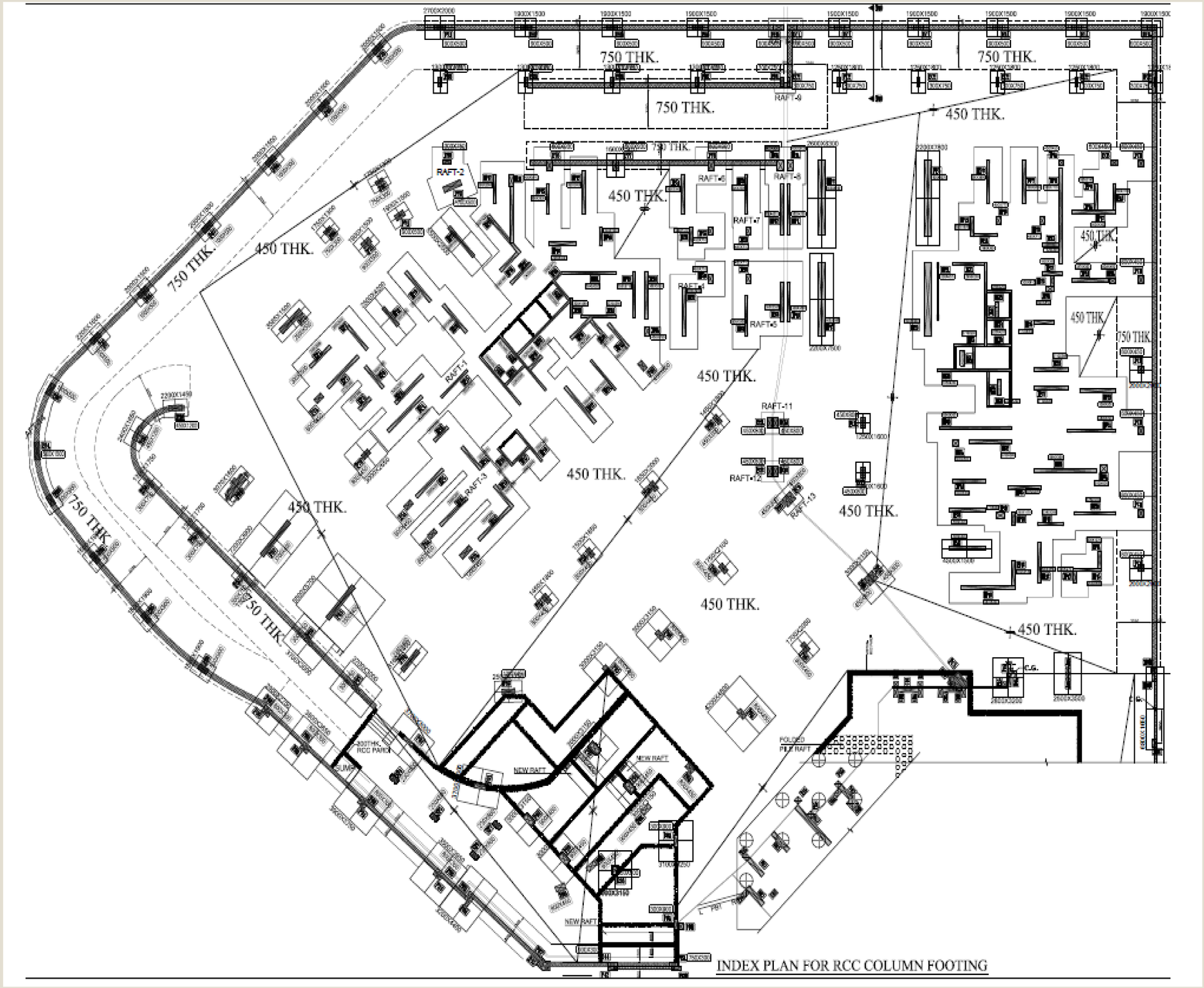
Height of building – 123.2m -From Ground lvl to Terrace slab



