

LOADING: Seismic Loading: X-Force +ve Eccentricity

FLOOR DISPLACEMENTS (at X=0, Y=0)

Storey (T-B)	X-Displ (+-->) (mm)	Y-Displ (+ UP) (mm)	Rotation (+ CCW) (radians)
1 2nd	+0.4782	-0.0092	+0.0000001
2 1st	+0.3410	+0.0071	-0.0000002
3 Grd	+0.2334	+0.0108	-0.0000003
4 Bas	+0.1278	+0.0113	-0.0000003

#	WALL Mark	Storey (T-B)	DEFLECTION (mm)	ROTATION (radians)	SHEAR (kN)	MOMENT (kN.m)	FORCE (kN)
1	Core 1x'	1 2nd	+0.4724	+0.0000223	-29.7	-175.1	-29.7
		2 1st	+0.3453	+0.0000232	+134.7	+329.9	+164.4
		3 Grd	+0.2400	+0.0000227	+191.5	+1047.9	+56.8
		4 Bas BASE	+0.1352	+0.0000185 0.0000000	+378.7	+3130.6	+187.2
2	Core 1y'	1 2nd	-0.0589	-0.0000051	-1.7	-10.0	-1.7
		2 1st	-0.0292	-0.0000044	-0.2	-10.9	+1.5
		3 Grd	-0.0143	-0.0000034	-3.1	-22.5	-2.8
		4 Bas BASE	-0.0028	-0.0000019 0.0000000	+2.9	-6.6	+6.0
3	Core 2x	1 2nd	+0.4771	+0.0000220	-93.4	-551.1	-93.4
		2 1st	+0.3437	+0.0000258	+152.3	+20.0	+245.7
		3 Grd	+0.2367	+0.0000282	+10.1	+57.9	-142.2
		4 Bas BASE	+0.1312	+0.0000279 0.0000000	+756.9	+4221.1	+746.8
4	Core 2y	1 2nd	+0.4771	+0.0000224	-94.1	-555.0	-94.1
		2 1st	+0.3437	+0.0000257	+151.9	+14.7	+246.0
		3 Grd	+0.2367	+0.0000278	+89.4	+349.9	-62.5
		4 Bas BASE	+0.1312	+0.0000264 0.0000000	+733.0	+4381.6	+643.6
5	Core 3x	1 2nd	+0.4780	+0.0000191	+269.9	+1592.4	+269.9
		2 1st	+0.3414	+0.0000182	+706.6	+4242.3	+436.7
		3 Grd	+0.2338	+0.0000160	+875.2	+7524.3	+168.6
		4 Bas BASE	+0.1282	+0.0000115 0.0000000	+1049.4	+13296.0	+174.2
6	Core 3y	1 2nd	+0.4781	+0.0000237	-14.6	-86.0	-14.6
		2 1st	+0.3413	+0.0000243	+94.9	+269.9	+109.5
		3 Grd	+0.2337	+0.0000235	+136.8	+782.9	+41.9
		4 Bas BASE	+0.1282	+0.0000189 0.0000000	+256.9	+2195.7	+120.1
7	Core 4x	1 2nd	+0.4751	+0.0000155	+321.8	+1898.8	+321.8
		2 1st	+0.3487	+0.0000147	+746.1	+4696.8	+424.3
		3 Grd	+0.2429	+0.0000128	+883.3	+8009.0	+137.1
		4 Bas BASE	+0.1375	+0.0000091 0.0000000	+1041.5	+13737.0	+158.2

#	WALL Mark	Storey (T-B)	DEFLECTION (mm)	ROTATION (radians)	SHEAR (kN)	MOMENT (kN.m)	FORCE (kN)
8	Core 4y	1 2nd	+0.4751	+0.0000222	-43.2	-255.1	-43.2
		2 1st	+0.3487	+0.0000244	+88.3	+76.1	+131.6
		3 Grd	+0.2429	+0.0000253	+113.7	+502.6	+25.4
		4 Bas	+0.1375	+0.0000222	+331.2	+2324.3	+217.5
		BASE		0.0000000			
9	Core 5x'	1 2nd	-0.4731	-0.0000220	+16.4	+96.7	+16.4
		2 1st	-0.3470	-0.0000226	-112.5	-325.1	-128.9
		3 Grd	-0.2417	-0.0000218	-158.2	-918.2	-45.7
		4 Bas	-0.1368	-0.0000175	-292.0	-2524.0	-133.8
		BASE		0.0000000			
10	Core 5y	1 2nd	+0.0495	+0.0000022	+65.2	+384.8	+65.2
		2 1st	+0.0209	+0.0000019	+41.2	+539.3	-24.0
		3 Grd	+0.0081	+0.0000015	+41.2	+693.6	0.0
		4 Bas	-0.0028	+0.0000009	-23.0	+566.9	-64.2
		BASE		0.0000000			
11	Wall 1	1 2nd	+0.4750	+0.0000046	+2384.4	+14067.9	+2384.4
		2 1st	+0.3489	+0.0000042	+3424.1	+26908.2	+1039.7
		3 Grd	+0.2432	+0.0000035	+3538.5	+40177.6	+114.4
		4 Bas	+0.1378	+0.0000024	+3352.6	+58616.9	-185.9
		BASE		0.0000000			
12	Wall 2	1 2nd	+0.4781	+0.0000081	+1558.8	+9196.7	+1558.8
		2 1st	+0.3411	+0.0000074	+2212.0	+17491.7	+653.2
		3 Grd	+0.2334	+0.0000062	+2315.5	+26174.8	+103.5
		4 Bas	+0.1279	+0.0000042	+2127.8	+37877.8	-187.7
		BASE		0.0000000			
13	Wall 3	1 2nd	+0.4781	+0.0000202	+138.1	+814.9	+138.1
		2 1st	+0.3411	+0.0000193	+424.0	+2405.0	+285.9
		3 Grd	+0.2334	+0.0000171	+538.8	+4425.4	+114.7
		4 Bas	+0.1279	+0.0000125	+673.2	+8128.2	+134.5
		BASE		0.0000000			
14	Wall 4	1 2nd	-0.0589	-0.0000036	-62.1	-366.6	-62.1
		2 1st	-0.0290	-0.0000032	-43.3	-528.9	+18.9
		3 Grd	-0.0141	-0.0000025	-41.6	-684.8	+1.7
		4 Bas	-0.0026	-0.0000015	+11.0	-624.1	+52.6
		BASE		0.0000000			
15	Wall 5	1 2nd	+0.4755	+0.0000224	-25.7	-151.7	-25.7
		2 1st	+0.3478	+0.0000233	+120.1	+298.7	+145.8
		3 Grd	+0.2418	+0.0000228	+170.2	+936.8	+50.1
		4 Bas	+0.1364	+0.0000186	+335.5	+2782.0	+165.3
		BASE		0.0000000			

LOADING: Seismic Loading: X-Force -ve Eccentricity

FLOOR DISPLACEMENTS (at X=0, Y=0)

Storey (T-B)	X-Displ (+-->) (mm)	Y-Displ (+ UP) (mm)	Rotation (+ CCW) (radians)
1 2nd	+0.5422	-0.1720	+0.0000037
2 1st	+0.3861	-0.1037	+0.0000024
3 Grd	+0.2640	-0.0626	+0.0000015
4 Bas	+0.1448	-0.0277	+0.0000007

#	WALL Mark	Storey (T-B)	DEFLECTION (mm)	ROTATION (radians)	SHEAR (kN)	MOMENT (kN.m)	FORCE (kN)
1	Core 1x'	1 2nd	+0.4386	+0.0000207	-27.9	-164.8	-27.9
		2 1st	+0.3207	+0.0000215	+125.0	+303.9	+152.9
		3 Grd	+0.2229	+0.0000211	+179.5	+977.0	+54.5
		4 Bas BASE	+0.1253	+0.0000172 0.0000000	+350.4	+2904.2	+170.9
2	Core 1y'	1 2nd	-0.2192	-0.0000138	-0.3	-1.6	-0.3
		2 1st	-0.1381	-0.0000137	-4.6	-18.7	-4.3
		3 Grd	-0.0864	-0.0000127	-4.8	-36.5	-0.2
		4 Bas BASE	-0.0411	-0.0000102 0.0000000	-14.7	-117.5	-10.0
3	Core 2x	1 2nd	+0.5019	+0.0000233	-95.9	-566.1	-95.9
		2 1st	+0.3605	+0.0000273	+159.6	+32.5	+255.6
		3 Grd	+0.2478	+0.0000297	+10.9	+73.3	-148.8
		4 Bas BASE	+0.1371	+0.0000292 0.0000000	+788.4	+4409.2	+777.5
4	Core 2y	1 2nd	+0.5019	+0.0000237	-96.4	-569.0	-96.4
		2 1st	+0.3605	+0.0000271	+159.4	+28.6	+255.8
		3 Grd	+0.2478	+0.0000292	+93.5	+379.4	-65.8
		4 Bas BASE	+0.1371	+0.0000276 0.0000000	+763.5	+4578.5	+669.9
5	Core 3x	1 2nd	+0.5374	+0.0000215	+308.7	+1821.2	+308.7
		2 1st	+0.3830	+0.0000204	+794.2	+4799.7	+485.6
		3 Grd	+0.2620	+0.0000179	+975.6	+8458.1	+181.3
		4 Bas BASE	+0.1439	+0.0000129 0.0000000	+1177.1	+14932.1	+201.5
6	Core 3y	1 2nd	+0.5384	+0.0000268	-15.3	-90.3	-15.3
		2 1st	+0.3836	+0.0000274	+106.9	+310.5	+122.2
		3 Grd	+0.2624	+0.0000264	+151.8	+879.9	+45.0
		4 Bas BASE	+0.1441	+0.0000213 0.0000000	+288.8	+2468.5	+137.0
7	Core 4x	1 2nd	+0.4258	+0.0000139	+289.2	+1706.5	+289.2
		2 1st	+0.3123	+0.0000132	+669.4	+4216.7	+380.2
		3 Grd	+0.2174	+0.0000115	+796.6	+7204.1	+127.2
		4 Bas BASE	+0.1225	+0.0000082 0.0000000	+926.5	+12299.9	+129.9

#	WALL Mark	Storey (T-B)	DEFLECTION (mm)	ROTATION (radians)	SHEAR (kN)	MOMENT (kN.m)	FORCE (kN)
8	Core 4y	1 2nd	+0.4258	+0.0000199	-38.7	-228.6	-38.7
		2 1st	+0.3123	+0.0000219	+79.0	+67.7	+117.7
		3 Grd	+0.2174	+0.0000227	+104.3	+458.8	+25.3
		4 Bas BASE	+0.1225	+0.0000199 0.0000000	+293.7	+2074.4	+189.4
9	Core 5x'	1 2nd	-0.4266	-0.0000200	+13.8	+81.2	+13.8
		2 1st	-0.3120	-0.0000204	-101.4	-298.9	-115.1
		3 Grd	-0.2168	-0.0000197	-144.1	-839.2	-42.7
		4 Bas BASE	-0.1219	-0.0000157 0.0000000	-258.6	-2261.4	-114.5
10	Core 5y	1 2nd	+0.2169	+0.0000069	+122.3	+721.4	+122.3
		2 1st	+0.1473	+0.0000064	+174.8	+1376.7	+52.5
		3 Grd	+0.0980	+0.0000054	+191.8	+2095.8	+17.0
		4 Bas BASE	+0.0511	+0.0000037 0.0000000	+177.9	+3074.5	-13.8
11	Wall 1	1 2nd	+0.4222	+0.0000041	+2121.5	+12516.6	+2121.5
		2 1st	+0.3100	+0.0000038	+3046.8	+23942.0	+925.3
		3 Grd	+0.2159	+0.0000032	+3161.1	+35796.1	+114.3
		4 Bas BASE	+0.1218	+0.0000022 0.0000000	+2962.7	+52090.8	-198.4
12	Wall 2	1 2nd	+0.5417	+0.0000091	+1776.4	+10480.8	+1776.4
		2 1st	+0.3858	+0.0000084	+2506.5	+19880.2	+730.1
		3 Grd	+0.2638	+0.0000070	+2608.4	+29661.8	+101.9
		4 Bas BASE	+0.1447	+0.0000048 0.0000000	+2408.0	+42906.0	-200.4
13	Wall 3	1 2nd	+0.5417	+0.0000229	+159.6	+941.8	+159.6
		2 1st	+0.3858	+0.0000219	+480.3	+2743.0	+320.7
		3 Grd	+0.2638	+0.0000194	+604.7	+5010.7	+124.4
		4 Bas BASE	+0.1447	+0.0000141 0.0000000	+761.9	+9201.1	+157.2
14	Wall 4	1 2nd	-0.2221	-0.0000111	-120.5	-711.0	-120.5
		2 1st	-0.1399	-0.0000103	-172.7	-1358.5	-52.2
		3 Grd	-0.0876	-0.0000086	-190.7	-2073.8	-18.0
		4 Bas BASE	-0.0416	-0.0000059 0.0000000	-172.9	-3024.6	+17.9
15	Wall 5	1 2nd	+0.4397	+0.0000208	-23.2	-136.9	-23.2
		2 1st	+0.3211	+0.0000216	+111.0	+279.2	+134.2
		3 Grd	+0.2229	+0.0000211	+158.8	+874.7	+47.9
		4 Bas BASE	+0.1252	+0.0000171 0.0000000	+306.7	+2561.6	+147.9

LOADING: Seismic Loading: Y-Force

FLOOR DISPLACEMENTS		(at X=0, Y=0)		
Storey (T-B)	X-Displ (+-->) (mm)	Y-Displ (+ UP) (mm)	Rotation (+ CCW) (radians)	
1 2nd	+0.0095	+4.6167	+0.0000008	
2 1st	+0.0424	+3.0988	+0.0000027	
3 Grd	+0.0478	+2.0310	+0.0000029	
4 Bas	+0.0404	+1.0764	+0.0000025	

#	WALL Mark	Storey (T-B)	DEFLECTION (mm)	ROTATION (radians)	SHEAR (kN)	MOMENT (kN.m)	FORCE (kN)
1	Core 1x'	1 2nd	+0.4738	+0.0000272	+38.2	+225.4	+38.2
		2 1st	+0.3070	+0.0000262	+137.0	+739.2	+98.8
		3 Grd	+0.1947	+0.0000232	+148.8	+1297.3	+11.8
		4 Bas	+0.0978	+0.0000171	+228.4	+2553.2	+79.5
		BASE		0.0000000			
2	Core 1y'	1 2nd	+4.5923	+0.0002543	-34.0	-200.4	-34.0
		2 1st	+3.0835	+0.0002686	+129.6	+285.6	+163.6
		3 Grd	+2.0215	+0.0002648	+33.2	+410.0	-96.4
		4 Bas	+1.0719	+0.0002333	+489.4	+3101.7	+456.2
		BASE		0.0000000			
3	Core 2x	1 2nd	+0.0006	-0.0000024	-25.2	-148.9	-25.2
		2 1st	+0.0136	-0.0000013	-0.5	-150.7	+24.8
		3 Grd	+0.0161	0.0000000	-18.5	-220.2	-18.1
		4 Bas	+0.0136	+0.0000017	+126.2	+474.1	+144.8
		BASE		0.0000000			
4	Core 2y	1 2nd	+0.0006	-0.0000023	-27.9	-164.8	-27.9
		2 1st	+0.0136	-0.0000013	-2.7	-175.0	+25.2
		3 Grd	+0.0161	0.0000000	-7.3	-202.3	-4.5
		4 Bas	+0.0136	+0.0000014	+120.8	+462.2	+128.1
		BASE		0.0000000			
5	Core 3x	1 2nd	+0.0085	-0.0000021	-200.7	-1184.0	-200.7
		2 1st	+0.0389	-0.0000014	-23.5	-1272.0	+177.2
		3 Grd	+0.0440	-0.0000005	+116.7	-834.3	+140.2
		4 Bas	+0.0372	+0.0000003	+396.2	+1344.9	+279.5
		BASE		0.0000000			
6	Core 3y	1 2nd	+0.0087	-0.0000039	-40.1	-236.7	-40.1
		2 1st	+0.0396	-0.0000022	-3.8	-251.1	+36.3
		3 Grd	+0.0448	-0.0000001	+20.7	-173.6	+24.5
		4 Bas	+0.0379	+0.0000017	+112.0	+442.6	+91.4
		BASE		0.0000000			
7	Core 4x	1 2nd	-0.0162	+0.0000012	+159.9	+943.6	+159.9
		2 1st	-0.0407	+0.0000008	+16.1	+1004.1	-143.8
		3 Grd	-0.0438	+0.0000002	-95.0	+647.7	-111.2
		4 Bas	-0.0369	-0.0000002	-336.2	-1201.5	-241.2
		BASE		0.0000000			

#	WALL Mark	Storey (T-B)	DEFLECTION (mm)	ROTATION (radians)	SHEAR (kN)	MOMENT (kN.m)	FORCE (kN)
8	Core 4y	1 2nd	-0.0162	+0.0000035	+34.5	+203.6	+34.5
		2 1st	-0.0407	+0.0000018	+3.9	+218.1	-30.6
		3 Grd	-0.0438	-0.0000004	-8.1	+187.7	-12.0
		4 Bas	-0.0369	-0.0000026	-128.8	-520.9	-120.7
		BASE		0.0000000			
9	Core 5x'	1 2nd	+0.5019	+0.0000224	-22.4	-132.2	-22.4
		2 1st	+0.3750	+0.0000231	+109.3	+277.6	+131.7
		3 Grd	+0.2676	+0.0000226	+156.8	+865.6	+47.5
		4 Bas	+0.1591	+0.0000187	+354.4	+2815.0	+197.6
		BASE		0.0000000			
10	Core 5y	1 2nd	+4.6655	+0.0001410	+2178.8	+12854.6	+2178.8
		2 1st	+3.3227	+0.0001312	+3730.9	+26845.4	+1552.1
		3 Grd	+2.2857	+0.0001119	+4069.6	+42106.3	+338.7
		4 Bas	+1.2950	+0.0000784	+4684.8	+67872.7	+615.2
		BASE		0.0000000			
11	Wall 1	1 2nd	-0.0170	+0.0000003	+587.6	+3466.7	+587.6
		2 1st	-0.0433	+0.0000002	+103.0	+3852.9	-484.6
		3 Grd	-0.0467	+0.0000001	-283.9	+2788.2	-386.9
		4 Bas	-0.0393	0.0000000	-1005.4	-2741.2	-721.4
		BASE		0.0000000			
12	Wall 2	1 2nd	+0.0094	-0.0000008	-486.6	-2870.8	-486.6
		2 1st	+0.0420	-0.0000006	-100.8	-3248.8	+385.8
		3 Grd	+0.0474	-0.0000003	+215.3	-2441.2	+316.1
		4 Bas	+0.0401	-0.0000001	+737.5	+1614.8	+522.1
		BASE		0.0000000			
13	Wall 3	1 2nd	+0.0094	-0.0000025	-135.8	-801.4	-135.8
		2 1st	+0.0420	-0.0000016	-14.6	-856.0	+121.3
		3 Grd	+0.0474	-0.0000005	+80.5	-554.0	+95.1
		4 Bas	+0.0401	+0.0000004	+280.2	+987.3	+199.7
		BASE		0.0000000			
14	Wall 4	1 2nd	+4.5917	+0.0002143	+1796.6	+10599.7	+1796.6
		2 1st	+3.0814	+0.0002011	+3670.8	+24365.4	+1874.3
		3 Grd	+2.0192	+0.0001735	+4011.7	+39409.1	+340.8
		4 Bas	+1.0700	+0.0001231	+4980.2	+66800.1	+968.5
		BASE		0.0000000			
15	Wall 5	1 2nd	-0.0131	+0.0000020	+30.6	+180.7	+30.6
		2 1st	-0.0308	+0.0000011	+2.5	+190.0	-28.1
		3 Grd	-0.0329	-0.0000002	-15.1	+133.5	-17.6
		4 Bas	-0.0277	-0.0000013	-95.2	-390.0	-80.1
		BASE		0.0000000			

MECHANICAL AND ELECTRICAL

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 Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 1 of 1

Zone Name : AHU-MEH

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
S-07/M.ENTR.	Jun	1500	33.63	3.03	2,990.8
S-02/FOYER	Aug	1600	41.62	5.35	3,701.4
Total including space multipliers :					6,692.2

Location : ZONE DESIGN COOLING LOAD SUMMARY
 AMMAN, JORDAN

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

6022890201

Carrier Hourly Analysis Program

Page 1 of 2

 CALCULATION DATA:

Zone Name : AHU-MEH

Calc Time: Jul 1500h

Job Name : Default Job

Amb db/wb: 38.0/ 21.0 C

 LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	20,409	0
GLASS TRANSMISSION	7,508	0
WALL TRANSMISSION	657	0
ROOF TRANSMISSION	1,272	0
PARTITION TRANSMISSION	5,917	0
LIGHTING (8,543 W TOTAL)	5,967	0
OTHER ELEC. (0 W TOTAL)	0	0
PEOPLE (132.75 PEOPLE TOTAL)	9,518	7,976
MISCELLANEOUS LOADS	20,000	0
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	117	0
COOLING SAFETY LOAD	3,568	399

SUB-TOTALS	74,932	8,374
NET VENTILATION LOAD (1328 L/s)	20,803	1,630
SUPPLY FAN LOAD (kw = 6.1)	6,134	0
WALL LOAD TO PLENUM	0	0

ROOF LOAD TO PLENUM	2,968	0
LIGHTING LOAD TO PLENUM	2,563	0

TOTAL COOLING LOADS	107,401	10,004

 CC SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)	=	26.6/ 17.3 deg C
COIL LEAVING AIR TEMP. (DB/WB)	=	11.9/ 11.5 deg C
COIL SENSIBLE LOAD	=	107,401 W
COIL TOTAL LOAD	=	117,405 W
COOLING SUPPLY AIR TEMPERATURE	=	12.8 deg C
TOTAL COOLING L/s (actual)	=	6,663 L/s
TOTAL COOLING L/s (std. air)	=	6,072 L/s
RESULTING ROOM REL. HUMIDITY	=	49.3 %
COIL BYPASS FACTOR	=	0.050
COIL APPARATUS DEWPOINT	=	11.2 deg C
REHEAT REQUIRED	=	0 W

