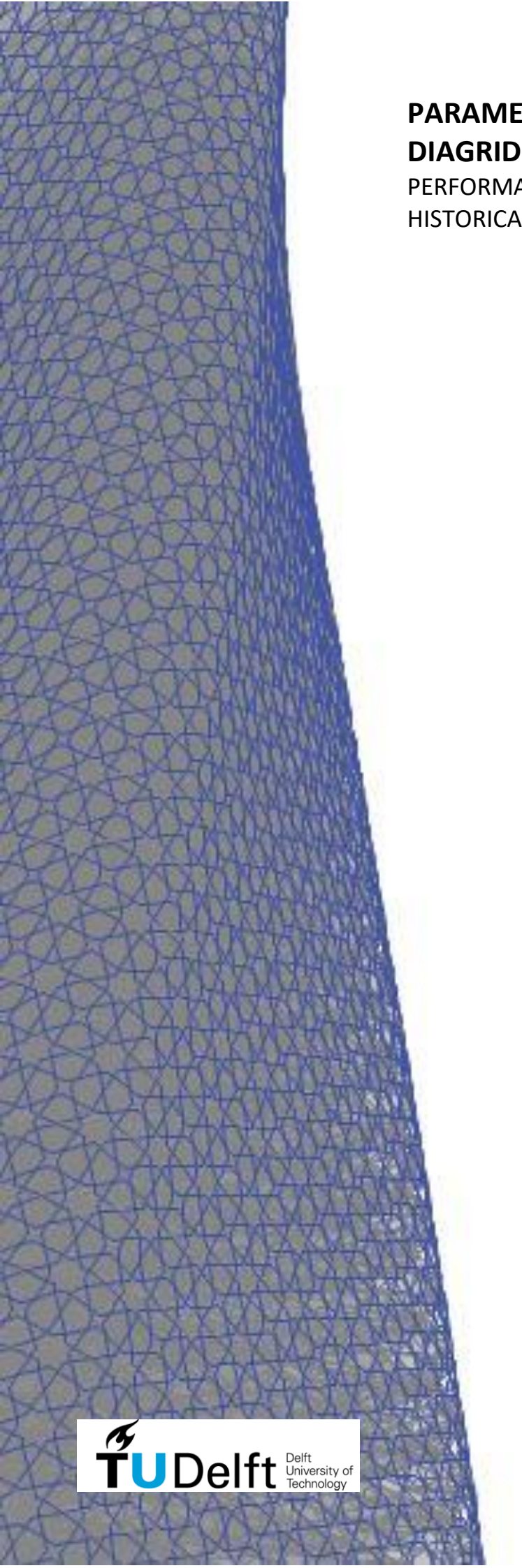

PARAMETRIC DESIGN OF NON-CONVENTIONAL DIAGRID SYSTEMS FOR TALL BUILDINGS

PERFORMANCE OF STRUCTURAL GRIDS INSPIRED IN HISTORICAL GEOMETRIC ISLAMIC ORNAMENTAL ART

APPENDIX II. NUMERICAL RESULTS

CARLOS A. MERI CELMA

TU Delft Delft University of Technology

MASTER THESIS // MAY 2020

MATER THESIS
STRUCTURAL ENGINEERING // STRUCTURAL MECHANICS
TU DELFT // FACULTY OF CIVIL ENGINEERING (CiTG)

AUTHOR
Carlos A. Meri Celma
carlosmericelma@gmail.com

GRADUATION COMMITTEE

Prof.dr.ir. Jan Rots (Chair)	TU DELFT - CiTG // Materials, Mechanics, Management & Design – Structural Mechanics
Dr. ir. Carlos Lázaro (Supervisor)	UPV (Spain) - ETSICCP // Continuous Medium Mechanics and Theory of Structures
Dr. ir. Max Hendriks	TU DELFT - CiTG // Materials, Mechanics, Management & Design – Structural Mechanics
Ir. Lennert van der Linden	TU DELFT - CiTG // Materials, Mechanics, Management & Design – Structural Design

A project in cooperation with:

Faculty of Civil Engineering and Geoscience (CiTG)

Department of Continuous Medium Mechanics and Theory of Structures

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This document is designed to be printed in A4 on. both sides, adjusting the scale to printer margins.

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1.1. BENCHMARK RESULTS: 1X1 PANELS

Linear elastic analysis with Imposed displacement of 1m, material 30MPa concrete with mechanical properties in accordance with EC2 ($E_b = 28{,}576{,}791\ kN/m^2,\ v = 0.2,\ G = 11{,}906{,}996\ kN/m^2$). The homogenized mechanical properties are normalized dividing the final results by E_b and are independent of the modulus of elasticity used. Results for **1X1 panels**

A) YESLI MOSQUE

Tessellation 3.6.3.6.

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	30.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	1,286,229	247,324	247,324	428,743	142,998	247,680	247,680	428,994
0.2	4.0	2,574,090	493,707	493,707	858,030	286,674	496,534	496,534	860,022
0.3	6.0	3,865,153	738,240	738,240	1,288,384	431,675	747,684	747,684	1,295,026
0.4	8.0	5,160,877	980,083	980,083	1,720,292	578,591	1,002,150	1,002,150	1,735,774
0.5	10.0	6,462,560	1,218,485	1,218,485	2,154,187	727,930	1,260,812	1,260,812	2,183,790
0.6	12.0	7,771,303	1,452,811	1,452,811	2,590,434	880,103	1,524,383	1,524,383	2,640,309
0.7	14.0	9,087,992	1,682,549	1,682,549	3,029,331	1,035,418	1,793,396	1,793,396	3,106,253
0.8	16.0	10,413,284	1,907,320	1,907,320	3,471,095	1,194,076	2,068,200	2,068,200	3,582,228
0.9	18.0	11,747,612	2,126,875	2,126,875	3,915,871	1,356,180	2,348,973	2,348,973	4,068,540
1.0	20.0	13,091,197	2,341,085	2,341,085	4,363,732	1,521,742	2,635,734	2,635,734	4,565,226

-	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.02599	0.00865	0.00865	0.02599	0.00867
4	0.05201	0.01728	0.01728	0.05201	0.01738
6	0.07809	0.02583	0.02583	0.07809	0.02616
8	0.10427	0.03430	0.03430	0.10427	0.03507
10	0.13057	0.04264	0.04264	0.13057	0.04412
12	0.1570	0.0508	0.0508	0.1570	0.05334
14	0.1836	0.0589	0.0589	0.1836	0.06276
16	0.2104	0.0667	0.0667	0.2104	0.07237
18	0.2373	0.0744	0.0744	0.2373	0.08220
20	0.2645	0.0819	0.0819	0.2645	0.09223

-	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	2.31%	2.31%	0.333	0.333	0.87%
4	4.63%	4.63%	0.332	0.332	1.74%
6	6.95%	6.95%	0.331	0.331	2.62%
8	9.30%	9.30%	0.329	0.329	3.51%
10	11.66%	11.66%	0.327	0.327	4.41%
12	14.05%	14.05%	0.324	0.324	5.33%
14	16.47%	16.47%	0.321	0.321	6.28%
16	18.92%	18.92%	0.317	0.317	7.24%
18	21.40%	21.40%	0.314	0.314	8.22%
20	23.91%	23.91%	0.310	0.310	9.22%

B) GREAT MOSQUE OF DAMASCUS

Tessellation 6.6.6. θ =60º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	40.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	8,083	3,469	3,469	6,062	2,511	2,138	2,138	2,180
0.10	2.0	61,391	25,687	25,687	46,043	19,289	16,425	16,425	16,841
0.15	3.0	191,220	76,868	76,868	143,415	61,074	52,003	52,003	53,806
0.20	4.0	409,612	156,392	156,392	307,209	133,285	113,464	113,464	118,835
0.25	5.0	712,968	256,476	256,476	534,726	236,357	201,121	201,121	213,779

0.30	6.0	1,089,130	367,367	367,367	816,848	367,379	312,371	312,371	337,697
0.35	7.0	1,523,335	480,790	480,790	1,142,501	521,887	443,217	443,217	488,135
0.40	8.0	2,001,633	591,159	591,159	1,501,225	695,199	589,402	589,402	662,110
0.45	9.0	2,512,290	695,392	695,392	1,884,218	883,134	747,037	747,037	856,675
0.50	10.0	3,046,049	792,240	792,240	2,284,537	1,082,286	912,849	912,849	1,069,180

60º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
1	0.00024	0.00012	0.00012	0.00024	0.00007
2	0.00186	0.00090	0.00090	0.00186	0.00057
3	0.00579	0.00269	0.00269	0.00579	0.00182
4	0.01241	0.00547	0.00547	0.01241	0.00397
5	0.02161	0.00897	0.00897	0.02161	0.00704
6	0.03301	0.01286	0.01286	0.03301	0.01093
7	0.04616	0.01682	0.01682	0.04616	0.01551
8	0.06066	0.02069	0.02069	0.06066	0.02063
9	0.07614	0.02433	0.02433	0.07614	0.02614
10	0.09231	0.02772	0.02772	0.09231	0.03194

60º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.02%	0.02%	0.496	0.496	0.01%
2	0.14%	0.14%	0.483	0.483	0.06%
3	0.45%	0.45%	0.464	0.464	0.19%
4	1.00%	1.00%	0.441	0.441	0.42%
5	1.79%	1.79%	0.415	0.415	0.75%
6	2.80%	2.80%	0.389	0.389	1.17%
7	4.00%	4.00%	0.364	0.364	1.67%
8	5.36%	5.36%	0.341	0.341	2.24%
9	6.84%	6.84%	0.320	0.320	2.85%
10	8.40%	8.40%	0.300	0.300	3.50%

Tessellation 6.6.6. θ =75º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	48.99	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Beam depth	rel beam depth	**Nxh = Q11**	**Nyh = Q21**	**Nxv = Q12**	**Nyv = Q22**	**Nxy,h**	**Nyx,h**	**Nxy,v**	**Nyx,v**
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	2,456	756	756	1,842	986	717	717	804
0.1	2.0	19,202	5,813	5,813	14,401	7,740	5,630	5,630	6,342
0.15	3.0	62,462	18,395	18,395	46,847	25,323	18,423	18,423	20,920
0.2	4.0	140,966	39,998	39,998	105,724	57,564	41,883	41,883	48,077
0.25	5.0	259,465	70,335	70,335	194,599	106,828	77,727	77,727	90,414
0.3	6.0	419,101	107,763	107,763	314,325	174,060	126,614	126,614	149,568
0.35	7.0	618,253	149,920	149,920	463,689	259,038	188,324	188,324	226,310
0.4	8.0	853,527	194,307	194,307	640,145	360,714	261,990	261,990	320,717
0.45	9.0	1,120,617	238,699	238,699	840,462	477,550	346,338	346,338	432,348
0.5	10.0	1,414,942	281,348	281,348	1,061,207	607,794	439,897	439,897	560,417

75º	CONSTITUTIVE COEFFICIENTS				
depth [%]	**Q11**	**Q12**	**Q21**	**Q22**	**Q33**
1	0.00007	0.00003	0.00003	0.00007	0.00003
2	0.00058	0.00020	0.00020	0.00058	0.00022
3	0.00189	0.00064	0.00064	0.00189	0.00074
4	0.00427	0.00140	0.00140	0.00427	0.00168
5	0.00786	0.00246	0.00246	0.00786	0.00312
6	0.01270	0.00377	0.00377	0.01270	0.00511
7	0.01874	0.00525	0.00525	0.01874	0.00763
8	0.02587	0.00680	0.00680	0.02587	0.01066
9	0.03396	0.00835	0.00835	0.03396	0.01416
10	0.04288	0.00985	0.00985	0.04288	0.01808

75º	HOMOGENIZED MECHANICAL PROPERTIES				
depth [%]	**Ex**	**Ey**	**Vxy**	**Vyx**	**G**
1	0.01%	0.01%	0.356	0.356	0.00%
2	0.05%	0.05%	0.350	0.350	0.02%
3	0.17%	0.17%	0.340	0.340	0.07%
4	0.38%	0.38%	0.328	0.328	0.17%
5	0.71%	0.71%	0.313	0.313	0.31%
6	1.16%	1.16%	0.297	0.297	0.51%
7	1.73%	1.73%	0.280	0.280	0.76%
8	2.41%	2.41%	0.263	0.263	1.07%
9	3.19%	3.19%	0.246	0.246	1.42%
10	4.06%	4.06%	0.230	0.230	1.81%

C) SABZ PUSHAN

Tessellation 6.6.6. θ =60º, opening distance 35%

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	52.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0

GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	17,062	10,986	10,986	12,797	2,820	2,114	2,114	2,279
0.10	2.0	122,364	76,408	76,408	91,773	21,782	16,347	16,347	17,724
0.15	3.0	353,481	210,329	210,329	265,111	69,535	52,269	52,269	57,180
0.20	4.0	700,973	391,996	391,996	525,730	153,310	115,412	115,412	127,733
0.25	5.0	1,129,910	585,179	585,179	847,433	274,221	206,593	206,593	232,426
0.30	6.0	1,640,292	789,877	789,877	1,230,219	432,268	325,812	325,812	371,257
0.35	7.0	2,232,117	1,006,090	1,006,090	1,674,088	627,451	473,069	473,069	544,277

35%	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
1	0.00052	0.00038	0.00038	0.00052	0.00008
2	0.00371	0.00267	0.00267	0.00371	0.00064
3	0.01071	0.00736	0.00736	0.01071	0.00205
4	0.02124	0.01372	0.01372	0.02124	0.00454
5	0.03424	0.02048	0.02048	0.03424	0.00815
6	0.04971	0.02764	0.02764	0.04971	0.01288
7	0.06764	0.03521	0.03521	0.06764	0.01874

35%	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.02%	0.02%	0.744	0.744	0.01%
2	0.18%	0.18%	0.721	0.721	0.06%
3	0.57%	0.57%	0.687	0.687	0.21%
4	1.24%	1.24%	0.646	0.646	0.45%
5	2.20%	2.20%	0.598	0.598	0.81%
6	3.43%	3.43%	0.556	0.556	1.29%
7	4.93%	4.93%	0.520	0.520	1.87%

D) LAHORE FORT

Tessellation 4.8.8. θ =67.5º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	36.96	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	52,028	9,914	9,914	52,028	4,644	4,330	4,330	4,644
0.10	2.0	328,208	64,815	64,815	328,208	34,018	31,560	31,560	34,018
0.15	3.0	823,482	170,257	170,257	823,482	101,562	93,526	93,526	101,562
0.20	4.0	1,442,895	310,301	310,301	1,442,895	209,817	191,469	191,469	209,817
0.25	5.0	2,117,984	467,753	467,753	2,117,984	356,238	321,813	321,813	356,238
0.30	6.0	2,814,995	630,722	630,722	2,814,995	536,901	479,783	479,783	536,901
0.35	7.0	3,519,686	792,422	792,422	3,519,686	747,700	660,553	660,553	747,700
0.40	8.0	4,226,733	949,399	949,399	4,226,733	984,648	859,521	859,521	984,648
0.45	9.0	4,934,525	1,100,091	1,100,091	4,934,525	1,243,999	1,072,433	1,072,433	1,243,999
0.50	10.0	5,642,854	1,243,955	1,243,955	5,642,854	1,522,363	1,295,491	1,295,491	1,522,363
0.55	11.0	6,351,949	1,380,995	1,380,995	6,351,949	1,816,771	1,525,426	1,525,426	1,816,771

67.5º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
1	0.00182	0.00035	0.00035	0.00182	0.00016
2	0.01149	0.00227	0.00227	0.01149	0.00115
3	0.02882	0.00596	0.00596	0.02882	0.00341
4	0.05049	0.01086	0.01086	0.05049	0.00702
5	0.07412	0.01637	0.01637	0.07412	0.01186
6	0.09851	0.02207	0.02207	0.09851	0.01779
7	0.12317	0.02773	0.02773	0.12317	0.02464
8	0.14791	0.03322	0.03322	0.14791	0.03227
9	0.17268	0.03850	0.03850	0.17268	0.04053
10	0.19746	0.04353	0.04353	0.19746	0.04930
11	0.22228	0.04833	0.04833	0.22228	0.05848

67.5º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.18%	0.18%	0.191	0.191	0.02%
2	1.10%	1.10%	0.197	0.197	0.11%
3	2.76%	2.76%	0.207	0.207	0.34%
4	4.82%	4.82%	0.215	0.215	0.70%
5	7.05%	7.05%	0.221	0.221	1.19%
6	9.36%	9.36%	0.224	0.224	1.78%
7	11.69%	11.69%	0.225	0.225	2.46%
8	14.04%	14.04%	0.225	0.225	3.23%
9	16.41%	16.41%	0.223	0.223	4.05%
10	18.79%	18.79%	0.220	0.220	4.93%
11	21.18%	21.18%	0.217	0.217	5.85%

E) PALACE OF THE SHIRVANSHAHS

Tessellation 4.8.8. θ =45º, with number of crossings = 0

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	16.57	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	679	601	601	679	679	601	601	679
0.10	2.0	5,350	4,723	4,723	5,350	5,350	4,723	4,723	5,350
0.15	3.0	17,609	15,499	15,499	17,609	17,609	15,499	15,499	17,609
0.20	4.0	40,345	35,364	35,364	40,345	40,345	35,364	35,364	40,345
0.25	5.0	75,567	65,885	65,885	75,567	75,567	65,885	65,885	75,567
0.30	6.0	124,373	107,742	107,742	124,373	124,373	107,742	107,742	124,373
0.35	7.0	187,053	160,827	160,827	187,053	187,053	160,827	160,827	187,053
0.40	8.0	263,253	224,416	224,416	263,253	263,253	224,416	224,416	263,253
0.45	9.0	352,171	297,367	297,367	352,171	352,171	297,367	297,367	352,171
0.50	10.0	452,739	378,306	378,306	452,739	452,739	378,306	378,306	452,739
0.55	11.0	563,776	465,776	465,776	563,776	563,776	465,776	465,776	563,776
0.60	12.0	684,093	558,350	558,350	684,093	684,093	558,350	558,350	684,093
0.65	13.0	812,564	654,700	654,700	812,564	812,564	654,700	654,700	812,564
0.70	14.0	948,170	753,637	753,637	948,170	948,170	753,637	753,637	948,170

45%	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
1	0.00002	0.00002	0.00002	0.00002	0.00002
2	0.00019	0.00017	0.00017	0.00019	0.00018
3	0.00062	0.00054	0.00054	0.00062	0.00058
4	0.00141	0.00124	0.00124	0.00141	0.00132
5	0.00264	0.00231	0.00231	0.00264	0.00247
6	0.00435	0.00377	0.00377	0.00435	0.00406
7	0.00655	0.00563	0.00563	0.00655	0.00609
8	0.00921	0.00785	0.00785	0.00921	0.00853
9	0.01232	0.01041	0.01041	0.01232	0.01136
10	0.01584	0.01324	0.01324	0.01584	0.01454
11	0.01973	0.01630	0.01630	0.01973	0.01801
12	0.02394	0.01954	0.01954	0.02394	0.02174
13	0.02843	0.02291	0.02291	0.02843	0.02567
14	0.03318	0.02637	0.02637	0.03318	0.02978

45%	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.884	0.884	0.00%
2	0.00%	0.00%	0.883	0.883	0.02%
3	0.01%	0.01%	0.880	0.880	0.06%
4	0.03%	0.03%	0.877	0.877	0.13%
5	0.06%	0.06%	0.872	0.872	0.25%
6	0.11%	0.11%	0.866	0.866	0.41%
7	0.17%	0.17%	0.860	0.860	0.61%
8	0.25%	0.25%	0.852	0.852	0.85%
9	0.35%	0.35%	0.844	0.844	1.14%
10	0.48%	0.48%	0.836	0.836	1.45%
11	0.63%	0.63%	0.826	0.826	1.80%
12	0.80%	0.80%	0.816	0.816	2.17%
13	1.00%	1.00%	0.806	0.806	2.57%
14	1.22%	1.22%	0.795	0.795	2.98%

F) MUSTANSIRIYA MADRASA

Tessellation 3.6.3.6. θ =30º

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	43.30	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	51,737	29,248	29,248	17,246	285	399	399	855
0.10	2.0	317,244	178,216	178,216	105,748	2,259	3,158	3,158	6,777
0.15	3.0	772,459	429,463	429,463	257,486	7,525	10,484	10,484	22,516
0.20	4.0	1,321,571	724,424	724,424	440,524	17,517	24,302	24,302	52,242
0.25	5.0	1,908,440	1,027,840	1,027,840	636,147	33,449	46,156	46,156	99,353
0.30	6.0	2,511,410	1,324,850	1,324,850	837,137	56,277	77,165	77,165	166,379

0.35	7.0	3,124,275	1,610,037	1,610,037	1,041,425	86,693	118,012	118,012	254,980
0.40	8.0	3,746,387	1,881,723	1,881,723	1,248,796	125,134	168,975	168,975	366,010
0.45	9.0	4,378,714	2,139,670	2,139,670	1,459,571	171,806	229,975	229,975	499,637
0.50	10.0	5,022,412	2,384,210	2,384,210	1,674,137	226,717	300,647	300,647	655,474
0.55	11.0	5,678,357	2,615,913	2,615,913	1,892,786	289,715	380,402	380,402	832,729
0.60	12.0	6,347,040	2,835,461	2,835,461	2,115,680	360,527	468,501	468,501	1,030,333
0.65	13.0	7,028,585	3,043,594	3,043,594	2,342,862	438,787	564,106	564,106	1,247,049
0.70	14.0	7,722,815	3,241,079	3,241,079	2,574,272	524,075	666,331	666,331	1,481,568
0.75	15.0	8,429,318	3,428,695	3,428,695	2,809,773	615,934	774,282	774,282	1,732,570
0.80	16.0	9,147,512	3,607,214	3,607,214	3,049,171	713,894	887,082	887,082	1,998,776
0.85	17.0	9,876,696	3,777,397	3,777,397	3,292,232	817,488	1,003,894	1,003,894	2,278,977
0.90	18.0	10,616,101	3,939,979	3,939,979	3,538,700	926,261	1,123,934	1,123,934	2,572,053

30º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
1	0.00105	0.00102	0.00102	0.00105	0.00002
2	0.00641	0.00624	0.00624	0.00641	0.00012
3	0.01561	0.01503	0.01503	0.01561	0.00041
4	0.02670	0.02535	0.02535	0.02670	0.00095
5	0.03856	0.03597	0.03597	0.03856	0.00182
6	0.05074	0.04636	0.04636	0.05074	0.00304
7	0.06312	0.05634	0.05634	0.06312	0.00467
8	0.07569	0.06585	0.06585	0.07569	0.00670
9	0.08847	0.07487	0.07487	0.08847	0.00915
10	0.10147	0.08343	0.08343	0.10147	0.01201
11	0.11472	0.09154	0.09154	0.11472	0.01525
12	0.12823	0.09922	0.09922	0.12823	0.01886
13	0.14200	0.10651	0.10651	0.14200	0.02282
14	0.15603	0.11342	0.11342	0.15603	0.02708
15	0.17030	0.11998	0.11998	0.17030	0.03163
16	0.18481	0.12623	0.12623	0.18481	0.03643
17	0.19954	0.13218	0.13218	0.19954	0.04146
18	0.21448	0.13787	0.13787	0.21448	0.04669

30º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.979	0.979	0.00%
2	0.03%	0.03%	0.973	0.973	0.01%
3	0.11%	0.11%	0.963	0.963	0.04%
4	0.26%	0.26%	0.949	0.949	0.10%
5	0.50%	0.50%	0.933	0.933	0.18%
6	0.84%	0.84%	0.914	0.914	0.30%
7	1.28%	1.28%	0.893	0.893	0.47%
8	1.84%	1.84%	0.870	0.870	0.67%
9	2.51%	2.51%	0.846	0.846	0.92%
10	3.29%	3.29%	0.822	0.822	1.20%
11	4.17%	4.17%	0.798	0.798	1.53%
12	5.15%	5.15%	0.774	0.774	1.89%
13	6.21%	6.21%	0.750	0.750	2.28%
14	7.36%	7.36%	0.727	0.727	2.71%
15	8.58%	8.58%	0.705	0.705	3.16%
16	9.86%	9.86%	0.683	0.683	3.64%
17	11.20%	11.20%	0.662	0.662	4.15%
18	12.59%	12.59%	0.643	0.643	4.67%

G) TOMB OF SALIM CHISHTI

Tessellation 6.6.6. D = 65%, θ =75º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	55.78	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	56,011	43,302	43,302	45,497	4,375	4,926	4,926	6,133
0.10	2.0	346,023	257,980	257,980	283,780	33,336	37,433	37,433	46,614
0.15	3.0	857,857	604,917	604,917	711,865	104,293	116,630	116,630	145,325
0.20	4.0	1,505,478	990,306	990,306	1,263,064	224,447	249,648	249,648	311,547
0.25	5.0	2,235,508	1,360,801	1,360,801	1,892,241	392,353	433,572	433,572	542,484
0.30	6.0	3,021,532	1,696,756	1,696,756	2,574,436	601,601	659,812	659,812	828,605
0.35	7.0	3,848,614	1,994,977	1,994,977	3,294,306	844,189	918,061	918,061	1,158,350
0.40	8.0	4,706,433	2,259,059	2,259,059	4,041,116	1,112,583	1,198,699	1,198,699	1,520,965

75º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
1	0.00170	0.00152	0.00152	0.00184	0.00018
2	0.01049	0.00903	0.00903	0.01147	0.00134
3	0.02600	0.02117	0.02117	0.02876	0.00420

75º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.04%	0.05%	0.824	0.893	0.02%
2	0.34%	0.37%	0.787	0.861	0.13%
3	1.04%	1.15%	0.736	0.814	0.42%

4	0.04562	0.03465	0.03465	0.05104	0.00900
5	0.06775	0.04762	0.04762	0.07646	0.01566
6	0.09157	0.05938	0.05938	0.10403	0.02390
7	0.11663	0.06981	0.06981	0.13311	0.03337
8	0.14263	0.07905	0.07905	0.16329	0.04374

4	2.21%	2.47%	0.679	0.760	0.90%
5	3.81%	4.30%	0.623	0.703	1.57%
6	5.77%	6.55%	0.571	0.648	2.39%
7	8.00%	9.13%	0.524	0.599	3.34%
8	10.44%	11.95%	0.484	0.554	4.37%

H) GENERALIFE

Tessellation 3.12.12. θ =60º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	77.33	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	64,383	3,841	3,841	21,461	10,137	16,900	16,900	29,596
0.10	2.0	428,530	29,470	29,470	142,843	66,256	110,083	110,083	193,760
0.15	3.0	1,133,642	89,599	89,599	377,881	171,975	284,146	284,146	503,846
0.20	4.0	2,069,858	181,626	181,626	689,953	309,595	507,709	507,709	908,324
0.25	5.0	3,130,440	294,907	294,907	1,043,480	464,445	754,735	754,735	1,363,659
0.30	6.0	4,251,272	419,380	419,380	1,417,091	628,871	1,011,325	1,011,325	1,846,485
0.35	7.0	5,399,935	548,184	548,184	1,799,978	799,557	1,271,153	1,271,153	2,346,141

60º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
1	0.00130	0.00013	0.00013	0.00130	0.00060
2	0.00866	0.00103	0.00103	0.00866	0.00391
3	0.02290	0.00314	0.00314	0.02290	0.01012
4	0.04182	0.00636	0.00636	0.04182	0.01816
5	0.06325	0.01032	0.01032	0.06325	0.02713
6	0.08589	0.01468	0.01468	0.08589	0.03655
7	0.10910	0.01918	0.01918	0.10910	0.04621

60º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.13%	0.13%	0.103	0.103	0.06%
2	0.85%	0.85%	0.119	0.119	0.39%
3	2.25%	2.25%	0.137	0.137	1.01%
4	4.09%	4.09%	0.152	0.152	1.82%
5	6.16%	6.16%	0.163	0.163	2.71%
6	8.34%	8.34%	0.171	0.171	3.66%
7	10.57%	10.57%	0.176	0.176	4.62%

I) HASHT BEHESHT

Tessellation I-6.10.10. θ =54º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	63.09	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	144,491	32,738	32,738	90,453	30,327	42,000	42,000	59,411
0.10	2.0	813,951	187,381	187,381	487,949	167,115	230,540	230,540	327,599
0.15	3.0	1,850,591	426,677	426,677	1,070,189	374,627	513,532	513,532	734,364
0.20	4.0	3,027,160	692,207	692,207	1,706,794	610,201	829,427	829,427	1,194,717
0.25	5.0	4,246,007	958,506	958,506	2,352,380	858,295	1,155,115	1,155,115	1,676,750
0.30	6.0	5,475,585	1,217,620	1,217,620	2,996,157	1,114,782	1,484,036	1,484,036	2,171,693
0.35	7.0	6,707,353	1,467,503	1,467,503	3,636,961	1,378,703	1,814,489	1,814,489	2,677,703
0.40	8.0	7,939,980	1,707,910	1,707,910	4,275,750	1,649,792	2,145,982	2,145,982	3,194,686
0.45	9.0	9,174,117	1,939,170	1,939,170	4,913,641	1,927,864	2,478,229	2,478,229	3,722,820

54º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
1	0.00367	0.00115	0.00115	0.00436	0.00148
2	0.02069	0.00656	0.00656	0.02350	0.00813
3	0.04705	0.01493	0.01493	0.05154	0.01816

54º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.34%	0.40%	0.263	0.312	0.15%
2	1.89%	2.14%	0.279	0.317	0.81%
3	4.27%	4.68%	0.290	0.317	1.82%

4	0.07696	0.02422	0.02422	0.08221	0.02945
5	0.10795	0.03354	0.03354	0.11330	0.04120
6	0.13921	0.04261	0.04261	0.14431	0.05319
7	0.17053	0.05135	0.05135	0.17517	0.06537
8	0.20187	0.05977	0.05977	0.20594	0.07772
9	0.23324	0.06786	0.06786	0.23666	0.09024

4	6.98%	7.46%	0.295	0.315	2.95%
5	9.80%	10.29%	0.296	0.311	4.12%
6	12.66%	13.13%	0.295	0.306	5.32%
7	15.55%	15.97%	0.293	0.301	6.54%
8	18.45%	18.82%	0.290	0.296	7.77%
9	21.38%	21.69%	0.287	0.291	9.02%

J) MODARI-KHAN MADRASH

Tessellation ROS-I-6.10.10. θ_1 = 45º, θ_2 = 60º, type Star

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	96.76	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	57,380	40,044	40,044	42,382	6,592	9,117	9,117	12,983
0.05	1.0	353,375	228,298	228,298	251,444	45,804	63,321	63,321	90,448
0.10	2.0	1,580,821	819,393	819,393	1,027,582	251,832	346,667	346,667	498,627
0.15	3.0	3,270,183	1,358,848	1,358,848	1,978,458	581,331	793,755	793,755	1,148,908
0.20	4.0	5,176,249	1,789,635	1,789,635	2,985,251	975,737	1,318,792	1,318,792	1,920,990
0.25	5.0	7,178,856	2,147,721	2,147,721	4,014,431	1,403,821	1,876,640	1,876,640	2,752,340
0.30	6.0	9,219,993	2,463,694	2,463,694	5,053,217	1,851,370	2,447,302	2,447,302	3,616,242

45º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
0.5	0.00146	0.00140	0.00140	0.00204	0.00032
1	0.00898	0.00799	0.00799	0.01211	0.00223
2	0.04019	0.02867	0.02867	0.04949	0.01227
3	0.08314	0.04755	0.04755	0.09529	0.02819
4	0.13160	0.06263	0.06263	0.14378	0.04703
5	0.18252	0.07516	0.07516	0.19335	0.06723
6	0.23441	0.08621	0.08621	0.24338	0.08810

45º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.07%	0.686	0.961	0.03%
1	0.37%	0.50%	0.660	0.889	0.22%
2	2.36%	2.90%	0.579	0.713	1.23%
3	5.94%	6.81%	0.499	0.572	2.82%
4	10.43%	11.40%	0.436	0.476	4.70%
5	15.33%	16.24%	0.389	0.412	6.72%
6	20.39%	21.17%	0.354	0.368	8.81%

K) SULTAN BAYEZID II

Tessellation ROS-3.4.3.12_3.12.12. θ =60º, type Bayezid

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	71.32	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	13,891	9,299	9,299	13,891	2,034	1,945	1,945	2,034
0.050	1.0	94,234	60,194	60,194	94,234	15,694	14,987	14,987	15,694
0.075	1.5	259,216	156,183	156,183	259,216	50,050	47,712	47,712	50,050
0.100	2.0	498,653	283,237	283,237	498,653	110,305	104,909	104,909	110,305
0.125	2.5	797,888	428,625	428,625	797,888	197,986	187,772	187,772	197,986
0.150	3.0	1,144,534	583,579	583,579	1,144,534	311,999	294,947	294,947	311,999
0.175	3.5	1,528,931	742,137	742,137	1,528,931	449,809	423,702	423,702	449,809
0.200	4.0	1,943,544	900,207	900,207	1,943,544	608,342	570,805	570,805	608,342
0.225	4.5	2,382,413	1,055,049	1,055,049	2,382,413	784,524	733,061	733,061	784,524
0.250	5.0	2,840,780	1,204,925	1,204,925	2,840,780	975,559	907,567	907,567	975,559

60º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
0.5	0.00049	0.00033	0.00033	0.00049	0.00007
1.0	0.00330	0.00211	0.00211	0.00330	0.00054
1.5	0.00907	0.00547	0.00547	0.00907	0.00171
2.0	0.01745	0.00991	0.00991	0.01745	0.00377
2.5	0.02792	0.01500	0.01500	0.02792	0.00675
3.0	0.04005	0.02042	0.02042	0.04005	0.01062
3.5	0.05350	0.02597	0.02597	0.05350	0.01528
4.0	0.06801	0.03150	0.03150	0.06801	0.02063
4.5	0.08337	0.03692	0.03692	0.08337	0.02655
5.0	0.09941	0.04216	0.04216	0.09941	0.03295

60º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.03%	0.03%	0.669	0.669	0.01%
1.0	0.20%	0.20%	0.639	0.639	0.05%
1.5	0.58%	0.58%	0.603	0.603	0.17%
2.0	1.18%	1.18%	0.568	0.568	0.38%
2.5	1.99%	1.99%	0.537	0.537	0.67%
3.0	2.96%	2.96%	0.510	0.510	1.06%
3.5	4.09%	4.09%	0.485	0.485	1.53%
4.0	5.34%	5.34%	0.463	0.463	2.06%
4.5	6.70%	6.70%	0.443	0.443	2.66%
5.0	8.15%	8.15%	0.424	0.424	3.29%

L) BEN YUSUF MADRASA

Tessellation ROS-3.4.3.12_3.12.12. θ =75º, type Arrow

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	69.43	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	4,768	882	882	4,768	1,504	1,426	1,426	1,504
0.050	1.0	35,986	6,936	6,936	35,986	11,625	11,009	11,009	11,625
0.075	1.5	111,170	22,542	22,542	111,170	37,174	35,126	35,126	37,174
0.100	2.0	236,191	50,218	50,218	236,191	82,167	77,408	77,408	82,167
0.125	2.5	408,320	90,062	90,062	408,320	147,891	138,816	138,816	147,891
0.150	3.0	620,779	140,222	140,222	620,779	233,623	218,363	218,363	233,623
0.175	3.5	866,005	197,883	197,883	866,005	337,506	313,985	313,985	337,506
0.200	4.0	1,137,236	260,140	260,140	1,137,236	457,250	423,230	423,230	457,250

75º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
0.5	0.02%	0.02%	0.185	0.185	0.01%
1.0	0.12%	0.12%	0.193	0.193	0.04%
1.5	0.37%	0.37%	0.203	0.203	0.13%
2.0	0.79%	0.79%	0.213	0.213	0.28%
2.5	1.36%	1.36%	0.221	0.221	0.50%
3.0	2.06%	2.06%	0.226	0.226	0.79%
3.5	2.87%	2.87%	0.229	0.229	1.14%
4.0	3.77%	3.77%	0.229	0.229	1.54%

75º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.00017	0.00003	0.00003	0.00017	0.00005
1.0	0.00126	0.00024	0.00024	0.00126	0.00040
1.5	0.00389	0.00079	0.00079	0.00389	0.00127
2.0	0.00827	0.00176	0.00176	0.00827	0.00279
2.5	0.01429	0.00315	0.00315	0.01429	0.00502
3.0	0.02172	0.00491	0.00491	0.02172	0.00791
3.5	0.03030	0.00692	0.00692	0.03030	0.01140
4.0	0.03980	0.00910	0.00910	0.03980	0.01541

M) MOSQUE OF AL-NASIR MUHAMMAD MINBAR

Tessellation ROS-I- 6.12.8.12. θ =75º, L =20%, type Arrow

Lx [m]	5	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	115.23	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	36,582	27,828	27,828	36,582	3,923	3,761	3,761	3,923
0.050	1.0	238,467	172,461	172,461	238,467	29,658	28,387	28,387	29,658
0.075	1.5	621,518	417,684	417,684	621,518	92,005	87,864	87,864	92,005
0.100	2.0	1,130,793	697,398	697,398	1,130,793	196,911	187,509	187,509	196,911
0.125	2.5	1,719,566	968,917	968,917	1,719,566	343,830	326,304	326,304	343,830
0.150	3.0	2,360,047	1,215,795	1,215,795	2,360,047	528,819	499,954	499,954	528,819

20%	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
0.5	0.00128	0.00097	0.00097	0.00128	0.00013
1.0	0.00834	0.00604	0.00604	0.00834	0.00102
1.5	0.02175	0.01462	0.01462	0.02175	0.00315
2.0	0.03957	0.02440	0.02440	0.03957	0.00673
2.5	0.06017	0.03391	0.03391	0.06017	0.01173
3.0	0.08259	0.04254	0.04254	0.08259	0.01800

20%	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.761	0.761	0.01%
1.0	0.40%	0.40%	0.723	0.723	0.10%
1.5	1.19%	1.19%	0.672	0.672	0.31%
2.0	2.45%	2.45%	0.617	0.617	0.67%
2.5	4.11%	4.11%	0.563	0.563	1.17%
3.0	6.07%	6.07%	0.515	0.515	1.80%

N) MOSQUE OF AL-NASIR MUHAMMAD

Tessellation ROS-3.12.12. θ =75º, type Arrow

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	120.97	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	8,833	1,007	1,007	2,944	1,237	2,071	2,071	3,715
0.050	1.0	66,829	7,771	7,771	22,276	9,299	15,556	15,556	27,989
0.075	1.5	207,085	24,654	24,654	69,028	28,581	47,773	47,773	86,324
0.100	2.0	441,261	53,532	53,532	147,087	60,488	100,965	100,965	183,385
0.125	2.5	764,578	93,669	93,669	254,859	104,406	173,912	173,912	317,663
0.150	3.0	1,164,059	142,585	142,585	388,020	158,892	263,938	263,938	484,894
0.175	3.5	1,624,825	197,211	197,211	541,608	222,387	368,153	368,153	680,246
0.200	4.0	2,133,362	254,720	254,720	711,121	293,506	483,960	483,960	899,282
0.225	4.5	2,678,618	312,906	312,906	892,873	371,095	609,183	609,183	1,138,239
0.250	5.0	3,252,018	370,227	370,227	1,084,006	454,209	742,036	742,036	1,394,020

75º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
0.5	0.00018	0.00004	0.00004	0.00018	0.00007
1.0	0.00135	0.00027	0.00027	0.00135	0.00055
1.5	0.00418	0.00086	0.00086	0.00418	0.00170
2.0	0.00891	0.00187	0.00187	0.00891	0.00361
2.5	0.01545	0.00328	0.00328	0.01545	0.00623
3.0	0.02352	0.00499	0.00499	0.02352	0.00947
3.5	0.03283	0.00690	0.00690	0.03283	0.01325
4.0	0.04310	0.00891	0.00891	0.04310	0.01746
4.5	0.05412	0.01095	0.01095	0.05412	0.02203
5.0	0.06570	0.01296	0.01296	0.06570	0.02691

75º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.197	0.197	0.01%
1.0	0.13%	0.13%	0.201	0.201	0.06%
1.5	0.40%	0.40%	0.206	0.206	0.17%
2.0	0.85%	0.85%	0.210	0.210	0.36%
2.5	1.48%	1.48%	0.212	0.212	0.62%
3.0	2.25%	2.25%	0.212	0.212	0.95%
3.5	3.14%	3.14%	0.210	0.210	1.32%
4.0	4.13%	4.13%	0.207	0.207	1.75%
4.5	5.19%	5.19%	0.202	0.202	2.20%
5.0	6.31%	6.31%	0.197	0.197	2.69%

O) GREAT MOSQUE OF HERAT

Tessellation ROS-4.8.8. θ =67.5º, L =30%

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	49.39	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	19,275	7,997	7,997	19,275	2,388	1,849	1,849	2,388
0.10	2.0	140,106	57,362	57,362	140,106	18,420	14,212	14,212	18,420
0.15	3.0	411,286	164,194	164,194	411,286	58,847	45,176	45,176	58,847
0.20	4.0	827,405	318,051	318,051	827,405	130,403	99,512	99,512	130,403

0.25	5.0	1,358,191	497,179	497,179	1,358,191	236,334	179,158	179,158	236,334
0.30	6.0	1,971,632	681,682	681,682	1,971,632	377,417	284,061	284,061	377,417
0.35	7.0	2,642,481	858,436	858,436	2,642,481	552,822	412,843	412,843	552,822
0.40	8.0	3,352,772	1,020,755	1,020,755	3,352,772	760,683	563,249	563,249	760,683

30%	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
1	0.00067	0.00028	0.00028	0.00067	0.00007
2	0.00490	0.00201	0.00201	0.00490	0.00057
3	0.01439	0.00575	0.00575	0.01439	0.00182
4	0.02895	0.01113	0.01113	0.02895	0.00402
5	0.04753	0.01740	0.01740	0.04753	0.00727
6	0.06899	0.02385	0.02385	0.06899	0.01157
7	0.09247	0.03004	0.03004	0.09247	0.01690
8	0.11733	0.03572	0.03572	0.11733	0.02316

30%	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.06%	0.06%	0.415	0.415	0.01%
2	0.41%	0.41%	0.409	0.409	0.06%
3	1.21%	1.21%	0.399	0.399	0.18%
4	2.47%	2.47%	0.384	0.384	0.40%
5	4.12%	4.12%	0.366	0.366	0.73%
6	6.07%	6.07%	0.346	0.346	1.16%
7	8.27%	8.27%	0.325	0.325	1.69%
8	10.65%	10.65%	0.304	0.304	2.32%

P) MOSQUE OF AL-SALIH TALA'I

Tessellation ROS-3.4.3.8_3.8.8. θ =75º, L = 25%, type Star

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	62.13	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	1,639	762	762	1,639	602	507	507	602
0.050	1.0	12,859	5,942	5,942	12,859	4,725	3,978	3,978	4,725
0.075	1.5	42,032	19,223	19,223	42,032	15,474	13,032	13,032	15,474
0.100	2.0	95,461	43,028	43,028	95,461	35,301	29,731	29,731	35,301
0.125	2.5	177,013	78,324	78,324	177,013	65,957	55,522	55,522	65,957
0.150	3.0	288,253	124,734	124,734	288,253	108,561	91,279	91,279	108,561
0.175	3.5	428,884	180,872	180,872	428,884	163,699	137,382	137,382	163,699
0.200	4.0	597,317	244,747	244,747	597,317	231,523	193,804	193,804	231,523
0.225	4.5	791,196	314,140	314,140	791,196	311,843	260,205	260,205	311,843
0.250	5.0	1,007,820	386,891	386,891	1,007,820	404,218	336,020	336,020	404,218
0.275	5.5	1,244,435	461,077	461,077	1,244,435	508,027	420,531	420,531	508,027
0.300	6.0	1,498,410	535,103	535,103	1,498,410	622,537	512,936	512,936	622,537