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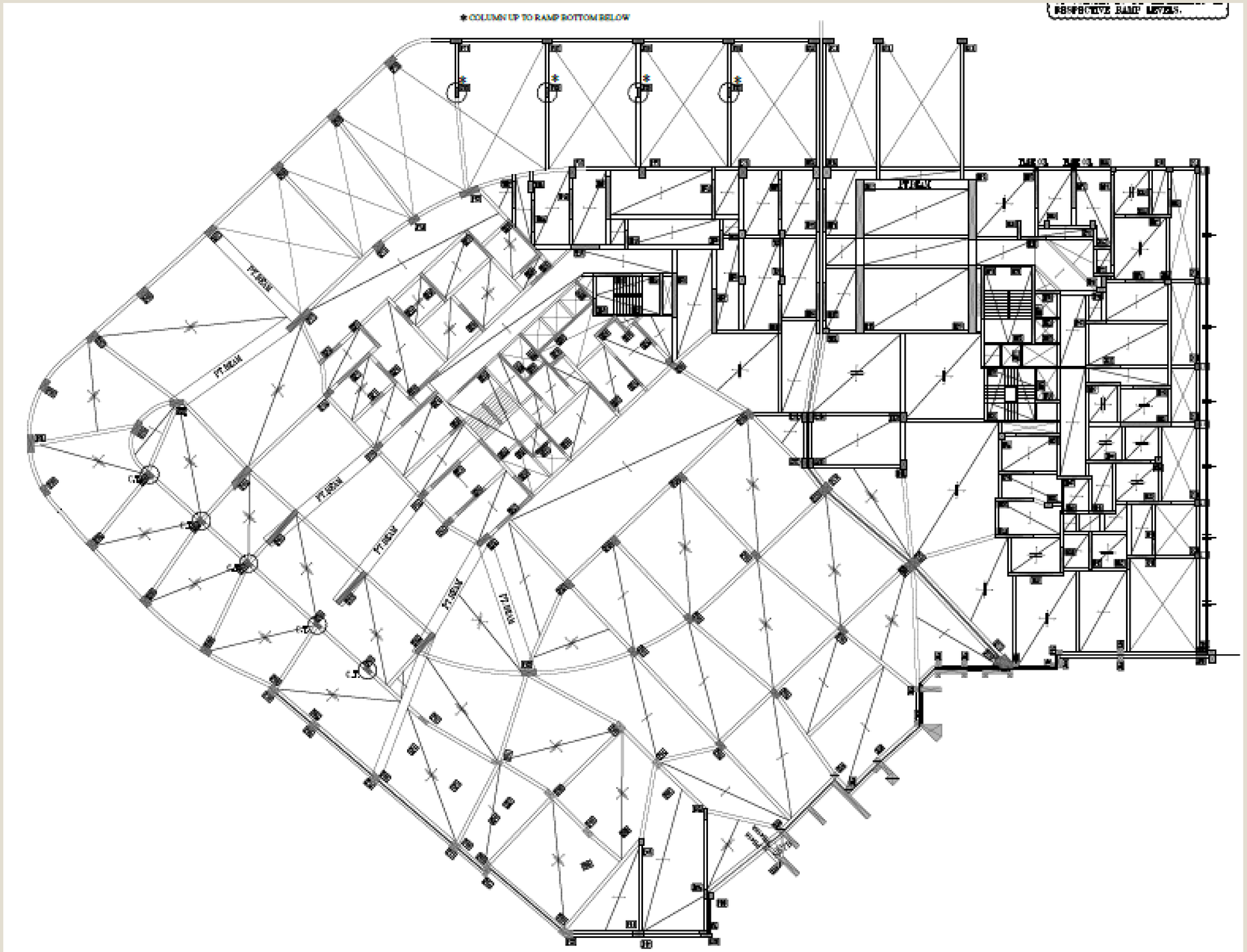
Building Forms For Eucalyptia & Fenelia

