

รายการอ้างอิง

ภาษาไทย

กรมพัฒนาและส่งเสริมพลังงาน. คู่มือการอนุรักษ์พลังงานในอาคาร. กรุงเทพมหานคร:

โรงพิมพ์มหาวิทยาลัยธรรมศาสตร์, 2538

มานะ หุตินทะ. แนวทางการออกแบบโดยใช้แสงธรรมชาติในโรงงานอุตสาหกรรม.

วิทยานิพนธ์ปริญญาโทมหาบัณฑิต ภาควิชาสถาปัตยกรรมศาสตร์

บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย, 2538.

วิช ครอบประเสริฐ. ประสิทธิภาพในการนำแสงธรรมชาติมาใช้ในสำนักงานทั่วไป.

วิทยานิพนธ์ปริญญาโทมหาบัณฑิต ภาควิชาสถาปัตยกรรมศาสตร์

บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย, 2537.

ภาษาอังกฤษ

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สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย



ภาคผนวก

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

DAYLIGHT DISTRIBUTION AT 21 MARCH & 24 SEPTEMBER : MODEL 1																					
OPENING SIDE		NORTH					EAST					SOUTH					WEST				
		Skydome			Eh		Skydome			Eh		Skydome			Eh		Skydome			Eh	
		int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL
8:00	1	169	1160	0.146	1150	168						172	1160	0.148	1150	171	151	1160	0.130	1150	150
	2	72	1160	0.062	1150	71						74	1160	0.064	1150	73	65	1160	0.056	1150	64
	3	43	1160	0.037	1150	43	DIRECT SUN EFFECT					46	1160	0.040	1150	46	39	1160	0.034	1150	39
	4	34	1160	0.029	1150	34						34	1160	0.029	1150	34	28.5	1160	0.025	1150	28
	5	28	1160	0.024	1150	28						30	1160	0.026	1150	30	24	1160	0.021	1150	24
	6	28	1160	0.024	1150	27						29.5	1160	0.025	1150	29	23.5	1160	0.020	1150	23
10:00	1											197	1880	0.105	1700	173	151	1880	0.080	1700	137
	2											98	1880	0.052	1700	89	65.5	1880	0.035	1700	59
	3	DIRECT SUN EFFECT					DIRECT SUN EFFECT					63	1880	0.034	1700	57	39	1880	0.021	1700	35
	4											46	1880	0.024	1700	42	29	1880	0.015	1700	26
	5											38	1880	0.020	1700	34	24.5	1880	0.013	1700	22
	6											32	1880	0.017	1700	29	24	1880	0.013	1700	22
12:00	1					167	1950	0.086	1800	154							164	1950	0.084	1800	151
	2					71	1950	0.036	1800	66							73	1950	0.037	1800	67
	3	DIRECT SUN EFFECT					42	1950	0.022	1800	39	DIRECT SUN EFFECT					43	1950	0.022	1800	40
	4					31.5	1950	0.016	1800	29							31.5	1950	0.016	1800	29
	5					26.5	1950	0.014	1800	24							26.5	1950	0.014	1800	24
	6					26.2	1950	0.013	1800	24							26.5	1950	0.014	1800	24
14:00	1					149	1880	0.079	1700	135	195	1880	0.104	1700	175						
	2					64.5	1880	0.034	1700	58	97	1880	0.052	1700	88						
	3	DIRECT SUN EFFECT					38.5	1880	0.020	1700	35	62	1880	0.033	1700	56	DIRECT SUN EFFECT				
	4					29	1880	0.015	1700	26	45	1880	0.024	1700	41						
	5					24.5	1880	0.013	1700	22	37	1880	0.020	1700	33						
	6					24	1880	0.013	1700	22	36.5	1880	0.019	1700	33						
16:00	1	170	1160	0.146	1150	168	152.5	1160	0.131	1150	151	172	1160	0.148	1150	171					
	2	74	1160	0.064	1150	73	66	1160	0.057	1150	65	73	1160	0.063	1150	72					
	3	44	1160	0.038	1150	43	39.5	1160	0.034	1150	39	46	1160	0.040	1150	46	DIRECT SUN EFFECT				
	4	34	1160	0.029	1150	34	29	1160	0.025	1150	29	34	1160	0.029	1150	34					
	5	28	1160	0.024	1150	28	24.7	1160	0.021	1150	24	29.5	1160	0.025	1150	29					
	6	28	1160	0.024	1150	28	24.5	1160	0.021	1150	24	29.5	1160	0.025	1150	29					

DAYLIGHT DISTRIBUTION AT 21 MARCH & 24 SEPTEMBER : MODEL 8

OPENING SIDE	DAYLIGHT DISTRIBUTION AT 21 MARCH & 24 SEPTEMBER : MODEL 8																							
	NORTH						EAST						SOUTH						WEST					
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh		
	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL				
8:00	1	108.0	1160	0.093	1150	107						130	1160	0.112	1150	129	98	1160	0.084	1150	97			
	2	61.00	1160	0.053	1150	60						71	1160	0.061	1150	70	95	1160	0.082	1150	94			
	3	39.00	1160	0.034	1150	39	DIRECT SUN EFFECT					41	1160	0.035	1150	41	36	1160	0.031	1150	36			
	4	28.50	1160	0.025	1150	28						32	1160	0.028	1150	32	26	1160	0.022	1150	26			
	5	24.00	1160	0.021	1150	24						27	1160	0.023	1150	27	22	1160	0.019	1150	22			
	6	23.50	1160	0.020	1150	23						27	1160	0.023	1150	27	21.5	1160	0.019	1150	21			
10:00	1	101.0	1880	0.054	1700	91						145	1880	0.077	1700	131	97	1880	0.052	1700	88			
	2	58.00	1880	0.031	1700	52						78	1880	0.041	1700	71	54.5	1880	0.029	1700	49			
	3	37.50	1880	0.020	1700	34	DIRECT SUN EFFECT					48	1880	0.026	1700	45	35	1880	0.019	1700	32			
	4	27.50	1880	0.015	1700	25						35	1880	0.019	1700	32	25.5	1880	0.014	1700	23			
	5	22.50	1880	0.013	1700	21						29	1880	0.015	1700	26	21.5	1880	0.011	1700	19			
	6	23.50	1880	0.013	1700	21						28	1880	0.015	1700	25	21.5	1880	0.011	1700	19			
12:00	1	97.00	1950	0.050	1800	90	105	1950	0.054	1800	97	142	1950	0.073	1800	131	107	1950	0.055	1800	99			
	2	52.50	1950	0.027	1800	48	58	1950	0.030	1800	54	67	1950	0.034	1800	62	59	1950	0.030	1800	54			
	3	53.50	1950	0.017	1800	31	57.5	1950	0.029	1800	53	48.5	1950	0.025	1800	45	58.5	1950	0.030	1800	54			
	4	24.50	1950	0.013	1800	23	28	1950	0.014	1800	26	34.5	1950	0.018	1800	32	28	1950	0.014	1800	26			
	5	21.00	1950	0.011	1800	19	24	1950	0.012	1800	22	28.5	1950	0.015	1800	26	24	1950	0.012	1800	22			
	6	21.00	1950	0.011	1800	19	24	1950	0.012	1800	22	28.5	1950	0.015	1800	26	24	1950	0.012	1800	22			
14:00	1	103.0	1880	0.055	1700	93	96	1880	0.051	1700	87	143	1880	0.076	1700	129								
	2	59.00	1880	0.031	1700	53	53	1880	0.028	1700	48	77.5	1880	0.041	1700	70								
	3	38.50	1880	0.020	1700	35	34	1880	0.018	1700	31	46.5	1880	0.025	1700	42	DIRECT SUN EFFECT							
	4	28.00	1880	0.015	1700	25	25	1880	0.015	1700	23	33.5	1880	0.018	1700	30								
	5	24.00	1880	0.013	1700	22	21	1880	0.011	1700	19	28	1880	0.015	1700	25								
	6	24.00	1880	0.013	1700	22	21	1880	0.011	1700	19	27	1880	0.014	1700	24								
16:00	1	110.0	1160	0.095	1150	109	97	1160	0.084	1150	96	128	1160	0.110	1150	127								
	2	62.00	1160	0.053	1150	61	94	1160	0.081	1150	93	69.5	1160	0.060	1150	69								
	3	40.00	1160	0.034	1150	40	35	1160	0.030	1150	35	40.5	1160	0.035	1150	40	DIRECT SUN EFFECT							
	4	29.00	1160	0.025	1150	29	25	1160	0.022	1150	25	32	1160	0.028	1150	32								
	5	25.00	1160	0.022	1150	25	21.5	1160	0.019	1150	21	26.5	1160	0.023	1150	26								
	6	25.00	1160	0.022	1150	25	21	1160	0.018	1150	21	26.5	1160	0.023	1150	26								

DAYLIGHT DISTRIBUTION AT 21 MARCH & 24 SEPTEMBER : MODEL 6

OPENING SIDE	NORTH										EAST					SOUTH					WEST									
	Skydome					Eh					Skydome					Eh					Skydome					Eh				
	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL					
8:00	1	105.0	1160	0.091	1150	104									131	1160	0.113	1150	130	83	1160	0.072	1150	82						
	2	69.00	1160	0.059	1150	68									80	1160	0.069	1150	79	52	1160	0.045	1150	52						
	3	43.00	1160	0.037	1150	43	DIRECT SUN EFFECT					50	1160	0.043	1150	50	33	1160	0.028	1150	33									
	4	32.00	1160	0.028	1150	32									36	1160	0.031	1150	36	24.5	1160	0.021	1150	24						
	5	26.50	1160	0.023	1150	26									30	1160	0.026	1150	30	20	1160	0.017	1150	20						
	6	25.00	1160	0.022	1150	25									29	1160	0.025	1150	29	19	1160	0.016	1150	19						
10:00	1	101.0	1880	0.054	1700	91									132	1880	0.070	1700	119	85	1880	0.045	1700	77						
	2	65.00	1880	0.035	1700	59									82	1880	0.044	1700	74	53	1880	0.028	1700	48						
	3	43.00	1880	0.023	1700	39	DIRECT SUN EFFECT					56	1880	0.030	1700	51	34	1880	0.018	1700	31									
	4	31.00	1880	0.016	1700	28									39	1880	0.021	1700	35	25.5	1880	0.014	1700	23						
	5	27.50	1880	0.015	1700	25									32	1880	0.017	1700	29	21	1880	0.011	1700	19						
	6	27.00	1880	0.014	1700	24									30	1880	0.016	1700	27	20	1880	0.011	1700	18						
12:00	1	89.00	1950	0.046	1800	82	95	1950	0.049	1800	88	180	1950	0.092	1800	166	93	1950	0.050	1800	90									
	2	54.50	1950	0.028	1800	50	60	1950	0.031	1800	55	100	1950	0.051	1800	92	61	1950	0.051	1800	56									
	3	34.50	1950	0.018	1800	32	39	1950	0.020	1800	36	63	1950	0.032	1800	58	38.5	1950	0.020	1800	36									
	4	24.50	1950	0.013	1800	23	28.5	1950	0.015	1800	25	44	1950	0.023	1800	41	28	1950	0.014	1800	26									
	5	20.80	1950	0.011	1800	19	23.5	1950	0.012	1800	22	36	1950	0.018	1800	33	24.2	1950	0.012	1800	22									
	6	20.50	1950	0.011	1800	19	23	1950	0.012	1800	21	35	1950	0.018	1800	32	24.2	1950	0.012	1800	22									
14:00	1	102.5	1880	0.055	1700	93	86	1880	0.046	1700	78	130	1880	0.069	1700	118														
	2	66.00	1880	0.035	1700	60	55	1880	0.029	1700	50	80	1880	0.043	1700	72														
	3	43.50	1880	0.023	1700	39	34	1880	0.018	1700	31	54	1880	0.029	1700	49	DIRECT SUN EFFECT													
	4	32.00	1880	0.017	1700	29	24	1880	0.013	1700	22	37.5	1880	0.020	1700	34														
	5	28.00	1880	0.015	1700	25	20	1880	0.011	1700	18	30.5	1880	0.016	1700	28														
	6	27.00	1880	0.014	1700	24	19.5	1880	0.010	1700	18	29	1880	0.015	1700	26														
16:00	1	106.0	1160	0.091	1150	105	85	1160	0.073	1150	84	129	1160	0.111	1150	128														
	2	70.00	1160	0.060	1150	69	54	1160	0.047	1150	54	78	1160	0.067	1150	77														
	3	45.00	1160	0.039	1150	45	35	1160	0.030	1150	35	48.5	1160	0.042	1150	48	DIRECT SUN EFFECT													
	4	33.00	1160	0.028	1150	33	25	1160	0.022	1150	25	35	1160	0.030	1150	35														
	5	27.50	1160	0.024	1150	27	20	1160	0.017	1150	20	29	1160	0.025	1150	29														
	6	27.00	1160	0.023	1150	27	19	1160	0.016	1150	19	28	1160	0.024	1150	28														

DAYLIGHT DISTRIBUTION AT 21 MARCH & 24 SEPTEMBER : MODEL 9

OPENING SID	NORTH						EAST						SOUTH						WEST					
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh		
	int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL	
8:00	1		1160	0.000	1150	0.0							62	1160	0.053	1150	61.5		52	1160	0.045	1150	51.6	
	2		1160	0.000	1150	0.0							39	1160	0.034	1150	38.7		33.5	1160	0.029	1150	33.2	
	3		1160	0.000	1150	0.0	DIRECT SUN EFFECT						28	1160	0.024	1150	27.8		23.5	1160	0.020	1150	23.3	
	4		1160	0.000	1150	0.0								21.5	1160	0.019	1150	21.3		17.5	1160	0.015	1150	17.3
	5		1160	0.000	1150	0.0								18	1160	0.016	1150	17.8		14	1160	0.012	1150	13.9
	6		1160	0.000	1150	0.0								18	1160	0.016	1150	17.8		14	1160	0.012	1150	13.9
10:00	1		1880	0.000	1700	0.0	350	1880	0.186	1700	316.5		75	1880	0.040	1700	67.8		53	1880	0.028	1700	47.9	
	2		1880	0.000	1700	0.0	187	1880	0.099	1700	169.1		54.5	1880	0.029	1700	49.3		35	1880	0.019	1700	31.6	
	3		1880	0.000	1700	0.0	88	1880	0.047	1700	79.6		36.5	1880	0.019	1700	33.0		24	1880	0.013	1700	21.7	
	4		1880	0.000	1700	0.0	51	1880	0.027	1700	46.1		27	1880	0.014	1700	24.4		18	1880	0.010	1700	16.3	
	5		1880	0.000	1700	0.0	29	1880	0.015	1700	26.2		23	1880	0.012	1700	20.8		15	1880	0.008	1700	13.6	
	6		1880	0.000	1700	0.0	28.5	1880	0.015	1700	25.8		23	1880	0.012	1700	20.8		15	1880	0.008	1700	13.6	
12:00	1		1950	0.000	1800	0.0	59.5	1950	0.031	1800	54.9		86.5	1950	0.044	1800	79.8		64	1950	0.033	1800	59.1	
	2		1950	0.000	1800	0.0	36.5	1950	0.019	1800	33.7		50.5	1950	0.026	1800	46.0		37.5	1950	0.019	1800	34.6	
	3		1950	0.000	1800	0.0	25	1950	0.013	1800	23.1		33.5	1950	0.017	1800	30.9		26	1950	0.013	1800	24.0	
	4		1950	0.000	1800	0.0	18.5	1950	0.009	1800	17.1		25	1950	0.013	1800	23.1		19.5	1950	0.010	1800	18.0	
	5		1950	0.000	1800	0.0	16	1950	0.008	1800	14.8		21	1950	0.011	1800	19.4		17	1950	0.009	1800	15.7	
	6		1950	0.000	1800	0.0	16	1950	0.008	1800	14.8		21	1950	0.011	1800	19.4		17	1950	0.009	1800	15.7	
14:00	1		1880	0.000	1700	0.0	51	1880	0.027	1700	46.1		75	1880	0.040	1700	67.8		370	1880	0.197	1700	334.6	
	2		1880	0.000	1700	0.0	32	1880	0.017	1700	28.9		42	1880	0.022	1700	38.0		210	1880	0.112	1700	189.9	
	3		1880	0.000	1700	0.0	22	1880	0.012	1700	19.9		29	1880	0.015	1700	26.2		97	1880	0.052	1700	87.7	
	4		1880	0.000	1700	0.0	17	1880	0.009	1700	15.4		22	1880	0.012	1700	19.9		56	1880	0.030	1700	50.6	
	5		1880	0.000	1700	0.0	14	1880	0.007	1700	12.7		18.5	1880	0.010	1700	16.7		30.5	1880	0.016	1700	27.6	
	6		1880	0.000	1700	0.0	14	1880	0.007	1700	12.7		18.5	1880	0.010	1700	16.7		30	1880	0.016	1700	27.1	
16:00	1		1160	0.000	1150	0	50	1160	0.043	1150	50		60	1160	0.052	1150	59							
	2		1160	0.000	1150	0.0	31.5	1160	0.027	1150	31.2		37	1160	0.032	1150	36.7							
	3		1160	0.000	1150	0.0	21.5	1160	0.019	1150	21.3		27	1160	0.023	1150	26.8	DIRECT SUN EFFECT						
	4		1160	0.000	1150	0.0	16.5	1160	0.014	1150	16.4		19.5	1160	0.017	1150	19.3							
	5		1160	0.000	1150	0.0	13.5	1160	0.012	1150	13.4		16.5	1160	0.014	1150	16.4							
	6		1160	0.000	1150	0.0	13.5	1160	0.012	1150	13.4		16.5	1160	0.014	1150	16.4							

