Appendix B

Figure (B.1): 3D Model of rigid frame.

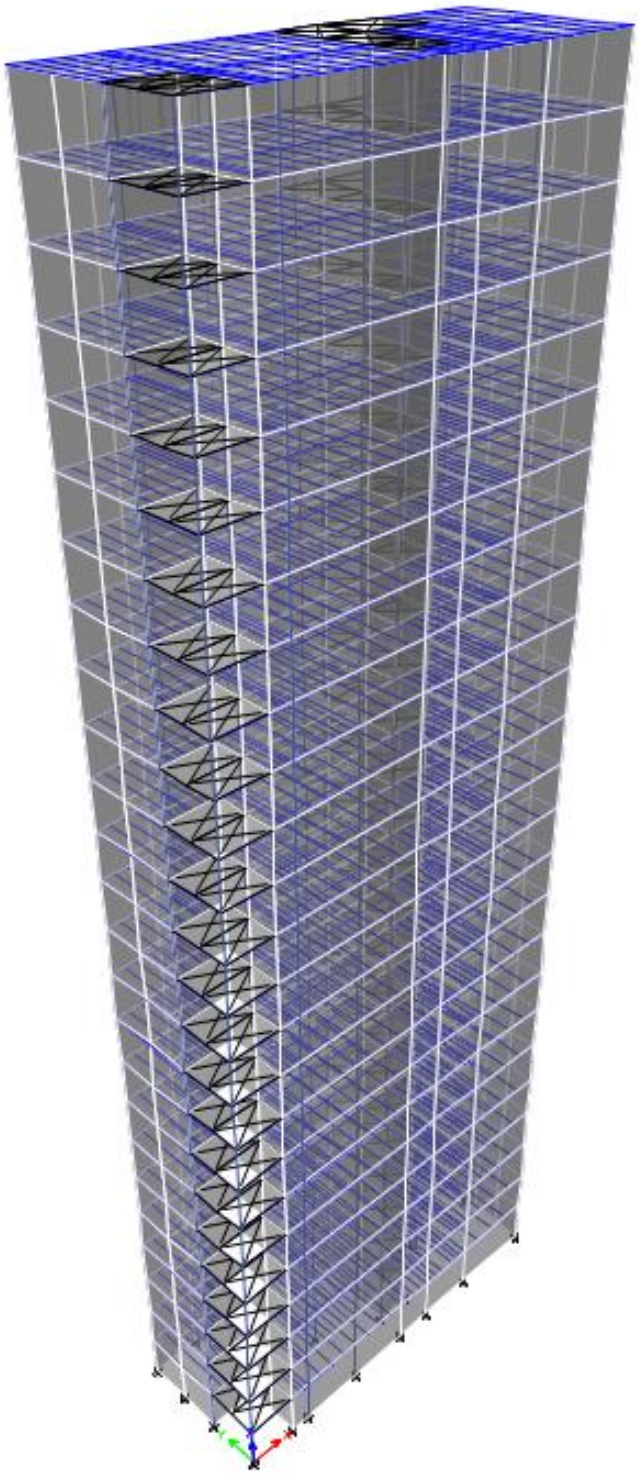

Table (B.1): The distribution of axial forces and bending moments on columns C1 and C24 for load combination 3 of unbraced shear-wall frame system.

Storey	Column 1			Column 24		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-322.1	-9.7	-36	-132.5	88	267.8
Storey24	-569.1	-8.1	-21.5	-200.1	217.5	409.2
Storey23	-848.4	-22.2	-36.1	-294.8	218.1	402.4
Storey22	-1130.6	-22.1	-25.8	-346.2	114.6	359.7
Storey21	-1458.7	-31.1	-38.1	-411	281	247.1
Storey20	-1790.4	-38.5	-21.1	-461.3	111	387.9
Storey19	-2125.8	-52.7	-37	-545	274.1	285.2
Storey18	-2463.5	-42.3	-37.4	-611.2	107.5	345.4
Storey17	-2810.1	-62.9	-36.5	-691.5	221.9	230.4
Storey16	-3165	-58.3	-26.7	-778	249.4	339.7
Storey15	-3528	-62.2	-37.4	-859	37	173.8
Storey14	-3898.4	-66.3	-27.5	-965.7	227.5	346.9
Storey13	-4274.7	-70.2	-38.2	-1084.5	35.7	96.9
Storey12	-4658.8	-72.2	-26.2	-1155.7	70	289.7
Storey11	-5051.6	-56	-43	-1302.3	53.2	75.4
Storey10	-5452	-60.5	-30.2	-1374.5	61.3	219.8
Storey9	-5858.1	-56.8	-40.9	-1481.4	26.3	91.2
Storey8	-6269.1	-61.5	-41.3	-1606.9	72.5	204.7
Storey7	-6684.1	-59.7	-40.5	-1772.9	35.9	116.7
Storey6	-7107.2	-57.8	-40.4	-1908.5	19.9	83.5
Storey5	-7535.6	-57.3	-43	-2119.6	9.5	100.9
Storey4	-7958.7	-58.7	-43.7	-2344.6	3.2	73.4
Storey3	-8386.2	-51.8	-33.1	-2577.8	1.1	89.6
Storey2	-8818.9	-60.4	-41.3	-2818.3	-0.6	88
Storey1	-9169	-16	-12.3	-3009.8	-0.1	30.3

Table (B.2): The beam's maximum forces of unbraced shear-wall frame system.

Storey	Station 0.1 m		Station 5.0 m		Station 16.7 m	
	Max. (-ve) S.F.	B.M.	S.F.	Max. (+ve) B.M.	Max. (+ve) S.F.	Max. (-ve) B.M.
	kN	kN	kN	kN-m	kN	kN-m
Storey25	-287.9	-753.4	-174.9	391.4	364.7	-912.6
Storey24	-429	-1177.2	-314	661.2	439.9	-1166.5
Storey23	-418.9	-1119.8	-305	671.3	342	-985.8
Storey22	-437.5	-1196.7	-322.5	683.7	425.1	-1134.2
Storey21	-412.9	-1110.1	-299	651.2	382	-999.9
Storey20	-405.6	-1084.1	-291.8	641.5	357.8	-977.1
Storey19	-401.6	-1073.1	-287.8	632.7	343.4	-954.2
Storey18	-397.5	-1056.9	-283.7	628.5	381.8	-979.3
Storey17	-367.1	-974.1	-254	562.6	379.5	-901.7
Storey16	-352	-891.7	-239.8	572.6	339.4	-806.4
Storey15	-327.6	-852	-215.4	491.4	316.1	-784.2
Storey14	-295.1	-753.6	-183.6	430.5	294	-717.4
Storey13	-271.4	-674.5	-160.7	394.5	233.4	-598.6
Storey12	-240.3	-614.6	-129.5	300.4	251.5	-612.8
Storey11	-203.9	-495.2	-94.3	242.5	167.9	-439.7
Storey10	-240.9	-606.5	-129.4	309.6	241.4	-633.9
Storey9	-216.7	-534	-105.9	264.1	206	-536.8
Storey8	-172.7	-393.9	-63.1	189.3	149.2	-388.3
Storey7	-169.5	-375.5	-59.9	191.7	144.8	-369
Storey6	-151.7	-327.9	-42.1	151.2	143.8	-349.4
Storey5	-86	-139.1	21.6	19.8	36.5	-91.6
Storey4	-72.4	-101.3	35.1	-9.3	14.5	-47.1
Storey3	-67.4	-88.3	40.1	-21.2	5.2	-33.1
Storey2	-63.2	-77.6	44.2	-31	4.4	-25.1
Storey1	-51.5	-62.2	36.4	-24.5	4.5	-24.6

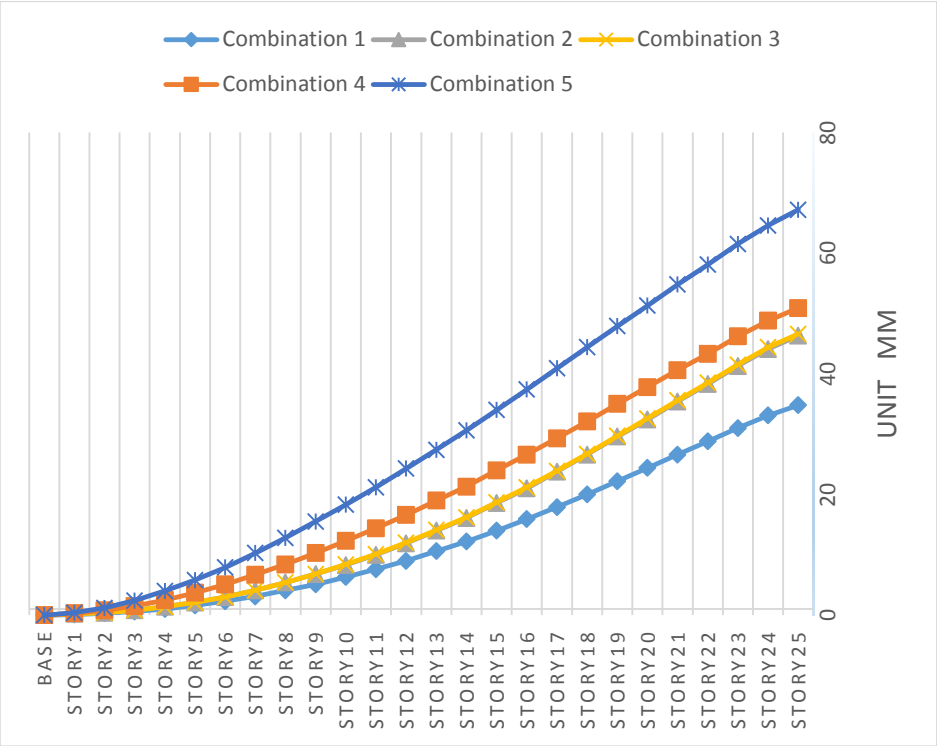

Figure (B.2): The distribution of maximum storey displacement in x-direction for all load combinations of unbraced shear-wall frame system.