25%	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
0.5	0.00006	0.00003	0.00003	0.00006	0.00002
1.0	0.00045	0.00021	0.00021	0.00045	0.00015
1.5	0.00147	0.00067	0.00067	0.00147	0.00050
2.0	0.00334	0.00151	0.00151	0.00334	0.00114
2.5	0.00619	0.00274	0.00274	0.00619	0.00213
3.0	0.01009	0.00436	0.00436	0.01009	0.00350
3.5	0.01501	0.00633	0.00633	0.01501	0.00527
4.0	0.02090	0.00856	0.00856	0.02090	0.00744
4.5	0.02769	0.01099	0.01099	0.02769	0.01001
5.0	0.03527	0.01354	0.01354	0.03527	0.01295
5.5	0.04355	0.01613	0.01613	0.04355	0.01625
6.0	0.05243	0.01873	0.01873	0.05243	0.01987

25%	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.00%	0.00%	0.465	0.465	0.00%
1.0	0.04%	0.04%	0.462	0.462	0.02%
1.5	0.12%	0.12%	0.457	0.457	0.05%
2.0	0.27%	0.27%	0.451	0.451	0.11%
2.5	0.50%	0.50%	0.442	0.442	0.21%
3.0	0.82%	0.82%	0.433	0.433	0.35%
3.5	1.23%	1.23%	0.422	0.422	0.53%
4.0	1.74%	1.74%	0.410	0.410	0.74%
4.5	2.33%	2.33%	0.397	0.397	1.00%
5.0	3.01%	3.01%	0.384	0.384	1.30%
5.5	3.76%	3.76%	0.371	0.371	1.62%
6.0	4.57%	4.57%	0.357	0.357	1.99%

Q) MOSQUE OF IBN TULUN

Tessellation ROS-3.4.3.12_3.12.12. θ_1 =75º, θ_2 =65º, type Star

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	68.48	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	4,305	1,090	1,090	4,305	1,511	1,426	1,426	1,511
0.050	1.0	32,938	8,431	8,431	32,938	11,697	11,021	11,021	11,697
0.075	1.5	103,707	26,924	26,924	103,707	37,479	35,238	35,238	37,479
0.100	2.0	224,941	59,151	59,151	224,941	83,051	77,860	77,860	83,051
0.125	2.5	396,615	105,151	105,151	396,615	149,906	140,043	140,043	149,906
0.150	3.0	613,520	162,974	162,974	613,520	237,517	220,998	220,998	237,517
0.175	3.5	868,347	229,594	229,594	868,347	344,183	318,829	318,829	344,183
0.200	4.0	1,153,716	301,759	301,759	1,153,716	467,722	431,209	431,209	467,722
0.225	4.5	1,463,153	376,551	376,551	1,463,153	605,896	555,800	555,800	605,896

65º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
0.5	0.00015	0.00004	0.00004	0.00015	0.00005
1.0	0.00115	0.00030	0.00030	0.00115	0.00040
1.5	0.00363	0.00094	0.00094	0.00363	0.00127
2.0	0.00787	0.00207	0.00207	0.00787	0.00282
2.5	0.01388	0.00368	0.00368	0.01388	0.00507
3.0	0.02147	0.00570	0.00570	0.02147	0.00802
3.5	0.03039	0.00803	0.00803	0.03039	0.01160
4.0	0.04037	0.01056	0.01056	0.04037	0.01573
4.5	0.05120	0.01318	0.01318	0.05120	0.02033

65º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.253	0.253	0.01%
1.0	0.11%	0.11%	0.256	0.256	0.04%
1.5	0.34%	0.34%	0.260	0.260	0.13%
2.0	0.73%	0.73%	0.263	0.263	0.28%
2.5	1.29%	1.29%	0.265	0.265	0.51%
3.0	2.00%	2.00%	0.266	0.266	0.80%
3.5	2.83%	2.83%	0.264	0.264	1.16%
4.0	3.76%	3.76%	0.262	0.262	1.57%
4.5	4.78%	4.78%	0.257	0.257	2.03%

R) FATEHPUR SIKRI

Tessellation ROS-I-6.10.10. θ =72º type Star

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	99.60	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	5,579	3,016	3,016	4,182	1,296	1,720	1,720	2,565
0.05	1.0	42,789	22,690	22,690	31,867	9,917	13,148	13,148	19,647
0.10	2.0	295,001	145,701	145,701	214,843	68,199	89,996	89,996	135,487
0.15	3.0	816,524	364,593	364,593	577,969	190,102	249,135	249,135	378,895
0.20	4.0	1,562,203	621,542	621,542	1,075,003	369,914	480,583	480,583	739,077
0.25	5.0	2,467,602	871,644	871,644	1,656,441	597,587	768,506	768,506	1,195,135
0.30	6.0	3,481,181	1,095,024	1,095,024	2,289,396	863,643	1,098,081	1,098,081	1,726,345

72º	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
0.5	0.00014	0.00011	0.00011	0.00020	0.00006
1.0	0.00109	0.00079	0.00079	0.00153	0.00047
2.0	0.00750	0.00510	0.00510	0.01035	0.00326
3.0	0.02076	0.01276	0.01276	0.02784	0.00906
4.0	0.03972	0.02175	0.02175	0.05178	0.01756
5.0	0.06274	0.03050	0.03050	0.07978	0.02824
6.0	0.08851	0.03832	0.03832	0.11027	0.04058

72º	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.524	0.744	0.01%
1.0	0.07%	0.10%	0.517	0.730	0.05%
2.0	0.50%	0.69%	0.493	0.680	0.33%
3.0	1.49%	2.00%	0.458	0.615	0.91%
4.0	3.06%	3.99%	0.420	0.548	1.76%
5.0	5.11%	6.50%	0.382	0.486	2.82%
6.0	7.52%	9.37%	0.348	0.433	4.06%

S) JAMEH MOSQUE

Tessellation ROS-I-6.12.8.12. θ =70º, L =20%, type Star

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	113.08	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	15,405	5,113	5,113	15,405	4,306	4,140	4,140	4,306
0.050	1.0	113,035	36,110	36,110	113,035	32,326	31,025	31,025	32,326
0.075	1.5	335,723	101,299	101,299	335,723	99,302	95,061	95,061	99,302
0.100	2.0	682,876	192,239	192,239	682,876	210,149	200,521	200,521	210,149
0.125	2.5	1,130,954	295,033	295,033	1,130,954	362,653	344,737	344,737	362,653
0.150	3.0	1,652,464	398,307	398,307	1,652,464	551,279	521,863	521,863	551,279
0.175	3.5	2,224,576	495,257	495,257	2,224,576	769,659	725,325	725,325	769,659

20%	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
0.5	0.00054	0.00018	0.00018	0.00054	0.00015
1.0	0.00396	0.00126	0.00126	0.00396	0.00111
1.5	0.01175	0.00354	0.00354	0.01175	0.00340
2.0	0.02390	0.00673	0.00673	0.02390	0.00719
2.5	0.03958	0.01032	0.01032	0.03958	0.01238
3.0	0.05783	0.01394	0.01394	0.05783	0.01878
3.5	0.07785	0.01733	0.01733	0.07785	0.02616

20%	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.332	0.332	0.01%
1.0	0.36%	0.36%	0.319	0.319	0.11%
1.5	1.07%	1.07%	0.302	0.302	0.34%
2.0	2.20%	2.20%	0.282	0.282	0.72%
2.5	3.69%	3.69%	0.261	0.261	1.24%
3.0	5.45%	5.45%	0.241	0.241	1.88%
3.5	7.40%	7.40%	0.223	0.223	2.62%

T) ALHAMBRA

Tessellation ROS-I- 6.9.12.9. θ=70º, L =35%

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	192.27	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	30,201	8,261	8,261	10,075	2,816	4,590	4,590	8,071
0.050	1.0	218,091	57,642	57,642	72,836	20,958	34,097	34,097	60,033
0.075	1.5	635,374	159,359	159,359	212,489	63,678	103,348	103,348	182,341
0.100	2.0	1,269,727	298,489	298,489	425,169	133,355	215,803	215,803	381,841
0.125	2.5	2,073,670	453,675	453,675	695,093	228,159	368,026	368,026	653,436
0.150	3.0	2,999,315	608,805	608,805	1,006,206	344,637	553,978	553,978	987,424
0.175	3.5	4,009,729	754,879	754,879	1,346,078	479,131	767,335	767,335	1,373,464
0.200	4.0	5,078,940	888,097	888,097	1,705,941	628,332	1,002,387	1,002,387	1,802,144

35%	CONSTITUTIVE COEFFICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
0.5	0.00061	0.00029	0.00029	0.00061	0.00016
1.0	0.00441	0.00202	0.00202	0.00441	0.00122
1.5	0.01284	0.00558	0.00558	0.01288	0.00369
2.0	0.02565	0.01045	0.01045	0.02577	0.00773
2.5	0.04190	0.01588	0.01588	0.04213	0.01320
3.0	0.06060	0.02130	0.02130	0.06099	0.01990
3.5	0.08101	0.02642	0.02642	0.08159	0.02762
4.0	0.10261	0.03108	0.03108	0.10340	0.03616

35%	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.473	0.474	0.02%
1.0	0.35%	0.35%	0.457	0.458	0.12%
1.5	1.04%	1.05%	0.433	0.434	0.37%
2.0	2.14%	2.15%	0.405	0.407	0.77%
2.5	3.59%	3.61%	0.377	0.379	1.32%
3.0	5.32%	5.35%	0.349	0.352	1.99%
3.5	7.25%	7.30%	0.324	0.326	2.76%
4.0	9.33%	9.40%	0.301	0.303	3.62%

Z) CONVENTIONAL DIAGRID, 30 ST MARY AXE

Tessellation 3.3.3.3.3.3. θ =60º, Hankin method not applied

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	220.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.15	3.0	750,429	370,890	370,890	1,286,340	429,223	371,457	371,457	321,882
0.30	6.0	1,502,572	739,801	739,801	2,574,966	861,830	744,286	744,286	646,070
0.45	9.0	2,258,056	1,104,855	1,104,855	3,868,046	1,301,010	1,119,708	1,119,708	974,612
0.60	12.0	3,018,343	1,464,363	1,464,363	5,167,530	1,749,595	1,498,692	1,498,692	1,309,128
0.75	15.0	3,784,670	1,816,896	1,816,896	6,475,067	2,209,954	1,881,903	1,881,903	1,650,759
0.90	18.0	4,558,008	2,161,334	2,161,334	7,791,951	2,683,944	2,269,713	2,269,713	2,000,208
1.05	21.0	5,339,045	2,496,882	2,496,882	9,119,102	3,172,905	2,662,229	2,662,229	2,357,833
1.20	24.0	6,128,190	2,823,067	2,823,067	10,457,063	3,677,693	3,059,342	3,059,342	2,723,736
1.35	27.0	6,925,595	3,139,714	3,139,714	11,806,038	4,198,736	3,460,769	3,460,769	3,097,847
1.50	30.0	7,731,188	3,446,906	3,446,906	13,165,930	4,736,095	3,866,091	3,866,091	3,479,978

1.2. REPRESENTATIVE ELEMENT VOLUME REFINEMENT: 2X2 AND 4X4 PANELS

Linear elastic analysis with Imposed displacement of 1m, material 30MPa concrete with mechanical properties in accordance with EC2 ($E_b = 28{,}576{,}791\ kN/m^2,\ v = 0.2,\ G = 11{,}906{,}996\ kN/m^2$). The homogenized mechanical properties are normalized dividing the final results by E_b and are independent of the modulus of elasticity used. Results for **2x2 and 4x4 panels**

A) YESLI MOSQUE

Tessellation 3.6.3.6.

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	120.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2	1,286,264	247,304	247,304	428,755	142,998	247,680	247,680	428,994
0.2	4	2,574,365	493,548	493,548	858,122	286,674	496,534	496,534	860,022
0.3	6	3,866,062	737,715	737,715	1,288,687	431,675	747,684	747,684	1,295,026
0.4	8	5,162,968	978,876	978,876	1,720,989	578,591	1,002,150	1,002,150	1,735,774
0.5	10	6,466,491	1,216,215	1,216,215	2,155,497	727,930	1,260,812	1,260,812	2,183,790
0.6	12	7,777,797	1,449,062	1,449,062	2,592,599	880,103	1,524,383	1,524,383	2,640,309
0.7	14	9,097,780	1,676,898	1,676,898	3,032,593	1,035,418	1,793,396	1,793,396	3,106,253
0.8	16	10,427,066	1,899,363	1,899,363	3,475,689	1,194,076	2,068,200	2,068,200	3,582,228
0.9	18	11,766,014	2,116,250	2,116,250	3,922,005	1,356,180	2,348,973	2,348,973	4,068,540
1.0	20	13,114,745	2,327,489	2,327,489	4,371,582	1,521,742	2,635,734	2,635,734	4,565,226

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	480.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2	1,286,281	247,294	247,294	428,760	142,998	247,680	247,680	428,994
0.2	4	2,574,497	493,471	493,471	858,166	286,674	496,534	496,534	860,022
0.3	6	3,866,499	737,463	737,463	1,288,833	431,675	747,684	747,684	1,295,026
0.4	8	5,163,976	978,293	978,293	1,721,325	578,591	1,002,150	1,002,150	1,735,774
0.5	10	6,468,395	1,215,116	1,215,116	2,156,132	727,930	1,260,812	1,260,812	2,183,790
0.6	12	7,780,955	1,447,238	1,447,238	2,593,652	880,103	1,524,383	1,524,383	2,640,309
0.7	14	9,102,565	1,674,135	1,674,135	3,034,188	1,035,418	1,793,396	1,793,396	3,106,253
0.8	16	10,433,842	1,895,451	1,895,451	3,477,947	1,194,076	2,068,200	2,068,200	3,582,228
0.9	18	11,775,119	2,110,994	2,110,994	3,925,040	1,356,180	2,348,973	2,348,973	4,068,540
1.0	20	13,126,477	2,320,716	2,320,716	4,375,492	1,521,742	2,635,734	2,635,734	4,565,226

(2x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	2.31%	2.31%	0.333	0.333	0.87%
4	4.63%	4.63%	0.332	0.332	1.74%
6	6.96%	6.96%	0.331	0.331	2.62%
8	9.31%	9.31%	0.328	0.328	3.51%
10	11.68%	11.68%	0.326	0.326	4.41%
12	14.08%	14.08%	0.323	0.323	5.33%
14	16.51%	16.51%	0.319	0.319	6.28%
16	18.97%	18.97%	0.316	0.316	7.24%
18	21.46%	21.46%	0.312	0.312	8.22%
20	23.99%	23.99%	0.307	0.307	9.22%

(4x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	2.31%	2.31%	0.333	0.333	0.87%
4	4.63%	4.63%	0.332	0.332	1.74%
6	6.96%	6.96%	0.330	0.330	2.62%
8	9.31%	9.31%	0.328	0.328	3.51%
10	11.68%	11.68%	0.325	0.325	4.41%
12	14.09%	14.09%	0.322	0.322	5.33%
14	16.52%	16.52%	0.319	0.319	6.28%
16	18.99%	18.99%	0.315	0.315	7.24%
18	21.50%	21.50%	0.311	0.311	8.22%
20	24.03%	24.03%	0.306	0.306	9.22%

B) GREAT MOSQUE OF DAMASCUS

Tessellation 6.6.6. θ =45º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	11.55	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	143.45	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	37,588	18,934	18,934	28,191	7,271	7,790	7,790	8,573
0.10	2.0	254,246	120,220	120,220	190,684	52,469	56,205	56,205	61,998
0.15	3.0	685,758	297,209	297,209	514,318	152,287	163,098	163,098	180,594
0.20	4.0	1,275,467	502,743	502,743	956,600	302,060	323,398	323,398	359,893
0.25	5.0	1,959,236	704,572	704,572	1,469,427	488,157	522,391	522,391	584,861
0.30	6.0	2,692,930	891,200	891,200	2,019,698	697,492	745,910	745,910	840,819
0.35	7.0	3,450,692	1,061,826	1,061,826	2,588,019	920,711	983,752	983,752	1,117,146
0.40	8.0	4,218,428	1,219,118	1,219,118	3,163,821	1,151,999	1,229,477	1,229,477	1,407,096
0.45	9.0	4,988,833	1,366,126	1,366,126	3,741,625	1,388,013	1,479,280	1,479,280	1,706,622
0.50	10.0	5,758,339	1,505,359	1,505,359	4,318,754	1,626,934	1,730,975	1,730,975	2,013,327

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	23.09	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	573.81	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	37,588	18,934	18,934	28,191	6,498	7,239	7,239	8,175
0.10	2.0	254,246	120,220	120,220	190,684	47,330	52,729	52,729	59,614
0.15	3.0	685,758	297,209	297,209	514,318	139,059	154,918	154,918	175,455
0.20	4.0	1,275,467	502,743	502,743	956,600	279,218	311,035	311,035	353,089
0.25	5.0	1,959,236	704,572	704,572	1,469,427	456,117	508,014	508,014	578,308
0.30	6.0	2,692,930	891,200	891,200	2,019,698	657,450	732,072	732,072	835,993
0.35	7.0	3,450,692	1,061,826	1,061,826	2,588,019	873,825	972,654	972,654	1,114,519
0.40	8.0	4,218,428	1,219,118	1,219,118	3,163,821	1,099,069	1,222,772	1,222,772	1,406,163
0.45	9.0	4,988,833	1,366,126	1,366,126	3,741,625	1,329,445	1,478,144	1,478,144	1,706,157
0.50	10.0	5,758,339	1,505,359	1,505,359	4,318,754	1,562,806	1,736,259	1,736,259	2,011,667

45º (2x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.08%	0.08%	0.582	0.582	0.03%
2	0.54%	0.54%	0.546	0.546	0.20%
3	1.56%	1.56%	0.500	0.500	0.58%
4	3.06%	3.06%	0.455	0.455	1.14%
5	4.91%	4.91%	0.415	0.415	1.85%
6	6.97%	6.97%	0.382	0.382	2.65%
7	9.14%	9.14%	0.355	0.355	3.50%
8	11.36%	11.36%	0.334	0.334	4.38%
9	13.61%	13.61%	0.316	0.316	5.28%
10	15.74%	15.01%	0.320	0.305	6.09%

45º (4x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.08%	0.08%	0.582	0.582	0.03%
2	0.54%	0.54%	0.546	0.546	0.19%
3	1.56%	1.56%	0.500	0.500	0.54%
4	3.06%	3.06%	0.455	0.455	1.09%
5	4.91%	4.91%	0.415	0.415	1.79%
6	6.97%	6.97%	0.382	0.382	2.58%
7	9.14%	9.14%	0.355	0.355	3.43%
8	11.36%	11.36%	0.334	0.334	4.32%
9	13.61%	13.61%	0.316	0.316	5.22%
10	15.86%	15.86%	0.302	0.302	6.14%

Tessellation 6.6.6. θ =60º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	11.55	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	160.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]

0.05	1.0	8,083	3,469	3,469	6,062	1,926	1,916	1,916	2,096
0.10	2.0	61,391	25,687	25,687	46,043	14,907	14,832	14,832	16,262
0.15	3.0	191,220	76,868	76,868	143,415	47,709	47,493	47,493	52,284
0.20	4.0	409,612	156,392	156,392	307,209	105,482	105,065	105,065	116,292
0.25	5.0	712,968	256,476	256,476	534,726	189,691	189,053	189,053	210,633
0.30	6.0	1,089,130	367,367	367,367	816,848	298,978	298,124	298,124	334,649
0.35	7.0	1,523,335	480,790	480,790	1,142,501	430,334	429,252	429,252	485,798
0.40	8.0	2,001,633	591,159	591,159	1,501,225	580,117	578,726	578,726	660,664
0.45	9.0	2,512,290	695,392	695,392	1,884,218	744,735	742,826	742,826	855,661
0.50	10.0	3,046,049	792,240	792,240	2,284,537	921,014	918,206	918,206	1,067,439

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	23.09	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	640.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	8,083	3,469	3,469	6,062	1,706	1,833	1,833	2,064
0.10	2.0	61,391	25,687	25,687	46,043	13,245	14,228	14,228	16,042
0.15	3.0	191,220	76,868	76,868	143,415	42,593	45,769	45,769	51,703
0.20	4.0	409,612	156,392	156,392	307,209	94,722	101,825	101,825	115,313
0.25	5.0	712,968	256,476	256,476	534,726	171,428	184,357	184,357	209,412
0.30	6.0	1,089,130	367,367	367,367	816,848	271,929	292,546	292,546	333,456
0.35	7.0	1,523,335	480,790	480,790	1,142,501	393,796	423,778	423,778	484,868
0.40	8.0	2,001,633	591,159	591,159	1,501,225	533,834	574,583	574,583	660,055
0.45	9.0	2,512,290	695,392	695,392	1,884,218	688,727	741,331	741,331	855,160
0.50	10.0	3,046,049	792,240	792,240	2,284,537	855,424	920,649	920,649	1,066,538

60º (2x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.02%	0.02%	0.496	0.496	0.01%
2	0.14%	0.14%	0.483	0.483	0.05%
3	0.45%	0.45%	0.464	0.464	0.17%
4	1.00%	1.00%	0.441	0.441	0.38%
5	1.79%	1.79%	0.415	0.415	0.68%
6	2.80%	2.80%	0.389	0.389	1.08%
7	4.00%	4.00%	0.364	0.364	1.55%
8	5.36%	5.36%	0.341	0.341	2.10%
9	6.84%	6.84%	0.320	0.320	2.70%
10	8.40%	8.40%	0.300	0.300	3.35%

60º (4x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.02%	0.02%	0.496	0.496	0.01%
2	0.14%	0.14%	0.483	0.483	0.05%
3	0.45%	0.45%	0.464	0.464	0.16%
4	1.00%	1.00%	0.441	0.441	0.36%
5	1.79%	1.79%	0.415	0.415	0.65%
6	2.80%	2.80%	0.389	0.389	1.04%
7	4.00%	4.00%	0.364	0.364	1.51%
8	5.36%	5.36%	0.341	0.341	2.04%
9	6.84%	6.84%	0.320	0.320	2.64%
10	8.40%	8.40%	0.300	0.300	3.28%

Tessellation 6.6.6. θ =75º

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	11.55	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	195.96	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	2,456	756	756	1,842	757	697	697	797
0.10	2.0	19,202	5,813	5,813	14,401	5,958	5,487	5,487	6,292
0.15	3.0	62,462	18,395	18,395	46,847	19,579	18,046	18,046	20,762
0.20	4.0	140,966	39,998	39,998	105,724	44,765	41,299	41,299	47,734
0.25	5.0	259,465	70,335	70,335	194,599	83,637	77,243	77,243	89,783
0.30	6.0	419,101	107,763	107,763	314,325	137,275	126,919	126,919	148,488
0.35	7.0	618,253	149,920	149,920	463,689	205,846	190,513	190,513	224,504
0.40	8.0	853,527	194,307	194,307	640,145	288,805	267,531	267,531	317,723

0.45	9.0	1,120,617	238,699	238,699	840,462	385,131	357,001	357,001	427,463
0.50	10.0	1,414,942	281,348	281,348	1,061,207	493,523	457,661	457,661	552,654

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	23.09	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	783.84	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	2,456	756	756	1,842	668	690	690	794
0.10	2.0	19,202	5,813	5,813	14,401	5,265	5,441	5,441	6,268
0.15	3.0	62,462	18,395	18,395	46,847	17,339	17,930	17,930	20,686
0.20	4.0	140,966	39,998	39,998	105,724	39,758	41,140	41,140	47,563
0.25	5.0	259,465	70,335	70,335	194,599	74,532	77,177	77,177	89,458
0.30	6.0	419,101	107,763	107,763	314,325	122,780	127,232	127,232	147,919
0.35	7.0	618,253	149,920	149,920	463,689	184,809	191,650	191,650	223,550
0.40	8.0	853,527	194,307	194,307	640,145	260,271	270,085	270,085	316,164
0.45	9.0	1,120,617	238,699	238,699	840,462	348,346	361,682	361,682	424,979
0.50	10.0	1,414,942	281,348	281,348	1,061,207	447,917	465,260	465,260	548,813

75º (2x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.01%	0.01%	0.356	0.356	0.00%
2	0.05%	0.05%	0.350	0.350	0.02%
3	0.17%	0.17%	0.340	0.340	0.07%
4	0.38%	0.38%	0.328	0.328	0.15%
5	0.71%	0.71%	0.313	0.313	0.29%
6	1.16%	1.16%	0.297	0.297	0.47%
7	1.73%	1.73%	0.280	0.280	0.71%
8	2.41%	2.41%	0.263	0.263	1.00%
9	3.19%	3.19%	0.246	0.246	1.34%
10	4.06%	4.06%	0.230	0.230	1.72%

75º (4x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.01%	0.01%	0.356	0.356	0.00%
2	0.05%	0.05%	0.350	0.350	0.02%
3	0.17%	0.17%	0.340	0.340	0.06%
4	0.38%	0.38%	0.328	0.328	0.15%
5	0.71%	0.71%	0.313	0.313	0.28%
6	1.16%	1.16%	0.297	0.297	0.46%
7	1.73%	1.73%	0.280	0.280	0.69%
8	2.41%	2.41%	0.263	0.263	0.98%
9	3.19%	3.19%	0.246	0.246	1.31%
10	4.06%	4.06%	0.230	0.230	1.68%

C) SABZ PUSHAN

Tessellation 6.6.6. θ =60º, opening distance 20%

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	11.55	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	256.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	15,939	7,126	7,126	11,955	3,136	3,381	3,381	4,020
0.10	2.0	118,448	51,454	51,454	88,836	24,008	25,812	25,812	30,722
0.15	3.0	357,769	148,826	148,826	268,327	75,630	80,957	80,957	96,521
0.20	4.0	740,423	292,148	292,148	555,318	164,111	174,633	174,633	208,699
0.25	5.0	1,245,348	463,906	463,906	934,011	289,436	305,766	305,766	366,495
0.30	6.0	1,842,671	647,479	647,479	1,382,003	447,786	469,109	469,109	564,262
0.35	7.0	2,504,721	831,590	831,590	1,878,540	633,830	657,906	657,906	794,549

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	23.09	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,024.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	15,939	7,126	7,126	11,955	3,010	3,359	3,359	3,937

0.10	2.0	118,448	51,454	51,454	88,836	23,039	25,681	25,681	30,111
0.15	3.0	357,769	148,826	148,826	268,327	72,571	80,716	80,716	94,715
0.20	4.0	740,423	292,148	292,148	555,318	157,412	174,566	174,566	205,071
0.25	5.0	1,245,348	463,906	463,906	934,011	277,400	306,520	306,520	360,591
0.30	6.0	1,842,671	647,479	647,479	1,382,003	428,627	471,650	471,650	555,779
0.35	7.0	2,504,721	831,590	831,590	1,878,540	605,688	663,411	663,411	783,248

20% (2x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.04%	0.04%	0.516	0.516	0.01%
2	0.27%	0.27%	0.502	0.502	0.09%
3	0.83%	0.83%	0.480	0.480	0.29%
4	1.78%	1.78%	0.456	0.456	0.63%
5	3.08%	3.08%	0.430	0.430	1.11%
6	4.66%	4.66%	0.406	0.406	1.70%
7	6.47%	6.47%	0.383	0.383	2.39%

20% (4x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.04%	0.04%	0.516	0.516	0.01%
2	0.27%	0.27%	0.502	0.502	0.09%
3	0.83%	0.83%	0.480	0.480	0.29%
4	1.78%	1.78%	0.456	0.456	0.62%
5	3.08%	3.08%	0.430	0.430	1.09%
6	4.66%	4.66%	0.406	0.406	1.68%
7	6.47%	6.47%	0.383	0.383	2.37%

Tessellation 6.6.6. θ =60º, opening distance 35%

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	11.55	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	208.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	17,062	10,986	10,986	12,797	2,136	1,973	1,973	2,228
0.10	2.0	122,364	76,408	76,408	91,773	16,577	15,340	15,340	17,360
0.15	3.0	353,481	210,329	210,329	265,111	53,326	49,441	49,441	56,159
0.20	4.0	700,973	391,996	391,996	525,730	118,667	110,252	110,252	125,840
0.25	5.0	1,138,229	592,409	592,409	853,671	214,974	200,124	200,124	229,716
0.30	6.0	1,640,292	789,877	789,877	1,230,219	341,423	318,359	318,359	367,742
0.35	7.0	2,188,627	972,541	972,541	1,641,470	495,100	462,198	462,198	537,506

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	23.09	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	832.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	17,062	10,986	10,986	12,797	1,866	1,928	1,928	2,207
0.10	2.0	122,364	76,408	76,408	91,773	14,524	15,018	15,018	17,209
0.15	3.0	353,481	210,329	210,329	265,111	46,893	48,546	48,546	55,722
0.20	4.0	700,973	391,996	391,996	525,730	104,824	108,661	108,661	124,993
0.25	5.0	1,138,229	592,409	592,409	853,671	190,828	198,060	198,060	228,404
0.30	6.0	1,640,292	789,877	789,877	1,230,219	304,573	316,448	316,448	365,957
0.35	7.0	2,188,627	972,541	972,541	1,641,470	443,762	461,429	461,429	535,231

35% (2x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.02%	0.02%	0.744	0.744	0.01%
2	0.18%	0.18%	0.721	0.721	0.06%
3	0.57%	0.57%	0.687	0.687	0.18%
4	1.24%	1.24%	0.646	0.646	0.41%
5	2.20%	2.20%	0.601	0.601	0.74%
6	3.43%	3.43%	0.556	0.556	1.18%
7	4.89%	4.89%	0.513	0.513	1.72%

35% (4x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.02%	0.02%	0.744	0.744	0.01%
2	0.18%	0.18%	0.721	0.721	0.05%
3	0.57%	0.57%	0.687	0.687	0.17%
4	1.24%	1.24%	0.646	0.646	0.39%
5	2.20%	2.20%	0.601	0.601	0.71%
6	3.43%	3.43%	0.556	0.556	1.14%
7	4.89%	4.89%	0.513	0.513	1.66%

Tessellation 6.6.6. θ =60º, opening distance 50%

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	11.55	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	160.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	8,083	3,469	3,469	6,062	1,926	1,916	1,916	2,096
0.10	2.0	61,391	25,687	25,687	46,043	14,907	14,832	14,832	16,262
0.15	3.0	191,220	76,868	76,868	143,415	47,709	47,493	47,493	52,284
0.20	4.0	409,612	156,392	156,392	307,209	105,482	105,065	105,065	116,292
0.25	5.0	712,968	256,476	256,476	534,726	189,691	189,053	189,053	210,633
0.30	6.0	1,089,130	367,367	367,367	816,848	298,978	298,124	298,124	334,649
0.35	7.0	1,523,335	480,790	480,790	1,142,501	430,334	429,252	429,252	485,798
0.40	8.0	2,001,633	591,159	591,159	1,501,225	580,117	578,726	578,726	660,664

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	23.09	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	640.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	8,083	3,469	3,469	6,062	1,706	1,833	1,833	2,064
0.10	2.0	61,391	25,687	25,687	46,043	13,245	14,228	14,228	16,042
0.15	3.0	191,220	76,868	76,868	143,415	42,593	45,769	45,769	51,703
0.20	4.0	409,612	156,392	156,392	307,209	94,722	101,825	101,825	115,313
0.25	5.0	712,968	256,476	256,476	534,726	171,428	184,357	184,357	209,412
0.30	6.0	1,089,130	367,367	367,367	816,848	271,929	292,546	292,546	333,456
0.35	7.0	1,523,335	480,790	480,790	1,142,501	393,796	423,778	423,778	484,868
0.40	8.0	2,001,633	591,159	591,159	1,501,225	533,834	574,583	574,583	660,055

50% (2x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.02%	0.02%	0.496	0.496	0.01%
2	0.14%	0.14%	0.483	0.483	0.05%
3	0.45%	0.45%	0.464	0.464	0.17%
4	1.00%	1.00%	0.441	0.441	0.38%
5	1.79%	1.79%	0.415	0.415	0.68%
6	2.80%	2.80%	0.389	0.389	1.08%
7	4.00%	4.00%	0.364	0.364	1.55%
8	5.36%	5.36%	0.341	0.341	2.10%

50% (4x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.02%	0.02%	0.496	0.496	0.01%
2	0.14%	0.14%	0.483	0.483	0.05%
3	0.45%	0.45%	0.464	0.464	0.16%
4	1.00%	1.00%	0.441	0.441	0.36%
5	1.79%	1.79%	0.415	0.415	0.65%
6	2.80%	2.80%	0.389	0.389	1.04%
7	4.00%	4.00%	0.364	0.364	1.51%
8	5.36%	5.36%	0.341	0.341	2.04%

D) LAHORE FORT

Tessellation 4.8.8. θ =45º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	136.57	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	773,789	201,883	201,883	773,789	202,478	202,335	202,335	202,478
0.10	2.0	1,548,653	402,693	402,693	1,548,653	407,341	406,227	406,227	407,341
0.15	3.0	2,325,500	601,518	601,518	2,325,500	616,658	613,046	613,046	616,658
0.20	4.0	3,104,992	797,698	797,698	3,104,992	832,005	823,851	823,851	832,005

0.25	5.0	3,887,550	990,813	990,813	3,887,550	1,054,464	1,039,360	1,039,360	1,054,464
0.30	6.0	4,673,416	1,180,620	1,180,620	4,673,416	1,284,693	1,259,979	1,259,979	1,284,693
0.35	7.0	5,462,720	1,366,989	1,366,989	5,462,720	1,523,031	1,485,860	1,485,860	1,523,031
0.40	8.0	6,255,525	1,549,857	1,549,857	6,255,525	1,769,578	1,716,963	1,716,963	1,769,578
0.45	9.0	7,051,855	1,729,199	1,729,199	7,051,855	2,024,258	1,953,108	1,953,108	2,024,258

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	546.27	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	773,789	201,883	201,883	773,789	202,378	202,298	202,298	202,378
0.10	2.0	1,548,653	402,693	402,693	1,548,653	406,546	405,942	405,942	406,546
0.15	3.0	2,325,500	601,518	601,518	2,325,500	614,025	612,126	612,126	614,025
0.20	4.0	3,104,992	797,698	797,698	3,104,992	825,979	821,817	821,817	825,979
0.25	5.0	3,887,550	990,813	990,813	3,887,550	1,043,257	1,035,742	1,035,742	1,043,257
0.30	6.0	4,673,416	1,180,620	1,180,620	4,673,416	1,266,461	1,254,407	1,254,407	1,266,461
0.35	7.0	5,462,720	1,366,989	1,366,989	5,462,720	1,495,983	1,478,133	1,478,133	1,495,983
0.40	8.0	6,255,525	1,549,857	1,549,857	6,255,525	1,732,048	1,707,081	1,707,081	1,732,048
0.45	9.0	7,051,855	1,729,199	1,729,199	7,051,855	1,974,737	1,941,288	1,941,288	1,974,737

45º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	2.52%	2.52%	0.261	0.261	0.71%
2	5.05%	5.05%	0.260	0.260	1.42%
3	7.59%	7.59%	0.259	0.259	2.15%
4	10.15%	10.15%	0.257	0.257	2.90%
5	12.72%	12.72%	0.255	0.255	3.66%
6	15.31%	15.31%	0.253	0.253	4.45%
7	17.92%	17.92%	0.250	0.250	5.26%
8	20.55%	20.55%	0.248	0.248	6.10%
9	23.19%	23.19%	0.245	0.245	6.96%

45º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	2.52%	2.52%	0.261	0.261	0.71%
2	5.05%	5.05%	0.260	0.260	1.42%
3	7.59%	7.59%	0.259	0.259	2.15%
4	10.15%	10.15%	0.257	0.257	2.88%
5	12.72%	12.72%	0.255	0.255	3.64%
6	15.31%	15.31%	0.253	0.253	4.41%
7	17.92%	17.92%	0.250	0.250	5.20%
8	20.55%	20.55%	0.248	0.248	6.02%
9	23.19%	23.19%	0.245	0.245	6.85%

Tessellation 4.8.8. θ = 60º

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	141.39	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	88,509	25,270	25,270	88,509	7,771	7,611	7,611	7,771
0.10	2.0	508,713	139,143	139,143	508,713	55,416	54,171	54,171	55,416
0.15	3.0	1,173,231	310,718	310,718	1,173,231	159,227	155,192	155,192	159,227
0.20	4.0	1,932,165	500,202	500,202	1,932,165	314,736	305,630	305,630	314,736
0.25	5.0	2,715,840	690,079	690,079	2,715,840	510,540	493,674	493,674	510,540
0.30	6.0	3,501,506	874,285	874,285	3,501,506	736,142	708,539	708,539	736,142
0.35	7.0	4,283,692	1,051,036	1,051,036	4,283,692	983,750	942,209	942,209	983,750
0.40	8.0	5,062,282	1,220,058	1,220,058	5,062,282	1,247,892	1,189,037	1,189,037	1,247,892
0.45	9.0	5,838,468	1,381,620	1,381,620	5,838,468	1,524,747	1,445,058	1,445,058	1,524,747

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	565.54	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	

depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	88,509	25,270	25,270	88,509	6,825	6,743	6,743	6,825
0.10	2.0	508,713	139,143	139,143	508,713	49,521	48,883	48,883	49,521
0.15	3.0	1,173,231	310,718	310,718	1,173,231	145,242	143,203	143,203	145,242
0.20	4.0	1,932,165	500,202	500,202	1,932,165	292,452	287,909	287,909	292,452
0.25	5.0	2,715,840	690,079	690,079	2,715,840	481,200	472,882	472,882	481,200
0.30	6.0	3,501,506	874,285	874,285	3,501,506	700,803	687,316	687,316	700,803
0.35	7.0	4,283,692	1,051,036	1,051,036	4,283,692	942,685	922,537	922,537	942,685
0.40	8.0	5,062,282	1,220,058	1,220,058	5,062,282	1,200,672	1,172,297	1,172,297	1,200,672
0.45	9.0	5,838,468	1,381,620	1,381,620	5,838,468	1,470,510	1,432,276	1,432,276	1,470,510

60º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.28%	0.28%	0.286	0.286	0.03%
2	1.65%	1.65%	0.274	0.274	0.19%
3	3.82%	3.82%	0.265	0.265	0.55%
4	6.31%	6.31%	0.259	0.259	1.09%
5	8.89%	8.89%	0.254	0.254	1.76%
6	11.49%	11.49%	0.250	0.250	2.53%
7	14.09%	14.09%	0.245	0.245	3.37%
8	16.69%	16.69%	0.241	0.241	4.26%
9	19.29%	19.29%	0.237	0.237	5.20%

60º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.28%	0.28%	0.286	0.286	0.02%
2	1.65%	1.65%	0.274	0.274	0.17%
3	3.82%	3.82%	0.265	0.265	0.50%
4	6.31%	6.31%	0.259	0.259	1.02%
5	8.89%	8.89%	0.254	0.254	1.67%
6	11.49%	11.49%	0.250	0.250	2.43%
7	14.09%	14.09%	0.245	0.245	3.26%
8	16.69%	16.69%	0.241	0.241	4.15%
9	19.29%	19.29%	0.237	0.237	5.08%

Tessellation 4.8.8. θ =67.5º

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	147.82	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	52,028	9,914	9,914	52,028	3,868	3,698	3,698	3,868
0.10	2.0	328,208	64,815	64,815	328,208	28,820	27,507	27,507	28,820
0.15	3.0	823,482	170,257	170,257	823,482	87,831	83,608	83,608	87,831
0.20	4.0	1,442,895	310,301	310,301	1,442,895	184,867	175,407	175,407	184,867
0.25	5.0	2,117,984	467,753	467,753	2,117,984	318,424	300,999	300,999	318,424
0.30	6.0	2,814,995	630,722	630,722	2,814,995	484,675	456,244	456,244	484,675
0.35	7.0	3,519,686	792,422	792,422	3,519,686	679,134	636,393	636,393	679,134
0.40	8.0	4,226,733	949,399	949,399	4,226,733	897,398	836,816	836,816	897,398
0.45	9.0	4,934,525	1,100,091	1,100,091	4,934,525	1,135,475	1,053,332	1,053,332	1,135,475

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	591.28	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	52,028	9,914	9,914	52,028	3,422	3,336	3,336	3,422
0.10	2.0	328,208	64,815	64,815	328,208	25,809	25,152	25,152	25,809
0.15	3.0	823,482	170,257	170,257	823,482	79,850	77,752	77,752	79,850
0.20	4.0	1,442,895	310,301	310,301	1,442,895	170,450	165,785	165,785	170,450
0.25	5.0	2,117,984	467,753	467,753	2,117,984	296,899	288,360	288,360	296,899
0.30	6.0	2,814,995	630,722	630,722	2,814,995	455,584	441,722	441,722	455,584
0.35	7.0	3,519,686	792,422	792,422	3,519,686	641,870	621,117	621,117	641,870
0.40	8.0	4,226,733	949,399	949,399	4,226,733	851,140	821,824	821,824	851,140

0.45	9.0	4,934,525	1,100,091	1,100,091	4,934,525	1,079,254	1,039,616	1,039,616	1,079,254

67.5º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.18%	0.18%	0.191	0.191	0.01%
2	1.10%	1.10%	0.197	0.197	0.10%
3	2.76%	2.76%	0.207	0.207	0.30%
4	4.82%	4.82%	0.215	0.215	0.63%
5	7.05%	7.05%	0.221	0.221	1.08%
6	9.36%	9.36%	0.224	0.224	1.65%
7	11.69%	11.69%	0.225	0.225	2.30%
8	14.04%	14.04%	0.225	0.225	3.03%
9	16.41%	16.41%	0.223	0.223	3.83%

67.5º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.18%	0.18%	0.191	0.191	0.01%
2	1.10%	1.10%	0.197	0.197	0.09%
3	2.76%	2.76%	0.207	0.207	0.28%
4	4.82%	4.82%	0.215	0.215	0.59%
5	7.05%	7.05%	0.221	0.221	1.02%
6	9.36%	9.36%	0.224	0.224	1.57%
7	11.69%	11.69%	0.225	0.225	2.21%
8	14.04%	14.04%	0.225	0.225	2.93%
9	16.41%	16.41%	0.223	0.223	3.71%

E) PALACE OF THE SHIRVANSHAHS

Tessellation 4.8.8. θ =45º, with number of crossings = 0

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	66.27	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	679	601	601	679	541	514	514	541
0.10	2.0	5,350	4,723	4,723	5,350	4,268	4,053	4,053	4,268
0.15	3.0	17,609	15,499	15,499	17,609	14,096	13,370	13,370	14,096
0.20	4.0	40,345	35,364	35,364	40,345	32,437	30,722	30,722	32,437
0.25	5.0	75,567	65,885	65,885	75,567	61,063	57,732	57,732	61,063
0.30	6.0	124,373	107,742	107,742	124,373	101,060	95,339	95,339	101,060
0.35	7.0	187,053	160,827	160,827	187,053	152,864	143,847	143,847	152,864
0.40	8.0	263,253	224,416	224,416	263,253	216,365	203,016	203,016	216,365
0.45	9.0	352,171	297,367	297,367	352,171	291,031	272,200	272,200	291,031
0.50	10.0	452,739	378,306	378,306	452,739	376,047	350,478	350,478	376,047

