

รายการอ้างอิง

ภาษาไทย

ตริงใจ บุรณสมภพ. การออกแบบสถาปัตยกรรมเมืองร้อนในประเทศไทย. N.D.

พรสทิพย์ ศรีเมือง. แนวทางการใช้พืชพรรณในการพัฒนาสภาพแวดล้อมเมือง. วิทยานิพนธ์
ปริญญาโทบริหารศึกษาศาสตร์ สาขาวิชาวางแผนภาคและผังเมือง : บัณฑิตวิทยาลัย
จุฬาลงกรณ์มหาวิทยาลัย, 2538.

สุนทร บุญญาธิการ. วิชา เดือนกรกฎาคม, 2539.

สุนทร บุญญาธิการ. เทคนิคการออกแบบบ้านประหยัดพลังงานเพื่อคุณภาพชีวิตที่ดีกว่า : สำนัก
พิมพ์จุฬาลงกรณ์มหาวิทยาลัย, 2542.

เอี่ยมพร วิสมหมาย, ศศิยา ศิริพานิช, อริศรา มีนะกนิษฐ์, ณัฐรัฐ พิษกรรรม. พรรณไม้ในงาน
ภูมิสถาปัตยกรรม : สมาคมภูมิสถาปนิกประเทศไทย, 2542.

ภาษาอังกฤษ

American Society of Heating, Refrigeration and Air-Conditioning Engineering Inc., 1997
ASHRAE Handbook/Fundament, Si Edition, Atlanta, 1997.

American Society of Heating, Refrigeration and Air-Conditioning Engineering Inc., 1993
ASHRAE Handbook/Fundament, Si Edition, Atlanta, 1993.

Benjamin Stein, John S. Reynolds. Mechanical and Electrical Equipment for Building, 8th
Edition, U.S.A: John Wiley & Sons, Inc., 1992.

B. Givoni. Man, Climate and Architecture, England: Elsevier Publishing Company
Limited, 1969.

Donald Watwon. The Energy Design Handbook, Whashington D.C.: The American
Institute of Architeck Press, 1993.

Lechner, N. Heating, Cooling, Lighting: Design Method for Architects. U.S.A.: John Wiley
& Sons, Inc, 1991.

Moore, Fuller. Environmental control Systems, Healing Cooling Lighting: McGraw-Hill,
Inc., 1993.

Robert D. Brown and Terry J.Gillespie. Microclimatic Landscape Design., U.S.A.: John
Wiley & Sons, Inc., 1995.

Robinette, Gary O., Mc Clenon, Charles. Landscape Planning for Energy Conservation, New York: Van Nostrand Reinhold Company, 1983.

Robinette, Gary O., Plants, People and Environmental Quality, New York: Van Nostrand Reinhold Company, 1985.

ภาคผนวก ก.

ตารางแสดงตำแหน่งดวงอาทิตย์ ,Surface Solar Azimute ของผิวผนังทึบทิศทางทิศ
ณ วันที่ 21 ของทุกเดือน ณ เวลาต่างๆสำหรับเส้นรุ้งที่ 14 องศาเหนือ

Month	Solar time	Altitude	Azimuth	EAST	SOUTH	WEST	NORTH	SOUTH-EAST	SOUTH-WEST	NORTH WEST	NORTH EAST	
				Surf. Sol Azi	Surf Sol Azi	Surf Sol Azi	Surf Sol Azi	Surf Sol Azi	Surf Sol Azi	Surf Sol Azi		
DEC.	7	8	-63	27	-63	-153	-243	-18	-108	-198	72	
	8	20	-58	32	-58	-148	-238	-13	-103	-193	77	
	9	32	-50	40	-50	-140	-230	-5	-95	-185	85	
	10	43	-38	52	-38	-128	-218	7	-83	-173	97	
	11	50	-22	68	-22	-112	-202	23	-67	-157	113	
	12	53	0	90	0	-90	-180	45	-45	-135	135	
	13	50	22	112	22	-68	-158	67	-23	-113	157	
	14	43	38	128	38	-52	-142	83	-7	-97	173	
	15	32	50	140	50	-40	-130	95	5	-85	185	
	16	20	58	148	58	-32	-122	103	13	-77	193	
	17	8	63	153	63	-27	-117	109	18	-72	199	
	JAN, NOV	7	9	-67	23	-67	-157	-247	-22	-112	-202	68
		8	22	-62	28	-62	-152	-242	-17	-107	-197	73
		9	34	-53	37	-53	-143	-233	-6	-98	-188	82
		10	45	-42	48	-42	-132	-222	3	-67	-177	93
		11	53	-24	66	-24	-114	-204	21	-69	-159	111
		12	56	0	90	0	-90	-180	45	-45	-135	135
13		53	24	114	24	-66	-156	69	-21	-111	159	
14		45	42	132	42	-48	-138	87	-3	-93	177	
15		34	53	143	53	-37	-127	98	8	-82	188	
16		22	62	152	62	-28	-118	107	17	-73	197	
17		9	67	157	67	-23	-113	112	22	-66	202	
FEB, OCT		7	12	-76	14	-76	-166	-256	-31	-121	-211	59
		8	25	-71	19	-71	-161	-251	-26	-116	-206	64
		9	38	-64	26	-64	-154	-244	-19	-109	-199	71
		10	51	-52	38	-52	-142	-232	-7	-97	-187	83
		11	61	-32	58	-32	-122	-212	13	-77	-167	103
		12	65	0	90	0	-90	-180	45	-45	-135	135
	13	61	32	122	32	-58	-148	77	-13	-103	167	
	14	51	52	142	52	-38	-128	97	7	-83	187	
	15	39	64	154	64	-26	-116	109	19	-71	199	
	16	26	71	161	71	-19	-109	116	26	-64	206	
	17	12	76	166	76	-14	-104	121	31	-59	211	
	MAR, SEP	7	14	-87	3	-87	-177	-267	-42	-132	-222	48
		8	29	-82	8	-82	-172	-262	-37	-127	-217	53
		9	43	-77	13	-77	-167	-257	-32	-122	-212	58
		10	57	-67	23	-67	-157	-247	-22	-112	-202	68
		11	69	-49	41	-49	-139	-229	-4	-94	-184	86
		12	76	0	90	0	-90	-180	45	-45	-135	135
13		69	49	139	49	-41	-131	94	4	-86	184	
14		57	67	157	67	-23	-113	112	22	-68	202	
15		43	77	167	77	-13	-103	122	32	-58	212	
16		29	82	172	82	-8	-98	127	37	-53	217	
17		14	87	177	87	-3	-93	132	42	-48	222	
APR, AUG		6	3	-101	-11	-101	-191	-281	-56	-146	-236	34
		7	17	-98	-8	-98	-188	-278	-53	-143	-233	37
		8	32	-95	-5	-95	-185	-275	-50	-140	-230	40
		9	46	-92	-2	-92	-182	-272	-47	-137	-227	43
		10	61	-89	1	-89	-179	-269	-44	-134	-224	46
		11	75	-83	7	-83	-173	-263	-38	-128	-218	52
	12	85	0	90	0	-90	-180	45	-45	-135	135	
	13	75	83	173	83	-7	-97	128	38	-52	218	
	14	61	89	179	89	-1	-91	134	44	-46	224	
	15	46	92	182	92	2	-88	137	47	-43	227	
	16	32	95	185	95	5	-85	140	50	-40	230	
	17	17	98	188	98	8	-82	143	53	-37	233	
	18	3	101	191	101	11	-79	146	56	-34	236	
	MAY, JUL	6	5	-109	-19	-109	-199	-289	-64	-154	-244	26
		7	19	-107	-17	-107	-197	-287	-62	-152	-242	28
		8	33	-105	-15	-105	-195	-285	-60	-150	-240	30
		9	47	-104	-14	-104	-194	-284	-59	-149	-239	31
10		61	-106	-16	-106	-196	-286	-61	-151	-241	29	
11		74	-114	-24	-114	-204	-294	-69	-159	-249	21	
12		84	180	270	180	90	0	225	135	45	315	
13		74	114	204	114	24	-66	159	69	-21	249	
14		61	106	196	106	16	-74	151	61	-29	241	
15		47	104	194	104	14	-76	149	59	-31	239	
16		33	105	195	105	15	-75	150	60	-30	240	
17		19	107	197	107	17	-73	152	62	-28	242	
18		5	109	199	109	19	-71	154	64	-26	244	
JUN		6	5	-113	-23	-113	-203	-293	-68	-158	-248	22
		7	19	-111	-21	-111	-201	-291	-66	-156	-246	24
		8	33	-109	-19	-109	-199	-289	-64	-154	-244	26
		9	46	-109	-19	-109	-199	-289	-64	-154	-244	26
	10	60	-113	-23	-113	-203	-293	-68	-158	-248	22	
	11	73	-125	-35	-125	-215	-305	-80	-170	-260	10	
	12	81	180	270	180	90	0	225	135	45	315	
	13	73	125	215	125	35	-55	170	80	-10	260	
	14	60	113	203	113	23	-67	158	68	-22	248	
	15	46	109	199	109	19	-71	154	64	-26	244	
	16	33	109	199	109	19	-71	154	64	-26	244	
	17	19	111	201	111	21	-69	156	66	-24	246	
	18	5	113	201	111	21	-69	156	66	-24	246	