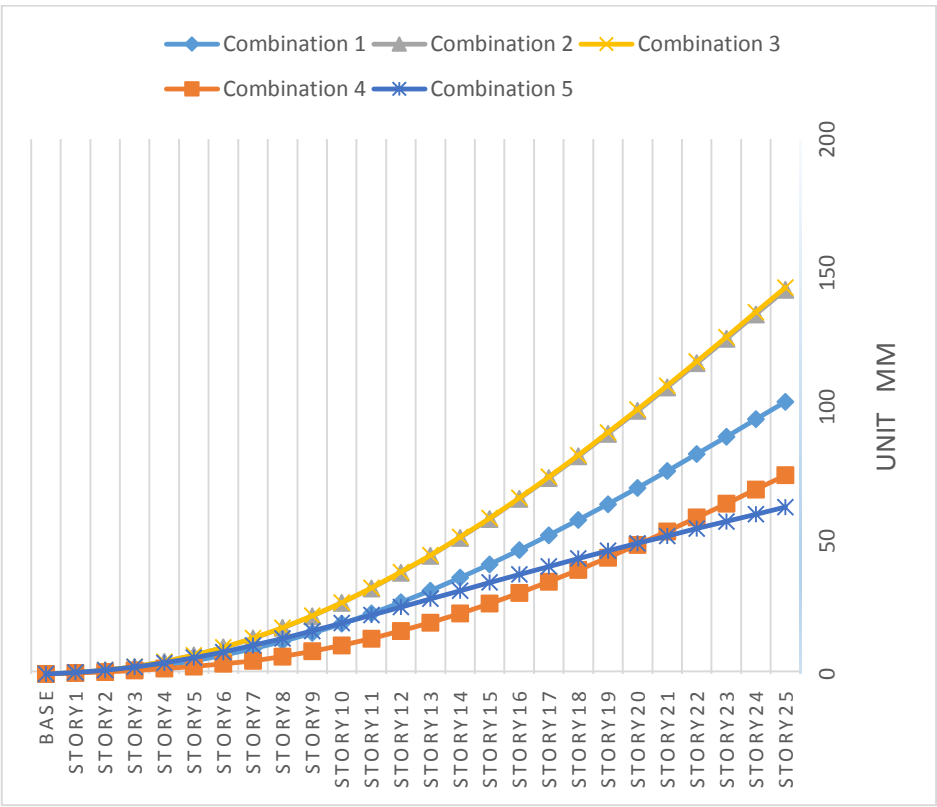

Figure (B.3): The distribution of maximum storey displacement in y-direction for all load combinations of unbraced shear-wall frame system.

Table (B.3): The distribution of axial forces and bending moments on columns C1 and C24 for load combination 3 of cross bracing shear-wall frame system.

Storey	Column 1			Column 24		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-224.2	-14.1	-54.2	-135.2	88.7	348
Storey24	-348.8	-13.6	-41.5	-421.3	31.6	366.5
Storey23	-554.5	-31.5	-64.9	-343.1	32.3	221.8
Storey22	-769.6	-31.1	-58.3	-268.8	65.7	320.3
Storey21	-1005.9	-32.1	-64	-220.2	34.6	292.7
Storey20	-1248.6	-52.8	-56	-192.5	37	242
Storey19	-1501.9	-50	-52	-167.6	32.5	370
Storey18	-1788	-51.3	-45.9	-149.9	29	202.4
Storey17	-2091.7	-78.6	-44.6	-145.7	27.6	422.7
Storey16	-2399.4	-73.1	-41.3	-147.7	27.4	213.1
Storey15	-2726.6	-74.3	-43.8	-163.1	26.2	353.4
Storey14	-3064	-72	-43.7	-177.3	24.7	239.1
Storey13	-3409.4	-64.3	-39.8	-184.7	25.9	285.7
Storey12	-3762.9	-77.3	-40.2	-201.9	24.2	296.6
Storey11	-4133.8	-74	-40.4	-224.9	19.6	257.1
Storey10	-4512.9	-77.5	-29.3	-239.9	21	290.9
Storey9	-4901.8	-61.7	-38.6	-248.7	10.4	233.5
Storey8	-5298.7	-62.6	-40.8	-252.9	9.5	248.5
Storey7	-5700.4	-64.5	-42.8	-245.4	6.2	162.4
Storey6	-6107.9	-59.3	-41	-231.1	5	166.9
Storey5	-6519.5	-62.5	-41.3	-225.1	3.7	92.9
Storey4	-6936	-61.1	-44.4	-274.7	2.6	133.9
Storey3	-7361.1	-51.5	-34.3	-355.1	1.3	154.3
Storey2	-7793	-56.3	-37.3	-455.3	-0.1	87.2
Storey1	-8141.5	-12.6	-29.8	-526.6	0	23.4

Table (B.4): The beam's maximum forces of cross bracing shear-wall frame system.

Storey	Station 0.1 m		Station 5.0 m		Station 16.7 m	
	Max. (-ve) S.F.	B.M.	S.F.	Max. (+ve) B.M.	Max. (+ve) S.F.	Max. (-ve) B.M.
	kN	kN	kN	kN-m	kN	kN-m
Storey25	-34.7	-25.7	87.2	-138.3	-84.8	41.3
Storey24	47.9	44.8	172.1	-482.6	-225.3	31
Storey23	-32.4	-31.9	89	-154.6	-87.6	37.4
Storey22	-36.4	-40	85	-143.2	-89.3	38
Storey21	-34.9	-36.4	86.5	-147	-92.2	40.7
Storey20	-30.3	-29.4	91	-162.4	-90.8	40.2
Storey19	-38.9	-39.1	82.3	-129.4	-79.3	39.9
Storey18	-34.8	-33.8	86.1	-143.6	-81.3	40.1
Storey17	-37.8	-37	83.4	-132.9	-77.6	39.9
Storey16	-38.4	-37.8	82.7	-130.2	-77.4	40.3
Storey15	-36.4	-35.1	84.5	-137.2	-76.8	38.8
Storey14	-37.7	-37	83.2	-132.5	-71	34.3
Storey13	-39.1	-38.7	81.8	-127.3	-70.2	35.1
Storey12	-40.9	-41.5	80	-121	-66.4	31.9
Storey11	-41.9	-42.5	79	-117.2	-68.7	35.1
Storey10	-43.6	-45.1	77.4	-111.6	-65.2	32.8
Storey9	-44.4	-46.2	76.5	-108.6	-62.4	31.7
Storey8	-44.7	-46.2	76.2	-107.2	-57.4	28.8
Storey7	-46.5	-48.9	74.4	-100.7	-56.1	29.4
Storey6	-48.4	-51.4	72.5	-93.7	-50.6	25.3
Storey5	-50.5	-54	70.4	-86	-48.1	25.5
Storey4	-53.3	-58.3	67.6	-76.6	-43.2	22
Storey3	-55.4	-61.3	65.5	-69	-39	21.5
Storey2	-57.4	-63	63.5	-60.9	-36.1	21
Storey1	-47.9	-52.6	50.2	-44.3	-25.9	16.4

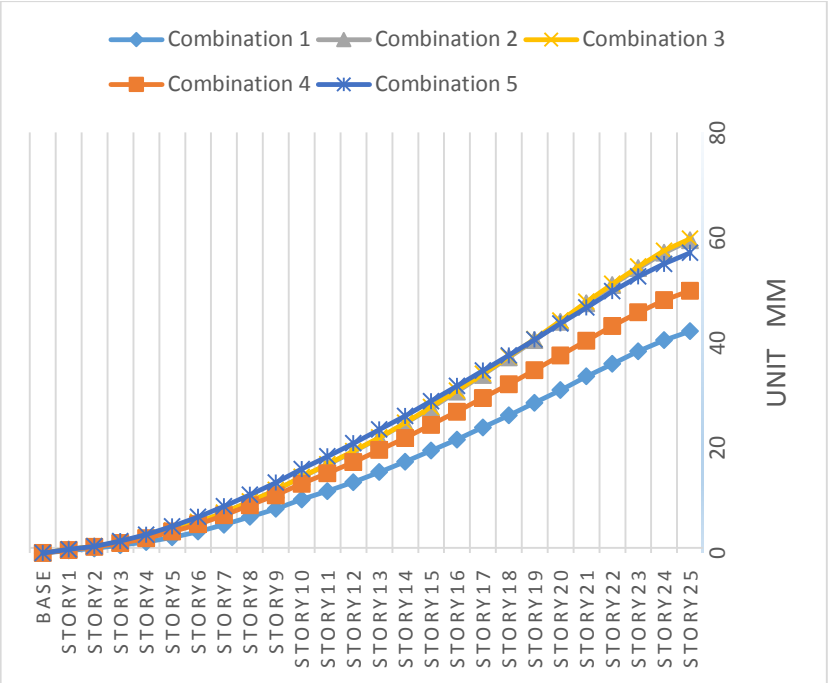

Figure (B.4): The distribution of maximum storey displacement in x-direction for all load combinations of cross bracing shear-wall frame system.

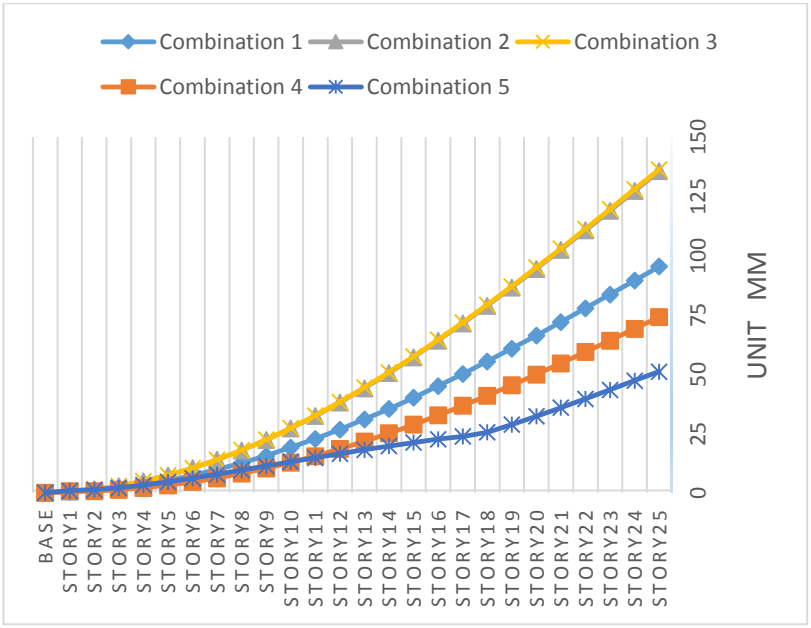

Figure (B.5): The distribution of maximum storey displacement in y-direction for all load combinations of cross bracing shear-wall frame system.

Table (B.5): The distribution of axial forces and bending moments on columns C1 and C24 for load combination 3 of diagonal bracing shear-wall frame system.