DAYLIGHT DISTRIBUTION AT 21 MARCH & 24 SEPTEMBER : MODEL 10

OPENING SID	NORTH						EAST						SOUTH						WEST					
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh		
	int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL	
8:00	1	75.00	1160	0.065	1150	74.4							90	1160	0.078	1150	89.2	69	1160	0.059	1150	68.4		
	2	44.50	1160	0.038	1150	44.1							55	1160	0.047	1150	54.5	41	1160	0.035	1150	40.6		
	3	33.00	1160	0.028	1150	32.7	DIRECT SUN EFFECT						35	1160	0.030	1150	34.7	27	1160	0.023	1150	26.8		
	4	23.50	1160	0.020	1150	23.3								27	1160	0.023	1150	26.8	29	1160	0.017	1150	19.8	
	5	19.80	1160	0.017	1150	19.6								23	1160	0.020	1150	22.8	16.7	1160	0.014	1150	16.6	
	6	19.80	1160	0.017	1150	19.6								23	1160	0.020	1150	22.8	16.5	1160	0.014	1150	16.4	
10:00	1	75.50	1880	0.040	1700	68.3	473	1880	0.252	1700	427.7	124	1880	0.066	1700	112.1	71	1880	0.038	1700	64.2			
	2	45.00	1880	0.024	1700	40.7	240	1880	0.128	1700	217.0	72	1880	0.038	1700	65.1	41	1880	0.022	1700	37.1			
	3	31.00	1880	0.016	1700	28.0	111	1880	0.059	1700	100.4	40	1880	0.024	1700	41.5	27.5	1880	0.015	1700	24.9			
	4	23.00	1880	0.012	1700	20.8	60	1880	0.032	1700	54.3	34	1880	0.018	1700	30.7	20	1880	0.011	1700	18.1			
	5	19.50	1880	0.010	1700	17.6	33	1880	0.018	1700	29.8	27	1880	0.014	1700	24.4	17	1880	0.009	1700	15.4			
	6	19.50	1880	0.010	1700	17.6	32	1880	0.017	1700	28.9	26	1880	0.014	1700	23.5	17	1880	0.009	1700	15.4			
12:00	1	69.00	1950	0.035	1800	63.7	82	1950	0.042	1800	75.7	140	1950	0.072	1800	129.2	84	1950	0.043	1800	77.5			
	2	39.00	1950	0.020	1800	36.0	46	1950	0.024	1800	42.5	80	1950	0.041	1800	73.8	49	1950	0.025	1800	45.2			
	3	27.00	1950	0.014	1800	24.9	32	1950	0.016	1800	29.5	52	1950	0.027	1800	48.0	32	1950	0.016	1800	29.5			
	4	20.00	1950	0.010	1800	18.5	24	1950	0.012	1800	22.2	38	1950	0.019	1800	35.1	24	1950	0.012	1800	22.2			
	5	17.00	1950	0.009	1800	15.7	21	1950	0.011	1800	12.4	30	1950	0.015	1800	27.7	22	1950	0.011	1800	20.3			
	6	16.70	1950	0.009	1800	15.4	20	1950	0.010	1800	18.5	28	1950	0.014	1800	25.8	21	1950	0.011	1800	15.4			
14:00	1	78.00	1880	0.041	1700	70.5	71	1880	0.038	1700	64.2	130	1880	0.069	1700	117.6	480	1880	0.255	1700	434.0			
	2	45.00	1880	0.024	1700	40.7	39	1880	0.021	1700	35.3	73	1880	0.040	1700	67.8	250	1880	0.133	1700	226.1			
	3	31.00	1880	0.016	1700	28.0	26	1880	0.014	1700	23.5	48	1880	0.026	1700	43.4	115	1880	0.061	1700	104.0			
	4	23.00	1880	0.012	1700	20.8	20	1880	0.011	1700	18.1	35	1880	0.019	1700	31.6	62	1880	0.033	1700	56.1			
	5	19.50	1880	0.010	1700	17.6	15.5	1880	0.009	1700	14.9	28	1880	0.015	1700	25.3	34	1880	0.018	1700	30.7			
	6	19.50	1880	0.010	1700	17.6	16	1880	0.009	1700	14.5	27	1880	0.014	1700	24.4	33	1880	0.018	1700	29.8			
16:00	1	80.00	1160	0.069	1150	79	70	1160	0.060	1150	69	97	1160	0.084	1150	96								
	2	45.50	1160	0.039	1150	45.1	39.5	1160	0.034	1150	32.2	59	1160	0.051	1150	58.5								
	3	32.00	1160	0.028	1150	31.7	27	1160	0.023	1150	26.8	38.5	1160	0.033	1150	38.2	DIRECT SUN EFFECT							
	4	23.00	1160	0.020	1150	22.3	19.5	1160	0.017	1150	19.3	30	1160	0.026	1150	29.7								
	5	20.00	1160	0.017	1150	19.8	16.5	1160	0.014	1150	16.4	26	1160	0.022	1150	25.8								
	6	20.00	1160	0.017	1150	19.8	16.5	1160	0.014	1150	16.4	26	1160	0.022	1150	25.8								

DAYLIGHT DISTRIBUTION AT 21 MARCH & 24 SEPTEMBER : MODEL 11

OPENING SID	NORTH						EAST						SOUTH						WEST					
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh		
	int	ext	DF	EXT ILI	INT ILI		int	ext	DF	EXT ILI	INT ILI		int	ext	DF	EXT ILI	INT ILI		int	ext	DF	EXT ILI	INT ILI	
8:00	1	45.50	1160	0.039	1150	45.1	310	1160	0.207	1150	307.3		49	1160	0.042	1150	48.6		49	1160	0.042	1150	48.6	
	2	28.00	1160	0.024	1150	27.8	145	1160	0.125	1150	143.8		28	1160	0.024	1150	27.8		23	1160	0.020	1150	22.8	
	3	18.00	1160	0.016	1150	17.8	64	1160	0.055	1150	63.4		19	1160	0.016	1150	18.8		15.5	1160	0.013	1150	15.4	
	4	13.00	1160	0.011	1150	12.9	35.5	1160	0.031	1150	35.2		15	1160	0.013	1150	14.9		12	1160	0.010	1150	11.9	
	5	11.00	1160	0.009	1150	10.9	22.5	1160	0.019	1150	22.3		13.5	1160	0.012	1150	13.4		10	1160	0.009	1150	9.9	
	6	11.00	1160	0.009	1150	10.9	22.5	1160	0.019	1150	22.3		13.5	1160	0.012	1150	13.4		10.8	1160	0.009	1150	10.7	
10:00	1	46.00	1880	0.024	1700	41.6	390	1880	0.207	1700	352.7		75	1880	0.040	1700	67.8		40.5	1880	0.022	1700	36.6	
	2	28.00	1880	0.015	1700	25.3	185	1880	0.098	1700	167.3		43	1880	0.023	1700	38.9		22.5	1880	0.012	1700	20.3	
	3	18.00	1880	0.010	1700	16.3	80	1880	0.043	1700	72.3		30	1880	0.016	1700	27.1		15.5	1880	0.008	1700	14.0	
	4	13.00	1880	0.007	1700	11.8	44	1880	0.023	1700	39.8		23	1880	0.012	1700	20.8		12	1880	0.006	1700	10.9	
	5	11.00	1880	0.006	1700	9.9	25.5	1880	0.014	1700	23.1		17.5	1880	0.009	1700	15.8		10.5	1880	0.006	1700	9.5	
	6	11.00	1880	0.006	1700	9.9	25.5	1880	0.014	1700	23.1		17	1880	0.009	1700	15.4		10	1880	0.005	1700	9.0	
12:00	1	47.00	1950	0.024	1800	43.4	49.5	1950	0.025	1800	45.7		64	1950	0.043	1800	77.5		50	1950	0.026	1800	46.2	
	2	28.50	1950	0.015	1800	26.3	27	1950	0.014	1800	24.9		47	1950	0.024	1800	43.4		27	1950	0.014	1800	24.9	
	3	18.50	1950	0.009	1800	17.1	19	1950	0.010	1800	17.5		29.5	1950	0.015	1800	27.2		18.5	1950	0.009	1800	17.1	
	4	13.00	1950	0.007	1800	12.0	14.5	1950	0.007	1800	13.4		21.5	1950	0.011	1800	19.8		14.5	1950	0.007	1800	13.4	
	5	11.00	1950	0.006	1800	10.2	13	1950	0.007	1800	12.0		18	1950	0.009	1800	16.6		13	1950	0.007	1800	12.0	
	6	11.00	1950	0.006	1800	10.2	13	1950	0.007	1800	12.0		18	1950	0.009	1800	16.6		13.5	1950	0.007	1800	12.5	
14:00	1	46.00	1880	0.024	1700	41.6	39.5	1880	0.021	1700	35.7		74	1880	0.039	1700	66.9		410	1880	0.218	1700	370.7	
	2	28.00	1880	0.015	1700	25.3	21.5	1880	0.011	1700	19.4		41.5	1880	0.022	1700	37.5		200	1880	0.106	1700	180.9	
	3	18.00	1880	0.010	1700	16.3	14.5	1880	0.008	1700	13.1		29.5	1880	0.016	1700	26.7		92	1880	0.049	1700	83.2	
	4	13.00	1880	0.007	1700	11.8	11	1880	0.006	1700	9.9		23	1880	0.012	1700	20.8		50	1880	0.027	1700	45.2	
	5	11.00	1880	0.006	1700	9.9	10	1880	0.005	1700	9.0		17.5	1880	0.009	1700	15.8		27.5	1880	0.015	1700	24.0	
	6	11.00	1880	0.006	1700	9.9	9.5	1880	0.005	1700	8.6		17	1880	0.009	1700	15.4		27	1880	0.014	1700	24.4	
16:00	1	45.00	1160	0.039	1150	45	39	1160	0.034	1150	39		48	1160	0.041	1150	48		330	1160	0.284	1150	327	
	2	28.00	1160	0.024	1150	27.8	22	1160	0.019	1150	21.8		27.5	1160	0.024	1150	27.3		155	1160	0.134	1150	153.7	
	3	18.00	1160	0.016	1150	17.8	15	1160	0.013	1150	14.9		18.5	1160	0.016	1150	18.3		72	1160	0.062	1150	71.4	
	4	13.00	1160	0.011	1150	12.9	11.5	1160	0.010	1150	11.4		14	1160	0.012	1150	13.9		38	1160	0.033	1150	37.7	
	5	11.00	1160	0.009	1150	10.9	10	1160	0.009	1150	9.9		12.5	1160	0.011	1150	12.4		23	1160	0.020	1150	22.8	
	6	11.00	1160	0.009	1150	10.9	10	1160	0.009	1150	9.9		12.5	1160	0.011	1150	12.4		22.5	1160	0.019	1150	22.3	

DAYLIGHT DISTRIBUTION AT 21 MARCH & 24 SEPTEMBER : MODEL 12

OPENING SID	NORTH						EAST						SOUTH						WEST					
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh		
	int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL	
8:00	1	33.50	1160	0.029	1150	33.2	245	1160	0.211	1150	242.9	33	1160	0.028	1150	32.7	27	1160	0.023	1150	26.8			
	2	22.50	1160	0.019	1150	22.3	120	1160	0.103	1150	119.0	22	1160	0.019	1150	21.8	18	1160	0.016	1150	17.8			
	3	15.00	1160	0.015	1150	14.9	52	1160	0.045	1150	51.6	15	1160	0.013	1150	14.9	12	1160	0.010	1150	11.9			
	4	10.50	1160	0.009	1150	10.4	33	1160	0.028	1150	32.7	11	1160	0.009	1150	10.9	8.5	1160	0.007	1150	8.4			
	5	9.00	1160	0.008	1150	8.9	21.5	1160	0.019	1150	21.3	9.5	1160	0.008	1150	9.4	7.5	1160	0.006	1150	7.4			
	6	9.00	1160	0.008	1150	8.9	21.5	1160	0.019	1150	21.3	9.5	1160	0.008	1150	9.4	7.5	1160	0.006	1150	7.4			
10:00	1	32.00	1880	0.017	1700	28.9	280	1880	0.149	1700	253.2	51	1880	0.027	1700	46.1	27.5	1880	0.015	1700	24.9			
	2	23.50	1880	0.013	1700	21.3	140	1880	0.074	1700	126.6	34	1880	0.018	1700	30.7	17.5	1880	0.009	1700	15.8			
	3	15.00	1880	0.008	1700	13.6	70	1880	0.037	1700	63.3	22	1880	0.012	1700	19.9	11.5	1880	0.006	1700	10.4			
	4	10.50	1880	0.006	1700	9.5	40	1880	0.021	1700	36.2	17	1880	0.009	1700	15.4	8.5	1880	0.005	1700	7.7			
	5	8.50	1880	0.005	1700	7.7	25.5	1880	0.014	1700	23.1	16	1880	0.009	1700	14.5	7	1880	0.004	1700	6.3			
	6	8.50	1880	0.005	1700	7.7	24.5	1880	0.013	1700	22.2	15	1880	0.008	1700	13.6	7	1880	0.004	1700	6.3			
12:00	1	31.50	1950	0.016	1800	29.1	30	1950	0.015	1800	27.7	68	1950	0.035	1800	62.8	31	1950	0.016	1800	28.6			
	2	22.50	1950	0.012	1800	20.8	19.5	1950	0.010	1800	18.0	42	1950	0.022	1800	38.8	20	1950	0.010	1800	18.5			
	3	14.50	1950	0.007	1800	13.4	13.3	1950	0.007	1800	12.5	27	1950	0.014	1800	24.9	13.5	1950	0.007	1800	12.5			
	4	10.00	1950	0.005	1800	9.2	9.7	1950	0.005	1800	9.0	19	1950	0.010	1800	17.5	9.7	1950	0.005	1800	9.0			
	5	8.50	1950	0.004	1800	7.8	3	1950	0.004	1800	7.4	16	1950	0.008	1800	14.8	8.5	1950	0.004	1800	7.8			
	6	8.50	1950	0.004	1800	7.8	8	1950	0.004	1800	7.4	16	1950	0.008	1800	14.8	8.5	1950	0.004	1800	7.8			
14:00	1	33.50	1880	0.018	1700	30.3	26	1880	0.014	1700	23.5	49	1880	0.026	1700	44.3	300	1880	0.160	1700	271.3			
	2	24.00	1880	0.013	1700	21.7	17	1880	0.009	1700	15.4	32.5	1880	0.017	1700	29.4	160	1880	0.085	1700	144.7			
	3	15.50	1880	0.008	1700	14.0	11	1880	0.006	1700	9.9	21.5	1880	0.011	1700	19.4	83	1880	0.044	1700	75.1			
	4	11.00	1880	0.006	1700	9.9	8	1880	0.004	1700	7.2	17	1880	0.009	1700	15.4	43	1880	0.023	1700	38.9			
	5	9.00	1880	0.005	1700	8.1	7	1880	0.004	1700	6.3	14.5	1880	0.008	1700	13.1	25.5	1880	0.014	1700	23.1			
	6	9.00	1880	0.005	1700	8.1	7	1880	0.004	1700	6.3	14.5	1880	0.008	1700	13.1	25.5	1880	0.014	1700	23.1			
16:00	1	35.00	1160	0.030	1150	35	26	1160	0.022	1150	26	31	1160	0.027	1150	31	260	1160	0.224	1150	258			
	2	24.50	1160	0.021	1150	24.3	16.5	1160	0.014	1150	16.4	21	1160	0.018	1150	20.8	128	1160	0.110	1150	126.9			
	3	16.00	1160	0.014	1150	15.9	11	1160	0.009	1150	10.9	14	1160	0.012	1150	13.9	61	1160	0.053	1150	60.5			
	4	11.00	1160	0.009	1150	10.9	8	1160	0.007	1150	7.9	10.5	1160	0.009	1150	10.4	35	1160	0.030	1150	34.7			
	5	9.50	1160	0.008	1150	9.4	6.5	1160	0.006	1150	6.4	9	1160	0.008	1150	8.9	22	1160	0.019	1150	21.8			
	6	9.50	1160	0.008	1150	9.4	6.5	1160	0.006	1150	6.4	9	1160	0.008	1150	8.9	22	1160	0.019	1150	21.8			