ภาคผนวก ข.

ตารางแสดง TOTAL HORIZONTAL SOLAR RADIATION ON CLEARDAY

ณ วันที่ 21 ของทุกเดือน เวลาต่างๆสำหรับเส้นรุ้งที่ 14 องศาเหนือ

Month	Solar time	I th w/sq.m.	Month	Solar time	I th w/sq.m.	Month	Solar time	I th w/sq.m.			
JAN	7	147.10	MAY	6	26.46	SEP	7	211.50			
	8	433.27		7	281.51		8	499.19			
	9	667.14		8	527.40		9	729.85			
	10	852.37		9	735.82		10	912.13			
	11	966.46		10	895.26		11	1022.28			
	12	1004.29		11	991.53		12	1064.86			
	13	966.46		12	1028.47		13	1022.28			
	14	852.37		13	991.53		14	912.13			
	15	667.14		14	895.26		15	729.85			
	16	433.27		15	735.82		16	499.19			
	17	147.10		16	527.40		17	211.50			
	FEB	7		211.47	17		281.51	OCT	7	192.10	
		8		486.20	18		26.46		8	459.27	
		9		743.55	JUN		6		23.52	9	711.16
		10		925.85			7		269.87	10	889.82
		11		1045.63			8		511.24	11	1007.24
		12		1084.51			9		703.12	12	1045.36
13		1045.63	10	863.84		13	1007.24				
14		925.85	11	962.64		14	889.82				
15		743.55	12	996.96		15	711.16				
16		505.97	13	962.64		16	478.60				
17		211.47	14	863.84		17	192.10				
MAR		7	237.69	15		703.12	NOV		7	139.63	
		8	537.14	16		511.24			8	422.13	
		9	775.56	17		269.87			9	654.02	
		10	963.69	18		23.52			10	837.80	
		11	1077.33	JUL		6			22.92	11	951.01
		12	1121.24			7			267.48	12	988.56
	13	1077.33	8			507.96		13	951.01		
	14	963.69	9			712.37		14	837.80		
	15	775.56	10		868.85	15		654.02			
	16	537.14	11		963.38	16		422.13			
	17	237.69	12		999.65	17		139.63			
	APIL	6	7.01		13	963.38		DEC	7	124.09	
		7	265.38		14	868.85			8	392.39	
		8	541.85		15	712.37			9	631.84	
		9	760.10		16	507.96			10	823.02	
		10	938.21		17	267.48			11	928.13	
		11	1042.73		18	22.92			12	968.82	
12		1078.92	AUG		6	4.57	13		928.13		
13		1042.73			7	240.68	14		823.02		
14		938.21			8	507.51	15		631.84		
15		760.10			9	719.38	16		392.39		
16		541.85		10	892.57	17	124.09				
17		265.38		11	994.26						
18		7.01		12	1029.48						
				13	994.26						
				14	892.57						
				15	719.38						
				16	507.51						
				17	240.68						
		18		4.57							

ภาคผนวก ค.

ตารางแสดงการหาปริมาณการแผ่รังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันออก ณ วันที่ 16,17/3/99

I total vertical :EAST SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

16,17/3/99	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	Ireflected=Idn*Og*Fsg	I total vertical=Idv+Idif+Iref
TIME		(w=-90)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft.)	(W/sq.m.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)
8:30	-77	13	0.974	35	0.819	0.798	903.579	286.40	721.198	228.59	20.05	28.64	277.28
9:00	-73	17	0.956	42	0.743	0.711	939.364	297.74	667.581	211.59	20.84	29.77	262.21
9:30	-69	21	0.934	48	0.669	0.625	961.431	304.73	600.594	190.36	21.33	30.47	242.17
10:00	-64	26	0.899	56	0.559	0.503	982.570	311.43	493.839	156.53	21.80	31.14	209.47
10:30	-56.5	33.5	0.834	61	0.485	0.404	992.253	314.50	401.144	127.15	22.02	31.45	180.61
11:00	-46.5	43.5	0.725	68	0.375	0.272	1002.338	317.70	272.365	86.33	22.24	31.77	140.34
11:30	-25.5	64.5	0.431	72	0.309	0.133	1006.580	319.04	133.911	42.44	22.33	31.90	96.68
12:00	0	90	0.000	74	0.276	0.000	1008.334	319.60	0.000	0.00	22.37	31.96	54.33
12:30	25.5	115.5	-0.431	72	0.309	-0.133	1006.580	319.04			22.33	31.90	54.24
13:00	46.5	136.5	-0.725	68	0.375	-0.272	1002.338	317.70			22.24	31.77	54.01
13:30	56.5	146.5	-0.834	61	0.485	-0.404	992.253	314.50			22.02	31.45	53.47
14:00	64	154	-0.899	56	0.559	-0.503	982.570	311.43			21.80	31.14	52.94
14:30	69	159	-0.934	48	0.669	-0.625	961.431	304.73			21.33	30.47	51.80
15:00	73	163	-0.956	42	0.743	-0.711	939.364	297.74			20.84	29.77	50.62
15:30	77	167	-0.974	35	0.819	-0.798	903.579	286.40			20.05	28.64	48.69
16:00	80.5	170.5	-0.986	30	0.866	-0.854	868.130	275.16			19.26	27.52	46.78
16:30	82	172	-0.990	22	0.927	-0.918	782.039	247.87			17.35	24.79	42.14
17:00	85	175	-0.996	14.5	0.968	-0.964	636.057	201.60			14.11	20.16	34.27
17:30	87	177	-0.999	6.5	0.994	-0.992	298.954	94.76			6.63	9.48	16.11

*Azimute:negative for am,positive for pm

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณการแผ่รังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศใต้ ณ วันที่ 16,17/3/99

I total vertical :SOUTH SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

6,17/3/1999 TIME	azimuth	Y=azimute-w (w=0)	cos Y	altitude (B)	cosB	cosOv= cosB*cosY	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	Ireflected=Idn*Og*Fsg	I total vertical=Idv+Idif+Iref
							(W/sq.m.)	(Btu/h.sq.ft.)	(W/sq.m.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)
8:30	-77	-77	0.225	35	0.819	0.184	903.579	286.40	166.502	52.77	20.05	28.64	101.46
9:00	-73	-73	0.292	42	0.743	0.217	939.364	297.74	204.100	64.69	20.84	29.77	115.31
9:30	-69	-69	0.358	48	0.669	0.240	961.431	304.73	230.546	73.07	21.33	30.47	124.88
10:00	-64	-64	0.438	56	0.559	0.245	982.570	311.43	240.861	76.34	21.80	31.14	129.29
10:30	-56.5	-56.5	0.552	61	0.485	0.268	992.253	314.50	265.511	84.16	22.02	31.45	137.62
11:00	-46.5	-46.5	0.688	68	0.375	0.258	1002.338	317.70	258.465	81.92	22.24	31.77	135.93
11:30	-25.5	-25.5	0.903	72	0.309	0.279	1006.580	319.04	280.749	88.99	22.33	31.90	143.22
12:00	0	0	1.000	74	0.276	0.276	1008.334	319.60	277.935	88.09	22.37	31.96	142.43
12:30	25.5	25.5	0.903	72	0.309	0.279	1006.580	319.04	280.749	88.99	22.33	31.90	143.22
13:00	46.5	46.5	0.688	68	0.375	0.258	1002.338	317.70	258.465	81.92	22.24	31.77	135.93
13:30	56.5	56.5	0.552	61	0.485	0.268	992.253	314.50	265.511	84.16	22.02	31.45	137.62
14:00	64	64	0.438	56	0.559	0.245	982.570	311.43	240.861	76.34	21.80	31.14	129.29
14:30	69	69	0.358	48	0.669	0.240	961.431	304.73	230.546	73.07	21.33	30.47	124.88
15:00	73	73	0.292	42	0.743	0.217	939.364	297.74	204.100	64.69	20.84	29.77	115.31
15:30	77	77	0.225	35	0.819	0.184	903.579	286.40	166.502	52.77	20.05	28.64	101.46
16:00	80.5	80.5	0.165	30	0.866	0.143	868.130	275.16	124.087	39.33	19.26	27.52	86.11
16:30	82	82	0.139	22	0.927	0.129	782.039	247.87	100.914	31.99	17.35	24.79	74.12
17:00	85	85	0.087	14.5	0.968	0.084	636.057	201.60	53.670	17.01	14.11	20.16	51.28
17:30	87	87	0.052	6.5	0.994	0.052	298.954	94.76	15.545	4.93	6.63	9.48	21.04

*Azimute:negative for am,positive for pm

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณการแผ่รังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันตก ณ วันที่ 16,17/3/99