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	265.10	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	679	601	601	679	468	457	457	468
0.10	2.0	5,350	4,723	4,723	5,350	3,698	3,610	3,610	3,698
0.15	3.0	17,609	15,499	15,499	17,609	12,242	11,947	11,947	12,242
0.20	4.0	40,345	35,364	35,364	40,345	28,261	27,565	27,565	28,261
0.25	5.0	75,567	65,885	65,885	75,567	53,408	52,056	52,056	53,408
0.30	6.0	124,373	107,742	107,742	124,373	88,775	86,451	86,451	88,775
0.35	7.0	187,053	160,827	160,827	187,053	134,907	131,240	131,240	134,907
0.40	8.0	263,253	224,416	224,416	263,253	191,865	186,431	186,431	191,865
0.45	9.0	352,171	297,367	297,367	352,171	259,317	251,642	251,642	259,317
0.50	10.0	452,739	378,306	378,306	452,739	336,647	326,212	326,212	336,647

45% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.884	0.884	0.00%
2	0.00%	0.00%	0.883	0.883	0.01%
3	0.01%	0.01%	0.880	0.880	0.05%
4	0.03%	0.03%	0.877	0.877	0.11%
5	0.06%	0.06%	0.872	0.872	0.21%
6	0.11%	0.11%	0.866	0.866	0.34%
7	0.17%	0.17%	0.860	0.860	0.52%
8	0.25%	0.25%	0.852	0.852	0.73%
9	0.35%	0.35%	0.844	0.844	0.99%
10	0.48%	0.48%	0.836	0.836	1.27%

45% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.884	0.884	0.00%
2	0.00%	0.00%	0.883	0.883	0.01%
3	0.01%	0.01%	0.880	0.880	0.04%
4	0.03%	0.03%	0.877	0.877	0.10%
5	0.06%	0.06%	0.872	0.872	0.18%
6	0.11%	0.11%	0.866	0.866	0.31%
7	0.17%	0.17%	0.860	0.860	0.47%
8	0.25%	0.25%	0.852	0.852	0.66%
9	0.35%	0.35%	0.844	0.844	0.89%
10	0.48%	0.48%	0.836	0.836	1.16%

Tessellation 4.8.8. θ =60º, with number of crossings = 0

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	77.18	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	408	332	332	408	383	355	355	383
0.10	2.0	3,222	2,621	2,621	3,222	3,023	2,805	2,805	3,023
0.15	3.0	10,662	8,639	8,639	10,662	9,992	9,257	9,257	9,992
0.20	4.0	24,601	19,823	19,823	24,601	23,022	21,287	21,287	23,022
0.25	5.0	46,467	37,180	37,180	46,467	43,403	40,034	40,034	43,403
0.30	6.0	77,206	61,252	61,252	77,206	71,953	66,171	66,171	71,953
0.35	7.0	117,306	92,143	92,143	117,306	109,037	99,928	99,928	109,037
0.40	8.0	166,855	129,587	129,587	166,855	154,630	141,155	141,155	154,630
0.45	9.0	225,630	173,031	173,031	225,630	208,408	189,415	189,415	208,408
0.50	10.0	293,191	221,737	221,737	293,191	269,833	244,067	244,067	269,833

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	308.71	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	408	332	332	408	374	363	363	374
0.10	2.0	3,222	2,621	2,621	3,222	2,951	2,862	2,862	2,951
0.15	3.0	10,662	8,639	8,639	10,662	9,752	9,451	9,451	9,752
0.20	4.0	24,601	19,823	19,823	24,601	22,459	21,747	21,747	22,459
0.25	5.0	46,467	37,180	37,180	46,467	42,316	40,933	40,933	42,316
0.30	6.0	77,206	61,252	61,252	77,206	70,101	67,725	67,725	70,101
0.35	7.0	117,306	92,143	92,143	117,306	106,141	102,395	102,395	106,141
0.40	8.0	166,855	129,587	129,587	166,855	150,379	144,833	144,833	150,379
0.45	9.0	225,630	173,031	173,031	225,630	202,459	194,635	194,635	202,459
0.50	10.0	293,191	221,737	221,737	293,191	261,819	251,194	251,194	261,819

60% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.815	0.815	0.00%
2	0.00%	0.00%	0.813	0.813	0.01%
3	0.01%	0.01%	0.810	0.810	0.03%
4	0.03%	0.03%	0.806	0.806	0.08%
5	0.06%	0.06%	0.800	0.800	0.15%
6	0.10%	0.10%	0.793	0.793	0.24%

60% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.815	0.815	0.00%
2	0.00%	0.00%	0.813	0.813	0.01%
3	0.01%	0.01%	0.810	0.810	0.03%
4	0.03%	0.03%	0.806	0.806	0.08%
5	0.06%	0.06%	0.800	0.800	0.15%

7	0.16%	0.16%	0.785	0.785	0.37%
8	0.23%	0.23%	0.777	0.777	0.52%
9	0.33%	0.33%	0.767	0.767	0.70%
10	0.44%	0.44%	0.756	0.756	0.90%

6	0.10%	0.10%	0.793	0.793	0.24%
7	0.16%	0.16%	0.785	0.785	0.36%
8	0.23%	0.23%	0.777	0.777	0.52%
9	0.33%	0.33%	0.767	0.767	0.69%
10	0.44%	0.44%	0.756	0.756	0.90%

Tessellation 4.8.8. θ =75º, with number of crossings = 0

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	100.58	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	186	118	118	186	155	128	128	155
0.10	2.0	1,478	935	935	1,478	1,227	1,019	1,019	1,227
0.15	3.0	4,930	3,101	3,101	4,930	4,092	3,391	3,391	4,092
0.20	4.0	11,496	7,177	7,177	11,496	9,536	7,882	7,882	9,536
0.25	5.0	21,999	13,604	13,604	21,999	18,231	15,020	15,020	18,231
0.30	6.0	37,103	22,679	22,679	37,103	30,711	25,204	25,204	30,711
0.35	7.0	57,306	34,554	34,554	57,306	47,366	38,695	38,695	47,366
0.40	8.0	82,944	49,243	49,243	82,944	68,440	55,623	55,623	68,440
0.45	9.0	114,204	66,632	66,632	114,204	94,047	75,995	75,995	94,047
0.50	10.0	151,143	86,510	86,510	151,143	124,185	99,718	99,718	124,185

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	402.32	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	186	118	118	186	137	126	126	137
0.10	2.0	1,478	935	935	1,478	1,092	1,004	1,004	1,092
0.15	3.0	4,930	3,101	3,101	4,930	3,641	3,347	3,347	3,641
0.20	4.0	11,496	7,177	7,177	11,496	8,489	7,795	7,795	8,489
0.25	5.0	21,999	13,604	13,604	21,999	16,239	14,891	14,891	16,239
0.30	6.0	37,103	22,679	22,679	37,103	27,375	25,062	25,062	27,375
0.35	7.0	57,306	34,554	34,554	57,306	42,250	38,608	38,608	42,250
0.40	8.0	82,944	49,243	49,243	82,944	61,094	55,707	55,707	61,094
0.45	9.0	114,204	66,632	66,632	114,204	84,012	76,422	76,422	84,012
0.50	10.0	151,143	86,510	86,510	151,143	111,008	100,714	100,714	111,008

75% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.634	0.634	0.00%
2	0.00%	0.00%	0.632	0.632	0.00%
3	0.01%	0.01%	0.629	0.629	0.01%
4	0.02%	0.02%	0.624	0.624	0.03%
5	0.05%	0.05%	0.618	0.618	0.06%
6	0.08%	0.08%	0.611	0.611	0.10%
7	0.13%	0.13%	0.603	0.603	0.15%
8	0.19%	0.19%	0.594	0.594	0.22%
9	0.26%	0.26%	0.583	0.583	0.30%
10	0.36%	0.36%	0.572	0.572	0.39%

75% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.634	0.634	0.00%
2	0.00%	0.00%	0.632	0.632	0.00%
3	0.01%	0.01%	0.629	0.629	0.01%
4	0.02%	0.02%	0.624	0.624	0.03%
5	0.05%	0.05%	0.618	0.618	0.05%
6	0.08%	0.08%	0.611	0.611	0.09%
7	0.13%	0.13%	0.603	0.603	0.14%
8	0.19%	0.19%	0.594	0.594	0.20%
9	0.26%	0.26%	0.583	0.583	0.28%
10	0.36%	0.36%	0.572	0.572	0.37%

F) MUSTANSIRIYA MADRASA

Tessellation 3.6.3.6. θ =30º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	173.20	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	51,737	29,248	29,248	17,246	221	345	345	681
0.10	2.0	317,244	178,216	178,216	105,748	1,758	2,735	2,735	5,406
0.15	3.0	772,459	429,463	429,463	257,486	5,863	9,115	9,115	18,002
0.20	4.0	1,321,571	724,424	724,424	440,524	13,674	21,233	21,233	41,894
0.25	5.0	1,908,440	1,027,840	1,027,840	636,147	26,173	40,574	40,574	79,976
0.30	6.0	2,511,410	1,324,850	1,324,850	837,137	44,157	68,315	68,315	134,534
0.35	7.0	3,124,275	1,610,037	1,610,037	1,041,425	68,226	105,304	105,304	207,228
0.40	8.0	3,746,387	1,881,723	1,881,723	1,248,796	98,789	152,069	152,069	299,111
0.45	9.0	4,378,714	2,139,670	2,139,670	1,459,571	136,072	208,839	208,839	410,689
0.50	10.0	5,022,412	2,384,210	2,384,210	1,674,137	180,141	275,578	275,578	541,991
0.55	11.0	5,678,357	2,615,913	2,615,913	1,892,786	230,927	352,037	352,037	692,656
0.60	12.0	6,347,040	2,835,461	2,835,461	2,115,680	288,252	437,790	437,790	862,020

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	692.82	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	51,695	29,224	29,224	17,232	198	326	326	605
0.10	2.0	317,042	178,100	178,100	105,681	1,576	2,590	2,590	4,806
0.15	3.0	772,092	429,253	429,253	257,364	5,261	8,641	8,641	16,024
0.20	4.0	1,321,097	724,153	724,153	440,366	12,283	20,164	20,164	37,358
0.25	5.0	1,907,904	1,027,537	1,027,537	635,968	23,535	38,612	38,612	71,473
0.30	6.0	2,510,837	1,324,530	1,324,530	836,946	39,752	65,169	65,169	120,531
0.35	7.0	3,123,675	1,609,706	1,609,706	1,041,225	61,498	100,726	100,726	186,165
0.40	8.0	3,745,764	1,881,386	1,881,386	1,248,588	89,165	145,883	145,883	269,482
0.45	9.0	4,378,068	2,139,328	2,139,328	1,459,356	122,982	200,966	200,966	371,099
0.50	10.0	5,021,740	2,383,863	2,383,863	1,673,913	163,034	266,053	266,053	491,194
0.55	11.0	5,677,657	2,615,561	2,615,561	1,892,552	209,280	341,015	341,015	629,576
0.60	12.0	6,346,308	2,835,104	2,835,104	2,115,436	261,576	425,548	425,548	785,754

30º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.979	0.979	0.00%
2	0.03%	0.03%	0.973	0.973	0.01%
3	0.11%	0.11%	0.963	0.963	0.03%
4	0.26%	0.26%	0.949	0.949	0.08%
5	0.50%	0.50%	0.933	0.933	0.15%
6	0.84%	0.84%	0.914	0.914	0.25%
7	1.28%	1.28%	0.893	0.893	0.39%
8	1.84%	1.84%	0.870	0.870	0.57%
9	2.51%	2.51%	0.846	0.846	0.78%
10	3.29%	3.29%	0.822	0.822	1.03%
11	4.17%	4.17%	0.798	0.798	1.32%
12	5.15%	5.15%	0.774	0.774	1.64%

30º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.979	0.979	0.00%
2	0.03%	0.03%	0.973	0.973	0.01%
3	0.11%	0.11%	0.963	0.963	0.03%
4	0.26%	0.26%	0.949	0.949	0.07%
5	0.50%	0.50%	0.933	0.933	0.14%
6	0.84%	0.84%	0.914	0.914	0.24%
7	1.28%	1.28%	0.893	0.893	0.36%
8	1.84%	1.84%	0.870	0.870	0.53%
9	2.51%	2.51%	0.846	0.846	0.73%
10	3.29%	3.29%	0.822	0.822	0.96%
11	4.17%	4.17%	0.798	0.798	1.23%
12	5.15%	5.15%	0.774	0.774	1.54%

Tessellation 3.6.3.6. θ =45º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	169.71	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	17,732	9,573	9,573	5,911	240	364	364	724
0.10	2.0	128,407	68,847	68,847	42,802	1,909	2,890	2,890	5,747
0.15	3.0	374,640	198,635	198,635	124,880	6,367	9,633	9,633	19,134
0.20	4.0	747,794	390,474	390,474	249,265	14,846	22,445	22,445	44,516
0.25	5.0	1,217,051	623,527	623,527	405,684	28,407	42,900	42,900	84,948
0.30	6.0	1,752,180	877,828	877,828	584,060	47,902	72,239	72,239	142,828
0.35	7.0	2,331,450	1,138,883	1,138,883	777,150	73,969	111,352	111,352	219,870
0.40	8.0	2,941,325	1,397,513	1,397,513	980,442	107,028	160,778	160,778	317,134
0.45	9.0	3,573,973	1,648,386	1,648,386	1,191,324	147,297	220,730	220,730	435,083
0.50	10.0	4,224,987	1,888,661	1,888,661	1,408,329	194,815	291,135	291,135	573,665
0.55	11.0	4,891,851	2,117,029	2,117,029	1,630,617	249,471	371,682	371,682	732,410
0.60	12.0	5,573,014	2,333,113	2,333,113	1,857,671	311,034	461,875	461,875	910,523

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	678.82	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	17,732	9,573	9,573	5,911	214	346	346	648
0.10	2.0	128,407	68,847	68,847	42,802	1,699	2,750	2,750	5,141
0.15	3.0	374,640	198,635	198,635	124,880	5,672	9,179	9,179	17,135
0.20	4.0	747,794	390,474	390,474	249,265	13,238	21,425	21,425	39,929
0.25	5.0	1,217,051	623,527	623,527	405,684	25,358	41,035	41,035	76,349
0.30	6.0	1,752,180	877,828	877,828	584,060	42,816	69,266	69,266	128,677
0.35	7.0	2,331,450	1,138,883	1,138,883	777,150	66,210	107,060	107,060	198,619
0.40	8.0	2,941,325	1,397,513	1,397,513	980,442	95,948	155,038	155,038	287,308
0.45	9.0	3,573,973	1,648,386	1,648,386	1,191,324	132,258	213,522	213,522	395,345
0.50	10.0	4,224,987	1,888,661	1,888,661	1,408,329	175,207	282,563	282,563	522,853
0.55	11.0	4,891,851	2,117,029	2,117,029	1,630,617	224,722	361,980	361,980	669,552
0.60	12.0	5,573,014	2,333,113	2,333,113	1,857,671	280,618	451,407	451,407	834,835

45º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.935	0.935	0.00%
2	0.04%	0.04%	0.929	0.929	0.01%
3	0.12%	0.12%	0.918	0.918	0.04%
4	0.28%	0.28%	0.904	0.904	0.08%
5	0.52%	0.52%	0.887	0.887	0.16%
6	0.87%	0.87%	0.868	0.868	0.27%
7	1.34%	1.34%	0.846	0.846	0.42%
8	1.92%	1.92%	0.823	0.823	0.60%
9	2.61%	2.61%	0.799	0.799	0.83%
10	3.42%	3.42%	0.774	0.774	1.09%
11	4.33%	4.33%	0.750	0.750	1.40%
12	5.34%	5.34%	0.725	0.725	1.74%

45º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.935	0.935	0.00%
2	0.04%	0.04%	0.929	0.929	0.01%
3	0.12%	0.12%	0.918	0.918	0.03%
4	0.28%	0.28%	0.904	0.904	0.08%
5	0.52%	0.52%	0.887	0.887	0.15%
6	0.87%	0.87%	0.868	0.868	0.25%
7	1.34%	1.34%	0.846	0.846	0.39%
8	1.92%	1.92%	0.823	0.823	0.56%
9	2.61%	2.61%	0.799	0.799	0.77%
10	3.42%	3.42%	0.774	0.774	1.02%
11	4.33%	4.33%	0.750	0.750	1.31%
12	5.34%	5.34%	0.725	0.725	1.64%

Tessellation 3.6.3.6. θ =60º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	180.01	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	4,153	1,778	1,778	1,384	227	328	328	643
0.10	2.0	32,329	13,737	13,737	10,776	1,800	2,604	2,604	5,105
0.15	3.0	104,434	43,832	43,832	34,811	6,003	8,686	8,686	17,019
0.20	4.0	233,659	96,424	96,424	77,886	14,002	20,255	20,255	39,666
0.25	5.0	426,001	172,122	172,122	142,000	26,796	38,749	38,749	75,848
0.30	6.0	681,475	268,564	268,564	227,158	45,197	65,316	65,316	127,808
0.35	7.0	996,091	381,604	381,604	332,030	69,812	100,787	100,787	197,195
0.40	8.0	1,363,760	506,429	506,429	454,587	101,043	145,677	145,677	285,074
0.45	9.0	1,777,730	638,371	638,371	592,577	139,100	200,206	200,206	391,965
0.50	10.0	2,231,457	773,365	773,365	743,819	184,024	264,328	264,328	517,915
0.55	11.0	2,719,035	908,147	908,147	906,345	235,710	337,774	337,774	662,571
0.60	12.0	3,235,343	1,040,259	1,040,259	1,078,448	293,937	420,102	420,102	825,269

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	720.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	4,157	1,780	1,780	1,386	200	318	318	588
0.10	2.0	32,354	13,751	13,751	10,785	1,592	2,525	2,525	4,674
0.15	3.0	104,512	43,875	43,875	34,837	5,315	8,429	8,429	15,598
0.20	4.0	233,826	96,516	96,516	77,942	12,409	19,683	19,683	36,402
0.25	5.0	426,288	172,280	172,280	142,096	23,780	37,720	37,720	69,718
0.30	6.0	681,906	268,800	268,800	227,302	40,168	63,712	63,712	117,694
0.35	7.0	996,680	381,923	381,923	332,227	62,141	98,543	98,543	181,954
0.40	8.0	1,364,513	506,834	506,834	454,838	90,087	142,804	142,804	263,597
0.45	9.0	1,778,648	638,860	638,860	592,883	124,225	196,808	196,808	363,225
0.50	10.0	2,232,535	773,934	773,934	744,178	164,620	260,612	260,612	480,989
0.55	11.0	2,720,270	908,791	908,791	906,757	211,204	334,057	334,057	616,657
0.60	12.0	3,236,727	1,040,974	1,040,974	1,078,909	263,798	416,804	416,804	769,681

60º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.742	0.742	0.00%
2	0.03%	0.03%	0.736	0.736	0.01%
3	0.10%	0.10%	0.727	0.727	0.03%
4	0.23%	0.23%	0.715	0.715	0.08%
5	0.44%	0.44%	0.700	0.700	0.15%
6	0.74%	0.74%	0.683	0.683	0.25%
7	1.13%	1.13%	0.664	0.664	0.38%
8	1.62%	1.62%	0.643	0.643	0.55%
9	2.20%	2.20%	0.622	0.622	0.76%
10	2.88%	2.88%	0.600	0.600	1.00%
11	3.65%	3.65%	0.578	0.578	1.28%
12	4.51%	4.51%	0.557	0.557	1.60%

60º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.742	0.742	0.00%
2	0.03%	0.03%	0.736	0.736	0.01%
3	0.10%	0.10%	0.727	0.727	0.03%
4	0.23%	0.23%	0.715	0.715	0.07%
5	0.44%	0.44%	0.700	0.700	0.14%
6	0.74%	0.74%	0.683	0.683	0.23%
7	1.13%	1.13%	0.664	0.664	0.36%
8	1.62%	1.62%	0.643	0.643	0.52%
9	2.20%	2.20%	0.622	0.622	0.72%
10	2.88%	2.88%	0.600	0.600	0.95%
11	3.66%	3.66%	0.579	0.579	1.22%
12	4.51%	4.51%	0.557	0.557	1.52%

G) TOMB OF SALIM CHISHTI

Tessellation 6.6.6. D = 65%, θ =60º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	11.55	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	215.36	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	52,136	42,104	42,104	40,679	2,001	2,246	2,246	2,751
0.10	2.0	327,718	258,888	258,888	256,286	15,621	17,534	17,534	21,478
0.15	3.0	820,823	626,204	626,204	643,959	50,708	56,868	56,868	69,698
0.20	4.0	1,443,016	1,052,144	1,052,144	1,136,062	114,122	127,813	127,813	156,802
0.25	5.0	2,136,578	1,477,532	1,477,532	1,687,776	209,358	234,041	234,041	287,531
0.30	6.0	2,875,601	1,876,766	1,876,766	2,278,358	336,893	375,725	375,725	462,455
0.35	7.0	3,648,835	2,241,764	2,241,764	2,898,243	494,957	550,443	550,443	679,047
0.40	8.0	4,450,264	2,572,280	2,572,280	3,541,957	680,414	754,203	754,203	932,889

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	23.09	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	861.46	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	59,279	47,884	47,884	45,354	1,854	2,108	2,108	2,505
0.10	2.0	365,556	288,847	288,847	279,988	14,503	16,490	16,490	19,600
0.15	3.0	899,181	686,142	686,142	689,747	47,219	53,669	53,669	63,805
0.20	4.0	1,559,407	1,137,263	1,137,263	1,198,187	106,670	121,172	121,172	144,109
0.25	5.0	2,286,746	1,581,725	1,581,725	1,759,862	196,508	223,046	223,046	265,422
0.30	6.0	3,056,706	1,995,392	1,995,392	2,355,761	317,593	360,109	360,109	428,863
0.35	7.0	3,859,436	2,371,656	2,371,656	2,977,964	468,606	530,665	530,665	632,607
0.40	8.0	4,689,786	2,711,301	2,711,301	3,622,162	646,804	731,380	731,380	872,901

60º (2x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.03%	0.03%	0.896	0.933	0.01%
2	0.20%	0.21%	0.875	0.912	0.06%
3	0.64%	0.67%	0.842	0.881	0.20%
4	1.42%	1.49%	0.802	0.842	0.46%
5	2.56%	2.69%	0.758	0.799	0.84%
6	4.03%	4.26%	0.713	0.754	1.35%
7	5.80%	6.15%	0.670	0.709	1.98%
8	7.83%	8.30%	0.629	0.667	2.71%

60º (4x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.03%	0.03%	0.914	0.933	0.01%
2	0.20%	0.21%	0.893	0.912	0.06%
3	0.66%	0.67%	0.861	0.881	0.19%
4	1.45%	1.49%	0.822	0.842	0.43%
5	2.62%	2.69%	0.778	0.799	0.79%
6	4.14%	4.26%	0.734	0.754	1.28%
7	5.97%	6.14%	0.690	0.710	1.88%
8	8.06%	8.30%	0.648	0.668	2.59%

Tessellation 6.6.6. D = 65%, θ =75º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	11.55	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	223.13	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	65,199	50,422	50,422	51,001	3,688	4,183	4,183	5,013
0.10	2.0	397,879	296,717	296,717	312,626	28,354	32,127	32,127	38,496
0.15	3.0	974,351	687,190	687,190	769,706	89,857	101,666	101,666	121,838
0.20	4.0	1,692,543	1,113,507	1,113,507	1,343,686	196,305	221,649	221,649	265,757
0.25	5.0	2,493,097	1,517,764	1,517,764	1,987,068	348,477	392,442	392,442	470,982
0.30	6.0	3,348,522	1,880,572	1,880,572	2,676,635	542,130	608,625	608,625	731,457

0.35	7.0	4,244,087	2,200,223	2,200,223	3,399,400	770,615	862,027	862,027	1,037,918
0.40	8.0	5,169,780	2,481,793	2,481,793	4,146,494	1,026,837	1,144,024	1,144,024	1,380,570

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	23.09	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	892.50	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	71,385	55,216	55,216	54,709	3,410	3,899	3,899	4,586
0.10	2.0	431,319	321,707	321,707	331,254	26,308	30,067	30,067	35,369
0.15	3.0	1,046,041	737,864	737,864	805,386	83,819	95,733	95,733	112,617
0.20	4.0	1,803,131	1,186,435	1,186,435	1,391,504	184,272	210,276	210,276	247,403
0.25	5.0	2,640,705	1,607,856	1,607,856	2,041,622	329,287	375,313	375,313	441,748
0.30	6.0	3,531,604	1,983,682	1,983,682	2,734,109	515,563	586,782	586,782	691,063
0.35	7.0	4,461,788	2,313,432	2,313,432	3,457,521	737,133	837,559	837,559	987,202
0.40	8.0	5,421,697	2,603,140	2,603,140	4,204,059	987,222	1,119,608	1,119,608	1,320,966

75º (2x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.05%	0.05%	0.856	0.893	0.01%
2	0.35%	0.37%	0.822	0.861	0.11%
3	1.09%	1.15%	0.773	0.814	0.36%
4	2.33%	2.47%	0.718	0.760	0.79%
5	4.04%	4.30%	0.661	0.703	1.40%
6	6.14%	6.55%	0.608	0.648	2.17%
7	8.55%	9.13%	0.561	0.599	3.07%
8	11.17%	11.94%	0.518	0.554	4.08%

75º (4x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.05%	0.05%	0.874	0.893	0.01%
2	0.36%	0.37%	0.841	0.861	0.11%
3	1.12%	1.15%	0.793	0.815	0.34%
4	2.40%	2.47%	0.738	0.760	0.74%
5	4.17%	4.29%	0.682	0.703	1.32%
6	6.34%	6.55%	0.628	0.649	2.07%
7	8.83%	9.12%	0.579	0.599	2.96%
8	11.55%	11.94%	0.536	0.554	3.96%

Tessellation 6.6.6. D = 65%, θ =90º

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	11.55	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	249.05	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	147,735	91,551	91,551	118,976	19,976	23,116	23,116	27,116
0.10	2.0	747,630	398,335	398,335	607,991	130,904	150,973	150,973	176,853
0.15	3.0	1,615,669	721,853	721,853	1,318,154	340,763	391,281	391,281	457,828
0.20	4.0	2,595,586	987,207	987,207	2,116,173	614,161	701,794	701,794	820,695
0.25	5.0	3,618,588	1,204,695	1,204,695	2,944,538	920,136	1,046,039	1,046,039	1,223,405
0.30	6.0	4,654,708	1,393,686	1,393,686	3,779,889	1,241,511	1,403,820	1,403,820	1,643,060

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	23.09	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	996.19	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	157,449	97,535	97,535	122,585	19,018	21,979	21,979	25,578
0.10	2.0	793,835	422,791	422,791	620,540	126,642	146,133	146,133	169,957
0.15	3.0	1,706,396	762,151	762,151	1,335,277	334,683	385,404	385,404	447,994
0.20	4.0	2,729,044	1,037,741	1,037,741	2,134,242	609,723	700,510	700,510	814,060
0.25	5.0	3,791,969	1,262,253	1,262,253	2,962,385	919,629	1,053,951	1,053,951	1,224,846
0.30	6.0	4,865,866	1,456,830	1,456,830	3,797,372	1,245,519	1,423,709	1,423,709	1,655,110

90º (2x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.23%	0.25%	0.666	0.716	0.08%
2	1.47%	1.60%	0.567	0.615	0.53%
3	3.70%	4.02%	0.474	0.516	1.38%
4	6.47%	7.03%	0.404	0.439	2.47%
5	9.47%	10.28%	0.354	0.384	3.69%
6	12.55%	13.59%	0.319	0.346	4.96%

90º (4x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.24%	0.25%	0.689	0.715	0.08%
2	1.53%	1.60%	0.590	0.615	0.51%
3	3.85%	4.02%	0.494	0.516	1.35%
4	6.74%	7.03%	0.421	0.439	2.46%
5	9.86%	10.27%	0.369	0.384	3.70%
6	13.05%	13.58%	0.332	0.346	5.00%

H) GENERALIFE

Tessellation 3.12.12. θ =45º

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	281.75	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	190,500	42,318	42,318	63,500	19,841	34,191	34,191	59,655
0.10	2.0	1,024,055	229,042	229,042	341,352	106,236	182,636	182,636	319,534
0.15	3.0	2,241,202	501,649	501,649	747,067	232,979	398,942	398,942	700,490
0.20	4.0	3,571,599	795,875	795,875	1,190,533	373,963	636,955	636,955	1,122,733
0.25	5.0	4,922,007	1,088,352	1,088,352	1,640,669	520,789	881,434	881,434	1,559,676
0.30	6.0	6,269,774	1,372,847	1,372,847	2,089,925	671,706	1,128,932	1,128,932	2,005,197
0.35	7.0	7,611,974	1,648,111	1,648,111	2,537,325	826,656	1,379,146	1,379,146	2,458,741
0.40	8.0	8,950,360	1,914,208	1,914,208	2,983,453	985,873	1,632,425	1,632,425	2,920,974
0.45	9.0	10,287,359	2,171,521	2,171,521	3,429,120	1,149,547	1,889,122	1,889,122	3,392,632

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,127.07	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	190,475	42,312	42,312	63,492	19,684	34,006	34,006	59,116
0.10	2.0	1,023,946	229,018	229,018	341,315	105,382	181,841	181,841	316,548
0.15	3.0	2,241,007	501,606	501,606	747,002	230,817	397,507	397,507	693,226
0.20	4.0	3,571,330	795,816	795,816	1,190,443	369,674	634,983	634,983	1,109,507
0.25	5.0	4,921,669	1,088,280	1,088,280	1,640,556	513,337	879,037	879,037	1,538,909
0.30	6.0	6,269,371	1,372,763	1,372,763	2,089,790	659,926	1,126,236	1,126,236	1,975,407
0.35	7.0	7,611,505	1,648,016	1,648,016	2,537,168	809,331	1,376,320	1,376,320	2,418,524
0.40	8.0	8,949,825	1,914,103	1,914,103	2,983,275	961,795	1,629,703	1,629,703	2,868,996
0.45	9.0	10,286,757	2,171,408	2,171,408	3,428,919	1,117,554	1,886,819	1,886,819	3,327,618

45º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.33%	0.33%	0.385	0.385	0.12%
2	1.76%	1.76%	0.387	0.387	0.64%
3	3.85%	3.85%	0.388	0.388	1.40%
4	6.14%	6.14%	0.386	0.386	2.25%
5	8.49%	8.49%	0.383	0.383	3.12%
6	10.85%	10.85%	0.379	0.379	4.01%
7	13.22%	13.22%	0.375	0.375	4.91%
8	15.60%	15.60%	0.370	0.370	5.83%
9	18.01%	18.01%	0.366	0.366	6.76%

45º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.33%	0.33%	0.385	0.385	0.12%
2	1.76%	1.76%	0.387	0.387	0.64%
3	3.85%	3.85%	0.388	0.388	1.40%
4	6.14%	6.14%	0.386	0.386	2.23%
5	8.48%	8.48%	0.383	0.383	3.09%
6	10.84%	10.84%	0.379	0.379	3.97%
7	13.22%	13.22%	0.375	0.375	4.86%
8	15.60%	15.60%	0.370	0.370	5.76%
9	18.00%	18.00%	0.366	0.366	6.68%

Tessellation 3.12.12. θ =60º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	309.31	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	64,383	3,841	3,841	21,461	9,875	16,779	16,779	29,224
0.10	2.0	428,530	29,470	29,470	142,843	64,558	109,507	109,507	191,207
0.15	3.0	1,133,642	89,599	89,599	377,881	167,443	283,272	283,272	496,426
0.20	4.0	2,069,858	181,626	181,626	689,953	300,889	507,213	507,213	892,799
0.25	5.0	3,130,440	294,907	294,907	1,043,480	450,179	755,598	755,598	1,336,486
0.30	6.0	4,251,272	419,380	419,380	1,417,091	607,568	1,014,768	1,014,768	1,804,116
0.35	7.0	5,399,935	548,184	548,184	1,799,978	769,658	1,278,626	1,278,626	2,285,185

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,237.19	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	64,406	3,848	3,848	21,469	9,749	16,724	16,724	29,048
0.10	2.0	428,663	29,517	29,517	142,888	63,738	109,249	109,249	189,992
0.15	3.0	1,133,950	89,718	89,718	377,983	165,256	282,886	282,886	492,854
0.20	4.0	2,070,351	181,833	181,833	690,117	296,694	507,000	507,000	885,243
0.25	5.0	3,131,103	295,205	295,205	1,043,701	443,331	755,988	755,988	1,323,156
0.30	6.0	4,252,085	419,765	419,765	1,417,362	597,396	1,016,293	1,016,293	1,783,229
0.35	7.0	5,400,882	548,654	548,654	1,800,294	755,474	1,281,910	1,281,910	2,255,067

60º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.13%	0.13%	0.103	0.103	0.06%
2	0.85%	0.85%	0.119	0.119	0.39%
3	2.25%	2.25%	0.137	0.137	1.00%
4	4.09%	4.09%	0.152	0.152	1.79%
5	6.16%	6.16%	0.163	0.163	2.68%
6	8.34%	8.34%	0.171	0.171	3.61%
7	10.57%	10.57%	0.176	0.176	4.56%

60º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.13%	0.13%	0.103	0.103	0.06%
2	0.85%	0.85%	0.119	0.119	0.38%
3	2.25%	2.25%	0.137	0.137	0.99%
4	4.09%	4.09%	0.152	0.152	1.78%
5	6.16%	6.16%	0.163	0.163	2.66%
6	8.34%	8.34%	0.171	0.171	3.58%
7	10.57%	10.57%	0.176	0.176	4.53%

Tessellation 3.12.12. θ =75º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	372.70	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	45,686	-2,378	-2,378	15,229	8,479	14,422	14,422	25,181
0.10	2.0	303,788	-10,418	-10,418	101,263	54,836	93,111	93,111	162,987
0.15	3.0	806,884	-10,823	-10,823	268,961	140,943	238,667	238,667	419,341

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,490.87	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$

[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	45,679	-2,378	-2,378	15,226	8,388	14,397	14,397	25,037
0.10	2.0	303,749	-10,417	-10,417	101,250	54,227	92,995	92,995	161,925
0.15	3.0	806,793	-10,825	-10,825	268,931	139,248	238,479	238,479	416,012

75º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.09%	0.09%	- 0.090	- 0.090	0.05%
2	0.61%	0.61%	- 0.059	- 0.059	0.33%
3	1.63%	1.63%	- 0.023	- 0.023	0.84%

75º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.09%	0.09%	- 0.090	- 0.090	0.05%
2	0.61%	0.61%	- 0.059	- 0.059	0.33%
3	1.63%	1.63%	- 0.023	- 0.023	0.84%

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Tessellation I-6.10.10. θ =36º

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	13.76	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	246.22	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	703,102	134,286	134,286	164,159	18,984	26,155	26,155	36,545
0.10	2.0	1,710,325	550,511	550,511	691,894	99,102	136,176	136,176	190,892
0.15	3.0	2,811,511	1,015,749	1,015,749	1,311,674	219,617	300,589	300,589	423,055
0.20	4.0	3,927,512	1,463,055	1,463,055	1,933,720	363,794	495,547	495,547	700,264
0.25	5.0	5,046,596	1,889,041	1,889,041	2,548,869	526,407	713,304	713,304	1,011,884
0.30	6.0	6,170,125	2,296,734	2,296,734	3,160,071	705,311	950,546	950,546	1,353,456
0.35	7.0	7,301,199	2,688,336	2,688,336	3,770,857	898,979	1,204,922	1,204,922	1,721,923

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	27.53	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	984.87	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	703,102	134,286	134,286	164,159	17,951	24,711	24,711	34,267
0.10	2.0	1,710,325	550,511	550,511	691,894	94,422	129,827	129,827	180,339
0.15	3.0	2,811,511	1,015,749	1,015,749	1,311,674	209,923	288,116	288,116	401,043
0.20	4.0	3,927,512	1,463,055	1,463,055	1,933,720	348,114	476,730	476,730	664,962
0.25	5.0	5,046,596	1,889,041	1,889,041	2,548,869	504,010	688,568	688,568	962,332
0.30	6.0	6,170,125	2,296,734	2,296,734	3,160,071	675,700	920,835	920,835	1,289,344
0.35	7.0	7,301,199	2,688,336	2,688,336	3,770,857	861,785	1,171,496	1,171,496	1,643,261

36º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	1.51%	0.67%	0.594	0.263	0.09%
2	3.23%	2.48%	0.578	0.443	0.48%
3	5.15%	4.55%	0.563	0.497	1.06%
4	7.17%	6.69%	0.550	0.513	1.75%
5	9.27%	8.87%	0.538	0.515	2.53%
6	11.44%	11.10%	0.528	0.512	3.37%
7	13.69%	13.39%	0.518	0.507	4.29%

36º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	1.51%	0.67%	0.594	0.263	0.09%
2	3.23%	2.48%	0.578	0.443	0.46%
3	5.15%	4.55%	0.563	0.497	1.01%
4	7.17%	6.69%	0.550	0.513	1.68%
5	9.27%	8.87%	0.538	0.515	2.42%
6	11.44%	11.10%	0.528	0.512	3.24%
7	13.69%	13.39%	0.518	0.507	4.13%

Tessellation I-6.10.10. θ =54º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	13.76	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	252.35	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	144,491	32,738	32,738	90,453	29,493	40,652	40,652	56,351
0.10	2.0	813,951	187,381	187,381	487,949	163,512	225,149	225,149	312,402
0.15	3.0	1,850,591	426,677	426,677	1,070,189	366,997	504,533	504,533	701,036
0.20	4.0	3,027,160	692,207	692,207	1,706,794	596,030	817,749	817,749	1,138,082
0.25	5.0	4,246,007	958,506	958,506	2,352,380	834,149	1,141,830	1,141,830	1,591,876
0.30	6.0	5,475,585	1,217,620	1,217,620	2,996,157	1,077,160	1,470,886	1,470,886	2,054,344
0.35	7.0	6,707,353	1,467,503	1,467,503	3,636,961	1,324,420	1,804,011	1,804,011	2,524,324
0.40	8.0	7,939,980	1,707,910	1,707,910	4,275,750	1,576,054	2,141,390	2,141,390	3,002,167
0.45	9.0	9,174,117	1,939,170	1,939,170	4,913,641	1,832,200	2,483,231	2,483,231	3,488,250

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	27.53	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,009.40	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	144,491	32,738	32,738	90,453	29,797	41,134	41,134	57,423
0.10	2.0	813,951	187,381	187,381	487,949	164,790	227,023	227,023	317,565
0.15	3.0	1,850,591	426,677	426,677	1,070,189	369,632	507,581	507,581	712,062
0.20	4.0	3,027,160	692,207	692,207	1,706,794	600,842	821,688	821,688	1,156,561
0.25	5.0	4,246,007	958,506	958,506	2,352,380	842,260	1,146,417	1,146,417	1,619,432
0.30	6.0	5,475,585	1,217,620	1,217,620	2,996,157	1,089,679	1,475,684	1,475,684	2,092,404
0.35	7.0	6,707,353	1,467,503	1,467,503	3,636,961	1,342,317	1,808,328	1,808,328	2,574,078
0.40	8.0	7,939,980	1,707,910	1,707,910	4,275,750	1,600,145	2,144,310	2,144,310	3,064,623
0.45	9.0	9,174,117	1,939,170	1,939,170	4,913,641	1,863,178	2,483,673	2,483,673	3,564,310

54º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.34%	0.40%	0.263	0.312	0.14%
2	1.89%	2.14%	0.279	0.317	0.80%
3	4.27%	4.68%	0.290	0.317	1.79%
4	6.98%	7.46%	0.295	0.315	2.90%
5	9.80%	10.29%	0.296	0.311	4.05%
6	12.66%	13.13%	0.295	0.306	5.22%
7	15.55%	15.97%	0.293	0.301	6.42%
8	18.45%	18.82%	0.290	0.296	7.63%
9	21.38%	21.69%	0.287	0.291	8.85%

54º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.34%	0.40%	0.263	0.312	0.14%
2	1.89%	2.14%	0.279	0.317	0.79%
3	4.27%	4.68%	0.290	0.317	1.77%
4	6.98%	7.46%	0.295	0.315	2.87%
5	9.80%	10.29%	0.296	0.311	4.01%
6	12.66%	13.13%	0.295	0.306	5.18%
7	15.55%	15.97%	0.293	0.301	6.36%
8	18.45%	18.82%	0.290	0.296	7.55%
9	21.38%	21.69%	0.287	0.291	8.77%

Tessellation I-6.10.10. θ =72º

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	13.76	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	289.82	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	86,566	-1,944	-1,944	34,814	19,567	26,919	26,919	37,663
0.10	2.0	530,072	5,897	5,897	216,921	116,959	160,511	160,511	225,026
0.15	3.0	1,295,612	54,499	54,499	539,854	279,462	382,031	382,031	537,077
0.20	4.0	2,228,966	142,710	142,710	943,190	473,980	644,672	644,672	909,255
0.25	5.0	3,233,484	252,575	252,575	1,385,739	683,479	924,203	924,203	1,308,203

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	27.53	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,159.29	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	86,566	-1,944	-1,944	34,814	19,498	26,830	26,830	37,234
0.10	2.0	530,072	5,897	5,897	216,921	116,540	160,164	160,164	222,489
0.15	3.0	1,295,612	54,499	54,499	539,854	278,187	381,572	381,572	530,767
0.20	4.0	2,228,966	142,710	142,710	943,190	470,989	644,398	644,398	897,761
0.25	5.0	3,233,484	252,575	252,575	1,385,739	677,695	924,531	924,531	1,290,261

72º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.22%	0.17%	- 0.041	- 0.031	0.09%
2	1.35%	1.04%	0.020	0.015	0.56%
3	3.28%	2.59%	0.073	0.058	1.35%
4	5.61%	4.50%	0.110	0.088	2.28%
5	8.10%	6.58%	0.132	0.108	3.27%

72º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.22%	0.17%	- 0.041	- 0.031	0.09%
2	1.35%	1.04%	0.020	0.015	0.56%
3	3.28%	2.59%	0.073	0.058	1.34%
4	5.61%	4.50%	0.110	0.088	2.27%
5	8.10%	6.58%	0.132	0.108	3.25%

J) MODARI-KHAN MADRASH

Tessellation ROS-I-6.10.10. θ_1 = 30º, θ_2 = 60º, type Star

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	13.76	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	391.37	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	664,920	291,415	291,415	379,836	73,845	100,999	100,999	139,633
0.10	2.0	2,414,641	775,390	775,390	1,298,458	356,456	485,996	485,996	673,390
0.15	3.0	4,424,677	1,163,523	1,163,523	2,294,654	732,517	994,452	994,452	1,382,240
0.20	4.0	6,477,497	1,512,790	1,512,790	3,298,646	1,134,652	1,533,050	1,533,050	2,138,808
0.25	5.0	8,534,347	1,844,816	1,844,816	4,305,991	1,547,924	2,081,201	2,081,201	2,915,497
0.30	6.0	10,591,660	2,163,830	2,163,830	5,318,284	1,969,825	2,635,571	2,635,571	3,708,313