DAYLIGHT DISTRIBUTION AT 21 MARCH & 24 SEPTEMBER : MODEL 13

OPENING SIDE	NORTH						EAST						SOUTH						WEST					
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh		
	int	ext	DF	EKT ILL	INT ILL		int	ext	DF	EKT ILL	INT ILL		int	ext	DF	EKT ILL	INT ILL		int	ext	DF	EKT ILL	INT ILL	
8:00	1	1160	0.000	1150	0.0		1160	0.000	1150	0.0	69	1160	0.039	1150	68.4		1160	0.000	1150	0.0				
	2	1160	0.000	1150	0.0		1160	0.000	1150	0.0	38.5	1160	0.033	1150	38.2		1160	0.000	1150	0.0				
	3	1160	0.000	1150	0.0		1160	0.000	1150	0.0	24.5	1160	0.021	1150	24.3		1160	0.000	1150	0.0				
	4	1160	0.000	1150	0.0		1160	0.000	1150	0.0	17.5	1160	0.015	1150	17.3		1160	0.000	1150	0.0				
	5	1160	0.000	1150	0.0		1160	0.000	1150	0.0	15	1160	0.013	1150	14.9		1160	0.000	1150	0.0				
	6	1160	0.000	1150	0.0		1160	0.000	1150	0.0	15	1160	0.013	1150	14.9		1160	0.000	1150	0.0				
10:00	1	1880	0.000	1700	0.0		1880	0.000	1700	0.0	87	1880	0.046	1700	78.7		1880	0.000	1700	0.0				
	2	1880	0.000	1700	0.0		1880	0.000	1700	0.0	48	1880	0.026	1700	43.4		1880	0.000	1700	0.0				
	3	1880	0.000	1700	0.0		1880	0.000	1700	0.0	32	1880	0.017	1700	28.9		1880	0.000	1700	0.0				
	4	1880	0.000	1700	0.0		1880	0.000	1700	0.0	23	1880	0.012	1700	20.8		1880	0.000	1700	0.0				
	5	1880	0.000	1700	0.0		1880	0.000	1700	0.0	17	1880	0.009	1700	15.4		1880	0.000	1700	0.0				
	6	1880	0.000	1700	0.0		1880	0.000	1700	0.0	16.5	1880	0.009	1700	14.9		1880	0.000	1700	0.0				
12:00	1	1950	0.000	1800	0.0		1950	0.000	1800	0.0	112	1950	0.057	1800	103.4		1950	0.000	1800	0.0				
	2	1950	0.000	1800	0.0		1950	0.000	1800	0.0	60	1950	0.034	1800	60.9		1950	0.000	1800	0.0				
	3	1950	0.000	1800	0.0		1950	0.000	1800	0.0	40	1950	0.021	1800	36.9		1950	0.000	1800	0.0				
	4	1950	0.000	1800	0.0		1950	0.000	1800	0.0	27.5	1950	0.014	1800	25.4		1950	0.000	1800	0.0				
	5	1950	0.000	1800	0.0		1950	0.000	1800	0.0	22	1950	0.011	1800	20.3		1950	0.000	1800	0.0				
	6	1950	0.000	1800	0.0		1950	0.000	1800	0.0	21.5	1950	0.011	1800	19.8		1950	0.000	1800	0.0				
14:00	1	1880	0.000	1700	0.0		1880	0.000	1700	0.0	80	1880	0.043	1700	72.3		1880	0.000	1700	0.0				
	2	1880	0.000	1700	0.0		1880	0.000	1700	0.0	46	1880	0.024	1700	41.6		1880	0.000	1700	0.0				
	3	1880	0.000	1700	0.0		1880	0.000	1700	0.0	28.5	1880	0.015	1700	25.8		1880	0.000	1700	0.0				
	4	1880	0.000	1700	0.0		1880	0.000	1700	0.0	20	1880	0.011	1700	18.1		1880	0.000	1700	0.0				
	5	1880	0.000	1700	0.0		1880	0.000	1700	0.0	16.5	1880	0.009	1700	14.9		1880	0.000	1700	0.0				
	6	1880	0.000	1700	0.0		1880	0.000	1700	0.0	16	1880	0.009	1700	14.5		1880	0.000	1700	0.0				
16:00	1	1160	0.000	1150	0.0		1160	0.000	1150	0.0	65.5	1160	0.056	1150	64.9		1160	0.000	1150	0.0				
	2	1160	0.000	1150	0.0		1160	0.000	1150	0.0	37	1160	0.032	1150	36.7		1160	0.000	1150	0.0				
	3	1160	0.000	1150	0.0		1160	0.000	1150	0.0	23.5	1160	0.020	1150	23.3		1160	0.000	1150	0.0				
	4	1160	0.000	1150	0.0		1160	0.000	1150	0.0	16.5	1160	0.014	1150	16.4		1160	0.000	1150	0.0				
	5	1160	0.000	1150	0.0		1160	0.000	1150	0.0	14	1160	0.012	1150	13.9		1160	0.000	1150	0.0				
	6	1160	0.000	1150	0.0		1160	0.000	1150	0.0	14	1160	0.012	1150	13.9		1160	0.000	1150	0.0				

DAYLIGHT DISTRIBUTION AT 22 JUNE : MODEL 5

OPENING SIDE	NORTH						EAST						SOUTH						WEST						
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh			
	int	ext	DF	EXT II	INT II	IL	int	ext	DF	EXT II	INT II	IL	int	ext	DF	EXT II	INT II	IL	int	ext	DF	EXT II	INT II	IL	
8:00	1	125	1370	0.091	1250	114							98	1370	0.072	1250	89	80	1370	0.058	1250	73			
	2	74	1370	0.054	1250	68							58.5	1370	0.043	1250	53	46.5	1370	0.034	1250	42			
	3	48.5	1370	0.035	1250	44	DIRECT SUN EFFECT						39	1370	0.028	1250	36	31	1370	0.023	1250	28			
	4	31.5	1370	0.023	1250	29								28.5	1370	0.021	1250	26	22.5	1370	0.016	1250	21		
	5	26.5	1370	0.019	1250	24								24	1370	0.018	1250	22	19	1370	0.014	1250	17		
	6	25.5	1370	0.019	1250	23								24	1370	0.018	1250	22	18.5	1370	0.014	1250	17		
10:00	1	117	1900	0.062	1750	108	495	1900	0.261	1750	456	98	1900	0.052	1750	90	85	1900	0.045	1750	78				
	2	70	1900	0.037	1750	64	272	1900	0.143	1750	251	58	1900	0.031	1750	53	48.5	1900	0.026	1750	45				
	3	45	1900	0.024	1750	41	158	1900	0.083	1750	146	38.5	1900	0.020	1750	35	33	1900	0.017	1750	30				
	4	33.5	1900	0.018	1750	31	108	1900	0.057	1750	99	28	1900	0.015	1750	26	24	1900	0.013	1750	22				
	5	27.5	1900	0.014	1750	25	84.5	1900	0.044	1750	78	23.5	1900	0.012	1750	22	19.5	1900	0.010	1750	18				
	6	27	1900	0.014	1750	25	82	1900	0.043	1750	76	23.5	1900	0.012	1750	22	19.5	1900	0.010	1750	18				
12:00	1	112	1960	0.057	1800	103	97	1960	0.049	1800	89	86	1960	0.044	1800	79	94	1960	0.048	1800	96				
	2	67.5	1960	0.034	1800	62	55.5	1960	0.028	1800	51	49	1960	0.025	1800	45	52.5	1960	0.027	1800	48				
	3	43.5	1960	0.022	1800	40	57	1960	0.044	1800	80	32.5	1960	0.017	1800	30	35.5	1960	0.018	1800	33				
	4	31	1960	0.016	1800	28	27	1960	0.014	1800	25	23.5	1960	0.012	1800	22	26	1960	0.013	1800	24				
	5	25.5	1960	0.013	1800	23	23	1960	0.012	1800	21	20	1960	0.010	1800	18	22	1960	0.011	1800	20				
	6	25	1960	0.013	1800	23	23	1960	0.012	1800	21	19.5	1960	0.010	1800	18	22	1960	0.011	1800	20				
14:00	1	119	1900	0.063	1750	110	88	1900	0.046	1750	81	98	1900	0.052	1750	90	445	1900	0.234	1750	410				
	2	72	1900	0.038	1750	66	50.5	1900	0.027	1750	47	57	1900	0.030	1750	53	240	1900	0.126	1750	221				
	3	46.8	1900	0.025	1750	43	33.5	1900	0.018	1750	31	39	1900	0.021	1750	36	142	1900	0.075	1750	131				
	4	34	1900	0.018	1750	31	24	1900	0.013	1750	22	29	1900	0.015	1750	27	98	1900	0.052	1750	90				
	5	23.5	1900	0.015	1750	26	23.5	1900	0.011	1750	19	25	1900	0.013	1750	23	79.5	1900	0.042	1750	73				
	6	28.5	1900	0.015	1750	26	20	1996	0.011	1750	18	24	1900	0.013	1750	22	75	1900	0.039	1750	69				
16:00	1	127	1370	0.093	1250	116	86	1370	0.063	1250	78	97.5	1370	0.071	1250	89									
	2	75.8	1370	0.055	1250	69	49.5	1370	0.036	1250	45	57	1370	0.042	1250	52									
	3	50	1370	0.036	1250	46	32.5	1370	0.024	1250	30	38	1370	0.028	1250	35	DIRECT SUN EFFECT								
	4	41.5	1370	0.030	1250	38	23.5	1370	0.017	1250	21	27	1370	0.020	1250	25									
	5	34.5	1370	0.025	1250	31	20	1370	0.015	1250	18	22	1370	0.017	1250	21									
	6	34	1370	0.025	1250	31	20	1370	0.015	1250	18	23	1370	0.017	1250	21									

DAYLIGHT DISTRIBUTION AT 29 JUNE : MODEL 10

OPENING SID	NORTH						EAST						SOUTH						WEST						
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh			
	int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		
8:00	1	99.5	1370	0.073	1250	90.8							86	1370	0.063	1250	78.5	75.5	1370	0.055	1250	68.9			
	2	62	1370	0.045	1250	56.6							52.6	1370	0.004	1250	4.8	44.5	1370	0.032	1250	40.6			
	3	41.5	1370	0.030	1250	37.9	DIRECT SUN EFFECT						31.5	1370	0.023	1250	28.7	29.5	1370	0.022	1250	26.9			
	4	30.5	1370	0.022	1250	27.8								26	1370	0.019	1250	23.7	21	1370	0.015	1250	19.2		
	5	26	1370	0.019	1250	23.7								22	1370	0.016	1250	20.1	18	1370	0.013	1250	16.4		
	6	26	1370	0.019	1250	23.7								21	1370	0.015	1250	19.2	17.5	1370	0.013	1250	16.0		
10:00	1	116	1900	0.061	1750	106.8							83	1900	0.044	1750	76.4	74	1900	0.039	1750	68.2			
	2	68	1900	0.036	1750	62.6							49.5	1900	0.026	1750	45.6	44	1900	0.023	1750	40.5			
	3	46	1900	0.024	1750	42.4	DIRECT SUN EFFECT						32	1900	0.017	1750	29.5	28.5	1900	0.015	1750	26.3			
	4	33	1900	0.017	1750	30.4								24	1900	0.013	1750	22.1	21	1900	0.011	1750	19.3		
	5	28	1900	0.015	1750	25.8								21	1900	0.011	1750	19.3	17.5	1900	0.009	1750	16.1		
	6	27	1900	0.014	1750	24.9								20.5	1900	0.011	1750	18.9	17	1900	0.009	1750	15.7		
12:00	1	91	1960	0.046	1800	83.6	84.5	1960	0.043	1800	77.5	72	1960	0.037	1800	66.1	84	1960	0.043	1800	77.1				
	2	53	1960	0.027	1800	48.7	50	1960	0.026	1800	45.0	47	1960	0.024	1800	43.2	49.5	1960	0.025	1800	45.5				
	3	34	1960	0.017	1800	31.2	3	1960	0.002	1800	2.8	27.5	1960	0.014	1800	25.3	32.2	1960	0.016	1800	29.6				
	4	25.6	1960	0.013	1800	23.5	25	1960	0.013	1800	23.0	20	1960	0.010	1800	18.4	24	1960	0.012	1800	22.0				
	5	21.5	1960	0.011	1800	19.7	22	1960	0.011	1800	20.2	16.5	1960	0.003	1800	15.2	21	1960	0.011	1800	19.3				
	6	21	1960	0.011	1800	19.3	21	1960	0.011	1800	19.3	16.5	1960	0.008	1800	15.2	20	1960	0.010	1800	18.4				
14:00	1	118	1900	0.062	1750	108.7	74	1900	0.039	1750	68.2	81.8	1900	0.043	1750	75.3									
	2	70	1900	0.037	1750	64.5	44	1900	0.023	1750	40.5	49	1900	0.026	1750	45.1									
	3	46.5	1900	0.024	1750	42.8	29	1900	0.015	1750	26.7	32	1900	0.017	1750	29.5	DIRECT SUN EFFECT								
	4	34	1900	0.018	1750	31.3	21	1900	0.011	1750	19.3	24	1900	0.013	1750	22.1									
	5	28.5	1900	0.015	1750	26.3	17.8	1900	0.007	1750	16.4	20	1900	0.011	1750	18.4									
	6	27.5	1900	0.014	1750	25.3	17.5	1900	0.009	1750	16.1	19.5	1900	0.010	1750	18.0									
16:00	1	100	1370	0.073	1250	91.2	77	1370	0.056	1250	70.3	84	1370	0.061	1250	76.6									
	2	63	1370	0.046	1250	57.5	45	1370	0.033	1250	41.1	51.5	1370	0.038	1250	47.0									
	3	42.5	1370	0.031	1250	38.8	30	1370	0.022	1250	27.4	34	1370	0.025	1250	31.0	DIRECT SUN EFFECT								
	4	31	1370	0.023	1250	28.3	22.5	1370	0.016	1250	20.5	25	1370	0.018	1250	22.8									
	5	26.8	1370	0.020	1250	24.5	19	1370	0.014	1250	17.3	21	1370	0.015	1250	19.2									
	6	26	1370	0.019	1250	23.7	19	1370	0.014	1250	17.3	20.5	1370	0.015	1250	18.7									