Index Plan For R.C.C. Footings



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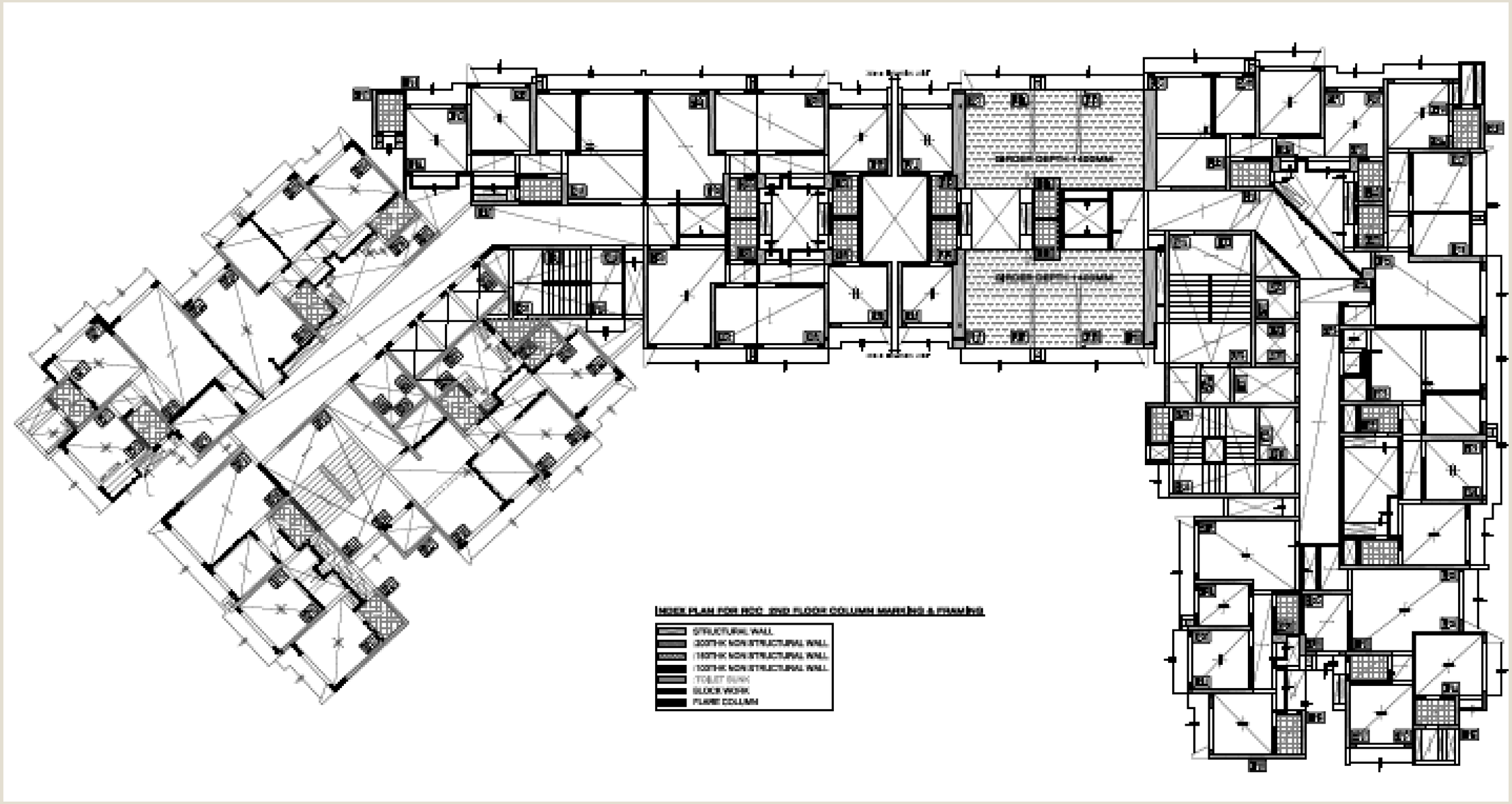
Index Plan For R.C.C. Podium Level Slab