Storey	Column 1			Column 24		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-256.2	-11.9	-62.4	-256.2	-11.9	-62.4
Storey24	-439.4	-13.4	-40.4	-439.4	-13.4	-40.4
Storey23	-650.5	-23.7	-81.8	-650.5	-23.7	-81.8
Storey22	-852.1	-24.8	-52.1	-852.1	-24.8	-52.1
Storey21	-1079.1	-23.6	-82.2	-1079.1	-23.6	-82.2
Storey20	-1323.9	-44.4	-50.8	-1323.9	-44.4	-50.8
Storey19	-1586.5	-40.3	-68.7	-1586.5	-40.3	-68.7
Storey18	-1855.7	-48.8	-58.7	-1855.7	-48.8	-58.7
Storey17	-2151.1	-58.6	-71	-2151.1	-58.6	-71
Storey16	-2453.5	-68.2	-39.5	-2453.5	-68.2	-39.5
Storey15	-2767.8	-58.3	-70.4	-2767.8	-58.3	-70.4
Storey14	-3097.6	-67	-30	-3097.6	-67	-30
Storey13	-3438.6	-65.9	-73	-3438.6	-65.9	-73
Storey12	-3791.9	-72.6	-22	-3791.9	-72.6	-22
Storey11	-4160.5	-67.1	-66	-4160.5	-67.1	-66
Storey10	-4542.4	-63.3	0.7	-4542.4	-63.3	0.7
Storey9	-4934.9	-51.5	-95.7	-4934.9	-51.5	-95.7
Storey8	-5336	-66.2	10.4	-5336	-66.2	10.4
Storey7	-5742.7	-55.2	-100.2	-5742.7	-55.2	-100.2
Storey6	-6152.8	-66.4	-1.9	-6152.8	-66.4	-1.9
Storey5	-6569.5	-52.6	-82	-6569.5	-52.6	-82
Storey4	-6994	-56.9	-8.6	-6994	-56.9	-8.6
Storey3	-7425.8	-51.9	-73.1	-7425.8	-51.9	-73.1
Storey2	-7863.6	-53.5	-12.9	-7863.6	-53.5	-12.9
Storey1	-8218.2	-8.8	-57	-8218.2	-8.8	-57

Table (B.6): The beam's maximum forces of diagonal bracing shear-wall frame system.

Storey	Station 0.1 m		Station 5.0 m		Station 16.7 m	
	Max. (-ve) S.F.	B.M.	S.F.	Max. (+ve) B.M.	Max. (+ve) S.F.	Max. (-ve) B.M.
	kN	kN	kN	kN-m	kN	kN-m
Storey25	-38.8	-79.1	85.3	-176.7	-83.4	-69.7
Storey24	-36.7	-76.8	87.4	-184.9	-53.1	-115.3
Storey23	-56.8	-85.2	66	-90.7	-38.1	-33.2
Storey22	-35.1	-92.7	89	-208.5	-37	-149.5
Storey21	-63	-97.4	60.2	-72.9	-34.6	-48
Storey20	-44.8	-104.6	79.3	-172.4	-36.2	-151.8
Storey19	-35.8	-92.4	88.3	-204.8	-45.9	-134.7
Storey18	-51.5	-81.6	72.1	-115.2	-31.9	-59.5
Storey17	-36.2	-87.4	87.9	-198	-48.5	-129.3
Storey16	-55.6	-82.1	67.6	-94.4	-31.3	-47.6
Storey15	-56.6	-77.2	65.8	-82.5	-32.3	-27.3
Storey14	-57.3	-78.1	65.1	-79.9	-33.6	-25.4
Storey13	-54.8	-73.4	67.6	-87.7	-34.2	-22.2
Storey12	-55.3	-73.7	67.1	-85.5	-33.4	-21.7
Storey11	-52.5	-68.9	69.9	-94.6	-32.1	-20.1
Storey10	-53.4	-69.7	69.1	-91.1	-32.1	-18.8
Storey9	-55.1	-71.5	67.3	-84.1	-31	-16.4
Storey8	-56.3	-73	66.1	-79.7	-28.6	-16.8
Storey7	-57.9	-72.3	64.1	-70	-26.4	-9.7
Storey6	-59.1	-73.5	62.9	-65.5	-25.8	-10.1
Storey5	-59.8	-73.5	62.2	-62.2	-23	-10.5
Storey4	-60.5	-73.3	61.5	-58.5	-21.8	-8.6
Storey3	-61.4	-73.1	60.6	-53.6	-21.2	-4.9
Storey2	-61.5	-71.9	60.5	-51.9	-22.4	1.2
Storey1	-49.5	-55.1	49.7	-41.2	-19.3	7.3

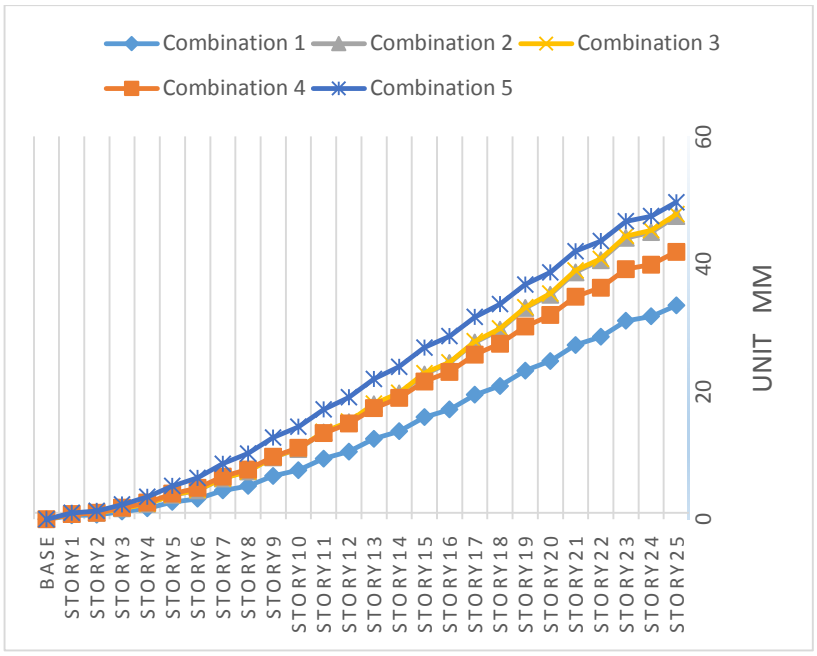

Figure (B.6): The distribution of maximum storey displacement in x-direction for all load combinations of diagonal bracing shear-wall frame system.

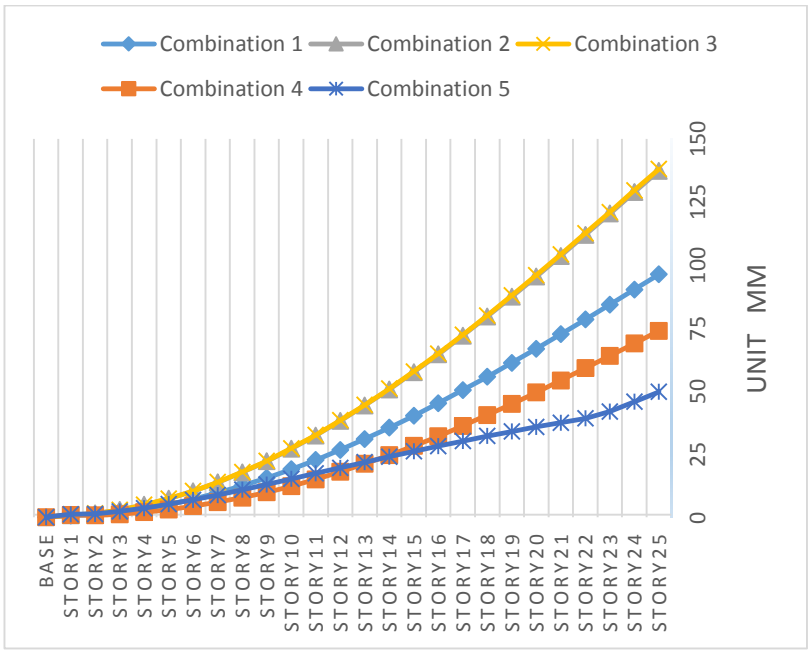

Figure (B.7): The distribution of maximum storey displacement in y-direction for all load combinations of diagonal bracing shear-wall frame system.

Table (B.7): The distribution of axial forces and bending moments on columns C1 and C24 for load combination 3 of V-shape bracing shear-wall frame system.

Storey	Column 1			Column 24		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-243.3	-10.7	-47.5	-243.3	-10.7	-47.5
Storey24	-323.3	-9.4	-38.5	-323.3	-9.4	-38.5
Storey23	-445.7	-8.2	-36.4	-445.7	-8.2	-36.4
Storey22	-621.2	-9.8	-34.2	-621.2	-9.8	-34.2
Storey21	-843.2	-20.6	-43.7	-843.2	-20.6	-43.7
Storey20	-1064.8	-21.3	-38.8	-1064.8	-21.3	-38.8
Storey19	-1300.4	-18.8	-36.6	-1300.4	-18.8	-36.6
Storey18	-1569.8	-35.2	-35.8	-1569.8	-35.2	-35.8
Storey17	-1850.6	-34	-34.5	-1850.6	-34	-34.5
Storey16	-2141.2	-33.9	-31.2	-2141.2	-33.9	-31.2
Storey15	-2457.5	-54.8	-35.2	-2457.5	-54.8	-35.2
Storey14	-2782.9	-50.3	-32.4	-2782.9	-50.3	-32.4
Storey13	-3121	-55.8	-33.7	-3121	-55.8	-33.7
Storey12	-3480	-50.8	-29.1	-3480	-50.8	-29.1
Storey11	-3856.5	-68.3	-32.8	-3856.5	-68.3	-32.8
Storey10	-4239.7	-61.9	-30.9	-4239.7	-61.9	-30.9
Storey9	-4634.6	-71.1	-26.1	-4634.6	-71.1	-26.1
Storey8	-5038.5	-54.5	-36.4	-5038.5	-54.5	-36.4
Storey7	-5449.5	-56.6	-36.1	-5449.5	-56.6	-36.1
Storey6	-5865.6	-55	-38.1	-5865.6	-55	-38.1
Storey5	-6287	-58.3	-42	-6287	-58.3	-42
Storey4	-6713.1	-56.8	-36.8	-6713.1	-56.8	-36.8
Storey3	-7143	-50.1	-51	-7143	-50.1	-51
Storey2	-7582.2	-57.1	-21	-7582.2	-57.1	-21
Storey1	-7936.3	-10.8	-34.8	-7936.3	-10.8	-34.8

Table (B.8): The beam's maximum forces of V-shape bracing shear-wall frame system.