DAYLIGHT DISTRIBUTION AT 22 JUNE : MODEL 11

OPENING SID	NORTH						EAST						SOUTH						WEST					
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh		
	int	ext	DF	EXT ILI	INT ILI		int	ext	DF	EXT ILI	INT ILI		int	ext	DF	EXT ILI	INT ILI		int	ext	DF	EXT ILI	INT ILI	
8:00	1	67.5	1370	0.049	1250	61.6	432	1370	0.315	1250	394.2	47	1370	0.034	1250	42.9	42.5	1370	0.031	1250	38.8			
	2	41.5	1370	0.030	1250	37.9	227	1370	0.166	1250	207.1	27	1370	0.020	1250	24.6	24	1370	0.018	1250	21.9			
	3	25.5	1370	0.019	1250	23.3	135	1370	0.099	1250	123.2	18	1370	0.013	1250	16.4	16	1370	0.012	1250	14.6			
	4	19	1370	0.014	1250	17.3	93	1370	0.068	1250	84.9	13.8	1370	0.010	1250	12.6	12	1370	0.009	1250	10.9			
	5	15.8	1370	0.012	1250	14.4	76.5	1370	0.056	1250	69.8	12	1370	0.009	1250	10.9	10.5	1370	0.008	1250	9.6			
	6	15.8	1370	0.012	1250	14.4	75	1370	0.055	1250	68.4	12	1370	0.009	1250	10.9	10.5	1370	0.008	1250	9.6			
10:00	1	70	1900	0.037	1750	64.5	341	1900	0.179	1750	314.1	48.5	1900	0.026	1750	44.7	43	1900	0.023	1750	39.6			
	2	40.5	1900	0.021	1750	37.3	176	1900	0.093	1750	162.1	27	1900	0.014	1750	24.9	24.5	1900	0.013	1750	22.6			
	3	25.5	1900	0.013	1750	23.5	98.5	1900	0.052	1750	90.7	18	1900	0.009	1750	16.6	16	1900	0.008	1750	14.7			
	4	18.5	1900	0.010	1750	17.0	68	1900	0.036	1750	62.6	13.8	1900	0.007	1750	12.7	12	1900	0.006	1750	11.1			
	5	15.5	1900	0.008	1750	14.3	55	1900	0.029	1750	50.7	12	1900	0.006	1750	11.1	10.5	1900	0.006	1750	9.7			
	6	15.5	1900	0.008	1750	14.3	54	1900	0.028	1750	49.7	12	1900	0.006	1750	11.1	10.5	1900	0.006	1750	9.7			
12:00	1	66.5	1960	0.034	1800	61.1	51	1960	0.226	1800	46.8	41	1960	0.021	1800	37.7	49.5	1960	0.025	1800	45.5			
	2	38	1960	0.019	1800	34.9	27.2	1960	0.014	1800	25.0	23	1960	0.012	1800	21.1	27	1960	0.014	1800	24.8			
	3	24	1960	0.012	1800	22.0	18.5	1960	0.009	1800	17.0	15.5	1960	0.008	1800	14.2	19	1960	0.010	1800	17.4			
	4	17	1960	0.009	1800	15.6	15.2	1960	0.008	1800	14.0	12	1960	0.006	1800	11.0	15	1960	0.008	1800	13.8			
	5	14.5	1960	0.007	1800	13.3	13.5	1960	0.007	1800	12.4	10.5	1960	0.005	1800	9.6	13.2	1960	0.007	1900	12.1			
	6	14.5	1960	0.007	1800	13.3	13.5	1960	0.007	1800	12.4	10.5	1960	0.005	1800	9.6	13.2	1960	0.007	1800	12.1			
14:00	1	71	1900	0.037	1750	65.4	44.5	1900	0.023	1750	41.0	48.5	1900	0.026	1750	44.7	338	1900	0.178	1750	311.3			
	2	42	1900	0.022	1750	38.7	25	1900	0.013	1750	23.0	26.5	1900	0.014	1750	24.4	173.5	1900	0.091	1750	159.8			
	3	26.5	1900	0.014	1750	24.4	16.5	1900	0.009	1750	15.2	18	1900	0.009	1750	16.6	97	1900	0.051	1750	89.3			
	4	19	1900	0.010	1750	17.5	12.5	1900	0.007	1750	11.5	13.5	1900	0.007	1750	12.4	67.5	1900	0.036	1750	62.2			
	5	16	1900	0.008	1750	14.7	11	1900	0.006	1750	10.1	12	1900	0.006	1750	11.1	54	1900	0.028	1750	49.7			
	6	16	1900	0.008	1750	14.7	11	1900	0.006	1750	10.1	12	1900	0.006	1750	11.1	53.8	1900	0.028	1750	49.6			
16:00	1	69	1370	0.050	1250	63.0	43.5	1370	0.032	1250	39.7	47	1370	0.034	1250	42.9	428	1370	0.312	1250	391			
	2	42	1370	0.031	1250	38.3	25	1370	0.018	1250	22.8	27	1370	0.020	1250	24.6	224	1370	0.164	1250	204.4			
	3	26	1370	0.019	1250	23.7	16.5	1370	0.012	1250	15.1	18	1370	0.013	1250	16.4	129	1370	0.094	1250	117.7			
	4	19	1370	0.014	1250	17.3	12.5	1370	0.009	1250	11.4	13.8	1370	0.010	1250	12.6	90.5	1370	0.066	1250	82.6			
	5	15.8	1370	0.012	1250	14.4	11	1370	0.008	1250	10.0	12	1370	0.009	1250	10.9	75	1370	0.055	1250	68.4			
	6	15.8	1370	0.012	1250	14.4	11	1370	0.008	1250	10.0	12	1370	0.009	1250	10.9	74	1370	0.054	1250	67.5			

DAYLIGHT DISTRIBUTION AT 22 JUNE : MODEL 12

OPENING SID	NORTH																				EAST					SOUTH					WEST				
	Skydome						Eh				Skydome						Eh				Skydome					Eh									
	int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL												
8:00	1	52	1370	0.038	1250	47.4	319	1370	0.233	1250	291.1	31	1370	0.023	1250	28.3	26.5	1370	0.019	1250	24.2														
	2	35.5	1370	0.026	1250	32.4	180.5	1370	0.132	1250	164.7	20.5	1370	0.015	1250	18.7	17.5	1370	0.013	1250	16.0														
	3	22.5	1370	0.016	1250	20.5	114	1370	0.083	1250	104.0	14	1370	0.010	1250	12.8	12	1370	0.009	1250	10.9														
	4	16.5	1370	0.012	1250	15.1	78	1370	0.057	1250	71.2	10	1370	0.007	1250	9.1	8.5	1370	0.006	1250	7.8														
	5	13.5	1370	0.010	1250	12.3	66	1370	0.048	1250	60.2	9	1370	0.007	1250	8.2	7.5	1370	0.005	1250	6.8														
	6	13.2	1370	0.010	1250	12.0	65.5	1370	0.048	1250	59.8	9	1370	0.007	1250	8.2	7.5	1370	0.005	1250	6.8														
10:00	1	51	1900	0.027	1750	47.0	252	1900	0.133	1750	232.1	29.5	1900	0.016	1750	27.2	25.5	1900	0.013	1750	23.5														
	2	33	1900	0.017	1750	30.4	150	1900	0.079	1750	138.2	19.5	1900	0.010	1750	18.0	16.5	1900	0.009	1750	15.2														
	3	21.5	1900	0.011	1750	19.8	90	1900	0.047	1750	82.9	13	1900	0.007	1750	12.0	11	1900	0.006	1750	10.1														
	4	14.5	1900	0.008	1750	13.4	67	1900	0.035	1750	61.7	9.5	1900	0.005	1750	8.8	8	1900	0.004	1750	7.4														
	5	12	1900	0.005	1750	11.1	51	1900	0.027	1750	47.0	8	1900	0.004	1750	7.4	6.8	1900	0.004	1750	6.3														
	6	12	1900	0.006	1750	11.1	50	1900	0.026	1750	46.1	8	1900	0.004	1750	7.4	6.8	1900	0.004	1750	6.3														
12:00	1	50	1960	0.026	1800	45.9	30.5	1960	0.016	1900	28.0	26	1950	0.013	1800	23.9	29.5	1960	0.015	1800	27.1														
	2	33.5	1960	0.017	1800	30.8	20.5	1960	0.010	1800	18.8	16.5	1960	0.008	1800	15.2	19.5	1960	0.010	1800	17.9														
	3	21.5	1960	0.011	1800	19.7	14	1960	0.007	1800	12.9	11	1960	0.006	1800	10.1	13.2	1960	0.007	1800	12.1														
	4	15	1960	0.008	1800	13.8	10	1960	0.005	1800	9.2	8	1960	0.004	1800	7.3	10	1960	0.005	1800	9.2														
	5	11.5	1960	0.006	1800	10.6	8.5	1960	0.004	1800	7.8	7	1960	0.004	1800	6.4	8.2	1960	0.004	1800	7.5														
	6	11.5	1960	0.006	1800	10.6	8.5	1960	0.004	1800	7.8	7	1960	0.004	1800	6.4	8.2	1960	0.004	1800	7.5														
14:00	1	51	1900	0.027	1750	47.0	26.5	1900	0.014	1750	24.4	28.5	1900	0.015	1750	26.3	248	1900	0.131	1750	228.4														
	2	34	1900	0.018	1750	31.3	17.5	1900	0.009	1750	16.1	19	1900	0.010	1750	17.5	148	1900	0.078	1750	136.3														
	3	22	1900	0.012	1750	20.3	11.5	1900	0.006	1750	10.6	13	1900	0.007	1750	12.0	89	1900	0.047	1750	82.0														
	4	15	1900	0.008	1750	13.8	8.5	1900	0.004	1750	7.8	9	1900	0.005	1750	8.3	67	1900	0.035	1750	61.7														
	5	12.5	1900	0.007	1750	11.5	7	1900	0.004	1750	6.4	8	1900	0.004	1750	7.4	49.5	1900	0.026	1750	45.6														
	6	12.5	1900	0.007	1750	11.5	7	1900	0.004	1750	6.4	8	1900	0.004	1750	7.4	48.5	1900	0.026	1750	44.7														
16:00	1	54	1370	0.039	1250	49.3	27.5	1370	0.020	1250	25.1	30.5	1370	0.022	1250	27.8	315	1370	0.230	1250	287.4														
	2	36	1370	0.026	1250	32.8	18	1370	0.013	1250	16.4	20	1370	0.015	1250	18.2	177	1370	0.129	1250	161.5														
	3	23.5	1370	0.017	1250	21.4	12	1370	0.009	1250	10.9	13.5	1370	0.010	1250	12.3	109	1370	0.080	1250	99.5														
	4	16.5	1370	0.012	1250	15.1	9	1370	0.007	1250	8.2	9.8	1370	0.007	1250	8.9	76	1370	0.055	1250	69.3														
	5	13.5	1370	0.010	1250	12.3	7.5	1370	0.005	1250	6.8	8.5	1370	0.006	1250	7.8	64	1370	0.047	1250	58.4														
	6	13.5	1370	0.010	1250	12.3	7.5	1370	0.005	1250	6.8	8.5	1370	0.006	1250	7.8	63.5	1370	0.046	1250	57.9														

DAYLIGHT DISTRIBUTION AT 22 JUNE : MODEL 18

OPENING SIDE	NORTH										EAST					SOUTH					WEST									
	Skydome					Eh					Skydome					Eh					Skydome					Eh				
	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL					
8:00	1		1370	0.000	1250	0.0			1370	0.000	1250	0.0	63	1370	0.046	1250	57.5			1370	0.000	1250	0.0							
	2		1370	0.000	1250	0.0			1370	0.000	1250	0.0	35.5	1370	0.026	1250	32.4			1370	0.000	1250	0.0							
	3		1370	0.000	1250	0.0			1370	0.000	1250	0.0	22.5	1370	0.016	1250	20.5			1370	0.000	1250	0.0							
	4		1370	0.000	1250	0.0			1370	0.000	1250	0.0	16	1370	0.012	1250	14.6			1370	0.000	1250	0.0							
	5		1370	0.000	1250	0.0			1370	0.000	1250	0.0	13.5	1370	0.010	1250	12.3			1370	0.000	1250	0.0							
	6		1370	0.000	1250	0.0			1370	0.000	1250	0.0	13.5	1370	0.010	1250	12.3			1370	0.000	1250	0.0							
10:00	1		1900	0.000	1750	0.0			1900	0.000	1750	0.0	62.5	1900	0.033	1750	57.6			1900	0.000	1750	0.0							
	2		1900	0.000	1750	0.0			1900	0.000	1750	0.0	35	1900	0.018	1750	32.2			1900	0.000	1750	0.0							
	3		1900	0.000	1750	0.0			1900	0.000	1750	0.0	22	1900	0.012	1750	20.3			1900	0.000	1750	0.0							
	4		1900	0.000	1750	0.0			1900	0.000	1750	0.0	15.5	1900	0.008	1750	14.3			1900	0.000	1750	0.0							
	5		1900	0.000	1750	0.0			1900	0.000	1750	0.0	13	1900	0.007	1750	12.0			1900	0.000	1750	0.0							
	6		1900	0.000	1750	0.0			1900	0.000	1750	0.0	13	1900	0.007	1750	12.0			1900	0.000	1750	0.0							
12:00	1		1960	0.000	1800	0.0			1960	0.000	1800	0.0	56	1960	0.029	1800	51.4			1960	0.000	1800	0.0							
	2		1960	0.000	1800	0.0			1960	0.000	1800	0.0	31	1960	0.016	1800	28.5			1960	0.000	1800	0.0							
	3		1960	0.000	1800	0.0			1960	0.000	1800	0.0	19.5	1960	0.010	1800	17.9			1960	0.000	1800	0.0							
	4		1960	0.000	1800	0.0			1960	0.000	1800	0.0	13.5	1960	0.007	1800	12.4			1960	0.000	1800	0.0							
	5		1960	0.000	1800	0.0			1960	0.000	1800	0.0	11	1960	0.006	1800	10.1			1960	0.000	1800	0.0							
	6		1960	0.000	1800	0.0			1960	0.000	1800	0.0	11	1960	0.006	1800	10.1			1960	0.000	1800	0.0							
14:00	1		1900	0.000	1750	0.0			1900	0.000	1750	0.0	62	1900	0.033	1750	57.1			1900	0.000	1750	0.0							
	2		1900	0.000	1750	0.0			1900	0.000	1750	0.0	33.5	1900	0.018	1750	30.9			1900	0.000	1750	0.0							
	3		1900	0.000	1750	0.0			1900	0.000	1750	0.0	21.5	1900	0.011	1750	19.8			1900	0.000	1750	0.0							
	4		1900	0.000	1750	0.0			1900	0.000	1750	0.0	15	1900	0.008	1750	13.8			1900	0.000	1750	0.0							
	5		1900	0.000	1750	0.0			1900	0.000	1750	0.0	12.5	1900	0.007	1750	11.5			1900	0.000	1750	0.0							
	6		1900	0.000	1750	0.0			1900	0.000	1750	0.0	12.5	1900	0.007	1750	11.5			1900	0.000	1750	0.0							
16:00	1		1370	0.000	1250	0.0			1370	0.000	1250	0.0	62.5	1370	0.046	1250	57.0			1370	0.000	1250	0.0							
	2		1370	0.000	1250	0.0			1370	0.000	1250	0.0	34	1370	0.025	1250	31.0			1370	0.000	1250	0.0							
	3		1370	0.000	1250	0.0			1370	0.000	1250	0.0	24 34	1370	0.025	1250	24 31.0			1370	0.000	1250	0.0							
	4		1370	0.000	1250	0.0			1370	0.000	1250	0.0	22	1370	0.016	1250	20.1			1370	0.000	1250	0.0							
	5		1370	0.000	1250	0.0			1370	0.000	1250	0.0	15.5	1370	0.011	1250	14.1			1370	0.000	1250	0.0							
	6		1370	0.000	1250	0.0			1370	0.000	1250	0.0	13	1370	0.009	1250	11.9			1370	0.000	1250	0.0							