 GENERAL INFORMATION:

TOTAL COOLING LOAD	=	117.41 kW
	=	3.49 sqm / kW
TOTAL FLOOR AREA	=	409.50 sqm
OVERALL U-FACTOR	=	2.052 W/sqm/K
COOLING L/s/sqm	=	16.27 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 2 of 2

 CALCULATION DATA:

Zone Name : AHU-MEH
 Job Name : Default Job
 Calc Time: Jul 1500h
 Amb db/wb: 38.0/ 21.0 C

 WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqm)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	92	4,032	7,021
E	0	0	0
SE	0	0	0
S	0	0	0
SW	39	1,722	3,837
W	0	0	0
NW	0	0	0
N	0	0	0
H	40	1,753	9,552
WALL LOADS: NE	14	154	-
E	0	0	-
SE	0	0	-
S	0	0	-
SW	63	503	-
W	0	0	-
NW	0	0	-
N	0	0	-

MAXIMUM ZONE COOLING LOADS

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 1 of 1

Zone Name : AHU-SST

No.	Month	Hour	Sensible Load (kW)	Total Load (kW)	Supply Air (L/s)
1	Jul	1500	12.53	12.53	547
2	Aug	1500	12.53	12.53	547
3	Jul	1600	12.18	12.18	543
4	Aug	1600	12.18	12.18	543
5	Jul	1400	11.97	11.97	533
6	Aug	1400	11.97	11.97	533
7	Jun	1500	11.85	11.85	531
8	Jun	1600	11.51	11.51	527
9	Jul	1700	11.32	11.32	529
10	Aug	1700	11.32	11.32	529

F DESIGN SPACE COOLING LOADS

Location : AMMAN, JORDAN

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

6022890201

Carrier Hourly Analysis Program

Page 1

CALCULATION DATA:

Zone Name : AHU-SST

Calc Time: Jul 1500h

Job Name : Default Job

573

Amb db/wb: 38.0/ 21.0 C

Space Sensible Supply Air

3-05/SP.STORE1	x	2	1.32	240.0
3-05/SP.STORE2	x	1	0.37	66.7

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN 04-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 1 of 2

 CALCULATION DATA:

Zone Name : AHU-SST Calc Time: Jul 1500h
 Job Name : Default Job Amb db/wb: 38.0/ 21.0 C

LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	0	0
GLASS TRANSMISSION	0	0
WALL TRANSMISSION	0	0
ROOF TRANSMISSION	0	0
PARTITION TRANSMISSION	1,816	0
LIGHTING (720 W TOTAL)	359	0
OTHER ELEC. (0 W TOTAL)	0	0
PEOPLE (9.60 PEOPLE TOTAL)	688	577
MISCELLANEOUS LOADS	0	0
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	0	0
COOLING SAFETY LOAD	143	29

SUB-TOTALS	3,006	606
NET VENTILATION LOAD (547 L/s)	8,659	-606
SUPPLY FAN LOAD (kw = 0.5)	503	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	0	0
LIGHTING LOAD TO PLENUM	360	0

TOTAL COOLING LOADS	12,529	0

** *****

COIL SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)	=	38.0/ 21.0 deg C
COIL LEAVING AIR TEMP. (DB/WB)	=	17.2/ 14.4 deg C
COIL SENSIBLE LOAD	=	12,529 W
COIL TOTAL LOAD	=	12,529 W
COOLING SUPPLY AIR TEMPERATURE	=	18.0 deg C
TOTAL COOLING L/s (actual)	=	547 L/s
TOTAL COOLING L/s (std. air)	=	498 L/s
RESULTING ROOM REL. HUMIDITY	=	53.8 %
COIL BYPASS FACTOR	=	0.050
COIL APPARATUS DEWPOINT	=	16.1 deg C
REHEAT REQUIRED	=	0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD	=	12.53 kW
	=	11.49 sqm / kW
TOTAL FLOOR AREA	=	144.00 sqm
OVERALL U-FACTOR	=	0.000 W/sqm/K
COOLING L/s/sqm	=	3.80 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 2 of 2

CALCULATION DATA:

Zone Name : AHU-SST
 Job Name : Default Job

Calc Time: Jul 1500h
 Amb db/wb: 38.0/ 21.0 C

WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqm)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	0	0	0
E	0	0	0
SE	0	0	0
S	0	0	0
SW	0	0	0
W	0	0	0
NW	0	0	0
N	0	0	0
H	0	0	0
WALL LOADS: NE	0	0	-
E	0	0	-
SE	0	0	-
S	0	0	-
SW	0	0	-
W	0	0	-
NW	0	0	-
N	0	0	-

= ZONE DESIGN HEATING LOAD SUMMARY

Location : AMMAN, JORDAN 04-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 1 of 1

 CALCULATION DATA:

Zone Name : AHU-MEH Calc Time: Winter design
 Job Name : Default Job Amb db : 0.0 C

LOAD COMPONENT	LOAD (W)
WALL TRANSMISSION	1,075
ROOF TRANSMISSION	4,068
GLASS TRANSMISSION	11,991
TRANSMISSION LOSS TO UNCOND. SPACES	9,450
INFILTRATION LOSS	0
LAB FLOOR	0
HEATING SAFETY W	1,329

SUB-TOTAL	27,913
NET VENTILATION LOSS	29,207

TOTAL HEATING LOAD	57,120
HEATING SUPPLY L/s	1,087 L/s
HEATING SUPPLY AIR TEMPERATURE	43.3 deg C
HEATING VENTILATION AIR L/s	1,328 L/s
HEATING THERMOSTAT SETPOINT TEMP	20.0 deg C

Location : AMMAN, JORDAN MAXIMUM SPACE COOLING LOADS
Prepared By : RAE & ASSOC. / ENGINEERS
Carrier Hourly Analysis Program

04-02-00
6022890201
Page 1 of 1

** *****

Zone Name : AHU-SST

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
B-05/SP.STORE1	Jul	1500	1.32	0.20	240.0
B-05/SP.STORE2	Jan	2300	0.37	0.20	66.7
Total including space multipliers :					546.6

HEATING SUPPLY L/s	128 L/s
HEATING SUPPLY AIR TEMPERATURE	43.3 deg C
HEATING VENTILATION AIR L/s	128 L/s
HEATING THERMOSTAT SETPOINT TEMP	20.0 deg C

ion C

ent MATRIX setting
nt : Pgm
tch : Pgm
rm length : 11 inch

F DESIGN SPACE HEATING LOADS

Location : AMMAN, JORDAN

17-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

6022890201

Carrier Hourly Analysis Program

Page 1 of 1

CALCULATION DATA:

Zone Name : AHU-EXH1

Calc Time: Winter design

Job Name : Default Job

Amb db : 0.0 C

Space Name	Mult	Space Sensible (W /space)	Supply Air (L/s/space)
G-01/EXHIB.1	x 1	8,415.8	425.0
S- /M.E.HALL1	x 1	26,140.8	1,320.2
S-01/VOID1	x 1	4,575.9	231.1

1.3
438
1.3

F DESIGN SPACE HEATING LOADS

Location : AMMAN, JORDAN 17-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 1 of 1

 CALCULATION DATA:

Zone Name : AHU-EXH2 Calc Time: Winter design
 Job Name : Default Job Amb db : 0.0 C

Space Name	Mult	Space Sensible (W /space)	Supply Air (L/s/space)
G-02/EXHIB.2	x 1	14,864.8	750.7
S-01/M.E.HALL2	x 1	27,383.0	1,382.9
S- /VOID2	x 1	5,446.4	275.0

F DESIGN SPACE HEATING LOADS

Location : AMMAN, JORDAN 17-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 1 of 1

 CALCULATION DATA:

Zone Name : AHU-TG Calc Time: Winter design
 Job Name : Default Job Amb db : 0.0 C

Space Name	Mult	Space Sensible (W /space)	Supply Air (L/s/space)
S-07/SERVICE	x 1	1,529.6	77.2
S-05/TEMP. GALL.	x 1	14,478.2	731.2

F DESIGN SPACE HEATING LOADS
Location : AMMAN, JORDAN
Prepared By : RAE & ASSOC. / ENGINEERS
Carrier Hourly Analysis Program 584

17-02-00
6022890201
Page 1 of 1

CALCULATION DATA:

Zone Name : AHU-MEH
Job Name : Default Job

Calc Time: Winter design
Amb db : 0.0 C

Space Name	Mult	Space Sensible (W /space)	Supply Air (L/s/space)
G-07/M.ENTR.	x 1	17,237.0	671.5
S-02/FOYER	x 1	12,856.2	500.9

730 L/s

MAXIMUM ZONE COOLING LOADS

Location : AMMAN, JORDAN

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

6022890201

Carrier Hourly Analysis Program

Page 1 of 1

Zone Name : SEMINAR

No.	Month	Hour	Sensible Load (kW)	Total Load (kW)	Supply Air (L/s)
1	Jul	1500	69.66	79.48	3,002
2	Jul	1600	69.51	79.47	3,042
3	Jun	1500	68.31	79.12	2,984
4	Jun	1600	68.17	79.12	3,024
5	Aug	1600	68.90	78.80	3,009
6	Aug	1500	69.03	78.78	2,968
7	Jul	1400	67.81	77.57	2,947
8	Jun	1400	66.47	77.22	2,930
9	Aug	1400	67.14	76.82	2,909
10	Jul	1300	64.52	73.93	2,883

MAXIMUM SPACE COOLING LOADS

Location : AMMAN, JORDAN

04-02-00

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6022890201

Carrier Hourly Analysis Program

Page 1 of 1

Zone Name : SEMINAR

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
G-20/FOYER	Jul	1600	15.14	5.46	1,346.2
G-21/SEMINAR	Jul	1600	19.07	5.87	1,696.0
Total including space multipliers :					3,042.2

Location : ZONE DESIGN COOLING LOAD SUMMARY
 AMMAN, JORDAN

04-02-00

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6022890201

Carrier Hourly Analysis Program

Page 1 of 2

CALCULATION DATA:

Zone Name : SEMINAR

Calc Time: Jul 1500h

Job Name : Default Job

Amb db/wb: 38.0/ 21.0 C

LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	1,622	0
GLASS TRANSMISSION	1,424	0
WALL TRANSMISSION	4,790	0
ROOF TRANSMISSION	2,694	0
PARTITION TRANSMISSION	939	0
LIGHTING (8,175 W TOTAL)	5,710	0
OTHER ELEC. (2,000 W TOTAL)	1,999	0
PEOPLE (179.50 PEOPLE TOTAL)	12,870	10,784
MISCELLANEOUS LOADS	0	0
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	102	0
COOLING SAFETY LOAD	1,608	539

SUB-TOTALS	33,759	11,323
NET VENTILATION LOAD (1795 L/s)	24,394	-1,503
SUPPLY FAN LOAD (kw = 2.8)	2,764	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	6,287	0
LIGHTING LOAD TO PLENUM	2,452	0

TOTAL COOLING LOADS	69,656	9,821

COT' SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)	=	33.0/ 19.7 deg C
COIL LEAVING AIR TEMP. (DB/WB)	=	11.9/ 11.3 deg C
COIL SENSIBLE LOAD	=	69,656 W
COIL TOTAL LOAD	=	79,477 W
COOLING SUPPLY AIR TEMPERATURE	=	12.8 deg C
TOTAL COOLING L/s (actual)	=	3,002 L/s
TOTAL COOLING L/s (std. air)	=	2,736 L/s
RESULTING ROOM REL. HUMIDITY	=	53.3 %
COIL BYPASS FACTOR	=	0.050
COIL APPARATUS DEWPOINT	=	10.8 deg C
REHEAT REQUIRED	=	0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD	=	79.48 kW
	=	4.52 sqm / kW
TOTAL FLOOR AREA	=	359.00 sqm
OVERALL U-FACTOR	=	1.018 W/sqm/K
COOLING L/s/sqm	=	8.36 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 2 of 2

CALCULATION DATA:

Zone Name : SEMINAR
 Job Name : Default Job

Calc Time: Jul 1500h
 Amb db/wb: 38.0/ 21.0 C

WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (م ²)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	28	1,205	1,181
E	0	0	0
SE	0	0	0
S	0	0	0
SW	0	0	0
W	0	0	0
NW	5	219	441
N	0	0	0
H	0	0	0
WALL LOADS: NE	150	1,645	-
E	0	0	-
SE	180	2,152	-
S	0	0	-
SW	76	609	-
W	0	0	-
NW	53	385	-
N	0	0	-

F ZONE DESIGN HEATING LOAD SUMMARY

Location : AMMAN, JORDAN 04-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 1 of 1

CALCULATION DATA:

Zone Name : SEMINAR Calc Time: Winter design
 Job Name : Default Job Amb db : 0.0 C

LOAD COMPONENT	LOAD (W)
WALL TRANSMISSION	6,425
ROOF TRANSMISSION	8,616
GLASS TRANSMISSION	2,275
TRANSMISSION LOSS TO UNCOND. SPACES	1,500
INFILTRATION LOSS	0
LAB FLOOR	0
HEATING SAFETY W	941

SUB-TOTAL	19,756
NET VENTILATION LOSS	39,493

TOTAL HEATING LOAD	59,249
HEATING SUPPLY L/s	998 L/s
HEATING SUPPLY AIR TEMPERATURE	38.0 deg C
HEATING VENTILATION AIR L/s	1,795 L/s
HEATING THERMOSTAT SETPOINT TEMP	20.0 deg C

ZONE DESIGN HEATING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 1 of 1

 CALCULATION DATA:

Zone Name : SHOP Calc Time: Winter design
 Job Name : Default Job Amb db : 0.0 C

LOAD COMPONENT	LOAD (W)
WALL TRANSMISSION	4,550
ROOF TRANSMISSION	18,720
GLASS TRANSMISSION	1,484
TRANSMISSION LOSS TO UNCOND. SPACES	7,067
INFILTRATION LOSS	0
LAB FLOOR	0
HEATING SAFETY W	1,591
SUB-TOTAL	33,412
NET VENTILATION LOSS	38,419
TOTAL HEATING LOAD	71,831
HEATING SUPPLY L/s	1,687 L/s
HEATING SUPPLY AIR TEMPERATURE	38.0 deg C
HEATING VENTILATION AIR L/s	1,746 L/s
HEATING THERMOSTAT SETPOINT TEMP	20.0 deg C

MAXIMUM ZONE COOLING LOADS

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 1 of 1

Zone Name : SHOP

No.	Month	Hour	Sensible Load (kW)	Total Load (kW)	Supply Air (L/s)
1	Jul	1600	125.76	138.64	8,039
2	Jun	1600	124.63	138.55	8,033
3	Jul	1500	124.62	137.38	7,875
4	Jun	1500	123.47	137.27	7,868
5	Aug	1600	123.59	136.43	7,861
6	Aug	1500	122.47	135.18	7,699
7	Jul	1400	121.23	134.02	7,667
8	Jun	1400	120.07	133.89	7,659
9	Aug	1400	119.13	131.87	7,494
10	Jul	1300	116.52	129.08	7,455

MAXIMUM SPACE COOLING LOADS

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 1 of 1

Zone Name : SHOP

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
B-13/REST.F	Jul	1500	1.68	0.19	149.3
S-01/M.E.HALL2	Jul	1600	77.67	10.03	6,907.1
S-01/VOID2	Jun	1600	11.09	0.66	986.4
Total including space multipliers :					8,042.8

Location : AMMAN, JORDAN

04-02-00

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6022890201

Carrier Hourly Analysis Program

Page 1 of 2

CALCULATION DATA:

Zone Name : SHOP

Calc Time: Jul 1600h

Job Name : Default Job

Amb db/wb: 37.6/ 20.9 C

LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	2,311	0
GLASS TRANSMISSION	920	0
WALL TRANSMISSION	3,466	0
ROOF TRANSMISSION	20,860	0
PARTITION TRANSMISSION	4,350	0
LIGHTING (31,640 W TOTAL)	31,577	0
OTHER ELEC. (10,000 W TOTAL)	9,994	0
PEOPLE (174.62 PEOPLE TOTAL)	12,498	10,364
MISCELLANEOUS LOADS	0	0
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	120	0
COOLING SAFETY LOAD	4,305	518

SUB-TOTALS	90,402	10,882
NET VENTILATION LOAD (1746 L/s)	27,960	1,997
SUPPLY FAN LOAD (kw = 7.4)	7,401	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	0	0
LIGHTING LOAD TO PLENUM	0	0

TOTAL COOLING LOADS	125,763	12,879

CO SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)	=	26.2/ 17.2 deg C
COIL LEAVING AIR TEMP. (DB/WB)	=	11.9/ 11.5 deg C
COIL SENSIBLE LOAD	=	125,763 W
COIL TOTAL LOAD	=	138,642 W
COOLING SUPPLY AIR TEMPERATURE	=	12.8 deg C
TOTAL COOLING L/s (actual)	=	8,039 L/s
TOTAL COOLING L/s (std. air)	=	7,326 L/s
RESULTING ROOM REL. HUMIDITY	=	49.6 %
COIL BYPASS FACTOR	=	0.050
COIL APPARATUS DEWPOINT	=	11.2 deg C
REHEAT REQUIRED	=	0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD	=	138.64 kW
	=	5.07 sqm / kW
TOTAL FLOOR AREA	=	703.60 sqm
OVERALL U-FACTOR	=	1.099 W/sqm/K
COOLING L/s/sqm	=	11.43 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 2 of 2

 CALCULATION DATA:

Zone Name : SHOP
 Job Name : Default Job
 Calc Time: Jul 1600h
 Amb db/wb: 37.6/ 20.9 C

 WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqm)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	0	0	0
E	0	0	0
SE	0	0	0
S	0	0	0
SW	0	0	0
W	0	0	0
NW	21	920	2,311
N	0	0	0
H	0	0	0
WALL LOADS: NE	270	3,009	-
E	0	0	-
SE	0	0	-
S	0	0	-
SW	0	0	-
W	0	0	-
NW	55	457	-
N	0	0	-

MAXIMUM SPACE COOLING LOADS

Location : AMMAN, JORDAN

11-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

6022890201

Carrier Hourly Analysis Program

Page 1 of 1

Zone Name : PRESEDENTIAL

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)	FCU
DINNING ROOM/R	Jul	700	6.90	0.31	618.8	(2x3)
SITTING ROOM/R	Jul	700	3.38	0.22	303.7	
MASTER BEDROOM/R	Jul	700	3.25	0.08	291.7	
DINNING ROOM	Aug	800	6.76	0.31	606.2	2x31
SITTING ROOM	Aug	800	3.38	0.22	303.7	
MASTER BEDROOM	Jul	800	3.28	0.08	294.3	
Total including space multipliers :					2,418.3	

4 suite president
 each : 4 FCU's : 300 L/s, 3.5 kW SH, 3.8 kW TH

MAXIMUM SPACE COOLING L

OADS

Location : AMMAN, JORDAN

11-02-00

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6022890201

Carrier Hourly Analysis Program

Page 1 of 1

Zone Name

: AHU-EXH1

Sensible Space Name (kW)	Latent (kW)	Supply Air Mo. Hour (L/s)
G-01/EXHIB.1 56.07	11.40	Aug 800 4,986.1
S-01/M.E.HALL1 59.04	10.03	Jul 800 5,250.7
S-01/VOID1 8.20	1.09	Jul 1600 728.8

Total including space multipliers :
10,965.5

505
52

5c66F

ZONE DESIGN COOLING L

OAD SUMMARY

Location : AMMAN, JORDAN

11-02-00

Prepared By : RAE & ASSOC. / ENGINEER

6022890201

RS

Carrier Hourly Analysis Program

Page 1 of 2

CALCULATION DATA:

Zone Name : AHU-EXH1

Calc Time: Jul 1600h

Job Name : Default Job

Amb db/wb: 37.6/ 20.9 C

LOAD INFORMATION

SENSIBLE (W)	LATENT LOAD COMPONENT (W)
------------------	----------------------------------

SOLAR GAIN

577 0

GLASS TRANSMISSION

217 0

WALL TRANSMISSION

8,776 0

ROOF TRANSMISSION

6,354 0

PARTITION TRANSMISSION

2,864 0

LIGHTING (67,566 W TOTAL)

47,201 0

OTHER ELEC. (20,000 W TOTAL)

19,987 0

PEOPLE (357.00 PEOPLE TOTAL)

25,598 21,448

MISCELLANEOUS LOADS

0 0

COOLING INFILTRATION

0 0

PULLDOWN/WARM-UP

244 0

COOLING SAFETY LOAD

5,591 1,072

SUB-TOTALS

117,410 22,521

NET VENTILATION LOAD (3570 L/s)

45,163 2,229

SUPPLY FAN LOAD (kW = 9.6)

9,612 0

WALL LOAD TO PLENUM

0 0

596 ROOF LOAD TO PLENUM

14,827 0

LIGHTING LOAD TO PLENUM

```

-----
TOTAL COOLING LOADS
207,282          24,750
*****
*****
COIL SELECTION PARAMETERS:
  COIL ENTERING AIR TEMP. (DB/WB)
=    30.0/ 18.5 deg C
  COIL LEAVING AIR TEMP. (DB/WB)
=    11.9/ 11.4 deg C
  COIL SENSIBLE LOAD
=    207,282 W
  COIL TOTAL LOAD
=    232,031 W
  COOLING SUPPLY AIR TEMPERATURE
=    12.8 deg C
  TOTAL COOLING L/s (actual)
=    10,441 L/s
  TOTAL COOLING L/s (std. air)
=    9,514 L/s
  RESULTING ROOM REL. HUMIDITY
=    50.6 %
  COIL BYPASS FACTOR
=    0.050
  COIL APPARATUS DEWPOINT
=    11.0 deg C
  REHEAT REQUIRED
=    0 W
*****
*****
GENERAL INFORMATION:
  TOTAL COOLING LOAD
=    232.03 kW

=    6.15 sqm / kW
  TOTAL FLOOR AREA
=    1,428.00 sqm
  OVERALL U-FACTOR
=    0.935 W/sqm/K
  COOLING L/s/sqm
=    7.31 L/s/sqm
*****
*****