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	27.53	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,565.47	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	664,920	291,415	291,415	379,836	72,414	99,356	99,356	137,055
0.10	2.0	2,414,641	775,390	775,390	1,298,458	351,661	481,764	481,764	665,282
0.15	3.0	4,424,677	1,163,523	1,163,523	2,294,654	724,132	989,974	989,974	1,369,178
0.20	4.0	6,477,497	1,512,790	1,512,790	3,298,646	1,121,437	1,529,592	1,529,592	2,119,319
0.25	5.0	8,534,347	1,844,816	1,844,816	4,305,991	1,528,316	2,079,616	2,079,616	2,887,145
0.30	6.0	10,591,660	2,163,830	2,163,830	5,318,284	1,942,443	2,636,919	2,636,919	3,668,620

30º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	1.12%	1.21%	0.557	0.603	0.35%
2	4.96%	5.05%	0.434	0.442	1.71%

30º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	1.12%	1.21%	0.557	0.603	0.35%
2	4.96%	5.05%	0.434	0.442	1.69%

3	9.75%	9.58%	0.368	0.362	3.50%
4	14.70%	14.19%	0.333	0.321	5.41%
5	19.69%	18.82%	0.311	0.298	7.36%
6	24.69%	23.49%	0.296	0.281	9.34%

3	9.75%	9.58%	0.368	0.362	3.47%
4	14.70%	14.19%	0.333	0.321	5.37%
5	19.69%	18.82%	0.311	0.298	7.31%
6	24.69%	23.49%	0.296	0.281	9.28%

Tessellation ROS-I-6.10.10. θ_1 = 45º, θ_2 = 60º, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	13.76	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	387.02	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	353,375	228,298	228,298	251,444	43,436	59,896	59,896	83,985
0.10	2.0	1,580,821	819,393	819,393	1,027,582	243,827	335,630	335,630	472,189
0.15	3.0	3,270,183	1,358,848	1,358,848	1,978,458	569,920	781,573	781,573	1,102,788
0.20	4.0	5,176,249	1,789,635	1,789,635	2,985,251	961,779	1,312,689	1,312,689	1,857,510
0.25	5.0	7,178,856	2,147,721	2,147,721	4,014,431	1,385,514	1,881,280	1,881,280	2,670,344
0.30	6.0	9,219,993	2,463,694	2,463,694	5,053,217	1,825,659	2,465,892	2,465,892	3,512,077

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	27.53	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,548.09	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	353,375	228,298	228,298	251,444	42,148	58,062	58,062	80,658
0.10	2.0	1,580,821	819,393	819,393	1,027,582	239,424	329,557	329,557	458,560
0.15	3.0	3,270,183	1,358,848	1,358,848	1,978,458	563,707	774,530	774,530	1,079,225
0.20	4.0	5,176,249	1,789,635	1,789,635	2,985,251	954,479	1,308,431	1,308,431	1,825,646
0.25	5.0	7,178,856	2,147,721	2,147,721	4,014,431	1,376,424	1,882,134	1,882,134	2,629,996
0.30	6.0	9,219,993	2,463,694	2,463,694	5,053,217	1,813,385	2,473,322	2,473,322	3,461,700

45º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.37%	0.50%	0.660	0.889	0.21%
2	2.36%	2.90%	0.579	0.713	1.18%
3	5.94%	6.81%	0.499	0.572	2.75%
4	10.43%	11.40%	0.436	0.476	4.64%
5	15.33%	16.24%	0.389	0.412	6.66%
6	20.39%	21.17%	0.354	0.368	8.75%

45º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.37%	0.50%	0.660	0.889	0.20%
2	2.36%	2.90%	0.579	0.713	1.16%
3	5.94%	6.81%	0.499	0.572	2.72%
4	10.43%	11.40%	0.436	0.476	4.60%
5	15.33%	16.24%	0.389	0.412	6.62%
6	20.39%	21.17%	0.354	0.368	8.71%

Tessellation ROS-I-6.10.10. θ_1 = 60º, θ_2 = 60º, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	13.76	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	401.10	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	103,310	59,000	59,000	71,947	18,927	25,870	25,870	36,634
0.10	2.0	651,812	337,267	337,267	434,936	121,559	165,937	165,937	236,000
0.15	3.0	1,658,993	757,130	757,130	1,058,209	319,322	434,696	434,696	620,919
0.20	4.0	2,975,507	1,192,052	1,192,052	1,826,316	592,196	803,096	803,096	1,151,768
0.25	5.0	4,480,346	1,586,158	1,586,158	2,668,111	918,547	1,240,215	1,240,215	1,785,608

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	27.53	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0

Bars [m]	1,604.38	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	103,310	59,000	59,000	71,947	18,295	25,094	25,094	35,036
0.10	2.0	651,812	337,267	337,267	434,936	118,545	162,504	162,504	227,361
0.15	3.0	1,658,993	757,130	757,130	1,058,209	313,474	429,158	429,158	601,692
0.20	4.0	2,975,507	1,192,052	1,192,052	1,826,316	583,668	797,603	797,603	1,120,424
0.25	5.0	4,480,346	1,586,158	1,586,158	2,668,111	907,238	1,237,148	1,237,148	1,741,124

60º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.14%	0.18%	0.596	0.786	0.09%
2	0.99%	1.25%	0.563	0.712	0.59%
3	2.84%	3.43%	0.520	0.628	1.54%
4	5.59%	6.50%	0.474	0.551	2.85%
5	8.99%	10.15%	0.432	0.487	4.41%

60º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.14%	0.18%	0.596	0.786	0.09%
2	0.99%	1.25%	0.563	0.712	0.57%
3	2.84%	3.43%	0.520	0.628	1.51%
4	5.59%	6.50%	0.474	0.551	2.81%
5	8.99%	10.15%	0.432	0.487	4.36%

K) SULTAN BAYEZID II

Tessellation ROS-3.4.3.12_3.12.12. θ =60º, type Bayezid

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	285.29	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	13,891	9,299	9,299	13,891	1,860	1,817	1,817	1,860
0.050	1.0	94,234	60,194	60,194	94,234	14,405	14,066	14,066	14,405
0.075	1.5	259,216	156,183	156,183	259,216	46,168	45,051	45,051	46,168
0.100	2.0	498,653	283,237	283,237	498,653	102,334	99,764	99,764	102,334
0.125	2.5	797,888	428,625	428,625	797,888	184,732	179,883	179,883	184,732
0.150	3.0	1,144,534	583,579	583,579	1,144,534	292,636	284,571	284,571	292,636
0.175	3.5	1,528,931	742,137	742,137	1,528,931	423,782	411,480	411,480	423,782
0.200	4.0	1,943,544	900,207	900,207	1,943,544	575,226	557,606	557,606	575,226
0.225	4.5	2,382,413	1,055,049	1,055,049	2,382,413	743,917	719,850	719,850	743,917
0.250	5.0	2,840,780	1,204,925	1,204,925	2,840,780	927,009	895,328	895,328	927,009

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,141.16	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	13,891	9,299	9,299	13,891	1,783	1,762	1,762	1,783
0.050	1.0	94,234	60,194	60,194	94,234	13,826	13,660	13,660	13,826
0.075	1.5	259,216	156,183	156,183	259,216	44,413	43,867	43,867	44,413
0.100	2.0	498,653	283,237	283,237	498,653	98,699	97,445	97,445	98,699
0.125	2.5	797,888	428,625	428,625	797,888	178,638	176,275	176,275	178,638
0.150	3.0	1,144,534	583,579	583,579	1,144,534	283,667	279,744	279,744	283,667
0.175	3.5	1,528,931	742,137	742,137	1,528,931	411,655	405,682	405,682	411,655
0.200	4.0	1,943,544	900,207	900,207	1,943,544	559,731	551,190	551,190	559,731
0.225	4.5	2,382,413	1,055,049	1,055,049	2,382,413	724,862	713,217	713,217	724,862
0.250	5.0	2,840,780	1,204,925	1,204,925	2,840,780	904,196	888,893	888,893	904,196

60º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.03%	0.03%	0.669	0.669	0.01%
1.0	0.20%	0.20%	0.639	0.639	0.05%
1.5	0.58%	0.58%	0.603	0.603	0.16%
2.0	1.18%	1.18%	0.568	0.568	0.35%
2.5	1.99%	1.99%	0.537	0.537	0.64%
3.0	2.96%	2.96%	0.510	0.510	1.01%
3.5	4.09%	4.09%	0.485	0.485	1.46%
4.0	5.34%	5.34%	0.463	0.463	1.98%
4.5	6.70%	6.70%	0.443	0.443	2.56%
5.0	8.15%	8.15%	0.424	0.424	3.19%

60º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.03%	0.03%	0.669	0.669	0.01%
1.0	0.20%	0.20%	0.639	0.639	0.05%
1.5	0.58%	0.58%	0.603	0.603	0.15%
2.0	1.18%	1.18%	0.568	0.568	0.34%
2.5	1.99%	1.99%	0.537	0.537	0.62%
3.0	2.96%	2.96%	0.510	0.510	0.99%
3.5	4.09%	4.09%	0.485	0.485	1.43%
4.0	5.34%	5.34%	0.463	0.463	1.94%
4.5	6.70%	6.70%	0.443	0.443	2.52%
5.0	8.15%	8.15%	0.424	0.424	3.14%

Tessellation ROS-3.4.3.12_3.12.12. θ =67.5º, type Bayezid

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	281.59	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	12,758	7,895	7,895	12,758	1,707	1,666	1,666	1,707
0.050	1.0	89,781	53,694	53,694	89,781	13,256	12,932	12,932	13,256
0.075	1.5	255,321	145,977	145,977	255,321	42,660	41,591	41,591	42,660
0.100	2.0	502,403	273,652	273,652	502,403	95,013	92,547	92,547	95,013
0.125	2.5	814,571	422,520	422,520	814,571	172,376	167,714	167,714	172,376
0.150	3.0	1,176,105	581,166	581,166	1,176,105	274,387	266,616	266,616	274,387
0.175	3.5	1,574,535	741,593	741,593	1,574,535	399,126	387,250	387,250	399,126
0.200	4.0	2,000,595	898,662	898,662	2,000,595	543,909	526,867	526,867	543,909
0.225	4.5	2,447,575	1,049,373	1,049,373	2,447,575	705,851	682,536	682,536	705,851

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,126.35	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	12,758	7,895	7,895	12,758	1,640	1,619	1,619	1,640
0.050	1.0	89,781	53,694	53,694	89,781	12,742	12,583	12,583	12,742
0.075	1.5	255,321	145,977	145,977	255,321	41,066	40,542	40,542	41,066
0.100	2.0	502,403	273,652	273,652	502,403	91,624	90,418	90,418	91,624
0.125	2.5	814,571	422,520	422,520	814,571	166,539	164,263	164,263	166,539
0.150	3.0	1,176,105	581,166	581,166	1,176,105	265,578	261,789	261,789	265,578
0.175	3.5	1,574,535	741,593	741,593	1,574,535	386,955	381,175	381,175	386,955
0.200	4.0	2,000,595	898,662	898,662	2,000,595	528,090	519,811	519,811	528,090
0.225	4.5	2,447,575	1,049,373	1,049,373	2,447,575	686,163	674,854	674,854	686,163

67,5º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.03%	0.03%	0.619	0.619	0.01%
1.0	0.20%	0.20%	0.598	0.598	0.05%
1.5	0.60%	0.60%	0.572	0.572	0.15%
2.0	1.24%	1.24%	0.545	0.545	0.33%
2.5	2.08%	2.08%	0.519	0.519	0.60%
3.0	3.11%	3.11%	0.494	0.494	0.95%
3.5	4.29%	4.29%	0.471	0.471	1.38%
4.0	5.59%	5.59%	0.449	0.449	1.87%

67,5º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.03%	0.03%	0.619	0.619	0.01%
1.0	0.20%	0.20%	0.598	0.598	0.04%
1.5	0.60%	0.60%	0.572	0.572	0.14%
2.0	1.24%	1.24%	0.545	0.545	0.32%
2.5	2.08%	2.08%	0.519	0.519	0.58%
3.0	3.11%	3.11%	0.494	0.494	0.92%
3.5	4.29%	4.29%	0.471	0.471	1.34%
4.0	5.59%	5.59%	0.449	0.449	1.83%

4.5	6.99%	6.99%	0.429	0.429	2.43%	4.5	6.99%	6.99%	0.429	0.429	2.38%

Tessellation ROS-3.4.3.12_3.12.12. θ =75º, type Bayezid

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	286.19	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	12,802	6,352	6,352	12,802	1,548	1,508	1,508	1,548
0.050	1.0	91,705	45,009	45,009	91,705	12,031	11,718	11,718	12,031
0.075	1.5	264,638	127,470	127,470	264,638	38,793	37,763	37,763	38,793
0.100	2.0	524,282	245,937	245,937	524,282	86,644	84,274	84,274	86,644
0.125	2.5	850,223	385,869	385,869	850,223	157,740	153,270	153,270	157,740
0.150	3.0	1,223,122	534,371	534,371	1,223,122	252,065	244,628	244,628	252,065
0.175	3.5	1,628,746	682,603	682,603	1,628,746	368,138	356,783	356,783	368,138

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,144.77	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	12,802	6,352	6,352	12,802	1,499	1,480	1,480	1,499
0.050	1.0	91,705	45,009	45,009	91,705	11,658	11,504	11,504	11,658
0.075	1.5	264,638	127,470	127,470	264,638	37,615	37,107	37,107	37,615
0.100	2.0	524,282	245,937	245,937	524,282	84,085	82,919	82,919	84,085
0.125	2.5	850,223	385,869	385,869	850,223	153,231	151,036	151,036	153,231
0.150	3.0	1,223,122	534,371	534,371	1,223,122	245,109	241,464	241,464	245,109
0.175	3.5	1,628,746	682,603	682,603	1,628,746	358,333	352,779	352,779	358,333

75º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.03%	0.03%	0.496	0.496	0.01%
1.0	0.24%	0.24%	0.491	0.491	0.04%
1.5	0.71%	0.71%	0.482	0.482	0.13%
2.0	1.43%	1.43%	0.469	0.469	0.30%
2.5	2.36%	2.36%	0.454	0.454	0.54%
3.0	3.46%	3.46%	0.437	0.437	0.87%
3.5	4.70%	4.70%	0.419	0.419	1.27%

75º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.03%	0.03%	0.496	0.496	0.01%
1.0	0.24%	0.24%	0.491	0.491	0.04%
1.5	0.71%	0.71%	0.482	0.482	0.13%
2.0	1.43%	1.43%	0.469	0.469	0.29%
2.5	2.36%	2.36%	0.454	0.454	0.53%
3.0	3.46%	3.46%	0.437	0.437	0.85%
3.5	4.70%	4.70%	0.419	0.419	1.24%

L) BEN YUSUF MADRASA

Tessellation ROS-3.4.3.12_3.12.12. θ =45º, type Arrow

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	241.78	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	9,327	7,116	7,116	9,327	1,765	1,727	1,727	1,765
0.050	1.0	68,162	51,026	51,026	68,162	13,635	13,335	13,335	13,635
0.075	1.5	201,743	146,685	146,685	201,743	43,545	42,556	42,556	43,545

0.100	2.0	409,954	287,431	287,431	409,954	96,075	93,807	93,807	96,075
0.125	2.5	680,354	457,917	457,917	680,354	172,520	168,258	168,258	172,520
0.150	3.0	998,724	643,760	643,760	998,724	271,776	264,718	264,718	271,776
0.175	3.5	1,353,244	834,675	834,675	1,353,244	391,411	380,695	380,695	391,411
0.200	4.0	1,735,070	1,024,230	1,024,230	1,735,070	528,524	513,252	513,252	528,524

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	967.11	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	9,327	7,116	7,116	9,327	1,710	1,692	1,692	1,710
0.050	1.0	68,162	51,026	51,026	68,162	13,211	13,069	13,069	13,211
0.075	1.5	201,743	146,685	146,685	201,743	42,180	41,712	41,712	42,180
0.100	2.0	409,954	287,431	287,431	409,954	93,030	91,957	91,957	93,030
0.125	2.5	680,354	457,917	457,917	680,354	166,978	164,965	164,965	166,978
0.150	3.0	998,724	643,760	643,760	998,724	262,911	259,580	259,580	262,911
0.175	3.5	1,353,244	834,675	834,675	1,353,244	378,431	373,381	373,381	378,431
0.200	4.0	1,735,070	1,024,230	1,024,230	1,735,070	510,698	503,510	503,510	510,698

45º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.763	0.763	0.01%
1.0	0.10%	0.10%	0.749	0.749	0.05%
1.5	0.33%	0.33%	0.727	0.727	0.15%
2.0	0.73%	0.73%	0.701	0.701	0.33%
2.5	1.30%	1.30%	0.673	0.673	0.60%
3.0	2.04%	2.04%	0.645	0.645	0.94%
3.5	2.93%	2.93%	0.617	0.617	1.35%
4.0	3.96%	3.96%	0.590	0.590	1.82%

45º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.763	0.763	0.01%
1.0	0.10%	0.10%	0.749	0.749	0.05%
1.5	0.33%	0.33%	0.727	0.727	0.15%
2.0	0.73%	0.73%	0.701	0.701	0.32%
2.5	1.30%	1.30%	0.673	0.673	0.58%
3.0	2.04%	2.04%	0.645	0.645	0.91%
3.5	2.93%	2.93%	0.617	0.617	1.32%
4.0	3.96%	3.96%	0.590	0.590	1.77%

Tessellation ROS-3.4.3.12_3.12.12. θ =60º, type Arrow

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	272.65	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	5,557	2,766	2,766	5,557	1,642	1,604	1,604	1,642
0.050	1.0	42,070	20,595	20,595	42,070	12,723	12,414	12,414	12,723
0.075	1.5	130,482	62,266	62,266	130,482	40,790	39,769	39,769	40,790
0.100	2.0	278,315	128,634	128,634	278,315	90,407	88,039	88,039	90,407
0.125	2.5	482,748	215,225	215,225	482,748	163,086	158,591	158,591	163,086
0.150	3.0	735,773	315,723	315,723	735,773	258,000	250,477	250,477	258,000
0.175	3.5	1,028,159	424,239	424,239	1,028,159	372,925	361,394	361,394	372,925
0.200	4.0	1,351,485	536,184	536,184	1,351,485	505,069	488,493	488,493	505,069

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,012.42	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	5,557	2,766	2,766	5,557	1,621	1,602	1,602	1,621

0.050	1.0	42,070	20,595	20,595	42,070	12,555	12,407	12,407	12,555
0.075	1.5	130,482	62,266	62,266	130,482	40,255	39,762	39,762	40,255
0.100	2.0	278,315	128,634	128,634	278,315	89,212	88,072	88,072	89,212
0.125	2.5	482,748	215,225	215,225	482,748	160,902	158,739	158,739	160,902
0.150	3.0	735,773	315,723	315,723	735,773	254,465	250,851	250,851	254,465
0.175	3.5	1,028,159	424,239	424,239	1,028,159	367,655	362,124	362,124	367,655
0.200	4.0	1,351,485	536,184	536,184	1,351,485	497,660	489,722	489,722	497,660

60º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.498	0.498	0.01%
1.0	0.11%	0.11%	0.490	0.490	0.04%
1.5	0.35%	0.35%	0.477	0.477	0.14%
2.0	0.77%	0.77%	0.462	0.462	0.31%
2.5	1.35%	1.35%	0.446	0.446	0.56%
3.0	2.10%	2.10%	0.429	0.429	0.89%
3.5	2.99%	2.99%	0.413	0.413	1.28%
4.0	3.98%	3.98%	0.397	0.397	1.74%

60º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.498	0.498	0.01%
1.0	0.11%	0.11%	0.490	0.490	0.04%
1.5	0.35%	0.35%	0.477	0.477	0.14%
2.0	0.77%	0.77%	0.462	0.462	0.31%
2.5	1.35%	1.35%	0.446	0.446	0.56%
3.0	2.10%	2.10%	0.429	0.429	0.88%
3.5	2.99%	2.99%	0.413	0.413	1.28%
4.0	3.98%	3.98%	0.397	0.397	1.73%

Tessellation ROS-3.4.3.12_3.12.12. θ =75º, Type Arrow

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	277.72	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	4,768	882	882	4,768	1,464	1,427	1,427	1,464
0.050	1.0	35,986	6,936	6,936	35,986	11,330	11,030	11,030	11,330
0.075	1.5	111,170	22,542	22,542	111,170	36,270	35,276	35,276	36,270
0.100	2.0	236,191	50,218	50,218	236,191	80,254	77,952	77,952	80,254
0.125	2.5	408,320	90,062	90,062	408,320	144,562	140,186	140,186	144,562
0.150	3.0	620,779	140,222	140,222	620,779	228,448	221,117	221,117	228,448
0.175	3.5	866,005	197,883	197,883	866,005	329,998	318,744	318,744	329,998
0.200	4.0	1,137,236	260,140	260,140	1,137,236	446,843	430,632	430,632	446,843

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,110.88	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	4,768	882	882	4,768	1,445	1,426	1,426	1,445
0.050	1.0	35,986	6,936	6,936	35,986	11,185	11,038	11,038	11,185
0.075	1.5	111,170	22,542	22,542	111,170	35,828	35,339	35,339	35,828
0.100	2.0	236,191	50,218	50,218	236,191	79,325	78,194	78,194	79,325
0.125	2.5	408,320	90,062	90,062	408,320	142,956	140,811	140,811	142,956
0.150	3.0	620,779	140,222	140,222	620,779	225,970	222,384	222,384	225,970
0.175	3.5	866,005	197,883	197,883	866,005	326,434	320,939	320,939	326,434
0.200	4.0	1,137,236	260,140	260,140	1,137,236	441,939	434,041	434,041	441,939

75º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.185	0.185	0.01%
1.0	0.12%	0.12%	0.193	0.193	0.04%
1.5	0.37%	0.37%	0.203	0.203	0.13%
2.0	0.79%	0.79%	0.213	0.213	0.28%
2.5	1.36%	1.36%	0.221	0.221	0.50%
3.0	2.06%	2.06%	0.226	0.226	0.79%
3.5	2.87%	2.87%	0.229	0.229	1.14%
4.0	3.77%	3.77%	0.229	0.229	1.54%

75º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.185	0.185	0.01%
1.0	0.12%	0.12%	0.193	0.193	0.04%
1.5	0.37%	0.37%	0.203	0.203	0.12%
2.0	0.79%	0.79%	0.213	0.213	0.28%
2.5	1.36%	1.36%	0.221	0.221	0.50%
3.0	2.06%	2.06%	0.226	0.226	0.78%
3.5	2.87%	2.87%	0.229	0.229	1.13%
4.0	3.77%	3.77%	0.229	0.229	1.53%

M) MOSQUE OF AL-NASIR MUHAMMAD MINBAR

Tessellation ROS-I-6.12.8.12. θ =75º, L =20%, type Arrow

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	461.54	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	36,242	27,535	27,535	36,242	3,669	3,586	3,586	3,669
0.050	1.0	236,686	171,016	171,016	236,686	27,744	27,101	27,101	27,744
0.075	1.5	617,938	415,077	415,077	617,938	86,123	84,047	84,047	86,123
0.100	2.0	1,125,678	694,188	694,188	1,125,678	184,482	179,812	179,812	184,482
0.125	2.5	1,713,204	965,555	965,555	1,713,204	322,495	313,869	313,869	322,495
0.150	3.0	2,352,602	1,212,494	1,212,494	2,352,602	496,716	482,620	482,620	496,716

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,847.40	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	36,374	27,672	27,672	36,374	3,555	3,513	3,513	3,555
0.050	1.0	237,269	171,639	171,639	237,269	26,897	26,575	26,575	26,897
0.075	1.5	618,786	416,051	416,051	618,786	83,531	82,495	82,495	83,531
0.100	2.0	1,126,355	695,157	695,157	1,126,355	179,021	176,699	176,699	179,021
0.125	2.5	1,713,389	966,312	966,312	1,713,389	313,125	308,851	308,851	313,125
0.150	3.0	2,352,126	1,212,997	1,212,997	2,352,126	482,589	475,626	475,626	482,589

20% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.760	0.760	0.01%
1.0	0.40%	0.40%	0.723	0.723	0.10%
1.5	1.19%	1.19%	0.672	0.672	0.30%
2.0	2.44%	2.44%	0.617	0.617	0.64%
2.5	4.09%	4.09%	0.564	0.564	1.11%
3.0	6.05%	6.05%	0.515	0.515	1.71%

20% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.761	0.761	0.01%
1.0	0.40%	0.40%	0.723	0.723	0.09%
1.5	1.19%	1.19%	0.672	0.672	0.29%
2.0	2.44%	2.44%	0.617	0.617	0.62%
2.5	4.09%	4.09%	0.564	0.564	1.09%
3.0	6.04%	6.04%	0.516	0.516	1.68%

Tessellation ROS-I-6.12.8.12. θ =75º, L =35%, type Arrow

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	473.47	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]

0.025	0.5	35,256	27,383	27,383	35,256	3,267	3,188	3,188	3,267
0.050	1.0	230,591	171,000	171,000	230,591	24,879	24,267	24,267	24,879
0.075	1.5	602,791	417,781	417,781	602,791	77,949	75,970	75,970	77,949
0.100	2.0	1,099,055	703,330	703,330	1,099,055	168,574	164,108	164,108	168,574
0.125	2.5	1,673,820	984,342	984,342	1,673,820	297,238	288,960	288,960	297,238
0.150	3.0	2,299,962	1,243,114	1,243,114	2,299,962	461,161	447,589	447,589	461,161

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,895.14	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	35,396	27,524	27,524	35,396	3,176	3,137	3,137	3,176
0.050	1.0	231,235	171,645	171,645	231,235	24,193	23,889	23,889	24,193
0.075	1.5	603,819	418,797	418,797	603,819	75,820	74,838	74,838	75,820
0.100	2.0	1,100,089	704,334	704,334	1,100,089	164,032	161,820	161,820	164,032
0.125	2.5	1,674,588	985,082	985,082	1,674,588	289,377	285,284	285,284	289,377
0.150	3.0	2,300,333	1,243,508	1,243,508	2,300,333	449,246	442,547	442,547	449,246

35% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.777	0.777	0.01%
1.0	0.36%	0.36%	0.742	0.742	0.09%
1.5	1.10%	1.10%	0.693	0.693	0.27%
2.0	2.27%	2.27%	0.640	0.640	0.58%
2.5	3.83%	3.83%	0.588	0.588	1.03%
3.0	5.70%	5.70%	0.540	0.540	1.59%

35% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.778	0.778	0.01%
1.0	0.36%	0.36%	0.742	0.742	0.08%
1.5	1.10%	1.10%	0.694	0.694	0.26%
2.0	2.27%	2.27%	0.640	0.640	0.57%
2.5	3.83%	3.83%	0.588	0.588	1.01%
3.0	5.70%	5.70%	0.541	0.541	1.56%

Tessellation ROS-I-6.12.8.12. θ =75º, L =50%, type Arrow

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	485.64	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	35,344	27,988	27,988	35,344	3,055	2,978	2,978	3,055
0.050	1.0	231,399	175,413	175,413	231,399	23,391	22,794	22,794	23,391
0.075	1.5	605,692	430,564	430,564	605,692	73,829	71,900	71,900	73,829
0.100	2.0	1,105,991	728,350	728,350	1,105,991	160,918	156,569	156,569	160,918
0.125	2.5	1,687,037	1,024,021	1,024,021	1,687,037	285,773	277,711	277,711	285,773

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,943.83	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	35,477	28,119	28,119	35,477	2,969	2,931	2,931	2,969
0.050	1.0	232,004	175,998	175,998	232,004	22,745	22,448	22,448	22,745
0.075	1.5	606,627	431,433	431,433	606,627	71,829	70,869	70,869	71,829
0.100	2.0	1,106,878	729,098	729,098	1,106,878	156,667	154,506	154,506	156,667
0.125	2.5	1,687,619	1,024,383	1,024,383	1,687,619	278,453	274,452	274,452	278,453

50% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.792	0.792	0.01%
1.0	0.34%	0.34%	0.758	0.758	0.08%
1.5	1.05%	1.05%	0.711	0.711	0.25%
2.0	2.19%	2.19%	0.659	0.659	0.56%
2.5	3.73%	3.73%	0.607	0.607	0.99%

50% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.793	0.793	0.01%
1.0	0.34%	0.34%	0.759	0.759	0.08%
1.5	1.05%	1.05%	0.711	0.711	0.25%
2.0	2.19%	2.19%	0.659	0.659	0.54%
2.5	3.73%	3.73%	0.607	0.607	0.97%

N) MOSQUE OF AL-NASIR MUHAMMAD

Tessellation ROS-3.12.12. θ =55º, type Arrow

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	422.98	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	15,414	4,423	4,423	5,138	1,360	2,323	2,323	4,090
0.050	1.0	114,605	32,140	32,140	38,202	10,325	17,631	17,631	31,072
0.075	1.5	346,553	93,903	93,903	115,518	32,161	54,892	54,892	96,867
0.100	2.0	718,573	186,762	186,762	239,524	68,954	117,611	117,611	207,886
0.125	2.5	1,211,945	301,057	301,057	403,982	120,279	204,966	204,966	362,961
0.150	3.0	1,799,735	426,914	426,914	599,912	184,388	313,846	313,846	556,858
0.175	3.5	2,456,958	557,003	557,003	818,986	259,147	440,474	440,474	783,102
0.200	4.0	3,163,914	686,744	686,744	1,054,638	342,547	581,290	581,290	1,035,534
0.225	4.5	3,906,173	813,602	813,602	1,302,058	432,896	733,287	733,287	1,308,924
0.250	5.0	4,673,497	936,342	936,342	1,557,832	528,839	894,060	894,060	1,599,073

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,691.92	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	15,414	4,423	4,423	5,138	1,325	2,280	2,280	3,981
0.050	1.0	114,605	32,140	32,140	38,202	10,069	17,316	17,316	30,252
0.075	1.5	346,553	93,903	93,903	115,518	31,393	53,976	53,976	94,356
0.100	2.0	718,573	186,762	186,762	239,524	67,375	115,806	115,806	202,603
0.125	2.5	1,211,945	301,057	301,057	403,982	117,639	202,113	202,113	353,913
0.150	3.0	1,799,735	426,914	426,914	599,912	180,493	309,927	309,927	543,214
0.175	3.5	2,456,958	557,003	557,003	818,986	253,845	435,588	435,588	764,200
0.200	4.0	3,163,914	686,744	686,744	1,054,638	335,709	575,620	575,620	1,010,853
0.225	4.5	3,906,173	813,602	813,602	1,302,058	424,403	727,073	727,073	1,278,048
0.250	5.0	4,673,497	936,342	936,342	1,557,832	518,573	887,575	887,575	1,561,663

55º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.497	0.497	0.01%
1.0	0.18%	0.18%	0.486	0.486	0.06%
1.5	0.55%	0.55%	0.469	0.469	0.19%
2.0	1.16%	1.16%	0.450	0.450	0.42%
2.5	2.00%	2.00%	0.430	0.430	0.72%
3.0	3.02%	3.02%	0.411	0.411	1.11%
3.5	4.20%	4.20%	0.393	0.393	1.56%
4.0	5.49%	5.49%	0.376	0.376	2.06%
4.5	6.86%	6.86%	0.361	0.361	2.60%
5.0	8.31%	8.31%	0.347	0.347	3.17%

55º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.497	0.497	0.01%
1.0	0.18%	0.18%	0.486	0.486	0.06%
1.5	0.55%	0.55%	0.469	0.469	0.19%
2.0	1.16%	1.16%	0.450	0.450	0.41%
2.5	2.00%	2.00%	0.430	0.430	0.71%
3.0	3.02%	3.02%	0.411	0.411	1.09%
3.5	4.20%	4.20%	0.393	0.393	1.53%
4.0	5.49%	5.49%	0.376	0.376	2.03%
4.5	6.86%	6.86%	0.361	0.361	2.56%
5.0	8.31%	8.31%	0.347	0.347	3.13%

Tessellation ROS-3.12.12. θ =65º, type Arrow

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	445.99	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	10,286	1,808	1,808	3,429	1,232	2,100	2,100	3,704
0.050	1.0	77,928	13,581	13,581	25,976	9,360	15,955	15,955	28,166
0.075	1.5	241,837	41,555	41,555	80,612	29,197	49,750	49,750	87,957
0.100	2.0	515,843	86,960	86,960	171,948	62,717	106,796	106,796	189,170
0.125	2.5	894,070	147,262	147,262	298,023	109,640	186,523	186,523	331,095
0.150	3.0	1,360,605	218,289	218,289	453,535	168,474	286,267	286,267	509,294
0.175	3.5	1,897,195	295,862	295,862	632,398	237,354	402,712	402,712	718,106
0.200	4.0	2,487,326	376,589	376,589	829,109	314,496	532,686	532,686	952,057
0.225	4.5	3,117,610	458,033	458,033	1,039,203	398,373	673,468	673,468	1,206,421
0.250	5.0	3,777,788	538,591	538,591	1,259,263	487,745	822,849	822,849	1,477,347

Lx [m]	20.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,783.94	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	10,286	1,808	1,808	3,429	1,212	2,083	2,083	3,639
0.050	1.0	77,928	13,581	13,581	25,976	9,212	15,829	15,829	27,676
0.075	1.5	241,837	41,555	41,555	80,612	28,749	49,391	49,391	86,418
0.100	2.0	515,843	86,960	86,960	171,948	61,784	106,112	106,112	185,833
0.125	2.5	894,070	147,262	147,262	298,023	108,053	185,495	185,495	325,192
0.150	3.0	1,360,605	218,289	218,289	453,535	166,088	284,957	284,957	500,104
0.175	3.5	1,897,195	295,862	295,862	632,398	234,037	401,251	401,251	704,985
0.200	4.0	2,487,326	376,589	376,589	829,109	310,120	531,257	531,257	934,438
0.225	4.5	3,117,610	458,033	458,033	1,039,203	392,809	672,294	672,294	1,183,809
0.250	5.0	3,777,788	538,591	538,591	1,259,263	480,861	822,179	822,179	1,449,302

65º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.304	0.304	0.01%
1.0	0.14%	0.14%	0.302	0.302	0.06%
1.5	0.45%	0.45%	0.298	0.298	0.18%
2.0	0.95%	0.95%	0.292	0.292	0.38%
2.5	1.66%	1.66%	0.285	0.285	0.66%
3.0	2.54%	2.54%	0.278	0.278	1.01%
3.5	3.55%	3.55%	0.270	0.270	1.43%
4.0	4.68%	4.68%	0.262	0.262	1.89%
4.5	5.89%	5.89%	0.254	0.254	2.39%
5.0	7.17%	7.17%	0.247	0.247	2.92%

65º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.304	0.304	0.01%
1.0	0.14%	0.14%	0.302	0.302	0.06%
1.5	0.45%	0.45%	0.298	0.298	0.17%
2.0	0.95%	0.95%	0.292	0.292	0.37%
2.5	1.66%	1.66%	0.285	0.285	0.65%
3.0	2.54%	2.54%	0.278	0.278	1.00%
3.5	3.55%	3.55%	0.270	0.270	1.41%
4.0	4.68%	4.68%	0.262	0.262	1.87%
4.5	5.89%	5.89%	0.254	0.254	2.37%
5.0	7.17%	7.17%	0.247	0.247	2.90%

Tessellation ROS-3.12.12. θ =75º, type Arrow

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	483.89	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]

0.025	0.5	8,833	1,007	1,007	2,944	1,209	2,059	2,059	3,628
0.050	1.0	66,829	7,771	7,771	22,276	9,095	15,482	15,482	27,321
0.075	1.5	207,085	24,654	24,654	69,028	27,983	47,618	47,618	84,205
0.100	2.0	441,261	53,532	53,532	147,087	59,277	100,805	100,805	178,702
0.125	2.5	764,578	93,669	93,669	254,859	102,376	173,933	173,933	309,169
0.150	3.0	1,164,059	142,585	142,585	388,020	155,833	264,415	264,415	471,293
0.175	3.5	1,624,825	197,211	197,211	541,608	218,070	369,432	369,432	660,260
0.200	4.0	2,133,362	254,720	254,720	711,121	287,673	486,445	486,445	871,696
0.225	4.5	2,678,618	312,906	312,906	892,873	363,461	613,330	613,330	1,101,908
0.250	5.0	3,252,018	370,227	370,227	1,084,006	444,464	748,344	748,344	1,347,872

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,935.57	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	8,833	1,007	1,007	2,944	1,195	2,053	2,053	3,586
0.050	1.0	66,829	7,771	7,771	22,276	8,994	15,444	15,444	26,999
0.075	1.5	207,085	24,654	24,654	69,028	27,688	47,536	47,536	83,185
0.100	2.0	441,261	53,532	53,532	147,087	58,679	100,713	100,713	176,456
0.125	2.5	764,578	93,669	93,669	254,859	101,376	173,915	173,915	305,110
0.150	3.0	1,164,059	142,585	142,585	388,020	154,329	264,597	264,597	464,818
0.175	3.5	1,624,825	197,211	197,211	541,608	215,954	369,969	369,969	650,782
0.200	4.0	2,133,362	254,720	254,720	711,121	284,823	487,521	487,521	858,657
0.225	4.5	2,678,618	312,906	312,906	892,873	359,744	615,146	615,146	1,084,792
0.250	5.0	3,252,018	370,227	370,227	1,084,006	439,739	751,125	751,125	1,326,196

75º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.197	0.197	0.01%
1.0	0.13%	0.13%	0.201	0.201	0.05%
1.5	0.40%	0.40%	0.206	0.206	0.17%
2.0	0.85%	0.85%	0.210	0.210	0.36%
2.5	1.48%	1.48%	0.212	0.212	0.62%
3.0	2.25%	2.25%	0.212	0.212	0.94%
3.5	3.14%	3.14%	0.210	0.210	1.31%
4.0	4.13%	4.13%	0.207	0.207	1.73%
4.5	5.19%	5.19%	0.202	0.202	2.18%
5.0	6.31%	6.31%	0.197	0.197	2.66%

75º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.197	0.197	0.01%
1.0	0.13%	0.13%	0.201	0.201	0.05%
1.5	0.40%	0.40%	0.206	0.206	0.17%
2.0	0.85%	0.85%	0.210	0.210	0.35%
2.5	1.48%	1.48%	0.212	0.212	0.61%
3.0	2.25%	2.25%	0.212	0.212	0.93%
3.5	3.14%	3.14%	0.210	0.210	1.30%
4.0	4.13%	4.13%	0.207	0.207	1.72%
4.5	5.19%	5.19%	0.202	0.202	2.17%
5.0	6.31%	6.31%	0.197	0.197	2.65%

O) GREAT MOSQUE OF HERAT

Tessellation ROS-4.8.8. θ =70º, L =15%

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	197.57	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	23,961	11,460	11,460	23,961	4,941	4,688	4,688	4,941
0.10	2.0	169,742	76,128	76,128	169,742	36,827	34,849	34,849	36,827
0.15	3.0	483,652	197,622	197,622	483,652	111,911	105,476	105,476	111,911
0.20	4.0	947,567	347,493	347,493	947,567	233,900	219,331	219,331	233,900
0.25	5.0	1,523,165	499,359	499,359	1,523,165	398,816	371,804	371,804	398,816
0.30	6.0	2,175,966	639,802	639,802	2,175,966	600,152	556,004	556,004	600,152

0.35	7.0	2,880,637	765,002	765,002	2,880,637	831,600	765,407	765,407	831,600
0.40	8.0	3,619,711	875,715	875,715	3,619,711	1,087,873	994,617	994,617	1,087,873

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	790.33	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	23,957	11,459	11,459	23,957	4,637	4,514	4,514	4,637
0.10	2.0	169,719	76,118	76,118	169,719	34,725	33,765	33,765	34,725
0.15	3.0	483,592	197,601	197,601	483,592	106,176	103,057	103,057	106,176
0.20	4.0	947,462	347,462	347,462	947,462	223,248	216,204	216,204	223,248
0.25	5.0	1,523,010	499,322	499,322	1,523,010	382,553	369,524	369,524	382,553
0.30	6.0	2,175,761	639,763	639,763	2,175,761	577,807	556,560	556,560	577,807
0.35	7.0	2,880,384	764,961	764,961	2,880,384	802,623	770,832	770,832	802,623
0.40	8.0	3,619,410	875,673	875,673	3,619,410	1,051,515	1,006,804	1,006,804	1,051,515

15% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.06%	0.06%	0.478	0.478	0.02%
2	0.47%	0.47%	0.448	0.448	0.13%
3	1.41%	1.41%	0.409	0.409	0.38%
4	2.87%	2.87%	0.367	0.367	0.79%
5	4.76%	4.76%	0.328	0.328	1.35%
6	6.96%	6.96%	0.294	0.294	2.02%
7	9.37%	9.37%	0.266	0.266	2.79%
8	11.93%	11.93%	0.242	0.242	3.64%

15% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.06%	0.06%	0.478	0.478	0.02%
2	0.47%	0.47%	0.448	0.448	0.12%
3	1.41%	1.41%	0.409	0.409	0.37%
4	2.87%	2.87%	0.367	0.367	0.77%
5	4.76%	4.76%	0.328	0.328	1.32%
6	6.96%	6.96%	0.294	0.294	1.98%
7	9.37%	9.37%	0.266	0.266	2.75%
8	11.92%	11.92%	0.242	0.242	3.60%

Tessellation ROS-4.8.8. θ =70º, L =22,5%

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	196.50	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	19,518	8,674	8,674	19,518	2,887	2,634	2,634	2,887
0.10	2.0	141,826	61,040	61,040	141,826	22,126	20,152	20,152	22,126
0.15	3.0	416,310	170,317	170,317	416,310	69,968	63,552	63,552	69,968
0.20	4.0	837,768	321,133	321,133	837,768	152,973	138,470	138,470	152,973
0.25	5.0	1,375,951	489,450	489,450	1,375,951	272,897	246,051	246,051	272,897
0.30	6.0	1,998,530	656,339	656,339	1,998,530	428,445	384,621	384,621	428,445
0.35	7.0	2,679,606	811,222	811,222	2,679,606	616,738	551,073	551,073	616,738
0.40	8.0	3,400,436	950,025	950,025	3,400,436	834,238	741,726	741,726	834,238
0.45	9.0	4,147,905	1,072,522	1,072,522	4,147,905	1,077,262	952,801	952,801	1,077,262

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	786.02	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	19,515	8,673	8,673	19,515	2,706	2,583	2,583	2,706
0.10	2.0	141,807	61,032	61,032	141,807	20,807	19,852	19,852	20,807
0.15	3.0	416,257	170,297	170,297	416,257	66,087	62,987	62,987	66,087

0.20	4.0	837,671	321,100	321,100	837,671	145,136	138,141	138,141	145,136
0.25	5.0	1,375,805	489,407	489,407	1,375,805	259,936	247,004	247,004	259,936
0.30	6.0	1,998,334	656,291	656,291	1,998,334	409,352	388,267	388,267	409,352
0.35	7.0	2,679,359	811,170	811,170	2,679,359	590,537	558,978	558,978	590,537
0.40	8.0	3,400,141	949,973	949,973	3,400,141	799,893	755,472	755,472	799,893
0.45	9.0	4,147,564	1,072,470	1,072,470	4,147,564	1,033,646	973,927	973,927	1,033,646

22,5% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.05%	0.05%	0.444	0.444	0.01%
2	0.40%	0.40%	0.430	0.430	0.07%
3	1.21%	1.21%	0.409	0.409	0.23%
4	2.50%	2.50%	0.383	0.383	0.51%
5	4.21%	4.21%	0.356	0.356	0.91%
6	6.24%	6.24%	0.328	0.328	1.42%
7	8.52%	8.52%	0.303	0.303	2.04%
8	10.97%	10.97%	0.279	0.279	2.76%
9	13.54%	13.54%	0.259	0.259	3.55%

22,5% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.05%	0.05%	0.444	0.444	0.01%
2	0.40%	0.40%	0.430	0.430	0.07%
3	1.21%	1.21%	0.409	0.409	0.23%
4	2.50%	2.50%	0.383	0.383	0.50%
5	4.21%	4.21%	0.356	0.356	0.89%
6	6.24%	6.24%	0.328	0.328	1.40%
7	8.52%	8.52%	0.303	0.303	2.01%
8	10.97%	10.97%	0.279	0.279	2.72%
9	13.54%	13.54%	0.259	0.259	3.51%

Tessellation ROS-4.8.8. θ =70º, L =30%

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	195.42	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	19,275	7,997	7,997	19,275	2,127	1,871	1,871	2,127
0.10	2.0	140,106	57,362	57,362	140,106	16,465	14,477	14,477	16,465
0.15	3.0	411,286	164,194	164,194	411,286	52,858	46,420	46,420	52,858
0.20	4.0	827,405	318,051	318,051	827,405	117,704	103,205	103,205	117,704
0.25	5.0	1,358,191	497,179	497,179	1,358,191	214,192	187,440	187,440	214,192
0.30	6.0	1,971,632	681,682	681,682	1,971,632	343,079	299,514	299,514	343,079
0.35	7.0	2,642,481	858,436	858,436	2,642,481	503,450	438,268	438,268	503,450
0.40	8.0	3,352,772	1,020,755	1,020,755	3,352,772	693,312	601,528	601,528	693,312

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	781.71	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	19,273	7,996	7,996	19,273	1,996	1,872	1,872	1,996
0.10	2.0	140,087	57,354	57,354	140,087	15,488	14,528	14,528	15,488
0.15	3.0	411,234	164,174	164,174	411,234	49,883	46,776	46,776	49,883
0.20	4.0	827,309	318,017	318,017	827,309	111,450	104,457	104,457	111,450
0.25	5.0	1,358,047	497,133	497,133	1,358,047	203,401	190,505	190,505	203,401
0.30	6.0	1,971,438	681,627	681,627	1,971,438	326,525	305,533	305,533	326,525
0.35	7.0	2,642,239	858,377	858,377	2,642,239	479,892	448,492	448,492	479,892
0.40	8.0	3,352,482	1,020,694	1,020,694	3,352,482	661,454	617,248	617,248	661,454

30% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.06%	0.06%	0.415	0.415	0.01%
2	0.41%	0.41%	0.409	0.409	0.05%
3	1.21%	1.21%	0.399	0.399	0.17%
4	2.47%	2.47%	0.384	0.384	0.39%
5	4.12%	4.12%	0.366	0.366	0.70%
6	6.07%	6.07%	0.346	0.346	1.12%
7	8.27%	8.27%	0.325	0.325	1.65%
8	10.65%	10.65%	0.304	0.304	2.27%

30% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.06%	0.06%	0.415	0.415	0.01%
2	0.41%	0.41%	0.409	0.409	0.05%
3	1.21%	1.21%	0.399	0.399	0.17%
4	2.47%	2.47%	0.384	0.384	0.38%
5	4.12%	4.12%	0.366	0.366	0.69%
6	6.07%	6.07%	0.346	0.346	1.11%
7	8.27%	8.27%	0.325	0.325	1.62%
8	10.64%	10.64%	0.304	0.304	2.24%

P) MOSQUE OF AL-SALIH TALA'I

Tessellation ROS-3.4.3.8_3.8.8. θ =75º, L = 15%, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	249.08	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	1,858	904	904	1,858	549	500	500	549
0.050	1.0	14,513	6,987	6,987	14,513	4,317	3,934	3,934	4,317
0.075	1.5	47,160	22,313	22,313	47,160	14,172	12,937	12,937	14,172
0.100	2.0	106,324	49,137	49,137	106,324	32,418	29,645	29,645	32,418
0.125	2.5	195,575	87,820	87,820	195,575	60,734	55,625	55,625	60,734
0.150	3.0	315,893	137,210	137,210	315,893	100,225	91,896	91,896	100,225
0.175	3.5	466,355	195,226	195,226	466,355	151,491	138,987	138,987	151,491
0.200	4.0	644,860	259,426	259,426	644,860	214,720	197,023	197,023	214,720
0.225	4.5	848,722	327,410	327,410	848,722	289,772	265,803	265,803	289,772
0.250	5.0	1,075,071	397,063	397,063	1,075,071	376,260	344,885	344,885	376,260
0.275	5.5	1,321,106	466,664	466,664	1,321,106	473,618	433,657	433,657	473,618
0.300	6.0	1,584,219	534,896	534,896	1,584,219	581,163	531,397	531,397	581,163

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	996.32	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	1,858	904	904	1,858	526	501	501	526
0.050	1.0	14,513	6,987	6,987	14,513	4,141	3,951	3,951	4,141
0.075	1.5	47,160	22,313	22,313	47,160	13,633	13,021	13,021	13,633
0.100	2.0	106,324	49,137	49,137	106,324	31,283	29,907	29,907	31,283
0.125	2.5	195,575	87,820	87,820	195,575	58,780	56,246	56,246	58,780
0.150	3.0	315,893	137,210	137,210	315,893	97,238	93,108	93,108	97,238
0.175	3.5	466,355	195,226	195,226	466,355	147,257	141,061	141,061	147,257
0.200	4.0	644,860	259,426	259,426	644,860	209,010	200,245	200,245	209,010
0.225	4.5	848,722	327,410	327,410	848,722	282,334	270,472	270,472	282,334
0.250	5.0	1,075,071	397,063	397,063	1,075,071	366,817	351,304	351,304	366,817
0.275	5.5	1,321,106	466,664	466,664	1,321,106	461,872	442,131	442,131	461,872
0.300	6.0	1,584,219	534,896	534,896	1,584,219	566,797	542,236	542,236	566,797

15% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.00%	0.00%	0.487	0.487	0.00%
1.0	0.04%	0.04%	0.481	0.481	0.01%
1.5	0.13%	0.13%	0.473	0.473	0.05%
2.0	0.29%	0.29%	0.462	0.462	0.11%
2.5	0.55%	0.55%	0.449	0.449	0.20%
3.0	0.90%	0.90%	0.434	0.434	0.34%
3.5	1.35%	1.35%	0.419	0.419	0.51%
4.0	1.89%	1.89%	0.402	0.402	0.72%
4.5	2.53%	2.53%	0.386	0.386	0.97%
5.0	3.25%	3.25%	0.369	0.369	1.26%
5.5	4.05%	4.05%	0.353	0.353	1.59%
6.0	4.91%	4.91%	0.338	0.338	1.95%

15% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.00%	0.00%	0.487	0.487	0.00%
1.0	0.04%	0.04%	0.481	0.481	0.01%
1.5	0.13%	0.13%	0.473	0.473	0.05%
2.0	0.29%	0.29%	0.462	0.462	0.11%
2.5	0.55%	0.55%	0.449	0.449	0.20%
3.0	0.90%	0.90%	0.434	0.434	0.33%
3.5	1.35%	1.35%	0.419	0.419	0.50%
4.0	1.89%	1.89%	0.402	0.402	0.72%
4.5	2.53%	2.53%	0.386	0.386	0.97%
5.0	3.25%	3.25%	0.369	0.369	1.26%
5.5	4.05%	4.05%	0.353	0.353	1.58%
6.0	4.91%	4.91%	0.338	0.338	1.94%

Tessellation ROS-3.4.3.8_3.8.8. θ =75º, L = 25%, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	248.01	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	1,649	767	767	1,649	549	503	503	549
0.050	1.0	12,935	5,977	5,977	12,935	4,320	3,959	3,959	4,320
0.075	1.5	42,276	19,333	19,333	42,276	14,195	13,014	13,014	14,195
0.100	2.0	95,999	43,265	43,265	95,999	32,499	29,805	29,805	32,499
0.125	2.5	177,978	78,735	78,735	177,978	60,927	55,877	55,877	60,927
0.150	3.0	289,768	125,354	125,354	289,768	100,571	92,207	92,207	100,571
0.175	3.5	431,055	181,718	181,718	431,055	152,002	139,263	139,263	152,002
0.200	4.0	600,225	245,820	245,820	600,225	215,362	197,103	197,103	215,362
0.225	4.5	794,902	315,426	315,426	794,902	290,458	265,463	265,463	290,458
0.250	5.0	1,012,366	388,366	388,366	1,012,366	376,854	343,848	343,848	376,854
0.275	5.5	1,249,845	462,712	462,712	1,249,845	473,942	431,606	431,606	473,942
0.300	6.0	1,504,698	536,866	536,866	1,504,698	581,008	527,989	527,989	581,008

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	992.05	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	1,649	767	767	1,649	521	498	498	521
0.050	1.0	12,935	5,977	5,977	12,935	4,103	3,926	3,926	4,103
0.075	1.5	42,276	19,333	19,333	42,276	13,511	12,933	12,933	13,511
0.100	2.0	95,999	43,265	43,265	95,999	31,005	29,685	29,685	31,005
0.125	2.5	177,978	78,735	78,735	177,978	58,254	55,779	55,779	58,254
0.150	3.0	289,768	125,354	125,354	289,768	96,341	92,241	92,241	96,341
0.175	3.5	431,055	181,718	181,718	431,055	145,836	139,590	139,590	145,836
0.200	4.0	600,225	245,820	245,820	600,225	206,881	197,927	197,927	206,881
0.225	4.5	794,902	315,426	315,426	794,902	279,285	267,028	267,028	279,285
0.250	5.0	1,012,366	388,366	388,366	1,012,366	362,618	346,434	346,434	362,618
0.275	5.5	1,249,845	462,712	462,712	1,249,845	456,283	435,525	435,525	456,283
0.300	6.0	1,504,698	536,866	536,866	1,504,698	559,578	533,584	533,584	559,578

25% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.00%	0.00%	0.465	0.465	0.00%
1.0	0.04%	0.04%	0.462	0.462	0.01%
1.5	0.12%	0.12%	0.457	0.457	0.05%
2.0	0.27%	0.27%	0.451	0.451	0.11%
2.5	0.50%	0.50%	0.442	0.442	0.20%
3.0	0.82%	0.82%	0.433	0.433	0.34%
3.5	1.24%	1.24%	0.422	0.422	0.51%
4.0	1.75%	1.75%	0.410	0.410	0.72%
4.5	2.34%	2.34%	0.397	0.397	0.97%
5.0	3.02%	3.02%	0.384	0.384	1.26%
5.5	3.77%	3.77%	0.370	0.370	1.58%
6.0	4.60%	4.60%	0.357	0.357	1.94%

25% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.00%	0.00%	0.465	0.465	0.00%
1.0	0.04%	0.04%	0.462	0.462	0.01%
1.5	0.12%	0.12%	0.457	0.457	0.05%
2.0	0.27%	0.27%	0.451	0.451	0.11%
2.5	0.50%	0.50%	0.442	0.442	0.20%
3.0	0.82%	0.82%	0.433	0.433	0.33%
3.5	1.24%	1.24%	0.422	0.422	0.50%
4.0	1.75%	1.75%	0.410	0.410	0.71%
4.5	2.34%	2.34%	0.397	0.397	0.96%
5.0	3.02%	3.02%	0.384	0.384	1.24%
5.5	3.77%	3.77%	0.370	0.370	1.56%
6.0	4.60%	4.60%	0.357	0.357	1.91%

Tessellation ROS-3.4.3.8_3.8.8. θ =75º, L = 35%, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	246.95	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	1,601	799	799	1,601	544	502	502	544
0.050	1.0	12,560	6,239	6,239	12,560	4,285	3,957	3,957	4,285
0.075	1.5	41,050	20,244	20,244	41,050	14,116	13,031	13,031	14,116
0.100	2.0	93,219	45,494	45,494	93,219	32,406	29,900	29,900	32,406
0.125	2.5	172,840	83,196	83,196	172,840	60,911	56,153	56,153	60,911
0.150	3.0	281,443	133,167	133,167	281,443	100,770	92,786	92,786	100,770
0.175	3.5	418,750	194,133	194,133	418,750	152,567	140,262	140,262	152,567
0.200	4.0	583,222	264,136	264,136	583,222	216,426	198,604	198,604	216,426
0.225	4.5	772,574	340,908	340,908	772,574	292,107	267,490	267,490	292,107
0.250	5.0	984,180	422,184	422,184	984,180	379,112	346,359	346,359	379,112

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	987.78	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	1,601	799	799	1,601	519	499	499	519
0.050	1.0	12,560	6,239	6,239	12,560	4,093	3,933	3,933	4,093
0.075	1.5	41,050	20,244	20,244	41,050	13,492	12,963	12,963	13,492
0.100	2.0	93,219	45,494	45,494	93,219	30,992	29,769	29,769	30,992
0.125	2.5	172,840	83,196	83,196	172,840	58,277	55,956	55,956	58,277
0.150	3.0	281,443	133,167	133,167	281,443	96,438	92,543	92,543	96,438
0.175	3.5	418,750	194,133	194,133	418,750	146,027	140,023	140,023	146,027
0.200	4.0	583,222	264,136	264,136	583,222	207,154	198,456	198,456	207,154
0.225	4.5	772,574	340,908	340,908	772,574	279,586	267,569	267,569	279,586
0.250	5.0	984,180	422,184	422,184	984,180	362,844	346,851	346,851	362,844

35% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.00%	0.00%	0.499	0.499	0.00%
1.0	0.03%	0.03%	0.497	0.497	0.01%
1.5	0.11%	0.11%	0.493	0.493	0.05%
2.0	0.25%	0.25%	0.488	0.488	0.11%
2.5	0.46%	0.46%	0.481	0.481	0.20%
3.0	0.76%	0.76%	0.473	0.473	0.34%
3.5	1.15%	1.15%	0.464	0.464	0.51%
4.0	1.62%	1.62%	0.453	0.453	0.73%
4.5	2.18%	2.18%	0.441	0.441	0.98%
5.0	2.81%	2.81%	0.429	0.429	1.27%

35% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.00%	0.00%	0.499	0.499	0.00%
1.0	0.03%	0.03%	0.497	0.497	0.01%
1.5	0.11%	0.11%	0.493	0.493	0.05%
2.0	0.25%	0.25%	0.488	0.488	0.11%
2.5	0.46%	0.46%	0.481	0.481	0.20%
3.0	0.76%	0.76%	0.473	0.473	0.33%
3.5	1.15%	1.15%	0.464	0.464	0.50%
4.0	1.62%	1.62%	0.453	0.453	0.71%
4.5	2.18%	2.18%	0.441	0.441	0.96%
5.0	2.81%	2.81%	0.429	0.429	1.24%

Q) MOSQUE OF IBN TULUN

Tessellation ROS-3.4.3.12_3.12.12. θ_1 =75º, θ_2 =55º, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	263.03	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	4,831	1,699	1,699	4,831	1,709	1,668	1,668	1,709
0.050	1.0	36,944	12,988	12,988	36,944	13,197	12,879	12,879	13,197
0.075	1.5	116,202	40,782	40,782	116,202	42,134	41,082	41,082	42,134
0.100	2.0	251,685	87,939	87,939	251,685	92,925	90,502	90,502	92,925
0.125	2.5	442,984	153,537	153,537	442,984	166,787	162,210	162,210	166,787
0.150	3.0	683,864	234,188	234,188	683,864	262,611	254,994	254,994	262,611
0.175	3.5	965,808	325,518	325,518	965,808	378,005	366,390	366,390	378,005
0.200	4.0	1,280,344	423,247	423,247	1,280,344	510,130	493,514	493,514	510,130
0.225	4.5	1,620,128	523,762	523,762	1,620,128	656,209	633,556	633,556	656,209

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,052.14	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	4,831	1,699	1,699	4,831	1,686	1,667	1,667	1,686
0.050	1.0	36,944	12,988	12,988	36,944	13,025	12,873	12,873	13,025
0.075	1.5	116,202	40,782	40,782	116,202	41,586	41,083	41,083	41,586
0.100	2.0	251,685	87,939	87,939	251,685	91,711	90,553	90,553	91,711
0.125	2.5	442,984	153,537	153,537	442,984	164,581	162,395	162,395	164,581
0.150	3.0	683,864	234,188	234,188	683,864	259,059	255,423	255,423	259,059
0.175	3.5	965,808	325,518	325,518	965,808	372,726	367,187	367,187	372,726
0.200	4.0	1,280,344	423,247	423,247	1,280,344	502,716	494,800	494,800	502,716
0.225	4.5	1,620,128	52Z3,762	523,762	1,620,128	646,226	635,447	635,447	646,226

55º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.352	0.352	0.01%
1.0	0.11%	0.11%	0.352	0.352	0.05%
1.5	0.36%	0.36%	0.351	0.351	0.15%
2.0	0.77%	0.77%	0.349	0.349	0.32%
2.5	1.36%	1.36%	0.347	0.347	0.58%
3.0	2.11%	2.11%	0.342	0.342	0.91%

55º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.352	0.352	0.01%
1.0	0.11%	0.11%	0.352	0.352	0.05%
1.5	0.36%	0.36%	0.351	0.351	0.14%
2.0	0.77%	0.77%	0.349	0.349	0.32%
2.5	1.36%	1.36%	0.347	0.347	0.57%
3.0	2.11%	2.11%	0.342	0.342	0.90%

3.5	3.00%	3.00%	0.337	0.337	1.30%
4.0	3.99%	3.99%	0.331	0.331	1.76%
4.5	5.08%	5.08%	0.323	0.323	2.26%

3.5	3.00%	3.00%	0.337	0.337	1.29%
4.0	3.99%	3.99%	0.331	0.331	1.75%
4.5	5.08%	5.08%	0.323	0.323	2.24%

Tessellation ROS-3.4.3.12_3.12.12. θ_1 =75º, θ_2 =65º, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	273.92	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	4,305	1,090	1,090	4,305	1,466	1,426	1,426	1,466
0.050	1.0	32,938	8,431	8,431	32,938	11,357	11,038	11,038	11,357
0.075	1.5	103,707	26,924	26,924	103,707	36,426	35,369	35,369	36,426
0.100	2.0	224,941	59,151	59,151	224,941	80,798	78,355	78,355	80,798
0.125	2.5	396,615	105,151	105,151	396,615	145,961	141,329	141,329	145,961
0.150	3.0	613,520	162,974	162,974	613,520	231,388	223,650	223,650	231,388
0.175	3.5	868,347	229,594	229,594	868,347	335,354	323,508	323,508	335,354
0.200	4.0	1,153,716	301,759	301,759	1,153,716	455,613	438,605	438,605	455,613
0.225	4.5	1,463,153	376,551	376,551	1,463,153	589,851	566,586	566,586	589,851

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,095.68	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	4,305	1,090	1,090	4,305	1,444	1,425	1,425	1,444
0.050	1.0	32,938	8,431	8,431	32,938	11,194	11,039	11,039	11,194
0.075	1.5	103,707	26,924	26,924	103,707	35,922	35,410	35,410	35,922
0.100	2.0	224,941	59,151	59,151	224,941	79,727	78,545	78,545	79,727
0.125	2.5	396,615	105,151	105,151	396,615	144,100	141,861	141,861	144,100
0.150	3.0	613,520	162,974	162,974	613,520	228,522	224,785	224,785	228,522
0.175	3.5	868,347	229,594	229,594	868,347	331,257	325,545	325,545	331,257
0.200	4.0	1,153,716	301,759	301,759	1,153,716	450,037	441,845	441,845	450,037
0.225	4.5	1,463,153	376,551	376,551	1,463,153	582,507	571,319	571,319	582,507

65º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.253	0.253	0.01%
1.0	0.11%	0.11%	0.256	0.256	0.04%
1.5	0.34%	0.34%	0.260	0.260	0.13%
2.0	0.73%	0.73%	0.263	0.263	0.28%
2.5	1.29%	1.29%	0.265	0.265	0.50%
3.0	2.00%	2.00%	0.266	0.266	0.80%
3.5	2.83%	2.83%	0.264	0.264	1.15%
4.0	3.76%	3.76%	0.262	0.262	1.56%
4.5	4.78%	4.78%	0.257	0.257	2.02%

65º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.253	0.253	0.01%
1.0	0.11%	0.11%	0.256	0.256	0.04%
1.5	0.34%	0.34%	0.260	0.260	0.12%
2.0	0.73%	0.73%	0.263	0.263	0.28%
2.5	1.29%	1.29%	0.265	0.265	0.50%
3.0	2.00%	2.00%	0.266	0.266	0.79%
3.5	2.83%	2.83%	0.264	0.264	1.15%
4.0	3.76%	3.76%	0.262	0.262	1.56%
4.5	4.78%	4.78%	0.257	0.257	2.02%

Tessellation ROS-3.4.3.12_3.12.12. θ_1 =75º, θ_2 =75º, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	291.86	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0

GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	3,825	1,023	1,023	3,825	1,241	1,201	1,201	1,241
0.050	1.0	29,268	7,899	7,899	29,268	9,621	9,306	9,306	9,621
0.075	1.5	92,170	25,135	25,135	92,170	30,902	29,860	29,860	30,902
0.100	2.0	200,007	54,949	54,949	200,007	68,709	66,305	66,305	68,709
0.125	2.5	352,921	97,099	97,099	352,921	124,543	119,993	119,993	124,543
0.150	3.0	546,521	149,465	149,465	546,521	198,295	190,706	190,706	198,295
0.175	3.5	774,575	208,986	208,986	774,575	288,877	277,272	277,272	288,877
0.200	4.0	1,030,761	272,484	272,484	1,030,761	394,729	378,072	378,072	394,729
0.225	4.5	1,309,509	337,186	337,186	1,309,509	514,149	491,359	491,359	514,149

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,167.43	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	3,825	1,023	1,023	3,825	1,212	1,192	1,192	1,212
0.050	1.0	29,268	7,899	7,899	29,268	9,404	9,249	9,249	9,404
0.075	1.5	92,170	25,135	25,135	92,170	30,253	29,742	29,742	30,253
0.100	2.0	200,007	54,949	54,949	200,007	67,385	66,207	66,207	67,385
0.125	2.5	352,921	97,099	97,099	352,921	122,350	120,124	120,124	122,350
0.150	3.0	546,521	149,465	149,465	546,521	195,084	191,377	191,377	195,084
0.175	3.5	774,575	208,986	208,986	774,575	284,512	278,851	278,851	284,512
0.200	4.0	1,030,761	272,484	272,484	1,030,761	389,053	380,942	380,942	389,053
0.225	4.5	1,309,509	337,186	337,186	1,309,509	506,965	495,887	495,887	506,965

75º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.267	0.267	0.00%
1.0	0.09%	0.09%	0.270	0.270	0.03%
1.5	0.30%	0.30%	0.273	0.273	0.11%
2.0	0.65%	0.65%	0.275	0.275	0.24%
2.5	1.14%	1.14%	0.275	0.275	0.43%
3.0	1.77%	1.77%	0.273	0.273	0.68%
3.5	2.51%	2.51%	0.270	0.270	0.99%
4.0	3.35%	3.35%	0.264	0.264	1.35%
4.5	4.28%	4.28%	0.257	0.257	1.76%

75º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.267	0.267	0.00%
1.0	0.09%	0.09%	0.270	0.270	0.03%
1.5	0.30%	0.30%	0.273	0.273	0.10%
2.0	0.65%	0.65%	0.275	0.275	0.23%
2.5	1.14%	1.14%	0.275	0.275	0.42%
3.0	1.77%	1.77%	0.273	0.273	0.68%
3.5	2.51%	2.51%	0.270	0.270	0.99%
4.0	3.35%	3.35%	0.264	0.264	1.35%
4.5	4.28%	4.28%	0.257	0.257	1.75%

R) FATEHPUR SIKRI

Tessellation ROS-I-6.10.10. θ =48º type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	13.76	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	333.99	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	241,900	178,541	178,541	251,026	80,216	110,970	110,970	154,588
0.10	2.0	1,158,423	690,960	690,960	1,052,635	358,436	495,009	495,009	691,656
0.15	3.0	2,472,257	1,202,602	1,202,602	2,004,692	714,856	983,841	983,841	1,379,175
0.20	4.0	3,983,631	1,641,854	1,641,854	2,977,508	1,099,103	1,505,506	1,505,506	2,117,204
0.25	5.0	5,595,363	2,024,828	2,024,828	3,952,711	1,499,406	2,042,436	2,042,436	2,881,280

0.30	6.0	7,256,582	2,371,053	2,371,053	4,928,495	1,911,410	2,588,103	2,588,103	3,662,539
0.35	7.0	8,940,314	2,693,662	2,693,662	5,905,076	2,332,552	3,138,920	3,138,920	4,456,387

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	27.53	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,335.98	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	241,900	178,541	178,541	251,026	79,231	109,321	109,321	151,369
0.10	2.0	1,158,423	690,960	690,960	1,052,635	356,203	491,074	491,074	680,977
0.15	3.0	2,472,257	1,202,602	1,202,602	2,004,692	712,442	980,545	980,545	1,361,897
0.20	4.0	3,983,631	1,641,854	1,641,854	2,977,508	1,096,018	1,504,967	1,504,967	2,093,484
0.25	5.0	5,595,363	2,024,828	2,024,828	3,952,711	1,494,097	2,046,024	2,046,024	2,850,341
0.30	6.0	7,256,582	2,371,053	2,371,053	4,928,495	1,901,890	2,596,890	2,596,890	3,623,105
0.35	7.0	8,940,314	2,693,662	2,693,662	5,905,076	2,316,759	3,153,942	3,153,942	4,406,941

48º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.29%	0.57%	0.517	1.016	0.39%
2	1.79%	3.08%	0.477	0.821	1.74%
3	4.45%	6.84%	0.436	0.670	3.46%
4	7.83%	11.08%	0.401	0.567	5.30%
5	11.59%	15.51%	0.372	0.498	7.21%
6	15.55%	20.01%	0.350	0.450	9.16%
7	19.61%	24.53%	0.331	0.415	11.13%

48º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.29%	0.57%	0.517	1.016	0.38%
2	1.79%	3.08%	0.477	0.821	1.72%
3	4.45%	6.84%	0.436	0.670	3.44%
4	7.83%	11.08%	0.401	0.567	5.28%
5	11.59%	15.51%	0.372	0.498	7.19%
6	15.55%	20.01%	0.350	0.450	9.14%
7	19.61%	24.53%	0.331	0.415	11.11%

Tessellation ROS-I-6.10.10. θ =60º, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	13.76	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	355.77	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	91,498	56,714	56,714	75,488	24,163	33,185	33,185	46,670
0.10	2.0	569,046	317,342	317,342	449,975	147,607	202,368	202,368	285,727
0.15	3.0	1,430,922	696,525	696,525	1,076,128	366,067	500,325	500,325	709,785
0.20	4.0	2,546,599	1,078,015	1,078,015	1,829,161	647,473	881,157	881,157	1,255,922
0.25	5.0	3,816,092	1,418,632	1,418,632	2,640,002	970,135	1,313,462	1,313,462	1,880,293
0.30	6.0	5,176,696	1,714,744	1,714,744	3,478,140	1,320,728	1,777,868	1,777,868	2,555,564
0.35	7.0	6,589,753	1,974,501	1,974,501	4,329,601	1,690,458	2,261,728	2,261,728	3,263,903

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	27.53	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,423.10	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	91,498	56,714	56,714	75,488	23,811	32,737	32,737	45,547
0.10	2.0	569,046	317,342	317,342	449,975	145,954	200,502	200,502	279,493
0.15	3.0	1,430,922	696,525	696,525	1,076,128	362,889	497,766	497,766	695,478
0.20	4.0	2,546,599	1,078,015	1,078,015	1,829,161	642,681	879,718	879,718	1,231,929
0.25	5.0	3,816,092	1,418,632	1,418,632	2,640,002	963,221	1,315,180	1,315,180	1,845,589
0.30	6.0	5,176,696	1,714,744	1,714,744	3,478,140	1,310,719	1,784,680	1,784,680	2,509,298
0.35	7.0	6,589,753	1,974,501	1,974,501	4,329,601	1,676,049	2,275,404	2,275,404	3,205,190

60º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.12%	0.19%	0.546	0.853	0.12%
2	0.88%	1.31%	0.512	0.768	0.71%
3	2.49%	3.55%	0.470	0.670	1.77%
4	4.86%	6.61%	0.428	0.583	3.12%
5	7.76%	10.18%	0.390	0.512	4.66%
6	11.01%	14.02%	0.358	0.456	6.33%
7	14.46%	18.00%	0.331	0.412	8.07%

60º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.12%	0.19%	0.546	0.853	0.11%
2	0.88%	1.31%	0.512	0.768	0.70%
3	2.49%	3.55%	0.470	0.670	1.75%
4	4.86%	6.61%	0.428	0.583	3.10%
5	7.76%	10.18%	0.390	0.512	4.63%
6	11.01%	14.02%	0.358	0.456	6.30%
7	14.46%	18.00%	0.331	0.412	8.04%

Tessellation ROS-I-6.10.10. θ =72º, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	13.76	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	398.38	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	42,789	22,690	22,690	31,867	9,494	12,828	12,828	18,413
0.10	2.0	295,001	145,701	145,701	214,843	65,675	88,554	88,554	127,541
0.15	3.0	816,524	364,593	364,593	577,969	184,049	247,381	247,381	357,958
0.20	4.0	1,562,203	621,542	621,542	1,075,003	359,310	481,027	481,027	699,601
0.25	5.0	2,467,602	871,644	871,644	1,656,441	581,227	774,480	774,480	1,132,127
0.30	6.0	3,481,181	1,095,024	1,095,024	2,289,396	839,881	1,113,266	1,113,266	1,635,353

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	27.53	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,593.53	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	42,789	22,690	22,690	31,867	9,281	12,658	12,658	17,796
0.10	2.0	295,001	145,701	145,701	214,843	64,410	87,756	87,756	123,574
0.15	3.0	816,524	364,593	364,593	577,969	181,030	246,273	246,273	347,565
0.20	4.0	1,562,203	621,542	621,542	1,075,003	354,080	480,769	480,769	680,166
0.25	5.0	2,467,602	871,644	871,644	1,656,441	573,265	776,631	776,631	1,101,393
0.30	6.0	3,481,181	1,095,024	1,095,024	2,289,396	828,471	1,119,539	1,119,539	1,591,381

72º (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.07%	0.10%	0.517	0.730	0.05%
2	0.50%	0.69%	0.493	0.680	0.32%
3	1.49%	2.00%	0.458	0.615	0.88%
4	3.06%	3.99%	0.420	0.548	1.72%
5	5.11%	6.50%	0.382	0.486	2.77%
6	7.52%	9.37%	0.348	0.433	4.00%

72º (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.07%	0.10%	0.517	0.730	0.04%
2	0.50%	0.69%	0.493	0.680	0.31%
3	1.49%	2.00%	0.458	0.615	0.87%
4	3.06%	3.99%	0.420	0.548	1.70%
5	5.11%	6.50%	0.382	0.486	2.75%
6	7.52%	9.37%	0.348	0.433	3.97%

S) JAMEH MOSQUE

Tessellation ROS-I-6.12.8.12. θ =70º, L =20%, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	452.34	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]

0.025	0.5	15,469	5,127	5,127	15,469	4,241	4,159	4,159	4,241
0.050	1.0	113,509	36,189	36,189	113,509	31,808	31,169	31,169	31,808
0.075	1.5	337,148	101,431	101,431	337,148	97,571	95,500	95,500	97,571
0.100	2.0	685,821	192,283	192,283	685,821	206,151	201,473	201,473	206,151
0.125	2.5	1,135,903	294,757	294,757	1,135,903	355,173	346,511	346,511	355,173
0.150	3.0	1,659,772	397,470	397,470	1,659,772	539,080	524,926	524,926	539,080
0.175	3.5	2,234,459	493,670	493,670	2,234,459	751,559	730,316	730,316	751,559

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,809.35	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	14,883	5,022	5,022	14,883	4,279	4,236	4,236	4,279
0.050	1.0	109,608	35,311	35,311	109,608	31,858	31,531	31,531	31,858
0.075	1.5	327,234	98,326	98,326	327,234	96,926	95,870	95,870	96,926
0.100	2.0	669,424	184,753	184,753	669,424	203,389	201,016	201,016	203,389
0.125	2.5	1,114,766	280,247	280,247	1,114,766	348,758	344,385	344,385	348,758
0.150	3.0	1,636,609	373,632	373,632	1,636,609	527,821	520,704	520,704	527,821
0.175	3.5	2,211,819	458,781	458,781	2,211,819	734,705	724,062	724,062	734,705

20% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.331	0.331	0.01%
1.0	0.36%	0.36%	0.319	0.319	0.11%
1.5	1.07%	1.07%	0.301	0.301	0.34%
2.0	2.21%	2.21%	0.280	0.280	0.71%
2.5	3.71%	3.71%	0.259	0.259	1.23%
3.0	5.48%	5.48%	0.239	0.239	1.86%
3.5	7.44%	7.44%	0.221	0.221	2.59%

20% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.337	0.337	0.01%
1.0	0.34%	0.34%	0.322	0.322	0.11%
1.5	1.04%	1.04%	0.300	0.300	0.34%
2.0	2.16%	2.16%	0.276	0.276	0.71%
2.5	3.65%	3.65%	0.251	0.251	1.21%
3.0	5.43%	5.43%	0.228	0.228	1.83%
3.5	7.41%	7.41%	0.207	0.207	2.55%

Tessellation ROS-I-6.12.8.12. θ =70º, L =35%, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	463.78	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	14,579	5,776	5,776	14,579	3,462	3,423	3,423	3,462
0.050	1.0	107,079	40,959	40,959	107,079	26,277	25,975	25,975	26,277
0.075	1.5	318,504	115,620	115,620	318,504	81,901	80,922	80,922	81,901
0.100	2.0	648,962	221,168	221,168	648,962	175,958	173,753	173,753	175,958
0.125	2.5	1,076,692	342,535	342,535	1,076,692	307,954	303,876	303,876	307,954
0.150	3.0	1,575,924	466,954	466,954	1,575,924	474,024	467,362	467,362	474,024

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,855.14	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	14,586	5,781	5,781	14,586	3,499	3,419	3,419	3,499
0.050	1.0	107,131	40,985	40,985	107,131	26,562	25,946	25,946	26,562
0.075	1.5	318,655	115,681	115,681	318,655	82,822	80,825	80,825	82,822
0.100	2.0	649,263	221,251	221,251	649,263	178,019	173,512	173,512	178,019

0.125	2.5	1,077,188	342,610	342,610	1,077,188	311,711	303,370	303,370	311,711
0.150	3.0	1,576,652	466,982	466,982	1,576,652	480,030	466,390	466,390	480,030

35% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.04%	0.04%	0.396	0.396	0.01%
1.0	0.32%	0.32%	0.383	0.383	0.09%
1.5	0.97%	0.97%	0.363	0.363	0.29%
2.0	2.01%	2.01%	0.341	0.341	0.62%
2.5	3.39%	3.39%	0.318	0.318	1.08%
3.0	5.03%	5.03%	0.296	0.296	1.66%

35% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.04%	0.04%	0.396	0.396	0.01%
1.0	0.32%	0.32%	0.383	0.383	0.09%
1.5	0.97%	0.97%	0.363	0.363	0.28%
2.0	2.01%	2.01%	0.341	0.341	0.61%
2.5	3.39%	3.39%	0.318	0.318	1.07%
3.0	5.03%	5.03%	0.296	0.296	1.65%

Tessellation ROS-I-6.12.8.12. θ =70º, L =50%, type Star

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	10.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	476.75	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	13,511	6,058	6,058	13,511	3,008	2,927	2,927	3,008
0.050	1.0	99,639	43,213	43,213	99,639	22,914	22,288	22,288	22,914
0.075	1.5	298,078	123,001	123,001	298,078	71,854	69,838	69,838	71,854
0.100	2.0	611,235	237,426	237,426	611,235	155,640	151,120	151,120	155,640
0.125	2.5	1,020,427	370,978	370,978	1,020,427	275,000	266,670	266,670	275,000
0.150	3.0	1,501,895	509,934	509,934	1,501,895	427,566	413,976	413,976	427,566

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	20.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	1,907.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	13,511	6,058	6,058	13,511	2,987	2,947	2,947	2,987
0.050	1.0	99,639	43,213	43,213	99,639	22,747	22,439	22,439	22,747
0.075	1.5	298,078	123,001	123,001	298,078	71,301	70,308	70,308	71,301
0.100	2.0	611,235	237,426	237,426	611,235	154,358	152,132	152,132	154,358
0.125	2.5	1,020,427	370,978	370,978	1,020,427	272,566	268,468	268,468	272,566
0.150	3.0	1,501,895	509,934	509,934	1,501,895	423,520	416,837	416,837	423,520

50% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.04%	0.04%	0.448	0.448	0.01%
1.0	0.28%	0.28%	0.434	0.434	0.08%
1.5	0.87%	0.87%	0.413	0.413	0.25%
2.0	1.82%	1.82%	0.388	0.388	0.54%
2.5	3.10%	3.10%	0.364	0.364	0.95%
3.0	4.65%	4.65%	0.340	0.340	1.47%

50% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.04%	0.04%	0.448	0.448	0.01%
1.0	0.28%	0.28%	0.434	0.434	0.08%
1.5	0.87%	0.87%	0.413	0.413	0.25%
2.0	1.82%	1.82%	0.388	0.388	0.54%
2.5	3.10%	3.10%	0.364	0.364	0.95%
3.0	4.65%	4.65%	0.340	0.340	1.47%

T) ALHAMBRA

Tessellation ROS-I-6.9.12.9. θ=70º, L =20%

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	755.22	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$

[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	36,436	9,292	9,292	12,184	3,541	5,960	5,960	10,377
0.050	1.0	260,783	64,037	64,037	87,232	26,040	43,781	43,781	76,279
0.075	1.5	751,514	174,043	174,043	251,455	78,009	130,979	130,979	228,438
0.100	2.0	1,486,226	319,960	319,960	497,394	161,162	270,170	270,170	471,881
0.125	2.5	2,405,481	477,476	477,476	805,150	272,392	455,871	455,871	797,626
0.150	3.0	3,453,192	629,974	629,974	1,155,937	407,007	679,972	679,972	1,192,085
0.175	3.5	4,587,586	769,433	769,433	1,535,764	560,305	934,382	934,382	1,641,595
0.200	4.0	5,779,832	893,525	893,525	1,934,977	728,141	1,211,981	1,211,981	2,134,077

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	3,021.46	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	31,567	8,111	8,111	10,539	2,984	5,095	5,095	8,848
0.050	1.0	228,073	56,617	56,617	76,156	22,129	37,764	37,764	65,594
0.075	1.5	664,876	156,414	156,414	222,041	66,979	114,232	114,232	198,504
0.100	2.0	1,329,446	292,301	292,301	444,027	139,784	238,234	238,234	414,248
0.125	2.5	2,172,037	442,615	442,615	725,499	238,411	406,018	406,018	706,547
0.150	3.0	3,142,044	591,186	591,186	1,049,548	359,020	610,939	610,939	1,064,093
0.175	3.5	4,200,089	729,326	729,326	1,403,017	497,523	845,940	845,940	1,474,823
0.200	4.0	5,318,214	853,792	853,792	1,776,563	650,187	1,104,583	1,104,583	1,927,705

20% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.06%	0.06%	0.440	0.442	0.02%
1.0	0.43%	0.43%	0.424	0.425	0.15%
1.5	1.27%	1.28%	0.400	0.401	0.46%
2.0	2.59%	2.60%	0.371	0.373	0.96%
2.5	4.29%	4.31%	0.342	0.344	1.61%
3.0	6.28%	6.31%	0.315	0.316	2.41%
3.5	8.49%	8.53%	0.289	0.291	3.31%
4.0	10.84%	10.89%	0.267	0.268	4.30%

20% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.444	0.445	0.02%
1.0	0.38%	0.38%	0.429	0.430	0.13%
1.5	1.12%	1.12%	0.407	0.407	0.40%
2.0	2.30%	2.30%	0.380	0.381	0.84%
2.5	3.84%	3.85%	0.352	0.353	1.43%
3.0	5.68%	5.69%	0.325	0.326	2.15%
3.5	7.72%	7.74%	0.300	0.301	2.98%
4.0	9.92%	9.94%	0.277	0.278	3.89%

Alhambra, Tessellation ROS-I-6.9.12.9. θ=70º, L =35%

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	769.36	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	35,517	9,830	9,830	11,844	3,179	5,341	5,341	9,316
0.050	1.0	253,779	67,589	67,589	84,680	23,501	39,450	39,450	68,862
0.075	1.5	729,795	183,437	183,437	243,691	70,825	118,744	118,744	207,505
0.100	2.0	1,440,440	337,411	337,411	481,295	147,104	246,274	246,274	431,011
0.125	2.5	2,327,802	504,769	504,769	778,192	249,766	417,474	417,474	731,945
0.150	3.0	3,338,288	668,557	668,557	1,116,459	374,702	625,215	625,215	1,098,370
0.175	3.5	4,432,637	820,258	820,258	1,482,937	517,767	862,340	862,340	1,518,211
0.200	4.0	5,584,133	956,911	956,911	1,868,661	675,319	1,122,565	1,122,565	1,980,820

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	3,078.02	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	

depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	30,761	8,580	8,580	10,256	2,691	4,592	4,592	7,980
0.050	1.0	221,909	59,755	59,755	74,005	20,043	34,180	34,180	59,422
0.075	1.5	645,649	164,822	164,822	215,393	60,959	103,900	103,900	180,719
0.100	2.0	1,288,583	308,048	308,048	430,015	127,778	217,644	217,644	378,813
0.125	2.5	2,102,099	467,355	467,355	701,676	218,745	372,318	372,318	648,549
0.150	3.0	3,037,688	626,302	626,302	1,014,184	330,490	562,076	562,076	979,981
0.175	3.5	4,058,199	775,819	775,819	1,355,124	459,411	780,689	780,689	1,362,467
0.200	4.0	5,137,618	912,147	912,147	1,715,799	602,237	1,022,503	1,022,503	1,786,323

35% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.06%	0.06%	0.479	0.479	0.02%
1.0	0.40%	0.40%	0.461	0.461	0.14%
1.5	1.20%	1.20%	0.435	0.435	0.42%
2.0	2.43%	2.44%	0.405	0.406	0.87%
2.5	4.04%	4.05%	0.374	0.376	1.48%
3.0	5.94%	5.96%	0.346	0.347	2.22%
3.5	8.04%	8.07%	0.319	0.321	3.06%
4.0	10.29%	10.33%	0.296	0.297	3.99%

35% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.483	0.483	0.02%
1.0	0.35%	0.35%	0.466	0.466	0.12%
1.5	1.05%	1.05%	0.442	0.442	0.37%
2.0	2.16%	2.16%	0.414	0.414	0.77%
2.5	3.62%	3.62%	0.385	0.385	1.31%
3.0	5.36%	5.36%	0.357	0.357	1.98%
3.5	7.30%	7.31%	0.331	0.331	2.75%
4.0	9.40%	9.42%	0.307	0.308	3.60%

Alhambra, Tessellation ROS-I-6.9.12.9. θ=70º, L =50%

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	784.63	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	35,953	11,088	11,088	11,965	2,876	4,814	4,814	8,402
0.050	1.0	256,661	76,238	76,238	85,481	21,403	35,813	35,813	62,551
0.075	1.5	737,290	207,116	207,116	245,795	65,042	108,748	108,748	190,177
0.100	2.0	1,453,813	381,819	381,819	485,118	136,208	227,507	227,507	398,503
0.125	2.5	2,347,492	573,070	573,070	783,954	232,962	388,637	388,637	682,020
0.150	3.0	3,364,140	762,006	762,006	1,124,208	351,650	585,801	585,801	1,030,150

Lx [m]	20.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	3,139.06	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	31,142	9,675	9,675	10,372	2,433	4,144	4,144	7,203
0.050	1.0	224,460	67,381	67,381	74,784	18,230	31,039	31,039	53,977
0.075	1.5	652,386	186,000	186,000	217,460	55,878	95,107	95,107	165,484
0.100	2.0	1,300,779	348,292	348,292	433,784	118,048	200,834	200,834	349,701
0.125	2.5	2,120,294	529,939	529,939	707,356	203,529	346,076	346,076	603,118
0.150	3.0	3,061,896	712,703	712,703	1,021,824	309,387	525,743	525,743	917,097

50% (2x2)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.05%	0.535	0.534	0.02%
1.0	0.38%	0.38%	0.515	0.514	0.13%
1.5	1.14%	1.14%	0.486	0.487	0.38%
2.0	2.33%	2.33%	0.454	0.455	0.81%

50% (4x4)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.04%	0.04%	0.539	0.538	0.01%
1.0	0.33%	0.33%	0.520	0.520	0.11%
1.5	1.00%	1.00%	0.494	0.494	0.33%
2.0	2.06%	2.06%	0.464	0.464	0.71%

2.5	3.90%	3.90%	0.422	0.423	1.38%
3.0	5.75%	5.77%	0.391	0.392	2.08%

2.5	3.48%	3.48%	0.433	0.433	1.22%
3.0	5.18%	5.19%	0.403	0.403	1.85%

Z) CONVENTIONAL DIAGRID

3.3.3.3.3.3. θ =60º, Hankin method not applied

Lx [m]	40.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	34.64	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	920.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.15	3.0	857,592	370,890	370,890	1,286,340	429,137	371,499	371,499	321,837
0.30	6.0	1,716,898	739,801	739,801	2,574,966	861,155	744,630	744,630	645,725
0.45	9.0	2,579,545	1,104,855	1,104,855	3,868,046	1,298,774	1,120,903	1,120,903	973,532
0.60	12.0	3,446,995	1,464,363	1,464,363	5,167,530	1,744,423	1,501,618	1,501,618	1,306,817
0.75	15.0	4,320,485	1,816,896	1,816,896	6,475,067	2,200,141	1,887,804	1,887,804	1,646,768
0.90	18.0	5,200,986	2,161,334	2,161,334	7,791,951	2,667,524	2,280,199	2,280,199	1,994,215
1.05	21.0	6,089,185	2,496,882	2,496,882	9,119,102	3,147,709	2,679,260	2,679,260	2,349,665
1.20	24.0	6,985,494	2,823,067	2,823,067	10,457,063	3,641,398	3,085,180	3,085,180	2,713,361
1.35	27.0	7,890,062	3,139,714	3,139,714	11,806,038	4,148,895	3,497,918	3,497,918	3,085,329
1.50	30.0	8,802,818	3,446,906	3,446,906	13,165,930	4,670,166	3,917,243	3,917,243	3,465,427

Lx [m]	80.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	69.28	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Bars [m]	3,760.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.15	3.0	911,174	370,890	370,890	1,286,340	429,089	371,526	371,526	321,809
0.30	6.0	1,824,061	739,801	739,801	2,574,966	860,772	744,846	744,846	645,511
0.45	9.0	2,740,290	1,104,855	1,104,855	3,868,046	1,297,504	1,121,646	1,121,646	972,860
0.60	12.0	3,661,321	1,464,363	1,464,363	5,167,530	1,741,484	1,503,413	1,503,413	1,305,370
0.75	15.0	4,588,393	1,816,896	1,816,896	6,475,067	2,194,564	1,891,371	1,891,371	1,644,255
0.90	18.0	5,522,475	2,161,334	2,161,334	7,791,951	2,658,191	2,286,451	2,286,451	1,990,409
1.05	21.0	6,464,256	2,496,882	2,496,882	9,119,102	3,133,396	2,689,278	2,689,278	2,344,429
1.20	24.0	7,414,145	2,823,067	2,823,067	10,457,063	3,620,800	3,100,191	3,100,191	2,706,633
1.35	27.0	8,372,295	3,139,714	3,139,714	11,806,038	4,120,652	3,519,260	3,519,260	3,077,108
1.50	30.0	9,338,633	3,446,906	3,446,906	13,165,930	4,632,884	3,946,335	3,946,335	3,455,743

60º (8x8)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
3	3.03%	3.41%	0.333	0.375	1.30%
6	6.08%	6.84%	0.332	0.373	2.61%
9	9.15%	10.29%	0.330	0.371	3.93%
12	12.25%	13.78%	0.327	0.368	5.27%
15	15.40%	17.31%	0.324	0.364	6.63%
18	18.59%	20.89%	0.320	0.360	8.03%
21	21.84%	24.53%	0.316	0.355	9.45%
24	25.15%	28.23%	0.312	0.350	10.90%
27	28.51%	31.99%	0.307	0.345	12.38%
30	31.92%	35.81%	0.302	0.339	13.89%

60º (16x16)	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
3	3.25%	3.44%	0.333	0.353	1.30%
6	6.51%	6.89%	0.332	0.351	2.61%
9	9.80%	10.37%	0.330	0.349	3.93%
12	13.12%	13.89%	0.327	0.346	5.27%
15	16.48%	17.44%	0.324	0.343	6.63%
18	19.89%	21.05%	0.320	0.339	8.03%
21	23.36%	24.71%	0.316	0.335	9.45%
24	26.88%	28.43%	0.312	0.330	10.90%
27	30.46%	32.21%	0.307	0.325	12.39%
30	34.09%	36.04%	0.302	0.320	13.91%

2. ANALYSIS WITH PLANE-STRESS ELEMENTS

2.1. MESH REFINEMENT STUDY

Reactions obtained from analysis in SAP2000 of F Mustansiriya Madrasa pattern (Tessellation 3.6.3.6. θ =30º) leading to results included in the project. Linear elastic analysis with Imposed displacement of 1m, material 30MPa concrete with mechanical properties in accordance with EC2 ($E_b = 28{,}576{,}791\ kN/m^2,\ v = 0.2,\ G = 11{,}906{,}996\ kN/m^2$). To normalize the results. divide by E_b and follow the steps explained in chapter *4.3. Homogenization process*. Homogenized mechanical properties are independent of the modulus of elasticity used. Results for **2x2 panels, mesh size varying with beam depth**

MESH SIZE = BEAM DEPTH

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV1	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	675,139	372,552	372,552	225,031	6,836	10,204	10,204	19,603
0.2	4.0	2,155,690	1,099,013	1,099,013	718,515	52,635	81,670	81,670	151,354
0.3	6.0	3,946,076	1,752,021	1,752,021	1,315,774	179,137	284,583	284,583	515,604
0.4	8.0	6,311,800	2,355,928	2,355,928	2,104,836	425,492	686,865	686,865	1,239,206
0.5	10.0	8,868,756	2,705,708	2,705,708	2,955,601	782,273	1,269,716	1,269,716	2,262,832
0.6	12.0	11,869,387	2,903,419	2,903,419	3,952,502	1,234,575	2,016,422	2,016,422	3,585,969
0.7	14.0	15,165,790	2,983,796	2,983,796	5,066,689	1,802,302	2,933,449	2,933,449	5,187,871
0.8	16.0	18,417,171	3,103,596	3,103,596	6,138,219	2,315,252	3,769,700	3,769,700	6,692,004
0.9	18.0	21,332,830	3,205,987	3,205,987	7,112,203	2,791,586	4,537,717	4,537,717	8,079,339

30 DIV1	CONSTITUTIVE COEFFCICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.01364	0.01304	0.01304	0.01364	0.00038
4	0.04355	0.03846	0.03846	0.04355	0.00299
6	0.07972	0.06131	0.06131	0.07975	0.01030
8	0.12752	0.08244	0.08244	0.12757	0.02472
10	0.17918	0.09468	0.09468	0.17914	0.04550
12	0.23980	0.10160	0.10160	0.23956	0.07210
14	0.30640	0.10441	0.10441	0.30709	0.10484
16	0.37209	0.10861	0.10861	0.37204	0.13484
18	0.43100	0.11219	0.11219	0.43107	0.16250

30 DIV1	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	0.12%	0.12%	0.956	0.956	0.04%
4	0.96%	0.96%	0.883	0.883	0.30%
6	3.26%	3.26%	0.769	0.769	1.03%
8	7.42%	7.43%	0.646	0.647	2.47%
10	12.91%	12.91%	0.529	0.528	4.55%
12	19.67%	19.65%	0.424	0.424	7.21%
14	27.09%	27.15%	0.340	0.341	10.48%
16	34.04%	34.03%	0.292	0.292	13.48%
18	40.18%	40.19%	0.260	0.260	16.25%

MESH SIZE = BEAM DEPTH/2

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV2	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	592,721	329,254	329,254	196,092	5,283	7,904	7,904	14,656
0.2	4.0	2,020,766	1,059,826	1,059,826	671,035	40,952	64,513	64,513	118,227
0.3	6.0	3,655,702	1,749,680	1,749,680	1,217,256	130,535	209,224	209,224	375,067
0.4	8.0	5,747,094	2,319,403	2,319,403	1,932,437	330,284	536,230	536,230	953,690
0.5	10.0	8,160,994	2,778,969	2,778,969	2,716,401	637,824	1,054,359	1,054,359	1,856,415
0.6	12.0	11,275,859	3,042,314	3,042,314	3,746,057	1,094,172	1,810,032	1,810,032	3,175,947
0.7	14.0	14,129,911	3,221,974	3,221,974	4,728,331	1,509,905	2,513,103	2,513,103	4,404,465
0.8	16.0	17,095,386	3,332,082	3,332,082	5,891,453	2,080,182	3,471,277	3,471,277	6,078,940
0.9	18.0	20,392,338	3,383,330	3,383,330	6,835,400	2,541,072	4,228,740	4,228,740	7,448,867

30 DIV2	CONSTITUTIVE COEFFCICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.01198	0.01152	0.01152	0.01189	0.00029
4	0.04083	0.03709	0.03709	0.04067	0.00235
6	0.07386	0.06123	0.06123	0.07378	0.00753
8	0.11611	0.08116	0.08116	0.11713	0.01920
10	0.16488	0.09725	0.09725	0.16464	0.03749
12	0.22781	0.10646	0.10646	0.22705	0.06429
14	0.28547	0.11275	0.11275	0.28659	0.08910
16	0.34539	0.11660	0.11660	0.35708	0.12296
18	0.41200	0.11839	0.11839	0.41430	0.15012

30 DIV2	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	0.08%	0.08%	0.969	0.962	0.03%
4	0.70%	0.70%	0.912	0.908	0.23%
6	2.30%	2.30%	0.830	0.829	0.75%
8	5.99%	6.04%	0.693	0.699	1.92%
10	10.74%	10.73%	0.591	0.590	3.75%
12	17.79%	17.73%	0.469	0.467	6.43%
14	24.11%	24.21%	0.393	0.395	8.91%
16	30.73%	31.77%	0.327	0.338	12.30%
18	37.82%	38.03%	0.286	0.287	15.01%

MESH SIZE = BEAM DEPTH/3

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV3	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	462,124	258,476	258,476	153,424	3,220	4,870	4,870	9,139
0.2	4.0	1,807,158	973,100	973,100	602,416	26,695	42,011	42,011	75,666
0.3	6.0	3,427,102	1,713,746	1,713,746	1,141,769	93,149	150,675	150,675	269,828
0.4	8.0	5,270,322	2,344,425	2,344,425	1,752,940	226,333	371,638	371,638	659,988
0.5	10.0	7,451,589	2,857,639	2,857,639	2,506,567	471,050	781,420	781,420	1,377,483
0.6	12.0	10,111,818	3,178,948	3,178,948	3,384,349	828,620	1,381,779	1,381,779	2,432,521
0.7	14.0	13,153,676	3,423,316	3,423,316	4,394,396	1,295,006	2,162,614	2,162,614	3,794,705
0.8	16.0	16,423,394	3,476,936	3,476,936	5,425,627	1,777,209	2,982,803	2,982,803	5,215,846
0.9	18.0	19,428,644	3,602,721	3,602,721	6,480,566	2,291,022	3,853,563	3,853,563	6,743,787

30 DIV3	CONSTITUTIVE COEFFCICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.00934	0.00904	0.00904	0.00930	0.00018
4	0.03651	0.03405	0.03405	0.03651	0.00152
6	0.06924	0.05997	0.05997	0.06920	0.00541
8	0.10648	0.08204	0.08204	0.10625	0.01327
10	0.15055	0.10000	0.10000	0.15192	0.02777
12	0.20429	0.11124	0.11124	0.20513	0.04902
14	0.26575	0.11979	0.11979	0.26635	0.07663
16	0.33181	0.12167	0.12167	0.32885	0.10546
18	0.39253	0.12607	0.12607	0.39279	0.13620

30 DIV3	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	0.05%	0.05%	0.973	0.969	0.02%
4	0.48%	0.48%	0.933	0.933	0.15%
6	1.73%	1.73%	0.867	0.866	0.54%
8	4.31%	4.30%	0.772	0.770	1.33%
10	8.47%	8.55%	0.658	0.664	2.78%
12	14.40%	14.46%	0.542	0.545	4.90%
14	21.19%	21.23%	0.450	0.451	7.66%
16	28.68%	28.42%	0.370	0.367	10.55%
18	35.21%	35.23%	0.321	0.321	13.62%

MESH SIZE = BEAM DEPTH/4

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV4	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	411,423	230,796	230,796	137,028	2,528	3,860	3,860	7,167
0.2	4.0	1,727,638	936,034	936,034	575,310	21,874	34,862	34,862	62,399
0.3	6.0	3,299,572	1,676,961	1,676,961	1,103,254	76,435	124,974	124,974	222,328
0.4	8.0	5,112,231	2,339,252	2,339,252	1,703,227	199,364	329,796	329,796	581,816
0.5	10.0	7,248,007	2,868,231	2,868,231	2,427,996	419,482	699,951	699,951	1,227,975
0.6	12.0	9,712,991	3,244,615	3,244,615	3,233,755	727,079	1,220,208	1,220,208	2,135,076

0.7	14.0	12,665,152	3,459,489	3,459,489	4,187,088	1,135,039	1,913,048	1,913,048	3,351,070
0.8	16.0	15,864,652	3,590,233	3,590,233	5,271,046	1,651,854	2,787,499	2,787,499	4,873,451
0.9	18.0	18,766,384	3,695,733	3,695,733	6,284,529	2,148,373	3,623,017	3,623,017	6,334,750

30 DIV4	CONSTITUTIVE COEFFCICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.00831	0.00808	0.00808	0.00831	0.00014
4	0.03490	0.03276	0.03276	0.03487	0.00126
6	0.06666	0.05868	0.05868	0.06687	0.00447
8	0.10328	0.08186	0.08186	0.10323	0.01173
10	0.14643	0.10037	0.10037	0.14716	0.02481
12	0.19624	0.11354	0.11354	0.19600	0.04315
14	0.25588	0.12106	0.12106	0.25378	0.06760
16	0.32052	0.12563	0.12563	0.31948	0.09842
18	0.37915	0.12933	0.12933	0.38091	0.12794

30 DIV4	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	0.05%	0.05%	0.972	0.972	0.01%
4	0.41%	0.41%	0.939	0.938	0.13%
6	1.52%	1.52%	0.878	0.880	0.45%
8	3.84%	3.84%	0.793	0.793	1.17%
10	7.80%	7.84%	0.682	0.685	2.48%
12	13.05%	13.03%	0.579	0.579	4.32%
14	19.81%	19.65%	0.477	0.473	6.76%
16	27.11%	27.02%	0.393	0.392	9.84%
18	33.52%	33.68%	0.340	0.341	12.79%

MESH SIZE = BEAM DEPTH/5

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV5	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	401,481	225,358	225,358	133,666	2,443	3,740	3,740	6,909
0.2	4.0	1,680,883	913,144	913,144	559,577	19,306	31,144	31,144	56,498
0.3	6.0	3,250,708	1,661,081	1,661,081	1,083,823	72,802	119,155	119,155	209,303
0.4	8.0	5,019,280	2,328,528	2,328,528	1,674,720	180,966	301,658	301,658	531,035
0.5	10.0	7,098,638	2,877,037	2,877,037	2,367,004	385,012	646,106	646,106	1,131,758
0.6	12.0	9,542,171	3,261,553	3,261,553	3,183,011	681,964	1,150,104	1,150,104	2,011,894
0.7	14.0	12,326,924	3,514,092	3,514,092	4,113,373	1,093,297	1,848,414	1,848,414	3,228,759
0.8	16.0	15,416,251	3,666,407	3,666,407	5,124,447	1,566,488	2,655,979	2,655,979	4,639,657
0.9	18.0	18,467,389	3,754,622	3,754,622	6,177,453	2,066,479	3,502,802	3,502,802	6,115,189

30 DIV5	CONSTITUTIVE COEFFCICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.00811	0.00789	0.00789	0.00810	0.00014
4	0.03396	0.03195	0.03195	0.03392	0.00112
6	0.06568	0.05813	0.05813	0.06569	0.00425
8	0.10141	0.08148	0.08148	0.10151	0.01070
10	0.14342	0.10068	0.10068	0.14347	0.02286
12	0.19278	0.11413	0.11413	0.19292	0.04062
14	0.24905	0.12297	0.12297	0.24931	0.06522
16	0.31146	0.12830	0.12830	0.31059	0.09364
18	0.37311	0.13139	0.13139	0.37442	0.12349

30 DIV5	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	0.04%	0.04%	0.973	0.972	0.01%
4	0.39%	0.38%	0.942	0.941	0.11%
6	1.42%	1.42%	0.885	0.885	0.42%
8	3.60%	3.60%	0.803	0.804	1.07%
10	7.28%	7.28%	0.702	0.702	2.29%
12	12.53%	12.54%	0.592	0.592	4.06%
14	18.84%	18.86%	0.493	0.494	6.52%
16	25.85%	25.77%	0.413	0.412	9.36%
18	32.70%	32.82%	0.351	0.352	12.35%

MESH SIZE = BEAM DEPTH/6

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	387,053	217,372	217,372	128,965	2,219	3,467	3,467	6,317
0.2	4.0	1,657,054	901,560	901,560	551,644	18,732	30,181	30,181	54,008
0.3	6.0	3,201,211	1,643,040	1,643,040	1,068,007	67,381	111,230	111,230	194,724

0.4	8.0	4,943,509	2,311,713	2,311,713	1,651,366	171,710	285,835	285,835	499,256
0.5	10.0	6,993,432	2,865,813	2,865,813	2,335,793	357,364	602,996	602,996	1,054,943
0.6	12.0	9,451,138	3,278,440	3,278,440	3,142,885	658,622	1,114,671	1,114,671	1,945,988
0.7	14.0	12,122,353	3,553,472	3,553,472	4,047,994	1,040,659	1,766,169	1,766,169	3,080,622
0.8	16.0	15,247,388	3,692,923	3,692,923	5,061,042	1,505,628	2,560,822	2,560,822	4,469,074
0.9	18.0	18,263,069	3,805,466	3,805,466	6,087,622	1,994,552	3,394,130	3,394,130	5,921,812

30 DIV6	CONSTITUTIVE COEFFCICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.00782	0.00761	0.00761	0.00782	0.00013
4	0.03348	0.03155	0.03155	0.03344	0.00108
6	0.06468	0.05750	0.05750	0.06473	0.00395
8	0.09988	0.08089	0.08089	0.10009	0.01012
10	0.14129	0.10028	0.10028	0.14157	0.02129
12	0.19095	0.11472	0.11472	0.19049	0.03931
14	0.24491	0.12435	0.12435	0.24535	0.06223
16	0.30805	0.12923	0.12923	0.30675	0.09019
18	0.36898	0.13317	0.13317	0.36897	0.11952

30 DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	0.04%	0.04%	0.973	0.973	0.01%
4	0.37%	0.37%	0.944	0.942	0.11%
6	1.36%	1.36%	0.888	0.889	0.40%
8	3.45%	3.46%	0.808	0.810	1.01%
10	7.03%	7.04%	0.708	0.710	2.13%
12	12.19%	12.16%	0.602	0.601	3.93%
14	18.19%	18.22%	0.507	0.508	6.22%
16	25.36%	25.25%	0.421	0.420	9.02%
18	32.09%	32.09%	0.361	0.361	11.95%

MESH SIZE = BEAM DEPTH/8

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV8	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	373,196	209,654	209,654	124,388	2,055	3,245	3,245	5,865
0.2	4.0	1,614,967	880,474	880,474	538,230	17,241	28,076	28,076	49,418
0.3	6.0	3,156,119	1,625,549	1,625,549	1,052,158	63,111	104,442	104,442	183,801
0.4	8.0	4,891,960	2,306,582	2,306,582	1,633,284	162,185	272,859	272,859	475,180
0.5	10.0	6,884,916	2,867,917	2,867,917	2,298,261	339,604	573,673	573,673	997,818
0.6	12.0	9,232,218	3,291,740	3,291,740	3,091,254	612,942	1,044,360	1,044,360	1,820,504
0.7	14.0	11,947,137	3,567,356	3,567,356	3,979,037	983,750	1,679,252	1,679,252	2,925,401
0.8	16.0	14,916,243	3,743,878	3,743,878	4,970,768	1,440,799	2,461,067	2,461,067	4,285,824
0.9	18.0	17,913,096	3,838,387	3,838,387	5,967,162	1,908,277	3,262,579	3,262,579	5,683,408

30 DIV8	CONSTITUTIVE COEFFCICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.00754	0.00734	0.00734	0.00754	0.00012
4	0.03263	0.03081	0.03081	0.03262	0.00100
6	0.06376	0.05688	0.05688	0.06377	0.00371
8	0.09883	0.08072	0.08072	0.09899	0.00963
10	0.13910	0.10036	0.10036	0.13930	0.02022
12	0.18652	0.11519	0.11519	0.18736	0.03676
14	0.24137	0.12483	0.12483	0.24117	0.05906
16	0.30136	0.13101	0.13101	0.30128	0.08654
18	0.36191	0.13432	0.13432	0.36167	0.11471

30 DIV8	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	0.04%	0.04%	0.973	0.973	0.01%
4	0.35%	0.35%	0.944	0.944	0.10%
6	1.30%	1.30%	0.892	0.892	0.37%
8	3.30%	3.31%	0.815	0.817	0.96%
10	6.68%	6.69%	0.720	0.721	2.02%
12	11.57%	11.62%	0.615	0.618	3.68%
14	17.68%	17.66%	0.518	0.517	5.91%
16	24.44%	24.43%	0.435	0.435	8.65%
18	31.20%	31.18%	0.371	0.371	11.47%

MESH SIZE = BEAM DEPTH/10

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV10	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]

0.1	2.0	369,161	207,411	207,411	123,037	2,007	3,188	3,188	5,695
0.2	4.0	1,604,597	875,108	875,108	534,649	16,799	27,491	27,491	48,514
0.3	6.0	3,131,910	1,616,583	1,616,583	1,044,829	59,991	100,543	100,543	176,352
0.4	8.0	4,863,690	2,297,189	2,297,189	1,619,883	154,344	261,341	261,341	458,242
0.5	10.0	6,852,074	2,868,300	2,868,300	2,284,674	328,461	558,363	558,363	970,480
0.6	12.0	9,162,290	3,296,201	3,296,201	3,053,446	597,853	1,018,529	1,018,529	1,768,623
0.7	14.0	11,835,851	3,586,589	3,586,589	3,945,957	969,979	1,655,454	1,655,454	2,874,697
0.8	16.0	14,734,901	3,763,320	3,763,320	4,910,209	1,393,232	2,388,440	2,388,440	4,155,260
0.9	18.0	17,787,216	3,860,135	3,860,135	5,946,644	1,887,763	3,237,244	3,237,244	5,631,771

30 DIV10	CONSTITUTIVE COEFFCICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.00746	0.00726	0.00726	0.00746	0.00011
4	0.03242	0.03062	0.03062	0.03241	0.00098
6	0.06328	0.05657	0.05657	0.06333	0.00356
8	0.09826	0.08039	0.08039	0.09818	0.00923
10	0.13844	0.10037	0.10037	0.13848	0.01965
12	0.18511	0.11535	0.11535	0.18507	0.03581
14	0.23913	0.12551	0.12551	0.23917	0.05818
16	0.29770	0.13169	0.13169	0.29761	0.08389
18	0.35936	0.13508	0.13508	0.36043	0.11369

30 DIV10	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	0.04%	0.04%	0.973	0.973	0.01%
4	0.35%	0.35%	0.945	0.945	0.10%
6	1.27%	1.28%	0.893	0.894	0.36%
8	3.24%	3.24%	0.819	0.818	0.92%
10	6.57%	6.57%	0.725	0.725	1.96%
12	11.32%	11.32%	0.623	0.623	3.58%
14	17.33%	17.33%	0.525	0.525	5.82%
16	23.94%	23.94%	0.442	0.442	8.39%
18	30.87%	30.97%	0.375	0.376	11.37%

MESH SIZE = BEAM DEPTH/12

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	364,769	204,938	204,938	121,572	1,957	3,121	3,121	5,541
0.2	4.0	1,592,564	868,998	868,998	530,774	15,891	26,463	26,463	46,565
0.3	6.0	3,114,929	1,608,714	1,608,714	1,037,814	58,734	98,570	98,570	171,732
0.4	8.0	4,834,844	2,292,799	2,292,799	1,612,198	152,560	258,292	258,292	450,449
0.5	10.0	6,811,559	2,863,500	2,863,500	2,268,335	317,866	542,622	542,622	942,904
0.6	12.0	9,123,221	3,300,276	3,300,276	3,039,993	584,614	999,705	999,705	1,736,074
0.7	14.0	11,743,407	3,596,492	3,596,492	3,913,838	939,370	1,608,071	1,608,071	2,790,972
0.8	16.0	14,653,694	3,774,650	3,774,650	4,884,891	1,374,496	2,355,056	2,355,056	4,088,636
0.9	18.0	17,653,473	3,874,156	3,874,156	5,883,103	1,844,787	3,169,785	3,169,785	5,510,462

30 DIV12	CONSTITUTIVE COEFFCICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.00737	0.00717	0.00717	0.00737	0.00011
4	0.03218	0.03041	0.03041	0.03217	0.00094
6	0.06293	0.05629	0.05629	0.06290	0.00348
8	0.09768	0.08023	0.08023	0.09772	0.00911
10	0.13762	0.10020	0.10020	0.13748	0.01907
12	0.18432	0.11549	0.11549	0.18426	0.03512
14	0.23726	0.12585	0.12585	0.23722	0.05647
16	0.29606	0.13209	0.13209	0.29608	0.08268
18	0.35666	0.13557	0.13557	0.35658	0.11125

30 DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	0.04%	0.04%	0.973	0.973	0.01%
4	0.34%	0.34%	0.945	0.945	0.09%
6	1.26%	1.25%	0.895	0.895	0.35%
8	3.18%	3.18%	0.821	0.821	0.91%
10	6.46%	6.45%	0.729	0.728	1.91%
12	11.19%	11.19%	0.627	0.627	3.51%
14	17.05%	17.05%	0.531	0.530	5.65%
16	23.71%	23.71%	0.446	0.446	8.27%
18	30.51%	30.50%	0.380	0.380	11.12%

MESH SIZE = BEAM DEPTH/16

Lx [m]	10.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	17.32	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV16	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0

GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	361,397	203,060	203,060	120,460	1,852	3,010	3,010	5,337
0.2	4.0	1,578,983	861,965	861,965	526,362	15,466	25,896	25,896	45,318
0.3	6.0	3,098,618	1,602,015	1,602,015	1,032,851	57,010	96,348	96,348	168,107
0.4	8.0	4,802,462	2,282,616	2,282,616	1,600,350	147,458	250,828	250,828	435,559
0.5	10.0	6,775,488	2,860,339	2,860,339	2,259,331	312,123	533,867	533,867	928,454
0.6	12.0	9,055,074	3,299,962	3,299,962	3,017,974	570,315	976,233	976,233	1,696,043
0.7	14.0	11,654,232	3,607,739	3,607,739	3,888,117	916,834	1,576,080	1,576,080	2,734,122
0.8	16.0	14,521,558	3,799,313	3,799,313	4,843,827	1,344,590	2,312,121	2,312,121	4,012,162
0.9	18.0	17,499,145	3,906,599	3,906,599	5,837,115	1,812,502	3,117,309	3,117,309	5,409,755

30 DIV16	CONSTITUTIVE COEFFCICIENTS				
rbd [%]	Q_{11}	Q_{12}	Q_{21}	Q_{22}	Q_{33}
2	0.00730	0.00711	0.00711	0.00730	0.00011
4	0.03190	0.03016	0.03016	0.03190	0.00092
6	0.06260	0.05606	0.05606	0.06260	0.00340
8	0.09703	0.07988	0.07988	0.09700	0.00882
10	0.13689	0.10009	0.10009	0.13694	0.01876
12	0.18294	0.11548	0.11548	0.18292	0.03429
14	0.23546	0.12625	0.12625	0.23566	0.05528
16	0.29339	0.13295	0.13295	0.29359	0.08109
18	0.35354	0.13671	0.13671	0.35379	0.10933

30 DIV16	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$\boldsymbol{E_{h.x}}$	$\boldsymbol{E_{h.y}}$	$\boldsymbol{\nu_{h.xy}}$	$\boldsymbol{\nu_{h.yx}}$	$\boldsymbol{G_h}$
2	0.04%	0.04%	0.973	0.973	0.01%
4	0.34%	0.34%	0.945	0.946	0.09%
6	1.24%	1.24%	0.896	0.895	0.34%
8	3.12%	3.12%	0.823	0.823	0.88%
10	6.37%	6.38%	0.731	0.731	1.88%
12	11.00%	11.00%	0.631	0.631	3.43%
14	16.78%	16.80%	0.536	0.536	5.53%
16	23.32%	23.33%	0.453	0.453	8.11%
18	30.07%	30.09%	0.386	0.387	10.93%

2.2. HISTORIC PATTERNS

Linear elastic analysis with Imposed displacement of 1m, material 30MPa concrete with mechanical properties in accordance with EC2 ($E_b = 28{,}576{,}791\ kN/m^2,\ v = 0.2,\ G = 11{,}906{,}996\ kN/m^2$). The homogenized mechanical properties are normalized dividing the final results by E_b and are independent of the modulus of elasticity used. Results for **2x2 and 4x4 panels**

A) YESLI MOSQUE

Tessellation 3.6.3.6.

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	1,301,454	249,053	249,053	433,753	145,234	251,267	251,267	435,384
0.2	4.0	2,623,265	498,078	498,078	874,094	294,795	508,780	508,780	882,185
0.3	6.0	3,967,036	745,914	745,914	1,321,799	448,701	773,292	773,292	1,341,516
0.4	8.0	5,337,000	991,453	991,453	1,778,298	609,576	1,047,426	1,047,426	1,818,149
0.5	10.0	6,738,355	1,235,923	1,235,923	2,246,943	776,034	1,331,220	1,331,220	2,313,125
0.6	12.0	8,197,296	1,480,618	1,480,618	2,727,669	952,071	1,629,016	1,629,016	2,833,293
0.7	14.0	9,665,007	1,719,059	1,719,059	3,215,296	1,132,653	1,934,064	1,934,064	3,366,852
0.8	16.0	11,138,705	1,949,005	1,949,005	3,709,120	1,318,578	2,246,230	2,246,230	3,913,725
0.9	18.0	12,670,140	2,181,652	2,181,652	4,220,665	1,513,280	2,572,850	2,572,850	4,486,775
1.0	20.0	14,307,961	2,424,866	2,424,866	4,757,032	1,721,434	2,919,133	2,919,133	5,094,903

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.1	2.0	1,299,663	248,805	248,805	433,253	144,962	250,876	250,876	434,629
0.2	4.0	2,613,743	496,694	496,694	871,317	292,908	506,509	506,509	877,828
0.3	6.0	3,949,582	743,630	743,630	1,316,729	445,352	769,168	769,168	1,333,420
0.4	8.0	5,310,960	988,292	988,292	1,769,913	603,062	1,040,278	1,040,278	1,804,560
0.5	10.0	6,693,590	1,230,577	1,230,577	2,231,707	764,731	1,318,794	1,318,794	2,287,623
0.6	12.0	8,106,303	1,470,006	1,470,006	2,702,501	933,101	1,607,348	1,607,348	2,789,175
0.7	14.0	9,549,975	1,704,832	1,704,832	3,182,324	1,108,512	1,907,081	1,907,081	3,310,675
0.8	16.0	11,008,501	1,935,659	1,935,659	3,670,060	1,288,515	2,214,013	2,214,013	3,844,929
0.9	18.0	12,508,766	2,165,140	2,165,140	4,168,755	1,473,466	2,531,299	2,531,299	4,399,362
1.0	20.0	14,036,904	2,391,772	2,391,772	4,673,732	1,664,805	2,857,949	2,857,949	4,970,074

DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	2.34%	2.34%	0.332	0.331	0.88%
4	4.73%	4.72%	0.329	0.329	1.78%
6	7.16%	7.16%	0.326	0.326	2.71%
8	9.67%	9.66%	0.322	0.322	3.67%
10	12.24%	12.24%	0.318	0.318	4.67%
12	14.94%	14.91%	0.313	0.313	5.72%
14	17.67%	17.63%	0.309	0.308	6.80%
16	20.43%	20.41%	0.303	0.303	7.90%
18	23.32%	23.30%	0.298	0.298	9.06%
20	26.41%	26.34%	0.294	0.294	10.29%

DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
2	2.34%	2.34%	0.332	0.332	0.88%
4	4.71%	4.71%	0.329	0.329	1.77%
6	7.13%	7.13%	0.326	0.326	2.69%
8	9.62%	9.61%	0.322	0.322	3.65%
10	12.15%	12.16%	0.318	0.318	4.62%
12	14.76%	14.76%	0.314	0.314	5.63%
14	17.45%	17.44%	0.309	0.309	6.69%
16	20.18%	20.18%	0.305	0.305	7.77%
18	23.00%	23.00%	0.300	0.300	8.88%
20	25.89%	25.86%	0.295	0.295	10.03%

B) GREAT MOSQUE OF DAMASCUS

Tessellation 6.6.6. θ =60º

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	9,585	4,214	4,214	7,182	2,230	2,222	2,222	2,427
0.10	2.0	82,015	36,264	36,264	61,612	17,535	18,328	18,328	20,404
0.15	3.0	280,774	123,147	123,147	210,825	57,958	62,161	62,161	69,923
0.20	4.0	671,902	288,787	288,787	503,096	137,874	149,955	149,955	169,720
0.25	5.0	1,309,800	544,689	544,689	974,683	269,823	297,844	297,844	339,048
0.30	6.0	2,168,903	868,646	868,646	1,634,385	456,462	510,266	510,266	583,873
0.35	7.0	3,278,522	1,251,804	1,251,804	2,475,442	717,482	805,204	805,204	923,575
0.40	8.0	4,662,316	1,668,466	1,668,466	3,488,503	1,054,848	1,187,987	1,187,987	1,365,484
0.45	9.0	6,179,923	2,055,253	2,055,253	4,587,714	1,442,161	1,629,385	1,629,385	1,877,028
0.50	10.0	7,780,809	2,425,608	2,425,608	5,837,517	1,899,954	2,150,036	2,150,036	2,480,904

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	8,949	3,929	3,929	6,707	1,933	2,018	2,018	2,245
0.10	2.0	76,104	33,561	33,561	57,061	15,293	16,669	16,669	18,856
0.15	3.0	260,197	113,975	113,975	194,952	51,357	56,863	56,863	64,708
0.20	4.0	620,073	267,058	267,058	465,853	122,892	137,335	137,335	156,850
0.25	5.0	1,197,412	500,810	500,810	897,443	241,465	271,431	271,431	310,854
0.30	6.0	2,006,263	806,269	806,269	1,506,101	414,614	468,690	468,690	537,872
0.35	7.0	3,048,864	1,173,613	1,173,613	2,299,511	652,383	741,389	741,389	852,789
0.40	8.0	4,310,339	1,564,803	1,564,803	3,227,897	955,490	1,086,861	1,086,861	1,251,421
0.45	9.0	5,803,047	1,978,965	1,978,965	4,333,466	1,333,787	1,518,836	1,518,836	1,750,600
0.50	10.0	7,375,336	2,360,954	2,360,954	5,517,997	1,761,905	2,011,904	2,011,904	2,320,335

60º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.02%	0.02%	0.508	0.508	0.01%
2	0.18%	0.18%	0.510	0.511	0.07%
3	0.63%	0.63%	0.506	0.506	0.22%
4	1.53%	1.53%	0.497	0.496	0.53%
5	3.05%	3.02%	0.484	0.480	1.05%
6	5.17%	5.20%	0.460	0.462	1.80%
7	8.02%	8.07%	0.438	0.441	2.83%
8	11.71%	11.68%	0.414	0.413	4.18%
9	15.94%	15.78%	0.388	0.384	5.73%
10	20.53%	20.53%	0.360	0.360	7.56%

60º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.02%	0.02%	0.507	0.507	0.01%
2	0.17%	0.17%	0.509	0.509	0.06%
3	0.59%	0.59%	0.506	0.506	0.20%
4	1.42%	1.42%	0.496	0.497	0.48%
5	2.78%	2.78%	0.483	0.483	0.95%
6	4.77%	4.78%	0.464	0.464	1.65%
7	7.42%	7.47%	0.442	0.444	2.60%
8	10.76%	10.75%	0.420	0.419	3.81%
9	14.85%	14.78%	0.395	0.394	5.33%
10	19.29%	19.24%	0.371	0.370	7.06%

Tessellation 6.6.6. θ =75º

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Beam depth	rel beam depth	**Nxh = Q11**	**Nyh = Q21**	**Nxv = Q12**	**Nyv = Q22**	**Nxy,h**	**Nyx,h**	**Nxy,v**	**Nyx,v**
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]

0.05	1.0	3,323	1,094	1,094	2,479	769	888	888	1,026
0.1	2.0	33,016	11,553	11,553	24,800	7,374	8,515	8,515	9,832
0.15	3.0	140,183	51,798	51,798	104,966	30,109	34,766	34,766	40,145
0.2	4.0	421,528	162,330	162,330	315,912	87,661	101,222	101,222	116,881
0.25	5.0	1,038,141	409,533	409,533	777,042	210,266	242,794	242,794	280,355
0.3	6.0	2,165,834	866,573	866,573	1,652,538	445,870	514,846	514,846	594,493
0.35	7.0	4,052,445	1,534,847	1,534,847	3,058,598	859,180	992,096	992,096	1,145,574
0.4	8.0	6,493,947	2,192,097	2,192,097	4,852,365	1,474,611	1,702,734	1,702,734	1,966,148
0.45	9.0	8,994,471	2,637,636	2,637,636	6,733,671	2,232,278	2,577,613	2,577,613	2,976,371
0.5	10.0	11,459,196	2,975,674	2,975,674	8,572,744	3,004,293	3,469,059	3,469,059	4,005,725

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Beam depth	rel beam depth	**Nxh = Q11**	**Nyh = Q21**	**Nxv = Q12**	**Nyv = Q22**	**Nxy,h**	**Nyx,h**	**Nxy,v**	**Nyx,v**
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	3,095	1,016	1,016	2,314	718	829	829	957
0.1	2.0	30,610	10,658	10,658	22,964	6,863	7,925	7,925	9,151
0.15	3.0	128,984	47,138	47,138	96,644	27,883	32,197	32,197	37,178
0.2	4.0	382,706	145,495	145,495	286,900	80,340	92,769	92,769	107,120
0.25	5.0	939,489	366,428	366,428	702,885	192,746	222,564	222,564	256,994
0.3	6.0	1,995,772	784,510	784,510	1,496,726	408,458	471,647	471,647	544,611
0.35	7.0	3,745,384	1,416,756	1,416,756	2,805,465	789,749	911,923	911,923	1,052,999
0.4	8.0	6,085,544	2,086,239	2,086,239	4,556,749	1,375,438	1,588,219	1,588,219	1,833,917
0.45	9.0	8,599,724	2,570,391	2,570,391	6,434,037	2,105,286	2,430,975	2,430,975	2,807,048
0.5	10.0	11,021,023	2,927,480	2,927,480	8,267,413	2,867,084	3,310,624	3,310,624	3,822,779

75º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
depth [%]	**Ex**	**Ey**	**Vxy**	**Vyx**	**G**
1	0.01%	0.01%	0.382	0.380	0.00%
2	0.08%	0.08%	0.403	0.404	0.03%
3	0.35%	0.35%	0.427	0.427	0.12%
4	1.02%	1.02%	0.445	0.445	0.35%
5	2.49%	2.49%	0.456	0.456	0.85%
6	5.19%	5.28%	0.454	0.462	1.80%
7	9.95%	10.01%	0.435	0.437	3.47%
8	16.68%	16.62%	0.391	0.390	5.96%
9	24.13%	24.08%	0.339	0.339	9.02%
10	31.60%	31.52%	0.301	0.300	12.14%

75º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
depth [%]	**Ex**	**Ey**	**Vxy**	**Vyx**	**G**
1	0.01%	0.01%	0.380	0.379	0.00%
2	0.08%	0.08%	0.402	0.402	0.03%
3	0.32%	0.32%	0.422	0.422	0.11%
4	0.94%	0.94%	0.439	0.439	0.32%
5	2.27%	2.26%	0.451	0.450	0.78%
6	4.80%	4.80%	0.454	0.454	1.65%
7	9.18%	9.17%	0.437	0.437	3.19%
8	15.55%	15.52%	0.396	0.396	5.56%
9	22.95%	22.89%	0.346	0.345	8.51%
10	30.26%	30.26%	0.307	0.307	11.59%

C) SABZ PUSHAN

Tessellation 6.6.6. θ =60º, opening distance 35%

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	21,566	14,047	14,047	16,141	1,969	2,273	2,273	2,625
0.10	2.0	181,688	116,989	116,989	135,782	17,165	19,820	19,820	22,887
0.15	3.0	613,072	382,483	382,483	457,152	62,699	72,398	72,398	83,598
0.20	4.0	1,379,538	815,465	815,465	1,023,012	158,803	183,370	183,370	211,737
0.25	5.0	2,459,057	1,333,005	1,333,005	1,824,432	344,114	389,346	389,346	448,422
0.30	6.0	3,851,631	1,935,101	1,935,101	2,861,411	618,631	690,325	690,325	793,651
0.35	7.0	5,557,258	2,621,755	2,621,755	4,133,949	982,355	1,086,308	1,086,308	1,247,425

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	20,081	13,055	13,055	14,967	1,841	2,126	2,126	2,454
0.10	2.0	168,563	108,376	108,376	125,593	15,968	18,438	18,438	21,290
0.15	3.0	566,596	353,950	353,950	421,492	57,968	66,936	66,936	77,291
0.20	4.0	1,278,556	762,139	762,139	950,562	146,580	169,256	169,256	195,440
0.25	5.0	2,289,643	1,260,662	1,260,662	1,706,863	314,425	358,287	358,287	412,697
0.30	6.0	3,599,858	1,849,517	1,849,517	2,690,396	561,502	634,029	634,029	729,061
0.35	7.0	5,209,200	2,528,706	2,528,706	3,901,161	887,812	996,482	996,482	1,144,532

35% DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.03%	0.03%	0.754	0.752	0.01%
2	0.25%	0.24%	0.746	0.744	0.07%
3	0.89%	0.88%	0.725	0.720	0.25%
4	2.21%	2.19%	0.690	0.683	0.64%
5	4.50%	4.45%	0.633	0.626	1.37%
6	7.71%	7.63%	0.586	0.580	2.43%
7	11.80%	11.71%	0.549	0.545	3.84%

35% DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.03%	0.03%	0.755	0.751	0.01%
2	0.23%	0.23%	0.747	0.742	0.06%
3	0.82%	0.81%	0.727	0.721	0.23%
4	2.02%	2.01%	0.694	0.688	0.59%
5	4.12%	4.09%	0.640	0.636	1.26%
6	7.06%	7.03%	0.595	0.593	2.23%
7	10.82%	10.80%	0.561	0.561	3.51%

D) LAHORE FORT

Tessellation 4.8.8. θ =67.5º

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	60,629	12,652	12,652	60,623	3,620	3,620	3,620	3,620
0.10	2.0	409,504	98,338	98,338	409,399	31,249	31,249	31,249	31,249
0.15	3.0	1,074,601	291,134	291,134	1,074,386	111,203	111,203	111,203	111,203
0.20	4.0	1,953,529	578,094	578,094	1,953,265	268,327	268,327	268,327	268,327
0.25	5.0	2,921,211	898,786	898,786	2,922,082	520,174	520,174	520,174	520,174
0.30	6.0	3,959,861	1,245,779	1,245,779	3,959,516	866,620	866,620	866,620	866,620
0.35	7.0	5,048,524	1,599,650	1,599,650	5,049,213	1,311,252	1,311,252	1,311,252	1,311,252
0.40	8.0	6,102,817	1,922,611	1,922,611	6,102,835	1,818,263	1,818,263	1,818,263	1,818,263
0.45	9.0	7,234,396	2,253,864	2,253,864	7,234,938	2,376,929	2,376,929	2,376,929	2,376,929
0.50	10.0	8,425,031	2,595,575	2,595,575	8,424,859	2,950,904	2,950,904	2,950,904	2,950,904
0.55	11.0	9,591,320	2,912,411	2,912,411	9,590,917	3,492,966	3,492,966	3,492,966	3,492,966

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	56,920	11,745	11,745	56,918	3,396	3,396	3,396	3,396
0.10	2.0	385,163	91,310	91,310	385,187	31,250	30,810	30,810	31,250
0.15	3.0	1,023,916	274,999	274,999	1,024,907	103,519	103,519	103,519	103,519

0.20	4.0	1,865,624	544,324	544,324	1,865,700	250,763	250,763	250,763	250,763
0.25	5.0	2,827,959	866,989	866,989	2,828,102	487,668	487,668	487,668	487,668
0.30	6.0	3,836,635	1,205,135	1,205,135	3,836,428	821,610	821,610	821,610	821,610
0.35	7.0	4,886,705	1,546,297	1,546,297	4,886,675	1,238,790	1,238,790	1,238,790	1,238,790
0.40	8.0	5,950,093	1,877,402	1,877,402	5,949,768	1,727,649	1,727,649	1,727,649	1,727,649
0.45	9.0	7,050,202	2,204,348	2,204,348	7,049,751	2,263,872	2,263,872	2,263,872	2,263,872
0.50	10.0	8,175,328	2,531,278	2,531,278	8,175,185	2,814,330	2,814,330	2,814,330	2,814,330
0.55	11.0	9,334,254	2,857,120	2,857,120	9,334,105	3,366,342	3,366,342	3,366,342	3,366,342

67.5º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.20%	0.20%	0.209	0.209	0.01%
2	1.35%	1.35%	0.240	0.240	0.11%
3	3.48%	3.48%	0.271	0.271	0.39%
4	6.24%	6.24%	0.296	0.296	0.94%
5	9.25%	9.26%	0.308	0.308	1.82%
6	12.49%	12.48%	0.315	0.315	3.03%
7	15.89%	15.90%	0.317	0.317	4.59%
8	19.24%	19.24%	0.315	0.315	6.36%
9	22.86%	22.86%	0.312	0.312	8.32%
10	26.68%	26.68%	0.308	0.308	10.33%
11	30.47%	30.47%	0.304	0.304	12.22%

67.5º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.19%	0.19%	0.206	0.206	0.01%
2	1.27%	1.27%	0.237	0.237	0.11%
3	3.32%	3.33%	0.268	0.269	0.36%
4	5.97%	5.97%	0.292	0.292	0.88%
5	8.97%	8.97%	0.307	0.307	1.71%
6	12.10%	12.10%	0.314	0.314	2.88%
7	15.39%	15.39%	0.316	0.316	4.33%
8	18.75%	18.75%	0.316	0.316	6.05%
9	22.26%	22.26%	0.313	0.313	7.92%
10	25.87%	25.87%	0.310	0.310	9.85%
11	29.60%	29.60%	0.306	0.306	11.78%

E) PALACE OF THE SHIRVANSHAHS

Tessellation 4.8.8. θ =45º, with number of crossings = 0

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	2,420	2,137	2,137	2,420	1,350	1,350	1,350	1,350
0.10	2.0	19,448	17,098	17,098	19,448	10,271	10,271	10,271	10,271
0.15	3.0	65,463	57,199	57,199	65,462	32,947	32,947	32,947	32,947
0.20	4.0	152,610	132,238	132,238	152,607	73,386	73,386	73,386	73,386
0.25	5.0	291,167	249,449	249,449	291,165	134,211	134,211	134,211	134,211
0.30	6.0	486,445	411,961	411,961	486,361	217,313	217,313	217,313	217,313
0.35	7.0	737,126	613,272	613,272	737,191	317,425	317,425	317,425	317,425
0.40	8.0	1,040,910	850,458	850,458	1,040,743	438,139	438,139	438,139	438,139
0.45	9.0	1,434,676	1,151,518	1,151,518	1,434,197	595,969	595,969	595,969	595,969
0.50	10.0	1,835,580	1,430,511	1,430,511	1,835,518	741,959	741,959	741,959	741,959
0.55	11.0	2,313,427	1,741,223	1,741,223	2,312,926	906,996	906,996	906,996	906,996
0.60	12.0	2,805,985	2,056,269	2,056,269	2,805,586	1,098,251	1,098,251	1,098,251	1,098,251
0.65	13.0	3,391,772	2,390,537	2,390,537	3,392,624	1,306,717	1,306,717	1,306,717	1,306,717
0.70	14.0	4,062,880	2,729,165	2,729,165	4,063,281	1,521,771	1,521,771	1,521,771	1,521,771

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	2,357	2,080	2,080	2,357	1,311	1,311	1,311	1,311
0.10	2.0	18,825	16,530	16,530	18,825	9,908	9,908	9,908	9,908
0.15	3.0	63,050	55,011	55,011	63,051	31,572	31,572	31,572	31,572

0.20	4.0	146,275	126,497	126,497	146,279	69,964	69,964	69,964	69,964
0.25	5.0	278,354	238,347	238,347	278,356	128,167	128,167	128,167	128,167
0.30	6.0	462,529	390,505	390,505	462,553	205,157	205,157	205,157	205,157
0.35	7.0	706,110	587,613	587,613	706,103	304,416	304,416	304,416	304,416
0.40	8.0	1,002,355	818,895	818,895	1,002,409	420,793	420,793	420,793	420,793
0.45	9.0	1,354,615	1,084,501	1,084,501	1,354,654	557,220	557,220	557,220	557,220
0.50	10.0	1,765,182	1,377,169	1,377,169	1,765,145	709,451	709,451	709,451	709,451
0.55	11.0	2,206,711	1,676,682	1,676,682	2,206,474	876,284	876,284	876,284	876,284
0.60	12.0	2,716,075	1,999,707	1,999,707	2,716,068	1,062,176	1,062,176	1,062,176	1,062,176
0.65	13.0	3,250,443	2,306,669	2,306,669	3,250,237	1,250,434	1,250,434	1,250,434	1,250,434
0.70	14.0	3,834,028	2,610,872	2,610,872	3,833,751	1,450,746	1,450,746	1,450,746	1,450,746

45% DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.883	0.883	0.00%
2	0.02%	0.02%	0.879	0.879	0.04%
3	0.05%	0.05%	0.874	0.874	0.12%
4	0.13%	0.13%	0.867	0.867	0.26%
5	0.27%	0.27%	0.857	0.857	0.47%
6	0.48%	0.48%	0.847	0.847	0.76%
7	0.79%	0.79%	0.832	0.832	1.11%
8	1.21%	1.21%	0.817	0.817	1.53%
9	1.79%	1.78%	0.803	0.803	2.09%
10	2.52%	2.52%	0.779	0.779	2.60%
11	3.51%	3.51%	0.753	0.753	3.17%
12	4.55%	4.54%	0.733	0.733	3.84%
13	5.65%	5.65%	0.710	0.710	4.38%
14	7.19%	7.19%	0.681	0.681	5.08%

45% DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.883	0.883	0.00%
2	0.02%	0.02%	0.878	0.878	0.03%
3	0.05%	0.05%	0.872	0.873	0.11%
4	0.13%	0.13%	0.865	0.865	0.24%
5	0.26%	0.26%	0.856	0.856	0.45%
6	0.46%	0.46%	0.844	0.844	0.72%
7	0.76%	0.76%	0.832	0.832	1.07%
8	1.17%	1.17%	0.817	0.817	1.47%
9	1.70%	1.70%	0.801	0.801	1.95%
10	2.42%	2.42%	0.780	0.780	2.48%
11	3.26%	3.26%	0.760	0.760	3.07%
12	4.35%	4.35%	0.736	0.736	3.72%
13	5.97%	5.98%	0.705	0.705	4.57%
14	7.80%	7.80%	0.672	0.672	5.33%

F) MUSTANSIRIYA MADRASA

Tessellation 3.6.3.6. θ =30º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	60,020	33,938	33,938	20,002	206	356	356	617
0.10	2.0	387,023	217,356	217,356	128,957	1,775	3,074	3,074	5,324
0.15	3.0	949,820	526,758	526,758	316,432	6,221	10,775	10,775	18,662
0.20	4.0	1,656,823	901,454	901,454	551,594	15,972	27,665	27,665	47,917
0.25	5.0	2,394,886	1,270,764	1,270,764	798,313	32,446	56,198	56,198	97,338
0.30	6.0	3,201,032	1,642,969	1,642,969	1,067,978	60,485	104,764	104,764	181,456
0.35	7.0	4,046,397	1,990,795	1,990,795	1,348,842	100,357	173,823	173,823	301,071
0.40	8.0	4,943,060	2,311,587	2,311,587	1,651,324	156,942	271,832	271,832	470,827
0.45	9.0	5,935,853	2,609,832	2,609,832	1,982,800	237,930	412,107	412,107	713,790
0.50	10.0	6,992,862	2,865,724	2,865,724	2,335,770	337,926	585,305	585,305	1,013,779
0.55	11.0	8,172,063	3,095,262	3,095,262	2,718,447	467,020	808,902	808,902	1,401,060
0.60	12.0	9,449,799	3,278,438	3,278,438	3,142,868	628,962	1,089,395	1,089,395	1,886,887
0.65	13.0	10,756,689	3,425,094	3,425,094	3,592,476	813,181	1,408,471	1,408,471	2,439,543
0.70	14.0	12,121,228	3,553,532	3,553,532	4,047,963	1,003,595	1,738,278	1,738,278	3,010,787
0.75	15.0	13,655,584	3,627,174	3,627,174	4,558,104	1,241,838	2,150,927	2,150,927	3,725,515
0.80	16.0	15,244,204	3,693,186	3,693,186	5,060,714	1,461,345	2,531,124	2,531,124	4,384,036
0.85	17.0	16,765,092	3,750,186	3,750,186	5,570,517	1,709,229	2,960,471	2,960,471	5,127,687

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0

Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	56,555	31,980	31,980	18,848	193	335	335	580
0.10	2.0	364,761	204,934	204,934	121,570	1,632	2,827	2,827	4,896
0.15	3.0	913,938	507,509	507,509	304,602	5,815	10,072	10,072	17,445
0.20	4.0	1,592,517	868,975	868,975	530,764	14,591	25,273	25,273	43,773
0.25	5.0	2,333,563	1,243,331	1,243,331	778,022	30,115	52,160	52,160	90,344
0.30	6.0	3,114,833	1,608,676	1,608,676	1,037,799	54,697	94,738	94,738	164,091
0.35	7.0	3,939,973	1,958,076	1,958,076	1,314,147	91,744	158,905	158,905	275,231
0.40	8.0	4,834,706	2,292,757	2,292,757	1,612,183	145,051	251,235	251,235	435,152
0.45	9.0	5,788,500	2,592,712	2,592,712	1,928,423	215,847	373,858	373,858	647,541
0.50	10.0	6,811,392	2,863,467	2,863,467	2,268,326	307,877	533,259	533,259	923,631
0.55	11.0	7,922,423	3,098,233	3,098,233	2,641,284	426,295	738,365	738,365	1,278,885
0.60	12.0	9,122,913	3,300,249	3,300,249	3,039,988	569,057	985,635	985,635	1,707,170
0.65	13.0	10,400,784	3,464,558	3,464,558	3,470,519	738,156	1,278,524	1,278,524	2,214,469
0.70	14.0	11,743,030	3,596,491	3,596,491	3,913,835	917,612	1,589,350	1,589,350	2,752,835
0.75	15.0	13,169,389	3,696,466	3,696,466	4,385,750	1,123,328	1,945,662	1,945,662	3,369,985
0.80	16.0	14,652,833	3,774,712	3,774,712	4,884,876	1,347,727	2,334,332	2,334,332	4,043,182
0.85	17.0	16,139,851	3,845,494	3,845,494	5,384,905	1,586,450	2,747,812	2,747,812	4,759,350

30º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.980	0.979	0.00%
2	0.04%	0.04%	0.973	0.973	0.01%
3	0.15%	0.15%	0.961	0.961	0.04%
4	0.37%	0.37%	0.944	0.942	0.10%
5	0.75%	0.75%	0.919	0.919	0.20%
6	1.36%	1.36%	0.888	0.889	0.37%
7	2.24%	2.24%	0.852	0.852	0.61%
8	3.45%	3.46%	0.808	0.810	0.95%
9	5.05%	5.06%	0.760	0.762	1.44%
10	7.02%	7.04%	0.708	0.710	2.05%
11	9.39%	9.37%	0.657	0.656	2.83%
12	12.18%	12.16%	0.602	0.601	3.81%
13	15.14%	15.16%	0.550	0.551	4.93%
14	18.19%	18.22%	0.507	0.508	6.08%
15	21.76%	21.79%	0.459	0.460	7.53%
16	25.35%	25.25%	0.421	0.420	8.86%
17	28.77%	28.68%	0.389	0.387	10.36%
18	32.08%	32.09%	0.361	0.361	11.79%

30º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.00%	0.00%	0.980	0.979	0.00%
2	0.04%	0.04%	0.973	0.973	0.01%
3	0.14%	0.14%	0.962	0.962	0.04%
4	0.34%	0.34%	0.945	0.945	0.09%
5	0.70%	0.70%	0.923	0.923	0.18%
6	1.26%	1.25%	0.895	0.895	0.33%
7	2.07%	2.07%	0.860	0.861	0.56%
8	3.18%	3.18%	0.821	0.821	0.88%
9	4.65%	4.65%	0.776	0.776	1.31%
10	6.46%	6.45%	0.729	0.728	1.87%
11	8.66%	8.67%	0.677	0.677	2.58%
12	11.19%	11.19%	0.627	0.627	3.45%
13	14.03%	14.04%	0.576	0.577	4.47%
14	17.05%	17.05%	0.531	0.530	5.56%
15	20.31%	20.29%	0.487	0.486	6.81%
16	23.71%	23.71%	0.446	0.446	8.17%
17	27.06%	27.08%	0.412	0.413	9.62%
18	30.51%	30.50%	0.380	0.380	11.05%

G) TOMB OF SALIM CHISHTI

Tessellation 6.6.6. D = 65%, θ =75º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	87,571	66,515	66,515	63,875	3,629	4,190	4,190	4,838
0.10	2.0	561,784	411,052	411,052	410,953	30,292	34,978	34,978	40,390
0.15	3.0	1,417,383	968,936	968,936	1,033,643	105,919	122,304	122,304	141,225
0.20	4.0	2,518,867	1,565,297	1,565,297	1,833,059	254,575	293,958	293,958	339,434
0.25	5.0	3,828,331	2,107,158	2,107,158	2,761,541	499,996	577,346	577,346	666,661
0.30	6.0	5,327,116	2,550,122	2,550,122	3,831,401	852,730	984,648	984,648	1,136,973

0.35	7.0	7,034,466	2,893,726	2,893,726	4,990,188	1,322,767	1,527,400	1,527,400	1,763,690
0.40	8.0	8,966,634	3,150,039	3,150,039	6,252,379	1,900,484	2,194,490	2,194,490	2,533,979

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	82,299	62,547	62,547	60,024	3,385	3,908	3,908	4,513
0.10	2.0	530,364	389,169	389,169	387,518	28,034	32,371	32,371	37,378
0.15	3.0	1,346,357	927,901	927,901	983,133	97,051	112,064	112,064	129,401
0.20	4.0	2,407,085	1,517,309	1,517,309	1,750,991	233,249	269,332	269,332	310,998
0.25	5.0	3,655,596	2,060,167	2,060,167	2,641,325	455,688	526,183	526,183	607,584
0.30	6.0	5,093,193	2,518,659	2,518,659	3,636,876	779,876	900,523	900,523	1,039,835
0.35	7.0	6,720,713	2,883,795	2,883,795	4,745,401	1,212,057	1,399,563	1,399,563	1,616,076
0.40	8.0	8,533,713	3,160,742	3,160,742	5,966,448	1,746,505	2,016,690	2,016,690	2,328,673

75º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.06%	0.05%	0.902	0.877	0.01%
2	0.46%	0.45%	0.866	0.845	0.12%
3	1.54%	1.50%	0.812	0.789	0.43%
4	3.58%	3.48%	0.740	0.718	1.03%
5	6.73%	6.47%	0.661	0.636	2.02%
6	11.00%	10.55%	0.576	0.553	3.45%
7	16.23%	15.35%	0.502	0.475	5.34%
8	22.36%	20.79%	0.436	0.406	7.68%

75º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.05%	0.05%	0.902	0.878	0.01%
2	0.42%	0.41%	0.870	0.847	0.11%
3	1.43%	1.39%	0.817	0.796	0.39%
4	3.31%	3.21%	0.750	0.728	0.94%
5	6.21%	5.98%	0.675	0.651	1.84%
6	10.15%	9.66%	0.600	0.571	3.15%
7	15.06%	14.17%	0.526	0.495	4.90%
8	20.79%	19.38%	0.459	0.428	7.06%

H) GENERALIFE

Tessellation 3.12.12. θ =60º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	76,610	4,778	4,778	25,526	11,405	19,754	19,754	34,215
0.10	2.0	566,101	43,047	43,047	188,138	81,227	140,689	140,689	243,680
0.15	3.0	1,645,365	159,874	159,874	546,327	227,600	394,215	394,215	682,801
0.20	4.0	3,220,177	371,729	371,729	1,073,659	429,802	744,439	744,439	1,289,405
0.25	5.0	5,172,134	670,190	670,190	1,720,852	663,672	1,149,514	1,149,514	1,991,017
0.30	6.0	7,370,919	1,045,784	1,045,784	2,449,604	922,413	1,597,666	1,597,666	2,767,238
0.35	7.0	9,679,649	1,461,042	1,461,042	3,230,764	1,190,530	2,062,059	2,062,059	3,571,591

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	71,557	4,402	4,402	23,840	10,777	18,520	18,520	32,143
0.10	2.0	528,284	39,935	39,935	175,936	76,420	132,363	132,363	229,259
0.15	3.0	1,538,553	144,809	144,809	512,385	214,323	371,218	371,218	642,968

0.20	4.0	3,042,638	340,310	340,310	1,012,498	407,563	705,920	705,920	1,222,690
0.25	5.0	4,899,660	624,594	624,594	1,631,658	636,278	1,102,065	1,102,065	1,908,833
0.30	6.0	7,006,611	977,558	977,558	2,335,202	885,634	1,533,963	1,533,963	2,656,903
0.35	7.0	9,277,368	1,382,171	1,382,171	3,092,839	1,147,664	1,987,813	1,987,813	3,442,993

60º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.15%	0.15%	0.108	0.108	0.07%
2	1.12%	1.12%	0.132	0.132	0.49%
3	3.23%	3.22%	0.169	0.168	1.38%
4	6.25%	6.25%	0.200	0.200	2.61%
5	9.92%	9.90%	0.225	0.224	4.02%
6	13.99%	13.95%	0.246	0.246	5.59%
7	18.22%	18.25%	0.261	0.261	7.22%

60º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.14%	0.14%	0.107	0.107	0.06%
2	1.05%	1.05%	0.131	0.131	0.46%
3	3.03%	3.02%	0.163	0.163	1.30%
4	5.92%	5.91%	0.194	0.194	2.47%
5	9.42%	9.41%	0.221	0.221	3.86%
6	13.33%	13.33%	0.242	0.242	5.37%
7	17.50%	17.50%	0.258	0.258	6.96%

I) HASHT BEHESHT

Tessellation I-6.10.10. θ =54º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	169,783	38,792	38,792	105,833	33,886	46,640	46,640	64,194
0.10	2.0	1,010,896	236,781	236,781	597,547	195,104	268,537	268,537	369,609
0.15	3.0	2,360,310	559,909	559,909	1,344,526	444,642	611,997	611,997	842,342
0.20	4.0	3,938,601	929,274	929,274	2,174,469	726,991	1,000,617	1,000,617	1,377,231
0.25	5.0	5,608,063	1,316,663	1,316,663	3,032,399	1,023,124	1,408,209	1,408,209	1,938,234
0.30	6.0	7,315,008	1,702,425	1,702,425	3,908,616	1,329,660	1,830,120	1,830,120	2,518,944
0.35	7.0	9,064,834	2,089,214	2,089,214	4,802,048	1,648,569	2,269,060	2,269,060	3,123,093
0.40	8.0	10,871,907	2,476,926	2,476,926	5,721,062	1,979,758	2,724,903	2,724,903	3,750,507
0.45	9.0	12,639,509	2,832,163	2,832,163	6,629,323	2,321,918	3,195,846	3,195,846	4,398,705

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	159,851	36,517	36,517	99,893	32,218	44,398	44,398	61,427
0.10	2.0	960,292	225,336	225,336	571,533	186,312	256,437	256,437	352,955
0.15	3.0	2,269,378	538,182	538,182	1,295,569	428,409	589,655	589,655	811,590
0.20	4.0	3,805,340	901,242	901,242	2,108,632	704,345	969,448	969,448	1,334,331
0.25	5.0	5,431,554	1,280,918	1,280,918	2,955,669	994,457	1,368,752	1,368,752	1,883,926
0.30	6.0	7,102,897	1,661,104	1,661,104	3,810,630	1,292,070	1,778,381	1,778,381	2,447,732
0.35	7.0	8,811,670	2,045,274	2,045,274	4,689,781	1,602,406	2,205,523	2,205,523	3,035,642
0.40	8.0	10,544,229	2,417,625	2,417,625	5,567,368	1,919,455	2,641,903	2,641,903	3,636,267
0.45	9.0	12,293,118	2,779,917	2,779,917	6,457,827	2,249,413	3,096,051	3,096,051	4,261,348

54º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.40%	0.47%	0.266	0.314	0.16%
2	2.33%	2.61%	0.288	0.322	0.94%
3	5.41%	5.84%	0.303	0.327	2.14%
4	9.00%	9.42%	0.310	0.325	3.50%

54º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.37%	0.44%	0.266	0.314	0.16%
2	2.22%	2.50%	0.286	0.323	0.90%
3	5.20%	5.63%	0.302	0.326	2.06%
4	8.70%	9.13%	0.311	0.326	3.39%

5	12.80%	13.12%	0.315	0.323	4.93%
6	16.71%	16.92%	0.316	0.320	6.40%
7	20.74%	20.81%	0.316	0.317	7.94%
8	24.91%	24.84%	0.315	0.314	9.54%
9	29.06%	28.87%	0.310	0.308	11.18%

5	12.40%	12.78%	0.315	0.325	4.79%
6	16.22%	16.48%	0.317	0.322	6.22%
7	20.14%	20.30%	0.317	0.319	7.72%
8	24.14%	24.14%	0.316	0.316	9.24%
9	28.21%	28.08%	0.313	0.311	10.83%

J) MODARI-KHAN MADRASH

Tessellation ROS-I-6.10.10. $\theta_1 = 45º$, $\theta_2 = 60º$, type Star

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	65,187	45,621	45,621	48,250	8,018	11,035	11,035	15,189
0.05	1.0	416,885	268,638	268,638	296,801	49,318	67,880	67,880	93,429
0.10	2.0	1,986,706	991,076	991,076	1,272,996	309,509	426,003	426,003	586,343
0.15	3.0	4,347,923	1,651,397	1,651,397	2,548,860	774,694	1,066,275	1,066,275	1,467,602
0.20	4.0	7,260,874	2,189,902	2,189,902	3,992,935	1,357,901	1,868,990	1,868,990	2,572,444
0.25	5.0	10,586,542	2,663,792	2,663,792	5,561,166	2,009,337	2,765,615	2,765,615	3,806,542
0.30	6.0	14,069,238	3,106,150	3,106,150	7,218,584	2,695,879	3,710,558	3,710,558	5,107,145

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	61,278	42,885	42,885	45,349	7,539	10,382	10,382	14,282
0.05	1.0	394,834	255,841	255,841	281,661	46,824	64,484	64,484	88,705
0.10	2.0	1,899,295	966,205	966,205	1,226,177	290,686	400,094	400,094	550,683
0.15	3.0	4,181,667	1,635,860	1,635,860	2,469,869	734,920	1,011,239	1,011,239	1,395,595
0.20	4.0	6,990,375	2,181,005	2,181,005	3,871,406	1,295,758	1,782,366	1,782,366	2,458,532
0.25	5.0	10,158,854	2,662,685	2,662,685	5,394,926	1,922,696	2,646,365	2,646,365	3,642,408
0.30	6.0	13,570,865	3,112,665	3,112,665	7,002,876	2,584,334	3,557,030	3,557,030	4,895,832

45º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.06%	0.08%	0.687	0.963	0.04%
1	0.44%	0.60%	0.658	0.887	0.24%
2	3.09%	3.75%	0.566	0.687	1.49%
3	8.33%	9.26%	0.471	0.523	3.73%
4	15.41%	16.05%	0.398	0.415	6.54%
5	23.67%	23.56%	0.348	0.346	9.68%
6	32.37%	31.46%	0.313	0.304	12.98%

45º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.05%	0.07%	0.687	0.963	0.04%
1	0.41%	0.56%	0.660	0.892	0.23%
2	2.89%	3.54%	0.573	0.700	1.40%
3	7.88%	8.81%	0.481	0.538	3.54%
4	14.65%	15.37%	0.409	0.429	6.24%
5	22.49%	22.62%	0.359	0.361	9.26%
6	30.99%	30.29%	0.323	0.316	12.45%

K) SULTAN BAYEZID II

Tessellation ROS-3.4.3.12_3.12.12. θ =60º, type Bayezid

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$

[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	16,230	10,866	10,866	16,230	2,034	2,034	2,034	2,034
0.050	1.0	117,145	74,676	74,676	117,148	17,365	17,365	17,365	17,365
0.075	1.5	342,770	204,187	204,187	342,786	61,640	61,640	61,640	61,640
0.100	2.0	698,053	387,267	387,267	698,284	151,081	151,081	151,081	151,081
0.125	2.5	1,179,631	612,296	612,296	1,179,766	300,552	300,552	300,552	300,552
0.150	3.0	1,793,862	869,256	869,256	1,794,136	519,062	519,062	519,062	519,062
0.175	3.5	2,528,000	1,143,909	1,143,909	2,528,080	809,141	809,141	809,141	809,141
0.200	4.0	3,391,094	1,424,798	1,424,798	3,390,966	1,165,966	1,165,966	1,165,966	1,165,966
0.225	4.5	4,359,512	1,706,524	1,706,524	4,359,351	1,580,544	1,580,544	1,580,544	1,580,544
0.250	5.0	5,462,348	2,001,776	2,001,776	5,462,032	2,055,182	2,055,182	2,055,182	2,055,182

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	13,884	8,576	8,576	13,882	1,768	1,756	1,756	1,768
0.050	1.0	110,219	70,454	70,454	110,213	16,599	16,484	16,484	16,599
0.075	1.5	322,704	193,395	193,395	322,687	58,320	58,039	58,039	58,320
0.100	2.0	657,666	368,518	368,518	657,675	141,755	141,245	141,245	141,755
0.125	2.5	1,116,036	585,573	585,573	1,115,990	281,623	280,753	280,753	281,625
0.150	3.0	1,695,607	831,218	831,218	1,695,633	480,565	480,565	480,565	480,565
0.175	3.5	2,386,742	1,096,485	1,096,485	2,386,915	749,353	749,353	749,353	749,353
0.200	4.0	3,204,961	1,371,108	1,371,108	3,204,780	1,085,911	1,085,911	1,085,911	1,085,911
0.225	4.5	4,130,697	1,655,006	1,655,006	4,130,284	1,479,613	1,479,613	1,479,613	1,479,613
0.250	5.0	5,175,517	1,931,555	1,931,555	5,175,100	1,924,863	1,924,863	1,924,863	1,924,863

60º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.03%	0.03%	0.669	0.670	0.01%
1.0	0.24%	0.24%	0.637	0.637	0.06%
1.5	0.77%	0.77%	0.596	0.596	0.22%
2.0	1.69%	1.69%	0.555	0.555	0.53%
2.5	3.02%	3.02%	0.519	0.519	1.05%
3.0	4.80%	4.80%	0.484	0.485	1.82%
3.5	7.04%	7.04%	0.452	0.452	2.83%
4.0	9.77%	9.77%	0.420	0.420	4.08%
4.5	12.92%	12.92%	0.391	0.391	5.53%
5.0	16.55%	16.55%	0.366	0.366	7.19%

60º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.03%	0.03%	0.618	0.618	0.01%
1.0	0.23%	0.23%	0.639	0.639	0.06%
1.5	0.72%	0.72%	0.599	0.599	0.20%
2.0	1.58%	1.58%	0.560	0.560	0.50%
2.5	2.83%	2.83%	0.525	0.525	0.98%
3.0	4.51%	4.51%	0.490	0.490	1.68%
3.5	6.59%	6.59%	0.459	0.459	2.62%
4.0	9.16%	9.16%	0.428	0.428	3.80%
4.5	12.13%	12.13%	0.401	0.401	5.18%
5.0	15.59%	15.59%	0.373	0.373	6.74%

L) BEN YUSUF MADRASA

Tessellation ROS-3.4.3.12_3.12.12. θ =75º, type Arrow

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	5,815	1,106	1,106	5,816	1,659	1,659	1,659	1,659
0.050	1.0	49,457	10,293	10,293	49,458	13,832	13,832	13,832	13,832
0.075	1.5	173,011	40,238	40,238	172,946	48,891	48,891	48,891	48,891
0.100	2.0	420,912	109,974	109,974	420,805	118,394	118,394	118,394	118,394
0.125	2.5	812,981	227,605	227,605	813,223	231,015	231,015	231,015	231,015

0.150	3.0	1,408,139	419,217	419,217	1,407,868	408,526	408,526	408,526	408,526
0.175	3.5	2,154,947	659,317	659,317	2,155,912	634,858	634,858	634,858	634,858
0.200	4.0	3,021,426	940,308	940,308	3,023,084	903,503	903,503	903,503	903,503

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	5,408	999	999	5,408	1,542	1,542	1,542	1,542
0.050	1.0	45,886	9,319	9,319	45,887	12,940	12,940	12,940	12,940
0.075	1.5	160,179	36,213	36,213	160,186	45,397	45,114	45,114	45,397
0.100	2.0	387,155	97,646	97,646	387,148	109,552	109,026	109,026	109,552
0.125	2.5	755,056	205,635	205,635	755,165	216,072	216,072	216,072	216,072
0.150	3.0	1,295,160	373,784	373,784	1,295,260	377,065	377,065	377,065	377,065
0.175	3.5	2,007,565	601,564	601,564	2,007,585	594,135	592,027	592,027	594,136
0.200	4.0	2,851,855	879,716	879,716	2,851,905	847,028	847,028	847,028	847,028

75º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.190	0.190	0.01%
1.0	0.17%	0.17%	0.208	0.208	0.05%
1.5	0.57%	0.57%	0.233	0.233	0.17%
2.0	1.37%	1.37%	0.261	0.261	0.41%
2.5	2.62%	2.62%	0.280	0.280	0.81%
3.0	4.49%	4.49%	0.298	0.298	1.43%
3.5	6.84%	6.84%	0.306	0.306	2.22%
4.0	9.55%	9.55%	0.311	0.311	3.16%

75º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.185	0.185	0.01%
1.0	0.15%	0.15%	0.203	0.203	0.05%
1.5	0.53%	0.53%	0.226	0.226	0.16%
2.0	1.27%	1.27%	0.252	0.252	0.38%
2.5	2.45%	2.45%	0.272	0.272	0.76%
3.0	4.15%	4.16%	0.289	0.289	1.32%
3.5	6.39%	6.39%	0.300	0.300	2.08%
4.0	9.03%	9.03%	0.308	0.308	2.96%

M) MOSQUE OF AL-NASIR MUHAMMAD MINBAR

Tessellation ROS-I-6.12.8.12. θ =75º, L =20%, type Arrow

Lx [m]	5	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	47,181	35,131	35,131	47,177	4,782	4,782	4,782	4,782
0.050	1.0	365,426	246,294	246,294	365,476	48,389	48,014	48,014	48,389
0.075	1.5	1,152,919	659,440	659,440	1,153,028	194,168	194,168	194,168	194,168
0.100	2.0	2,562,690	1,150,709	1,150,709	2,562,691	544,281	544,281	544,281	544,281
0.125	2.5	4,451,130	1,540,453	1,540,453	4,451,273	1,133,316	1,133,316	1,133,316	1,133,316
0.150	3.0	6,450,499	2,013,959	2,013,959	6,450,382	1,808,475	1,808,475	1,808,475	1,808,475

Lx [m]	5	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	44,279	33,014	33,014	44,277	4,488	4,488	4,488	4,488
0.050	1.0	342,576	231,843	231,843	342,591	45,359	45,008	45,008	45,359
0.075	1.5	1,083,699	625,669	625,669	1,083,715	181,351	180,868	180,868	181,352
0.100	2.0	2,414,997	1,104,057	1,104,057	2,414,957	506,392	505,522	505,522	506,393
0.125	2.5	4,244,568	1,489,388	1,489,388	4,244,725	1,071,967	1,070,481	1,070,481	1,071,968

0.150	3.0	6,209,919	1,948,900	1,948,900	6,209,958	1,720,784	1,720,784	1,720,784	1,720,784

20% DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.07%	0.07%	0.745	0.745	0.02%
1.0	0.70%	0.70%	0.674	0.674	0.17%
1.5	2.71%	2.71%	0.572	0.572	0.68%
2.0	7.16%	7.16%	0.449	0.449	1.90%
2.5	13.71%	13.71%	0.346	0.346	3.97%
3.0	20.37%	20.37%	0.312	0.312	6.33%

20% DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.07%	0.07%	0.746	0.746	0.02%
1.0	0.65%	0.65%	0.677	0.677	0.16%
1.5	2.53%	2.53%	0.577	0.577	0.63%
2.0	6.68%	6.68%	0.457	0.457	1.77%
2.5	13.02%	13.02%	0.351	0.351	3.75%
3.0	19.59%	19.59%	0.314	0.314	6.02%

N) MOSQUE OF AL-NASIR MUHAMMAD

Tessellation ROS-3.12.12. θ =75º, type Arrow

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	10,938	1,260	1,260	3,632	1,508	2,570	2,570	4,512
0.050	1.0	94,936	11,501	11,501	31,558	12,779	21,897	21,897	38,278
0.075	1.5	339,828	44,280	44,280	113,051	44,542	76,597	76,597	133,574
0.100	2.0	835,526	117,134	117,134	277,445	105,654	182,997	182,997	316,961
0.125	2.5	1,658,004	244,828	244,828	554,648	205,765	356,396	356,396	617,295
0.150	3.0	2,829,540	428,247	428,247	944,193	347,827	602,453	602,453	1,043,480
0.175	3.5	4,389,004	677,911	677,911	1,467,177	535,850	928,119	928,119	1,607,550
0.200	4.0	6,188,915	964,478	964,478	2,061,033	753,276	1,304,713	1,304,713	2,259,830
0.225	4.5	8,141,909	1,280,779	1,280,779	2,711,032	980,485	1,698,250	1,698,250	2,941,455
0.250	5.0	10,089,072	1,608,164	1,608,164	3,356,011	1,211,543	2,098,454	2,098,454	3,634,628

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	10,143	1,147	1,147	3,379	1,403	2,390	2,390	4,197
0.050	1.0	87,619	10,364	10,364	29,187	11,819	20,252	20,252	35,401
0.075	1.5	312,518	39,608	39,608	104,196	40,966	70,661	70,661	122,886
0.100	2.0	767,658	104,023	104,023	255,873	98,495	170,030	170,030	295,489
0.125	2.5	1,523,859	217,467	217,467	508,635	191,310	331,359	331,359	573,931
0.150	3.0	2,635,027	389,744	389,744	877,964	328,108	567,232	567,232	984,846
0.175	3.5	4,091,294	615,974	615,974	1,362,771	503,582	872,229	872,229	1,510,745
0.200	4.0	5,816,737	890,851	890,851	1,938,483	712,164	1,233,505	1,233,505	2,136,494
0.225	4.5	7,674,554	1,195,137	1,195,137	2,558,839	933,922	1,617,601	1,617,601	2,801,767
0.250	5.0	9,593,857	1,521,048	1,521,048	3,203,963	1,160,274	2,009,654	2,009,654	3,480,823

75º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.200	0.200	0.01%
1.0	0.18%	0.18%	0.210	0.210	0.08%
1.5	0.65%	0.65%	0.226	0.226	0.27%
2.0	1.59%	1.58%	0.244	0.243	0.64%
2.5	3.13%	3.14%	0.255	0.256	1.25%

75º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.196	0.196	0.01%
1.0	0.17%	0.17%	0.205	0.205	0.07%
1.5	0.60%	0.60%	0.219	0.220	0.25%
2.0	1.47%	1.47%	0.235	0.235	0.60%
2.5	2.89%	2.89%	0.247	0.247	1.16%

3.0	5.32%	5.33%	0.262	0.262	2.11%
3.5	8.23%	8.26%	0.267	0.268	3.25%
4.0	11.59%	11.58%	0.270	0.270	4.57%
4.5	15.23%	15.21%	0.273	0.272	5.94%
5.0	18.83%	18.79%	0.277	0.276	7.34%

3.0	4.97%	4.97%	0.256	0.256	1.99%
3.5	7.70%	7.70%	0.261	0.261	3.05%
4.0	10.92%	10.92%	0.265	0.265	4.32%
4.5	14.38%	14.38%	0.270	0.270	5.66%
5.0	17.92%	17.96%	0.274	0.275	7.03%

O) GREAT MOSQUE OF HERAT

Tessellation ROS-4.8.8. θ =67.5º, L =30%

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	24,770	10,570	10,570	24,766	2,318	2,318	2,318	2,318
0.10	2.0	213,093	94,474	94,474	213,103	20,796	20,796	20,796	20,796
0.15	3.0	735,807	328,516	328,516	735,993	78,884	78,884	78,884	78,884
0.20	4.0	1,676,138	741,622	741,622	1,677,175	206,917	206,917	206,917	206,917
0.25	5.0	3,030,083	1,283,474	1,283,474	3,028,593	444,188	444,188	444,188	444,188
0.30	6.0	4,725,149	1,865,931	1,865,931	4,724,678	842,694	842,694	842,694	842,694
0.35	7.0	6,639,301	2,390,449	2,390,449	6,639,638	1,432,359	1,432,359	1,432,359	1,432,359
0.40	8.0	8,615,567	2,806,191	2,806,191	8,617,094	2,206,367	2,206,367	2,206,367	2,206,367

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.05	1.0	23,075	9,882	9,882	23,072	2,164	2,164	2,164	2,164
0.10	2.0	199,189	87,651	87,651	199,210	19,406	19,406	19,406	19,406
0.15	3.0	684,839	305,319	305,319	684,748	72,945	72,945	72,945	72,945
0.20	4.0	1,572,066	695,016	695,016	1,572,074	191,708	191,708	191,708	191,708
0.25	5.0	2,857,807	1,214,030	1,214,030	2,858,377	411,118	411,118	411,118	411,118
0.30	6.0	4,465,427	1,781,314	1,781,314	4,465,980	775,393	775,393	775,393	775,393
0.35	7.0	6,302,995	2,307,645	2,307,645	6,302,897	1,318,166	1,318,166	1,318,166	1,318,166
0.40	8.0	8,263,668	2,753,982	2,753,982	8,263,217	2,057,179	2,057,179	2,057,179	2,057,179

30% DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.07%	0.07%	0.427	0.427	0.01%
2	0.60%	0.60%	0.443	0.443	0.07%
3	2.06%	2.06%	0.446	0.446	0.28%
4	4.72%	4.72%	0.442	0.442	0.72%
5	8.70%	8.70%	0.424	0.424	1.55%
6	13.96%	13.95%	0.395	0.395	2.95%
7	20.22%	20.22%	0.360	0.360	5.01%
8	26.95%	26.96%	0.326	0.326	7.72%

30% DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
1	0.07%	0.07%	0.428	0.428	0.01%
2	0.56%	0.56%	0.440	0.440	0.07%
3	1.92%	1.92%	0.446	0.446	0.26%
4	4.43%	4.43%	0.442	0.442	0.67%
5	8.20%	8.20%	0.425	0.425	1.44%
6	13.14%	13.14%	0.399	0.399	2.71%
7	19.10%	19.10%	0.366	0.366	4.61%
8	25.71%	25.70%	0.333	0.333	7.20%

P) MOSQUE OF AL-SALIH TALA'I

Tessellation ROS-3.4.3.8_3.8.8. θ =75º, L = 25%, type Star

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0

Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	2,094	1,009	1,009	2,094	574	574	574	574
0.050	1.0	19,464	9,686	9,686	19,464	5,339	5,339	5,339	5,339
0.075	1.5	76,439	39,232	39,232	76,414	20,145	20,145	20,145	20,145
0.100	2.0	207,681	108,952	108,952	207,724	52,548	52,548	52,548	52,548
0.125	2.5	464,994	248,155	248,155	465,045	114,611	114,611	114,611	114,611
0.150	3.0	900,527	482,932	482,932	900,489	218,625	218,625	218,625	218,625
0.175	3.5	1,564,244	825,330	825,330	1,563,451	381,576	381,576	381,576	381,576
0.200	4.0	2,474,941	1,251,443	1,251,443	2,475,904	618,511	618,511	618,511	618,511
0.225	4.5	3,635,512	1,713,402	1,713,402	3,635,727	951,978	951,978	951,978	951,978
0.250	5.0	4,928,804	2,091,310	2,091,310	4,929,278	1,378,241	1,378,241	1,378,241	1,378,241
0.275	5.5	6,299,297	2,391,597	2,391,597	6,297,612	1,859,093	1,859,093	1,859,093	1,859,093
0.300	6.0	7,681,740	2,575,018	2,575,018	7,682,673	2,394,354	2,394,354	2,394,354	2,394,354

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	1,957	942	942	1,958	539	539	539	539
0.050	1.0	18,125	8,997	8,997	18,124	4,990	4,990	4,990	4,990
0.075	1.5	70,719	36,136	36,136	70,721	18,752	18,752	18,752	18,752
0.100	2.0	192,644	100,738	100,738	192,633	49,127	49,127	49,127	49,127
0.125	2.5	427,140	226,698	226,698	427,117	106,122	106,122	106,122	106,122
0.150	3.0	828,658	441,299	441,299	828,701	202,482	202,482	202,482	202,482
0.175	3.5	1,442,393	757,491	757,491	1,442,219	352,914	352,914	352,914	352,914
0.200	4.0	2,295,460	1,165,053	1,165,053	2,295,651	575,176	575,176	575,176	575,176
0.225	4.5	3,393,198	1,615,477	1,615,477	3,393,041	884,335	884,335	884,335	884,335
0.250	5.0	4,656,371	2,017,797	2,017,797	4,656,479	1,282,909	1,282,909	1,282,909	1,282,909
0.275	5.5	6,014,405	2,320,190	2,320,190	6,013,691	1,759,000	1,759,000	1,759,000	1,759,000
0.300	6.0	7,381,617	2,533,835	2,533,835	7,382,131	2,271,145	2,271,145	2,271,145	2,271,145

25% DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.482	0.482	0.00%
1.0	0.05%	0.05%	0.498	0.498	0.02%
1.5	0.20%	0.20%	0.513	0.513	0.07%
2.0	0.53%	0.53%	0.525	0.525	0.18%
2.5	1.16%	1.16%	0.534	0.534	0.40%
3.0	2.24%	2.24%	0.536	0.536	0.77%
3.5	3.95%	3.95%	0.528	0.528	1.34%
4.0	6.45%	6.45%	0.505	0.506	2.16%
4.5	9.90%	9.90%	0.471	0.471	3.33%
5.0	14.14%	14.14%	0.424	0.424	4.82%
5.5	18.87%	18.86%	0.380	0.380	6.51%
6.0	23.86%	23.86%	0.335	0.335	8.38%

25% DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.481	0.481	0.00%
1.0	0.05%	0.05%	0.496	0.496	0.02%
1.5	0.18%	0.18%	0.511	0.511	0.07%
2.0	0.49%	0.49%	0.523	0.523	0.17%
2.5	1.07%	1.07%	0.531	0.531	0.37%
3.0	2.08%	2.08%	0.533	0.533	0.71%
3.5	3.66%	3.65%	0.525	0.525	1.23%
4.0	5.96%	5.96%	0.508	0.508	2.01%
4.5	9.18%	9.18%	0.476	0.476	3.09%
5.0	13.23%	13.23%	0.433	0.433	4.49%
5.5	17.91%	17.91%	0.386	0.386	6.16%
6.0	22.79%	22.79%	0.343	0.343	7.95%

Q) MOSQUE OF IBN TULUN

Tessellation ROS-3.4.3.12_3.12.12. θ1 =75º, θ2 =65º, type Star

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0

Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	5,446	1,504	1,504	5,446	1,743	1,743	1,743	1,743
0.050	1.0	49,419	15,089	15,089	49,421	15,461	15,461	15,461	15,461
0.075	1.5	184,458	62,242	62,242	184,468	56,811	56,811	56,811	56,811
0.100	2.0	474,521	172,558	172,558	474,388	144,915	144,915	144,915	144,915
0.125	2.5	979,131	370,846	370,846	979,393	299,895	299,895	299,895	299,895
0.150	3.0	1,737,017	658,817	658,817	1,737,516	540,979	540,979	540,979	540,979
0.175	3.5	2,751,648	985,408	985,408	2,751,716	872,236	872,236	872,236	872,236
0.200	4.0	3,970,889	1,280,983	1,280,983	3,972,561	1,284,170	1,284,170	1,284,170	1,284,170
0.225	4.5	5,278,328	1,550,990	1,550,990	5,279,397	1,707,400	1,707,400	1,707,400	1,707,400

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	5,099	1,402	1,402	5,098	1,648	1,637	1,637	1,648
0.050	1.0	45,920	13,932	13,932	45,918	14,508	14,407	14,407	14,508
0.075	1.5	170,821	56,958	56,958	170,838	53,103	52,862	52,862	53,103
0.100	2.0	438,870	158,068	158,068	438,847	135,412	134,956	134,956	135,412
0.125	2.5	901,716	339,599	339,599	901,822	279,090	279,090	279,090	279,090
0.150	3.0	1,607,385	604,609	604,609	1,607,301	502,257	502,257	502,257	502,257
0.175	3.5	2,566,848	922,275	922,275	2,567,060	817,023	817,023	817,023	817,023
0.200	4.0	3,727,684	1,218,905	1,218,905	3,727,593	1,206,509	1,206,509	1,206,509	1,206,509
0.225	4.5	4,994,767	1,474,167	1,474,167	4,994,756	1,621,664	1,621,664	1,621,664	1,621,664

65º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.276	0.276	0.01%
1.0	0.16%	0.16%	0.305	0.305	0.05%
1.5	0.57%	0.57%	0.337	0.337	0.20%
2.0	1.44%	1.44%	0.364	0.364	0.51%
2.5	2.93%	2.94%	0.379	0.379	1.05%
3.0	5.20%	5.21%	0.379	0.379	1.89%
3.5	8.39%	8.39%	0.358	0.358	3.05%
4.0	12.45%	12.46%	0.322	0.323	4.49%
4.5	16.88%	16.88%	0.294	0.294	5.97%

65º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.02%	0.02%	0.275	0.275	0.01%
1.0	0.15%	0.15%	0.303	0.303	0.05%
1.5	0.53%	0.53%	0.333	0.333	0.19%
2.0	1.34%	1.34%	0.360	0.360	0.47%
2.5	2.71%	2.71%	0.377	0.377	0.98%
3.0	4.83%	4.83%	0.376	0.376	1.76%
3.5	7.82%	7.82%	0.359	0.359	2.86%
4.0	11.65%	11.65%	0.327	0.327	4.22%
4.5	15.96%	15.96%	0.295	0.295	5.67%

R) FATEHPUR SIKRI

Tessellation ROS-I-6.10.10. θ =72º, type Star

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	7,097	3,886	3,886	5,323	1,413	1,945	1,945	2,678
0.05	1.0	64,477	35,199	35,199	48,121	12,777	17,587	17,587	24,206
0.10	2.0	621,259	321,428	321,428	449,395	115,461	158,919	158,919	218,733
0.15	3.0	2,259,056	1,020,741	1,020,741	1,551,200	412,229	567,384	567,384	780,938
0.20	4.0	5,288,051	1,862,142	1,862,142	3,362,480	987,084	1,358,605	1,358,605	1,869,959

0.25	5.0	9,416,285	2,423,182	2,423,182	5,500,552	1,794,262	2,469,590	2,469,590	3,399,099
0.30	6.0	13,790,056	2,925,516	2,925,516	7,638,166	2,605,666	3,586,391	3,586,391	4,936,244

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	6,592	3,609	3,609	4,950	1,345	1,846	1,846	2,585
0.05	1.0	59,595	32,504	32,504	44,504	12,095	16,602	16,602	23,237
0.10	2.0	572,487	296,979	296,979	415,835	108,384	149,071	149,071	207,202
0.15	3.0	2,097,934	952,463	952,463	1,444,009	386,890	532,255	532,255	737,013
0.20	4.0	4,980,939	1,787,423	1,787,423	3,173,274	932,675	1,283,127	1,283,127	1,772,670
0.25	5.0	8,927,399	2,371,124	2,371,124	5,268,030	1,706,670	2,349,029	2,349,029	3,233,161
0.30	6.0	13,217,727	2,868,345	2,868,345	7,379,664	2,502,113	3,443,863	3,443,863	4,740,071

72º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.02%	0.530	0.754	0.01%
1.0	0.10%	0.14%	0.531	0.751	0.06%
2.0	1.00%	1.36%	0.520	0.712	0.56%
3.0	4.04%	5.25%	0.478	0.622	1.99%
4.0	10.82%	13.04%	0.402	0.485	4.75%
5.0	21.23%	23.49%	0.320	0.354	8.64%
6.0	32.21%	33.80%	0.278	0.292	12.55%

72º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.01%	0.01%	0.530	0.754	0.01%
1.0	0.09%	0.13%	0.531	0.751	0.06%
2.0	0.92%	1.26%	0.519	0.714	0.52%
3.0	3.74%	4.87%	0.479	0.625	1.87%
4.0	10.10%	12.19%	0.409	0.494	4.49%
5.0	19.98%	22.34%	0.327	0.366	8.22%
6.0	30.77%	32.55%	0.282	0.299	12.05%

S) JAMEH MOSQUE

Tessellation ROS-I-6.12.8.12. θ =70º, L =20%, type Star

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	20,432	7,324	7,324	20,433	5,648	5,648	5,648	5,648
0.050	1.0	193,890	71,180	71,180	193,913	52,590	52,590	52,590	52,590
0.075	1.5	743,188	274,334	274,334	743,401	200,485	200,485	200,485	200,485
0.100	2.0	1,886,100	675,975	675,975	1,885,530	525,983	525,983	525,983	525,983
0.125	2.5	3,646,645	1,239,573	1,239,573	3,647,190	1,090,184	1,090,184	1,090,184	1,090,184
0.150	3.0	5,794,354	1,851,489	1,851,489	5,793,919	1,882,475	1,882,475	1,882,475	1,882,475
0.175	3.5	8,050,772	2,471,315	2,471,315	8,050,449	2,780,743	2,780,743	2,780,743	2,780,743

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	18,943	6,743	6,743	18,942	5,236	5,236	5,236	5,236
0.050	1.0	178,951	65,228	65,228	178,956	48,534	48,534	48,534	48,534
0.075	1.5	682,558	248,847	248,847	682,585	184,084	184,084	184,084	184,084
0.100	2.0	1,734,484	616,223	616,223	1,734,572	486,012	485,131	485,131	486,012
0.125	2.5	3,396,876	1,148,981	1,148,981	3,396,721	1,015,383	1,013,884	1,013,884	1,015,383

0.150	3.0	5,484,225	1,751,597	1,751,597	5,484,114	1,764,192	1,764,192	1,764,192	1,764,192
0.175	3.5	7,693,388	2,378,726	2,378,726	7,693,113	2,651,730	2,648,178	2,648,178	2,651,731

20% DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.06%	0.06%	0.358	0.358	0.02%
1.0	0.59%	0.59%	0.367	0.367	0.18%
1.5	2.25%	2.25%	0.369	0.369	0.70%
2.0	5.75%	5.75%	0.359	0.358	1.84%
2.5	11.29%	11.29%	0.340	0.340	3.81%
3.0	18.21%	18.20%	0.320	0.320	6.59%
3.5	25.52%	25.52%	0.307	0.307	9.73%

20% DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.06%	0.06%	0.356	0.356	0.02%
1.0	0.54%	0.54%	0.364	0.365	0.17%
1.5	2.07%	2.07%	0.365	0.365	0.64%
2.0	5.30%	5.30%	0.355	0.355	1.70%
2.5	10.53%	10.53%	0.338	0.338	3.55%
3.0	17.23%	17.23%	0.319	0.319	6.17%
3.5	24.35%	24.35%	0.309	0.309	9.27%

T) ALHAMBRA

Tessellation ROS-I-6.9.12.9. θ=70º, L =35%

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	42,332	12,331	12,331	14,127	3,491	6,047	6,047	10,473
0.050	1.0	390,831	114,902	114,902	130,404	32,207	55,180	55,180	95,949
0.075	1.5	1,425,106	410,995	410,995	474,351	119,030	204,892	204,892	355,831
0.100	2.0	3,390,732	919,362	919,362	1,132,581	299,317	516,338	516,338	896,326
0.125	2.5	6,248,559	1,522,710	1,522,710	2,087,731	603,333	1,041,523	1,041,523	1,808,462
0.150	3.0	9,746,453	2,061,853	2,061,853	3,244,421	1,026,533	1,778,008	1,778,008	3,079,600
0.175	3.5	13,602,280	2,547,718	2,547,718	4,531,408	1,528,564	2,647,551	2,647,551	4,585,693
0.200	4.0	17,609,648	3,053,912	3,053,912	5,874,370	2,054,239	3,558,047	3,558,047	6,162,719

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.025	0.5	39,174	11,372	11,372	13,064	3,228	5,592	5,592	9,685
0.050	1.0	361,676	105,963	105,963	120,590	29,783	51,027	51,027	88,728
0.075	1.5	1,314,499	377,902	377,902	438,017	109,913	189,198	189,198	328,575
0.100	2.0	3,148,430	854,200	854,200	1,048,847	277,726	481,035	481,035	833,177
0.125	2.5	5,863,408	1,441,378	1,441,378	1,954,506	561,865	971,298	971,298	1,684,277
0.150	3.0	9,226,837	1,985,628	1,985,628	3,075,975	964,195	1,670,034	1,670,034	2,892,584
0.175	3.5	12,992,656	2,472,690	2,472,690	4,330,063	1,454,022	2,515,626	2,515,626	4,362,744
0.200	4.0	16,948,620	2,981,651	2,981,651	5,650,192	1,964,442	3,402,513	3,402,513	5,893,326

35% DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.06%	0.06%	0.504	0.505	0.02%
1.0	0.59%	0.59%	0.509	0.509	0.19%
1.5	2.16%	2.16%	0.500	0.500	0.72%
2.0	5.34%	5.35%	0.469	0.470	1.81%
2.5	10.38%	10.40%	0.421	0.422	3.65%
3.0	17.04%	17.02%	0.367	0.366	6.22%
3.5	24.59%	24.57%	0.325	0.324	9.26%
4.0	32.37%	32.39%	0.300	0.300	12.45%

35% DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	0.06%	0.06%	0.503	0.503	0.02%
1.0	0.54%	0.54%	0.507	0.507	0.18%
1.5	2.00%	2.00%	0.498	0.498	0.66%
2.0	4.96%	4.95%	0.470	0.470	1.68%
2.5	9.70%	9.70%	0.426	0.426	3.40%
3.0	16.05%	16.05%	0.373	0.373	5.84%
3.5	23.40%	23.39%	0.330	0.330	8.81%
4.0	31.06%	31.07%	0.305	0.305	11.91%

Z60) CONVENTIONAL DIAGRID, 30 ST MARY AXE

Tessellation 3.3.3.3.3.3. θ =60º, Hankin method not applied

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV6	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.15	3.0	982,709	380,126	380,126	1,310,288	435,446	377,108	377,108	326,585
0.30	6.0	2,007,734	774,697	774,697	2,677,741	890,629	771,307	771,307	667,972
0.45	9.0	3,079,073	1,176,954	1,176,954	4,105,925	1,373,938	1,189,865	1,189,865	1,030,453
0.60	12.0	4,213,453	1,580,843	1,580,843	5,623,030	1,895,646	1,641,678	1,641,678	1,421,735
0.75	15.0	5,425,488	1,976,808	1,976,808	7,237,706	2,475,894	2,144,187	2,144,187	1,856,920
0.90	18.0	6,712,105	2,363,107	2,363,107	8,953,395	3,114,773	2,697,473	2,697,473	2,336,080
1.05	21.0	8,081,226	2,719,138	2,719,138	10,781,079	3,828,111	3,315,241	3,315,241	2,871,083
1.20	24.0	9,551,459	3,049,283	3,049,283	12,767,776	4,619,714	4,000,790	4,000,790	3,464,786
1.35	27.0	11,144,807	3,366,147	3,366,147	14,887,527	5,536,155	4,794,451	4,794,451	4,152,117
1.50	30.0	12,842,823	3,647,499	3,647,499	17,169,713	6,518,056	5,644,802	5,644,802	4,888,542

Lx [m]	10.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh	DIV12	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
depth	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.15	3.0	980,954	379,620	379,620	1,307,896	434,724	376,482	376,482	326,043
0.30	6.0	2,000,278	772,563	772,563	2,666,873	887,087	768,240	768,240	665,316
0.45	9.0	3,064,515	1,172,825	1,172,825	4,086,574	1,365,982	1,182,975	1,182,975	1,024,487
0.60	12.0	4,186,942	1,576,228	1,576,228	5,582,134	1,880,597	1,628,645	1,628,645	1,410,448
0.75	15.0	5,370,182	1,972,652	1,972,652	7,160,555	2,442,929	2,115,639	2,115,639	1,832,197
0.90	18.0	6,623,434	2,350,927	2,350,927	8,834,764	3,060,500	2,650,470	2,650,470	2,295,375
1.05	21.0	7,969,484	2,712,269	2,712,269	10,622,732	3,747,181	3,245,154	3,245,154	2,810,386
1.20	24.0	9,395,858	3,048,154	3,048,154	12,517,513	4,501,654	3,898,547	3,898,547	3,376,241
1.35	27.0	10,926,158	3,351,629	3,351,629	14,573,764	5,350,088	4,633,313	4,633,313	4,012,567
1.50	30.0	12,588,481	3,638,327	3,638,327	16,773,123	6,285,529	5,443,428	5,443,428	4,714,147

60º DIV6	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
3	3.53%	3.53%	0.335	0.335	1.32%
6	7.21%	7.21%	0.334	0.334	2.70%
9	11.08%	11.08%	0.331	0.331	4.16%
12	15.23%	15.24%	0.325	0.325	5.74%
15	19.74%	19.75%	0.315	0.316	7.50%
18	24.60%	24.61%	0.305	0.305	9.44%
21	29.88%	29.90%	0.291	0.291	11.60%
24	35.65%	35.74%	0.276	0.276	14.00%
27	41.96%	42.04%	0.261	0.262	16.78%
30	48.76%	48.89%	0.245	0.246	19.75%

60º DIV12	HOMOGENIZED MECHANICAL PROPERTIES				
rbd [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
3	3.52%	3.52%	0.335	0.335	1.32%
6	7.18%	7.18%	0.335	0.334	2.69%
9	11.02%	11.02%	0.331	0.331	4.14%
12	15.12%	15.12%	0.326	0.326	5.70%
15	19.50%	19.50%	0.318	0.318	7.40%
18	24.24%	24.25%	0.307	0.307	9.27%
21	29.40%	29.40%	0.295	0.295	11.36%
24	34.97%	34.94%	0.281	0.281	13.64%
27	41.03%	41.05%	0.266	0.266	16.21%
30	47.68%	47.64%	0.250	0.250	19.05%

2.3. STAR-FILLED PATTERNS

Linear elastic analysis with Imposed displacement of 1m, material 30MPa concrete with mechanical properties in accordance with EC2 ($E_b = 28{,}576{,}791\ kN/m^2,\ v = 0.2,\ G = 11{,}906{,}996\ kN/m^2$). The homogenized mechanical properties are normalized dividing the final results by E_b. Provided homogenized mechanical properties are independent of the modulus of elasticity used. Results for **1x1 panels**

A*) YESLI MOSQUE

Tessellation 3.6.3.6.

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	5.97	5,944,464	1,571,906	1,571,906	1,981,984	545,463	935,578	935,578	1,619,783
40	9.14	7,835,486	1,838,055	1,838,055	2,611,724	783,208	1,346,936	1,346,936	2,333,289
45	12.44	9,839,446	2,077,005	2,077,005	3,279,672	1,047,912	1,804,993	1,804,993	3,127,858

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	5.97	5,980,944	1,582,273	1,582,273	1,993,453	555,709	944,802	944,802	1,635,870
40	9.14	7,866,352	1,846,402	1,846,402	2,621,227	792,288	1,353,647	1,353,647	2,346,681
45	12.44	9,872,869	2,085,697	2,085,697	3,288,614	1,056,396	1,810,697	1,810,697	3,141,014

(2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	9.49%	9.49%	0.458	0.458	3.28%
40	13.22%	13.22%	0.406	0.406	4.72%
45	17.22%	17.22%	0.366	0.366	6.33%

(4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	9.55%	9.55%	0.458	0.458	3.32%
40	13.27%	13.26%	0.407	0.407	4.75%
45	17.27%	17.26%	0.366	0.366	6.36%

B*) GREAT MOSQUE OF DAMASCUS

Tessellation 6.6.6. θ =60º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
55	1.49	7,613,844	1,875,435	1,875,435	5,712,532	2,062,978	2,364,094	2,364,094	2,732,844
60	3.05	10,018,720	2,402,713	2,402,713	7,516,611	2,733,861	3,138,849	3,138,849	3,628,075
65	4.72	12,278,701	2,873,475	2,873,475	9,217,471	3,376,221	3,880,563	3,880,563	4,485,178

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
55	1.49	7,656,985	1,884,579	1,884,579	5,744,900	2,074,667	2,377,489	2,377,489	2,748,329

60	3.05	10,054,646	2,412,101	2,412,101	7,543,564	2,743,664	3,150,105	3,150,105	3,641,085
65	4.72	12,305,797	2,881,181	2,881,181	9,237,812	3,383,672	3,889,126	3,889,126	4,495,076

60º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
55	21.21%	21.22%	0.284	0.284	8.29%
60	28.03%	28.04%	0.277	0.277	11.00%
65	34.50%	34.53%	0.270	0.270	13.60%

60º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
55	21.33%	21.34%	0.284	0.284	8.34%
60	28.13%	28.14%	0.277	0.277	11.04%
65	34.57%	34.60%	0.270	0.270	13.63%

Tessellation 6.6.6. θ =75º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Saturation	Rel, depth	**Nxh = Q11**	**Nyh = Q21**	**Nxv = Q12**	**Nyv = Q22**	**Nxy,h**	**Nyx,h**	**Nxy,v**	**Nyx,v**
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	2.02	5,508,026	1,507,584	1,507,584	4,130,671	1,430,848	1,634,493	1,634,493	1,889,325
45	3.31	6,979,001	1,874,620	1,874,620	5,231,837	1,822,849	2,087,056	2,087,056	2,412,296
50	4.65	8,431,595	2,215,201	2,215,201	6,323,218	2,219,521	2,544,972	2,544,972	2,941,396

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Saturation	Rel, depth	**Nxh = Q11**	**Nyh = Q21**	**Nxv = Q12**	**Nyv = Q22**	**Nxy,h**	**Nyx,h**	**Nxy,v**	**Nyx,v**
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	2.02	5,550,091	1,514,822	1,514,822	4,160,972	1,424,500	1,644,871	1,644,871	1,899,333
45	3.31	7,014,550	1,880,141	1,880,141	5,261,315	1,815,865	2,096,780	2,096,780	2,421,153
50	4.65	8,474,958	2,224,466	2,224,466	6,351,746	2,213,485	2,555,913	2,555,913	2,951,314

75º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	**Ex**	**Ey**	**Vxy**	**Vyx**	**G**
40	15.02%	15.02%	0.316	0.316	5.74%
45	19.11%	19.11%	0.310	0.310	7.32%
50	23.20%	23.20%	0.303	0.303	8.92%

75º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	**Ex**	**Ey**	**Vxy**	**Vyx**	**G**
40	15.15%	15.14%	0.315	0.315	5.76%
45	19.22%	19.22%	0.309	0.309	7.34%
50	23.32%	23.31%	0.303	0.303	8.94%

D*) LAHORE FORT

Tessellation 4.8.8. θ =67.5º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	1.58	2,650,003	1,547,493	1,547,493	2,650,035	820,581	811,383	811,383	820,577
40	3.02	3,721,372	1,931,886	1,931,886	3,721,337	1,239,045	1,229,077	1,229,077	1,239,064
45	4.52	4,838,107	2,249,313	2,249,313	4,838,263	1,703,852	1,693,413	1,693,413	1,703,855

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]

35	1.58	2,718,354	1,574,462	1,574,462	2,721,008	815,701	815,701	815,701	815,701
40	3.02	3,786,499	1,959,067	1,959,067	3,786,228	1,237,771	1,237,771	1,237,771	1,237,771
45	4.52	4,907,003	2,279,316	2,279,316	4,906,989	1,704,659	1,704,659	1,704,659	1,704,659

67.5º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	6.11%	6.11%	0.584	0.584	2.86%
40	9.51%	9.51%	0.519	0.519	4.32%
45	13.27%	13.27%	0.465	0.465	5.94%

67.5º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	6.32%	6.33%	0.579	0.579	2.85%
40	9.70%	9.70%	0.517	0.517	4.33%
45	13.47%	13.47%	0.465	0.465	5.97%

E*) PALACE OF THE SHIRVANSHAHS

Tessellation 4.8.8. θ =45º, with number of crossings = 0

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
45	2.2	5,089,277	260,211	260,211	5,089,306	491,580	491,052	491,052	491,581
50	5.39	6,758,260	481,517	481,517	6,758,333	749,735	748,430	748,430	749,735
55	8.74	8,239,742	753,457	753,457	8,239,652	1,070,972	1,068,871	1,068,871	1,070,972

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
45	2.2	5,159,415	268,999	268,999	5,159,212	493,173	493,173	493,173	493,173
50	5.39	6,813,081	492,104	492,104	6,813,302	751,330	751,330	751,330	751,330
55	8.74	8,291,053	768,082	768,082	8,297,721	1,074,948	1,074,948	1,074,948	1,074,948

45% (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
45	17.76%	17.76%	0.051	0.051	1.72%
50	23.53%	23.53%	0.071	0.071	2.62%
55	28.59%	28.59%	0.091	0.091	3.74%

45% (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
45	18.01%	18.00%	0.052	0.052	1.73%
50	23.72%	23.72%	0.072	0.072	2.63%
55	28.76%	28.79%	0.093	0.093	3.76%

F*) MUSTANSIRIYA MADRASA

Tessellation 3.6.3.6. θ =30º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	1.53	5,601,763	1,127,619	1,127,619	1,870,926	616,613	1,060,268	1,060,268	1,832,919
40	3.66	7,841,671	1,578,348	1,578,348	2,613,713	857,715	1,477,573	1,477,573	2,556,863
45	5.92	9,893,036	1,983,947	1,983,947	3,298,367	1,082,974	1,867,333	1,867,333	3,233,170

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	

Sat,	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	1.53	5,680,257	1,141,777	1,141,777	1,897,436	619,129	1,072,363	1,072,363	1,857,387
40	3.66	7,912,073	1,591,447	1,591,447	2,636,547	858,666	1,487,254	1,487,254	2,575,999
45	5.92	9,961,046	1,993,355	1,993,355	3,321,419	1,085,423	1,880,007	1,880,007	3,256,268

30º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	9.94%	9.96%	0.348	0.349	3.72%
40	13.92%	13.92%	0.349	0.349	5.18%
45	17.58%	17.58%	0.347	0.347	6.54%

30º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	10.09%	10.11%	0.347	0.348	3.75%
40	14.04%	14.04%	0.348	0.348	5.20%
45	17.71%	17.71%	0.346	0.347	6.58%

G*) TOMB OF SALIM CHISHTI

Tessellation 6.6.6. D = 65%, θ =75º

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
50	1.32	5,825,803	1,400,843	1,400,843	4,093,559	1,501,540	1,724,772	1,724,772	1,993,107
55	2.45	7,701,290	1,686,503	1,686,503	5,389,568	2,028,993	2,333,833	2,333,833	2,697,733
60	3.64	9,563,260	1,972,451	1,972,451	6,679,063	2,550,827	2,936,745	2,936,745	3,394,977

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.77	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
50	1.32	6,025,576	1,444,065	1,444,065	4,239,304	1,554,182	1,794,615	1,794,615	2,072,243
55	2.45	7,877,297	1,735,980	1,735,980	5,526,879	2,078,524	2,400,073	2,400,073	2,771,365
60	3.64	9,739,872	2,032,152	2,032,152	6,822,095	2,602,051	3,004,590	3,004,590	3,469,402

75º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
50	16.20%	15.18%	0.296	0.278	6.04%
55	21.74%	20.29%	0.271	0.253	8.18%
60	27.22%	25.34%	0.256	0.238	10.29%

75º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
50	16.77%	15.73%	0.295	0.277	6.28%
55	22.22%	20.79%	0.272	0.254	8.40%
60	27.68%	25.85%	0.258	0.241	10.51%

H*) GENERALIFE

Tessellation 3.12.12. θ =60º

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh} = Q_{11}$	$N_{yh} = Q_{21}$	$N_{xv} = Q_{12}$	$N_{yv} = Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	1.48	4,639,505	1,262,396	1,262,396	1,546,040	408,806	708,072	708,072	1,226,417
40	2.69	6,392,099	1,555,407	1,555,407	2,129,696	615,892	1,066,757	1,066,757	1,847,677
45	3.95	8,220,902	1,825,918	1,825,918	2,741,390	843,180	1,460,431	1,460,431	2,529,541

Lx [m]	5.00	LONGITUDINAL ANALYSIS	TRANSVERSAL ANALYSIS

Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	1.48	4,811,322	1,295,524	1,295,524	1,603,323	426,723	739,107	739,107	1,280,170
40	2.69	6,536,409	1,587,071	1,587,071	2,178,170	630,664	1,092,341	1,092,341	1,891,991
45	3.95	8,365,305	1,857,082	1,857,082	2,786,269	857,374	1,485,015	1,485,015	2,572,122

60º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	7.29%	7.29%	0.471	0.471	2.48%
40	10.62%	10.61%	0.422	0.421	3.73%
45	14.15%	14.16%	0.385	0.385	5.11%

60º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	7.61%	7.60%	0.467	0.466	2.59%
40	10.87%	10.87%	0.421	0.421	3.82%
45	14.40%	14.39%	0.385	0.385	5.20%

I*) HASHT BEHESHT

Tessellation I-6.10.10. θ =54º

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	1.79	3,964,436	1,382,365	1,382,365	2,150,566	435,805	599,834	599,834	825,601
40	2.98	5,350,091	1,675,808	1,675,808	2,881,822	725,327	998,327	998,327	1,374,079
45	4.23	6,817,894	1,947,927	1,947,927	3,648,130	1,038,755	1,429,723	1,429,723	1,967,845

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	1.79	4,087,827	1,407,828	1,407,828	2,213,913	474,553	653,166	653,166	899,006
40	2.98	5,456,823	1,700,286	1,700,286	2,934,040	753,712	1,037,396	1,037,396	1,427,853
45	4.23	6,924,274	1,970,471	1,970,471	3,697,425	1,062,064	1,461,805	1,461,805	2,012,002

54º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	7.82%	8.04%	0.467	0.480	2.10%
40	11.12%	11.35%	0.422	0.431	3.49%
45	14.69%	14.89%	0.388	0.393	5.00%

54º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	8.12%	8.33%	0.462	0.474	2.29%
40	11.37%	11.58%	0.421	0.429	3.63%
45	14.93%	15.11%	0.387	0.392	5.12%

L*) BEN YUSUF MADRASA

Tessellation ROS-3.4.3.12_3.12.12. θ =75º, type Arrow

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
45	0.85	2,828,515	1,446,245	1,446,245	2,828,513	463,952	463,216	463,216	463,953
50	1.62	4,048,566	1,812,549	1,812,549	4,048,584	843,110	841,762	841,762	843,112
55	2.43	5,319,863	2,147,061	2,147,061	5,320,038	1,301,377	1,299,369	1,299,369	1,301,377

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[m]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
45	0.85	3,013,954	1,466,764	1,466,764	3,013,802	531,384	531,384	531,384	531,384
50	1.62	4,205,198	1,840,236	1,840,236	4,204,631	892,979	892,979	892,979	892,979
55	2.43	5,478,036	2,177,793	2,177,793	5,477,562	1,353,416	1,353,416	1,353,416	1,353,416

75º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
45	7.31%	7.31%	0.511	0.511	1.62%
50	11.33%	11.33%	0.448	0.448	2.95%
55	15.58%	15.58%	0.404	0.404	4.55%

75º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
45	8.05%	8.05%	0.487	0.487	1.86%
50	11.90%	11.90%	0.438	0.438	3.12%
55	16.14%	16.14%	0.398	0.398	4.74%

M*) MOSQUE OF AL-NASIR MUHAMMAD MINBAR

Tessellation ROS-I-6.12.8.12. θ =75º, L =20%. type Arrow

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	0.57	2,843,029	1,882,541	1,882,541	2,843,124	854,263	851,022	851,022	854,264
45	1.04	3,961,068	2,319,139	2,319,139	3,961,098	1,233,053	1,229,201	1,229,201	1,233,053
50	1.52	5,182,700	2,681,356	2,681,356	5,182,687	1,671,292	1,666,759	1,666,759	1,671,292

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	0.57	3,121,098	1,887,889	1,887,889	3,120,066	967,156	967,156	967,156	967,156
45	1.04	4,235,441	2,309,436	2,309,436	4,234,736	1,352,241	1,352,241	1,352,241	1,352,241
50	1.52	5,453,549	2,671,903	2,671,903	5,453,322	1,776,412	1,776,412	1,776,412	1,776,412

20% (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	5.59%	5.59%	0.662	0.662	2.98%
45	9.11%	9.11%	0.585	0.585	4.31%
50	13.28%	13.28%	0.517	0.517	5.84%

20% (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	6.92%	6.92%	0.605	0.605	3.38%
45	10.41%	10.41%	0.545	0.545	4.73%
50	14.50%	14.50%	0.490	0.490	6.22%

N*) MOSQUE OF AL-NASIR MUHAMMAD

Tessellation ROS-3.12.12. θ =75º, type Arrow

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$

[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	0.72	4,349,725	1,461,243	1,461,243	1,451,223	313,206	534,247	534,247	925,173
45	1.48	6,247,750	1,886,053	1,886,053	2,085,578	507,491	870,365	870,365	1,508,225
50	2.28	8,248,205	2,247,367	2,247,367	2,750,468	735,762	1,265,580	1,265,580	2,193,926

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	0.72	4,617,946	1,496,217	1,496,217	1,542,549	340,759	590,212	590,212	1,022,277
45	1.48	6,488,523	1,917,577	1,917,577	2,168,104	531,249	920,151	920,151	1,593,748
50	2.28	8,482,095	2,277,893	2,277,893	2,833,137	758,051	1,312,983	1,312,983	2,274,153

75º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	5.82%	5.82%	0.581	0.582	1.88%
45	9.18%	9.19%	0.522	0.523	3.05%
50	12.95%	12.96%	0.472	0.472	4.44%

75º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	6.40%	6.41%	0.560	0.561	2.07%
45	9.68%	9.71%	0.511	0.512	3.22%
50	13.44%	13.46%	0.464	0.465	4.59%

O*) GREAT MOSQUE OF HERAT

Tessellation ROS-4.8.8. θ =70º, L =30%

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	1.33	3,336,149	2,080,845	2,080,845	3,336,069	903,719	902,834	902,834	903,718
45	2.43	4,587,913	2,522,346	2,522,346	4,587,913	1,444,827	1,443,240	1,443,240	1,444,831
50	3.59	5,895,607	2,870,384	2,870,384	5,895,495	2,033,225	2,030,911	2,030,911	2,033,228

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	1.33	3,437,030	2,091,736	2,091,736	3,437,194	938,399	938,399	938,399	938,399
45	2.43	4,678,377	2,526,337	2,526,337	4,678,144	1,467,604	1,467,604	1,467,604	1,467,604
50	3.59	5,993,621	2,879,856	2,879,856	5,993,606	2,065,559	2,065,559	2,065,559	2,065,559

30% (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	7.13%	7.13%	0.624	0.624	3.16%
45	11.20%	11.20%	0.550	0.550	5.05%
50	15.74%	15.74%	0.487	0.487	7.11%

30% (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	7.57%	7.57%	0.609	0.609	3.28%
45	11.60%	11.60%	0.540	0.540	5.14%
50	16.13%	16.13%	0.480	0.480	7.23%

P*) MOSQUE OF AL-SALIH TALA'I

Tessellation ROS-3.4.3.8_3.8.8. θ =75º, L = 25%, type Star

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	1.08	3,445,973	1,379,126	1,379,126	3,446,027	1,059,751	1,046,538	1,046,538	1,059,747
40	1.94	4,634,869	1,706,417	1,706,417	4,634,995	1,450,644	1,436,889	1,436,889	1,450,645
45	2.85	5,829,415	1,995,809	1,995,809	5,829,310	1,861,120	1,846,961	1,846,961	1,861,118

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	1.08	3,531,782	1,381,469	1,381,469	3,535,620	1,047,345	1,047,345	1,047,345	1,047,345
40	1.94	4,713,719	1,709,931	1,709,931	4,713,567	1,451,384	1,451,384	1,451,384	1,451,384
45	2.85	5,911,896	2,006,583	2,006,583	5,911,738	1,869,141	1,869,141	1,869,141	1,869,141

25% (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	10.13%	10.13%	0.400	0.400	3.69%
40	14.02%	14.02%	0.368	0.368	5.05%
45	18.01%	18.01%	0.342	0.342	6.49%

25% (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	10.47%	10.48%	0.391	0.391	3.67%
40	14.32%	14.32%	0.363	0.363	5.08%
45	18.30%	18.30%	0.339	0.339	6.54%

Q*) MOSQUE OF IBN TULUN

Tessellation ROS-3.4.3.12_3.12.12. θ_1 =75º, θ_2 =65º, type Star

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	0.96	2,981,543	1,422,624	1,422,624	2,981,615	420,511	419,832	419,832	420,512
40	1.74	4,034,265	1,772,575	1,772,575	4,034,298	710,269	709,076	709,076	710,271
45	2.56	5,119,377	2,078,712	2,078,712	5,119,473	1,065,606	1,063,836	1,063,836	1,065,604

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
35	0.96	3,101,190	1,446,978	1,446,978	3,101,079	474,642	474,642	474,642	474,642
40	1.74	4,142,396	1,792,763	1,792,763	4,142,445	746,183	746,183	746,183	746,183
45	2.56	5,233,330	2,104,000	2,104,000	5,233,325	1,103,314	1,103,314	1,103,314	1,103,314

65º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
0.5	35	8.06%	8.06%	0.477	0.477
1	40	11.39%	11.39%	0.439	0.439
1.5	45	14.96%	14.96%	0.406	0.406

65º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
35	8.49%	8.49%	0.467	0.467	1.66%
40	11.78%	11.78%	0.433	0.433	2.61%
45	15.35%	15.35%	0.402	0.402	3.86%

R*) FATEHPUR SIKRI

Tessellation ROS-I-6.10.10. θ =72º, type Star

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	1.31	5,123,590	1,923,449	1,923,449	2,722,446	562,412	771,911	771,911	1,074,282
45	2.06	6,733,853	2,240,073	2,240,073	3,588,614	839,593	1,153,961	1,153,961	1,601,884
50	2.86	8,464,432	2,518,078	2,518,078	4,524,003	1,171,399	1,610,866	1,610,866	2,231,775

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	6.88	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	1.31	5,328,235	1,927,720	1,927,720	2,826,783	588,428	809,901	809,901	1,114,733
45	2.06	6,931,769	2,248,640	2,248,640	3,698,533	870,794	1,198,545	1,198,545	1,649,656
50	2.86	8,669,406	2,529,865	2,529,865	4,625,585	1,206,252	1,660,263	1,660,263	2,285,156

72º (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	9.57%	9.63%	0.513	0.517	2.71%
45	13.57%	13.70%	0.454	0.458	4.05%
50	17.96%	18.18%	0.404	0.409	5.65%

72º (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	10.20%	10.26%	0.495	0.498	2.83%
45	14.15%	14.30%	0.442	0.446	4.19%
50	18.52%	18.72%	0.397	0.402	5.81%

S*) JAMEH MOSQUE

Tessellation ROS-I-6.12.8.12. θ =70º, L =20%, type Star

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	0.61	3,260,068	2,068,720	2,068,720	3,260,083	1,148,339	1,145,453	1,145,453	1,148,338
45	1.09	4,390,956	2,517,193	2,517,193	4,390,778	1,562,595	1,559,184	1,559,184	1,562,597
50	1.59	5,621,130	2,899,195	2,899,195	5,621,359	2,022,502	2,018,489	2,018,489	2,022,501

Lx [m]	5.00	LONGITUDINAL ANALYSIS				TRANSVERSAL ANALYSIS			
Ly [m]	5.00	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	0.61	3,533,804	2,086,886	2,086,886	3,533,689	1,255,112	1,255,112	1,255,112	1,255,112
45	1.09	4,658,937	2,516,885	2,516,885	4,657,673	1,660,564	1,660,564	1,660,564	1,660,564
50	1.59	5,870,147	2,898,207	2,898,207	5,870,014	2,110,973	2,110,973	2,110,973	2,110,973

20% (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	6.81%	6.81%	0.635	0.635	4.01%
45	10.32%	10.32%	0.573	0.573	5.46%
50	14.44%	14.44%	0.516	0.516	7.07%

20% (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	8.05%	8.05%	0.591	0.591	4.39%
45	11.54%	11.54%	0.540	0.540	5.81%
50	15.53%	15.53%	0.494	0.494	7.39%

T*) ALHAMBRA

Tessellation ROS-I-6.9.12.9. θ=70º, L =35%

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	2.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	0.81	6,253,446	2,042,242	2,042,242	2,082,285	464,564	800,550	800,550	1,389,363
45	1.31	8,230,066	2,409,482	2,409,482	2,743,288	689,020	1,188,870	1,188,870	2,062,922
50	1.82	10,354,998	2,724,792	2,724,792	3,455,132	951,080	1,642,539	1,642,539	2,849,722

Lx [m]	5.00	**LONGITUDINAL ANALYSIS**				**TRANSVERSAL ANALYSIS**			
Ly [m]	8.66	dx=1	Nx≠0	dx=0	Nx≠0	dx.up=1	Nxy≠0	dx=0	Nxy≠0
Mesh [cm]	4.00	dy=0	Ny≠0	dy=1	Ny≠0	dy=0	Nyx≠0	dy.right=1	Nyx≠0
GEOMETRY		HORIZONTAL		VERTICAL		HORIZ. DISTORTION		VERTICAL DISTORTION	
Sat,	rbd	$N_{xh}=Q_{11}$	$N_{yh}=Q_{21}$	$N_{xv}=Q_{12}$	$N_{yv}=Q_{22}$	$N_{xy.h}$	$N_{yx.h}$	$N_{xy.v}$	$N_{yx.v}$
[%]	[%]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
40	0.81	6,700,395	2,035,454	2,035,454	2,233,582	526,376	911,710	911,710	1,579,129
45	1.31	8,657,403	2,403,369	2,403,369	2,886,762	752,240	1,302,918	1,302,918	2,256,720
50	1.82	10,789,617	2,717,867	2,717,867	3,596,503	1,014,567	1,757,281	1,757,281	3,043,701

35% (2cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	8.59%	8.58%	0.566	0.566	2.81%
45	12.35%	12.35%	0.507	0.507	4.17%
50	16.58%	16.60%	0.455	0.456	5.75%

35% (4cm)	HOMOGENIZED MECHANICAL PROPERTIES				
Sat, [%]	$E_{h.x}$	$E_{h.y}$	$\nu_{h.xy}$	$\nu_{h.yx}$	G_h
40	9.79%	9.79%	0.526	0.526	3.19%
45	13.45%	13.45%	0.481	0.481	4.56%
50	17.65%	17.65%	0.436	0.436	6.15%