DAYLIGHT DISTRIBUTION AT 22 DECEMBER : MODEL 8

OPENING SIDE	NORTH						EAST					SOUTH					WEST				
	Skydome			Eh			Skydome			Eh		Skydome			Eh		Skydome			Eh	
	int	ext	DF	EXT ILL	INT ILL		int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL
8:00	1		920	0.000	800	0.0						109	970	0.118	800	94.8	57.8	920	0.063	800	50.3
	2		920	0.000	800	0.0						67	920	0.073	800	58.3	36	920	0.039	800	31.3
	3		920	0.000	800	0.0	DIRECT SUN EFFECT					14	920	0.048	800	38.3	24	920	0.026	800	20.9
	4		920	0.000	800	0.0						32	920	0.035	800	27.8	19	920	0.021	800	16.5
	5		920	0.000	800	0.0						27.5	920	0.030	800	23.9	16	920	0.017	800	13.9
	6		920	0.000	800	0.0						27	920	0.029	800	23.5	16	920	0.017	800	13.9
10:00	1		1725	0.000	1500	0.0	215	1725	0.125	1500	187.0	348	1725	0.202	1500	302.6	60.8	1725	0.035	1500	52.9
	2		1725	0.000	1500	0.0	132	1725	0.077	1500	114.8	209	1725	0.121	1500	181.7	37	1725	0.021	1500	32.2
	3		1725	0.000	1500	0.0	85	1725	0.049	1500	73.9	132	1725	0.077	1500	114.8	25.5	1725	0.015	1500	22.2
	4		1725	0.000	1500	0.0	58.5	1725	0.034	1500	59.9	89	1725	0.052	1500	77.4	19.5	1725	0.011	1500	17.0
	5		1725	0.000	1500	0.0	47.5	1725	0.028	1500	41.3	73	1725	0.042	1500	63.5	16.5	1725	0.010	1500	14.3
	6		1725	0.000	1500	0.0	47.5	1725	0.028	1500	41.3	69	1725	0.040	1500	60.0	16.5	1725	0.010	1500	14.3
12:00	1		1840	0.000	1600	0.0	68.5	1840	0.037	1600	59.6	785	1840	0.427	1600	682.6	70	1840	0.038	1600	60.9
	2		1840	0.000	1600	0.0	41.5	1840	0.023	1600	36.1	410	1840	0.223	1600	336.5	43	1840	0.023	1600	37.4
	3		1840	0.000	1600	0.0	28	1840	0.015	1600	24.3	247	1840	0.134	1600	214.8	29	1840	0.016	1600	25.2
	4		1840	0.000	1600	0.0	21.5	1840	0.012	1600	18.7	170	1840	0.092	1600	147.8	22	1840	0.012	1600	19.1
	5		1840	0.000	1600	0.0	17.8	1840	0.010	1600	15.5	133	1840	0.072	1600	115.7	19	1840	0.010	1600	16.5
	6		1840	0.000	1600	0.0	17.8	1840	0.010	1600	15.5	123	1840	0.067	1600	107.0	19	1840	0.010	1600	16.5
14:00	1		1725	0.000	1500	0.0	59.5	1725	0.034	1500	51.7	346.5	1725	0.201	1500	301.3	218	1725	0.126	1500	189.6
	2		1725	0.000	1500	0.0	36.8	1725	0.021	1500	32.0	207	1725	0.120	1500	180.0	133	1725	0.077	1500	115.7
	3		1725	0.000	1500	0.0	25	1725	0.014	1500	21.7	131	1725	0.076	1500	113.9	86	1725	0.050	1500	74.8
	4		1725	0.000	1500	0.0	19	1725	0.011	1500	16.5	87.5	1725	0.051	1500	76.1	60	1725	0.035	1500	52.2
	5		1725	0.000	1500	0.0	16	1725	0.009	1500	13.9	72	1725	0.042	1500	62.0	48.5	1725	0.028	1500	42.2
	6		1725	0.000	1500	0.0	16	1725	0.009	1500	13.9	68	1725	0.039	1500	59.1	42	1725	0.028	1500	41.7
16:00	1		920	0.000	800	0.0	56.5	920	0.061	800	49.1	107	920	0.116	800	93.0					
	2		920	0.000	800	0.0	35	920	0.038	800	30.4	66	920	0.072	800	57.4					
	3		920	0.000	800	0.0	23.5	920	0.026	800	20.4	43	920	0.047	800	37.4	DIRECT SUN EFFECT				
	4		920	0.000	800	0.0	18.5	920	0.020	800	16.1	31	920	0.034	800	27.0					
	5		920	0.000	800	0.0	15	920	0.010	800	13.0	27	920	0.029	800	23.5					
	6		920	0.000	800	0.0	15	920	0.015	800	13.0	27.6	920	0.030	800	24.0					

DAYLIGHT DISTRIBUTION AT 22 DECEMBER : MODEL 9

OPENING SID	NORTH																				EAST					SOUTH					WEST				
	Skydome					Eh					Skydome					Eh					Skydome					Eh									
	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL	int	ext	DF	EXT IL	INT IL										
8:00	1		920	0.000	800	0.0									95.5	920	0.104	800	83.0	51	920	0.055	800	44.3											
	2		920	0.000	800	0.0									62	920	0.067	800	53.9	34.8	920	0.038	800	30.3											
	3		920	0.000	800	0.0	DIRECT SUN EFFECT								42.5	920	0.046	800	37.0	24.5	920	0.027	800	21.3											
	4		920	0.000	800	0.0									31	920	0.034	800	27.0	19	920	0.021	800	16.5											
	5		920	0.000	800	0.0									27	920	0.029	800	23.5	16	920	0.017	800	13.9											
	6		920	0.000	800	0.0									27	920	0.029	800	23.5	16	920	0.017	800	13.9											
10:00	1		1725	0.000	1500	0.0	186	1725	0.108	1500	161.7	300	1725	0.174	1500	260.9	57.8	1725	0.034	1500	50.2														
	2		1725	0.000	1500	0.0	120	1725	0.070	1500	104.3	192	1725	0.111	1500	167.0	37	1725	0.021	1500	32.2														
	3		1725	0.000	1500	0.0	79.5	1725	0.046	1500	69.1	124	1725	0.072	1500	107.8	21	1725	0.012	1500	18.3														
	4		1725	0.000	1500	0.0	58.5	1725	0.034	1500	50.9	89	1725	0.052	1500	77.4	20	1725	0.012	1500	17.4														
	5		1725	0.000	1500	0.0	47	1725	0.027	1500	40.9	74	1725	0.043	1500	64.3	17	1725	0.010	1500	14.8														
	6		1725	0.000	1500	0.0	40	1725	0.027	1500	40.0	72.5	1725	0.042	1500	63.0	17	1725	0.010	1500	14.8														
12:00	1		1840	0.000	1600	0.0	62.5	1840	0.034	1600	54.3	715	1840	0.389	1600	621.7	63.5	1840	0.035	1600	55.2														
	2		1840	0.000	1600	0.0	39.5	1840	0.021	1600	34.3	405	1840	0.220	1600	352.2	40.5	1840	0.022	1600	35.2														
	3		1840	0.000	1600	0.0	27	1840	0.015	1600	23.5	252	1840	0.137	1600	219.1	27.5	1840	0.015	1600	23.9														
	4		1840	0.000	1600	0.0	20	1840	0.011	1600	17.4	174	1840	0.095	1600	151.3	21	1840	0.011	1600	18.3														
	5		1840	0.000	1600	0.0	17.5	1840	0.010	1600	15.2	138	1840	0.075	1600	120.0	18	1840	0.010	1600	15.7														
	6		1840	0.000	1600	0.0	17.5	1840	0.010	1600	15.2	130	1840	0.071	1600	113.0	18	1840	0.010	1600	15.7														
14:00	1		1725	0.000	1500	0.0	57	1725	0.033	1500	49.6	297	1725	0.172	1500	258.3	188	1725	0.109	1500	163.5														
	2		1725	0.000	1500	0.0	36.8	1725	0.021	1500	32.0	190	1725	0.110	1500	165.2	121.5	1725	0.070	1500	105.7														
	3		1725	0.000	1500	0.0	20.5	1725	0.012	1500	17.8	122.5	1725	0.071	1500	106.5	81	1725	0.047	1500	70.4														
	4		1725	0.000	1500	0.0	19	1725	0.011	1500	16.5	87	1725	0.050	1500	75.7	60	1725	0.035	1500	52.2														
	5		1725	0.000	1500	0.0	16	1725	0.009	1500	13.9	73	1725	0.042	1500	63.5	48	1725	0.028	1500	41.7														
	6		1725	0.000	1500	0.0	16	1725	0.009	1500	13.9	72	1725	0.042	1500	62.6	47.5	1725	0.028	1500	41.3														
16:00	1		920	0.000	800	0.0	52.8	920	0.057	800	45.9	93	920	0.101	800	80.9																			
	2		920	0.000	800	0.0	33.5	920	0.036	800	29.1	60	920	0.065	800	52.2																			
	3		920	0.000	800	0.0	23.8	920	0.026	800	20.7	41	920	0.045	800	35.7	DIRECT SUN EFFECT																		
	4		920	0.000	800	0.0	18	920	0.020	800	15.7	30	920	0.033	800	26.1																			
	5		920	0.000	800	0.0	15.5	920	0.017	800	13.5	25.5	920	0.028	800	22.2																			
	6		920	0.000	800	0.0	15.5	920	0.017	800	13.5	25.5	920	0.028	800	22.2																			

DAYLIGHT DISTRIBUTION AT 23 DECEMBER : MODEL 10

OPENING SID	NORTH										EAST					SOUTH					WEST									
	Skydome					Eh					Skydome					Eh					Skydome					Eh				
	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL					
8:00	1	75	920	0.082	800	65.2									227	920	0.247	800	197.4	75	920	0.082	800	65.2						
	2	45.5	920	0.049	800	39.6									73	920	0.079	800	63.5	44	920	0.048	800	38.3						
	3	30	920	0.033	800	26.1	DIRECT SUN EFFECT					48	920	0.052	800	41.7	30	920	0.033	800	26.1									
	4	22.5	920	0.024	800	19.6										34	920	0.037	800	29.6	22	920	0.024	800	19.1					
	5	19.5	920	0.021	800	17.0										28.8	920	0.031	800	25.0	19	920	0.021	800	16.5					
	6	19.5	920	0.021	800	17.0										28.5	920	0.031	800	24.8	18.5	920	0.020	800	16.1					
10:00	1	74.5	1725	0.043	1500	64.8	179	1725	0.104	1500	155.7	310	1725	0.180	1500	269.6	78	1725	0.045	1500	67.3									
	2	44.5	1725	0.026	1500	38.7	110	1725	0.064	1500	95.7	190	1725	0.110	1500	165.2	45	1725	0.026	1500	39.1									
	3	29	1725	0.017	1500	25.2	71	1725	0.041	1500	61.7	117	1725	0.068	1500	101.7	30	1725	0.017	1500	26.1									
	4	21.5	1725	0.012	1500	18.7	50.5	1725	0.029	1500	43.9	85	1725	0.049	1500	73.9	22.5	1725	0.013	1500	19.6									
	5	18.5	1725	0.011	1500	16.1	43	1725	0.025	1500	37.4	69	1725	0.040	1500	60.0	19.5	1725	0.011	1500	17.0									
	6	18.5	1725	0.011	1500	16.1	40	1725	0.023	1500	34.8	68	1725	0.039	1500	59.1	19.5	1725	0.011	1500	17.0									
12:00	1	73.5	1840	0.040	1600	63.9	79	1840	0.043	1600	68.7	845	1840	0.459	1600	734.8	81	1840	0.044	1600	70.4									
	2	44	1840	0.024	1600	38.3	47	1840	0.026	1600	40.9	440	1840	0.239	1600	382.6	48	1840	0.026	1600	41.7									
	3	28.5	1840	0.015	1600	24.8	31.5	1840	0.017	1600	27.4	265	1840	0.144	1600	230.4	32	1840	0.017	1600	27.8									
	4	21	1840	0.011	1600	18.3	23.5	1840	0.013	1600	20.4	182	1840	0.099	1600	158.3	24	1840	0.013	1600	20.9									
	5	18	1840	0.010	1600	15.7	20.5	1840	0.011	1600	17.8	149	1840	0.081	1600	129.6	21.5	1840	0.012	1600	18.7									
	6	18	1840	0.010	1600	15.7	20.5	1840	0.011	1600	17.6	140	1840	0.076	1600	121.7	21.5	1840	0.012	1600	18.7									
14:00	1	78.5	1725	0.046	1500	68.3	76.5	1725	0.044	1500	66.5	300	1725	0.174	1500	260.9	173	1725	0.100	1500	150.4									
	2	46.5	1725	0.027	1500	40.4	44	1725	0.026	1500	38.3	187	1725	0.108	1500	162.6	107	1725	0.062	1500	93.0									
	3	30	1725	0.017	1500	26.1	29.4	1725	0.017	1500	25.6	115	1725	0.067	1500	100.0	70	1725	0.041	1500	60.9									
	4	22.5	1725	0.013	1500	19.6	22.4	1725	0.013	1500	19.5	84	1725	0.049	1500	73.0	50	1725	0.029	1500	43.5									
	5	19.5	1725	0.011	1500	17.0	19.6	1725	0.011	1500	17.0	67	1725	0.039	1500	58.3	42	1725	0.024	1500	36.5									
	6	19.5	1725	0.011	1500	17.0	19.6	1725	0.011	1500	17.0	66	1725	0.038	1500	57.4	38.8	1725	0.022	1500	33.7									
16:00	1	81.5	920	0.089	800	70.9	73	920	0.079	800	63.5	224	920	0.243	800	194.8														
	2	48	920	0.052	800	41.7	43.5	920	0.047	800	37.8	71.5	920	0.078	800	62.2														
	3	31.8	920	0.035	800	27.7	29.5	920	0.032	800	25.7	46	920	0.050	800	40.0	DIRECT SUN EFFECT													
	4	23.5	920	0.026	800	20.4	21.8	920	0.024	800	19.0	33.5	920	0.036	800	29.1														
	5	20.5	920	0.022	800	17.8	19	920	0.021	800	16.5	28	920	0.030	800	24.3														
	6	20.5	920	0.022	800	17.8	19	920	0.021	800	16.5	28	920	0.030	800	24.3														