```

ZONE DESIGN COOL

ING LOAD SUMMARY

Location : AMMAN, JORDAN
11-02-00

Prepared By : RAE & ASSOC. / ENGINEER
6022890201

RS

Carrier Hourly Analysis Program
Page 2 of 2

CALCULATION DATA:

Zone Name : AHU-EXH1
Calc Time: Jul 1600h
Job Name : Default Job
Amb db/wb: 37.6/ 20.9 C

WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT		AREA	TR
ANSMISSION	SOLAR GAIN	(sqm)	
(W)	(W)		

GLASS LOADS: NE			
0	0	0	0
0	E	0	0
0	SE	0	0
0	S	0	0
0	SW	0	5
217	W	577	0
0	NW	0	0
0	N	0	0
0	H	0	0
WALL LOADS: NE			
0	E	-	0
0	SE	-	0
0	S	-	0
0	SW	-	722
6,890	W	-	0
0	NW	-	227
5,988	N	-	0
0			

ZONE DESIGN HEAT

ING LOAD SUMMARY

Location : AMMAN, JORDAN
11-02-00

Prepared By : RAE & ASSOC. / ENGINEER
6022890201

RS

Carrier Hourly Analysis Program
Page 1 of 1

CALCULATION DATA:

Zone Name : AHU-EXH1
Calc Time: Winter design
Job Name : Default Job
Amb db : 0.0 C

LOAD COMPONENT
LOAD (W)

WALL TRANSMISSION

13,286

ROOF TRANSMISSION

19,008

GLASS TRANSMISSION

350

TRANSMISSION LOSS TO UNCOND. SPAC

ES

4,625

INFILTRATION LOSS

0

SLAB FLOOR

0

HEATING SAFETY W

1,863

SUB-TOTAL

39,132

NET VENTILATION LOSS

78,545

TOTAL HEATING LOAD

117,678

HEATING SUPPLY L/s

1,976 L/s

HEATING SUPPLY AIR TEMPERATURE

38.0 deg C

HEATING VENTILATION AIR L/s

3,570 L/s

HEATING THERMOSTAT SETPOINT TEMP

20.0 deg C

MAXIMUM ZONE COOLING LOADS

Location : AMMAN, JORDAN

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

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Carrier Hourly Analysis Program

Page 1 of 1

Zone Name : AHU-TG

No.	Month	Hour	Sensible Load (kW)	Total Load (kW)	Supply Air (L/s)
1	Jul	1600	53.34	59.45	2,637
2	Jul	1500	53.31	59.37	2,624
3	Jun	1600	52.58	59.20	2,620
4	Aug	1600	53.05	59.15	2,633
5	Jun	1500	52.54	59.11	2,606
6	Aug	1500	53.03	59.09	2,621
7	Jul	1400	52.18	58.26	2,596
8	Jun	1400	51.42	58.00	2,579
9	Aug	1400	51.89	57.96	2,592
10	Jul	1300	50.28	56.24	2,560

MAXIMUM SPACE COOLING LOADS

Location : AMMAN, JORDAN

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

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Carrier Hourly Analysis Program

Page 1 of 1

Zone Name : AHU-TG

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
S-05/TEMP. GALL.	Jul	1600	29.65	5.48	2,636.6
Total including space multipliers :					2,636.6

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN 04-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 1 of 2

CALCULATION DATA:

Zone Name : AHU-TG Calc Time: Jul 1600h
 Job Name : Default Job Amb db/wb: 37.6/ 20.9 C

LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	0	0
GLASS TRANSMISSION	0	0
WALL TRANSMISSION	1,265	0
ROOF TRANSMISSION	2,786	0
PARTITION TRANSMISSION	2,477	0
LIGHTING (14,930 W TOTAL)	10,430	0
OTHER ELEC. (5,000 W TOTAL)	4,997	0
PEOPLE (86.80 PEOPLE TOTAL)	6,224	5,215
MISCELLANEOUS LOADS	0	0
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	59	0
COOLING SAFETY LOAD	1,412	261

SUB-TOTALS	29,650	5,476
NET VENTILATION LOAD (868 L/s)	10,284	639
SUPPLY FAN LOAD (kW = 2.4)	2,427	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	6,500	0
LIGHTING LOAD TO PLENUM	4,479	0

TOTAL COOLING LOADS	53,340	6,115

COIL SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB) = 30.3/ 18.6 deg C
 COIL LEAVING AIR TEMP. (DB/WB) = 11.9/ 11.4 deg C
 COIL SENSIBLE LOAD = 53,340 W
 COIL TOTAL LOAD = 59,454 W
 COOLING SUPPLY AIR TEMPERATURE = 12.8 deg C
 TOTAL COOLING L/s (actual) = 2,637 L/s
 TOTAL COOLING L/s (std. air) = 2,403 L/s
 RESULTING ROOM REL. HUMIDITY = 50.4 %
 COIL BYPASS FACTOR = 0.050
 COIL APPARATUS DEWPOINT = 11.0 deg C
 REHEAT REQUIRED = 0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD = 59.45 kW
 = 5.84 sqm / kW
 TOTAL FLOOR AREA = 347.20 sqm
 OVERALL U-FACTOR = 1.085 W/sqm/K
 COOLING L/s/sqm = 7.59 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 2 of 2

 CALCULATION DATA:

Zone Name : AHU-TG Calc Time: Jul 1600h
 Job Name : Default Job Amb db/wb: 37.6/ 20.9 C

 WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqm)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	0	0	0
E	0	0	0
SE	0	0	0
S	0	0	0
SW	0	0	0
W	0	0	0
NW	0	0	0
N	0	0	0
H	0	0	0
WALL LOADS: NE	0	0	-
E	0	0	-
SE	104	1,265	-
S	0	0	-
SW	0	0	-
W	0	0	-
NW	0	0	-
N	0	0	-

F ZONE DESIGN HEATING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 1 of 1

CALCULATION DATA:

Zone Name : AHU-TG Calc Time: Winter design
 Job Name : Default Job Amb db : 0.0 C

LOAD COMPONENT	LOAD (W)
WALL TRANSMISSION	1,456
ROOF TRANSMISSION	8,333
GLASS TRANSMISSION	0
TRANSMISSION LOSS TO UNCOND. SPACES	4,000
INFILTRATION LOSS	0
SLAB FLOOR	0
HEATING SAFETY W	689

SUB-TOTAL	14,478
NET VENTILATION LOSS	19,097

TOTAL HEATING LOAD	33,576
HEATING SUPPLY L/s	731 L/s
HEATING SUPPLY AIR TEMPERATURE	38.0 deg C
HEATING VENTILATION AIR L/s	868 L/s
HEATING THERMOSTAT SETPOINT TEMP	20.0 deg C

5c66F MAXIMUM SPACE COOL
ING LOADS

Location : AMMAN, JORDAN

11-02-00

Prepared By : RAE & ASSOC. / ENGINEER

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Carrier Hourly Analysis Program

Page 1 of 1

Zone Name

: AHU-EXH2

Sensible Space Name (kW)	Latent (kW)	Supply Air Mo. Hour (L/s)	

G-02/EXHIB.2		Jul 800	
59.41	11.40	5,282.7	5232
S-01/M.E.HALL2		Jul 800	
58.77	10.03	5,226.5	5239
S-01/VOID2		Jun 1600	
9.08	0.66	807.2	

Total including space multipliers :
11,316.5

OAD SUMMARY

Location : AMMAN, JORDAN
 11-02-00
 Prepared By : RAE & ASSOC. / ENGINEER
 6022890201
 Carrier Hourly Analysis Program
 Page 1 of 2

RS

CALCULATION DATA:

Zone Name : AHU-EXH2
 Calc Time: Jul 1600h
 Job Name : Default Job
 Amb db/wb: 37.6/ 20.9 C

LOAD INFORMATION

SENSIBLE	LATENT
LOAD COMPONENT	LOAD COMPONENT
(W)	(W)

SOLAR GAIN		
2,311		0
GLASS TRANSMISSION		
920		0
WALL TRANSMISSION		
7,489		0
ROOF TRANSMISSION		
6,138		0
PARTITION TRANSMISSION		
9,842		0
LIGHTING (65,136 W TOTAL)		
45,504		0
OTHER ELEC. (20,000 W TOTAL)		
19,987		0
PEOPLE (350.25 PEOPLE TOTAL)		
25,114	21,043	
MISCELLANEOUS LOADS		
0		0
COOLING INFILTRATION		
0		0
PULLDOWN/WARM-UP		
240		0
COOLING SAFETY LOAD		
5,877		1,052

SUB-TOTALS

123,423	22,095	
NET VENTILATION LOAD (3503 L/s)		
45,277	2,585	
SUPPLY FAN LOAD (kW = 10.1)		
10,104		0
605 WALL LOAD TO PLENUM		0
0		0
ROOF LOAD TO PLENUM		
14,322		0
LIGHTING LOAD TO PLENUM		

 TOTAL COOLING LOADS

212,666 24,680

COIL SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)
 = 29.6/ 18.4 deg C
 COIL LEAVING AIR TEMP. (DB/WB)
 = 11.9/ 11.4 deg C
 COIL SENSIBLE LOAD
 = 212,666 W
 COIL TOTAL LOAD
 = 237,346 W
 COOLING SUPPLY AIR TEMPERATURE
 = 12.8 deg C
 TOTAL COOLING L/s (actual)
 = 10,976 L/s
 TOTAL COOLING L/s (std. air)
 = 10,002 L/s
 RESULTING ROOM REL. HUMIDITY
 = 50.3 %
 COIL BYPASS FACTOR
 = 0.050
 COIL APPARATUS DEWPOINT
 = 11.0 deg C
 REHEAT REQUIRED
 = 0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD
 = 237.35 kW

 = 5.90 sqm / kW
 TOTAL FLOOR AREA
 = 1,401.00 sqm
 OVERALL U-FACTOR
 = 1.000 W/sqm/K
 COOLING L/s/sqm
 = 7.83 L/s/sqm

ZONE DESIGN COOL

ING LOAD SUMMARY

Location : AMMAN, JORDAN
 11-02-00
 Prepared By : RAE & ASSOC. / ENGINEE
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 Carrier Hourly Analysis Program
 Page 2 of 2

 CALCULATION DATA:
 Zone Name : AHU-EXH2
 Calc Time: Jul 1600h
 Job Name : Default Job
 Amb db/wb: 37.6/ 20.9 C

 WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT		AREA	TR
ANSMISSION	SOLAR GAIN	(sqm)	
(W)	(W)		

GLASS LOADS: NE		0	
0		0	
	E	0	0
0		0	
	SE	0	0
0		0	
	S	0	0
0		0	
	SW	0	0
0		0	
	W	0	0
0		0	
	NW	21	
920		2,311	
	N	0	
0		0	
	H	0	0
0		0	
WALL LOADS: NE		631	
7,032		-	
	E	-	0
0		-	
	SE	-	0
0		-	
	S	-	0
0		-	
	SW	-	0
0		-	
	W	-	0
0		-	
	NW	-	55
607 ⁴⁵⁷		-	
	N	-	0
0		-	

ZONE DESIGN HEAT

ING LOAD SUMMARY

Location : AMMAN, JORDAN
11-02-00
Prepared By : RAE & ASSOC. / ENGINEER
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Carrier Hourly Analysis Program
Page 1 of 1

CALCULATION DATA:

Zone Name : AHU-EXH2
Calc Time: Winter design
Job Name : Default Job
Amb db : 0.0 C

LOAD COMPONENT
LOAD (W)

WALL TRANSMISSION
9,604
ROOF TRANSMISSION
18,360
GLASS TRANSMISSION
1,484
TRANSMISSION LOSS TO UNCOND. SPAC
ES 15,275
INFILTRATION LOSS
0
SLAB FLOOR
0
HEATING SAFETY W
2,236

SUB-TOTAL
46,959
NET VENTILATION LOSS
77,060

TOTAL HEATING LOAD
124,019

HEATING SUPPLY L/s
2,372 L/s
HEATING SUPPLY AIR TEMPERATURE
38.0 deg C
HEATING VENTILATION AIR L/s
3,503 L/s
HEATING THERMOSTAT SETPOINT TEMP
20.0 deg C

MAXIMUM ZONE COOLING LOADS

Location : AMMAN, JORDAN

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

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Carrier Hourly Analysis Program

Page 1 of 1

Zone Name : CAFETERIA

No.	Month	Hour	Sensible Load (kW)	Total Load (kW)	Supply Air (L/s)
1	Jul	1600	69.79	82.66	3,648
2	Jul	1500	69.91	82.63	3,594
3	Jun	1600	68.66	82.42	3,635
4	Jun	1500	68.79	82.40	3,581
5	Aug	1600	69.38	82.18	3,614
6	Aug	1500	69.47	82.13	3,558
7	Jul	1400	68.33	81.00	3,528
3	Jun	1400	67.22	80.78	3,516
9	Aug	1400	67.87	80.47	3,490
10	Jul	1300	65.56	77.92	3,459

MAXIMUM SPACE COOLING LOADS

Location : AMMAN, JORDAN

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

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Carrier Hourly Analysis Program

Page 1 of 1

Zone Name : CAFETERIA

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
G-23/CAFETERIA	Jul	1600	24.12	11.86	2,145.0
G-26/KITCHEN	Jul	1600	16.90	3.43	1,503.0
Total including space multipliers :					3,648.0

Location : ZONE DESIGN COOLING LOAD SUMMARY
 AMMAN, JORDAN

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

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Carrier Hourly Analysis Program

Page 1 of 2

 CALCULATION DATA:

Zone Name : CAFETERIA

Calc Time: Jul 1600h

Job Name : Default Job

Amb db/wb: 37.6/ 20.9 C

LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	972	0
GLASS TRANSMISSION	868	0
WALL TRANSMISSION	1,429	0
ROOF TRANSMISSION	5,956	0
PARTITION TRANSMISSION	1,331	0
LIGHTING (5,481 W TOTAL)	5,470	0
OTHER ELEC. (0 W TOTAL)	0	0
PEOPLE (158.70 PEOPLE TOTAL)	13,005	12,558
MISCELLANEOUS LOADS	10,000	2,000
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	38	0
COOLING SAFETY LOAD	1,953	728

SUB-TOTALS	41,022	15,286
NET VENTILATION LOAD (1587 L/s)	25,411	-2,420
SUPPLY FAN LOAD (kw = 3.4)	3,358	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	0	0
LIGHTING LOAD TO PLENUM	0	0

TOTAL COOLING LOADS	69,792	12,865

COIL SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)	=	29.3/ 18.7 deg C
COIL LEAVING AIR TEMP. (DB/WB)	=	11.9/ 11.5 deg C
COIL SENSIBLE LOAD	=	69,792 W
COIL TOTAL LOAD	=	82,658 W
COOLING SUPPLY AIR TEMPERATURE	=	12.8 deg C
TOTAL COOLING L/s (actual)	=	3,648 L/s
TOTAL COOLING L/s (std. air)	=	3,324 L/s
RESULTING ROOM REL. HUMIDITY	=	54.7 %
COIL BYPASS FACTOR	=	0.050
COIL APPARATUS DEWPOINT	=	11.0 deg C
REHEAT REQUIRED	=	0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD	=	82.66 kW
	=	2.69 sqm / kW
TOTAL FLOOR AREA	=	222.70 sqm
OVERALL U-FACTOR	=	1.125 W/sqm/K
COOLING L/s/sqm	=	16.38 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 2 of 2

CALCULATION DATA:

Zone Name : CAFETERIA Calc Time: Jul 1600h
 Job Name : Default Job Amb db/wb: 37.6/ 20.9 C

WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqm)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	0	0	0
E	0	0	0
SE	0	0	0
S	0	0	0
SW	0	0	0
W	0	0	0
NW	20	868	972
N	0	0	0
H	0	0	0
WALL LOADS: NE	0	0	-
E	0	0	-
SE	0	0	-
S	0	0	-
SW	141	1,346	-
W	0	0	-
NW	10	83	-
N	0	0	-

F ZONE DESIGN HEATING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 1 of 1

CALCULATION DATA:

Zone Name : CAFETERIA Calc Time: Winter design
 Job Name : Default Job Amb db : 0.0 C

LOAD COMPONENT	LOAD (W)
WALL TRANSMISSION	2,114
ROOF TRANSMISSION	5,345
GLASS TRANSMISSION	1,400
TRANSMISSION LOSS TO UNCOND. SPACES	2,150
INFILTRATION LOSS	0
SLAB FLOOR	0
HEATING SAFETY W	550
SUB-TOTAL	11,559
NET VENTILATION LOSS	34,916
TOTAL HEATING LOAD	46,476
HEATING SUPPLY L/s	584 L/s
HEATING SUPPLY AIR TEMPERATURE	38.0 deg C
HEATING VENTILATION AIR L/s	1,587 L/s
HEATING THERMOSTAT SETPOINT TEMP	20.0 deg C

MAXIMUM SPACE COOLING LOADS

Location : AMMAN, JORDAN

16-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

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Carrier Hourly Analysis Program

Page 1 of 1

Zone Name : SHOP

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
G-22/SHOP	Jun	1600	24.50	3.15	2,178.4
G-23/CAFETERIA	Jul	1600	24.12	11.86	2,145.0
G-26/KITCHEN	Jul	1600	16.90	3.43	1,503.0
Total including space multipliers :					5,826.3

Location : ZONE DESIGN COOLING LOAD SUMMARY
 AMMAN, JORDAN

16-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

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Carrier Hourly Analysis Program

Page 1 of 2

CALCULATION DATA:

Zone Name : SHOP

Calc Time: Jul 1500h

Job Name : Default Job

Amb db/wb: 38.0/ 21.0 C

LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	5,693	0
GLASS TRANSMISSION	4,383	0
WALL TRANSMISSION	1,824	0
ROOF TRANSMISSION	10,212	0
PARTITION TRANSMISSION	1,816	0
LIGHTING (11,046 W TOTAL)	11,022	0
OTHER ELEC. (0 W TOTAL)	0	0
PEOPLE (208.70 PEOPLE TOTAL)	16,589	15,562
MISCELLANEOUS LOADS	10,000	2,000
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	117	0
COOLING SAFETY LOAD	3,083	878

SUB-TOTALS	64,737	18,440
NET VENTILATION LOAD (2087 L/s)	34,438	-1,334
SUPPLY FAN LOAD (kw = 5.3)	5,300	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	0	0
LIGHTING LOAD TO PLENUM	0	0

TOTAL COOLING LOADS	104,475	17,106

CO SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)	=	28.4/ 18.3 deg C
COIL LEAVING AIR TEMP. (DB/WB)	=	11.9/ 11.5 deg C
COIL SENSIBLE LOAD	=	104,475 W
COIL TOTAL LOAD	=	121,581 W
COOLING SUPPLY AIR TEMPERATURE	=	12.8 deg C
TOTAL COOLING L/s (actual)	=	5,757 L/s
TOTAL COOLING L/s (std. air)	=	5,246 L/s
RESULTING ROOM REL. HUMIDITY	=	52.9 %
COIL BYPASS FACTOR	=	0.050
COIL APPARATUS DEWPOINT	=	11.1 deg C
REHEAT REQUIRED	=	0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD	=	121.58 kW
	=	3.36 sqm / kW
TOTAL FLOOR AREA	=	408.20 sqm
OVERALL U-FACTOR	=	1.373 W/sqm/K
COOLING L/s/sqm	=	14.10 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

16-02-00
 6022890201
 Page 2 of 2

CALCULATION DATA:

Zone Name : SHOP
 Job Name : Default Job

Calc Time: Jul 1500h
 Amb db/wb: 38.0/ 21.0 C

WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqm)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	60	2,630	3,775
E	0	0	0
SE	0	0	0
S	0	0	0
SW	0	0	0
W	0	0	0
NW	40	1,753	1,918
N	0	0	0
H	0	0	0
WALL LOADS: NE	50	549	-
E	0	0	-
SE	0	0	-
S	0	0	-
SW	141	1,129	-
W	0	0	-
NW	20	145	-
N	0	0	-

Location : ZONE DESIGN HEATING LOAD SUMMARY
AMMAN, JORDAN

16-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

6022890201

Carrier Hourly Analysis Program

Page 1 of 1

CALCULATION DATA:

Zone Name : SHOP

Calc Time: Winter design

Job Name : Default Job

Amb db : 0.0 C

LOAD COMPONENT	LOAD (W)
WALL TRANSMISSION	2,954
ROOF TRANSMISSION	9,797
GLASS TRANSMISSION	7,000
TRANSMISSION LOSS TO UNCOND. SPACES	2,900
INFILTRATION LOSS	0
SLAB FLOOR	0
HEATING SAFETY W	1,133

SUB-TOTAL	23,783
NET VENTILATION LOSS	45,917

TOTAL HEATING LOAD	69,700
HEATING SUPPLY L/s	1,201 L/s
HEATING SUPPLY AIR TEMPERATURE	38.0 deg C
HEATING VENTILATION AIR L/s	2,087 L/s
HEATING THERMOSTAT SETPOINT TEMP	20.0 deg C

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 1 of 1

Zone Name : AHU-ST

No.	Month	Hour	Sensible Load (kW)	Total Load (kW)	Supply Air (L/s)
1	Jul	1500	37.24	37.24	1,625
2	Aug	1500	37.24	37.24	1,625
3	Jul	1600	36.23	36.23	1,615
4	Aug	1600	36.23	36.23	1,615
5	Jul	1400	35.86	35.86	1,598
6	Aug	1400	35.86	35.86	1,598
7	Jun	1500	35.51	35.51	1,591
8	Jun	1600	34.52	34.52	1,581
9	Jun	1400	34.16	34.16	1,565
10	Jul	1700	33.88	33.88	1,583

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 1 of 1

Zone Name : AHU-ST

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
B-01/STORAGE	Jul	1500	8.94	1.25	1,624.5