Storey	Station 0.1 m		Station 5.0 m		Station 16.7 m	
	Max. (-ve) S.F.	B.M.	S.F.	Max. (+ve) B.M.	Max. (+ve) S.F.	Max. (-ve) B.M.
	kN	kN	kN	kN-m	kN	kN-m
Storey25	-49	-64	73.3	-107	-54.8	-10.4
Storey24	-106.4	-199.1	226.6	-274.8	195.2	-290.1
Storey23	-124.5	-237.9	239.3	-269.9	217.7	-308.1
Storey22	-124.6	-233.4	234.7	-258.4	258.2	-336.1
Storey21	-131.1	-248.3	236.3	-253.4	265.1	-340.9
Storey20	-126.8	-234.1	230.9	-245.8	277.7	-351.2
Storey19	-129.8	-242.1	227.5	-238.3	256.8	-334.6
Storey18	-136.5	-259.7	226.5	-231.4	256.4	-330
Storey17	-130.5	-241.4	219.8	-223.6	254.1	-322.9
Storey16	-131.5	-243.2	220.1	-222.4	250.6	-316.7
Storey15	-132.1	-242	219.4	-218.3	251.4	-313.6
Storey14	-131	-239.5	212.1	-208.6	249.7	-308.2
Storey13	-131.9	-238.7	216.4	-210.9	248.9	-303.5
Storey12	-131.3	-235.8	212.6	-204.6	247.6	-299
Storey11	-130.9	-233.6	209.6	-199.2	246.7	-295.8
Storey10	-129.4	-224.4	210.1	-195.9	246.4	-294.1
Storey9	-58.1	-73.1	49.3	-46.8	98.9	-81.3
Storey8	-57.3	-70.2	50.9	-49.4	91.6	-74.7
Storey7	-56.4	-68.3	48.9	-47.5	87.5	-70.7
Storey6	-55.8	-66.5	48.6	-47	84	-66.9
Storey5	-54.9	-64	46.7	-45	80.6	-62.6
Storey4	-53.5	-60.7	43.9	-42.5	74.4	-56.8
Storey3	-52.2	-57.5	41.2	-39.7	71.2	-51.8
Storey2	-46.6	-46.9	31.3	-33.1	59.2	-38.6
Storey1	-28.3	-24	3.4	-12	6.7	-3.1

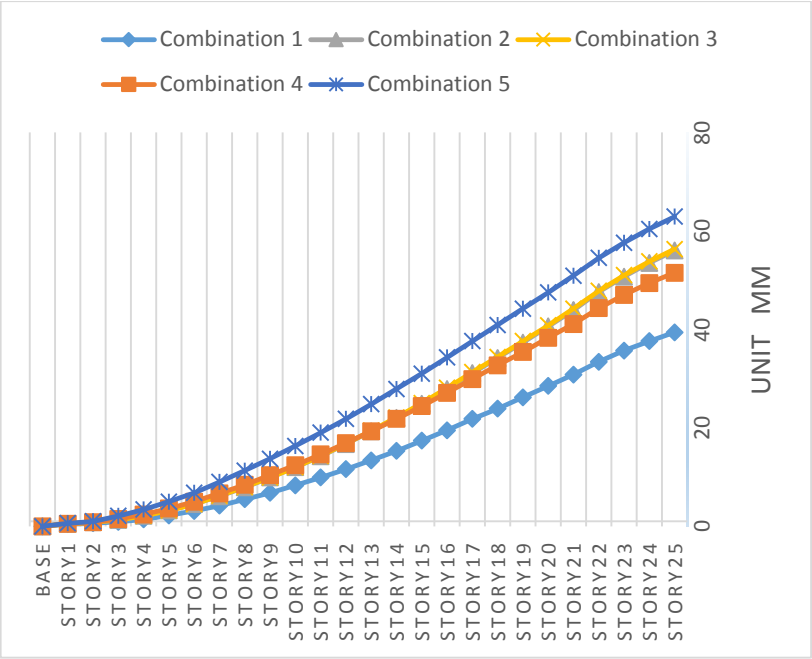

Figure (B.8): The distribution of maximum storey displacement in x-direction for all load combinations of V-shape bracing shear-wall frame system.

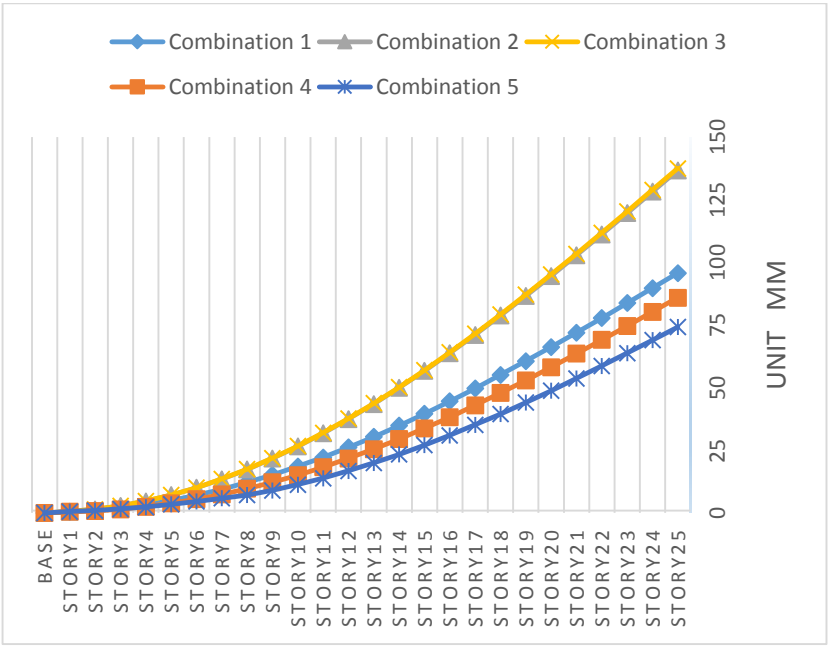

Figure (B.9): The distribution of maximum storey displacement in y-direction for all load combinations of V-shape bracing shear-wall frame system.

Table (B.9): The distribution of axial forces and bending moments on columns C11 and C27 for load combination 3 of unbraced tube frame system.

Storey	Column 11			Column 27		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-232.6	-7.1	277.7	-262.3	3.9	-457.4
Storey24	-517.9	-7.6	226.3	-528.6	4.4	-261.5
Storey23	-798	-9.3	224	-778.3	1.9	-245.7
Storey22	-1090.4	-15.6	303.9	-1035.8	1.6	-341.3
Storey21	-1405.1	-15.8	305.1	-1301.2	3.8	-295.2
Storey20	-1746.7	-7.9	315.3	-1555.2	4.5	-291.1
Storey19	-2034.2	-14.6	298.6	-1827.2	4.4	-383.7
Storey18	-2337.4	-16	224.7	-2097.7	9.7	-284.5
Storey17	-2642.3	-12.5	356.1	-2369.6	4.7	-356.7
Storey16	-2951.7	-13.1	230	-2635.1	9.8	-267.6
Storey15	-3273.9	-17.6	323.7	-2903.6	6.3	-346
Storey14	-3628.9	-15.3	325.4	-3187.6	6	-325.5
Storey13	-3978.9	-11.4	297.8	-3460	8.4	-308.4
Storey12	-4341.6	-15.6	396.2	-3748.2	7.6	-327.8
Storey11	-4706.8	-9.6	361.6	-4023	6.9	-305.6
Storey10	-5075.9	-9.4	358.3	-4301	7.9	-347.5
Storey9	-5437.2	-9.1	395.2	-4577.6	7.1	-298.2
Storey8	-5806.1	-8.1	398.1	-4856.3	5.6	-317
Storey7	-6179.1	-5.9	313.8	-5137.3	7.4	-283
Storey6	-6551.7	-5	408.8	-5427.9	7.1	-309.2
Storey5	-6910.2	-6	305.6	-5704.5	7.3	-275.4
Storey4	-7277.2	-2.2	334.2	-5996.8	7.2	-299.9
Storey3	-7640.7	-2.1	355.2	-6286.4	5.6	-254.9
Storey2	-7977.4	3.4	509.6	-6571.7	7.7	-362
Storey1	-8268.2	0.7	550.1	-6878	6.1	-7.2

Table (B.10): The distribution of axial forces and bending moments on columns C16 and C20 for load combination 3 of unbraced tube frame system.

Storey	Column 16			Column 20		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-47.3	-3.4	2.6	-49.2	-2.4	-14.5
Storey24	-95.1	-3.2	-1.2	-123.6	-13.8	-25.1
Storey23	-145.9	-5	5	-198.8	-13.6	-13.2
Storey22	-200.9	-7.8	1.2	-268.4	-13.2	-17.3
Storey21	-260.5	-15.3	1.1	-334	-12.1	-14.1
Storey20	-324.7	-13.6	8.8	-392.7	-11.6	-13.6
Storey19	-389.6	-12.8	8.5	-452.1	-11.1	-16.9
Storey18	-451.8	-12.3	6	-510.2	-10.1	-18.7
Storey17	-512.3	-12	5.2	-575.5	-9.8	-15.4
Storey16	-573.4	-11.1	8.9	-633.1	-9.2	-2.2
Storey15	-634.8	-12.1	7.2	-673.9	-9.1	-6.9
Storey14	-694.6	-11.6	5.9	-716.1	-8.3	-9.8
Storey13	-753.1	-10.7	6.7	-770.2	-8.8	-6
Storey12	-811.5	-11.4	6.4	-800.8	-8.1	-2.1
Storey11	-867.9	-10.3	7.3	-836.9	-7.4	-0.6
Storey10	-921.7	-10.2	3	-873.2	-6.7	-3.2
Storey9	-973.8	-9.3	3.7	-909.3	-6.2	-1.6
Storey8	-1025.8	-12.3	3.7	-941.3	-5.8	-0.8
Storey7	-1076.5	-10.6	2.4	-976.3	-5	-6.4
Storey6	-1124.5	-10.1	2.5	-1030.4	-5.1	-4.9
Storey5	-1172.5	-9.3	1.2	-1064.6	-4.2	-2.8
Storey4	-1219.6	-8.4	2.3	-1093.9	-3.6	-2.2
Storey3	-1267.2	-7.1	4.7	-1120.7	-3.1	0.4
Storey2	-1314.2	-7.3	7.4	-1145.2	-2.8	1.7
Storey1	-1359.1	-2.5	7.3	-1170	-0.8	3.9

Table (B.11): Beams' maximum bending moments for load combination 5 of unbraced tube frame system.