DAYLIGHT DISTRIBUTION AT 22 DECEMBER : MODEL 11

OPENING SID	NORTH						EAST						SOUTH						WEST					
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh		
	int	ext	DF	EKT ILL	INT ILL		int	ext	DF	EKT ILL	INT ILL		int	ext	DF	EKT ILL	INT ILL		int	ext	DF	EKT ILL	INT ILL	
8:00	1	45	920	0.049	800	39.1	163	920	0.177	800	141.7	89	920	0.097	800	77.4	41.5	920	0.045	800	35.1			
	2	27.5	920	0.030	800	23.9	96.5	920	0.105	800	83.9	47.8	920	0.052	800	41.6	23	920	0.025	800	20.0			
	3	18	920	0.020	800	15.7	52.5	920	0.057	800	45.7	31	920	0.034	800	27.0	16	920	0.017	800	13.9			
	4	13	920	0.014	800	11.3	38.5	920	0.042	800	33.5	22.8	920	0.025	800	19.8	12	920	0.013	800	10.4			
	5	11	920	0.012	800	9.6	32.5	920	0.035	800	28.3	19.5	920	0.021	800	17.0	10.5	920	0.011	800	9.1			
	6	11	920	0.012	800	9.6	32.5	920	0.035	800	28.3	19.5	920	0.021	800	17.0	10.5	920	0.011	800	9.1			
10:00	1	43	1725	0.025	1500	37.4	224	1725	0.130	1500	194.8	345	1725	0.200	1500	300.0	43.5	1725	0.025	1500	37.8			
	2	27	1725	0.016	1500	23.5	118	1725	0.068	1500	102.6	177	1725	0.103	1500	153.9	24.5	1725	0.014	1500	21.3			
	3	17.5	1725	0.010	1500	15.2	72.5	1725	0.042	1500	63.0	103	1725	0.060	1500	89.6	16.5	1725	0.010	1500	14.3			
	4	12.5	1725	0.007	1500	10.9	50.5	1725	0.029	1500	43.9	75	1725	0.043	1500	65.2	13	1725	0.008	1500	11.3			
	5	10.8	1725	0.006	1500	9.4	42	1725	0.024	1500	36.5	61	1725	0.035	1500	53.0	11	1725	0.006	1500	9.6			
	6	10.8	1725	0.006	1500	9.4	41.5	1725	0.024	1500	36.1	60.5	1725	0.035	1500	52.6	11	1725	0.006	1500	9.6			
12:00	1	43	1840	0.023	1600	37.4	49	1840	0.027	1600	42.6	710	1840	0.386	1600	617.4	50	1840	0.027	1600	43.5			
	2	27	1840	0.015	1600	23.5	27	1840	0.015	1600	23.5	340	1840	0.185	1600	295.7	27.5	1840	0.015	1600	23.9			
	3	18	1840	0.010	1600	15.7	18	1840	0.010	1600	15.7	190	1840	0.103	1600	165.2	18	1840	0.010	1600	15.7			
	4	13	1840	0.007	1600	11.3	14	1840	0.008	1600	12.2	136	1840	0.071	1600	113.0	14	1840	0.008	1600	12.2			
	5	10.5	1840	0.006	1600	9.1	12	1840	0.007	1600	10.4	104	1840	0.057	1600	90.4	12	1840	0.007	1600	10.4			
	6	10.5	1840	0.006	1600	9.1	12	1840	0.007	1600	10.4	100	1840	0.054	1600	87.0	12	1840	0.007	1600	10.4			
14:00	1	44.5	1725	0.026	1500	38.7	42.5	1725	0.025	1500	37.0	342	1725	0.198	1500	297.4	227	1725	0.132	1500	197.4			
	2	27.5	1725	0.016	1500	23.9	23.5	1725	0.014	1500	20.4	175	1725	0.101	1500	152.2	120	1725	0.070	1500	104.3			
	3	18	1725	0.010	1500	15.7	16	1725	0.009	1500	13.9	102	1725	0.059	1500	88.7	74	1725	0.043	1500	64.3			
	4	13.5	1725	0.008	1500	11.7	12.5	1725	0.007	1500	10.9	73	1725	0.042	1500	63.5	51.5	1725	0.030	1500	44.8			
	5	10.8	1725	0.006	1500	9.4	11	1725	0.006	1500	9.6	60	1725	0.035	1500	52.2	43	1725	0.025	1500	37.4			
	6	10.8	1725	0.006	1500	9.4	11	1725	0.006	1500	9.6	60	1725	0.035	1500	52.2	42	1725	0.024	1500	36.5			
16:00	1	45.5	920	0.049	800	39.6	40	920	0.043	800	34.8	89.5	920	0.097	800	77.8	165	920	0.179	800	143.5			
	2	28	920	0.030	800	24.3	22	920	0.024	800	19.1	45.5	920	0.051	800	40.4	97.8	920	0.106	800	85.0			
	3	18	920	0.020	800	15.7	15	920	0.016	800	13.0	30	920	0.033	800	26.1	54	920	0.059	800	77.0			
	4	13.5	920	0.015	800	11.7	11.5	920	0.013	800	10.0	21.5	920	0.023	800	18.7	39.8	920	0.043	800	34.6			
	5	11.5	920	0.013	800	10.0	10	920	0.011	800	8.7	19	920	0.021	800	16.5	33.5	920	0.036	800	29.1			
	6	11.5	920	0.013	800	10.0	10	920	0.011	800	8.7	19	920	0.021	800	16.5	33	920	0.036	800	28.7			

DAYLIGHT DISTRIBUTION AT 22 DECEMBER : MODEL 12

OPENING SID	NORTH						EAST						SOUTH						WEST					
	Skydome			Eh			Skydome			Eh			Skydome			Eh			Skydome			Eh		
	int	ext	DF	EKT ILI	INT ILI		int	ext	DF	EKT ILI	INT ILI		int	ext	DF	EKT ILI	INT ILI		int	ext	DF	EKT ILI	INT ILI	
8:00	1	33	920	0.036	800	28.7	144	920	0.157	800	125.2	69	920	0.075	800	60.0	28	920	0.030	800	24.3			
	2	23.5	920	0.026	800	20.4	84	920	0.091	800	73.0	41	920	0.045	800	35.7	18.8	920	0.020	800	16.3			
	3	15.5	920	0.017	800	13.5	51	920	0.055	800	44.3	26	920	0.028	800	22.6	12.5	920	0.014	800	10.9			
	4	10.5	920	0.011	800	9.1	35	920	0.038	800	30.4	18	920	0.020	800	15.7	9	920	0.010	800	7.8			
	5	8.5	920	0.009	800	7.4	29.5	920	0.032	800	25.7	16	920	0.017	800	13.9	7.8	920	0.008	800	6.8			
	6	8.5	920	0.009	800	7.4	29	920	0.032	800	25.2	16	920	0.017	800	13.9	7.8	920	0.008	800	6.8			
10:00	1	31	1725	0.018	1500	27.0	119	1725	0.069	1500	103.5	229.5	1725	0.133	1500	199.6	30	1725	0.017	1500	26.1			
	2	22	1725	0.013	1500	19.1	89	1725	0.052	1500	77.4	145	1725	0.084	1500	126.1	20	1725	0.012	1500	17.4			
	3	14.5	1725	0.008	1500	12.6	57	1725	0.033	1500	49.6	86	1725	0.050	1500	74.8	13	1725	0.008	1500	11.3			
	4	10.5	1725	0.006	1500	9.1	41	1725	0.024	1500	35.7	61.5	1725	0.036	1500	53.5	10	1725	0.006	1500	8.7			
	5	8.5	1725	0.005	1500	7.4	35	1725	0.020	1500	30.4	51	1725	0.030	1500	44.3	8.5	1725	0.005	1500	7.4			
	6	8.5	1725	0.005	1500	7.4	35	1725	0.020	1500	30.4	50.5	1725	0.029	1500	43.9	8.5	1725	0.005	1500	7.4			
12:00	1	31	1840	0.017	1600	27.0	31	1840	0.017	1600	27.0	520	1840	0.283	1600	452.2	32.5	1840	0.018	1600	28.3			
	2	22	1840	0.012	1600	19.1	20.5	1840	0.011	1600	17.8	295	1840	0.160	1600	256.5	21.5	1840	0.012	1600	18.7			
	3	14.5	1840	0.008	1600	12.6	14	1840	0.008	1600	12.7	172	1840	0.093	1600	149.6	14.5	1840	0.008	1600	12.6			
	4	10.5	1840	0.006	1600	9.1	10	1840	0.005	1600	8.7	127	1840	0.069	1600	110.4	10	1840	0.005	1600	8.7			
	5	8	1840	0.004	1600	7.0	9	1840	0.005	1600	7.8	97	1840	0.053	1600	84.3	9.5	1840	0.005	1600	8.3			
	6	8	1840	0.004	1600	7.0	9	1840	0.005	1600	7.8	95	1840	0.052	1600	82.6	9.5	1840	0.005	1600	8.3			
14:00	1	33	1725	0.019	1500	28.7	29	1725	0.017	1500	25.2	223	1725	0.129	1500	193.9	121	1725	0.070	1500	105.2			
	2	23.5	1725	0.014	1500	20.4	19	1725	0.011	1500	16.5	137	1725	0.079	1500	119.1	92	1725	0.053	1500	80.0			
	3	15.5	1725	0.009	1500	13.5	13	1725	0.008	1500	11.3	84	1725	0.049	1500	73.0	59	1725	0.034	1500	51.3			
	4	11	1725	0.006	1500	9.6	9.5	1725	0.006	1500	8.3	60.5	1725	0.035	1500	52.6	42	1725	0.024	1500	36.5			
	5	9	1725	0.005	1500	7.8	8	1725	0.005	1500	7.0	50	1725	0.029	1500	43.5	35	1725	0.020	1500	30.4			
	6	8.5	1725	0.005	1500	7.4	8	1725	0.005	1500	7.0	50	1725	0.029	1500	43.5	35	1725	0.020	1500	30.4			
16:00	1	33.5	920	0.036	800	29.1	27	920	0.029	800	23.5	67	920	0.073	800	58.3	146	920	0.159	800	127.0			
	2	24	920	0.026	800	20.9	17.5	920	0.019	800	15.2	40	920	0.043	800	34.8	85.5	920	0.093	800	74.3			
	3	15.5	920	0.017	800	13.5	11.5	920	0.013	800	10.0	25	920	0.027	800	21.7	53	920	0.058	800	46.1			
	4	11	920	0.012	800	9.6	8.5	920	0.009	800	7.4	17	920	0.018	800	14.8	36	920	0.039	800	31.3			
	5	9	920	0.010	800	7.8	7.5	920	0.008	800	6.5	16	920	0.017	800	13.9	30	920	0.033	800	26.1			
	6	9	920	0.010	800	7.8	7.5	920	0.008	800	6.5	16	920	0.017	800	13.9	29.5	920	0.032	800	25.7			

DAYLIGHT DISTRIBUTION AT 22 DECEMBER : MODEL 18

OPENING SIDE		NORTH					EAST					SOUTH					WEST				
		Skydome			Eh		Skydome			Eh		Skydome			Eh		Skydome			Eh	
		int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL	int	ext	DF	EXT ILL	INT ILL
8:00	1		920	0.000	800	0.0		920	0.000	800	0.0	110	920	0.120	800	95.7		920	0.000	800	0.0
	2		920	0.000	800	0.0		920	0.000	800	0.0	60	920	0.065	800	52.2		920	0.000	800	0.0
	3		920	0.000	800	0.0		920	0.000	800	0.0	38	920	0.041	800	33.0		920	0.000	800	0.0
	4		920	0.000	800	0.0		920	0.000	800	0.0	26.5	920	0.029	800	23.0		920	0.000	800	0.0
	5		920	0.000	800	0.0		920	0.000	800	0.0	22	920	0.024	800	19.1		920	0.000	800	0.0
	6		920	0.000	800	0.0		920	0.000	800	0.0	21.5	920	0.023	800	18.7		920	0.000	800	0.0
10:00	1		1725	0.000	1500	0.0		1725	0.000	1500	0.0	360	1725	0.209	1500	313.0		1725	0.000	1500	0.0
	2		1725	0.000	1500	0.0		1725	0.000	1500	0.0	233	1725	0.135	1500	202.6		1725	0.000	1500	0.0
	3		1725	0.000	1500	0.0		1725	0.000	1500	0.0	116	1725	0.067	1500	100.9		1725	0.000	1500	0.0
	4		1725	0.000	1500	0.0		1725	0.000	1500	0.0	81	1725	0.047	1500	70.4		1725	0.000	1500	0.0
	5		1725	0.000	1500	0.0		1725	0.000	1500	0.0	66	1725	0.038	1500	57.4		1725	0.000	1500	0.0
	6		1725	0.000	1500	0.0		1725	0.000	1500	0.0	60	1725	0.035	1500	52.2		1725	0.000	1500	0.0
12:00	1		1840	0.000	1600	0.0		1840	0.000	1600	0.0	730	1840	0.397	1600	634.8		1840	0.000	1600	0.0
	2		1840	0.000	1600	0.0		1840	0.000	1600	0.0	370	1840	0.201	1600	321.7		1840	0.000	1600	0.0
	3		1840	0.000	1600	0.0		1840	0.000	1600	0.0	210	1840	0.114	1600	182.6		1840	0.000	1600	0.0
	4		1840	0.000	1600	0.0		1840	0.000	1600	0.0	135	1840	0.073	1600	117.4		1840	0.000	1600	0.0
	5		1840	0.000	1600	0.0		1840	0.000	1600	0.0	110	1840	0.060	1600	95.7		1840	0.000	1600	0.0
	6		1840	0.000	1600	0.0		1840	0.000	1600	0.0	100	1840	0.054	1600	87.0		1840	0.000	1600	0.0
14:00	1		1725	0.000	1500	0.0		1725	0.000	1500	0.0	350	1725	0.203	1500	304.3		1725	0.000	1500	0.0
	2		1725	0.000	1500	0.0		1725	0.000	1500	0.0	230	1725	0.133	1500	200.0		1725	0.000	1500	0.0
	3		1725	0.000	1500	0.0		1725	0.000	1500	0.0	113.5	1725	0.066	1500	98.7		1725	0.000	1500	0.0
	4		1725	0.000	1500	0.0		1725	0.000	1500	0.0	79.5	1725	0.046	1500	59.1		1725	0.000	1500	0.0
	5		1725	0.000	1500	0.0		1725	0.000	1500	0.0	64	1725	0.037	1500	55.7		1725	0.000	1500	0.0
	6		1725	0.000	1500	0.0		1725	0.000	1500	0.0	60	1725	0.035	1500	52.2		1725	0.000	1500	0.0
16:00	1		920	0.000	800	0.0		920	0.000	800	0.0	107	920	0.116	800	93.0		920	0.000	800	0.0
	2		920	0.000	800	0.0		920	0.000	800	0.0	59	920	0.064	800	51.3		920	0.000	800	0.0
	3		920	0.000	800	0.0		920	0.000	800	0.0	37	920	0.040	800	32.2		920	0.000	800	0.0
	4		920	0.000	800	0.0		920	0.000	800	0.0	26	920	0.028	800	22.6		920	0.000	800	0.0
	5		920	0.000	800	0.0		920	0.000	800	0.0	24	920	0.026	800	20.9		920	0.000	800	0.0
	6		920	0.000	800	0.0		920	0.000	800	0.0	21	920	0.023	800	18.3		920	0.000	800	0.0

ข้อมูลดวงอาทิตย์สำหรับด้านที่หันหน้าไปทางทิศเหนือ

NORTH ORIENTATION									
Azimuth = 180					Tilt angle = 90				
21 March					22 June				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	0.00	0.00	0.00	22.70	07:00	35.69	68.90	43.58	28.85
08:00	0.00	0.00	0.00	60.80	08:00	58.06	70.50	60.15	58.65
09:00	0.00	0.00	0.00	101.05	09:00	69.76	70.66	69.07	84.15
10:00	0.00	0.00	0.00	128.05	10:00	75.85	68.39	69.71	107.37
11:00	0.00	0.00	0.00	145.08	11:00	78.96	59.82	63.25	138.03
12:00	0.00	0.00	0.00	151.70	12:00	80.20	24.92	60.36	161.38
13:00	0.00	0.00	0.00	148.39	13:00	79.96	-42.98	57.11	164.30
14:00	0.00	0.00	0.00	142.63	14:00	78.14	-64.04	44.31	151.27
15:00	0.00	0.00	0.00	124.96	15:00	74.18	-69.58	25.07	130.85
16:00	0.00	0.00	0.00	95.33	16:00	66.58	-70.80	13.18	102.13
17:00	0.00	0.00	0.00	58.39	17:00	51.89	-70.09	12.01	59.00