Total including space multipliers : 1,624.5

Location : ZONE DESIGN COOLING LOAD SUMMARY

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

6022890201

Carrier Hourly Analysis Program

Page 1 of 2

CALCULATION DATA:

Zone Name : AHU-ST

Calc Time: Jul 1500h

Job Name : Default Job

Amb db/wb: 38.0/ 21.0 C

LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	0	0
GLASS TRANSMISSION	0	0
PARTITION TRANSMISSION	3,121	0
LIGHTING (6,255 W TOTAL)	3,121	0
OTHER ELEC. (0 W TOTAL)	0	0
PEOPLE (19.86 PEOPLE TOTAL)	1,424	1,193
MISCELLANEOUS LOADS	0	0
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	51	0
COOLING SAFETY LOAD	425	60

SUB-TOTALS	8,935	1,253
NET VENTILATION LOAD (1625 L/s)	23,679	-1,253
SUPPLY FAN LOAD (kw = 1.5)	1,503	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	0	0
LIGHTING LOAD TO PLENUM	3,127	0

TOTAL COOLING LOADS	37,245	0

COIL SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)	=	38.0/ 21.0 deg C
COIL LEAVING AIR TEMP. (DB/WB)	=	17.2/ 14.4 deg C
COIL SENSIBLE LOAD	=	37,245 W
COIL TOTAL LOAD	=	37,245 W
COOLING SUPPLY AIR TEMPERATURE	=	18.0 deg C
TOTAL COOLING L/s (actual)	=	1,625 L/s
TOTAL COOLING L/s (std. air)	=	1,480 L/s
RESULTING ROOM REL. HUMIDITY	=	53.1 %
COIL BYPASS FACTOR	=	0.050
COIL APPARATUS DEWPOINT	=	16.1 deg C
REHEAT REQUIRED	=	0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD	=	37.24 kW
	=	33.59 sqm / kW
TOTAL FLOOR AREA	=	1,251.00 sqm

618

COOLING L/s/sqm

=

1.30 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN
Prepared By : RAE & ASSOC. / ENGINEERS
Carrier Hourly Analysis Program

04-02-00
6022890201
Page 2 of 2

CALCULATION DATA:

Zone Name : AHU-ST
Job Name : Default Job

Calc Time: Jul 1500h
Amb db/wb: 38.0/ 21.0 C

WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqm)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	0	0	0
E	0	0	0
SE	0	0	0
S	0	0	0
SW	0	0	0
W	0	0	0
NW	0	0	0
N	0	0	0
H	0	0	0
WALL LOADS: NE	0	0	-
E	0	0	-
SE	0	0	-
S	0	0	-
SW	0	0	-
W	0	0	-
NW	0	0	-
N	0	0	-

DESIGN SPACE COOLING LOADS

Location : AMMAN, JORDAN 04-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 1

 CALCULATION DATA:

Zone Name : AHU-ST Calc Time: Jul 1500h
 Job Name : Default Job Amb db/wb: 38.0/ 21.0 C

Space Name	Mult	Space Sensible (kW /space)	Supply Air (L/s/space)
3-01/STORAGE	x 1	8.94	1,624.5

ZONE DESIGN HEATING LOAD SUMMARY

Location : AMMAN, JORDAN 04-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 1 of 1

 CALCULATION DATA:

Zone Name : AHU-ST Calc Time: Winter design
 Job Name : Default Job Amb db : 0.0 C

LOAD COMPONENT	LOAD (W)
WALL TRANSMISSION	0
ROOF TRANSMISSION	0
GLASS TRANSMISSION	0
TRANSMISSION LOSS TO UNCOND. SPACES	9,822
INFILTRATION LOSS	0
SLAB FLOOR	0
HEATING SAFETY W	491

SUB-TOTAL	10,313
NET VENTILATION LOSS	8,839

TOTAL HEATING LOAD	19,152
HEATING SUPPLY L/s	402 L/s
HEATING SUPPLY AIR TEMPERATURE	620 43.3 deg C
HEATING VENTILATION AIR L/s	402 L/s
HEATING THERMOSTAT SETPOINT TEMP	20.0 deg C

F MAXIMUM SPACE COOLING LOADS

Location : AMMAN, JORDAN

Prepared By : RAE & ASSOC. / ENGINEERS

Carrier Hourly Analysis Program

NEW
11-02-00
6022890201
Page 1 of 1

Zone Name : AHU-EXH1

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
G-01/EXHIB.1	Aug	800	56.64 56.07	11.40	5,036.4 4986.
S-01/M.E.HALL1	Jul	800	58.97	10.03	5,244.3 5250.
S-01/VOID1	Jul	1600	8.20	1.09	728.8
Total including space multipliers :					11,009.5 10,965.5

F ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN 11-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 1 of 2

CALCULATION DATA:

Zone Name : AHU-EXH1 Calc Time: Jul 1500h
 Job Name : Default Job Amb db/wb: 38.0/ 21.0 C

LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	536	0
GLASS TRANSMISSION	219	0
WALL TRANSMISSION	7,238	0
ROOF TRANSMISSION	6,057	0
PARTITION TRANSMISSION	4,617	0
LIGHTING (67,566 W TOTAL)	47,195	0
OTHER ELEC. (20,000 W TOTAL)	19,987	0
PEOPLE (357.00 PEOPLE TOTAL)	25,596	21,448
MISCELLANEOUS LOADS	0	0
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	408	0
COOLING SAFETY LOAD	5,593	1,072

SUB-TOTALS	117,445	22,521
NET VENTILATION LOAD (3570 L/s)	47,150	2,072
SUPPLY FAN LOAD (kw = 9.6)	9,615	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	14,132	0
LIGHTING LOAD TO PLENUM	20,269	0

TOTAL COOLING LOADS	208,610	24,593

COIL SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB) = 30.1/ 18.6 deg C
 COIL LEAVING AIR TEMP. (DB/WB) = 11.9/ 11.4 deg C
 COIL SENSIBLE LOAD = 208,610 W
 COIL TOTAL LOAD = 233,203 W
 COOLING SUPPLY AIR TEMPERATURE = 6.22 12.8 deg C
 TOTAL COOLING L/s (actual) = 10,444 L/s
 TOTAL COOLING L/s (std air) = 9,517 L/s

RESULTING ROOM REL. HUMIDITY = 50.5 %
 COIL BYPASS FACTOR = 0.050
 COIL APPARATUS DEWPOINT = 11.0 deg C
 REHEAT REQUIRED = 0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD = 233.20 kW
 = 6.12 sqm / kW
 TOTAL FLOOR AREA = 1,428.00 sqm
 OVERALL U-FACTOR = 0.940 W/sqm/K
 COOLING L/s/sqm = 7.31 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN 11-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 2 of 2

CALCULATION DATA:

Zone Name : AHU-EXH1 Calc Time: Jul 1500h
 Job Name : Default Job Amb db/wb: 38.0/ 21.0 C

WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqm)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	0	0	0
E	0	0	0
SE	0	0	0
S	0	0	0
SW	5	219	536
W	0	0	0
NW	0	0	0
N	0	0	0
H	0	623	0
WALL LOADS: NE	0	0	-
E	0	0	-
S	0	0	-
SE	0	0	-
S	0	0	-
SW	0	0	-
W	0	0	-
NW	0	0	-
N	0	0	-
H	0	0	-

MAXIMUM SPACE COOLING LOADS

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

NEW

11-02-00
 6022890201
 Page 1 of 1

Zone Name : AHU-EXH2

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
G-02/EXHIB.2	Jul	800	58.69 59.41	11.40	5,218.7 5282
S-01/M.E.HALL2	Jul	800	58.71 58.77	10.03	5,221.2 5231
S-01/VOID2	Jun	1600	9.08	0.66	807.2
Total including space multipliers :					11,247.1 11316.5

Location : ZONE DESIGN COOLING LOAD SUMMARY
 AMMAN, JORDAN

11-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

6022890201

Carrier Hourly Analysis Program

Page 1 of 2

 CALCULATION DATA:

Zone Name : AHU-EXH2

Calc Time: Jul 1600h

Job Name : Default Job

Amb db/wb: 37.6/ 20.9 C

 LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	2,311	0
GLASS TRANSMISSION	920	0
WALL TRANSMISSION	7,233	0
ROOF TRANSMISSION	6,258	0
PARTITION TRANSMISSION	7,675	0
LIGHTING (65,136 W TOTAL)	45,504	0
OTHER ELEC. (20,000 W TOTAL)	19,987	0
PEOPLE (350.25 PEOPLE TOTAL)	25,114	21,043
MISCELLANEOUS LOADS	0	0
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	240	0
COOLING SAFETY LOAD	5,762	1,052

SUB-TOTALS	121,004	22,095
NET VENTILATION LOAD (3503 L/s)	44,970	2,476
SUPPLY FAN LOAD (kw = 9.9)	9,906	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	14,602	0
LIGHTING LOAD TO PLENUM	19,540	0

TOTAL COOLING LOADS	210,023	24,571

COIL SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)	=	29.7/ 18.4 deg C
COIL LEAVING AIR TEMP. (DB/WB)	=	11.9/ 11.4 deg C
COIL SENSIBLE LOAD	=	210,023 W
COIL TOTAL LOAD	=	234,593 W
COOLING SUPPLY AIR TEMPERATURE	=	12.8 deg C
TOTAL COOLING L/s (actual)	=	10,761 L/s
TOTAL COOLING L/s (std. air)	=	9,806 L/s
RESULTING ROOM REL. HUMIDITY	=	50.4 %
COIL BYPASS FACTOR	=	0.050
COIL APPARATUS DEWPOINT	=	11.0 deg C
REHEAT REQUIRED	=	0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD	=	234.59 kW
	=	5.97 sqm / kW
TOTAL FLOOR AREA	=	1,401.00 sqm
OVERALL U-FACTOR	=	1.007 W/sqm/K
COOLING L/s/sqm	=	7.68 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN 11-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 2 of 2

CALCULATION DATA:

Zone Name : AHU-EXH2 Calc Time: Jul 1600h
 Job Name : Default Job Amb db/wb: 37.6/ 20.9 C

WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqm)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	0	0	0
E	0	0	0
SE	0	0	0
S	0	0	0
SW	0	0	0
W	0	0	0
NW	21	920	2,311
N	0	0	0
H	0	0	0
WALL LOADS: NE	608	6,776	-
E	0	0	-
SE	0	0	-
S	0	0	-
SW	0	0	-
W	0	0	-
NW	55	457	-
N	0	0	-

ZONE DESIGN HEATING LOAD SUMMARY

Location : AMMAN, JORDAN 04-02-00
 Prepared By : RAE & ASSOC. / ENGINEERS 6022890201
 Carrier Hourly Analysis Program Page 1 of 1

 CALCULATION DATA:

Zone Name : ADMIN. Calc Time: Winter design
 Job Name : Default Job Amb db : 0.0 C

LOAD COMPONENT	LOAD (W)
WALL TRANSMISSION	5,465
ROOF TRANSMISSION	3,920
GLASS TRANSMISSION	2,240
TRANSMISSION LOSS TO UNCOND. SPACES	21,616
INFILTRATION LOSS	0
LAB FLOOR	0
HEATING SAFETY W	1,662
SUB-TOTAL	34,903
NET VENTILATION LOSS	41,507
TOTAL HEATING LOAD	76,409
HEATING SUPPLY L/s	1,360 L/s
HEATING SUPPLY AIR TEMPERATURE	43.3 deg C
HEATING VENTILATION AIR L/s	1,887 L/s
HEATING THERMOSTAT SETPOINT TEMP	20.0 deg C

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

16-02-00
 6022890201
 Page 1 of 1

Zone Name : SHOP

No.	Month	Hour	Sensible Load (kW)	Total Load (kW)	Supply Air (L/s)
1	Jul	1500	104.47	121.58	5,757
2	Jul	1600	104.27	121.53	5,824
3	Jun	1500	103.07	121.39	5,746
4	Jun	1600	102.86	121.33	5,813
5	Aug	1500	102.86	119.82	5,624
6	Aug	1600	102.68	119.80	5,693
7	Jul	1400	102.15	119.23	5,650
8	Jun	1400	100.77	119.06	5,641
9	Aug	1400	100.49	117.42	5,513
10	Jul	1300	98.02	114.74	5,520



F MAXIMUM SPACE COOLING LOADS

Location : AMMAN, JORDAN

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS

6022890201

Carrier Hourly Analysis Program

Page 1 of 1

Zone Name : ADMIN.

Space Name	Mo.	Hour	Sensible (kW)	Latent (kW)	Supply Air (L/s)
B-13/REST.F	Jul	1500	1.69	0.19	149.9
B-12/REST.M	Jul	1500	1.74	0.20	154.3
B-17/STORAGE	Jul	800	0.89	0.24	78.9
B-18/WORKSH.	Jan	800	6.49	1.43	576.8
B-21/STUDIO	Jan	800	4.35	0.33	386.4
B-22/STOR.	Jul	1500	0.87	0.22	77.6
B-19/UNPACK.	Jul	1500	1.74	0.17	154.6
B-13A/CORR2	Jul	1500	3.38	0.53	300.8
B-13B/CORR3	Jul	1500	0.78	0.14	69.4
G-10/BACK OFF.	Jul	1500	1.99	0.27	177.2
G-11/CORR	Jul	1500	1.85	0.21	164.4
G-12/CORR.	Jul	1500	2.24	0.34	198.8
G-13/CORR.	Sep	1500	1.82	0.17	161.4
G-14/SEC. OFF.	Jul	1800	1.97	0.15	175.0
G-15/OFFICE	Sep	800	13.85 12.9	0.97	1,231.3 1139
G-16/SERVICE	Jul	1500	0.91	0.14	81.2
F-03/CORR	Aug	1500	2.19	0.28	194.4
F-04/LIBRARY	Jan	800	6.77	0.71	601.6
F-05/LIB.OFF.	Jan	800	1.30	0.20	115.3
F-06/PRODUCT.	Jan	800	2.42	0.36	215.6
F-07/LABORAT.	Jan	800	8.70	1.54	773.8
F-01/CORR.	Jul	1500	1.89	0.22	167.7
F-02/CORR.	Jan	800	1.38	0.27	123.0
F-08/DIRECT.	Jul	1800	5.13	0.27	456.0
F-09/SECRET.	Jul	1700	2.50	0.13	222.4
F-10/DEPUTY	Jul	1700	2.31	0.20	205.5
F-11/MEETING	Aug	1700	8.46	1.76	752.5
F-14/SERVICE	Aug	1700	1.26	0.17	112.1
S-04/SECURITY OFF.	Jul	1700	2.99	0.15	266.1

Total including space multipliers :

8,344.0

3-08/corr

342.3

4645381 / 2

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN

04-02-00

Prepared By : RAE & ASSOC. / ENGINEERS
Carrier Hourly Analysis Program

6022890201
Page 1 of 2

CALCULATION DATA:

Zone Name : ADMIN.
Job Name : Default Job

Calc Time: Aug 1500h
Amb db/wb: 38.0/ 21.0 C

LOAD INFORMATION

LOAD COMPONENT	SENSIBLE (W)	LATENT (W)
SOLAR GAIN	1,643	0
GLASS TRANSMISSION	1,402	0
WALL TRANSMISSION	4,527	0
ROOF TRANSMISSION	3,845	0
PARTITION TRANSMISSION	12,467	0
LIGHTING (33,312 W TOTAL)	33,240	0
OTHER ELEC. (13,000 W TOTAL)	12,991	0
PEOPLE (188.65 PEOPLE TOTAL)	13,565	11,380
MISCELLANEOUS LOADS	0	0
COOLING INFILTRATION	0	0
PULLDOWN/WARM-UP	764	0
COOLING SAFETY LOAD	4,222	569

SUB-TOTALS	88,667	11,949
NET VENTILATION LOAD (1887 L/s)	31,130	1,804
SUPPLY FAN LOAD (kw = 7.3)	7,259	0
WALL LOAD TO PLENUM	0	0
ROOF LOAD TO PLENUM	0	0
LIGHTING LOAD TO PLENUM	0	0

TOTAL COOLING LOADS	127,056	13,752

** : *****

COIL SELECTION PARAMETERS:

COIL ENTERING AIR TEMP. (DB/WB)	=	26.6/ 17.4 deg C
COIL LEAVING AIR TEMP. (DB/WB)	=	11.9/ 11.5 deg C
COIL SENSIBLE LOAD	=	127,056 W
COIL TOTAL LOAD	=	140,808 W
COOLING SUPPLY AIR TEMPERATURE	=	12.8 deg C
TOTAL COOLING L/s (actual)	=	7,885 L/s
TOTAL COOLING L/s (std. air)	=	7,185 L/s
RESULTING ROOM REL. HUMIDITY	=	49.8 %
COIL BYPASS FACTOR	=	0.050
COIL APPARATUS DEWPOINT	=	11.2 deg C
REHEAT REQUIRED	=	0 W

GENERAL INFORMATION:

TOTAL COOLING LOAD	=	140.81 kW
	=	9.76 sqm / kW
TOTAL FLOOR AREA	=	1,374.50 sqm
OVERALL U-FACTOR	=	0.998 W/sqm/K
COOLING L/s/sqm	=	5.74 L/s/sqm

ZONE DESIGN COOLING LOAD SUMMARY

Location : AMMAN, JORDAN
 Prepared By : RAE & ASSOC. / ENGINEERS
 Carrier Hourly Analysis Program

04-02-00
 6022890201
 Page 2 of 2

CALCULATION DATA:

Zone Name : ADMIN. Calc Time: Aug 1500h
 Job Name : Default Job Amb db/wb: 38.0/ 21.0 C

WALL AND GLASS LOAD BREAKDOWN

LOAD COMPONENT	AREA (sqm)	TRANSMISSION (W)	SOLAR GAIN (W)
GLASS LOADS: NE	0	0	0
E	0	0	0
SE	32	1,402	1,643
S	0	0	0
SW	0	0	0
W	0	0	0
NW	0	0	0
N	0	0	0
H	0	0	0
WALL LOADS: NE	117	1,128	-
E	0	0	-
SE	233	3,056	-
S	0	0	-
SW	37	343	-
W	0	0	-
NW	0	0	-
N	0	0	-

Lighting Calculations Sheet

PROJECT NAME : N. Museum
 FLOOR NO. : Ground Floor

PROJECT NO. : _____
 DATE : _____

SER NO.	SPACE NAME	SPACE DIMENSIONS			DESIGN LUX	LIGHTING FIXTURE			AVERAGE LUX	NOTES
		W	L	H		CATALOGUE	TYPE	NUMBER		
1	clock room.	4.0	5.4	5.0	200	phmpf.	2x3ep/r	1x3	215	
2	Store.	5.0	10	5.0	200	'	2x2ep/r.	2x3	220	
3	Trickets.	3.0	3.6	2.8	300	"	4x18p/s	1x2	340	
4	office.	1.0	2.0	2.8	500	"	4x18l/r.	5x2	515	
5	b. office.	3.8	5.0	2.8	500	'	4x12l/r.	2x2	450	
6	security office	2.6	7.1	2.8	300	'	4x18l/r.	1x4	450	
7	corridor	2.0	26.0	2.8	300-200	"	1x26 C.F.	Spacing 1.5m	154	Spacing 1.3m
8	Fumigation. R									
9	sub station.									
10	ceprt yard.	2.5	22.	2.8			5x18 300 150	Spacing		
chiller							page 2-50			

S B P S . P . A .

WORLD OF LIGHTS
Amman
Tel. 843273 - Fax 833273

TECHNICAL LIGHTING CALCULATION EXTERIOR

Tuesday February 29 2000

General data

INSTALLATION NAME : FACADE1
PROJECT NOTES : GALLERY
CUSTOMER NAME : GALINA BAHLAWAN

Area data

LENGTH	[m]		56.0
WIDTH	[m]		15.0
LOWER LEFT CORNER COORDINATES	[m]	X =	0.0
	[m]	Y =	0.0
MAINTENANCE FACTOR			1.00

SBP S.P.A.

Summing table of floodlights

Range	Floodlight Name Relief Name	Floodlight Code Relief Code	Lamps N.	Q.ity
SBP	LEO/S 400 -N- CR LEO/S 400	05752013 0070	1	14

Summing table of results
Calculation plane height : 0.0 [m]

Illuminance	Horizontal	Vertical			
		+Y	-Y	+X	-X
Minimum [lx]	48	##	##	##	##
Maximum [lx]	906	##	##	##	##
Average [lx]	258	##	##	##	##
Min/av	0.19	##	##	##	##
Min/max	0.05	##	##	##	##

= Not calculated

SBP S.P.A.

Summing table of lamps

Type	Code	Description	Flux [lm]	Power [W]	Degrees [K]	Q.ity
IODURI METALLICI	HPI-T 400 W	LAMPADA VAPORI DI ALOGENURI PH	30500	400	4100	14

SBP S.P.A.

Summing table of floodlights coordinates

Lev.	Fam.	Sym.	Light point pos.			Ainings				K	Flood. code	Lamp	Flux
			X [m]	Y [m]	H [m]	X [m]	Y [m]	α [°]	β [°]				[lm]
1	1	A	4.0	4.0	4.0	4.0	3.5	7	180	0.58	05752013	HPI-T 400 W	1 * 30500
1	1	A	4.0	4.0	4.0	4.0	12.0	63	0	0.35	05752013	HPI-T 400 W	1 * 30500
1	1	A	12.0	4.0	4.0	12.0	3.5	7	180	0.62	05752013	HPI-T 400 W	1 * 30500
	1	A	12.0	4.0	4.0	12.0	12.0	63	0	0.41	05752013	HPI-T 400 W	1 * 30500
1	1	A	20.0	4.0	4.0	20.0	3.5	7	180	0.64	05752013	HPI-T 400 W	1 * 30500
1	1	A	20.0	4.0	4.0	20.0	12.0	63	0	0.41	05752013	HPI-T 400 W	1 * 30500
1	1	A	28.0	4.0	4.0	28.0	3.5	7	180	0.64	05752013	HPI-T 400 W	1 * 30500
1	1	A	28.0	4.0	4.0	28.0	12.0	63	0	0.41	05752013	HPI-T 400 W	1 * 30500
1	1	A	36.0	4.0	4.0	36.0	3.5	7	180	0.64	05752013	HPI-T 400 W	1 * 30500
1	1	A	36.0	4.0	4.0	36.0	12.0	63	0	0.41	05752013	HPI-T 400 W	1 * 30500
1	1	A	44.0	4.0	4.0	44.0	3.5	7	180	0.62	05752013	HPI-T 400 W	1 * 30500
1	1	A	44.0	4.0	4.0	44.0	12.0	63	0	0.41	05752013	HPI-T 400 W	1 * 30500
1	2	A	52.0	4.0	4.0	52.0	3.5	7	180	0.58	05752013	HPI-T 400 W	1 * 30500
1	2	A	52.0	4.0	4.0	52.0	12.0	63	0	0.35	05752013	HPI-T 400 W	1 * 30500

RESULTS : Total horizontal illuminance [lx]
Calculation plane height : 0.0 [m]

14.2	48	60	73	76	76	79	78	77	80	78	78	80	77	78	79	76	76	73	60	48
12.8	71	85	106	109	103	110	108	105	110	107	107	110	105	108	110	103	109	106	85	71
11.2	100	121	148	151	137	149	148	141	148	144	144	148	141	148	149	137	151	148	121	100
9.8	135	166	185	189	181	187	191	185	188	189	189	188	185	191	187	181	189	185	166	135
8.2	187	225	223	236	247	221	245	253	217	251	251	217	253	245	221	247	236	223	225	187
6.8	238	348	233	318	380	203	356	389	187	380	380	187	389	356	203	380	318	233	348	238
5.2	312	545	266	425	589	215	503	589	190	557	557	190	589	503	215	589	425	266	545	312
3.8	437	901	368	569	906	293	675	895	251	804	804	251	895	675	293	906	569	368	901	437
2.2	300	451	271	377	492	225	421	488	201	460	460	201	488	421	225	492	377	271	451	300
0.8	125	159	128	165	178	113	181	186	104	188	188	104	186	181	113	178	165	128	159	125
Y/X	1.4	4.2	7.0	9.8	12.6	15.4	18.2	21.0	23.8	26.6	29.4	32.2	35.0	37.8	40.6	43.4	46.2	49.0	51.8	54.6

RESULTS : Illuminance values and quality parameters

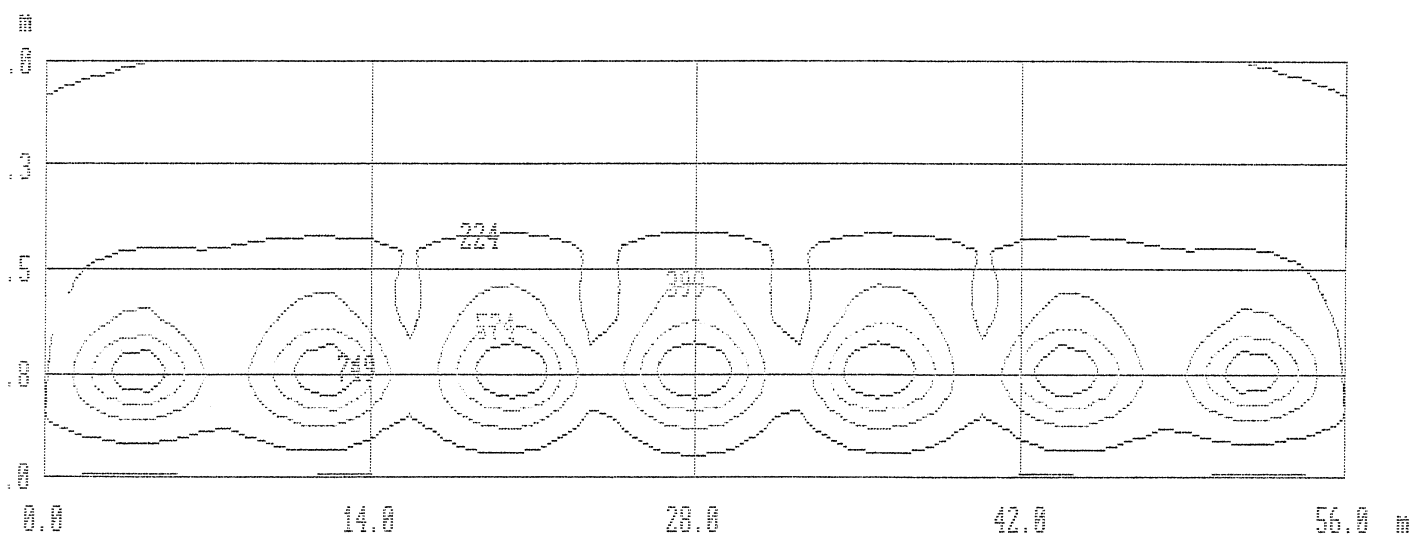
Minimum	Average	Maximum	Emin/Eav	Emin/Emax	Cgu
48	258	906	0.19	0.05	0.51

Cgu = Global utilization factor

SBP S.P.A.

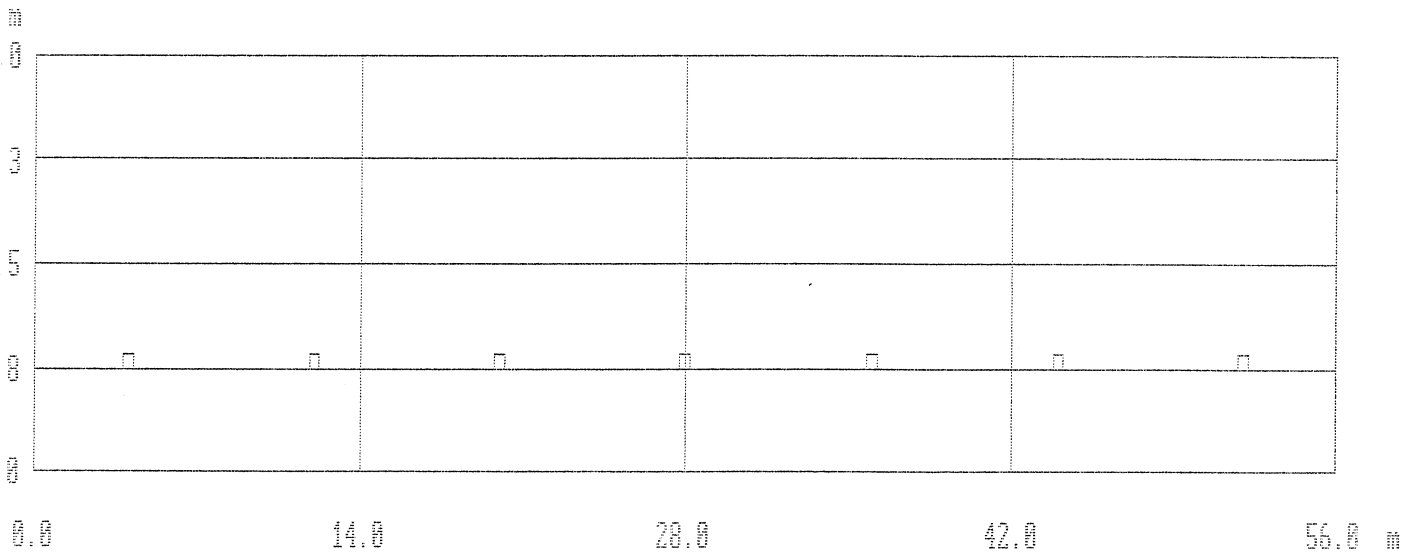
ILLUMINANCES PLANIMETRIC DIAGRAM (Isolux)

Initial curve = 49.0 lx
Interdistance = 175.0 lx



WORKING PLANE

LUMINAIRES DISPOSITION



Photos: Lighting engineering for INTERIORS



Code: 1000
Project NATIONAL MUSEUM
Project manager
Customer
User GALINA BAHLAWAN
Agency
Date الاثنين ٢٨ شباط ٢٠٠٠

MAIN GALERRY

Lighting design project

GUZZINI

ROOM DATA	Dimensions (regular or irregular)
	Characteristics (reflections, colours, finishes)
	Furniture and obstacles (architectural and structural)

Fittings	Characteristics (product technical sheet)
	Positioning

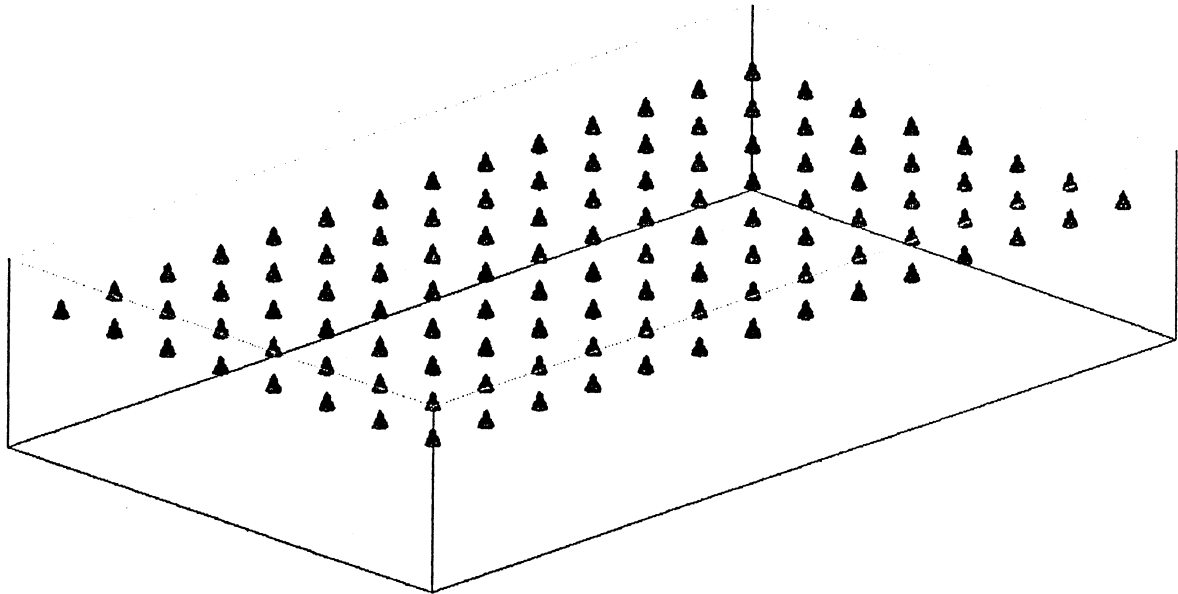
Results	Illuminance
	Luminance

Rendering

Checkings on the installation may show deviations as regards lamps, ballasts, voltage position of fittings, as well as room data, compared to the nominal values indicated in this table

ROOM DATA

(Cuzzin)



Room dimensions

Dimensions	[m]
Length	27
Width	15.5
Height	5.1
Working plane	0

Reflection factors

Wall dimensions

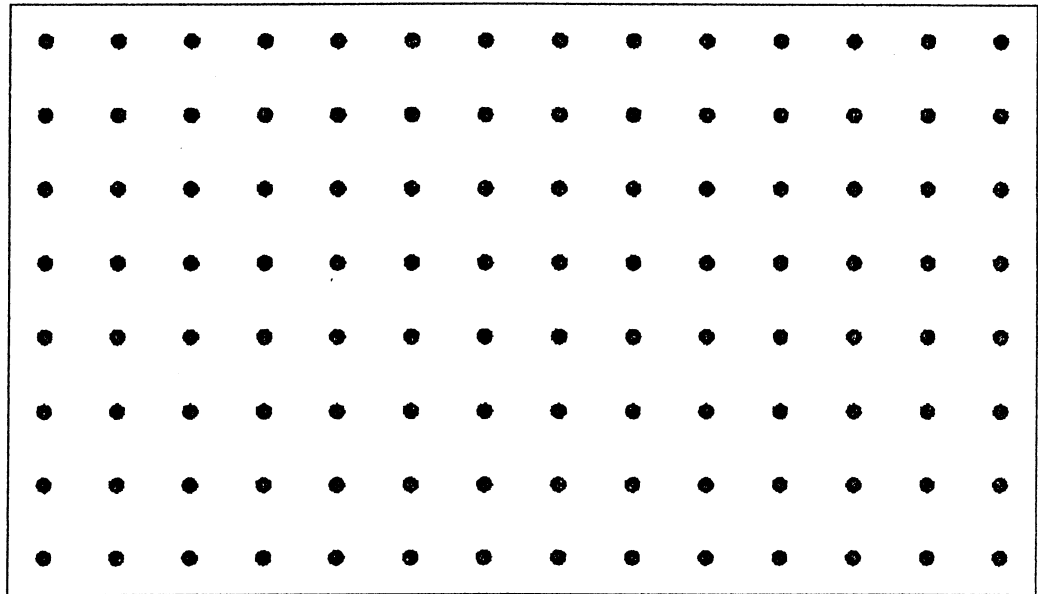
Surface	%	Width	Height
FLOOR	20	*	*
CEILING	70	*	*
Wall A-B	50	15.5	5.1
Wall B-C	50	27	5.1
Wall C-D	50	15.5	5.1
Wall D-A	50	27	5.1

Position of fittings

GUZZINI

Exhibition area

POSITION OF FITTINGS IN THE ROOM



Positions

Description				Flux	Position of fittings			Projection			Angles		
N°	Fitting	Acc	Lamp	Lumen	X	Y	Z	X	Y	Z	A[°]	E[°]	I[°]
1	4350	4448	1673	3200	1	1	4	1	1	3.7	0	0	0
2	4350	4448	1673	3200	1	2.9	4	1	2.9	3.7	0	0	0
3	4350	4448	1673	3200	1	4.8	4	1	4.8	3.7	0	0	0
4	4350	4448	1673	3200	1	6.8	4	1	6.8	3.7	0	0	0
5	4350	4448	1673	3200	1	8.7	4	1	8.7	3.7	0	0	0
6	4350	4448	1673	3200	1	10.7	4	1	10.7	3.7	0	0	0
7	4350	4448	1673	3200	1	12.6	4	1	12.6	3.7	0	0	0
8	4350	4448	1673	3200	1	14.5	4	1	14.5	3.7	0	0	0
9	4350	4448	1673	3200	2.9	1	4	2.9	1	3.7	0	0	0
10	4350	4448	1673	3200	2.9	2.9	4	2.9	2.9	3.7	0	0	0
11	4350	4448	1673	3200	2.9	4.8	4	2.9	4.8	3.7	0	0	0
12	4350	4448	1673	3200	2.9	6.8	4	2.9	6.8	3.7	0	0	0
13	4350	4448	1673	3200	2.9	8.7	4	2.9	8.7	3.7	0	0	0
14	4350	4448	1673	3200	2.9	10.7	4	2.9	10.7	3.7	0	0	0
15	4350	4448	1673	3200	2.9	12.6	4	2.9	12.6	3.7	0	0	0
16	4350	4448	1673	3200	2.9	14.5	4	2.9	14.5	3.7	0	0	0
17	4350	4448	1673	3200	4.8	1	4	4.8	1	3.7	0	0	0
18	4350	4448	1673	3200	4.8	2.9	4	4.8	2.9	3.7	0	0	0
19	4350	4448	1673	3200	4.8	4.8	4	4.8	4.8	3.7	0	0	0
20	4350	4448	1673	3200	4.8	6.8	4	4.8	6.8	3.7	0	0	0

Position of fittings

IGuzzini

Exhibition area

Position of fittings in the room

N°	Fittin	Acc	Lam	Lumen	X	Y	Z	X	Y	Z	A[°]	E[°]	I[°]
21	4350	4448	1673	3200	4.8	8.7	4	4.8	8.7	3.7	0	0	0
22	4350	4448	1673	3200	4.8	10.	4	4.8	10.	3.7	0	0	0
23	4350	4448	1673	3200	4.8	12.	4	4.8	12.	3.7	0	0	0
24	4350	4448	1673	3200	4.8	14.	4	4.8	14.	3.7	0	0	0
25	4350	4448	1673	3200	6.8	1	4	6.8	1	3.7	0	0	0
26	4350	4448	1673	3200	6.8	2.9	4	6.8	2.9	3.7	0	0	0
27	4350	4448	1673	3200	6.8	4.8	4	6.8	4.8	3.7	0	0	0
28	4350	4448	1673	3200	6.8	6.8	4	6.8	6.8	3.7	0	0	0
29	4350	4448	1673	3200	6.8	8.7	4	6.8	8.7	3.7	0	0	0
30	4350	4448	1673	3200	6.8	10.	4	6.8	10.	3.7	0	0	0
31	4350	4448	1673	3200	6.8	12.	4	6.8	12.	3.7	0	0	0
32	4350	4448	1673	3200	6.8	14.	4	6.8	14.	3.7	0	0	0
33	4350	4448	1673	3200	8.7	1	4	8.7	1	3.7	0	0	0
34	4350	4448	1673	3200	8.7	2.9	4	8.7	2.9	3.7	0	0	0
35	4350	4448	1673	3200	8.7	4.8	4	8.7	4.8	3.7	0	0	0
36	4350	4448	1673	3200	8.7	6.8	4	8.7	6.8	3.7	0	0	0
37	4350	4448	1673	3200	8.7	8.7	4	8.7	8.7	3.7	0	0	0
38	4350	4448	1673	3200	8.7	10.	4	8.7	10.	3.7	0	0	0
39	4350	4448	1673	3200	8.7	12.	4	8.7	12.	3.7	0	0	0
40	4350	4448	1673	3200	8.7	14.	4	8.7	14.	3.7	0	0	0
41	4350	4448	1673	3200	10.6	1	4	10.	1	3.7	0	0	0
42	4350	4448	1673	3200	10.6	2.9	4	10.	2.9	3.7	0	0	0
43	4350	4448	1673	3200	10.6	4.8	4	10.	4.8	3.7	0	0	0
44	4350	4448	1673	3200	10.6	6.8	4	10.	6.8	3.7	0	0	0
45	4350	4448	1673	3200	10.6	8.7	4	10.	8.7	3.7	0	0	0
46	4350	4448	1673	3200	10.6	10.	4	10.	10.	3.7	0	0	0
47	4350	4448	1673	3200	10.6	12.	4	10.	12.	3.7	0	0	0
48	4350	4448	1673	3200	10.6	14.	4	10.	14.	3.7	0	0	0
49	4350	4448	1673	3200	12.5	1	4	12.	1	3.7	0	0	0
50	4350	4448	1673	3200	12.5	2.9	4	12.	2.9	3.7	0	0	0
51	4350	4448	1673	3200	12.5	4.8	4	12.	4.8	3.7	0	0	0
52	4350	4448	1673	3200	12.5	6.8	4	12.	6.8	3.7	0	0	0
53	4350	4448	1673	3200	12.5	8.7	4	12.	8.7	3.7	0	0	0
54	4350	4448	1673	3200	12.5	10.	4	12.	10.	3.7	0	0	0
55	4350	4448	1673	3200	12.5	12.	4	12.	12.	3.7	0	0	0
56	4350	4448	1673	3200	12.5	14.	4	12.	14.	3.7	0	0	0
57	4350	4448	1673	3200	14.5	1	4	14.	1	3.7	0	0	0
58	4350	4448	1673	3200	14.5	2.9	4	14.	2.9	3.7	0	0	0
59	4350	4448	1673	3200	14.5	4.8	4	14.	4.8	3.7	0	0	0
60	4350	4448	1673	3200	14.5	6.8	4	14.	6.8	3.7	0	0	0

Position of fittings

[Guzzini]

Exhibition area

Position of fittings in the room

N°	Fittin	Acc	Lam	Lumen	X	Y	Z	X	Y	Z	A[°]	E[°]	I[°]
61	4350	4448	1673	3200	14.5	8.7	4	14.	8.7	3.7	0	0	0
62	4350	4448	1673	3200	14.5	10.	4	14.	10.	3.7	0	0	0
63	4350	4448	1673	3200	14.5	12.	4	14.	12.	3.7	0	0	0
64	4350	4448	1673	3200	14.5	14.	4	14.	14.	3.7	0	0	0
65	4350	4448	1673	3200	16.4	1	4	16.	1	3.7	0	0	0
66	4350	4448	1673	3200	16.4	2.9	4	16.	2.9	3.7	0	0	0
67	4350	4448	1673	3200	16.4	4.8	4	16.	4.8	3.7	0	0	0
68	4350	4448	1673	3200	16.4	6.8	4	16.	6.8	3.7	0	0	0
69	4350	4448	1673	3200	16.4	8.7	4	16.	8.7	3.7	0	0	0
70	4350	4448	1673	3200	16.4	10.	4	16.	10.	3.7	0	0	0
71	4350	4448	1673	3200	16.4	12.	4	16.	12.	3.7	0	0	0
72	4350	4448	1673	3200	16.4	14.	4	16.	14.	3.7	0	0	0
73	4350	4448	1673	3200	18.3	1	4	18.	1	3.7	0	0	0
74	4350	4448	1673	3200	18.3	2.9	4	18.	2.9	3.7	0	0	0
75	4350	4448	1673	3200	18.3	4.8	4	18.	4.8	3.7	0	0	0
76	4350	4448	1673	3200	18.3	6.8	4	18.	6.8	3.7	0	0	0
77	4350	4448	1673	3200	18.3	8.7	4	18.	8.7	3.7	0	0	0
78	4350	4448	1673	3200	18.3	10.	4	18.	10.	3.7	0	0	0
79	4350	4448	1673	3200	18.3	12.	4	18.	12.	3.7	0	0	0
80	4350	4448	1673	3200	18.3	14.	4	18.	14.	3.7	0	0	0
81	4350	4448	1673	3200	20.3	1	4	20.	1	3.7	0	0	0
82	4350	4448	1673	3200	20.3	2.9	4	20.	2.9	3.7	0	0	0
83	4350	4448	1673	3200	20.3	4.8	4	20.	4.8	3.7	0	0	0
84	4350	4448	1673	3200	20.3	6.8	4	20.	6.8	3.7	0	0	0
85	4350	4448	1673	3200	20.3	8.7	4	20.	8.7	3.7	0	0	0
86	4350	4448	1673	3200	20.3	10.	4	20.	10.	3.7	0	0	0
87	4350	4448	1673	3200	20.3	12.	4	20.	12.	3.7	0	0	0
88	4350	4448	1673	3200	20.3	14.	4	20.	14.	3.7	0	0	0
89	4350	4448	1673	3200	22.2	1	4	22.	1	3.7	0	0	0
90	4350	4448	1673	3200	22.2	2.9	4	22.	2.9	3.7	0	0	0
91	4350	4448	1673	3200	22.2	4.8	4	22.	4.8	3.7	0	0	0
92	4350	4448	1673	3200	22.2	6.8	4	22.	6.8	3.7	0	0	0
93	4350	4448	1673	3200	22.2	8.7	4	22.	8.7	3.7	0	0	0
94	4350	4448	1673	3200	22.2	10.	4	22.	10.	3.7	0	0	0
95	4350	4448	1673	3200	22.2	12.	4	22.	12.	3.7	0	0	0
96	4350	4448	1673	3200	22.2	14.	4	22.	14.	3.7	0	0	0
97	4350	4448	1673	3200	24.1	1	4	24.	1	3.7	0	0	0
98	4350	4448	1673	3200	24.1	2.9	4	24.	2.9	3.7	0	0	0
99	4350	4448	1673	3200	24.1	4.8	4	24.	4.8	3.7	0	0	0
10	4350	4448	1673	3200	24.1	6.8	4	24.	6.8	3.7	0	0	0