Storey	Beam 50		Beam 206	
	S.F.	Max. (+ve) B.M.	S.F.	Max. (-ve) B.M.
	kN	kN-m	kN	kN-m
Storey25	-174	182.9	143.7	-355.7
Storey24	-155.9	11	171.3	-423.1
Storey23	-174.4	162.7	189.7	-470.8
Storey22	-149.5	73.1	203.9	-562.2
Storey21	-161.6	169.3	231.6	-679.6
Storey20	-141	135.8	267.3	-820.9
Storey19	-145	59.9	210.9	-592.3
Storey18	-120.8	137	221.5	-625.4
Storey17	-120.7	381.8	220.2	-593.4
Storey16	-127.8	255.8	231	-652
Storey15	-142.9	119.4	237.1	-661.1
Storey14	-93.4	272.4	284.1	-773.5
Storey13	-98.5	166.5	283.3	-797.9
Storey12	-97.5	114.6	306	-835.5
Storey11	-90.7	198.3	313.9	-899.1
Storey10	-84.3	210.4	319.5	-908.1
Storey9	-27.4	579.9	319.4	-913
Storey8	-69.5	187.8	337.6	-974.2
Storey7	-49.7	364.1	356	-1035
Storey6	-46.2	385.9	366.8	-1017.8
Storey5	-2.7	621.7	348.8	-1028.3
Storey4	-60.8	202.1	371.6	-1025.4
Storey3	-32.7	216.3	375.2	-1026.5
Storey2	-62	241.1	327.5	-918.1
Storey1	-165.4	234.8	239	-596.8

Table (B.12): Beams' maximum shear forces for load combination 5 of unbraced tube frame system.

Storey	Beam 53		Beam 50	
	Max. (+ve) S.F.	B.M.	Max. (-ve) S.F.	B.M.
	kN	kN-m	kN	kN-m
Storey25	213.4	-199.2	-219.8	-180.5
Storey24	207.4	-384.6	-206.9	-356.8
Storey23	191.3	-159.2	-223.3	-221.6
Storey22	231.5	-414.1	-218.1	-332.1
Storey21	206.7	-215.3	-213.4	-207.4
Storey20	225.7	-343.2	-196.4	-221.2
Storey19	215.9	-389.5	-219	-370.4
Storey18	260.6	-497.2	-186.3	-199.4
Storey17	303.7	-413.9	-231.8	-152.3
Storey16	261.4	-386	-235.7	-317.8
Storey15	239.1	-400.4	-248.7	-423
Storey14	314.7	-564.9	-224.4	-286.2
Storey13	300.2	-610.2	-225.8	-365.4
Storey12	303.6	-684.6	-233.7	-400.3
Storey11	311.7	-649.4	-229.7	-371.2
Storey10	316.2	-659.4	-232	-373.9
Storey9	412.2	-696.7	-225.3	-140.3
Storey8	336.1	-756.6	-236.3	-379.2
Storey7	359	-710.8	-230.4	-302.6
Storey6	362.3	-682.9	-231.4	-298.2
Storey5	426.6	-676	-223.9	-136.8
Storey4	338	-726.8	-227.9	-373.1
Storey3	372.7	-869.2	-232.5	-368.5
Storey2	338.7	-658.6	-232.3	-391.6
Storey1	213.7	-168.4	-286.2	-484.8

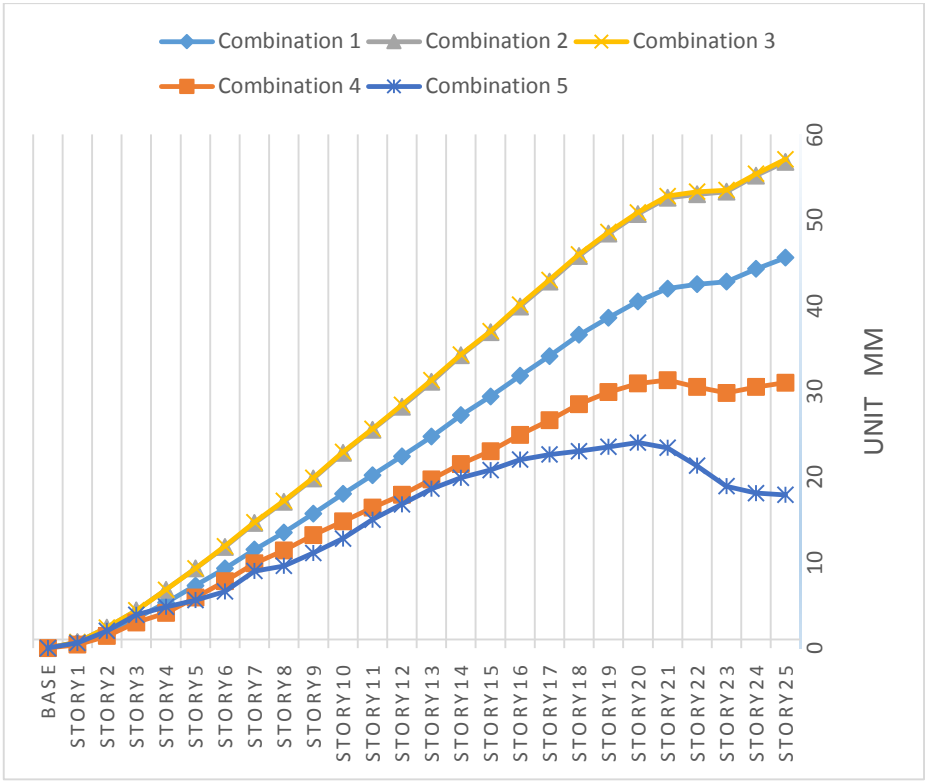

Figure (B.10): The distribution of maximum storey displacement in x-direction of unbraced tube frame system.

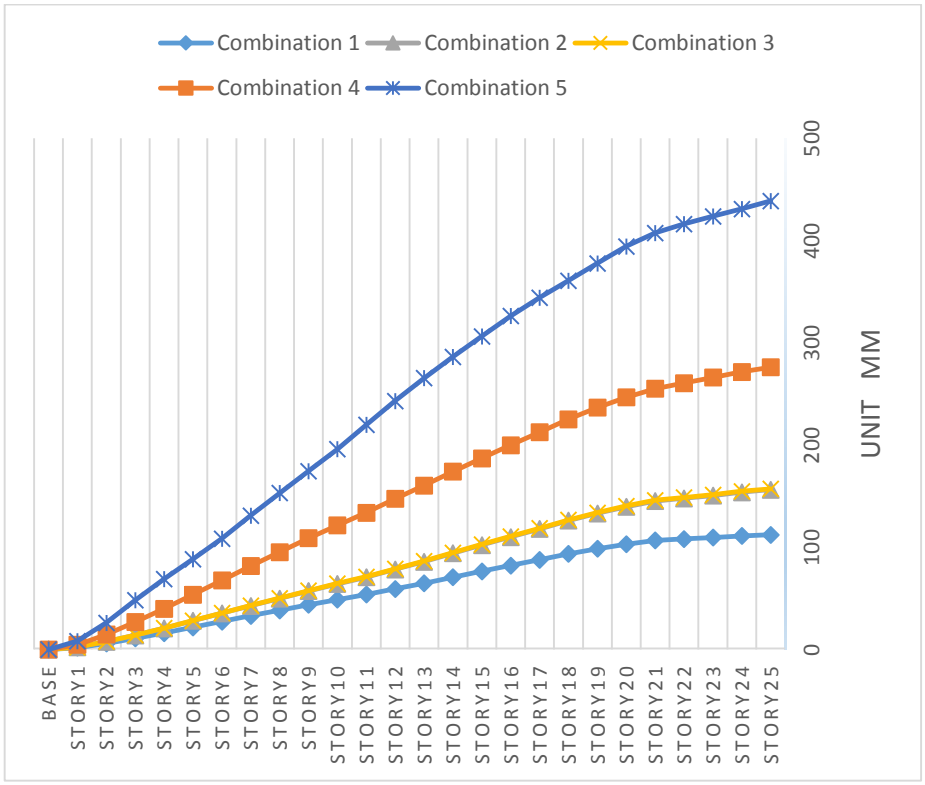

Figure (B.11): The distribution of maximum storey displacement in y-direction of unbraced tube frame system.

Table (B.13): The distribution of axial forces and bending moments on columns C11 and C27 for load combination 3 of cross bracing tube frame system.

Storey	Column 11			Column 27		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-171.3	-2.8	244.9	-183.4	13.1	-292.4
Storey24	-342.5	-1.9	144.8	-384.6	10.4	-234.3
Storey23	-514.6	-1.9	187.6	-588.6	10.1	-205.6
Storey22	-700	-1.7	186.8	-809.8	9.6	-300.6
Storey21	-877.3	-1.2	180.7	-1041.2	8.6	-320.9
Storey20	-1061.9	-0.9	237.7	-1262	15.1	-230.9
Storey19	-1257.1	-0.1	154	-1487.8	8.2	-293.3
Storey18	-1432.3	0.5	186.4	-1732.2	8.7	-363.7
Storey17	-1632.1	-0.5	215.9	-1986.6	12.8	-317.7
Storey16	-1836.4	-1.2	217.4	-2224.8	10.2	-309.3
Storey15	-2022.6	-2.3	216.4	-2476.7	9.8	-334.4
Storey14	-2196	-2.5	133.8	-2724.1	8.5	-298.3
Storey13	-2386.5	-1	268.5	-2992.3	9.3	-401.9
Storey12	-2575.7	-3	151.4	-3255.7	6.3	-294.1
Storey11	-2758.5	-1.9	180.7	-3535.1	6.3	-421
Storey10	-2943.6	-2.4	181.2	-3832.8	3.8	-407.3
Storey9	-3138.6	-2.1	256.3	-4121.3	2.5	-228.7
Storey8	-3340.3	-2.6	196.8	-4351.4	2.5	-345
Storey7	-3545	-0.9	182.4	-4635.9	1.2	-276.4
Storey6	-3775.1	-0.7	351.6	-4885.9	0.4	-249.5
Storey5	-4009	-0.5	148.3	-5144	0.3	-271.4
Storey4	-4221.6	0.2	241.2	-5405.8	-0.5	-269.6
Storey3	-4431	0.3	194.8	-5657.9	-0.8	-280.8
Storey2	-4657	1.8	271.2	-5915.5	-0.8	-311.7
Storey1	-4870.5	9.2	104.3	-6158.5	2.9	-25.2

Table (B.14): The distribution of axial forces and bending moments on columns C16 and C20 for combination 3 of cross bracing tube frame system.

Storey	Column 16			Column 20		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-2.6	-0.8	0.7	-31.5	-0.5	-1
Storey24	-35.9	-0.8	0.3	-102.8	-0.5	-0.5
Storey23	-77.2	-0.8	0.5	-155.8	-0.5	-0.7
Storey22	-121.9	-0.8	0.7	-226.4	-0.8	-0.8
Storey21	-192.8	-1.2	0.5	-279.7	-0.9	-0.8
Storey20	-265.7	-1.4	0.9	-354.1	-1.3	-0.4
Storey19	-317.3	-2	0.2	-395.4	-1.3	-1.2
Storey18	-363.9	-1.8	0.8	-468.4	-1.2	-0.9
Storey17	-459.5	-3.9	1	-551	-2.6	-0.6
Storey16	-509.5	-3.7	0.4	-608	-2.5	-0.8
Storey15	-560.7	-3.7	0.9	-655.9	-2.5	-0.4
Storey14	-601.4	-3.6	0.7	-697.4	-2.6	-0.5
Storey13	-648.4	-3.7	1.5	-728.5	-2.4	0.3
Storey12	-689.6	-3.6	0.7	-743.2	-2.5	-0.4
Storey11	-744.6	-3.6	1.7	-777	-2.5	0.2
Storey10	-836.8	-4.1	0.4	-799.1	-2.5	-1
Storey9	-879.9	-4	1.4	-850.5	-2.5	0.2
Storey8	-980	-4.5	0.2	-864.8	-2.3	-1
Storey7	-1011.6	-4.3	0.6	-993.6	-2.8	-0.3
Storey6	-1099.6	-4.8	1.1	-1046.6	-2.7	-0.3
Storey5	-1103.1	-4.3	0.1	-1146.6	-2.8	-0.8
Storey4	-1152.8	-6.1	0.7	-1239.7	-3	-1
Storey3	-1142.9	-5.5	1.4	-1203.2	-2.5	-0.6
Storey2	-1389.1	-5.7	-0.9	-1485.6	-3.7	1
Storey1	-1691.7	-7.8	0	-1575.6	-2	-10.4

Table (B.15): Beams' maximum bending moments for load combination 5 of cross bracing tube frame system.

Storey	Beam 50		Beam 206	
	S.F.	Max. (+ve) B.M.	S.F.	Max. (-ve) B.M.
	kN	kN-m	kN	kN-m
Storey25	-71.8	60	120	-298.7
Storey24	-93.4	15.5	128.4	-340.2
Storey23	-98.5	10.2	128.6	-338.2
Storey22	-95.4	11.6	139.5	-356.2
Storey21	-91.4	16	135.6	-358.7
Storey20	-89.4	15.7	136.9	-374
Storey19	-94.1	12.1	149.6	-404.9
Storey18	-96.6	9.1	126.8	-329.5
Storey17	-107.8	26.1	148.4	-377.9
Storey16	-101.1	4.1	162.2	-442.4
Storey15	-108.3	83.1	143.4	-377.3
Storey14	-98.8	35.2	130	-353.5
Storey13	-138.6	174.2	143.6	-371.8
Storey12	-143.9	-16.4	144.7	-385.7
Storey11	-51.5	40.8	136	-352
Storey10	-130.9	-13.3	136.5	-350.9
Storey9	-57.3	45.3	142.5	-375.2
Storey8	-121.8	-11.7	147.8	-416
Storey7	-69.6	41	146	-386.7
Storey6	-120.1	-5.3	165.3	-439.9
Storey5	-126	1.3	174.7	-501.2
Storey4	-138.8	182	148.3	-380.2
Storey3	-94	24.5	142.1	-385.2
Storey2	-106.2	18.3	155.5	-372.7
Storey1	-124.9	0.2	143.2	-380.9

Table (B.16): Beams' maximum shear forces for load combination 5 of cross bracing tube frame system.

Storey	Beam 53		Beam 50	
	Max. (+ve) S.F.	B.M.	Max. (-ve) S.F.	B.M.
	kN	kN-m	kN	kN-m
Storey25	225.7	-518.9	-105.1	-105.2
Storey24	176.5	-377.2	-128.8	-198
Storey23	171	-357.1	-135.3	-217.9
Storey22	170.8	-355.9	-132	-210.8
Storey21	181.7	-394.8	-127.9	-198.7
Storey20	178.8	-389.6	-126.1	-196.3
Storey19	177.8	-388.7	-131	-209
Storey18	167.3	-353	-133.8	-219.8
Storey17	132.9	-220.2	-140.8	-215.5
Storey16	161.1	-332.9	-140.2	-235.1
Storey15	138.4	-180.9	-139.7	-153.4
Storey14	150.5	-275.6	-133.9	-196.4
Storey13	180.8	-202.8	-188.6	-142.5
Storey12	106.4	-136.9	-187.9	-351.2
Storey11	202.3	-481.8	-77.3	-82.7
Storey10	114.7	-178	-172.4	-317.2
Storey9	214.1	-518.5	-83.2	-90.4
Storey8	119.4	-198.4	-165.5	-305
Storey7	208.6	-498	-101.6	-129
Storey6	150.2	-300.3	-166.8	-304.5
Storey5	135.1	-240.7	-168.5	-299.4
Storey4	180.3	-191.2	-187.7	-144.6
Storey3	174.5	-366.9	-131	-194.6
Storey2	179	-375.6	-145.6	-226.6
Storey1	166.8	-349.5	-169.9	-303

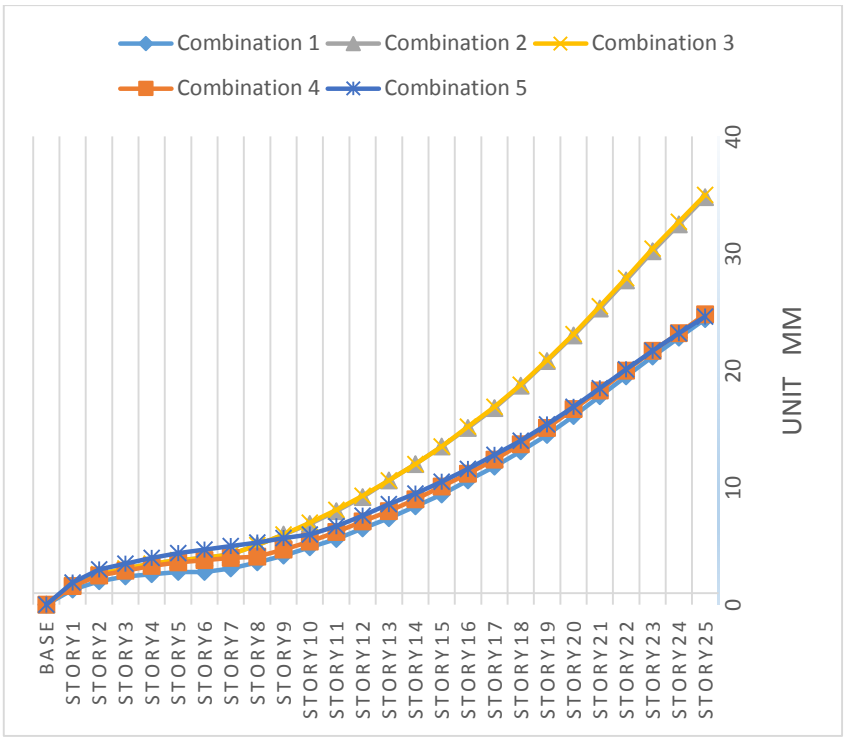

Figure (B.12): The distribution of maximum storey displacement in x-direction of cross bracing tube frame system.

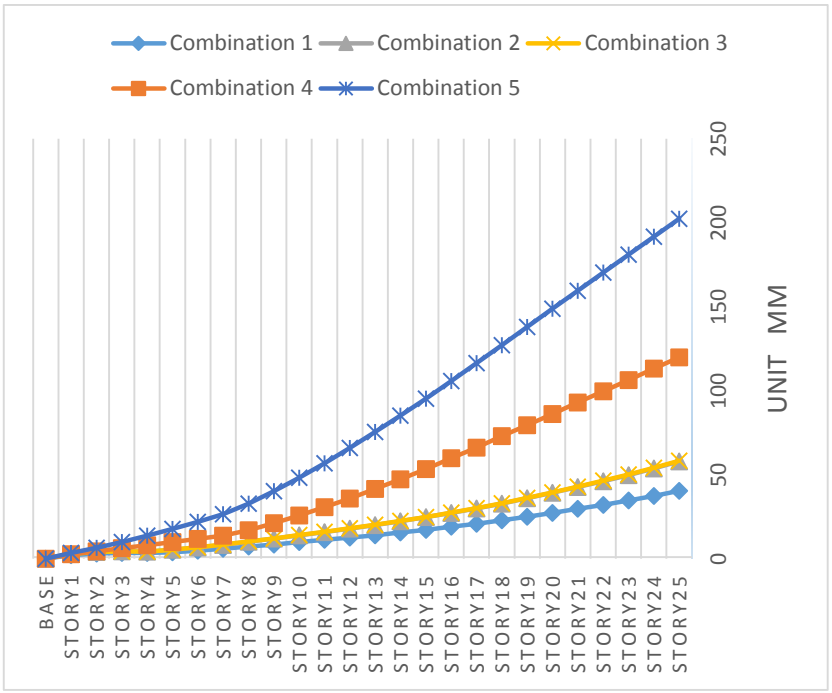

Figure (B.13): The distribution of maximum storey displacement in y-direction of cross bracing tube frame system.

Table (B.17): The distribution of axial forces and bending moments on columns C11 and C27 for load combination 3 of diagonal bracing tube frame system.

Storey	Column 11			Column 27		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-185.9	-7.3	268.8	-190.9	8	-282.8
Storey24	-375.6	-4.1	173.1	-388.4	6.2	-238.2
Storey23	-570.7	-4.8	200.9	-598.2	6.9	-203.5
Storey22	-763.3	-6.1	161.7	-820.2	6.3	-343.9
Storey21	-983.7	-3	333.4	-1033	7.4	-169.8
Storey20	-1202.6	-6.4	138.7	-1263.1	6.8	-431.5
Storey19	-1395.8	-2.7	314	-1488.2	7.2	-156.5
Storey18	-1599.5	-11.1	155.2	-1732.1	5.6	-475.9
Storey17	-1813.2	-5.2	273.9	-1974	8.6	-147.5
Storey16	-2005	-10.6	131.5	-2228.8	4	-492.8
Storey15	-2187.3	-5.8	268.5	-2492.3	9.1	-249.6
Storey14	-2382.4	-11.2	138.8	-2751.3	2.8	-368.8
Storey13	-2581.7	-2.9	297.9	-3031.2	6.3	-361.8
Storey12	-2774.3	-11.3	133.5	-3304.7	2.1	-390.1
Storey11	-2966.5	-3.3	271.8	-3579.9	7.4	-296.1
Storey10	-3153.5	-10.8	94.2	-3874.6	-1.1	-489.2
Storey9	-3345.1	-2.2	303.9	-4171.9	5.7	-293.8
Storey8	-3538.7	-11.5	115.1	-4455.4	-3.8	-358.2
Storey7	-3738.6	1	369.5	-4709.8	4.8	-196
Storey6	-3954.8	-14.1	135.8	-4958	-6.3	-339.4
Storey5	-4168.4	2.1	258.1	-5220.2	4.9	-237.9
Storey4	-4382.4	-9.2	143	-5486.4	-6.1	-340.8
Storey3	-4592.7	4.4	262.4	-5748.9	5.1	-263.1
Storey2	-4815.9	-7.3	168	-6009.3	-4.7	-341.3
Storey1	-5035.8	13.1	160.9	-6259.3	5.4	9.1

Table (B.18): The distribution of axial forces and bending moments on columns C16 and C20 for combination 3 of diagonal bracing tube frame system.

Storey	Column 16			Column 20		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-9	-1	0.3	-9	-1	0.3
Storey24	-37.7	-0.9	-1.1	-37.7	-0.9	-1.1
Storey23	-125.2	-1	0.7	-125.2	-1	0.7
Storey22	-154.3	-1	-0.8	-154.3	-1	-0.8
Storey21	-265.5	-1.7	0.9	-265.5	-1.7	0.9
Storey20	-295.6	-1.9	-2.1	-295.6	-1.9	-2.1
Storey19	-429.4	-4.7	2.6	-429.4	-4.7	2.6
Storey18	-462	-3.6	-3.1	-462	-3.6	-3.1
Storey17	-559.4	-4.6	3.7	-559.4	-4.6	3.7
Storey16	-592	-3.3	-2.8	-592	-3.3	-2.8
Storey15	-663	-4.6	3.8	-663	-4.6	3.8
Storey14	-695.5	-3.1	-3	-695.5	-3.1	-3
Storey13	-763.2	-4.6	3.6	-763.2	-4.6	3.6
Storey12	-795.9	-3	-2.5	-795.9	-3	-2.5
Storey11	-933.7	-5.6	4.4	-933.7	-5.6	4.4
Storey10	-966.9	-3.2	-3.8	-966.9	-3.2	-3.8
Storey9	-1083.9	-6.1	5.6	-1083.9	-6.1	5.6
Storey8	-1116.9	-3.1	-5.8	-1116.9	-3.1	-5.8
Storey7	-1247.1	-8.1	6.8	-1247.1	-8.1	6.8
Storey6	-1283.1	-4.5	-7.3	-1283.1	-4.5	-7.3
Storey5	-1525.5	-8.7	12.6	-1525.5	-8.7	12.6
Storey4	-1562.8	-2.8	-12.2	-1562.8	-2.8	-12.2
Storey3	-1964.1	-15.1	15.5	-1964.1	-15.1	15.5
Storey2	-2005.4	-3.1	-19	-2005.4	-3.1	-19
Storey1	-2433.2	-14.9	17.6	-2433.2	-14.9	17.6

Table (B.19): Beams' maximum bending moments for load combination 5 of diagonal bracing tube frame system.

Storey	Beam 50		Beam 206	
	S.F.	Max. (+ve) B.M.	S.F.	Max. (-ve) B.M.
	kN	kN-m	kN	kN-m
Storey25	-69.6	55.2	134.4	-336.5
Storey24	-92.6	10.2	142.7	-384.2
Storey23	-85.1	18	146.5	-374.4
Storey22	-97.3	8	144.6	-370.1
Storey21	-84.7	21.2	168.8	-465.9
Storey20	-96.1	7.4	171.9	-475.1
Storey19	-107.2	22.2	140.7	-379.3
Storey18	-112.8	16	163.4	-449.6
Storey17	-119.6	4.2	175.5	-467.1
Storey16	-118.7	9	153.1	-414.6
Storey15	-112.2	18.7	140.5	-364.1
Storey14	-99.7	83.5	154.7	-415
Storey13	-119.4	211.6	162	-416.4
Storey12	-102.3	5.2	155.1	-412
Storey11	-137.3	18.4	150	-400.2
Storey10	-66.8	40.4	148.3	-390.5
Storey9	-142.3	-32.1	144.5	-364.3
Storey8	-54.9	47.2	146.6	-384.9
Storey7	-162.4	23.4	141.9	-376.9
Storey6	-50.7	44.9	161.9	-472.5
Storey5	-164.6	-34.5	152	-410.8
Storey4	-53.7	46.9	148.7	-376.8
Storey3	-160.6	-17.1	145.7	-368.4
Storey2	-95.9	34.4	155.9	-376.3
Storey1	-104.1	16.2	149.4	-366.8

Table (B.20): Beams' maximum shear forces for load combination 5 of diagonal bracing tube frame system.

Storey	Beam 53		Beam 50	
	Max. (+ve) S.F.	B.M.	Max. (-ve) S.F.	B.M.
	kN	kN-m	kN	kN-m
Storey25	232.6	-547.6	-102.2	-105.5
Storey24	165.9	-351.6	-128	-204
Storey23	195.6	-450.7	-119.9	-182
Storey22	161.5	-325.3	-134.3	-219.3
Storey21	202.2	-474.7	-121	-182.3
Storey20	160.1	-333.4	-133.2	-218.5
Storey19	138.2	-243.5	-146	-229
Storey18	123.3	-188.8	-151.7	-244.3
Storey17	112.6	-163.2	-159.2	-272.7
Storey16	117.9	-176.8	-159.6	-272.5
Storey15	124.7	-195.2	-152.5	-249.1
Storey14	129.4	-150.3	-129.3	-134.2
Storey13	183.9	-203.9	-166.9	-81.4
Storey12	168.2	-367	-148.1	-256.9
Storey11	114.2	-147.4	-185	-331.7
Storey10	211.1	-509.3	-98.3	-119.7
Storey9	92.8	-119.2	-188.6	-371.3
Storey8	217.4	-537.3	-81.2	-77.2
Storey7	119.3	-125.3	-218.4	-405.6
Storey6	222.1	-550.6	-76.4	-66.6
Storey5	99	-106.5	-212.8	-418.1
Storey4	223.7	-545.9	-80.9	-70.2
Storey3	106.9	-117.8	-207.6	-385
Storey2	194.6	-416.3	-133.8	-187.2
Storey1	169	-356	-144.9	-238.6

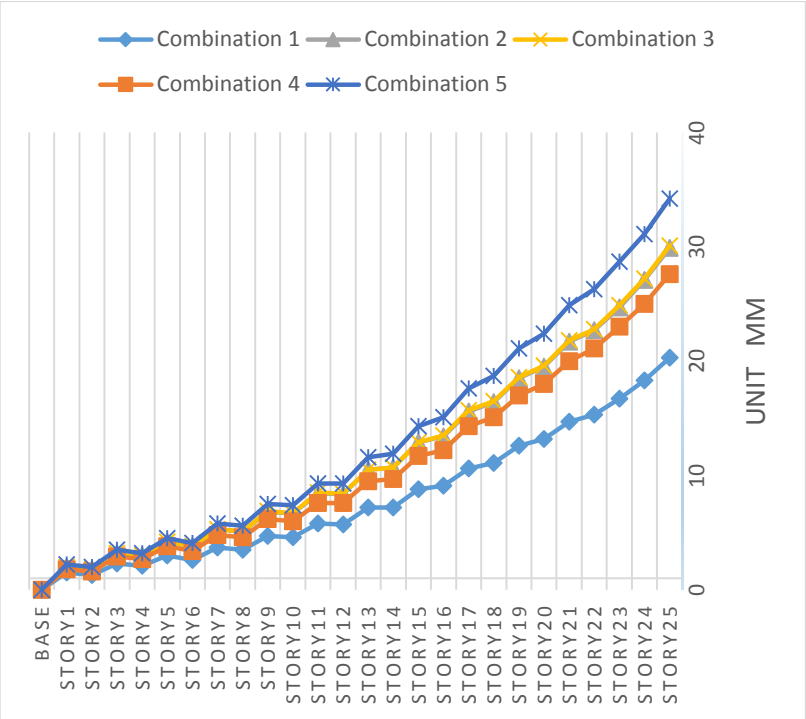

Figure (B.14): The distribution of maximum storey displacement in x-direction of diagonal bracing tube frame system.

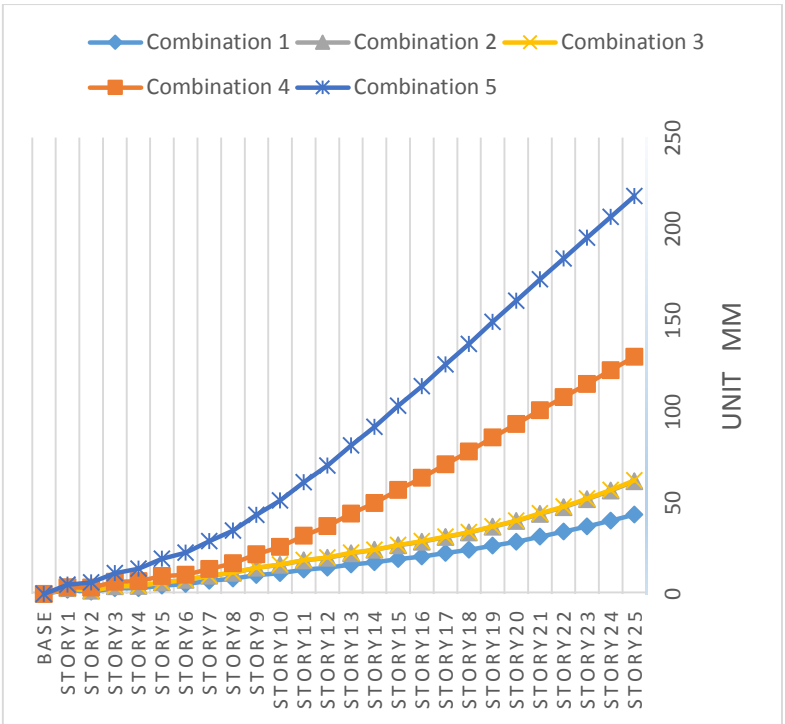

Figure (B.15): The distribution of maximum storey displacement in y-direction of diagonal bracing tube frame system.

Table (B.21): The distribution of axial forces and bending moments on columns C11 and C27 for load combination 3 of V-shape bracing tube frame system.

Storey	Column 11			Column 27		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-181.4	-8.8	241.2	-225.9	7.7	-397.6
Storey24	-359.9	-4.1	168.5	-427.7	3.8	-161.2
Storey23	-565.8	-7.7	203.1	-651.6	7.1	-350.2
Storey22	-782.1	-6.2	292.9	-862.6	6.4	-172.2
Storey21	-987.1	-7.1	147.4	-1070.9	6.7	-307.6
Storey20	-1198.6	-8	276.4	-1312.4	5.8	-313.5
Storey19	-1388.5	-7.4	157.7	-1541	8.7	-295.5
Storey18	-1583.2	-12.1	297	-1766.4	7.9	-277.1
Storey17	-1776.8	-10.8	111.9	-2002.9	7.7	-328.9
Storey16	-1965.9	-7	277.6	-2246.8	7.1	-314.7
Storey15	-2152.1	-12.7	148.4	-2495.9	6	-321.9
Storey14	-2357.7	-10.8	224.2	-2745.5	6.9	-283.7
Storey13	-2550.7	-10.3	223.3	-3010.7	4	-380.7
Storey12	-2743	-9.9	202.7	-3282.4	5.1	-359
Storey11	-2935.9	-9	171.9	-3552.6	4.3	-342
Storey10	-3127.4	-9.4	210.9	-3833	3.2	-375
Storey9	-3324	-7.5	179.9	-4112.4	3.3	-343.3
Storey8	-3527.9	-7.2	234	-4399	2	-352
Storey7	-3736.4	-5.8	184.7	-4709	2.2	-438
Storey6	-3933.5	-5.9	209.1	-5024.3	1.3	-313.9
Storey5	-4124.7	-3.4	213.3	-5300.1	-0.3	-341.3
Storey4	-4330	-3.8	228.7	-5579.3	-0.6	-286
Storey3	-4548.5	-4.6	194.1	-5835.4	-1.8	-279.7
Storey2	-4765.3	-1.4	223.3	-6091.6	1.7	-327.5
Storey1	-4987.5	4.2	64.7	-6345.2	-1.6	-97.5

Table (B.22): The distribution of axial forces and bending moments on columns C16 and C20 for combination 3 of V-shape bracing tube frame system.

Storey	Column 16			Column 20		
	P	M2	M3	P	M2	M3
	kN	kN-m	kN-m	kN	kN-m	kN-m
Storey25	-64.6	-0.6	-0.3	-81.1	-0.5	-1.4
Storey24	-134.9	-0.6	1.2	-166.1	-0.6	-3.9
Storey23	-211.8	-1.1	2.6	-264.5	-1.1	-6.8
Storey22	-292.5	-1.4	3.8	-357.1	-1.8	-9.8
Storey21	-370.4	-2.2	4.9	-444.7	-4	-11.6
Storey20	-464.6	-5.2	6.6	-521.3	-4.3	-11.8
Storey19	-538.8	-5.3	7	-595	-4.8	-14.3
Storey18	-605.9	-5.6	7.7	-657.9	-5.2	-16.3
Storey17	-691.5	-6	10.2	-731.8	-5.7	-17.1
Storey16	-791.7	-6.8	8.9	-837.6	-6.7	-19.5
Storey15	-922.9	-7.8	14.2	-934.8	-7.5	-20.3
Storey14	-1026.5	-7.4	14	-1034.4	-7.9	-18.8
Storey13	-1148.7	-12.4	13.1	-1132.9	-8.1	-25.2
Storey12	-1243.8	-11.9	14.6	-1218.7	-12.1	-21.3
Storey11	-1343	-12.3	14.6	-1300	-12	-22.2
Storey10	-1459.2	-13.5	15.3	-1393.6	-12.6	-25
Storey9	-1580.7	-11.8	17	-1479.3	-12.5	-26.2
Storey8	-1728.9	-18.1	18.6	-1588.6	-13.8	-24.9
Storey7	-1843.7	-15.7	15.1	-1695.3	-13.9	-27.8
Storey6	-1971.4	-20.3	16.1	-1817.9	-13.2	-31.2
Storey5	-2054.9	-18.5	16.9	-1932.5	-17.8	-27.5
Storey4	-2113.5	-17.2	14.2	-2080.2	-15.7	-31.3
Storey3	-2141.8	-24.2	17.1	-2201.9	-26.4	-37.9
Storey2	-1018.9	-2.6	1.1	-1057.1	-1.1	-7.5
Storey1	-1028.1	-0.5	-6	-1060.5	0.1	0.1

Table (B.23): Beams' maximum bending moments for load combination 5 of V-shape bracing tube frame system.

Storey	Beam 50		Beam 206	
	S.F.	Max. (+ve) B.M.	S.F.	Max. (-ve) B.M.
	kN	kN-m	kN	kN-m
Storey25	-99.6	49.9	132	-327.4
Storey24	-96.4	4.6	126.8	-338.2
Storey23	-88.5	13.3	153.1	-379.4
Storey22	-97.8	6.3	170.8	-463.7
Storey21	-97.2	6.1	160.2	-446.5
Storey20	-93.8	81.8	163.7	-402.6
Storey19	-120.5	219.2	149	-409.1
Storey18	-119.8	233.9	149.1	-406.8
Storey17	-118.3	212.3	153.9	-420.4
Storey16	-99.1	3.5	143.9	-377.7
Storey15	-109.5	20.2	144.3	-394.2
Storey14	-107.1	7.4	161.4	-441.7
Storey13	-107.6	-7.2	150.3	-401.4
Storey12	-96.4	70.2	149	-403
Storey11	-115.9	70.1	149	-404.3
Storey10	-101.6	5.2	144	-380.3
Storey9	-117.2	70.3	148.2	-391.5
Storey8	-124.6	208.2	158.6	-411.4
Storey7	-120.7	74.8	167.1	-436.3
Storey6	-61.2	47.6	143.7	-375.9
Storey5	-137.3	9.7	141.8	-375.7
Storey4	-59.4	47.7	147.3	-405.1
Storey3	-130	33.4	153.7	-411.2
Storey2	-75.8	37.3	145.5	-368.9
Storey1	-129.6	65.5	148.6	-354.7

Table (B.24): Beams' maximum shear forces for load combination 5 of V-shape bracing tube frame system.

Storey	Beam 53		Beam 50	
	Max. (+ve) S.F.	B.M.	Max. (-ve) S.F.	B.M.
	kN	kN-m	kN	kN-m
Storey25	163.3	-277	-137	-176.4
Storey24	167	-347.3	-134.2	-223.1
Storey23	175.2	-372.6	-126	-199
Storey22	172.1	-366.1	-138.1	-228.3
Storey21	163	-335.3	-136.6	-229.7
Storey20	129.1	-148.9	-124.2	-123
Storey19	177.7	-162.9	-165.6	-61.6
Storey18	174.2	-150.3	-165.2	-53.9
Storey17	186.2	-202.6	-168.9	-85.7
Storey16	152.1	-311.8	-147.3	-257.6
Storey15	122.1	-188.2	-148	-245.2
Storey14	140.6	-272	-153.6	-272.6
Storey13	121.9	-221.5	-152.8	-280.8
Storey12	130.1	-174.6	-128.6	-149.5
Storey11	146	-236.3	-170.3	-276.1
Storey10	159.8	-339.2	-158.4	-286.7
Storey9	145.3	-236.6	-174.1	-284.6
Storey8	185.7	-210.1	-184.5	-150.9
Storey7	145.6	-220.7	-172.9	-268.5
Storey6	222.6	-549.7	-97.4	-112.2
Storey5	119.5	-155.9	-186.7	-338.6
Storey4	223.8	-543.5	-93	-100.7
Storey3	135.4	-188.5	-176.7	-284.7
Storey2	206.5	-491.7	-116.1	-161.8
Storey1	160.5	-272.8	-180.5	-268.6

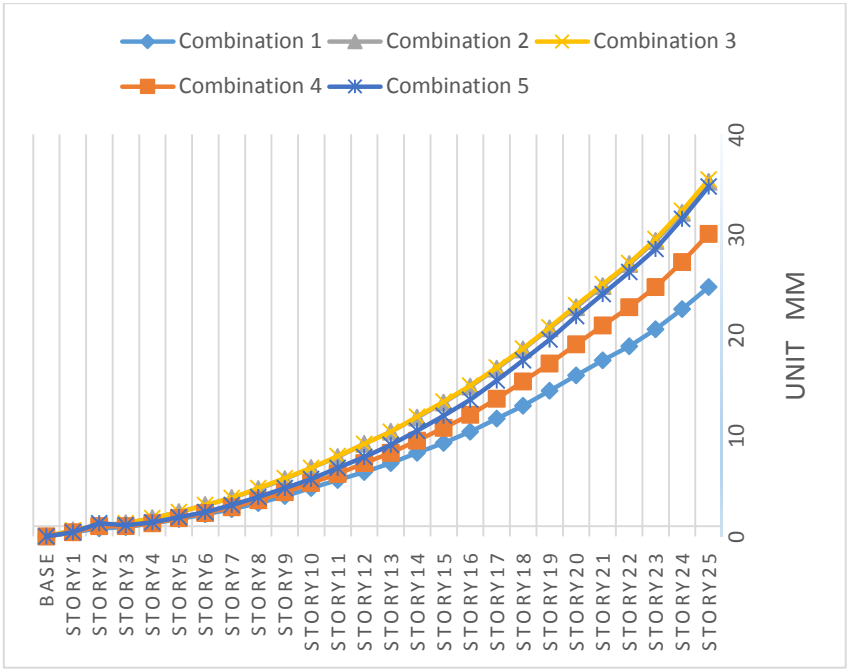

Figure (B.16): The distribution of maximum storey displacement in x-direction of V-shape bracing tube frame system.

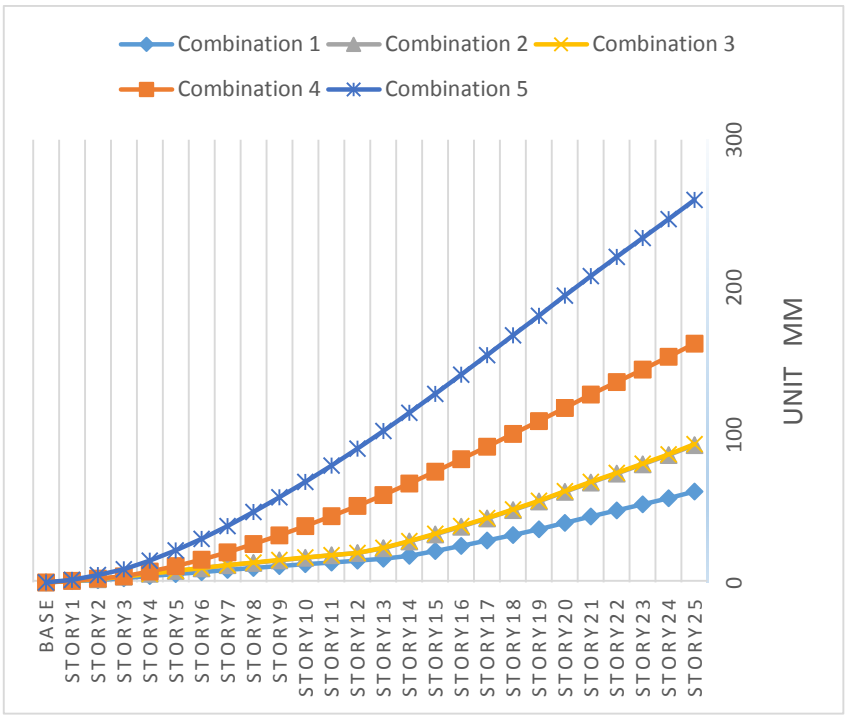

Figure (B.17): The distribution of maximum storey displacement in y-direction of V-shape bracing tube frame system.