NORTH ORIENTATION									
Azimuth = 180					Tilt angle = 90				
23 Sep					22 Dec				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	0.00	0.00	0.00	24.90	07:00	0.00	0.00	0.00	15.95
08:00	0.00	0.00	0.00	66.65	08:00	0.00	0.00	0.00	43.77
09:00	0.00	0.00	0.00	95.72	09:00	0.00	0.00	0.00	65.45
10:00	0.00	0.00	0.00	114.72	10:00	0.00	0.00	0.00	71.72
11:00	0.00	0.00	0.00	126.59	11:00	0.00	0.00	0.00	78.52
12:00	0.00	0.00	0.00	132.48	12:00	0.00	0.00	0.00	92.02
13:00	0.00	0.00	0.00	114.25	13:00	0.00	0.00	0.00	101.69
14:00	0.00	0.00	0.00	80.97	14:00	0.00	0.00	0.00	101.01
15:00	0.00	0.00	0.00	68.03	15:00	0.00	0.00	0.00	86.56
16:00	0.00	0.00	0.00	49.88	16:00	0.00	0.00	0.00	60.80
17:00	0.00	0.00	0.00	21.98	17:00	0.00	0.00	0.00	29.58

ข้อมูลดวงอาทิตย์สำหรับด้านที่หันหน้าไปทางทิศตะวันออกเฉียงเหนือ

NORTH-EAST ORIENTATION									
Azimuth = -135					Tilt angle = 90				
21 March					22 June				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	12.02	47.44	92.48	22.70	07:00	15.79	23.91	110.69	28.85
08:00	33.83	51.33	114.21	60.85	08:00	30.69	25.50	162.63	58.65
09:00	53.68	56.19	122.33	101.05	09:00	44.89	25.66	188.00	84.15
10:00	70.22	63.40	99.78	128.05	10:00	57.85	23.40	173.75	107.37
11:00	83.82	76.90	39.49	145.08	11:00	69.44	14.82	121.64	138.03
12:00	0.00	0.00	0.00	151.70	12:00	79.86	-20.08	62.51	161.38
13:00	0.00	0.00	0.00	148.39	13:00	82.51	-82.89	2.75	164.30
14:00	0.00	0.00	0.00	142.63	14:00	0.00	0.00	0.00	151.27
15:00	0.00	0.00	0.00	124.96	15:00	0.00	0.00	0.00	130.85
16:00	0.00	0.00	0.00	95.33	16:00	0.00	0.00	0.00	102.13
17:00	0.00	0.00	0.00	58.39	17:00	0.00	0.00	0.00	59.00

NORTH-EAST ORIENTATION									
Azimuth = -135					Tilt angle = 90				
23 Sep					22 Dec				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	18.03	49.05	61.04	24.90	07:00	11.79	70.32	55.77	15.95
08:00	39.79	53.18	57.93	66.65	08:00	49.93	75.17	73.85	43.77
09:00	58.92	58.60	79.99	95.72	09:00	76.28	82.19	45.70	65.45
10:00	74.83	67.14	51.67	114.72	10:00	0.00	0.00	0.00	71.72
11:00	87.61	84.26	8.20	126.59	11:00	0.00	0.00	0.00	78.52
12:00	0.00	0.00	0.00	132.48	12:00	0.00	0.00	0.00	92.02
13:00	0.00	0.00	0.00	114.25	13:00	0.00	0.00	0.00	101.69
14:00	0.00	0.00	0.00	80.97	14:00	0.00	0.00	0.00	101.01
15:00	0.00	0.00	0.00	68.03	15:00	0.00	0.00	0.00	86.56
16:00	0.00	0.00	0.00	49.88	16:00	0.00	0.00	0.00	60.80
17:00	0.00	0.00	0.00	24.98	17:00	0.00	0.00	0.00	29.58

ข้อมูลดวงอาทิตย์สำหรับด้านที่หันหน้าไปทางทิศตะวันออก

EAST ORIENTATION									
Azimuth = -90									
Tilt angle = 90									
21 March					22 June				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	8.20	2.44	136.61	22.70	07:00	15.49	-21.09	112.97	28.85
08:00	22.85	6.33	181.65	60.80	08:00	29.60	-19.50	169.84	58.65
09:00	37.66	11.19	215.65	101.05	09:00	43.38	-19.34	196.81	84.15
10:00	52.68	18.40	211.48	128.05	10:00	57.52	-21.60	176.01	107.37
11:00	67.93	31.90	147.91	145.08	11:00	71.46	-30.18	108.77	138.03
12:00	83.34	65.12	47.74	151.70	12:00	85.41	-65.08	28.04	161.38
13:00	0.00	0.00	0.00	148.39	13:00	0.00	0.00	0.00	164.30
14:00	0.00	0.00	0.00	142.63	14:00	0.00	0.00	0.00	151.27
15:00	0.00	0.00	0.00	124.96	15:00	0.00	0.00	0.00	130.85
16:00	0.00	0.00	0.00	95.33	16:00	0.00	0.00	0.00	102.13
17:00	0.00	0.00	0.00	58.39	17:00	0.00	0.00	0.00	59.00

23 Sep					22 Dec				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	12.07	4.05	92.91	24.90	07:00	4.45	25.33	120.97	15.95
08:00	26.76	8.18	95.67	66.65	08:00	19.40	30.17	249.39	43.77
09:00	41.65	13.60	149.22	95.72	09:00	34.92	37.19	268.05	65.45
10:00	56.76	22.14	123.19	114.72	10:00	51.08	47.56	250.47	71.72
11:00	72.10	39.26	63.50	126.59	11:00	67.83	62.81	155.31	78.52
12:00	87.57	80.86	11.01	132.48	12:00	84.98	83.41	34.13	92.02
13:00	0.00	0.00	0.00	114.25	13:00	0.00	0.00	0.00	101.70
14:00	0.00	0.00	0.00	80.97	14:00	0.00	0.00	0.00	101.01
15:00	0.00	0.00	0.00	68.03	15:00	0.00	0.00	0.00	86.56
16:00	0.00	0.00	0.00	49.88	16:00	0.00	0.00	0.00	60.80
17:00	0.00	0.00	0.00	24.98	17:00	0.00	0.00	0.00	29.58

ข้อมูลดวงอาทิตย์สำหรับด้านที่หันหน้าไปทางทิศตะวันออกเฉียงใต้

SOUTH-EAST ORIENTATION									
Azimuth = -45									
Tilt angle = 90									
21 March					22 June				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	11.06	-42.56	100.71	22.70	07:00	32.54	-66.10	49.06	28.85
08:00	28.21	-38.57	142.69	60.85	08:00	51.21	-64.50	77.57	58.65
09:00	42.34	-33.81	182.65	101.05	09:00	64.25	-64.34	90.32	84.15
10:00	54.31	-26.60	199.30	128.05	10:00	74.79	-66.61	75.17	107.37
11:00	65.06	-13.10	169.69	145.08	11:00	84.33	-75.18	32.19	138.03
12:00	75.39	20.12	106.57	151.70	12:00	0.00	0.00	0.00	161.38
13:00	86.07	76.58	27.83	114.25	13:00	0.00	0.00	0.00	164.30
14:00	0.00	0.00	0.00	80.97	14:00	0.00	0.00	0.00	151.27
15:00	0.00	0.00	0.00	68.03	15:00	0.00	0.00	0.00	130.85
16:00	0.00	0.00	0.00	49.88	16:00	0.00	0.00	0.00	102.13
17:00	0.00	0.00	0.00	24.98	17:00	0.00	0.00	0.00	59.00

23 Sep					22 Dec				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	15.77	-40.93	70.35	24.90	07:00	4.27	-19.67	102.08	15.95
08:00	31.95	-36.82	77.57	66.65	08:00	17.48	-14.84	278.81	43.77
09:00	45.36	-31.40	131.04	95.72	09:00	29.31	-7.81	333.38	65.45
10:00	56.90	-22.86	122.54	114.72	10:00	39.92	2.56	370.79	71.72
11:00	67.46	-5.74	81.59	126.59	11:00	49.67	17.81	323.56	78.52
12:00	77.81	35.86	34.13	132.48	12:00	59.06	38.41	232.99	92.02
13:00	88.73	83.68	6.31	114.25	13:00	68.69	60.75	132.14	101.70
14:00	0.00	0.00	0.00	80.97	14:00	79.50	79.26	45.00	101.01
15:00	0.00	0.00	0.00	68.03	15:00	0.00	0.00	0.00	86.56
16:00	0.00	0.00	0.00	49.88	16:00	0.00	0.00	0.00	60.80
17:00	0.00	0.00	0.00	24.98	17:00	0.00	0.00	0.00	29.58

ข้อมูลดวงอาทิตย์สำหรับด้านที่หันหน้าไปทางทิศใต้

SOUTH ORIENTATION

Azimuth = 0					Tilt angle = 90				
21 March					22 June				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	73.55	-87.36	5.81	22.70	07:00	0.00	0.00	0.00	28.85
08:00	75.26	-83.67	20.14	60.85	08:00	0.00	0.00	0.00	58.65
09:00	75.62	-78.81	42.66	101.05	09:00	0.00	0.00	0.00	84.15
10:00	75.77	-71.60	70.37	129.05	10:00	0.00	0.00	0.00	107.37
11:00	75.84	-58.10	92.07	145.08	11:00	0.00	0.00	0.00	138.03
12:00	75.86	-24.88	102.97	151.70	12:00	0.00	0.00	0.00	161.38
13:00	75.86	31.58	102.14	148.39	13:00	0.00	0.00	0.00	164.30
14:00	75.83	60.67	90.89	142.63	14:00	0.00	0.00	0.00	151.27
15:00	75.75	72.83	72.60	124.96	15:00	0.00	0.00	0.00	130.85
16:00	75.59	79.58	49.58	95.33	16:00	0.00	0.00	0.00	102.13
17:00	75.17	84.25	24.92	58.39	17:00	0.00	0.00	0.00	59.00

23 Sep					22 Dec				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	71.67	-85.95	6.58	24.90	07:00	9.33	-64.68	82.65	15.95
08:00	74.10	-81.82	13.75	66.65	08:00	31.21	-59.83	144.95	43.77
09:00	74.78	-76.40	36.10	95.72	09:00	42.61	-52.81	203.42	65.45
10:00	75.08	-67.86	50.11	114.72	10:00	48.56	-42.44	273.91	71.72
11:00	75.21	-50.74	51.90	126.59	11:00	51.58	-27.19	302.27	78.52
12:00	75.26	-9.14	68.37	132.48	12:00	52.76	-6.59	295.37	92.02
13:00	75.24	41.38	74.97	114.25	13:00	52.46	15.75	260.30	101.69
14:00	75.13	63.90	62.65	80.97	14:00	50.58	34.26	202.17	101.01
15:00	74.90	74.21	52.22	68.03	15:00	46.52	47.28	171.90	86.56
16:00	74.39	80.32	34.18	49.88	16:00	38.73	56.08	136.71	60.80
17:00	72.89	84.74	11.44	24.98	17:00	23.67	62.08	73.00	29.58

ข้อมูลดวงอาทิตย์สำหรับด้านที่หันหน้าไปทางทิศตะวันตกเฉียงใต้

SOUTH-WEST ORIENTATION

Azimuth = -45					Tilt angle = 90				
21 March					22 June				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	0.00	0.00	0.00	22.70	07:00	0.00	0.00	0.00	28.85
08:00	0.00	0.00	0.00	60.85	08:00	0.00	0.00	0.00	58.65
09:00	0.00	0.00	0.00	101.05	09:00	0.00	0.00	0.00	84.15
10:00	0.00	0.00	0.00	128.05	10:00	0.00	0.00	0.00	107.37
11:00	0.00	0.00	0.00	145.08	11:00	0.00	0.00	0.00	138.03
12:00	84.54	-69.88	39.05	151.70	12:00	0.00	0.00	0.00	161.38
13:00	73.94	-13.42	116.62	148.39	13:00	0.00	0.00	0.00	164.30
14:00	63.61	15.56	178.64	142.63	14:00	81.11	70.96	33.01	151.27
15:00	52.74	27.83	217.50	124.96	15:00	71.35	63.42	29.87	130.85
16:00	40.53	34.53	225.72	95.33	16:00	60.17	64.20	17.15	102.13
17:00	26.03	39.25	102.65	58.39	17:00	45.67	64.91	14.95	59.00

23 Sep					22 Dec				
Time	θ_1	θ_2	I_D	I_g	Time	θ_1	θ_2	I_D	I_g
07:00	0.00	0.00	0.00	24.90	07:00	0.00	0.00	0.00	15.95
08:00	0.00	0.00	0.00	66.65	08:00	0.00	0.00	0.00	43.77
09:00	0.00	0.00	0.00	95.72	09:00	0.00	0.00	0.00	65.45
10:00	0.00	0.00	0.00	114.72	10:00	86.94	-67.44	16.57	71.72
11:00	0.00	0.00	0.00	126.59	11:00	74.75	-72.19	103.92	78.52
12:00	81.13	-54.14	40.37	132.48	12:00	64.58	-51.59	181.72	92.02
13:00	69.68	-3.62	99.71	114.25	13:00	55.14	-29.25	235.98	101.69
14:00	60.27	18.90	134.75	80.97	14:00	45.66	-10.74	210.33	101.01
15:00	49.13	29.21	107.45	68.03	15:00	35.60	2.28	253.20	86.56
16:00	36.40	35.32	105.87	49.88	16:00	24.52	11.07	240.39	60.80
17:00	21.17	39.74	95.94	24.98	17:00	12.12	17.08	149.02	29.58

ข้อมูลดวงอาทิตย์สำหรับด้านที่หันหน้าไปทางทิศตะวันตก

WEST ORIENTATION									
Azimuth = 90					Tilt angle = 90				
21 March					22 June				
Time	θ_1	θ_2	I_D	I_d	Time	θ_1	θ_2	I_D	I_d
07:00	0.00	0.00	0.00	22.70	07:00	0.00	0.00	0.00	28.85
08:00	0.00	0.00	0.00	60.80	08:00	0.00	0.00	0.00	58.65
09:00	0.00	0.00	0.00	101.05	09:00	0.00	0.00	0.00	84.15
10:00	0.00	0.00	0.00	128.05	10:00	0.00	0.00	0.00	107.37
11:00	0.00	0.00	0.00	145.08	11:00	0.00	0.00	0.00	138.03
12:00	0.00	0.00	0.00	151.70	12:00	0.00	0.00	0.00	161.38
13:00	81.20	-38.42	62.78	148.39	13:00	80.63	47.02	53.23	164.30
14:00	65.81	-29.33	161.71	142.63	14:00	66.68	25.97	90.99	151.27
15:00	50.59	-17.17	234.99	124.96	15:00	52.74	20.42	67.31	130.85
16:00	35.59	-10.42	289.64	95.33	16:00	38.80	19.20	37.87	102.13
17:00	20.81	-5.75	247.53	58.39	17:00	24.78	19.91	33.16	59.00

WEST ORIENTATION									
Azimuth = 90					Tilt angle = 90				
23 Sep					22 Dec				
Time	θ_1	θ_2	I_D	I_d	Time	θ_1	θ_2	I_D	I_d
07:00	0.00	0.00	0.00	24.90	07:00	0.00	0.00	0.00	15.95
08:00	0.00	0.00	0.00	66.65	08:00	0.00	0.00	0.00	43.77
09:00	0.00	0.00	0.00	95.72	09:00	0.00	0.00	0.00	65.45
10:00	0.00	0.00	0.00	114.72	10:00	0.00	0.00	0.00	71.72
11:00	0.00	0.00	0.00	126.59	11:00	0.00	0.00	0.00	78.52
12:00	0.00	0.00	0.00	132.48	12:00	0.00	0.00	0.00	92.02
13:00	76.93	-48.62	66.04	114.25	13:00	77.77	-74.25	73.43	101.69
14:00	61.54	-76.10	127.91	80.97	14:00	60.76	-55.74	137.71	101.01
15:00	46.35	-15.79	184.60	68.03	15:00	44.24	-42.72	186.17	86.56
16:00	31.39	-9.68	200.40	49.88	16:00	28.35	-33.92	203.25	60.80
17:00	16.65	-5.26	124.24	24.98	17:00	13.07	-27.92	137.75	29.58