Position of fittings

Guzzini

Exhibition area

Position of fittings in the room

N°	Fittin	Acc	Lam	Lumen	X	Y	Z	X	Y	Z	A[°]	E[°]	I[°]
10	4350	4448	1673	3200	24.1	8.7	4	24.	8.7	3.7	0	0	0
10	4350	4448	1673	3200	24.1	10.	4	24.	10.	3.7	0	0	0
10	4350	4448	1673	3200	24.1	12.	4	24.	12.	3.7	0	0	0
10	4350	4448	1673	3200	24.1	14.	4	24.	14.	3.7	0	0	0
10	4350	4448	1673	3200	26	1	4	26	1	3.7	0	0	0
10	4350	4448	1673	3200	26	2.9	4	26	2.9	3.7	0	0	0
10	4350	4448	1673	3200	26	4.8	4	26	4.8	3.7	0	0	0
10	4350	4448	1673	3200	26	6.8	4	26	6.8	3.7	0	0	0
10	4350	4448	1673	3200	26	8.7	4	26	8.7	3.7	0	0	0
11	4350	4448	1673	3200	26	10.	4	26	10.	3.7	0	0	0
11	4350	4448	1673	3200	26	12.	4	26	12.	3.7	0	0	0
11	4350	4448	1673	3200	26	14.	4	26	14.	3.7	0	0	0

Fittings details

(Guzzini)

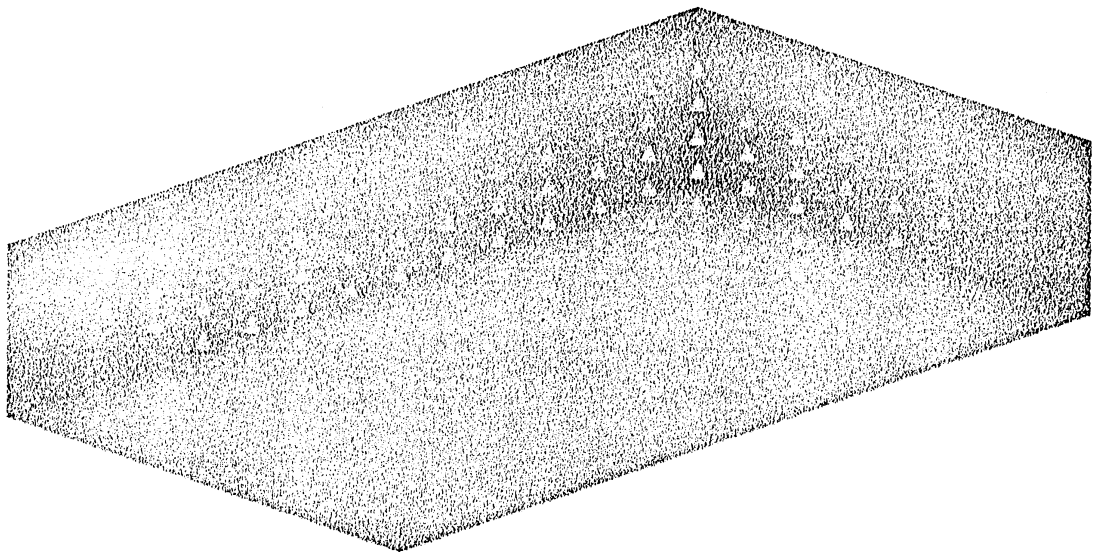
Fittings details

Article	Components
4350 4448 1673	Berlino System.
	Luminaire: 4350.OA1 - Berlino small
	Accessory: 4448.015 - Sospensione - Grey
	Lamp: 1673 - Compact fluorescent 42W GX24q-4 3000°K

Rendering display

Guzzini

Exhibition area



Illumination numeric results working surface

Guzzini

Exhibition area

Illumination numeric results working surface

B	183	242	262	272	277	280	280	280	277	272	264	242	183	C
	232	308	334	345	352	356	357	356	352	346	336	308	232	
	254	336	364	376	384	387	388	387	384	377	367	336	254	
	264	349	377	388	396	399	401	399	396	389	379	349	264	
	271	356	385	397	404	408	409	408	405	397	388	356	271	
	276	363	391	403	411	415	416	415	411	404	394	363	276	
	278	366	394	406	413	417	418	417	413	406	396	366	278	
	278	366	394	406	413	417	418	417	413	406	396	366	278	
	276	363	391	403	411	415	416	415	411	404	394	363	276	
	271	356	385	397	404	408	409	408	405	397	388	356	271	
	264	348	376	388	395	399	401	399	396	388	379	348	264	
	251	333	361	373	380	383	384	383	380	373	363	333	251	
	232	308	334	345	352	356	357	356	352	346	336	308	232	
A	183	242	262	272	277	280	280	280	277	272	264	242	183	D

Illumination average values

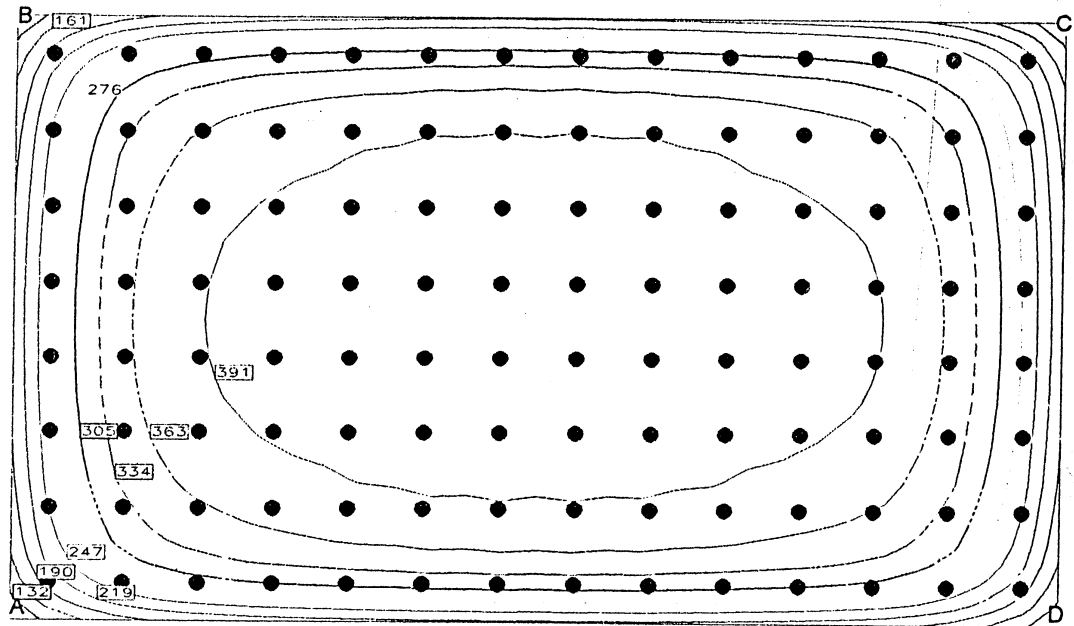
Surface	Direct	Indirect	Total	g1	g2
working surface	185	156	341	0.3	0.25
FLOOR	185	156	341	0.3	0.25
CEILING	122	97	219	0.27	0.23
Wall A-B	182	88	269	0.42	0.24
Wall B-C	188	108	296	0.35	0.21
Wall C-D	182	88	269	0.42	0.24
Wall D-A	188	108	296	0.35	0.21

ISOLUX DIAGRAM ON working surface

ICUZZINI

Exhibition area

ISOLUX DIAGRAM ON working surface



Illumination average values

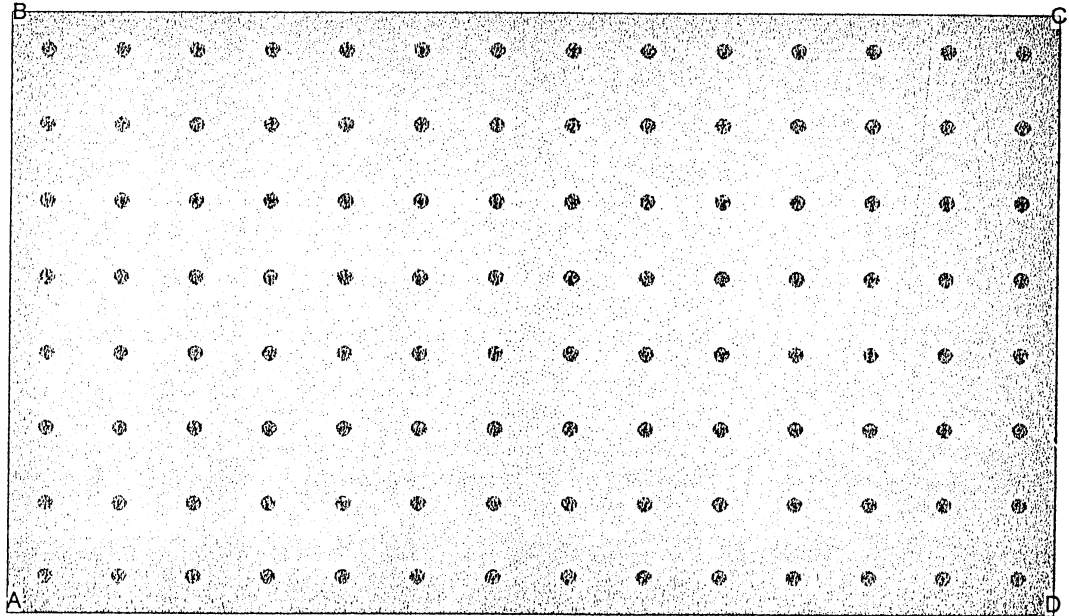
Surface	Direct	Indirect	Total	g1	g2
working surface	185	156	341	0.3	0.25
FLOOR	185	156	341	0.3	0.25
CEILING	122	97	219	0.27	0.23
Wall A-B	182	88	269	0.42	0.24
Wall B-C	188	108	296	0.35	0.21
Wall C-D	182	88	269	0.42	0.24
Wall D-A	188	108	296	0.35	0.21

Shades of grey illuminance display working surface

GUZZINI

Exhibition area

Shades of grey illuminance display working surface



Illumination average values

Surface	Direct	Indirect	Total	g1	g2
working surface	185	156	341	0.3	0.25
FLOOR	185	156	341	0.3	0.25
CEILING	122	97	219	0.27	0.23
Wall A-B	182	88	269	0.42	0.24
Wall B-C	188	108	296	0.35	0.21
Wall C-D	182	88	269	0.42	0.24
Wall D-A	188	108	296	0.35	0.21

Photos: Lighting engineering for INTERIORS

Code: **1101**
Project **NATIONAL MUSEUM**
Project manager
Customer
User **GALINA BAHLAWAN**
Agency
Date **الاربعاء ١ آذار ٢٠٠٠**

WALL 3 ✓

ROOM DATA	Dimensions (regular or irregular)
	Characteristics (reflections, colours, finishes)
	Furniture and obstacles (architectural and structural)

Fittings	Characteristics (product technical sheet)
	Positioning

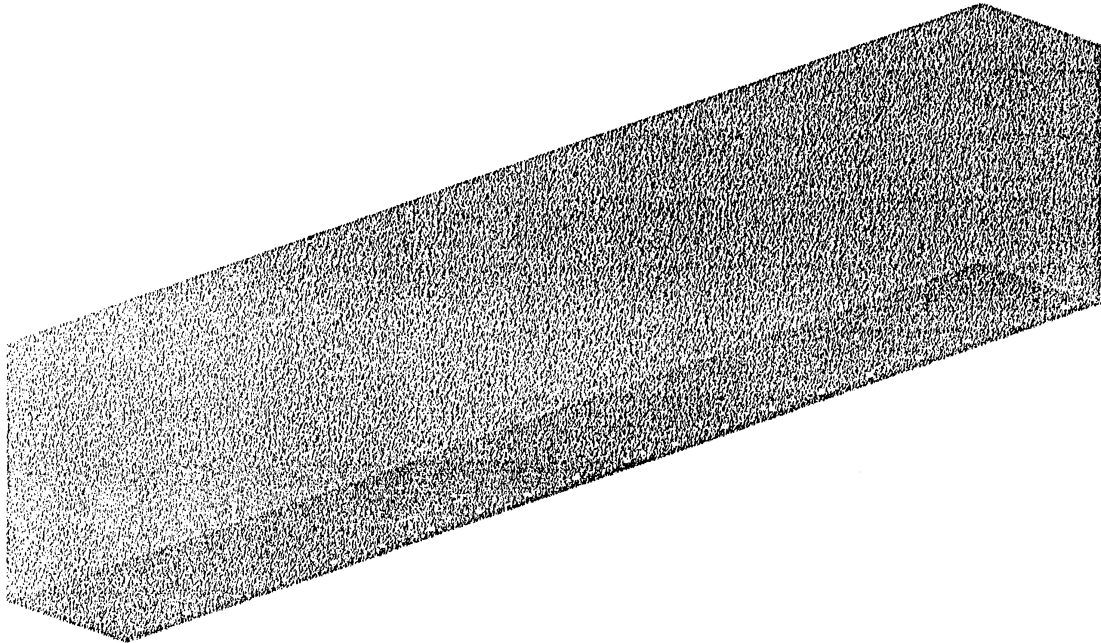
Results	Illuminance
	Luminance

Rendering

Checkings on the installation may show deviations as regards lamps, ballasts, voltage position of fittings, as well as room data, compared to the nominal values indicated in this table

ROOM DATA

Cuzzini



Room dimensions

Dimensions	[m]
Length	40
Width	5
Height	8
Working plane	0

Reflection factors

Wall dimensions

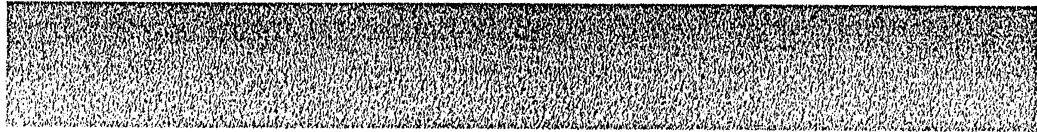
Surface	%	Width	Height
FLOOR	20	*	*
CEILING	70	*	*
Wall A-B	50	5	8
Wall B-C	50	40	8
Wall C-D	50	5	8
Wall D-A	50	40	8

Position of fittings

IGUZZINI

Exhibition area

POSITION OF FITTINGS IN THE ROOM



Positions

N°	Description			Flux Lumen	Position of fittings			Projection			Angles		
	Fitting	Acc	Lamp		X	Y	Z	X	Y	Z	A[°]	E[°]	I[°]
1	7164	0000	1676	5200	1	0.5	0	1	0.5	8	0	0	0
2	7164	0000	1676	5200	3	0.5	0	3	0.5	8	0	0	0
3	7164	0000	1676	5200	5	0.5	0	5	0.5	8	0	0	0
4	7164	0000	1676	5200	7	0.5	0	7	0.5	8	0	0	0
5	7164	0000	1676	5200	9	0.5	0	9	0.5	8	0	0	0
6	7164	0000	1676	5200	11	0.5	0	11	0.5	8	0	0	0
7	7164	0000	1676	5200	13	0.5	0	13	0.5	8	0	0	0
8	7164	0000	1676	5200	15	0.5	0	15	0.5	8	0	0	0
9	7164	0000	1676	5200	17	0.5	0	17	0.5	8	0	0	0
10	7164	0000	1676	5200	19	0.5	0	19	0.5	8	0	0	0
11	7164	0000	1676	5200	21	0.5	0	21	0.5	8	0	0	0
12	7164	0000	1676	5200	23	0.5	0	23	0.5	8	0	0	0
13	7164	0000	1676	5200	25	0.5	0	25	0.5	8	0	0	0
14	7164	0000	1676	5200	27	0.5	0	27	0.5	8	0	0	0
15	7164	0000	1676	5200	29	0.5	0	29	0.5	8	0	0	0
16	7164	0000	1676	5200	31	0.5	0	31	0.5	8	0	0	0
17	7164	0000	1676	5200	33	0.5	0	33	0.5	8	0	0	0
18	7164	0000	1676	5200	35	0.5	0	35	0.5	8	0	0	0
19	7164	0000	1676	5200	37	0.5	0	37	0.5	8	0	0	0
20	7164	0000	1676	5200	39	0.5	0	39	0.5	8	0	0	0

Fittings details

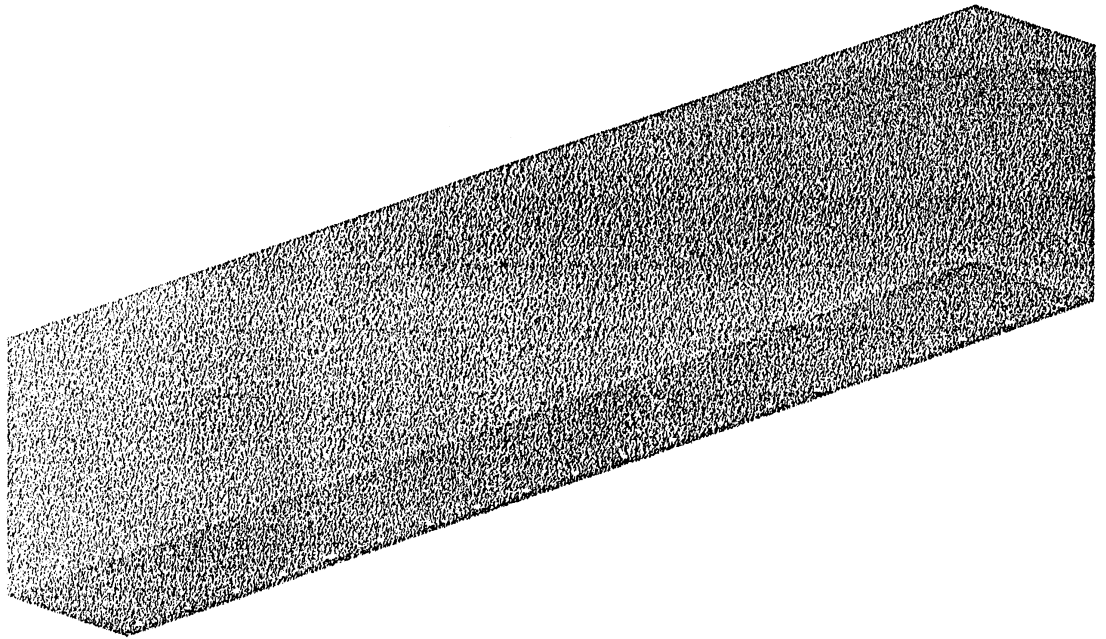
(Guzzini)

Fittings details

7194 AS

Article	Components
7164 0000 1676	Light Up System. Luminaire: 7164.013 - Light-Up Garden Metal Halide floodlight - fixed Lamp: 1676 - Metal halide 70W G12 WDL

Exhibition area



Illumination numeric results Wall D-A

ICUZZINI

Exhibition area

Illumination numeric results Wall D-A

9	12	12	12	12	12	12	12	12	12	12	12	9
19	23	23	24	23	24	23	24	23	24	23	23	19
53	60	55	64	54	64	53	64	54	64	55	60	53
190	278	134	365	99	382	64	382	99	365	134	278	190

Illumination average values

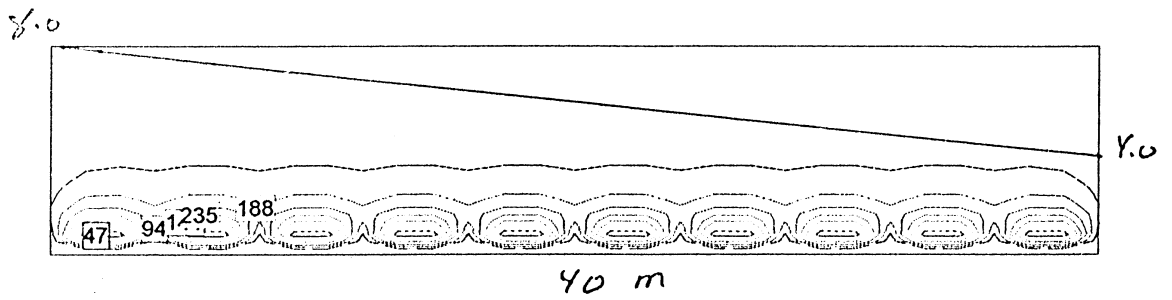
Surface	Direct	Indirect	Total	g1	g2
working surface	0	0	0	0	0
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	60	0	60	0	0

ISOLUX DIAGRAM ON Wall D-A

(Guzzini)

Exhibition area

ISOLUX DIAGRAM ON Wall D-A



Illumination average values

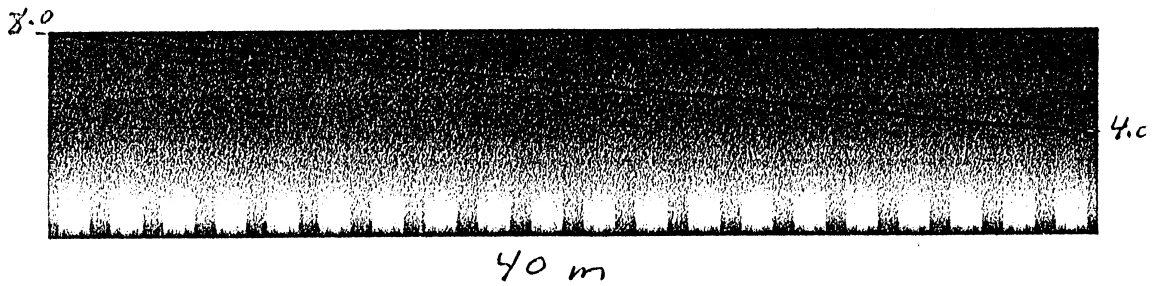
Surface	Direct	Indirect	Total	g1	g2
working surface	0	0	0	0	0
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	60	0	60	0	0

Shades of grey illuminance display Wall D-A

Guzzini

Exhibition area

Shades of grey illuminance display Wall D-A



Illumination average values

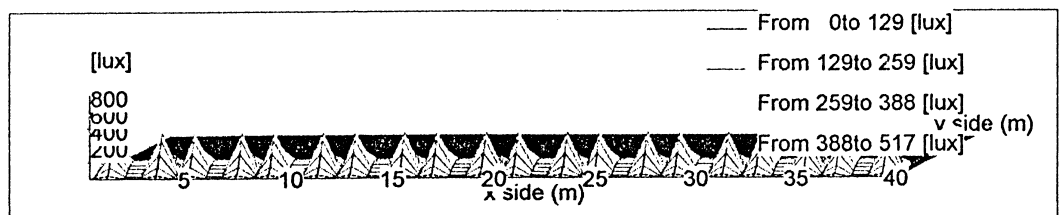
Surface	Direct	Indirect	Total	g1	g2
working surface	0	0	0	0	0
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	60	0	60	0	0

3D illuminance display Wall D-A

(Guzzini)

Exhibition area

3D illuminance display Wall D-A



Illumination average values

Surface	Direct	Indirect	Total	g1	g2
working surface	0	0	0	0	0
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	60	0	60	0	0

Photos: Lighting engineering for INTERIORS

Code: 1104
Project NATIONAL MUSEUM
Project manager
Customer
User GALINA BAHLAWAN
Agency
Date الاربعاء ١ آذار ٢٠٠٠

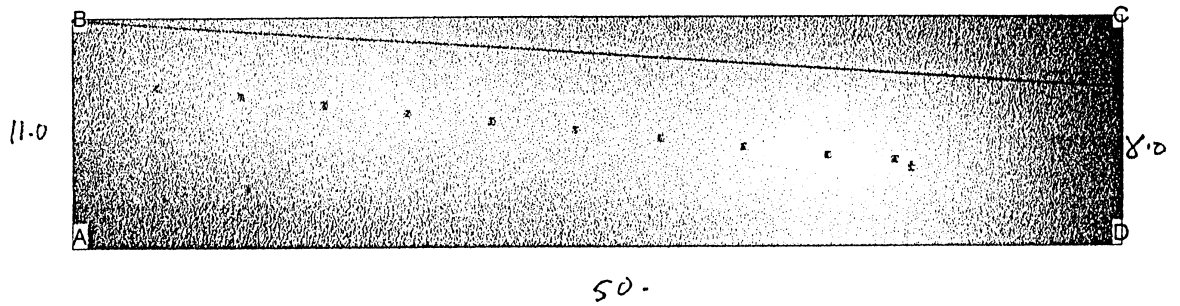
WALL 4

Shades of grey illuminance display working surface

IGUZZINI

Exhibition area

Shades of grey illuminance display working surface



Illumination average values

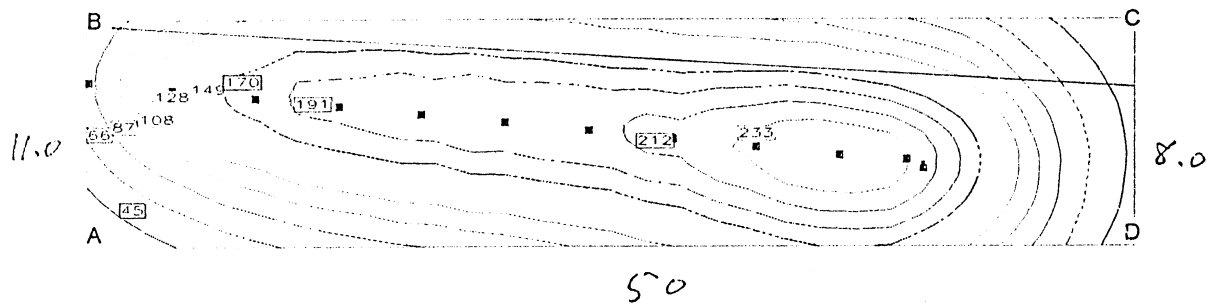
Surface	Direct	Indirect	Total	g1	g2
working surface	145	0	145	0.17	0.1
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	0	0	0	0	0

ISOLUX DIAGRAM ON working surface

Guzzini

Exhibition area

ISOLUX DIAGRAM ON working surface



Illumination average values

Surface	Direct	Indirect	Total	g1	g2
working surface	145	0	145	0.17	0.1
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	0	0	0	0	0

ROOM DATA	Dimensions (regular or irregular) Characteristics (reflections, colours, finishes) Furniture and obstacles (architectural and structural)
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Fittings	Characteristics (product technical sheet) Positioning
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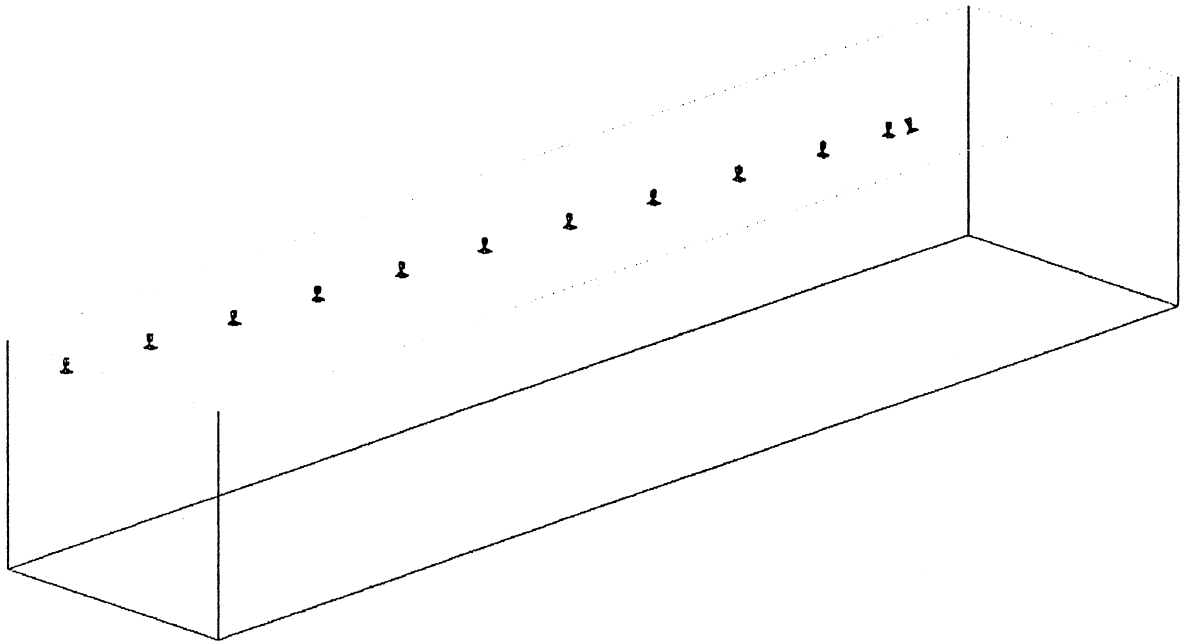
Results	Illuminance Luminance
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Rendering

Checkings on the installation may show deviations as regards lamps, ballasts, voltage position of fittings, as well as room data, compared to the nominal values indicated in this table

ROOM DATA

GUZZINI



Room dimensions

Dimensions	[m]
Length	50
Width	11
Height	9
Working plane	0

Reflection factors

Wall dimensions

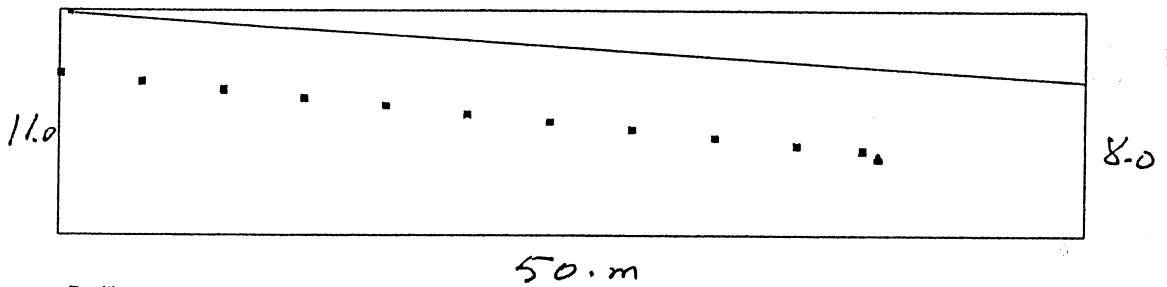
Surface	%	Width	Height
FLOOR	20	*	*
CEILING	70	*	*
Wall A-B	43.4	11	9
Wall B-C	50	50	9
Wall C-D	50	11	9
Wall D-A	50	50	9

Position of fittings

GUZZINI

Exhibition area

POSITION OF FITTINGS IN THE ROOM



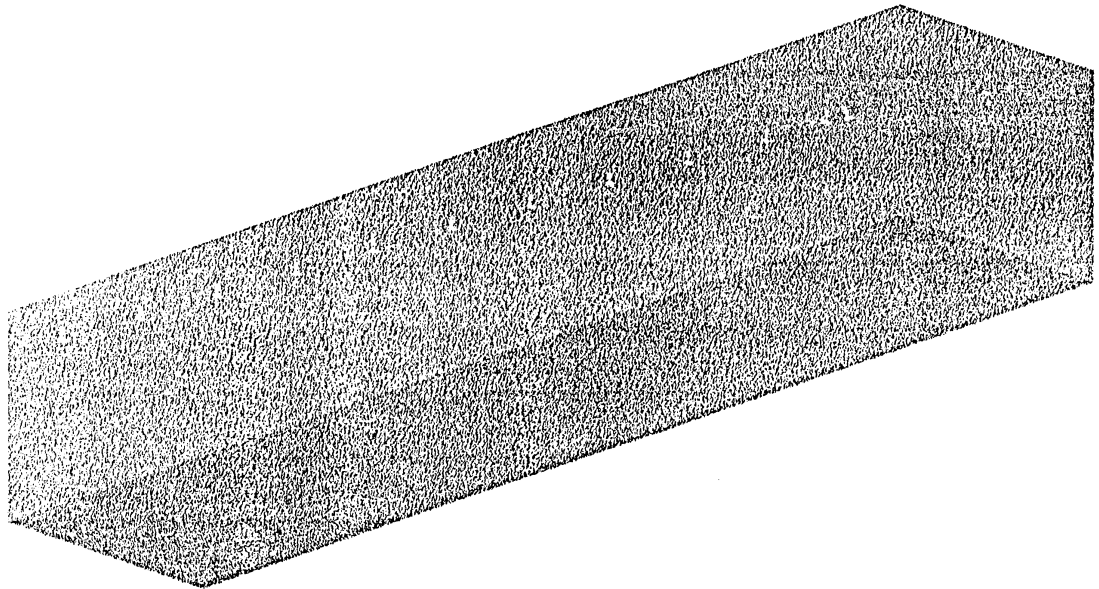
Positions

N°	Description			Flux Lumen	Position of fittings			Projection			Angles		
	Fitting	Acc	Lamp		X	Y	Z	X	Y	Z	A[°]	E[°]	I[°]
1	7020	0000	1796	28000	0	8	9	0.1	8	8.5	0	0	0
2	7020	0000	1796	28000	4	7.6	9	4	7.6	8.5	0	0	0
3	7020	0000	1796	28000	8	7.2	9	8	7.2	8.5	0	0	0
4	7020	0000	1796	28000	11.9	6.8	9	12	6.8	8.5	0	0	0
5	7020	0000	1796	28000	15.9	6.4	9	16	6.4	8.5	0	0	0
6	7020	0000	1796	28000	19.9	6	9	20	6	8.5	0	0	0
7	7020	0000	1796	28000	23.9	5.6	9	23.9	5.6	8.5	0	0	0
8	7020	0000	1796	28000	27.9	5.2	9	27.9	5.2	8.5	0	0	0
9	7020	0000	1796	28000	31.8	4.8	9	31.9	4.8	8.5	0	0	0
10	7020	0000	1796	28000	35.8	4.4	9	35.9	4.4	8.5	0	0	0
11	7020	0000	1796	28000	39.8	4	9	39.9	0	2.3	0	0	32
12	7020	0000	1796	28000	39	4.2	9	39.1	4.2	8.5	0	0	0

Fittings details**Guzzini****Fittings details**

Article	Components
7020 0000 1796	Lingotto System.
	Luminaire: 7020.073 - Lingotto Metal halide floodlight - Yellow / Grey
	Lamp: 1796 - Metal halide 400W Fc2 D

Exhibition area



Illumination numeric results working surface

(Cuzzini)

Exhibition area

Illumination numeric results working surface

	B	100	139	160	164	160	151	143	134	130	120	101	69	39	C
		115	162	189	198	197	194	189	185	192	182	153	97	51	
11.0		99	142	172	190	199	205	208	219	237	241	204	126	60	
		70	103	130	148	159	169	182	201	231	246	212	132	61	8-0
	A	44	66	85	100	111	122	136	157	184	199	173	113	53	D

50

Illumination average values

Surface	Direct	Indirect	Total	g1	g2
working surface	145	0	145	0.17	0.1
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	0	0	0	0	0

Photos: Lighting engineering for INTERIORS

Code: 1105
Project NATIONAL MUSEUM
Project manager
Customer
User GALINA BAHLAWAN
Agency
Date الاربعاء ١ آذار ٢٠٠٠

WALL 5

ROOM DATA	Dimensions (regular or irregular) Characteristics (reflections, colours, finishes) Furniture and obstacles (architectural and structural)
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Fittings	Characteristics (product technical sheet) Positioning
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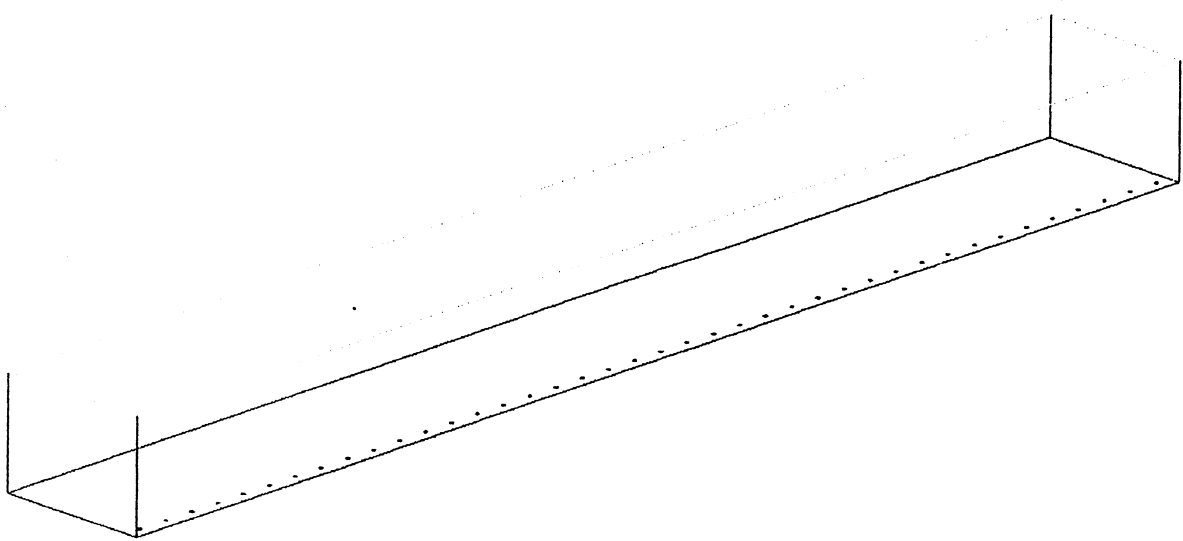
Results	Illuminance Luminance
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Rendering

Checkings on the installation may show deviations as regards lamps, ballasts, voltage position of fittings, as well as room data, compared to the nominal values indicated in this table

ROOM DATA

[Guzzini]



Room dimensions

Dimensions	[m]
Length	80
Width	10
Height	7
Working plane	0

Reflection factors

Wall dimensions

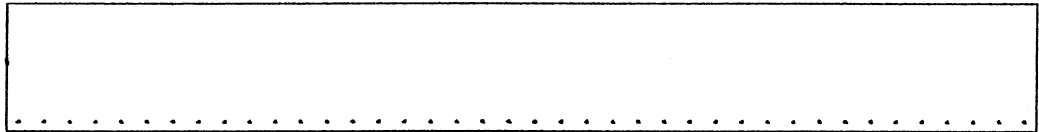
Surface	%	Width	Height
FLOOR	20	*	*
CEILING	70	*	*
Wall A-B	50	10	7
Wall B-C	50	80	7
Wall C-D	50	10	7
Wall D-A	50	80	7

Position of fittings

IGUZZINI

Exhibition area

POSITION OF FITTINGS IN THE ROOM



Positions

N°	Description			Flux Lumen	Position of fittings			Projection			Angles		
	Fitting	Acc	Lamp		X	Y	Z	X	Y	Z	A[°]	E[°]	I[°]
1	7164	0000	1676	5200	1	0.8	0	1	0.8	7	0	0	0
2	7164	0000	1676	5200	3	0.8	0	3	0.8	7	0	0	0
3	7164	0000	1676	5200	5	0.8	0	5	0.8	7	0	0	0
4	7164	0000	1676	5200	7	0.8	0	7	0.8	7	0	0	0
5	7164	0000	1676	5200	9	0.8	0	9	0.8	7	0	0	0
6	7164	0000	1676	5200	11	0.8	0	11	0.8	7	0	0	0
7	7164	0000	1676	5200	13	0.8	0	13	0.8	7	0	0	0
8	7164	0000	1676	5200	15	0.8	0	15	0.8	7	0	0	0
9	7164	0000	1676	5200	17	0.8	0	17	0.8	7	0	0	0
10	7164	0000	1676	5200	19	0.8	0	19	0.8	7	0	0	0
11	7164	0000	1676	5200	21	0.8	0	21	0.8	7	0	0	0
12	7164	0000	1676	5200	23	0.8	0	23	0.8	7	0	0	0
13	7164	0000	1676	5200	25	0.8	0	25	0.8	7	0	0	0
14	7164	0000	1676	5200	27	0.8	0	27	0.8	7	0	0	0
15	7164	0000	1676	5200	29	0.8	0	29	0.8	7	0	0	0
16	7164	0000	1676	5200	31	0.8	0	31	0.8	7	0	0	0
17	7164	0000	1676	5200	33	0.8	0	33	0.8	7	0	0	0
18	7164	0000	1676	5200	35	0.8	0	35	0.8	7	0	0	0
19	7164	0000	1676	5200	37	0.8	0	37	0.8	7	0	0	0
20	7164	0000	1676	5200	39	0.8	0	39	0.8	7	0	0	0

Position of fittings

Guzzini

Exhibition area

Position of fittings in the room

N°	Fittin	Acc	Lam	Lumen	X	Y	Z	X	Y	Z	A[°]	E[°]	I[°]
21	7164	0000	1676	5200	41	0.8	0	41	0.8	7	0	0	0
22	7164	0000	1676	5200	43	0.8	0	43	0.8	7	0	0	0
23	7164	0000	1676	5200	45	0.8	0	45	0.8	7	0	0	0
24	7164	0000	1676	5200	47	0.8	0	47	0.8	7	0	0	0
25	7164	0000	1676	5200	49	0.8	0	49	0.8	7	0	0	0
26	7164	0000	1676	5200	51	0.8	0	51	0.8	7	0	0	0
27	7164	0000	1676	5200	53	0.8	0	53	0.8	7	0	0	0
28	7164	0000	1676	5200	55	0.8	0	55	0.8	7	0	0	0
29	7164	0000	1676	5200	57	0.8	0	57	0.8	7	0	0	0
30	7164	0000	1676	5200	59	0.8	0	59	0.8	7	0	0	0
31	7164	0000	1676	5200	61	0.8	0	61	0.8	7	0	0	0
32	7164	0000	1676	5200	63	0.8	0	63	0.8	7	0	0	0
33	7164	0000	1676	5200	65	0.8	0	65	0.8	7	0	0	0
34	7164	0000	1676	5200	67	0.8	0	67	0.8	7	0	0	0
35	7164	0000	1676	5200	69	0.8	0	69	0.8	7	0	0	0
36	7164	0000	1676	5200	71	0.8	0	71	0.8	7	0	0	0
37	7164	0000	1676	5200	73	0.8	0	73	0.8	7	0	0	0
38	7164	0000	1676	5200	75	0.8	0	75	0.8	7	0	0	0
39	7164	0000	1676	5200	77	0.8	0	77	0.8	7	0	0	0
40	7164	0000	1676	5200	79	0.8	0	79	0.8	7	0	0	0

Fittings details**(Guzzini)**

Fittings details

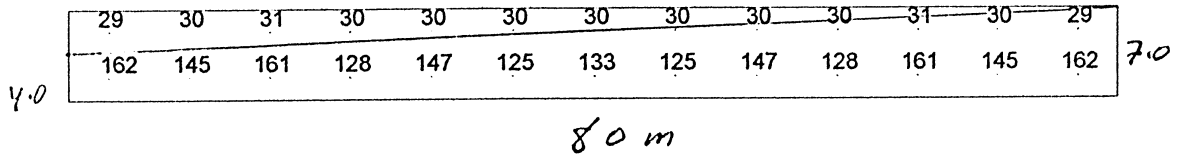
Article	Components
7164 0000 1676	Light Up System.
	Luminaire: 7164.013 - Light-Up Garden Metal Halide floodlight - fixed
	Lamp: 1676 - Metal halide 70W G12 WDL

Illumination numeric results Wall D-A

(Guzzini)

Exhibition area

Illumination numeric results Wall D-A



Illumination average values

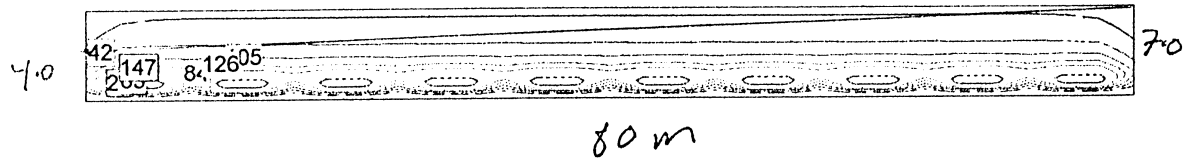
Surface	Direct	Indirect	Total	g1	g2
working surface	0	0	0	0	0
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	61	0	61	0	0

ISOLUX DIAGRAM ON Wall D-A

IGUZZINI

Exhibition area

ISOLUX DIAGRAM ON Wall D-A



Illumination average values

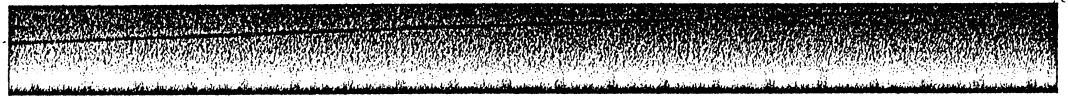
Surface	Direct	Indirect	Total	g1	g2
working surface	0	0	0	0	0
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	61	0	61	0	0

Shades of grey illuminance display Wall D-A

ICUZZINI

Exhibition area

Shades of grey illuminance display Wall D-A



Illumination average values

Surface	Direct	Indirect	Total	g1	g2
working surface	0	0	0	0	0
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	61	0	61	0	0

Photos: Lighting engineering for INTERIORS

Code: 1106
Project NATIONAL MUSEUM
Project manager
Customer
User GALINA BAHLAWAN
Agency
Date الاربعاء ١ آذار ٢٠٠٠

WALL 6

ROOM DATA	Dimensions (regular or irregular) Characteristics (reflections, colours, finishes) Furniture and obstacles (architectural and structural)
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Fittings	Characteristics (product technical sheet) Positioning
-----------------	--

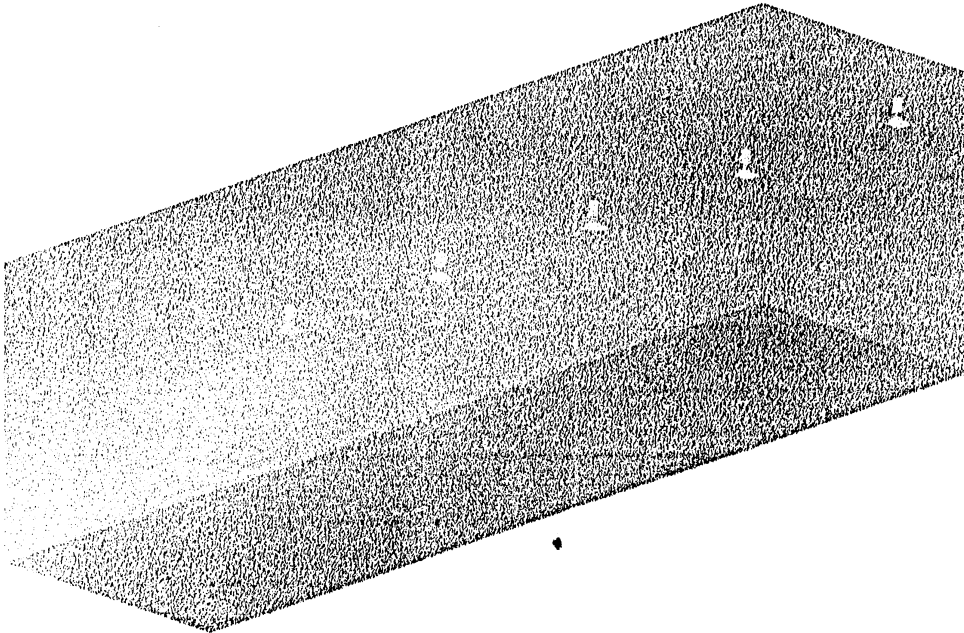
Results	Illuminance Luminance
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Rendering

Checkings on the installation may show deviations as regards lamps, ballasts, voltage position of fittings, as well as room data, compared to the nominal values indicated in this table

ROOM DATA

(Guzzini)



Room dimensions

Dimensions	[m]
Length	20
Width	5.5
Height	6
Working plane	0

Reflection factors

Wall dimensions

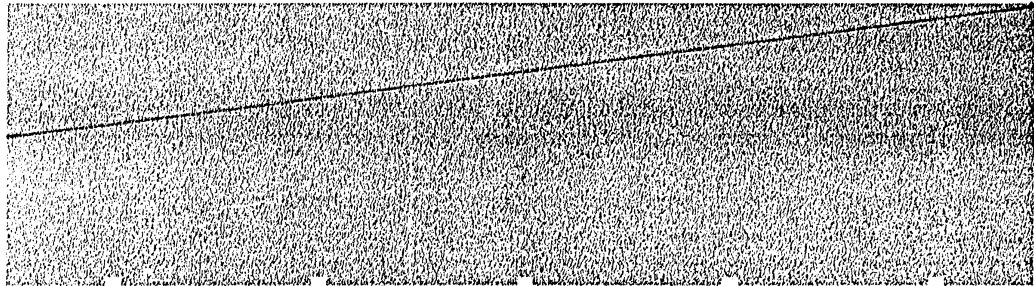
Surface	%	Width	Height
FLOOR	20	*	*
CEILING	70	*	*
Wall A-B	50	5.5	6
Wall B-C	50	20	6
Wall C-D	50	5.5	6
Wall D-A	50	20	6

Position of fittings

IGUZZINI

Exhibition area

POSITION OF FITTINGS IN THE ROOM



5.5

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Positions

N°	Description			Flux	Position of fittings			Projection			Angles		
	Fitting	Acc	Lamp	Lumen	X	Y	Z	X	Y	Z	A[°]	E[°]	I[°]
1	7020	0000	1796	28000	2	0	6	2.1	0	5.5	0	0	0
2	7020	0000	1796	28000	6	0	6	6.1	0	5.5	0	0	0
3	7020	0000	1796	28000	10	0	6	10.1	0	5.5	0	0	0
4	7020	0000	1796	28000	14	0	6	14.1	0	5.5	0	0	0
5	7020	0000	1796	28000	18	0	6	18.1	0	5.5	0	0	0

Fittings details**Fittings details**

Article	Components
7020 0000 1796	Lingotto System.
	Luminaire: 7020.073 - Lingotto Metal halide floodlight - Yellow / Grey
	Lamp: 1796 - Metal halide 400W Fc2 D

Illumination numeric results working surface

GUZZINI

Exhibition area

Illumination numeric results working surface

B	31	51	65	78	91	98	105	106	107	109	105	101	88	C
	42	71	91	107	125	134	141	144	144	147	144	135	119	
	55	96	124	140	166	174	185	190	185	191	188	174	158	
	69	125	158	179	213	220	235	241	230	243	235	218	202	
	81	150	192	213	261	259	278	288	271	291	279	261	241	
A	93	167	221	238	293	295	305	319	302	323	313	288	268	D

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20. —

Illumination average values

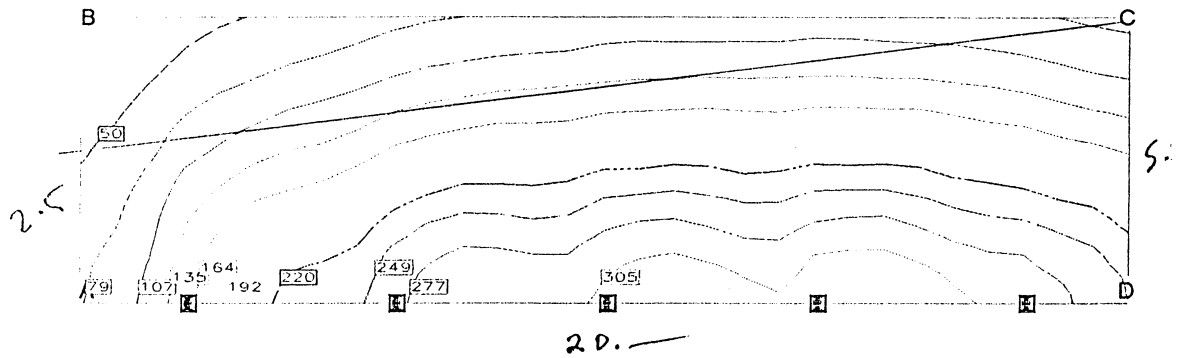
Surface	Direct	Indirect	Total	g1	g2
working surface	175	0	175	0.12	0.07
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	0	0	0	0	0

ISOLUX DIAGRAM ON working surface

(Guzzini)

Exhibition area

ISOLUX DIAGRAM ON working surface



Illumination average values

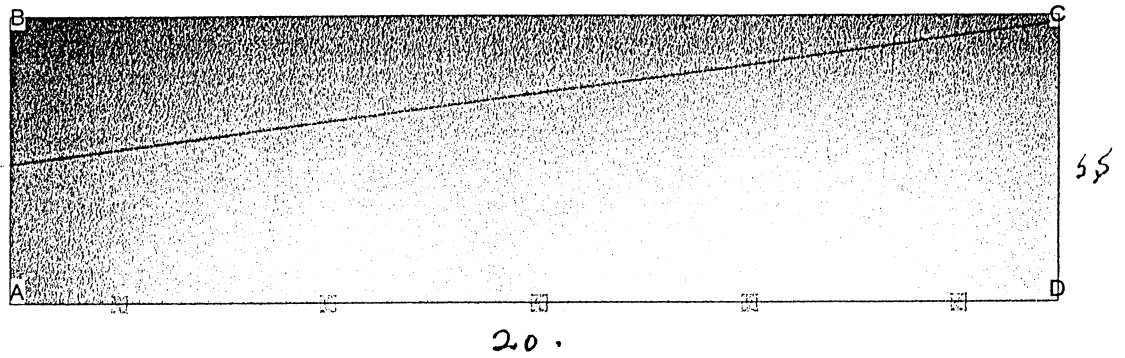
Surface	Direct	Indirect	Total	g1	g2
working surface	175	0	175	0.12	0.07
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	0	0	0	0	0

Shades of grey illuminance display working surface

(Guzzini)

Exhibition area

Shades of grey illuminance display working surface



Illumination average values

Surface	Direct	Indirect	Total	g1	g2
working surface	175	0	175	0.12	0.07
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	0	0	0	0	0

Photos: Lighting engineering for INTERIORS

Code: 1107
Project NATIONAL MUSEUM
Project manager
Customer
User GALINA BAHLAWAN
Agency
Date الاربعاء ١ آذار ٢٠٠٠

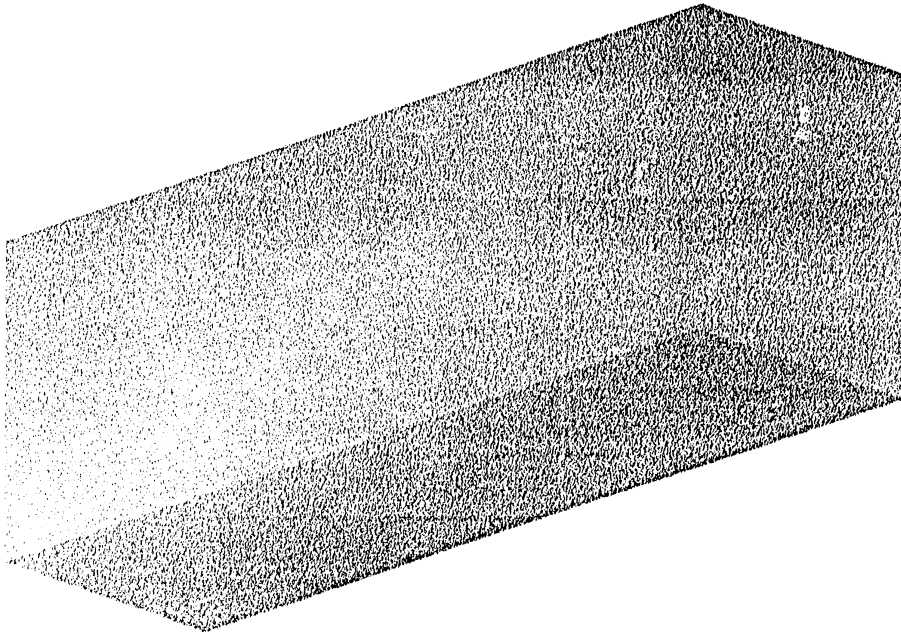
WALL 7

ROOM DATA	Dimensions (regular or irregular) Characteristics (reflections, colours, finishes) Furniture and obstacles (architectural and structural)
Fittings	Characteristics (product technical sheet) Positioning
Results	Illuminance Luminance
Rendering	

Checkings on the installation may show deviations as regards lamps, ballasts, voltage position of fittings, as well as room data, compared to the nominal values indicated in this table

ROOM DATA

(Guzzini)



Room dimensions

Dimensions	[m]
Length	17
Width	5
Height	6
Working plane	0

Reflection factors

Wall dimensions

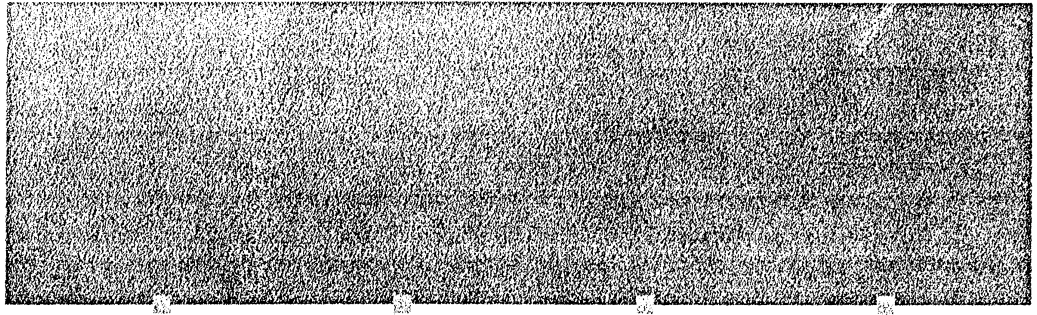
Surface	%	Width	Height
FLOOR	20	*	*
CEILING	70	*	*
Wall A-B	50	5	6
Wall B-C	50	17	6
Wall C-D	50	5	6
Wall D-A	50	17	6

Position of fittings

(Guzzini)

Exhibition area

POSITION OF FITTINGS IN THE ROOM



Positions

N°	Description			Flux	Position of fittings			Projection			Angles		
	Fitting	Acc	Lamp	Lumen	X	Y	Z	X	Y	Z	A[°]	E[°]	I[°]
1	7020	0000	1796	28000	2.5	0	6	2.6	0	5.5	0	0	0
2	7020	0000	1796	28000	6.5	0	6	6.6	0	5.5	0	0	0
3	7020	0000	1796	28000	10.5	0	6	10.6	0	5.5	0	0	0
4	7020	0000	1796	28000	14.5	0	6	14.6	0	5.5	0	0	0

Fittings details**ICUZZINI**

Fittings details

Article	Components
7020 0000 1796	Lingotto System.
	Luminaire: 7020.073 - Lingotto Metal halide floodlight - Yellow / Grey
	Lamp: 1796 - Metal halide 400W Fc2 D

Illumination numeric results working surface

(Guzzini)

Exhibition area

Illumination numeric results working surface

B	30	45	65	78	89	103	111	114	120	120	115	107	96	C
	38	58	83	100	113	131	141	144	151	152	144	134	122	
	45	72	104	127	140	163	177	176	185	189	175	163	152	
	55	88	128	153	171	198	211	212	224	224	211	198	180	
	63	101	155	179	199	236	245	244	263	262	244	231	209	
	73	109	176	206	223	267	276	271	297	294	275	260	235	
	78	117	190	224	240	287	298	292	318	316	295	280	252	D
A														

Illumination average values

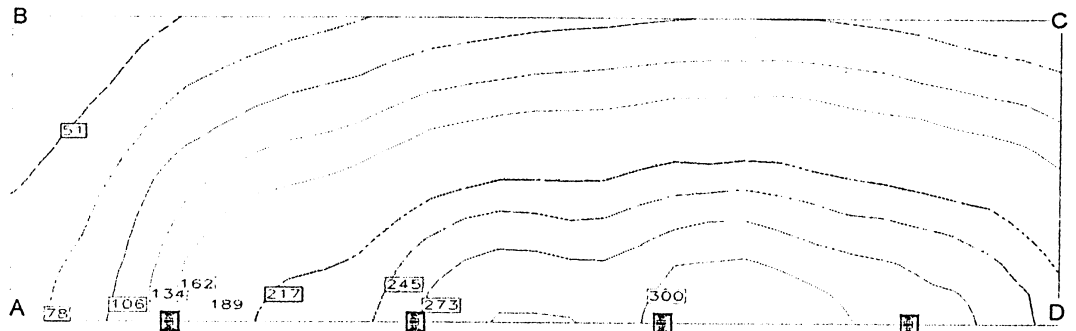
Surface	Direct	Indirect	Total	g1	g2
working surface	170	0	170	0.13	0.07
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	0	0	0	0	0

ISOLUX DIAGRAM ON working surface

(Guzzini)

Exhibition area

ISOLUX DIAGRAM ON working surface



Illumination average values

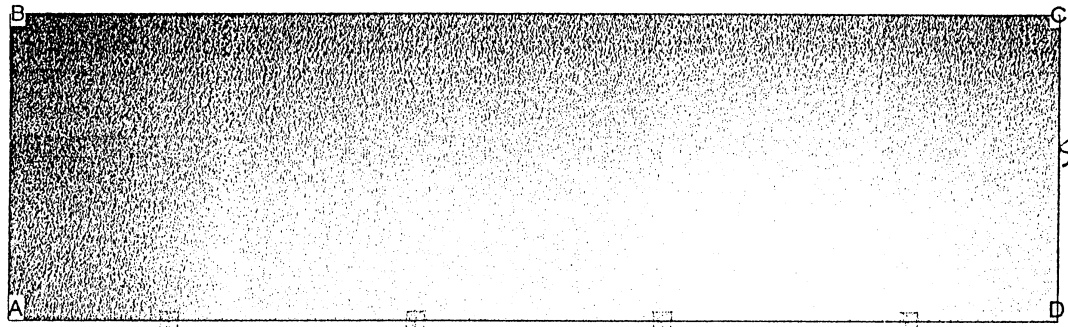
Surface	Direct	Indirect	Total	g1	g2
working surface	170	0	170	0.13	0.07
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	0	0	0	0	0

Shades of grey illuminance display working surface

IGuzzini

Exhibition area

Shades of grey illuminance display working surface



Illumination average values

Surface	Direct	Indirect	Total	g1	g2
working surface	170	0	170	0.13	0.07
FLOOR	0	0	0	0	0
CEILING	0	0	0	0	0
Wall A-B	0	0	0	0	0
Wall B-C	0	0	0	0	0
Wall C-D	0	0	0	0	0
Wall D-A	0	0	0	0	0

CABLE NO.	LOCATION	BRK	AMP (A)	L (m)	%VD	SIZE (mm ²)	NOTES	
1	MDB. 1835	300	2477 2477	15	0.45	4X500	0.8TJS.7	
2	SMDS. 248.4	600	446	80m	1.1	2X185	3.96TJS.2 4.7TJS.9	22.8KA
3	PRS3.	40	33.4	40m	1.2	10	73.2 77.1TJS.9	2.11KA
4	PRS1	89	59.6	10m	0.2	2.5	7.27TJS.9 11.97TJS.8	14.8KA
5	DS6	200	135.5	10m	0.16	9.5	1.93TJS.2 6.63TJS.7	19.6KA
6	DS4	100	77.8	40m	0.86	3.5	21.13.2 25.7TJS.1	8.1KA
7	DS3	80	67.0	40m	1.0	2.5	29.1TJS.6 33.72TJS.5	6.3KA
8	DS1	80	53.6	10m	0.2	2.5	7.27TJS.9 11.97TJS.8	14.9KA
9	SMDG1	600	424.4	55m	0.78	2X185	2.75TJS.2 3.5TJS.9	26.6KA
10	DRG1	80	65.6	10	6.2	2.5	7.27TJS.9 10.97TJS.2	16.5KA
11								
12	DG2	200	155.5	10	0.16	9.5	1.93TJS.2 5.1TJS.9	22.9KA
13	DG3	100	77.2	40	0.85	3.5	20.16TJS.2 24.4TJS.1	8.6KA
14	DG1	100	81	10	0.2	3.5	5.21TJS.2 8.7TJS.9	18.9KA
15	DF1	60	54.2	48	0.98	2.5	34.2TJS.3 38.1TJS.2	5.9KA
16	SMDG2. 12.6.5	300	232.2	120m	1.29	300		13KA
17	SMDK 46.57	175	137.8	40m	0.59	9.5		11KA
18	MCC-5 56.95	150	102.4	35m	0.99	3.5		
19	DK 8.5	40	15.3	35m	0.5	10		
20	SM 53.4	105	96.12	40m	0.19	50		8.2KA