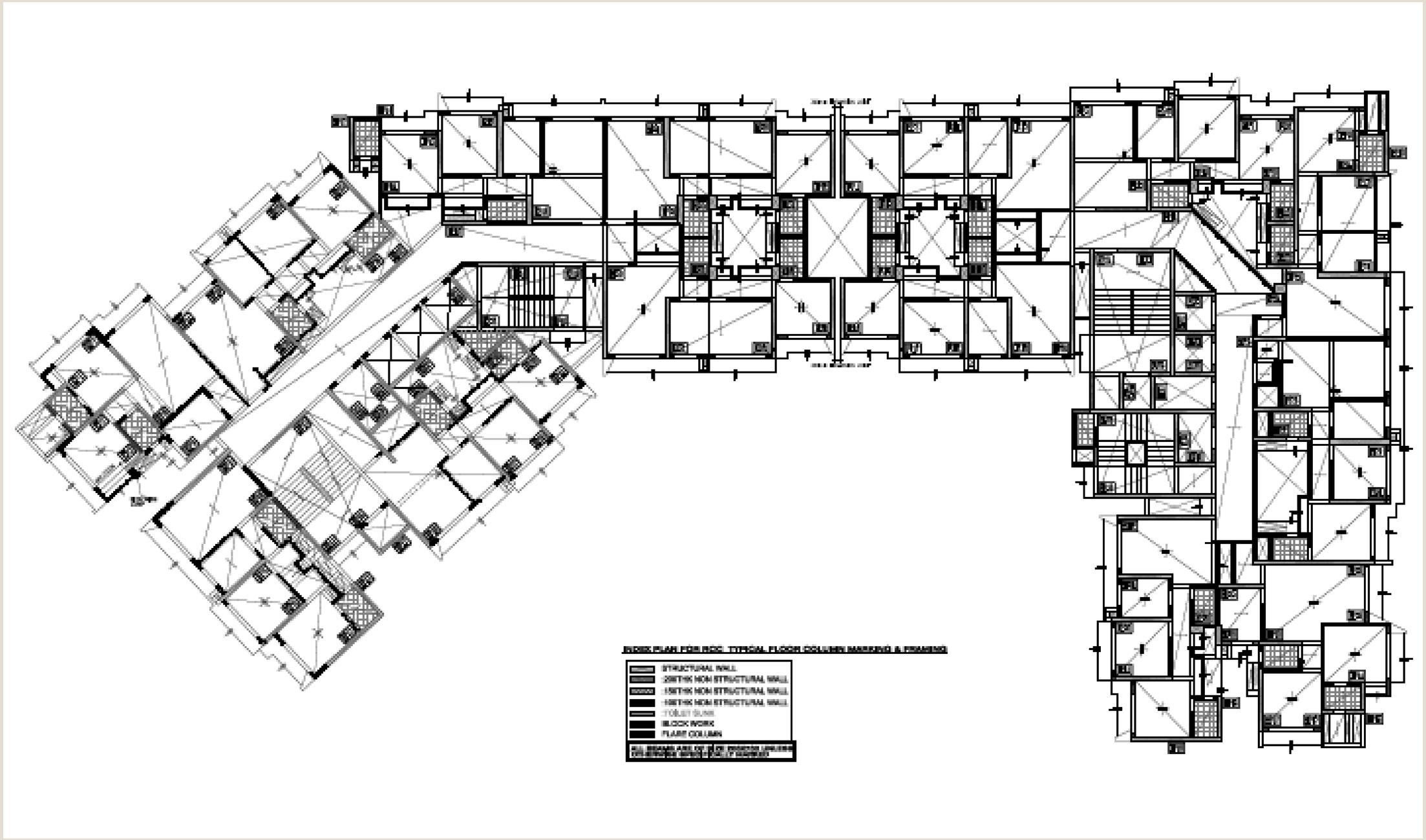
INDEX PLAN FOR RCC 1ST PODIUM FLOOR SLAB (+105.20 LVL)

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Index Plan For R.C.C. Transfer Level Slab



Index Plan For R.C.C. Typical Level Slab



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Details of Super Structure For Eucalyptia & Fenelia

	Eucalyptia	Fenelia
No. of Floors	43 Floors	43 Floors
Shape Of Building, Plan, Elevation whether Symmetric in Elevation	Not symmetric in elevation	Not Symmetric in elevation.
Maximum plan dimension in either direction	41.9 M	54.19 M
Ratio of plan dimension	1.56	1.55
Aspect ratio (Height of building till Terrace/ Minimum Dimension of Building)	131.70 / 26.85 = 4.905	131.70 / 29.93 = 4.400
Use of floor at different levels (Residential / Commercial /industrial)	Residential and Parking as per Architectural plan	Residential and Parking as per Architectural plan
Is there any Transfer level If yes, depth of Transfer Girder	NA	NA
Whether Expansion joint is provided? If yes, what is the maximum plan dimension in mt.	NA	NA
Maximum cantilever projection in mt.	0.75 m	0.75 m
Cross Earthquake load applied	Yes	No
Cross Wind load applied	No	Yes

Design Basis Report

Earth Quake Loading Details For Eucalyptia & Fenelia

Zone Factor	Z = 0.16
Importance factor	I = 1.2
Response Reduction factor	4.0 (IS 1893:2016)
Soil Type	Hard
% LL considered in seismic	25% up to 3 kN/m2 & 50% above 3 kN/m2

Earthquake Loading Details For Eucalyptia & Fenelia

		Eucalyptia	Fenelia
Maximum plan dimension in either direction		54.19 M	54.19 M
Ratio of plan dimension		1.55	1.55
Aspect ratio (Height of building till Terrace/Minimum Dimension of Bldg)		131.70 / 26.85 = 4.905	131.70 / 29.93 = 4.400
Time Period in the horizontal X-direction(from formula in code)		2.030 Sec	2.547 Sec
Time Period in the horizontal Y-direction(from formula in code)		2.530 Sec	2.230 Sec
Total Seismic weight (Sw) of building (in KN)		722895.6143 KN	522096.36 KN
Static Base-shear in X-direction (kN) (as % of Sw)		8546.5491 KN	4919.636 KN
Static Base-shear in Y-direction (kN) (as % of Sw)		6857.5078 KN	5618.974 KN
Dynamic Base-shear in X-direction (as % of Sw)		8030.2192 KN	3450.741 KN
Dynamic Base-shear in Y-direction (as % of Sw)		6013.0443 KN	4245.527 KN
Max. deflection at roof level.	(in X-dir)	34.253 mm or H/3844.92	110.34 mm or H/1194
	(in Y-dir)	58.22 mm or H/2262.1	60.545 mm or H/2175
Scale factor in X-direction		1.56	1.426
Scale factor in Y-direction		1.86	1.463

Wind Load Parameters For Eucalyptia & Fenelia

Wind Loading		
Category of building		3
Class of building		C
Basic wind speed in m/sec		44 m/s
Maximum wind pressure	K_1 =	1.0
	K_3 =	1.0

Wind Loading Details For Eucalyptia & Fenelia

		Eucalyptia	Fenelia
Maximum wind pressure	K_2 =	0.813	0.813
	V_z =	35.772 m/s	35.772 m/s
	P =	767.78 N/m2	767.78 N/m2
Force coefficient		h/b = 2.94 a/b = 0.641 Cf = 1.3	h/b = 3.50 a/b = 0.851 Cf = 1.3
Static base shear in X-direction		7683.446 KN	8378.03 KN
Static base shear in Y-direction		10913.9863KN	6912.40KN
Dynamic base shear in X-direction		7208.982KN	10182.796KN
Dynamic base shear in Y-direction		11600.3723KN	8165.366KN
Gust factor in X-direction	Gx	2.808	3.062
	Mode	Third	First
	Sec	3.511	5.585
Gust factor in Y-direction	Gy	2.896	2.897
	Mode	First	Second
	Sec	4.833	4.224
Vertical Element Data			
a) Size of maximum loaded wall 1		300 X 3300mm	600 X 6270mm
b) Gravity load on Col./Wall in Kn		28423.6358 kN (Factored)	53457.73 kN (Factored)
c) Axial stress in max. loaded Column		28.71 N/mm2 (Factored)	14.21 N/mm2 (Factored)
d)Grade of max. loaded Column at base		M60	M60
e)Unfactored Axial settlement in max. loaded wall		1.73 mm	0.856mm
f) Unfactored Axial settlement in min. loaded wall		0.289 mm	0.774 mm

Wind Load Calculations For Eucalyptia

Sr No.	Loading	Wind Base Shear (KN)		Deflection(mm)		Story Drift (%)	
		X	Y	X	Y	X	Y
1	WIND	7683.446	10913.9863	78.355	202.82	0.115	0.2466
				H/1572.33	H/607.44	Stilt floor	15th floor
2	GUST	7208.982	11600.3723	84.905	235.814	0.0842	0.2949
				H/1451.03	H/522.44	15th floor	16th floor

Diaphragm Displacement at Terrace level For Eucalyptia

Load Case	Dx-max (mm)	H/Dx	Drift-x (%)	DY-max (mm)	H/DY	Drift-Y (%)
DL	7.37	H/17869.74	0.0251	30.665	H/4294.8	0.068
DL+LL	11.01	H/11961.85	0.0347	39.724	H/3315.37	0.0882
SPEC 1	34.253	H/3844.92	0.0432	4.516	H/29162.97	0.0344
SPEC 2	8.02	H/16421.44	0.0376	58.22	H/2262.11	0.0829
WX	78.355	H/1572.33	0.0543	5.621	H/21917.81	0.0141
WY	5.623	H/21910.01	0.0409	202.82	H/607.44	0.1747

Dynamic Analysis Data For Eucalyptia

Mode	Period	Frequency	X Participation	Y Participation	RZ Participation	Sum X	Sum Y	Sum RZ
			X - Translation	Y - Translation	(Rotation)			
Mode 1	4.833	0.206911	0.71	17.4	5.49	0.71	17.4	5.49
Mode 2	4.547	0.219925	0.03	25.12	14.84	0.74	42.52	20.33
Mode 3	3.511	0.284819	42.7	0.28	0.43	43.44	42.8	20.76
Mode 4	1.391	0.718907	0.23	8.7	15.1	43.67	51.5	35.85
Mode 5	1.294	0.772798	0.01	10.68	8.28	43.68	62.18	44.14
Mode 6	1.041	0.960615	17.9	2.33	16.22	61.59	64.5	60.36
Mode 7	0.951	1.051525	3.56	3.78	19.19	65.14	68.28	79.54
Mode 8	0.691	1.447178	0	13.08	3.28	65.14	81.36	82.82
Mode 9	0.607	1.647446	2.74	0.1	0.65	67.88	81.46	83.47
Mode 10	0.6	1.666667	0.003679	0	0.000552	67.89	81.46	83.47
Mode 11	0.534	1.872659	15.87	1.37	1.16	83.76	82.82	84.64
Mode 12	0.469	2.132196	0.2	5.55	1.29	83.96	88.37	85.93

Dynamic Analysis Data For Eucalyptia

Mode	Period	Frequency	X Participation	Y Participation	RZ Participation	Sum X	Sum Y	Sum RZ
			X - Translation	Y - Translation	(Rotation)			
Mode 13	0.444	2.252252	0.001634	0.000338	0.000699	83.96	88.37	85.93
Mode 14	0.391	2.557545	0.001321	0.000302	0.001563	83.96	88.37	85.93
Mode 15	0.387	2.583979	1.03	0.000432	0.26	84.99	88.37	86.19
Mode 16	0.37	2.702703	4.14	0.52	0.36	89.13	88.89	86.56
Mode 17	0.363	2.754821	0.02	0.002011	0.000491	89.15	88.89	86.56
Mode 18	0.327	3.058104	0.13	1.67	0.07	89.28	90.56	86.63
Mode 19	0.304	3.289474	0.01	0.004091	0.03	89.29	90.57	86.66
Mode 20	0.283	3.533569	0.64	0.25	2.63	89.93	90.82	89.29
Mode 21	0.279	3.584229	0.16	0.33	1.5	90.09	91.15	90.78
Mode 22	0.26	3.846154	0.52	0.26	0.000523	90.61	91.41	90.78
Mode 23	0.226	4.424779	0.58	0.0029	0.06	91.19	91.41	90.84
Mode 24	0.21	4.761905	0.000452	1.41	0.3	91.19	92.82	91.14

Dynamic Analysis Data For Eucalyptia

Mode	Period	Frequency	X Participation	Y Participation	RZ Participation	Sum X	Sum Y	Sum RZ
			X - Translation	Y - Translation	(Rotation)			
Mode 25	0.202	4.950495	0.89	0.48	0.05	92.08	93.3	91.19
Mode 26	0.164	6.097561	2.22	0.18	0.21	94.3	93.49	91.4
Mode 27	0.157	6.369427	0.67	2.31	0.06	94.97	95.79	91.47
Mode 28	0.139	7.194245	0.22	0.05	0.001732	95.19	95.84	91.47
Mode 29	0.08	12.5	2.58	0.98	0.01	97.77	96.82	91.48
Mode 30	0.074	13.51351	0.51	2.43	0.004465	98.28	99.25	91.48
Mode 31	0.071	14.08451	0.49	0.000444	0.00063	98.77	99.25	91.49

Torsional Irregularity (along X-direction) For Eucalyptia

Load Case	Corner -1	Corner -2	Corner -3	Corner -4	Avg-X	% = Max/Avg	Max/Min
SPEC1	48.726	39.823	40.28	42.504	42.833	1.137	1.223
WX	75.747	77.123	80.521	77.077	77.617	1.037	-

Torsional Irregularity (along Y-direction) For Eucalyptia

Load Case	Corner -1	Corner -2	Corner -3	Corner -4	Avg-X	% = Max/Avg	Max/Min
SPEC2	76.93	90.726	86.115	85.075	84.7115	1.071	1.179
WY	235.19	250.76	167.32	168.78	205.51	1.22	-

Cantilever Data For Eucalyptia

Cantilever span	Beam Size	Nature of Class	Maximum elastic deflection under gravity load (m)
1.98 M	200 X 700	Supporting Bedroom slab	1.507 mm

Wind Load Calculations For Fenelia

Sr No.	Loading	Wind Base Shear (KN)		Deflection(mm)		Story Drift (%)	
		X	Y	X	Y	X	Y
1	Static	8378.03	6912.40	215.082	110.255	0.3008	0.1718
				H/573	H/1117	18th floor	16th floor
2	Gust	10182.796	8165.366	283.047	137.001	0.3637	0.1978
				H/435	H/899	18th floor	16th floor

Diaphragm Displacement at Terrace level For Fenelia

Load Case	Dx-max (mm)	H/Dx	Drift-x (%)	DY-max (mm)	H/DY	Drift-Y (%)
DL	13.206	H/9973	0.0302	11.609	H/11345	0.037
DL+LL	13.523	H/9739	0.0336	13.96	H/9434	0.0431
SPEC 1	110.34	H/1194	0.1298	12.322	H/10688	0.0652
SPEC 2	9.765	H/13487	0.0592	60.545	H/2175	0.0892
WX	215.082	H/573	0.2447	11.397	H/10810	0
WY	8.207	H/15012	0	110.255	H/1117	0.1214

Dynamic Analysis Data For Fenelia

Mode	Period	Frequency	X Participation	Y Participation	RZ Participation	Sum X	Sum Y	Sum RZ
			X - Translation	Y - Translation	(Rotation)			
Mode 1	5.585	0.179051	45.7	0.04	10.53	45.7	0.04	10.53
Mode 2	5.214	0.191791	10.74	3.13	34.17	56.44	3.17	44.7
Mode 3	4.224	0.236742	0.53	53.19	1.05	56.97	56.36	45.74
Mode 4	1.663	0.601323	8.5	0.04	5.32	65.48	56.41	51.07
Mode 5	1.371	0.729395	6.63	0.61	8.19	72.11	57.02	59.26
Mode 6	1.132	0.883392	0.11	15.46	0.38	72.21	72.48	59.64
Mode 7	0.87	1.149425	4.1	0.04	6.35	76.31	72.53	65.99
Mode 8	0.642	1.557632	4.82	0.02	6.55	81.13	72.54	72.54
Mode 9	0.57	1.754386	2.55	0.06	4.97	83.68	72.61	77.52
Mode 10	0.546	1.831502	0.01	9.05	0.77	83.69	81.66	78.29
Mode 11	0.406	2.463054	0.2	0.000536	6.68	83.89	81.66	84.97
Mode 12	0.393	2.544529	5.02	0.003004	0.3	88.91	81.66	85.27

Dynamic Analysis Data For Fenelia

Mode	Period	Frequency	X Participation	Y Participation	RZ Participation	Sum X	Sum Y	Sum RZ
			X - Translation	Y - Translation	(Rotation)			
Mode 13	0.346	2.890173	0.000515	5.81	0.09	88.91	87.48	85.36
Mode 14	0.298	3.355705	0.01	0.003726	0.08	88.92	87.48	85.44
Mode 15	0.295	3.389831	0.3	0.02	1.61	89.23	87.5	87.05
Mode 16	0.287	3.484321	0.01	0.000555	0.001358	89.23	87.5	87.05
Mode 17	0.283	3.533569	0.00012	0.04	0.003947	89.23	87.54	87.06
Mode 18	0.272	3.676471	0.2	0.01	0.06	89.43	87.55	87.11
Mode 19	0.271	3.690037	2.2	0.02	1.1	91.63	87.56	88.21
Mode 20	0.245	4.081633	8.73E-05	2.9	0.05	91.63	90.46	88.25
Mode 21	0.236	4.237288	0.002945	0.1	0.000201	91.63	90.56	88.25
Mode 22	0.227	4.405286	0.31	0.02	0.5	91.95	90.58	88.76
Mode 23	0.22	4.545455	0.1	0.02	0.02	92.05	90.6	88.78
Mode 24	0.201	4.975124	0.06	0.12	0.03	92.11	90.72	88.8

Dynamic Analysis Data For Fenelia

Mode	Period	Frequency	X Participation	Y Participation	RZ Participation	Sum X	Sum Y	Sum RZ
			X - Translation	Y - Translation	(Rotation)			
Mode 25	0.191	5.235602	1.22	0.01	0.01	93.33	90.74	88.81
Mode 26	0.184	5.434783	0.04	1.34	0	93.37	92.07	88.81
Mode 27	0.173	5.780347	0.01	0.21	0.01	93.38	92.28	88.82
Mode 28	0.153	6.535948	1.54	0.02	0.56	94.92	92.3	89.39
Mode 29	0.137	7.29927	0.000548	1.4	0.01	94.92	93.7	89.4
Mode 30	0.128	7.8125	0.000208	0.21	0.003322	94.92	93.91	89.4
Mode 31	0.098	10.20408	1.56	0.45	1.33	96.49	94.36	90.73
Mode 32	0.096	10.41667	0.21	2.17	0.28	96.7	96.53	91.01
Mode 33	0.091	10.98901	0.01	0.25	0.02	96.71	96.78	91.03
Mode 34	0.052	19.23077	2.63	0.02	0.01	99.34	96.8	91.04
Mode 35	0.051	19.60784	0.03	2.49	0.02	99.37	99.29	91.06
Mode 36	0.047	21.2766	0.00134	0.13	0.00021	99.37	99.42	91.06

Torsional Irregularity (along X-direction) For Fenelia

Load Case	Corner -1	Corner -2	Corner -3	Corner -4	Avg-X	% = Max/Avg	Max/Min
SPEC1	122.932	119.506	142.552	142.582	131.893	1.081	1.193
WX	295.742	285.353	162.94	162.945	226.745	1.304	-

Torsional Irregularity (along Y-direction) For Fenelia

Load Case	Corner -1	Corner -2	Corner -3	Corner -4	Avg-X	% = Max/Avg	Max/Min
SPEC2	64.647	64.908	96.01	67.665	73.307	1.309	1.485
WY	85.266	121.255	168.168	73.925	112.153	1.499	-

Cantilever Data For Fenelia

Cantilever span	Beam Size	Nature of Class	Maximum elastic deflection under gravity load (m)
1.33 M	200 X 700	Supporting Bedroom	1.415 mm

Structural Information

Clear cover to the reinforcement	Wall & Column = 50 mm, Beam & Slab = 30 mm				
Sub Structure:					
All Substructure elements	Moderate				
Super Structure:					
All external columns and peripheral beams & slabs	Moderate				
Grade for concrete for structural members :-	Foundation = M40				
Grade of concrete	**SL. NO**	**LEVELS**	**WALL**	**COLUMN**	**BEAMS/ SLABS**
	1	Foundation to 3rd Typical floor	M60	M60	M40
	2	3rd to 10th Typical floor	M50	M50	M40
	3	10th to Terrace floor	M40	M40	M30
Grade of Steel	Fe500 High Strength deformed Steel bars produced by thermo-mechanical treatment process having elongation more than 14.5 % and conforming to IS 1786. (As per Clause 5.3.1.b, Page No. 4, IS 13920:2016)				
Construction sequence and loading parameters	Construction will be done in single phase				
Wind tunnel test	N.A.				
Proposed approach to structural analysis	I. ETABs – 17.0 -software is used for analysis. II. SAFE – 16.0 - software is used for raft foundation.				

Thank you