ข้อมูลดวงอาทิตย์สำหรับด้านที่หันหน้าไปทางทิศตะวันตกเฉียงเหนือ

NORTH-WEST ORIENTATION									
Azimuth = 135					Tilt angle = 90				
21 March					22 June				
Time	θ_1	θ_2	I_D	I_d	Time	θ_1	θ_2	I_D	I_d
07:00	0.00	0.00	0.00	22.70	07:00	0.00	0.00	0.00	28.85
08:00	0.00	0.00	0.00	60.85	08:00	0.00	0.00	0.00	58.65
09:00	0.00	0.00	0.00	101.05	09:00	0.00	0.00	0.00	84.15
10:00	0.00	0.00	0.00	128.05	10:00	0.00	0.00	0.00	107.37
11:00	0.00	0.00	0.00	145.08	11:00	0.00	0.00	0.00	138.03
12:00	0.00	0.00	0.00	151.70	12:00	86.26	69.92	22.85	161.38
13:00	0.00	0.00	0.00	148.39	13:00	76.40	2.02	78.02	164.30
14:00	82.08	-74.33	50.10	142.63	14:00	65.61	-19.01	95.68	151.27
15:00	66.12	-62.17	114.83	124.96	15:00	53.57	-24.58	65.32	130.85
16:00	51.12	-55.42	155.60	95.33	16:00	40.14	-25.80	36.10	102.13
17:00	30.87	-50.75	157.41	58.39	17:00	25.51	-25.09	31.64	59.00

NORTH-WEST ORIENTATION									
Azimuth = 135					Tilt angle = 90				
23 Sep					22 Dec				
Time	θ_1	θ_2	I_D	I_d	Time	θ_1	θ_2	I_D	I_d
07:00	0.00	0.00	0.00	24.90	07:00	0.00	0.00	0.00	15.95
08:00	0.00	0.00	0.00	66.65	08:00	0.00	0.00	0.00	43.77
09:00	0.00	0.00	0.00	95.72	09:00	0.00	0.00	0.00	65.45
10:00	0.00	0.00	0.00	114.72	10:00	0.00	0.00	0.00	71.72
11:00	0.00	0.00	0.00	126.59	11:00	0.00	0.00	0.00	78.52
12:00	0.00	0.00	0.00	132.48	12:00	0.00	0.00	0.00	92.02
13:00	0.00	0.00	0.00	114.25	13:00	0.00	0.00	0.00	101.69
14:00	78.94	-71.10	-6.15	80.97	14:00	0.00	0.00	0.00	101.01
15:00	64.18	-60.79	93.61	68.03	15:00	86.81	-87.72	10.03	86.56
16:00	46.14	-54.68	117.54	49.88	16:00	66.77	-78.93	47.06	60.80
17:00	24.98	-50.26	79.76	24.98	17:00	34.94	-72.92	45.70	29.53

Solar Intensity (E_{DN}) and Solar Heat Gain Factors (SHGF) for 16° North Latitude

Date	Solar Time	Direct Normal, W/m^2	Solar Heat Gain Factors, W/m^2														Solar Time			
			N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW		NW	NNW	Hor.
Jan	7	445	17	19	138	291	390	424	396	303	155	19	17	17	17	17	17	17	43	5
	8	827	45	48	174	463	662	756	734	596	359	79	45	45	45	45	45	45	249	4
	9	948	67	67	102	384	630	770	791	690	481	183	69	67	67	67	67	67	472	3
	10	1001	82	82	86	209	474	658	736	704	563	321	97	82	82	82	82	82	640	2
	11	1025	91	91	91	96	242	467	614	663	611	462	236	96	91	91	91	91	745	1
	12	1032	95	95	95	95	100	228	438	580	628	580	438	228	100	95	95	95	781	12
	HALF DAY TOTALS		348	352	618	1452	2398	3153	3457	3216	2465	1344	666	401	350	348	348	348	2539	
Feb	7	375	24	25	265	435	531	544	474	326	113	26	24	24	24	24	24	24	80	5
	8	862	53	60	304	567	729	778	706	524	244	56	53	53	53	53	53	53	319	4
	9	961	74	77	202	482	675	763	733	592	347	96	74	74	74	74	74	74	549	3
	10	1006	90	91	104	291	508	636	664	593	423	193	93	90	90	90	90	90	721	2
	11	1027	99	99	102	118	262	428	527	542	471	323	154	103	99	99	99	99	831	1
	12	1033	103	103	103	104	108	189	336	448	487	448	336	189	108	104	103	103	868	12
	HALF DAY TOTALS		390	431	1013	1922	2728	3226	3262	2790	1835	906	547	417	392	390	390	390	2932	
Mar	7	633	35	167	392	543	605	578	457	259	46	33	33	33	33	33	33	33	126	5
	8	857	63	157	441	647	752	740	614	389	111	61	61	61	61	61	61	61	380	4
	9	942	83	110	342	564	688	708	622	435	180	85	82	82	82	82	82	82	605	3
	10	983	98	103	191	378	519	575	542	424	240	106	99	98	98	98	98	98	777	2
	11	1002	107	110	113	166	273	361	394	365	280	173	113	110	107	107	107	107	884	1
	12	1007	111	111	112	114	117	149	215	273	294	273	215	149	117	114	112	111	918	12
	HALF DAY TOTALS		443	712	1556	2381	2924	3074	2771	2026	1005	588	483	447	440	438	437	437	3230	
Apr	6	44	7	24	37	43	43	37	24	7	2	2	2	2	2	2	2	2	4	6
	7	622	75	297	482	589	604	528	369	141	45	42	42	42	42	42	42	42	169	5
	8	806	85	312	543	681	717	644	473	217	74	70	70	70	70	70	70	70	412	4
	9	884	97	248	468	609	657	608	465	244	97	90	90	90	90	90	90	90	622	3
	10	923	111	171	320	444	498	476	380	231	118	108	105	105	105	105	105	105	784	2
	11	942	120	126	169	228	270	276	245	188	136	121	118	115	115	115	115	118	881	1
	12	948	123	123	124	125	125	129	135	141	143	141	135	129	125	125	124	123	910	12
	HALF DAY TOTALS		565	1271	2126	2709	2682	2058	1111	547	583	494	491	489	489	489	491	491	3331	
May	6	138	43	94	128	141	134	106	59	11	9	9	9	9	9	9	9	10	17	6
	7	607	157	378	531	602	583	474	289	76	49	49	49	49	49	49	49	52	195	5
	8	770	165	415	597	689	677	564	362	121	78	76	76	76	76	76	76	80	424	4
	9	844	156	365	539	625	621	525	344	141	100	96	96	96	96	96	96	100	620	3
	10	882	149	281	409	477	473	397	264	139	116	111	111	111	111	111	111	116	771	2
	11	901	147	198	248	273	262	220	165	130	126	123	120	120	122	124	128	128	861	1
	12	906	146	144	139	134	132	131	130	129	129	129	130	131	132	134	139	144	885	12
	HALF DAY TOTALS		892	1811	2534	2888	2826	2358	1553	684	541	528	526	526	528	528	532	536	3335	
Jun	6	168	64	124	163	175	162	123	64	13	12	12	12	12	12	12	12	13	24	6
	7	593	194	403	542	598	565	445	252	63	52	52	52	52	52	52	52	57	203	5
	8	750	209	449	611	683	653	525	313	38	79	79	79	79	79	79	79	84	425	4
	9	823	199	408	560	626	601	487	294	118	98	98	98	98	98	98	98	105	613	3
	10	840	187	329	440	486	459	363	222	124	116	113	113	113	113	113	113	121	759	2
	11	879	181	241	283	290	258	200	146	130	126	121	121	121	121	125	128	136	846	1
	12	885	179	173	158	142	134	132	130	129	129	129	130	132	134	142	152	173	872	12
	HALF DAY TOTALS		1122	2042	2682	2930	2762	2207	1356	512	548	540	539	540	542	545	555	599	3307	
Jul	6	128	43	90	122	134	127	99	55	11	9	9	9	9	9	9	9	10	17	6
	7	579	161	373	518	584	564	456	277	74	51	51	51	51	51	51	51	55	194	5
	8	743	173	415	590	676	661	549	349	118	78	78	78	78	78	78	78	83	419	4
	9	818	165	370	537	618	610	513	334	138	102	99	99	99	99	99	99	104	611	3
	10	857	157	289	413	475	467	389	257	138	118	113	113	113	113	113	113	120	759	2
	11	876	154	207	257	277	262	218	164	132	128	125	122	122	125	128	131	148	848	1
	12	882	154	151	145	158	135	134	133	132	132	132	132	134	135	138	145	151	875	12
	HALF DAY TOTALS		933	1829	2520	2847	2769	2298	1506	680	554	541	539	539	540	542	547	575	3288	
Aug	6	36	7	21	31	37	36	31	20	6	2	2	2	2	2	2	2	2	4	6
	7	569	81	289	458	555	566	495	343	131	48	45	45	45	45	45	45	45	167	5
	8	757	91	315	531	600	691	617	451	206	79	74	74	74	74	74	74	74	404	4
	9	838	104	258	467	598	640	589	448	235	103	95	95	95	95	95	95	95	608	3
	10	879	118	183	327	443	490	464	368	224	122	114	110	110	110	110	110	110	765	2
	11	899	127	136	180	235	271	273	240	185	138	127	124	120	120	120	120	123	860	1
	12	905	129	130	130	131	132	134	139	143	145	143	139	134	132	131	130	130	888	12
	HALF DAY TOTALS		603	1294	2099	2639	2809	2577	1985	1069	568	528	519	516	515	514	515	518	3257	
Sep	7	565	38	157	360	497	554	529	419	140	48	35	35	35	35	35	35	35	122	5
	8	796	67	156	424	617	716	705	586	374	113	64	64	64	64	64	64	64	367	4
	9	887	87	114	335	547	665	684	602	423	181	90	86	86	86	86	86	86	585	3
	10	931	101	107	193	372	506	560	529	415	240	111	103	101	101	101	101	101	752	2
	11	951	111	114	118	169	272	356	388	360	2									

SOUTHSIDE OPENINGS

year	Opaque Wall(BASECASE)				M10-clear glass				M10-Heat Mirror				M10-Low-E			
	Investment	FIN	ENV.	Total	Investment	FIN	ENV.	Total	Investment	FIN	ENV.	Total	Investment	FIN	ENV.	Total
	4725	0	4725	4725	Artificial Light(watt/sq.m.)	Cooling Load(watt/sq.m.)	Total Energy (watt/sq.m.)	Electricity Cost(Baht)	Artificial Light(watt/sq.m.)	Cooling Load(watt/sq.m.)	Total Energy (watt/sq.m.)	Electricity Cost(Baht)	Artificial Light(watt/sq.m.)	Cooling Load(watt/sq.m.)	Total Energy (watt/sq.m.)	Electricity Cost(Baht)
0	4725	0	4725	4725	10179	0	10179	10179	37800	0	37800	37800	54000	0	54000	54000
1	4896.46	4371.8	3903.4	9066.8	7342.7	8223.85	10179	17521.7	4214.43	3762.9	3762.9	41562.9	3512.68	3136.3	57136.3	57136.3
2	4896.46	3903.4	3485.2	13000.3	6556.0	8223.85	24077.7	24077.7	4214.43	3369.7	3369.7	44922.6	3512.68	2800.3	59936.6	59936.6
3	4896.46	3111.8	3111.8	19997.3	5463.6	8223.85	29824.1	29824.1	4214.43	2999.7	2999.7	47922.3	3512.68	2500.3	62436.9	62436.9
4	4896.46	2778.4	2778.4	22375.6	4968.4	8223.85	33902.6	33902.6	4214.43	2678.3	2678.3	50800.7	3512.68	2232.4	64669.2	64669.2
5	4896.46	2480.7	2480.7	24856.3	4166.5	8223.85	3720.1	3720.1	4214.43	2391.4	2391.4	52992.1	3512.68	1993.2	66662.4	66662.4
6	4896.46	2214.9	2214.9	27071.3	3720.1	8223.85	47710.6	47710.6	4214.43	2136.2	2136.2	55127.2	3512.68	1779.6	68442.1	68442.1
7	4896.46	1977.6	1977.6	29048.9	3221.5	8223.85	51032.1	51032.1	4214.43	1906.4	1906.4	57033.6	3512.68	1589.0	70031.0	70031.0
8	4896.46	1765.7	1765.7	30814.6	2965.6	8223.85	53997.7	53997.7	4214.43	1702.1	1702.1	58735.7	3512.68	1418.7	71449.7	71449.7
9	4896.46	1576.5	1576.5	32391.1	2647.9	8223.85	56646.6	56646.6	4214.43	1519.8	1519.8	60255.5	3512.68	1266.7	72716.4	72716.4
10	4896.46	1407.6	1407.6	33798.7	2384.2	8223.85	59009.7	59009.7	4214.43	1366.9	1366.9	61612.4	3512.68	1131.0	73847.4	73847.4
11	4896.46	1258.8	1258.8	35055.5	2110.9	8223.85	61120.6	61120.6	4214.43	1211.5	1211.5	62824.0	3512.68	1009.8	74857.2	74857.2
12	4896.46	1122.1	1122.1	36177.7	1884.7	8223.85	63005.3	63005.3	4214.43	1081.7	1081.7	63905.7	3512.68	901.6	75758.8	75758.8
13	4896.46	1001.9	1001.9	37179.6	1682.8	8223.85	64638.0	64638.0	4214.43	965.8	965.8	64871.6	3512.68	805.0	76563.9	76563.9
14	4896.46	894.6	894.6	38074.1	1502.5	8223.85	66190.5	66190.5	4214.43	862.4	862.4	65733.9	3512.68	718.8	77282.6	77282.6
15	4896.46	800.0	800.0	38774.1	1320.0	8223.85	67610.5	67610.5	4214.43	770.0	770.0	66503.9	3512.68	641.8	77924.4	77924.4

การคิดค่าใช้จ่ายในส่วนของกระแสไฟฟ้า

Ex. ช่องเปิดด้านทิศเหนือ อุปกรณ์บังแดด แบบที่ 6
 การให้ความสว่างแก่อาคารจากแหล่งกำเนิดแสงประดิษฐ์ (หลอดไฟฟลูออโรเรสเซนต์
 36 watt) CU = 0.714

Energy Consumption for Artificial Light = 3.15 watt/sq.m.

Energy Consumption for Cooling Load = 9.73 watt/sq.m.

Total Energy Consumption = 12.88 watt/sq.m.

เมื่อคิดค่าไฟฟ้าในอัตรา 1.95 B/Kwh.

ดังนั้นการใช้ไฟฟ้า จะต้องเสียค่าใช้จ่าย $= 1.95 \text{ B/Kw.hr} * 12.88 \text{ watt/sq.m.} * 81 \text{ sq.m.}$

1000

= 2.034 B/hr.

ชั่วโมงการทำงานปี = 3 hr. * 6 days/week * 52 week/year

= 2496 hrs.

ดังนั้น ค่าไฟฟ้าปี = 2.034 * 2496

= 5077.85 บาท

สถาบันวิทยบริการ
 จุฬาลงกรณ์มหาวิทยาลัย



ประวัติผู้เขียน

นางสาวกนกวรรณ อุดันโน เกิดเมื่อวันที่ 14 ธันวาคม พ.ศ.2513 ที่กรุงเทพมหานคร เข้ารับการศึกษาที่โรงเรียนพิมลวิทย์ โรงเรียนเซนต์คาทอลิก และโรงเรียนสตรีวิทยา ตามลำดับ สำเร็จการศึกษาระดับมัธยมศึกษาตอนต้น สาขาสถาปัตยกรรมศาสตร์ จากสถาบันเทคโนโลยีพระจอมเกล้า เจ้าคุณทหารลาดกระบัง ในปีการศึกษา 2535 และเข้าศึกษาต่อหลักสูตรสถาปัตยกรรมศาสตรมหาบัณฑิต จุฬาลงกรณ์มหาวิทยาลัย ในภาควิชาสถาปัตยกรรมศาสตร์ สาขาวิชาเทคโนโลยีอาคาร ในปีการศึกษา 2538 ปัจจุบันเป็นอาจารย์ประจำคณะสถาปัตยกรรมศาสตร์ มหาวิทยาลัยศรีปทุม



สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย