COMPARATIVEANALYSISOFSHEARWALL CONFIGURATIONS AT SOFT STORY AND FULL BUILDING HEIGHT ON THE SEISMIC PERFORMANCE OF MULTI-STORY STRUCTURES

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ABSTRACT

When compared to constructions without shear walls, shear walls greatly increase story shear, base shear, and stiffness. The seismic performance of seven models with T, C, and H-shaped shear walls at soft story and full height was compared using IS 456:2000's zone factor (Z = 0.16). Compared to soft-story shear walls and no-shear-wall models, full-height shear walls (T, C, and H) greatly increase story shear. Similar shear is produced by soft-story T, C, and H shear walls—slightly better than none. In shear at both levels, Model 5 (C-section, full-height) performs better than T and H. For every model, base shear stays the same. In every situation, C-section shear walls work well. While Model 5 leads in Y-direction stiffness (Ky), Model 4 (C-shaped, soft-story) improves X-direction stiffness (Kx, kN/m). Compared to full-height walls, soft-story shear walls display lower Ky.

1. Overview

a sturdy, vertical wall structure that can withstand sideways (lateral) stresses, such as those caused by earthquakes or wind. By keeping the structure from wobbling or falling, it maintains stability. Shear walls, which are made of steel or concrete, are positioned in strategic locations to reinforce and support the structure. A shear wall's capacity to withstand lateral stresses and preserve structural stability is greatly influenced by its form. Shearwalls are created in a variety of forms according to building plan, structural constraints, and architectural requirements. The typical shear wall forms are described simply below: 1. Shear walls that are rectangular; 2. Shear walls that are L-shaped; 3. Shear walls that are T-shaped; 4. Shear walls that are U-shaped; 5. Shear walls that are C-shaped; 6. I-shaped (or barbell) Shear walls: 7. Curved or circular shear walls: 8. Box-shaped shear walls Shear Walls: Influencing Factors Shape of Shear Walls

• Building Layout: L- or T-shaped walls work well in corners or crossroads, while U- or box-shaped walls are used for core regions. • Lateral Load Direction: Perfect for seismic or windy circumstances, complex geometries (L, T, and U) resist pressures in various directions.

• Architectural Design: Circular walls or curves may be utilized for aesthetic reasons. • Torsional Resistance: Building twisting is lessened by closed forms (box, U) or L-shaped walls positioned at corners. Building Limitations: While complicated designs need sophisticated formwork, rectangular walls are easier and less expensive to construct. The shearwall's purpose The main purpose of a shear wall is to protect a building structure against lateral forces like wind, earthquakes, and other horizontal stresses. It offers: Lateral Stability: Prevents structure deformation or collapse by absorbing and transferring shear stresses, or horizontal forces, to the foundation. Stiffness: Reduces sway or deflection under lateral stresses by making the structure more stiff. Load Distribution: Reduces the amount of stress concentrated on particular components by distributing lateral stresses across the structure. Torsional resistance aids in a building's ability to withstand twisting pressures, particularly in asymmetrical structures. Assistance with Vertical Loads: Shear walls may sometimes function as load-bearing walls by supporting vertical (gravity) loads as well. In high-rise or multi-story structures, shear walls—which are usually composed of reinforced concrete, steel, or masonry—are positioned carefully to guarantee structural integrity. Shearwall performance The capacity of a seawall to efficiently withstand lateral forces (such as those caused by wind or earthquakes) while maximizing structural performance, material utilization, and cost is referred to as its efficiency. The following are important variables affecting shear wall efficiency: Material Strength: Steel and reinforced concrete are examples of high-strength materials that increase load-carrying capacity and enable smaller walls with comparable performance. Placement and Geometry: Ratio of height to width: Although they may be more likely to buckle, taller, thinner walls are better at withstanding shear. Location strategy: To increase torsional resistance and decrease deformation, walls should be positioned symmetrically or along the building's perimeter, such as around elevators or stairwells. Stiffness: By lowering lateral deflection, a stiffer wall increases the stability of the structure as a whole. In order to prevent brittle failure, efficiency relies on striking a balance between stiffness and flexibility. Relation to the Foundation: Performance is improved by strong anchoring, which guarantees efficient force transmission to the ground. Openings: Because wide openings decrease efficiency, minimizing or strengthening apertures (such as for doors or windows) preserves structural integrity. Ductility: Shear walls that are made to flex without fail are ductile and absorb energy better in seismic zones, increasing safety and efficiency under dynamic loads. Performance versus Cost Ratio: While satisfying design specifications, efficient shearwalls need less material and construction work, which lowers building costs overall. Quantitative Performance Measures The wall's capacity to withstand lateral forces per unit area is known as its shear capacity. For instance, depending on the strength of the concrete and reinforcement, a well-designed reinforced concrete shear wall may withstand 0.5 to 1.5 MPa of shear stress. Deflection Control: Under design loads, effective walls reduce lateral drift to, say, H/500, where H is the building height. Optimization of Materials: Wall thickness may be decreased without sacrificing performance by using composite materials or high-strength concrete (such as 40–60 MPa). Improving Outcomes Walls with Coupled Shear: use slabs or beams to join walls in order to distribute loads. Superior Performance Materials: using steel-plate shear walls or concrete reinforced with fibers. Advanced Design: Optimizing wall form and reinforcing by the use of finite element analysis. In conclusion, a shear wall's performance is to efficiently maximize forces while reducing material consumption and preserving structural integrity.

2. REVIEW OF LITERATURE

According to research by Richa Gupta and Alfia Bano (1), structures with shear walls outperform those without them in every other shape. & Wind has no influence on the examination of buildings in zone 5, as shown by the fact that it doesn't dominate the study there and didn't change any of the findings. Kewat Priya Golghate Kavita (2) Compared to static analysis, dynamic analysis shows reduced storey drift and lateral movement. Therefore, it could be better to use the dynamic analysis approach in practice. It is determined that a higher shear wall thickness is necessary for improved construction performance.

Using ETABS v9.7.1, G.S. Hiremath (2016) (3) examined the effects of adding shear walls at various locations and configurations as well as with varied shear wall thicknesses. The behavior of frame-wall irregularities on existing reinforced concrete buildings that were subjected to the 1999 Kocaeli Earthquake in Turkey is discussed by Ali Kocak and Basak Zengin (2015), (4). Gangisetty (2015) (5) introduced optimization algorithms that are utilized to address structural engineering issues including size and topological optimization while taking stability, safety, and responsiveness to various loading scenarios into account. S.P. Pawar Dr. C.P. Pie (6) conducted research on the construction of the shortest slope column on increased stiffness. Compared to other transverse directions, the base shear and displacement are greater along the slope. When compared to alternative arrangements, the use of T-shaped shear wals provides greater lateral displacement and member forces for structures on slopes.

3. Approach In this study, the Response Spectrum Method in Etabs 18.1.1 software is used to analyze the high-rise structure of G+6 stories for lateral loads. According to IS code, the following load combination was achieved for the concrete frame and concrete shearwall designs: We have therefore found 14 for the concrete frame design and 14 for the concrete shear wall design, for a total of 28 load combinations. (1) 1.5DL plus 1.5SIDL (2) 1.5LL + 1.5SIDL + 1.5DL (3) 1.2LL+1.2SIDL+1.2Ex+1.2DL (4) * 1.2DL + 1.2LL + 1.2SIDL-1.2Ex (1) 1.2DL + 1.2LL + 1.2SIDL + 1.2Ey This is 1.2DL+1.2LL+1.2SIDL-1.2Ey (7) 1.5Ex+1.5DL+1.5SIDL (8) (9) 1.5DL+1.5SIDL-1.5Ex 1.5Ey + 1.5DL + 1.5SIDL (10). (11), 1.5DL+1.5SIDL-1.5Ey 1.5Ex + 0.9DL + 0.9SIDL (12) (13), (14), and (9) 0.9DL+0.9SIDL-1.5Ex are 0.9DL+0.9SIDL-1.5Ey Developing Material Properties & Modeling Section

Table:1Specificationof inputdata

Sl.No	Description	Specification
1	Buildingframesystem	SMRF
2	Softstoreyheight	3
3	Typicalstoreyheight	3
4	Typeofsoil	II
5	Supportcondition	Fixed
6	Gradeof concrete	M25
7	Gradeofsteel	FE550
8	Liveload	2.5 kN/m^2
9	SuperImposedDeadLoad	2 kN/m^2
10	ResponseReductionfactor	3
11	Zone Factor	0.16
12	Slabthickness	125mm
13	Column(mm)	230 x 600
14	Beam(mm)	230 x 450
15	Shearwall thickness	150 mm
16	ImportanceFactor	1
17	Wall load	10.5kN/m

Creating Models: The following examples are examined in an analytical manner using various shear shapes:
Model 1: G+6 Shear-wall-free storage building Model 2: A multi-story structure with a T-section shear wall at the soft floor on four sides of the building's central outside perimeter Model 3: A G+6-story structure with a TSection Shearwall that extends fully to four sides of the building's central outside perimeter Model 4: A multi-story structure with a C-section shear wall at the soft floor on four sides of the building's central outside perimeter Model 5: A G+6-story structure with a CSection Shearwall that extends fully to four sides of the building's central outside perimeter Model 6: A G+6-story structure with an H-section shear wall at the soft level at the building's center Model 7: G+6 Story Building with Full Height Extension in the Center of the Building and HSection Shearwall

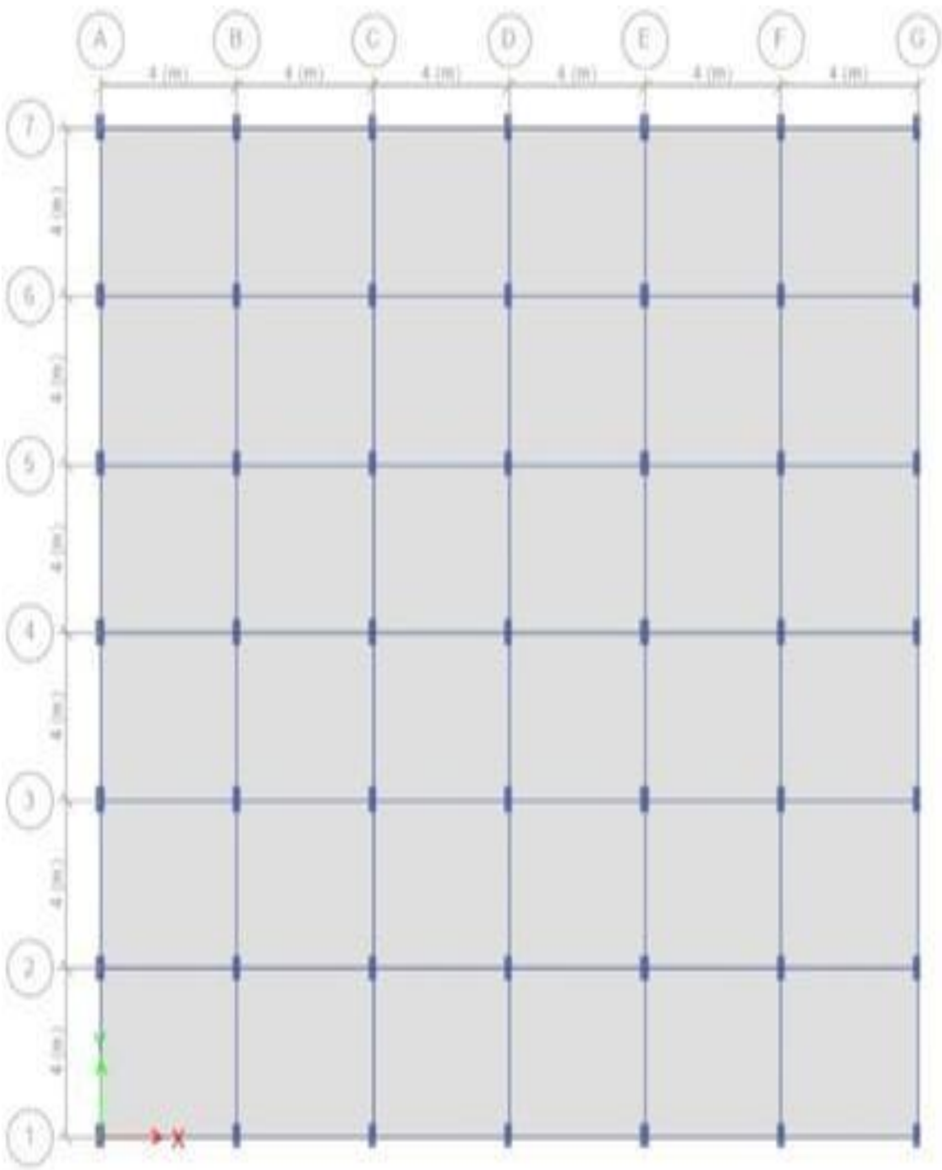


Fig-1:Model1

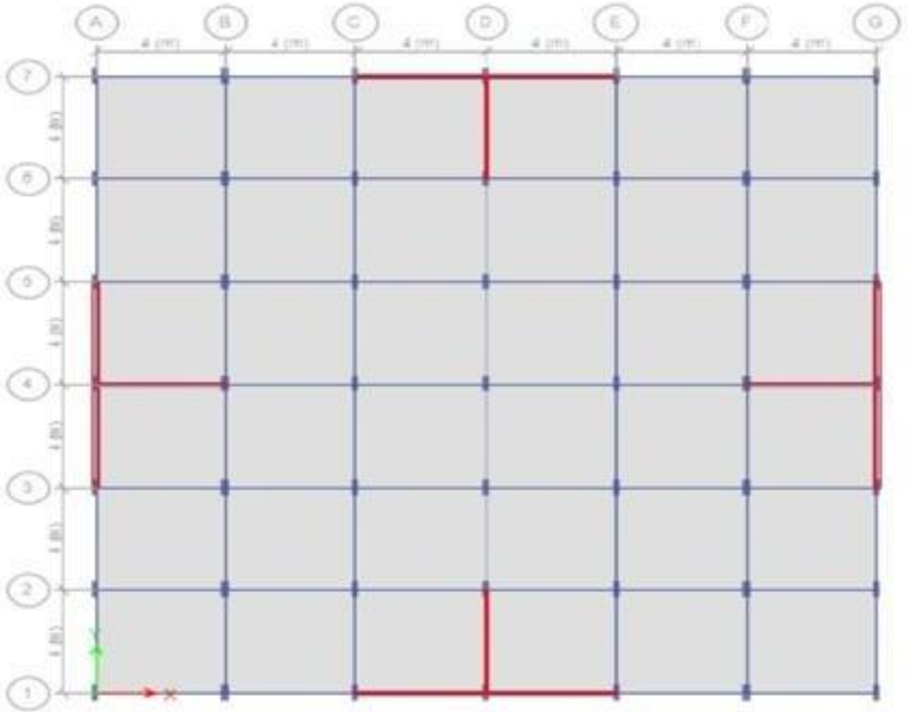


Fig-2:Model2&3

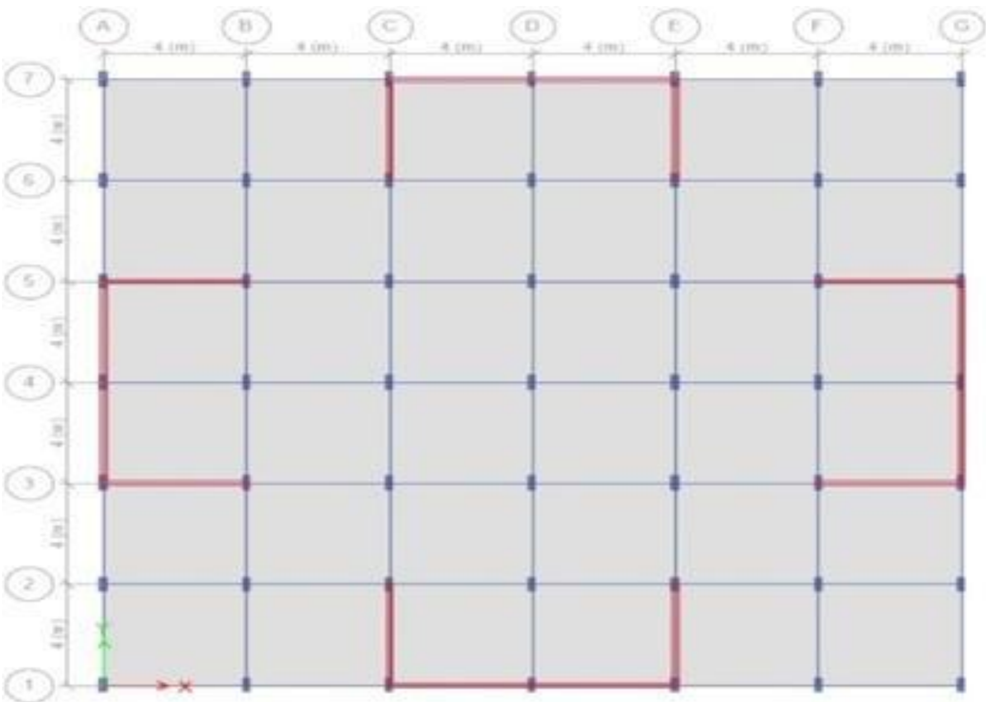


Fig-3:Model4&5

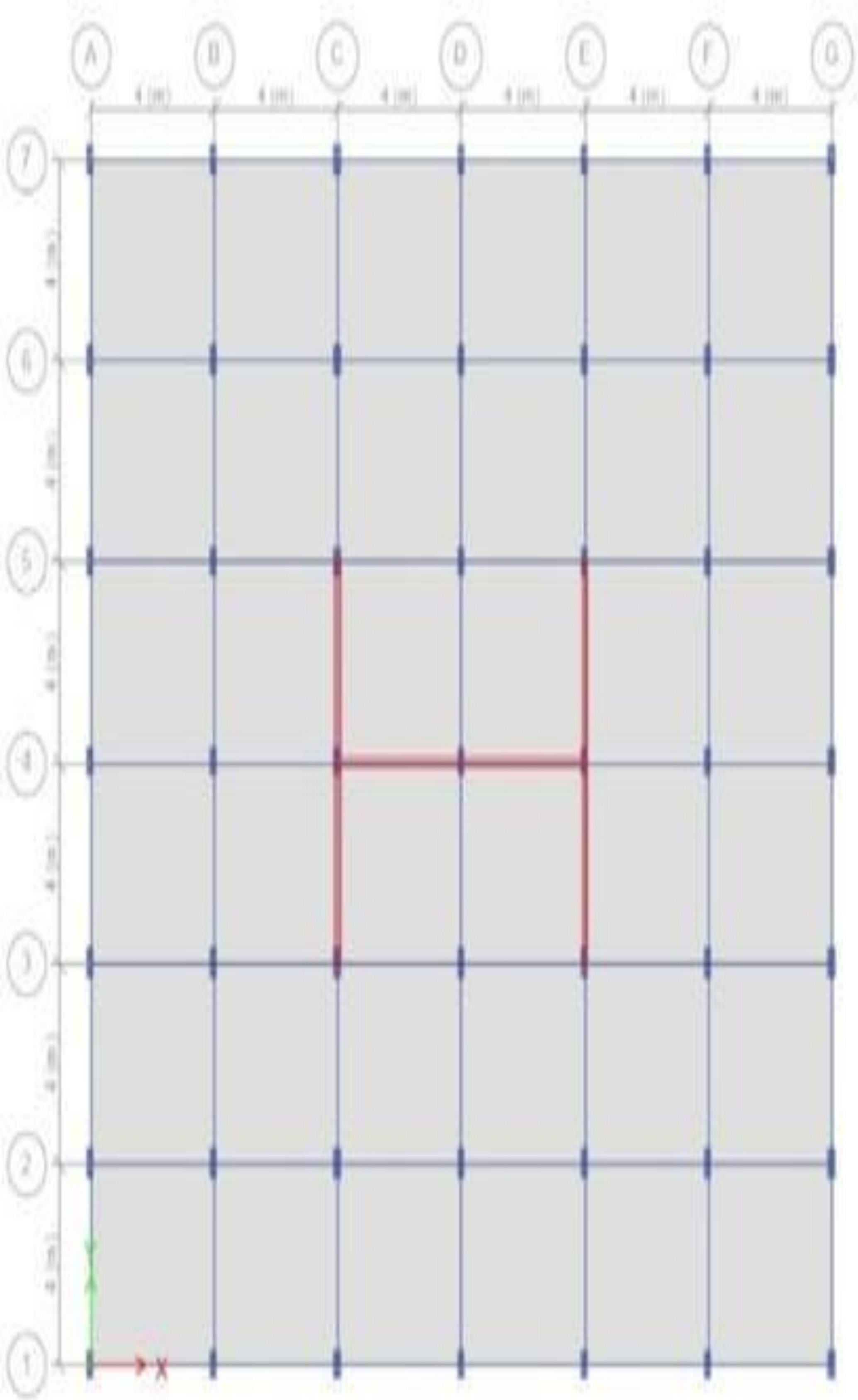


Fig-4:Model6&7

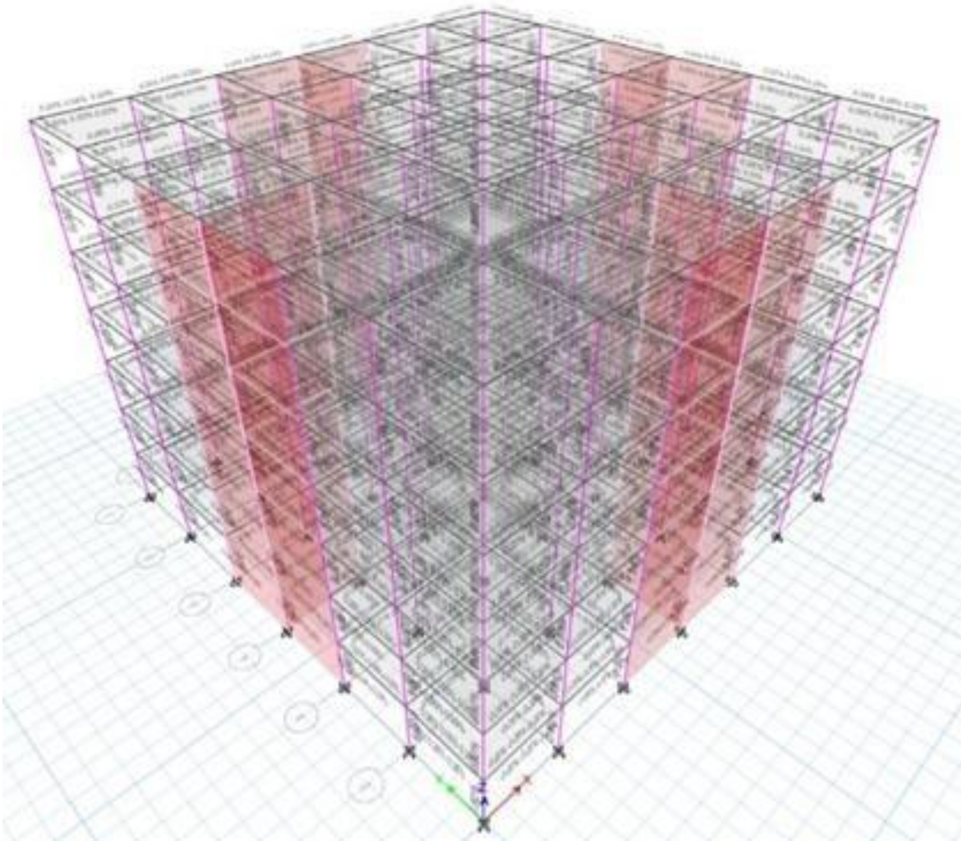
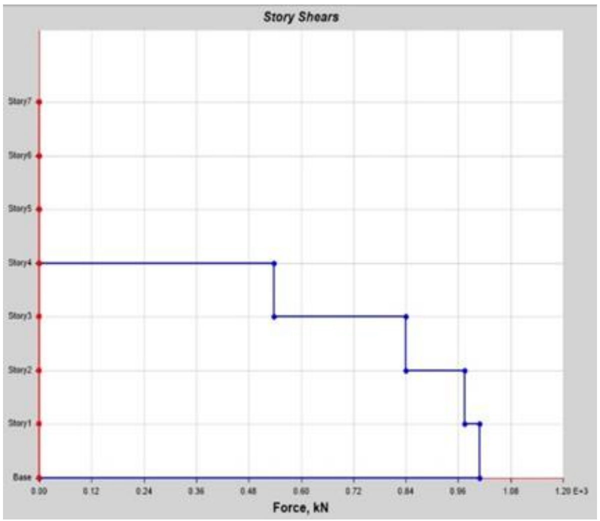


Fig-5:3DVIEW

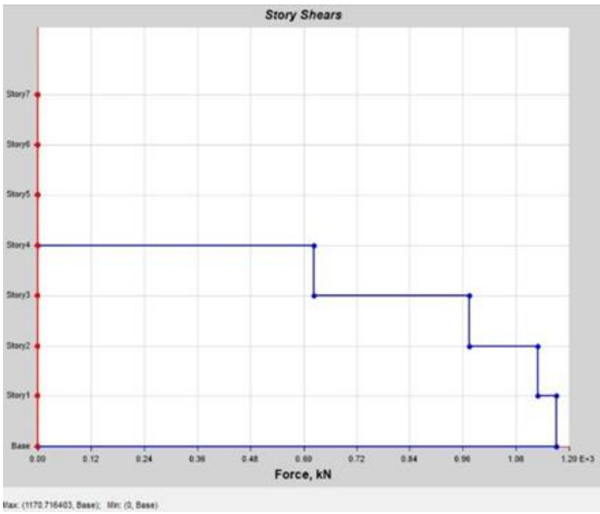
Model:1=WithoutShear wall

Model:2,4,6=T,C,HsectionShearwallatSoftStory(Providedatparking floor/Ground floor area only)

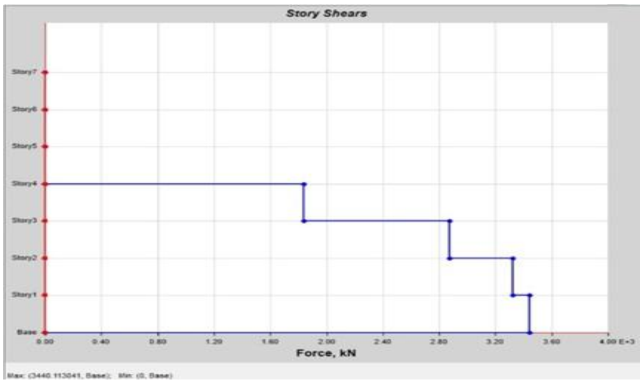
Model:3,5,7 = T, C, H section Shear wall with fullHeightExtension(Providedfrom Bottom story to Top story)



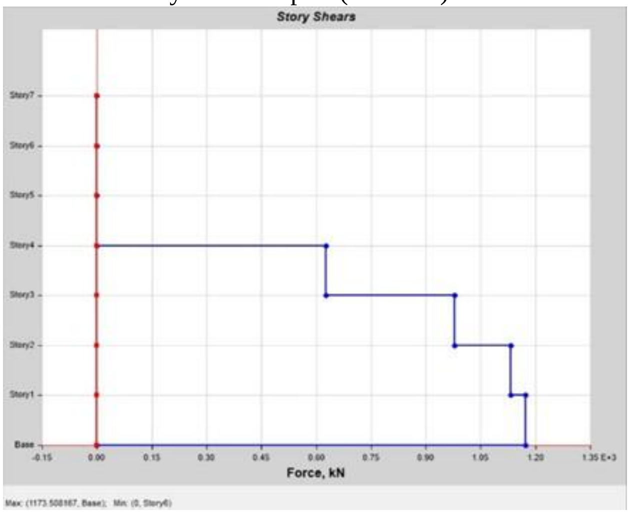
StoryShear:Graph-1(Model-1)-1008.002kN



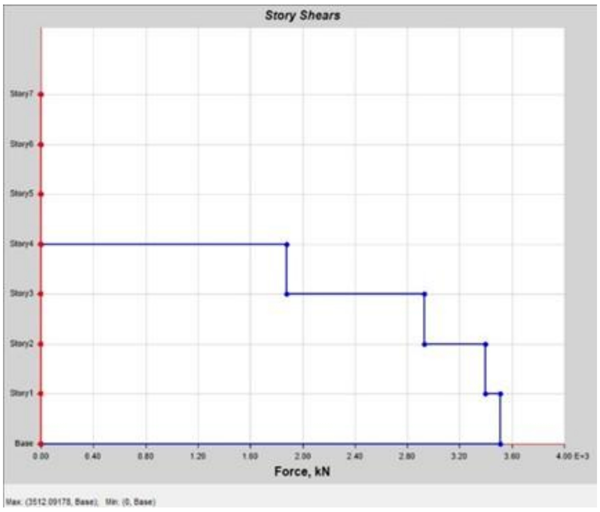
StoryShear:Graph-2(Model-2)-1170.71kN



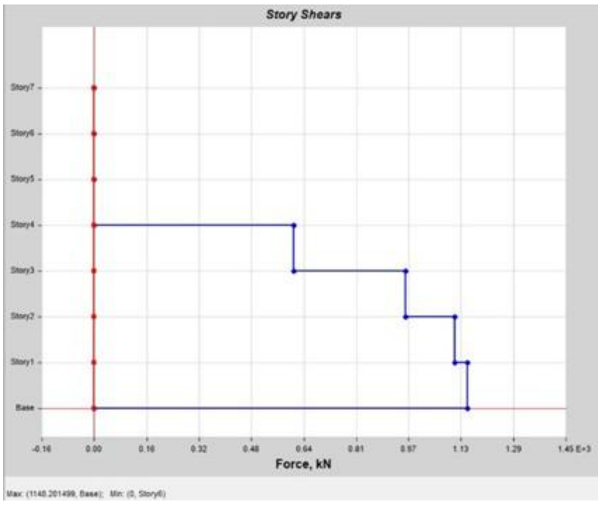
StoryShear:Graph-3(Model-3)-3440.113kN



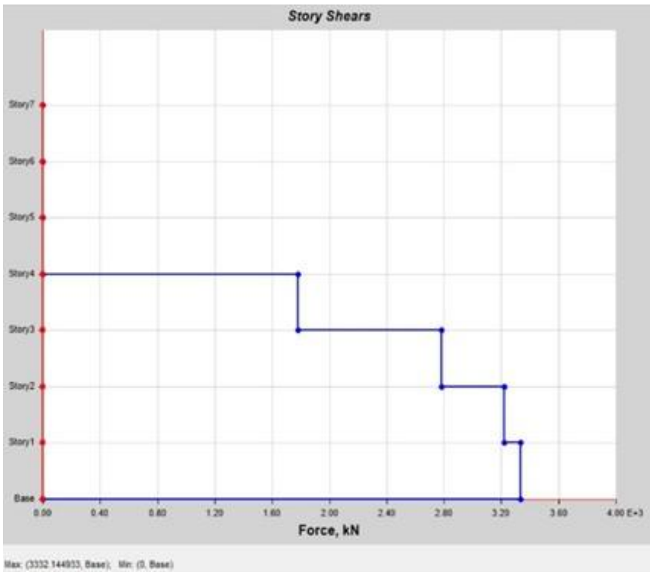
StoryShear:Graph-4(Model-4)-1173.5kN



StoryShear:Graph-5(Model-5)-3512.09kN



StoryShear:Graph-6(Model-6)-1148.20kN



storyshear:Graph-7(Model-7)-3332.14kN Table:

Story shear graph Value

ModelGraph	StoreyShearValue(kN)
Model1:Graph1	1008.002
Model2:Graph2	1170.71
Model3:Graph3	3440.113
Model4:Graph4	1173.508
Model5:Graph5	3512.09
Model6:Graph6	1148.20
Model7:Graph8	3332.14

Table2:PercentageofsteelReinforcement (Model-1)

TYPESOFCOLUMNS	STOREY 1	STOREY 2	STOREY3	STOREY4	STOREY5	STOREY6	STOREY7
Cornercolumn–2beam junction	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Edgecolumn–3beam Junction	1.49	1.49	1.04	0.8	0.8	0.8	0.8
Interiorcolumn–4beam junction	2.64	2.31	1.73	1.18	0.8	0.8	0.8

Table3:PercentageofsteelReinforcement (Model-2)

TYPESOFCOLUMNS	STOREY 1	STOREY 2	STOREY3	STOREY4	STOREY5	STOREY6	STOREY7
Cornercolumn–2beam junction	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Edgecolumn–3beam Junction	1.77	1.74	1.24	0.8	0.8	0.8	0.8
Interiorcolumn–4beam junction	2.66	2.6	2.21	1.83	1.19	0.8	0.8

Table4:PercentageofsteelReinforcement (Model-3)

TYPESOFCOLUMNS	STOREY 1	STOREY 2	STOREY3	STOREY4	STOREY5	STOREY6	STOREY7
Cornercolumn–2beam junction	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Edgecolumn–3beam Junction	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Interiorcolumn–4beam junction	2.57	1.98	1.63	1.38	1.21	0.8	0.8

Table5:PercentageofsteelReinforcement(Model-4)

TYPESOFCOLUMNS	STOREY 1	STOREY 2	STOREY3	STOREY4	STOREY5	STOREY6	STOREY7
Cornercolumn–2beam junction	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Edgecolumn–3beamJunction	1.76	1.76	1.38	0.8	0.8	0.8	0.8
Interiorcolumn–4beam junction	2.63	2.63	2.2	1.82	1.19	0.8	0.8

Table6:PercentageofsteelReinforcement (Model-5)

TYPESOFCOLUMNS	STOREY 1	STOREY 2	STOREY3	STOREY4	STOREY5	STOREY6	STOREY7
Cornercolumn–2beam junction	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Edgecolumn–3beam Junction	1.76	1.76	1.38	0.8	0.8	0.8	0.8
Interiorcolumn–4beam junction	2.51	1.94	1.59	1.33	1.19	0.8	0.8

Table7:PercentageofsteelReinforcement (Model-6)

TYPESOFCOLUMNS	STOREY 1	STOREY 2	STOREY3	STOREY4	STOREY5	STOREY6	STOREY7
Cornercolumn–2beam junction	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Edgecolumn–3beam Junction	1.86	1.86	1.2	0.8	0.8	0.8	0.8
Interiorcolumn–4beam junction	2.64	2.64	2.46	1.74	1.06	0.8	0.8

Table8:PercentageofsteelReinforcement (Model-7)

TYPESOFCOLUMNS	STO REY 1	STO REY 2	STOR EY3	STORE Y4	STOR EY5	STOR EY6	STOR EY7
Cornercolumn–2beam junction	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Edgecolumn–3beam Junction	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Interiorcolumn–4beam junction	1.55	1.52	1.48	1.44	1.35	0.8	0.8

The analysis of the reinforcement percentage from Table 2 reveals that, for a 2-point junction corner column, the reinforcement stays constant from bottom to top story. For a 3-point junction triaxial column, the variation from bottom to top story was 46.30, and for a 4-point junction axial column, the variation was 69.6%. Table 3: According to the preceding study, the 2-point junction corner column stays the same from bottom to top story, the 3-point junction triaxial column increases from bottom to top story by 54.80, and the 4-point junction axial column increases from bottom to top story by 69.9%. By supplying a shear wall of T section at the soft story, we may infer from Models 1 and 2 that there is a shift in column reinforcement. According to Table 4, the reinforcement from the foregoing analysis demonstrates that the 2-point junction corner column stays the same from bottom to top story, the 3-point junction triaxial column stays the same from bottom to top story, and the 4-point junction axial column differs from bottom to top story by 52.91%. We can conclude that the provision of a T section shear wall through the height significantly reduced the reinforcement in columns with T section shear walls at soft story only because the triaxial column's reinforcement was reduced by a minimum percentage and the axial loaded column's reinforcement was reduced by 32.11%. From Table 5: The Strengthening According to the aforementioned research, the 3-point junction triaxial column varied from bottom to top story by 69.6%, whereas the 2-point junction corner column remained constant from bottom to top story. According to Table 6's reinforcement study, the 2-point junction corner column stays the same from bottom to top story, the 3-point junction triaxial column varies from bottom to top story by 54.54, and the 4-point junction axial column varies from bottom to top story by 68.12%. Table 7: The examination of the einforcement above reveals that the 2-point junction corner column stays the same from bottom to top story, whereas the 3-point junction triaxial column is 56.98% different from bottom to top story and the 4-point junction axial column is 69.6% different from bottom to top story. Table 8: According to the preceding study, the 6-point junction axial column differs from bottom to top story by 48.38%, but the 2-point junction corner column and 3-point junction triaxial column stay the same. Compared to all models, the H section with complete height extension at the core had the lowest proportion of steel columns, according to the observation of abovereinforcement columns.

Table: BASESHEAR(Reactions)-Model-1

TABLE: Base Reactions

Output Case	Case Type	Step Type	Step Number	FX	FY	FZ	MX	MY	MZ
				kN	kN	kN	kN-m	kN-m	kN-m
Modal	LinModEigen	Mode	1	-0.8753	-0.00001922	0	0.0003	-12.0247	10.4445
Modal	LinModEigen	Mode	2	-0.0053	0.0478	0	-0.6618	-0.08	19.5304
Modal	LinModEigen	Mode	3	0.0001	2.1297	0	-29.9435	0.0019	25.0619
Modal	LinModEigen	Mode	4	-2.6504	-0.0001	0	-0.0001	10.0636	31.632
Modal	LinModEigen	Mode	5	-0.0115	0.1377	0	0.2974	0.0873	65.4852
Modal	LinModEigen	Mode	6	-0.0016	7.5748	0	16.6163	-0.0078	89.5418
Modal	LinModEigen	Mode	7	4.3281	0.0033	0	0.0065	15.0646	-51.7089
Modal	LinModEigen	Mode	8	-5.6189	-0.0004	0	0.0007	10.0598	66.8222
Modal	LinModEigen	Mode	9	-0.0533	0.2111	0	-0.7945	-0.1279	126.2638
Modal	LinModEigen	Mode	10	6.0123	0.0024	0	-0.0082	16.918	-71.0995
Modal	LinModEigen	Mode	11	-0.0002	15.5494	0	-57.3128	-0.0005	184.559
Modal	LinModEigen	Mode	12	-5.0591	0.0001	0	-0.0000212	9.556	60.7566
Dead	LinStatic			0	0	21598.0686	259176.8231	-259176.8231	0
Live	LinStatic			0	0	10080	120960	-120960	0
SIDL	LinStatic			0	0	28980	345744	-350280	0
EX	LinStatic			-672.0017	0	0	0	-6720.0166	8036.0872
EY	LinStatic			0	-1059.3436	0	10593.4361	0	-12767.1648
DCon1	Combination			0	0	75867.1029	907381.2347	-914185.2347	0
DCon2	Combination			0	0	**90987.1029**	1088821.235	-1095625	0
DCon3	Combination			-806.402	0	72789.6823	871056.9878	-884564.2077	9643.3046
DCon4	Combination			806.402	0	72789.6823	871056.9878	-868436.1678	-9643.3046
DCon5	Combination			0	-1271.2123	72789.6823	883769.1111	-876500.1878	-15320.5978
DCon6	Combination			0	1271.2123	72789.6823	858344.8644	-876500.1878	15320.5978

Table:BASESHEAR(Reactions)-Model-2

TABLE: Base Reactions									
Output Case	Case Type	Step Type	Step Number	FX	FY	FZ	MX	MY	MZ
				kN	kN	kN	kN-m	kN-m	kN-m
Modal	LinModEigen	Mode	1	1.0814	0.00002471	0	-0.0003	15.9315	-12.9041
Modal	LinModEigen	Mode	2	-0.0063	0.065	0	-0.955	-0.1024	24.1066
Modal	LinModEigen	Mode	3	0.0002	2.5866	0	-38.4389	0.0026	30.3721
Modal	LinModEigen	Mode	4	3.259	0.0001	0	-0.0001	-1.9609	-38.9054
Modal	LinModEigen	Mode	5	-0.0092	0.1831	0	-0.0894	0.0814	82.1266
Modal	LinModEigen	Mode	6	-0.0011	9.5619	0	-4.8282	-0.0101	112.9894
Modal	LinModEigen	Mode	7	5.1805	0.0031	0	-0.0024	30.7899	-62.0116
Modal	LinModEigen	Mode	8	6.2765	0.0008	0	-0.003	5.8103	-74.5686
Modal	LinModEigen	Mode	9	-0.0796	0.278	0	-1.5689	-0.39	158.6272
Modal	LinModEigen	Mode	10	5.7097	0.004	0	-0.0205	32.3957	-66.8301
Modal	LinModEigen	Mode	11	-0.0017	-20.5253	0	111.668	-0.0044	-243.8627
Modal	LinModEigen	Mode	12	3.305	-0.0002	0	0.0021	1.1064	-39.7737
Dead	LinStatic			0	0	22137.9091	265654.9096	-265654.9096	0
Live	LinStatic			0	0	10080	120960	-120960	0
SIDL	LinStatic			0	0	28980	345744	-350280	0
EX	LinStatic			-780.4776	0	0	0	-7798.7018	9333.3256
EY	LinStatic			0	-1212.4361	0	12114.9246	0	-14612.1586
DWal1	Combination			0	0	76676.8637	917098.3645	-923902.3645	0
DWal2	Combination			0	0	**91796.8637**	1098538.365	-1105342	0
DWal3	Combination			-936.5731	0	73437.491	878830.6916	-893632.3337	11199.9907
DWal4	Combination			936.5731	0	73437.491	878830.6916	-874915.4494	-11199.9907
DWal5	Combination			0	-1454.9233	73437.491	893368.6011	-884273.8916	-17534.5904
DWal6	Combination			0	1454.9233	73437.491	864292.782	-884273.8916	17534.5904
DWal7	Combination			-1170.7164	0	76676.8637	917098.3645	-935600.4171	13999.9884
DWal8	Combination			1170.7164	0	76676.8637	917098.3645	-912204.3118	-13999.9884
DWal9	Combination			0	-1818.6541	76676.8637	935270.7513	-923902.3645	-21918.238
DWal10	Combination			0	1818.6541	76676.8637	898925.9776	-923902.3645	21918.238

Table:BASESHEAR(Reactions)-Model-3

TABLE: Base Reactions									
Output Case	Case Type	Step Type	Step Number	FX	FY	FZ	MX	MY	MZ
				kN	kN	kN	kN-m	kN-m	kN-m
Modal	LinModEigen	Mode	1	-10.5207	-0.0027	0	0.04	-157.6282	125.5403
Modal	LinModEigen	Mode	2	0.0031	-11.8696	0	177.2217	0.0472	-143.5668
Modal	LinModEigen	Mode	3	0.0528	0.0902	0	-1.458	0.8853	-212.0079
Modal	LinModEigen	Mode	4	87.5835	0.2958	0	-0.7611	248.3018	-1041.6742
Modal	LinModEigen	Mode	5	0.3246	-92.1942	0	242.8842	0.939	-1118.4412
Modal	LinModEigen	Mode	6	-0.4454	-0.6403	0	1.8256	-1.3999	1736.8723
Modal	LinModEigen	Mode	7	-148.1661	-1.833	0	3.6117	-277.0924	1748.2532
Modal	LinModEigen	Mode	8	2.0487	-157.7834	0	314.2216	3.8709	-1928.4962
Modal	LinModEigen	Mode	9	145.7291	2.3701	0	-1.7774	116.4262	-1697.6124
Modal	LinModEigen	Mode	10	2.8241	-162.9721	0	128.7481	2.3817	-2054.8884
Modal	LinModEigen	Mode	11	-1.6761	-4.0022	0	4.364	-2.2728	2933.8009
Modal	LinModEigen	Mode	12	112.4641	1.8483	0	-2.3324	109.1609	-1304.9875
Dead	LinStatic			0	0	25376.952	304523.429	-304523.429	0
Live	LinStatic			0	0	10080	120960	-120960	0
SIDL	LinStatic			0	0	28980	345744	-350280	0
EX	LinStatic			-2299.541	0	0	0	-22995.4104	27504.8925
EY	LinStatic			0	-2299.541	0	22995.4104	0	-27706.493
DWal1	Combination			0	0	81535.429	975401.143	-982205.143	0
DWal2	Combination			0	0	**96655.429**	1156841.14	-1163645	0
DWal3	Combination			-2759.4493	0	77324.343	925472.914	-958510.607	33005.871
DWal4	Combination			2759.4493	0	77324.343	925472.914	-903321.622	-33005.871
DWal5	Combination			0	-2759.4493	77324.343	953067.407	-930916.114	-33247.791
DWal6	Combination			0	2759.4493	77324.343	897878.422	-930916.114	33247.791

Table:BASESHEAR(Reactions)-Model-4

TABLE: Base Reactions									
Output Case	Case Type	Step Type	Step Number	FX	FY	FZ	MX	MY	MZ
				kN	kN	kN	kN-m	kN-m	kN-m
Modal	LinModEigen	Mode	1	1.0814	0.00002471	0	-0.0003	15.9315	-12.9041
Modal	LinModEigen	Mode	2	-0.0063	0.065	0	-0.955	-0.1024	24.1066
Modal	LinModEigen	Mode	3	0.0002	2.5866	0	-38.4389	0.0026	30.3721
Modal	LinModEigen	Mode	4	3.259	0.0001	0	-0.0001	-1.9609	-38.9054
Modal	LinModEigen	Mode	5	-0.0092	0.1831	0	-0.0894	0.0814	82.1266
Modal	LinModEigen	Mode	6	-0.0011	9.5619	0	-4.8282	-0.0101	112.9894
Modal	LinModEigen	Mode	7	5.1805	0.0031	0	-0.0024	30.7899	-62.0116
Modal	LinModEigen	Mode	8	6.2765	0.0008	0	-0.003	5.8103	-74.5686
Modal	LinModEigen	Mode	9	-0.0796	0.278	0	-1.5689	-0.39	158.6272
Modal	LinModEigen	Mode	10	5.7097	0.004	0	-0.0205	32.3957	-66.8301
Modal	LinModEigen	Mode	11	-0.0017	-20.5253	0	111.668	-0.0044	-243.8627
Modal	LinModEigen	Mode	12	3.305	-0.0002	0	0.0021	1.1064	-39.7737
Dead	LinStatic			0	0	22137.9091	265654.9096	-265654.9096	0
Live	LinStatic			0	0	10080	120960	-120960	0
SIDL	LinStatic			0	0	28980	345744	-350280	0
EX	LinStatic			-780.4776	0	0	0	-7798.7018	9333.3256
EY	LinStatic			0	-1212.4361	0	12114.9246	0	-14612.1586
DWal1	Combination			0	0	76676.8637	917098.3645	-923902.3645	0
DWal2	Combination			0	0	**91796.8637**	1098538.365	-1105342	0
DWal3	Combination			-936.5731	0	73437.491	878830.6916	-893632.3337	11199.9907
DWal4	Combination			936.5731	0	73437.491	878830.6916	-874915.4494	-11199.9907
DWal5	Combination			0	-1454.9233	73437.491	893368.6011	-884273.8916	-17534.5904
DWal6	Combination			0	1454.9233	73437.491	864292.782	-884273.8916	17534.5904
DWal7	Combination			-1170.7164	0	76676.8637	917098.3645	-935600.4171	13999.9884
DWal8	Combination			1170.7164	0	76676.8637	917098.3645	-912204.3118	-13999.9884
DWal9	Combination			0	-1818.6541	76676.8637	935270.7513	-923902.3645	-21918.238
DWal10	Combination			0	1818.6541	76676.8637	898925.9776	-923902.3645	21918.238

Table: BASESHEAR(Reactions)-Model-5

TABLE: Base Reactions									
Output Case	Case Type	Step Type	Step Number	FX	FY	FZ	MX	MY	MZ
				kN	kN	kN	kN-m	kN-m	kN-m
Modal	LinModEigen	Mode	1	1.0845	0.00002497	0	-0.0003	16.0042	-12.9475
Modal	LinModEigen	Mode	2	0.0068	-0.0644	0	0.9364	0.1011	-24.167
Modal	LinModEigen	Mode	3	-0.0002	-2.6126	0	38.9743	-0.0025	-30.7122
Modal	LinModEigen	Mode	4	3.2576	0.0001	0	-0.00002987	-1.8552	-38.9967
Modal	LinModEigen	Mode	5	0.0388	-0.2469	0	0.2241	0.0941	-83.252
Modal	LinModEigen	Mode	6	-0.0137	-9.6216	0	6.0898	-0.0775	-113.3978
Modal	LinModEigen	Mode	7	-5.1633	0.0229	0	-0.014	-31.0119	61.9113
Modal	LinModEigen	Mode	8	-6.2588	0.0003	0	-0.0023	-6.0404	75.3338
Modal	LinModEigen	Mode	9	-0.1154	0.4797	0	-2.6931	-0.8034	161.1969
Modal	LinModEigen	Mode	10	5.7151	0.0193	0	-0.1075	32.655	-64.2621
Modal	LinModEigen	Mode	11	-0.00001617	20.4699	0	-114.7496	-0.0058	242.641
Modal	LinModEigen	Mode	12	-3.3175	0.0049	0	-0.0273	-1.4198	39.8939
Dead	LinStatic			0	0	22267.8707	267514.3604	-267714.3013	0
Live	LinStatic			0	0	10040	120720	-120880	0
SIDL	LinStatic			0	0	28948	345552	-350216	0
EX	LinStatic			-782.3388	0	0	0	-7820.0084	9362.6675
EY	LinStatic			0	-1221.2168	0	12206.8928	0	-14736.5855
DWal1	Combination			0	0	76823.8061	919599.5406	-926895.452	0
DWal2	Combination			0	0	**91883.8061**	1100679.541	-1108215	0
DWal3	Combination			-938.8065	0	73507.0449	880543.6325	-895956.3716	11235.201
DWal4	Combination			938.8065	0	73507.0449	880543.6325	-877188.3516	-11235.201
DWal5	Combination			0	-1465.4602	73507.0449	895191.9038	-886572.3616	-17683.9026
DWal6	Combination			0	1465.4602	73507.0449	865895.3611	-886572.3616	17683.9026
DWal7	Combination			-1173.5082	0	76823.8061	919599.5406	-938625.4645	14044.0013
DWal8	Combination			1173.5082	0	76823.8061	919599.5406	-915165.4395	-14044.0013
DWal9	Combination			0	-1831.8252	76823.8061	937909.8798	-926895.452	-22104.8783
DWal10	Combination			0	1831.8252	76823.8061	901289.2014	-926895.452	22104.8783

Table:BASESHEAR(Reactions)-Model-6

TABLE: Base Reactions									
Output Case	Case Type	Step Type	Step Number	FX	FY	FZ	MX	MY	MZ
				kN	kN	kN	kN-m	kN-m	kN-m
Modal	LinModEigen	Mode	1	1.0615	0.0000308	0	-0.0004	15.5499	-12.6626
Modal	LinModEigen	Mode	2	0.0074	-0.0366	0	0.5129	0.1097	-21.3936
Modal	LinModEigen	Mode	3	0.0001	2.5359	0	-37.5206	0.0015	30.0712
Modal	LinModEigen	Mode	4	-3.2304	-0.00003376	0	0.00004765	2.6775	38.666
Modal	LinModEigen	Mode	5	-0.0253	0.1687	0	-0.1331	-0.0285	75.4537
Modal	LinModEigen	Mode	6	0.0025	9.3697	0	-2.602	0.013	111.1107
Modal	LinModEigen	Mode	7	5.2578	-0.0043	0	0.0007	29.746	-62.8916
Modal	LinModEigen	Mode	8	6.6717	-0.0014	0	0.0054	5.4878	-80.3934
Modal	LinModEigen	Mode	9	0.0347	0.3234	0	-1.6569	-0.1143	154.8696
Modal	LinModEigen	Mode	10	-6.4347	-0.0062	0	0.0347	-33.1047	75.3427
Modal	LinModEigen	Mode	11	-0.0059	20.1865	0	-106.017	-0.0186	239.2266
Modal	LinModEigen	Mode	12	-3.9214	0.0017	0	-0.0054	-1.8789	47.0609
Dead	LinStatic			0	0	21818.0036	262115.955	-262315.8959	0
Live	LinStatic			0	0	10040	120720	-120880	0
SIDL	LinStatic			0	0	28948	345552	-350216	0
EX	LinStatic			-765.4677	0	0	0	-7656.3419	9160.7388
EY	LinStatic			0	-1189.0521	0	11893.1072	0	-14348.5233
DWal1	Combination			0	0	76149.0054	911501.9325	-918797.8439	0
DWal2	Combination			0	0	**91209.0054**	1092581.933	-1100118	0
DWal3	Combination			-918.5612	0	72967.2044	874065.546	-889281.8854	10992.8866
DWal4	Combination			918.5612	0	72967.2044	874065.546	-870906.6648	-10992.8866
DWal5	Combination			0	-1426.8625	72967.2044	888337.2746	-880094.2751	-17218.2279
DWal6	Combination			0	1426.8625	72967.2044	859793.8173	-880094.2751	17218.2279
DWal7	Combination			-1148.2015	0	76149.0054	911501.9325	-930282.3567	13741.1082
DWal8	Combination			1148.2015	0	76149.0054	911501.9325	-907313.331	-13741.1082
DWal9	Combination			0	-1783.5781	76149.0054	929341.5933	-918797.8439	-21522.7849
DWal10	Combination			0	1783.5781	76149.0054	893662.2716	-918797.8439	21522.7849

Table:BASESHEAR(Reactions)-Model-7

TABLE: Base Reactions									
Output Case	Case Type	Step Type	Step Number	FX	FY	FZ	MX	MY	MZ
				kN	kN	kN	kN-m	kN-m	kN-m
Modal	LinModEigen	Mode	1	0.0136	0.0216	0	-0.2789	0.196	33.0701
Modal	LinModEigen	Mode	2	0.0137	-9.6252	0	143.0615	0.1982	-115.5573
Modal	LinModEigen	Mode	3	-10.2396	-0.0134	0	0.1982	-146.483	122.8596
Modal	LinModEigen	Mode	4	0.0312	0.1513	0	-0.1344	-0.0685	160.5572
Modal	LinModEigen	Mode	5	-41.4578	-0.04	0	0.0517	-1.5461	498.9367
Modal	LinModEigen	Mode	6	0.405	1.0731	0	-2.4838	0.4086	280.4473
Modal	LinModEigen	Mode	7	0.0196	-69.4245	0	163.3874	-0.0555	-827.1716
Modal	LinModEigen	Mode	8	-0.5291	-0.2333	0	0.0886	-0.1316	-324.4936
Modal	LinModEigen	Mode	9	52.312	-0.1535	0	0.5023	107.0801	-630.1747
Modal	LinModEigen	Mode	10	0.5436	-0.0716	0	0.1715	0.4911	331.3469
Modal	LinModEigen	Mode	11	-49.025	0.0537	0	0.0444	25.2087	598.6036
Modal	LinModEigen	Mode	12	0.8599	-1.0574	0	2.1917	-1.014	287.4694
Dead	LinStatic			0	0	23437.525	281550.215	-281750.155	0
Live	LinStatic			0	0	10040	120720	-120880	0
SIDL	LinStatic			0	0	28948	345552	-350216	0
EX	LinStatic			-2221.43	0	0	0	-22227.3651	26587.273
EY	LinStatic			0	-2221.43	0	22227.3651	0	-26801.679
DWal1	Combination			0	0	78578.288	940653.322	-947949.233	0
DWal2	Combination			0	0	**93638.288**	1121733.32	-1129269	0
DWal3	Combination			-2665.716	0	74910.63	897386.657	-930088.225	31904.7276
DWal4	Combination			2665.7159	0	74910.63	897386.657	-876742.548	-31904.728
DWal5	Combination			0	-2665.716	74910.63	924059.495	-903415.387	-32162.015
DWal6	Combination			0	2665.7159	74910.63	870713.819	-903415.387	32162.015
DWal7	Combination			-3332.145	0	78578.288	940653.322	-981290.281	39880.9095
DWal8	Combination			3332.1449	0	78578.288	940653.322	-914608.186	-39880.91
DWal9	Combination			0	-3332.145	78578.288	973994.369	-947949.233	-40202.519

Table:AllModelsBaseReactionsfor Dcon2& Dwal2(Criticalvalueobtained)

Model	BaseShear(BaseReactions)kN
Model-1	90987.102
Model-2	91796.863
Model-3	96655.429
Model-4	91796.863
Model-5	91883.806
Model-6	91209.005
Model-7	93638.288

2. Findings and Conversation:

A) STOREY SHEAR: Comparing the outcomes of the seven models mentioned above We can explain how the values for above variation in shearwall forms and location are modified as well as which of the above cases is successful in terms of strength since shear stories were analyzed. 1) Story Shear Graphs 1 and 2 are compared; Model 2 Story shear is 13.89% more than Model 1 Story shear. 2) Story Shear Graphs 2 and 3 are compared; the Model 3 Story shear is 65.96% more than the Model 2 Story shear. 3) Story Shear Graphs 4 and 5 are compared; the shear of the Model 5 Story is 66.58% more than that of the Model 4 Story.4) Story Shear Graphs 6 and 7 are compared. Model 7 Story shear is 65.54% higher than Model 6 Story shear. In contrast to shear walls at soft story with forms T, C, and H sections, there is a dramatic increase in story shear value for shear walls with full height extension in buildings with these shapes when comparing above-story shear values for various models. Consequently, shear walls with full height extensions in buildings have a bigger effect on story shear than shear walls at soft stories or models without shear walls. The story shear value in the T, C, and H sections is about equal. Shearwallatsoftstory is marginally superior to the model. without a shearwall. At the soft story and with complete height expansion in the structure, Model 5, or the C section shear wall, fared better than the T and C section shear wall. B) BASE REACTION: As shown below, the Maximum Base ShearValue derived for all model situations above for load combinations Dcon2 for Model-1 & Dwal2 for Shear wall Models 1) When comparing Models 2 and 3 in the above table, Model 3's base reaction is 5.23% higher than Model 2's. 2) When comparing Models 4 and 5 in the preceding table, Model 5's base reaction is 7.05% higher than Model 4's. 3) When comparing Models 6 and 7 in the above table, Model 7's base reaction is 2.67% higher than Model 6's. According to the above data and analysis, the base shear value is the same for buildings with shear walls of various shapes at soft story and Budlings without shear walls, and it varies very little for buildings with shear walls that are fully extended in height and buildings with shear walls at soft story for different forms. When compared to T & H section shear walls, CSection shear walls perform better.

Table:StoryStiffnessModel-1

TABLE: Story Stiffness

Story	Output Case	Case Type	Step Type	Step Number	Shear X	Drift X	Stiff X	Shear Y	Drift Y	Stiff Y
					kN	mm	kN/m	kN	mm	kN/m
Story7	EX	LinStatic	Step By Step	1	0	0.021	0.00002186	0	0.00003563	0
Story6	EX	LinStatic	Step By Step	1	0	0.027	0.0000349	0	0.0001686	0
Story5	EX	LinStatic	Step By Step	1	0	0.195	0.000006721	0	0.002	0
Story4	EX	LinStatic	Step By Step	1	358.4009	1.7	210884.761	0	0.002	0
Story3	EX	LinStatic	Step By Step	1	560.0014	2.696	207746.356	0	0.004	0
Story2	EX	LinStatic	Step By Step	1	649.6016	3.129	207589.877	0	0.004	0
Story1	EX	LinStatic	Step By Step	1	672.0017	2.644	254163.419	0	0.003	0
Story7	EY	LinStatic	Step By Step	1	0	0.00008939	0.000311	0	0.039	0.000006992
Story6	EY	LinStatic	Step By Step	1	0	0.0002621	0	0	0.092	0.000007564
Story5	EY	LinStatic	Step By Step	1	0	0.003	0	0	0.355	0
Story4	EY	LinStatic	Step By Step	1	0	0.005	0	564.9833	1.154	489562.348
Story3	EY	LinStatic	Step By Step	1	0	0.007	0	882.7863	1.786	494317.803
Story2	EY	LinStatic	Step By Step	1	0	0.007	0	1024.0322	1.965	521200.946
Story1	EY	LinStatic	Step By Step	1	0	0.005	0	1059.3436	1.223	866364.805

Table:StoryStiffnessModel-2

TABLE: Story Stiffness										
Story	Output Case	Case Type	Step Type	Step Number	Shear X	Drift X	Stiff X	Shear Y	Drift Y	Stiff Y
					kN	mm	kN/m	kN	mm	kN/m
Story7	EX	LinStatic	Step By Step	1	0	0.02	0.0000192	0	0.0001004	0
Story6	EX	LinStatic	Step By Step	1	0	0.027	0.00002914	0	0.0002018	0
Story5	EX	LinStatic	Step By Step	1	0	0.222	0	0	0.002	0
Story4	EX	LinStatic	Step By Step	1	415.7919	1.966	211502.585	0	0.003	0
Story3	EX	LinStatic	Step By Step	1	649.6749	3.106	209160.601	0	0.004	0
Story2	EX	LinStatic	Step By Step	1	753.6229	3.189	236355.684	0	0.006	0
Story1	EX	LinStatic	Step By Step	1	780.4776	0.09	8648811.462	0	0.005	0
Story7	EY	LinStatic	Step By Step	1	0	0.00007389	0.0003159	0	0.038	0.000005939
Story6	EY	LinStatic	Step By Step	1	0	0.0002919	0	0	0.098	0.000005923
Story5	EY	LinStatic	Step By Step	1	0	0.004	0	0	0.394	0
Story4	EY	LinStatic	Step By Step	1	0	0.005	0	645.9136	1.288	501617.776
Story3	EY	LinStatic	Step By Step	1	0	0.007	0	1009.24	1.911	528025.21
Story2	EY	LinStatic	Step By Step	1	0	0.012	0	1170.7185	1.646	711080.624
Story1	EY	LinStatic	Step By Step	1	0	0.009	0	1212.4361	0.157	7734023.662

Table:StoryStiffnessModel-3

TABLE: Story Stiffness										
Story	Output Case	Case Type	Step Type	Step Number	Shear X	Drift X	Stiff X	Shear Y	Drift Y	Stiff Y
					kN	mm	kN/m	kN	mm	kN/m
Story7	EX	LinStatic	Step By Step	1	0	0.339	0	0	0.001	0
Story6	EX	LinStatic	Step By Step	1	0	0.345	0	0	0.002	0
Story5	EX	LinStatic	Step By Step	1	0	0.341	0	0	0.007	0
Story4	EX	LinStatic	Step By Step	1	1226.4219	0.469	2613815.241	0	0.002	0
Story3	EX	LinStatic	Step By Step	1	1916.2842	0.495	3872973.077	0	0.003	0
Story2	EX	LinStatic	Step By Step	1	2222.8897	0.43	5173168.139	0	0.002	0
Story1	EX	LinStatic	Step By Step	1	2299.541	0.268	8592116.5	0	0.005	0
Story7	EY	LinStatic	Step By Step	1	0	0.001	0	0	0.282	0
Story6	EY	LinStatic	Step By Step	1	0	0.002	0	0	0.292	0
Story5	EY	LinStatic	Step By Step	1	0	0.007	0	0	0.298	0
Story4	EY	LinStatic	Step By Step	1	0	0.002	0	1226.4219	0.418	2933609.644
Story3	EY	LinStatic	Step By Step	1	0	0.003	0	1916.2842	0.452	4237547.065
Story2	EY	LinStatic	Step By Step	1	0	0.003	0	2222.8897	0.401	5549412.256
Story1	EY	LinStatic	Step By Step	1	0	0.004	0	2299.541	0.247	9307882.749

Table:StoryStiffnessModel-4

TABLE: Story Stiffness										
Story	Output Case	Case Type	Step Type	Step Number	Shear X	Drift X	Stiff X	Shear Y	Drift Y	Stiff Y
					kN	mm	kN/m	kN	mm	kN/m
Story7	EX	LinStatic	Step By Step	1	0	0.021	0.00001794	0	0.00008803	0
Story6	EX	LinStatic	Step By Step	1	0	0.028	0.00002177	0	0.0002003	0
Story5	EX	LinStatic	Step By Step	1	0	0.223	0	0	0.002	0
Story4	EX	LinStatic	Step By Step	1	417.2612	1.973	211445.843	0	0.003	0
Story3	EX	LinStatic	Step By Step	1	651.9706	3.116	209246.864	0	0.004	0
Story2	EX	LinStatic	Step By Step	1	755.0989	3.161	238842.505	0	0.006	0
Story1	EX	LinStatic	Step By Step	1	782.3388	0.069	11319445.49	0	0.005	0
Story7	EY	LinStatic	Step By Step	1	0	0.00007586	0	0	0.039	0.000005909
Story6	EY	LinStatic	Step By Step	1	0	0.0003012	0	0	0.099	0.000006219
Story5	EY	LinStatic	Step By Step	1	0	0.004	0	0	0.398	0
Story4	EY	LinStatic	Step By Step	1	0	0.005	0	651.3372	1.297	502070.194
Story3	EY	LinStatic	Step By Step	1	0	0.009	0	1017.7144	1.915	531322.026
Story2	EY	LinStatic	Step By Step	1	0	0.012	0	1178.6958	1.597	738269.938
Story1	EY	LinStatic	Step By Step	1	0	0.008	0	1221.2168	0.122	10008003.63

Table:StoryStiffnessModel-5

TABLE: Story Stiffness										
Story	Output Case	Case Type	Step Type	Step Number	Shear X	Drift X	Stiff X	Shear Y	Drift Y	Stiff Y
					kN	mm	kN/m	kN	mm	kN/m
Story7	EX	LinStatic	Step By Step	1	0	0.149	0	0	0.001	0
Story6	EX	LinStatic	Step By Step	1	0	0.154	0	0	0.003	0
Story5	EX	LinStatic	Step By Step	1	0	0.157	0	0	0.005	0
Story4	EX	LinStatic	Step By Step	1	1250.4859	0.259	4836209.827	0	0.002	0
Story3	EX	LinStatic	Step By Step	1	1953.8843	0.297	6568205.661	0	0.005	0
Story2	EX	LinStatic	Step By Step	1	2263.2391	0.277	8183701.007	0	0.005	0
Story1	EX	LinStatic	Step By Step	1	2341.3945	0.188	12465362.6	0	0.004	0
Story7	EY	LinStatic	Step By Step	1	0	0.001	0	0	0.134	0
Story6	EY	LinStatic	Step By Step	1	0	0.003	0	0	0.14	0
Story5	EY	LinStatic	Step By Step	1	0	0.005	0	0	0.147	0
Story4	EY	LinStatic	Step By Step	1	0	0.002	0	1250.4859	0.243	5142904.944
Story3	EY	LinStatic	Step By Step	1	0	0.006	0	1953.8843	0.284	6890934.092
Story2	EY	LinStatic	Step By Step	1	0	0.005	0	2263.2391	0.265	8534170.474
Story1	EY	LinStatic	Step By Step	1	0	0.004	0	2341.3945	0.179	13107515.22

Table:StoryStiffnessModel-6

TABLE: Story Stiffness										
Story	Output Case	Case Type	Step Type	Step Number	Shear X	Drift X	Stiff X	Shear Y	Drift Y	Stiff Y
					kN	mm	kN/m	kN	mm	kN/m
Story7	EX	LinStatic	Step By Step	1	0	0.022	0.00001701	0	0.00003755	0
Story6	EX	LinStatic	Step By Step	1	0	0.029	0.00002115	0	0.0001884	0
Story5	EX	LinStatic	Step By Step	1	0	0.22	0	0	0.002	0
Story4	EX	LinStatic	Step By Step	1	408.642	1.935	211182.041	0	0.002	0
Story3	EX	LinStatic	Step By Step	1	638.5032	3.055	208988.146	0	0.006	0
Story2	EX	LinStatic	Step By Step	1	739.5011	3.228	229079.532	0	0.019	0
Story1	EX	LinStatic	Step By Step	1	765.4677	0.253	3026141.893	0	0.019	0
Story7	EY	LinStatic	Step By Step	1	0	0.0001022	0	0	0.04	0.000005932
Story6	EY	LinStatic	Step By Step	1	0	0.0002962	0	0	0.099	0.000006402
Story5	EY	LinStatic	Step By Step	1	0	0.004	0	0	0.391	0
Story4	EY	LinStatic	Step By Step	1	0	0.005	0	634.7709	1.272	499088.683
Story3	EY	LinStatic	Step By Step	1	0	0.011	0	991.8296	1.888	525217.599
Story2	EY	LinStatic	Step By Step	1	0	0.029	0	1148.7165	1.678	684665.562
Story1	EY	LinStatic	Step By Step	1	0	0.027	0	1189.0521	0.24	4953580.174

Table:StoryStiffnessModel-7

TABLE: Story Stiffness										
Story	Output Case	Case Type	Step Type	Step Number	Shear X	Drift X	Stiff X	Shear Y	Drift Y	Stiff Y
					kN	mm	kN/m	kN	mm	kN/m
Story7	EX	LinStatic	Step By Step	1	0	0.181	0	0	0.002	0
Story6	EX	LinStatic	Step By Step	1	0	0.182	0	0	0.004	0
Story5	EX	LinStatic	Step By Step	1	0	0.136	0	0	0.02	0
Story4	EX	LinStatic	Step By Step	1	1186.5047	0.501	2369489.776	0	0.011	0
Story3	EX	LinStatic	Step By Step	1	1853.9136	0.645	2873455.747	0	0.015	0
Story2	EX	LinStatic	Step By Step	1	2147.2734	0.659	3258934.55	0	0.01	0
Story1	EX	LinStatic	Step By Step	1	2221.43	0.541	4106365.45	0	0.008	0
Story7	EY	LinStatic	Step By Step	1	0	0.005	0	0	0.314	0
Story6	EY	LinStatic	Step By Step	1	0	0.004	0	0	0.332	0
Story5	EY	LinStatic	Step By Step	1	0	0.014	0	0	0.338	0
Story4	EY	LinStatic	Step By Step	1	0	0.008	0	1186.5047	0.515	2304399.126
Story3	EY	LinStatic	Step By Step	1	0	0.012	0	1853.9136	0.575	3225127.976
Story2	EY	LinStatic	Step By Step	1	0	0.013	0	2147.2734	0.524	4101757.074
Story1	EY	LinStatic	Step By Step	1	0	0.005	0	2221.43	0.329	6752691.19

A) STORY STIFFNESS: We spoke about story stiffness for various shear wall forms at soft story as well as story stiffness with full height extension since story stiffness values are mostly influenced at softstoryi.eatGroundfloor (parking floor). Based on the above, the narrative stiffness (Siff X) kN/m outcomes are assessed as follows: Table of story stiffness Stiffness (SiffX)kN/matsoftstory of Model 2 is 97.06% higher than that of Model 1, i.e., a column without a shear wall. Compared to model 3, model 2 tale stiffness at soft story is 0.6% higher. Thus, we might argue that Model 2, or the T section Compared to the T section shearwall with full height extension, the shear wall at the soft story transmits the same story stiffness.

2) When comparing Model 4 Storystiffness (SiffX)kN/matsoftstory to Model 1, i.e., column without shear wall, the difference is 97.75%. The stiffness of the Model 4 tale at soft story is 23.59% higher than that of the Model 2 and 10.13% more than that of the Model 5. 3) Compared to model 7, model 6 story stiffness (SiffX)kN/matsoftstory is reduced by 35.69%.

From this outcome, we can say When compared to other shearwall forms at soft stories and with complete height extension, Model 4i, eCshapeShearwallatsoftstory, has a substantial impact on story stiffness (SiffX)kN/m. The following narrative stiffness (Siff Y) kN/m findings are assessed using the previously Table of story stiffness 1) The story stiffness (SiffY) kN/m of Model 3 (T section shear wall with full height extension) is 90.69% higher than that of Model 1 (column without shear wall). Compared to model 2, the stiffness of the third model (T shear wall section with complete height extension) is 16.90% higher. Thus, we may conclude that, in comparison to a T section shear wall at a soft story, Model 3, or a T section shear wall with complete height extension, has a little effect on story stiffness. 2) The story stiffness (Siff Y) kN/m of Model 5 (C shear wall section with full height extension) is 93.39% higher than that of Model 1, or column without shear wall. The stiffness (Siff Y) of the Model 5 storey is 28.98% higher than that of the Model 3 (T shear wall section with full height extension) and 48.48% higher than that of the Model 7 (HS shear wall section with full height extension). 3) Story stiffness (Siff Y) in Model 7 (H section shear wall with fill height extension) reduced by 37.83% compared to Model 3 and by 94.10% compared to Model 5. Additionally, Model 7 story stiffness (Siff Y) kN/m is reduced by 48.20% compared to Model 4 and 14.53% compared to Model 2 (T section shear wall at soft story). According to the aforementioned findings, the story stiffness in the Y-direction Model 5 shear wall, or C-Section, performed better than other shear wall sections with complete height extension. Providing a shear wall of various forms at soft story does not provide better outcomes than shear with full extension in terms of story stiffness (Stiff Y). Scope for Additional Research: Analysis may be done for many earthquake zones using the various shearwall forms.

Conclusion:

In comparison to soft-story shear walls (T, C, and H sections) and models without shear walls, full-height shear walls (T, C, and H sections) considerably increase story shear. Similar story shear values are produced by soft-story shear walls (T, C, and H), which marginally outperform models without shear walls. At both soft story and full height, Model 5 (C-section shear wall with full-height extension) outperforms T and H sections in terms of story shear performance. There is little difference in base shear values between buildings with full-height shear walls, soft-story shear walls (of different forms), and structures without shear walls. In full-height and soft-story applications, C-section shear walls perform better than T and H sections. In comparison to other shear wall forms at soft story and full-height extensions, Model 4 (C-shaped shearwall at soft story) considerably increases story stiffness in the X-direction (Stiff X, kN/m). Model 5 (C-section shearwall with full-height extension) performs better than other full-height shear wall sections in the Y-direction. In contrast to full-height extensions, different shear wall forms at the soft story result in lesser stiffness (Stiff Y).

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