I total vertical :WEST SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

6,17/3/1999	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	lreflected=Idn*Og*Fsg	total vertical=Idv+Idif+l
TIME		(w=90)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft.)	(W/sq.m.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)
8:30	-77	-167	-0.974	35	0.819	-0.798	903.579	286.40			20.05	28.64	48.69
9:00	-73	-163	-0.956	42	0.743	-0.711	939.364	297.74			20.84	29.77	50.62
9:30	-69	-159	-0.934	48	0.669	-0.625	961.431	304.73			21.33	30.47	51.80
10:00	-64	-154	-0.899	56	0.559	-0.503	982.570	311.43			21.80	31.14	52.94
10:30	-56.5	-146.5	-0.834	61	0.485	-0.404	992.253	314.50			22.02	31.45	53.47
11:00	-46.5	-136.5	-0.725	68	0.375	-0.272	1002.338	317.70			22.24	31.77	54.01
11:30	-25.5	-115.5	-0.431	72	0.309	-0.133	1006.580	319.04			22.33	31.90	54.24
12:00	0	-90	0.000	74	0.276	0.000	1008.334	319.60	0.000	0.00	22.37	31.96	54.33
12:30	25.5	-64.5	0.431	72	0.309	0.133	1006.580	319.04	133.911	42.44	22.33	31.90	96.68
13:00	46.5	-43.5	0.725	68	0.375	0.272	1002.338	317.70	272.365	86.33	22.24	31.77	140.34
13:30	56.5	-33.5	0.834	61	0.485	0.404	992.253	314.50	401.144	127.15	22.02	31.45	180.61
14:00	64	-26	0.899	56	0.559	0.503	982.570	311.43	493.839	156.53	21.80	31.14	209.47
14:30	69	-21	0.934	48	0.669	0.625	961.431	304.73	600.594	190.36	21.33	30.47	242.17
15:00	73	-17	0.956	42	0.743	0.711	939.364	297.74	667.581	211.59	20.84	29.77	262.21
15:30	77	-13	0.974	35	0.819	0.798	903.579	286.40	721.198	228.59	20.05	28.64	277.28
16:00	80.5	-9.5	0.986	30	0.866	0.854	868.130	275.16	741.512	235.03	19.26	27.52	281.80
16:30	82	-8	0.990	22	0.927	0.918	782.039	247.87	718.037	227.59	17.35	24.79	269.73
17:00	85	-5	0.996	14.5	0.968	0.964	636.057	201.60	613.454	194.44	14.11	20.16	228.71
17:30	87	-3	0.999	6.5	0.994	0.992	298.954	94.76	296.625	94.02	6.63	9.48	110.13

*Azimute:negative for am,positive for pm

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณการแผ่รังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศเหนือ ณ วันที่ 16,17/3/99

I total vertical :NORTH SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

6,17/3/1999	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	Ireflected=Idn*Og*Fsg	I total vertical=Idv+Idif+Iref
TIME		(w=180)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft.)	(W/sq.m.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)
8:30	-77	-257	-0.225	35	0.819	-0.184	903.579	286.40			20.05	28.64	48.69
9:00	-73	-253	-0.292	42	0.743	-0.217	939.364	297.74			20.84	29.77	50.62
9:30	-69	-249	-0.358	48	0.669	-0.240	961.431	304.73			21.33	30.47	51.80
10:00	-64	-244	-0.438	56	0.559	-0.245	982.570	311.43			21.80	31.14	52.94
10:30	-56.5	-236.5	-0.552	61	0.485	-0.268	992.253	314.50			22.02	31.45	53.47
11:00	-46.5	-226.5	-0.688	68	0.375	-0.258	1002.338	317.70			22.24	31.77	54.01
11:30	-25.5	-205.5	-0.903	72	0.309	-0.279	1006.580	319.04			22.33	31.90	54.24
12:00	0	-180	-1.000	74	0.276	-0.276	1008.334	319.60			22.37	31.96	54.33
12:30	25.5	-154.5	-0.903	72	0.309	-0.279	1006.580	319.04			22.33	31.90	54.24
13:00	46.5	-133.5	-0.688	68	0.375	-0.258	1002.338	317.70			22.24	31.77	54.01
13:30	56.5	-123.5	-0.552	61	0.485	-0.268	992.253	314.50			22.02	31.45	53.47
14:00	64	-116	-0.438	56	0.559	-0.245	982.570	311.43			21.80	31.14	52.94
14:30	69	-111	-0.358	48	0.669	-0.240	961.431	304.73			21.33	30.47	51.80
15:00	73	-107	-0.292	42	0.743	-0.217	939.364	297.74			20.84	29.77	50.62
15:30	77	-103	-0.225	35	0.819	-0.184	903.579	286.40			20.05	28.64	48.69
16:00	80.5	-99.5	-0.165	30	0.866	-0.143	868.130	275.16			19.26	27.52	46.78
16:30	82	-98	-0.139	22	0.927	-0.129	782.039	247.87			17.35	24.79	42.14
17:00	85	-95	-0.087	14.5	0.968	-0.084	636.057	201.60			14.11	20.16	34.27
17:30	87	-93	-0.052	6.5	0.994	-0.052	298.954	94.76			6.63	9.48	16.11

*Azimute:negative for am,positive for pm

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณการแผ่รังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันออกเฉียงใต้ ณ วันที่ 16, 17/3/99

I total vertical :SOUTH-EAST SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

6, 17/3/1999	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	lreflected=Idn*Og*Fsg	I total vertical=Idv+Idif+I
TIME		(w=-45)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft.)	(W/sq.m.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)
8:30	-77	-32	0.848	35	0.819	0.695	903.579	286.40	627.699	198.95	20.05	28.64	247.64
9:00	-73	-28	0.883	42	0.743	0.656	939.364	297.74	616.371	195.36	20.84	29.77	245.98
9:30	-69	-24	0.914	48	0.669	0.611	961.431	304.73	587.705	186.28	21.33	30.47	238.08
10:00	-64	-19	0.946	56	0.559	0.529	982.570	311.43	519.512	164.66	21.80	31.14	217.61
10:30	-56.5	-11.5	0.980	61	0.485	0.475	992.253	314.50	471.397	149.41	22.02	31.45	202.88
11:00	-46.5	-1.5	1.000	68	0.375	0.374	1002.338	317.70	375.354	118.97	22.24	31.77	172.98
11:30	-25.5	19.5	0.943	72	0.309	0.291	1006.580	319.04	293.209	92.93	22.33	31.90	147.17
12:00	0	45	0.707	74	0.276	0.195	1008.334	319.60	196.529	62.291	22.37	31.96	116.62
12:30	25.5	70.5	0.334	72	0.309	0.103	1006.580	319.04	103.831	32.910	22.33	31.90	87.15
13:00	46.5	91.5	-0.026	68	0.375	-0.010	1002.338	317.70			22.24	31.77	54.01
13:30	56.5	101.5	-0.199	61	0.485	-0.097	992.253	314.50			22.02	31.45	53.47
14:00	64	109	-0.326	56	0.559	-0.182	982.570	311.43			21.80	31.14	52.94
14:30	69	114	-0.407	48	0.669	-0.272	961.431	304.73			21.33	30.47	51.80
15:00	73	118	-0.469	42	0.743	-0.349	939.364	297.74			20.84	29.77	50.62
15:30	77	122	-0.530	35	0.819	-0.434	903.579	286.40			20.05	28.64	48.69
16:00	80.5	125.5	-0.581	30	0.866	-0.503	868.130	275.16			19.26	27.52	46.78
16:30	82	127	-0.602	22	0.927	-0.558	782.039	247.87			17.35	24.79	42.14
17:00	85	130	-0.643	14.5	0.968	-0.622	636.057	201.60			14.11	20.16	34.27
17:30	87	132	-0.669	6.5	0.994	-0.665	298.954	94.76			6.63	9.48	16.11

*Azimute:negative for am,positive for pm

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณการแผ่รังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันตกเฉียงใต้ ณ วันที่ 16,17/3/99

I total vertical :SOUTH-WEST SURFACE ORIENTATION ON CLEAR DAY (LAT.=14NORTH)

6,17/3/1999	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	Ireflected=Idn*Og*Fsg	total vertical=Idv+Idif+Iref
TIME		(w=45)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft.)	(W/sq.m.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)
8:30	-77	-122	-0.530	35	0.819	-0.434	903.579	286.40			20.05	28.64	48.69
9:00	-73	-118	-0.469	42	0.743	-0.349	939.364	297.74			20.84	29.77	50.62
9:30	-69	-114	-0.407	48	0.669	-0.272	961.431	304.73			21.33	30.47	51.80
10:00	-64	-109	-0.326	56	0.559	-0.182	982.570	311.43			21.80	31.14	52.94
10:30	-56.5	-101.5	-0.199	61	0.485	-0.097	992.253	314.50			22.02	31.45	53.47
11:00	-46.5	-91.5	-0.026	68	0.375	-0.010	1002.338	317.70			22.24	31.77	54.01
11:30	-25.5	-70.5	0.334	72	0.309	0.103	1006.580	319.04	103.831	32.91	22.33	31.90	87.15
12:00	0	-45	0.707	74	0.276	0.195	1008.334	319.60	196.529	62.291	22.37	31.96	116.62
12:30	25.5	-19.5	0.943	72	0.309	0.291	1006.580	319.04	293.209	92.935	22.33	31.90	147.17
13:00	46.5	1.5	1.000	68	0.375	0.374	1002.338	317.70	375.354	118.971	22.24	31.77	172.98
13:30	56.5	11.5	0.980	61	0.485	0.475	992.253	314.50	471.397	149.413	22.02	31.45	202.88
14:00	64	19	0.946	56	0.559	0.529	982.570	311.43	519.512	164.663	21.80	31.14	217.61
14:30	69	24	0.914	48	0.669	0.611	961.431	304.73	587.705	186.277	21.33	30.47	238.08
15:00	73	28	0.883	42	0.743	0.656	939.364	297.74	616.371	195.363	20.84	29.77	245.98
15:30	77	32	0.848	35	0.819	0.695	903.579	286.40	627.699	198.954	20.05	28.64	247.64
16:00	80.5	35.5	0.814	30	0.866	0.705	868.130	275.16	612.071	194.000	19.26	27.52	240.78
16:30	82	37	0.799	22	0.927	0.740	782.039	247.87	579.086	183.545	17.35	24.79	225.68
17:00	85	40	0.766	14.5	0.968	0.742	636.057	201.60	471.728	149.518	14.11	20.16	183.79
17:30	87	42	0.743	6.5	0.994	0.738	298.954	94.76	220.738	69.964	6.63	9.48	86.07

*Azimute:negative for am,positive for pm

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณการแผ่รังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันตกเฉียงเหนือ ณ วันที่ 16, 17/3/99

I total vertical :NORTH-WEST SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

6, 17/3/1999	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	lreflected=Idn*Og*Fsg	total vertical=Idv+Idif+lr
TIME		(w=135)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft.)	(W/sq.m.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)
8:30	-77	-212	-0.848	35	0.819	-0.695	903.579	286.40			20.05	28.64	48.69
9:00	-73	-208	-0.883	42	0.743	-0.656	939.364	297.74			20.84	29.77	50.62
9:30	-69	-204	-0.914	48	0.669	-0.611	961.431	304.73			21.33	30.47	51.80
10:00	-64	-199	-0.946	56	0.559	-0.529	982.570	311.43			21.80	31.14	52.94
10:30	-56.5	-191.5	-0.980	61	0.485	-0.475	992.253	314.50			22.02	31.45	53.47
11:00	-46.5	-181.5	-1.000	68	0.375	-0.374	1002.338	317.70			22.24	31.77	54.01
11:30	-25.5	-160.5	-0.943	72	0.309	-0.291	1006.580	319.04			22.33	31.90	54.24
12:00	0	-135	-0.707	74	0.276	-0.195	1008.334	319.60			22.37	31.96	54.33
12:30	25.5	-109.5	-0.334	72	0.309	-0.103	1006.580	319.04			22.33	31.90	54.24
13:00	46.5	-88.5	0.026	68	0.375	0.010	1002.338	317.70	9.829	3.12	22.24	31.77	57.12
13:30	56.5	-78.5	0.199	61	0.485	0.097	992.253	314.50	95.907	30.40	22.02	31.45	83.86
14:00	64	-71	0.326	56	0.559	0.182	982.570	311.43	178.882	56.70	21.80	31.14	109.64
14:30	69	-66	0.407	48	0.669	0.272	961.431	304.73	261.663	82.94	21.33	30.47	134.74
15:00	73	-62	0.469	42	0.743	0.349	939.364	297.74	327.730	103.88	20.84	29.77	154.49
15:30	77	-58	0.530	35	0.819	0.434	903.579	286.40	392.230	124.32	20.05	28.64	173.01
16:00	80.5	-54.5	0.581	30	0.866	0.503	868.130	275.16	436.586	138.38	19.26	27.52	185.16
16:30	82	-53	0.602	22	0.927	0.558	782.039	247.87	436.372	138.31	17.35	24.79	180.45
17:00	85	-50	0.643	14.5	0.968	0.622	636.057	201.60	395.827	125.46	14.11	20.16	159.73
17:30	87	-48	0.669	6.5	0.994	0.665	298.954	94.76	198.753	63.00	6.63	9.48	79.10

*Azimute:negative for am,positive for pm

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณการแผ่รังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันออกเฉียงเหนือ ณ วันที่ 16,17/3/99

I total vertical :NORTH-EAST SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

6,17/3/1999	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	reflected=Idn*Og*Fsg	total vertical=Idv+Idif+Ir
TIME		(w=-135)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft.)	(W/sq.m.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)	(Btu/h.sq.ft.)
8:30	-77	58	0.530	35	0.819	0.434	903.579	286.40	392.230	124.32	20.05	28.64	173.01
9:00	-73	62	0.469	42	0.743	0.349	939.364	297.74	327.730	103.88	20.84	29.77	154.49
9:30	-69	66	0.407	48	0.669	0.272	961.431	304.73	261.663	82.94	21.33	30.47	134.74
10:00	-64	71	0.326	56	0.559	0.182	982.570	311.43	178.882	56.70	21.80	31.14	109.64
10:30	-56.5	78.5	0.199	61	0.485	0.097	992.253	314.50	95.907	30.40	22.02	31.45	83.86
11:00	-46.5	88.5	0.026	68	0.375	0.010	1002.338	317.70	9.829	3.12	22.24	31.77	57.12
11:30	-25.5	109.5	-0.334	72	0.309	-0.103	1006.580	319.04			22.33	31.90	54.24
12:00	0	135	-0.707	74	0.276	-0.195	1008.334	319.60			22.37	31.96	54.33
12:30	25.5	160.5	-0.943	72	0.309	-0.291	1006.580	319.04			22.33	31.90	54.24
13:00	46.5	181.5	-1.000	68	0.375	-0.374	1002.338	317.70			22.24	31.77	54.01
13:30	56.5	191.5	-0.980	61	0.485	-0.475	992.253	314.50			22.02	31.45	53.47
14:00	64	199	-0.946	56	0.559	-0.529	982.570	311.43			21.80	31.14	52.94
14:30	69	204	-0.914	48	0.669	-0.611	961.431	304.73			21.33	30.47	51.80
15:00	73	208	-0.883	42	0.743	-0.656	939.364	297.74			20.84	29.77	50.62
15:30	77	212	-0.848	35	0.819	-0.695	903.579	286.40			20.05	28.64	48.69
16:00	80.5	215.5	-0.814	30	0.866	-0.705	868.130	275.16			19.26	27.52	46.78
16:30	82	217	-0.799	22	0.927	-0.740	782.039	247.87			17.35	24.79	42.14
17:00	85	220	-0.766	14.5	0.968	-0.742	636.057	201.60			14.11	20.16	34.27
17:30	87	222	-0.743	6.5	0.994	-0.738	298.954	94.76			6.63	9.48	16.11

*Azimute:negative for am,positive for pm

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณรังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันออก ณ วันที่ 13/4/99

I total vertical :EAST SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

13/4/99	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	Ireflected=Idn*Og*Fsg	I total vertical=Idv+Idif+Ir
TIME		(w=-90)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft)	(W/sq.m.)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)
9:00	-87.2	2.8	0.999	45	0.707	0.706	880.694	279.14	622.001	197.15	19.54	27.91	244.60
9:15	-86.5	3.5	0.998	48	0.669	0.668	891.633	282.61	595.506	188.75	19.78	28.26	236.79
9:30	-85.5	4.5	0.997	52	0.616	0.614	904.014	286.53	554.851	175.86	20.06	28.65	224.57
9:45	-83.5	6.5	0.994	55	0.574	0.570	911.899	289.03	519.682	164.72	20.23	28.90	213.85
10:00	-82	8	0.990	58	0.530	0.525	918.752	291.21	482.126	152.81	20.38	29.12	202.32
10:15	-80	10	0.985	62	0.469	0.462	926.493	293.66	428.354	135.77	20.56	29.37	185.69
10:30	-78	12	0.978	67	0.391	0.382	934.231	296.11	357.056	113.17	20.73	29.61	163.51
10:45	-74.5	15.5	0.964	69	0.358	0.345	936.793	296.92	323.507	102.54	20.78	29.69	153.01
11:00	-72	18	0.951	73	0.292	0.278	941.095	298.29	261.683	82.94	20.88	29.83	133.65
11:15	-65	25	0.906	76	0.242	0.219	943.653	299.10	206.901	65.58	20.94	29.91	116.43
11:30	-55	35	0.819	79	0.191	0.156	945.676	299.74	147.811	46.85	20.98	29.97	97.81
11:45	-37.5	52.5	0.609	82	0.139	0.085	947.190	300.22	80.249	25.44	21.02	30.02	76.47
12:00	0	90	0.000	84	0.105	0.000	947.927	300.45	0.000	0.00	21.03	30.05	51.08
12:15	37.5	127.5	-0.609	82	0.139	-0.085	947.190	300.22			21.02	30.02	51.04
12:30	55	145	-0.819	79	0.191	-0.156	945.676	299.74			20.98	29.97	50.96
12:45	65	155	-0.906	76	0.242	-0.219	943.653	299.10			20.94	29.91	50.85
13:00	72	162	-0.951	73	0.292	-0.278	941.095	298.29			20.88	29.83	50.71
13:15	74.5	164.5	-0.964	69	0.358	-0.345	936.793	296.92			20.78	29.69	50.48
13:30	78	168	-0.978	67	0.391	-0.382	934.231	296.11			20.73	29.61	50.34
13:45	80	170	-0.985	62	0.469	-0.462	926.493	293.66			20.56	29.37	49.92
14:00	82	172	-0.990	58	0.530	-0.525	918.752	291.21			20.38	29.12	49.50
14:15	83.5	173.5	-0.994	55	0.574	-0.570	911.899	289.03			20.23	28.90	49.14
14:30	85.5	175.5	-0.997	52	0.616	-0.614	904.014	286.53			20.06	28.65	48.71
14:45	86.5	176.5	-0.998	48	0.669	-0.668	891.633	282.61			19.78	28.26	48.04
15:00	87.2	177.2	-0.999	45	0.707	-0.706	880.694	279.14			19.54	27.91	47.45
15:15	88.2	178.2	-1.000	42	0.743	-0.743	868.062	275.14			19.26	27.51	46.77
15:30	89.5	179.5	-1.000	38	0.788	-0.788	848.017	268.78			18.81	26.88	45.69
15:45	90	180	-1.000	35	0.819	-0.819	830.019	263.08			18.42	26.31	44.72
16:00	91	181	-1.000	32	0.848	-0.848	808.834	256.37			17.95	25.64	43.58
16:15	91.5	181.5	-1.000	29	0.875	-0.874	783.671	248.39			17.39	24.84	42.23
16:30	92.5	182.5	-0.999	24	0.914	-0.913	729.764	231.30			16.19	23.13	39.32
16:45	94	184	-0.998	20	0.940	-0.937	671.144	212.72			14.89	21.27	36.16
17:00	95	185	-0.996	16	0.961	-0.958	591.249	187.40			13.12	18.74	31.86

*Azimute:negative for am,positive for pm

A=1136,B=0.180

k=0.14,Fss=0.5

Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณรังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศใต้ ณ วันที่ 13/4/99

I total vertical :SOUTH SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

13/4/99	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	Ireflected=Idn*Og*Fsg	I total vertical=Idv+Idif+Ir
TIME		(w=0)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft)	(W/sq.m.)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)
9:00	-87.2	-87.2	0.049	45	0.707	0.035	880.694	279.14	30.421	9.64	19.54	27.91	57.10
9:15	-86.5	-86.5	0.061	48	0.669	0.041	891.633	282.61	36.423	11.54	19.78	28.26	59.59
9:30	-85.5	-85.5	0.078	52	0.616	0.048	904.014	286.53	43.668	13.84	20.06	28.65	62.55
9:45	-83.5	-83.5	0.113	55	0.574	0.065	911.899	289.03	59.210	18.77	20.23	28.90	67.90
10:00	-82	-82	0.139	58	0.530	0.074	918.752	291.21	67.758	21.48	20.38	29.12	70.98
10:15	-80	-80	0.174	62	0.469	0.082	926.493	293.66	75.530	23.94	20.56	29.37	73.86
10:30	-78	-78	0.208	67	0.391	0.081	934.231	296.11	75.895	24.06	20.73	29.61	74.39
10:45	-74.5	-74.5	0.267	69	0.358	0.096	936.793	296.92	89.716	28.44	20.78	29.69	78.91
11:00	-72	-72	0.309	73	0.292	0.090	941.095	298.29	85.026	26.95	20.88	29.83	77.66
11:15	-65	-65	0.423	76	0.242	0.102	943.653	299.10	96.480	30.58	20.94	29.91	81.43
11:30	-55	-55	0.574	79	0.191	0.109	945.676	299.74	103.498	32.80	20.98	29.97	83.76
11:45	-37.5	-37.5	0.793	82	0.139	0.110	947.190	300.22	104.583	33.15	21.02	30.02	84.19
12:00	0	0	1.000	84	0.105	0.105	947.927	300.45	99.085	31.41	21.03	30.05	82.48
12:15	37.5	37.5	0.793	82	0.139	0.110	947.190	300.22	104.583	33.15	21.02	30.02	84.19
12:30	55	55	0.574	79	0.191	0.109	945.676	299.74	103.498	32.80	20.98	29.97	83.76
12:45	65	65	0.423	76	0.242	0.102	943.653	299.10	96.480	30.58	20.94	29.91	81.43
13:00	72	72	0.309	73	0.292	0.090	941.095	298.29	85.026	26.95	20.88	29.83	77.66
13:15	74.5	74.5	0.267	69	0.358	0.096	936.793	296.92	89.716	28.44	20.78	29.69	78.91
13:30	78	78	0.208	67	0.391	0.081	934.231	296.11	75.895	24.06	20.73	29.61	74.39
13:45	80	80	0.174	62	0.469	0.082	926.493	293.66	75.530	23.94	20.56	29.37	73.86
14:00	82	82	0.139	58	0.530	0.074	918.752	291.21	67.758	21.48	20.38	29.12	70.98
14:15	83.5	83.5	0.113	55	0.574	0.065	911.899	289.03	59.210	18.77	20.23	28.90	67.90
14:30	85.5	85.5	0.078	52	0.616	0.048	904.014	286.53	43.668	13.84	20.06	28.65	62.55
14:45	86.5	86.5	0.061	48	0.669	0.041	891.633	282.61	36.423	11.54	19.78	28.26	59.59
15:00	87.2	87.2	0.049	45	0.707	0.035	880.694	279.14	30.421	9.64	19.54	27.91	57.10
15:15	88.2	88.2	0.031	42	0.743	0.023	868.062	275.14	20.263	6.42	19.26	27.51	53.20
15:30	89.5	89.5	0.009	38	0.788	0.007	848.017	268.78	5.831	1.85	18.81	26.88	47.54
15:45	90	90	0.000	35	0.819	0.000	830.019	263.08	0.000	0.00	18.42	26.31	44.72
16:00	91	91	-0.017	32	0.848	-0.015	808.834	256.37			17.95	25.64	43.58
16:15	91.5	91.5	-0.026	29	0.875	-0.023	783.671	248.39			17.39	24.84	42.23
16:30	92.5	92.5	-0.044	24	0.914	-0.040	729.764	231.30			16.19	23.13	39.32
16:45	94	94	-0.070	20	0.940	-0.066	671.144	212.72			14.89	21.27	36.16
17:00	95	95	-0.087	16	0.961	-0.084	591.249	187.40			13.12	18.74	31.86

*Azimute:negative for am,positive for pm

A=1186,B=0.156

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface In shade

ตารางแสดงการหาปริมาณรังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันตก ณ วันที่ 13/4/99

I total vertical :WEST SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

13/4/99	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	reflected=Idn*Og*Fsc	I total vertical=Idv+Idif+Ir
TIME		(w=90)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft)	(W/sq.m.)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)
9:00	-87.2	-177.2	-0.999	45	0.707	-0.706	880.694	279.14			19.54	27.91	47.45
9:15	-86.5	-176.5	-0.998	48	0.669	-0.668	891.633	282.61			19.78	28.26	48.04
9:30	-85.5	-175.5	-0.997	52	0.616	-0.614	904.014	286.53			20.06	28.65	48.71
9:45	-83.5	-173.5	-0.994	55	0.574	-0.570	911.899	289.03			20.23	28.90	49.14
10:00	-82	-172	-0.990	58	0.530	-0.525	918.752	291.21			20.38	29.12	49.50
10:15	-80	-170	-0.985	62	0.469	-0.462	926.493	293.66			20.56	29.37	49.92
10:30	-78	-168	-0.978	67	0.391	-0.382	934.231	296.11			20.73	29.61	50.34
10:45	-74.5	-164.5	-0.964	69	0.358	-0.345	936.793	296.92			20.78	29.69	50.48
11:00	-72	-162	-0.951	73	0.292	-0.278	941.095	298.29			20.88	29.83	50.71
11:15	-65	-155	-0.906	76	0.242	-0.219	943.653	299.10			20.94	29.91	50.85
11:30	-55	-145	-0.819	79	0.191	-0.156	945.676	299.74			20.98	29.97	50.96
11:45	-37.5	-127.5	-0.609	82	0.139	-0.085	947.190	300.22			21.02	30.02	51.04
12:00	0	-90	0.000	84	0.105	0.000	947.927	300.45	0.000	0.00	21.03	30.05	51.08
12:15	37.5	-52.5	0.609	82	0.139	0.085	947.190	300.22	80.249	25.44	21.02	30.02	76.47
12:30	55	-35	0.819	79	0.191	0.156	945.676	299.74	147.811	46.85	20.98	29.97	97.81
12:45	65	-25	0.906	76	0.242	0.219	943.653	299.10	206.901	65.58	20.94	29.91	116.43
13:00	72	-18	0.951	73	0.292	0.278	941.095	298.29	261.683	82.94	20.88	29.83	133.65
13:15	74.5	-15.5	0.964	69	0.358	0.345	936.793	296.92	323.507	102.54	20.78	29.69	153.01
13:30	78	-12	0.978	67	0.391	0.382	934.231	296.11	357.056	113.17	20.73	29.61	163.51
13:45	80	-10	0.985	62	0.469	0.462	926.493	293.66	428.354	135.77	20.56	29.37	185.69
14:00	82	-8	0.990	58	0.530	0.525	918.752	291.21	482.126	152.81	20.38	29.12	202.32
14:15	83.5	-6.5	0.994	55	0.574	0.570	911.899	289.03	519.682	164.72	20.23	28.90	213.85
14:30	85.5	-4.5	0.997	52	0.616	0.614	904.014	286.53	554.851	175.86	20.06	28.65	224.57
14:45	86.5	-3.5	0.998	48	0.669	0.668	891.633	282.61	595.506	188.75	19.78	28.26	236.79
15:00	87.2	-2.8	0.999	45	0.707	0.706	880.694	279.14	622.001	197.15	19.54	27.91	244.60
15:15	88.2	-1.8	1.000	42	0.743	0.743	868.062	275.14	644.777	204.37	19.26	27.51	251.14
15:30	89.5	-0.5	1.000	38	0.788	0.788	848.017	268.78	668.221	211.80	18.81	26.88	257.49
15:45	90	0	1.000	35	0.819	0.819	830.019	263.08	679.911	215.50	18.42	26.31	260.23
16:00	91	1	1.000	32	0.848	0.848	808.834	256.37	685.826	217.38	17.95	25.64	260.96
16:15	91.5	1.5	1.000	29	0.875	0.874	783.671	248.39	685.179	217.17	17.39	24.84	259.40
16:30	92.5	2.5	0.999	24	0.914	0.913	729.764	231.30	666.038	211.11	16.19	23.13	250.43
16:45	94	4	0.998	20	0.940	0.937	671.144	212.72	629.133	199.41	14.89	21.27	235.57
17:00	95	5	0.996	16	0.961	0.958	591.249	187.40	566.182	179.46	13.12	18.74	211.31

*Azimute:negative for am,positive for pm

A=1186,B=0.156

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณรังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศเหนือ ณ วันที่ 13/4/99

I total vertical :NORTH SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

13/4/99	azimuth	Y=azimute-w (w=180)	cos Y	altitude (B)	cosB	cosOv= cosB*cosY	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	lreflected=Idn*Og*Fsg	ltotal vertical=Idv+Idif+lr
TIME							(W/sq.m.)	(Btu/h.sq.ft)	(W/sq.m.)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)
9:00	-87.2	-267.2	-0.049	45	0.707	-0.035	880.694	279.14			19.54	27.91	47.45
9:15	-86.5	-266.5	-0.061	48	0.669	-0.041	891.633	282.61			19.78	28.26	48.04
9:30	-85.5	-265.5	-0.078	52	0.616	-0.048	904.014	286.53			20.06	28.65	48.71
9:45	-83.5	-263.5	-0.113	55	0.574	-0.065	911.899	289.03			20.23	28.90	49.14
10:00	-82	-262	-0.139	58	0.530	-0.074	918.752	291.21			20.38	29.12	49.50
10:15	-80	-260	-0.174	62	0.469	-0.082	926.493	293.66			20.56	29.37	49.92
10:30	-78	-258	-0.208	67	0.391	-0.081	934.231	296.11			20.73	29.61	50.34
10:45	-74.5	-254.5	-0.267	69	0.358	-0.096	936.793	296.92			20.78	29.69	50.48
11:00	-72	-252	-0.309	73	0.292	-0.090	941.095	298.29			20.88	29.83	50.71
11:15	-65	-245	-0.423	76	0.242	-0.102	943.653	299.10			20.94	29.91	50.85
11:30	-55	-235	-0.574	79	0.191	-0.109	945.676	299.74			20.98	29.97	50.96
11:45	-37.5	-217.5	-0.753	82	0.139	-0.110	947.190	300.22			21.02	30.02	51.04
12:00	0	-180	-1.000	84	0.105	-0.105	947.927	300.45			21.03	30.05	51.08
12:15	37.5	-142.5	-0.793	82	0.139	-0.110	947.190	300.22			21.02	30.02	51.04
12:30	55	-125	-0.574	79	0.191	-0.109	945.676	299.74			20.98	29.97	50.96
12:45	65	-115	-0.423	76	0.242	-0.102	943.653	299.10			20.94	29.91	50.85
13:00	72	-108	-0.309	73	0.292	-0.090	941.095	298.29			20.88	29.83	50.71
13:15	74.5	-105.5	-0.267	69	0.358	-0.096	936.793	296.92			20.78	29.69	50.48
13:30	78	-102	-0.208	67	0.391	-0.081	934.231	296.11			20.73	29.61	50.34
13:45	80	-100	-0.174	62	0.469	-0.082	926.493	293.66			20.56	29.37	49.92
14:00	82	-98	-0.139	58	0.530	-0.074	918.752	291.21			20.38	29.12	49.50
14:15	83.5	-96.5	-0.113	55	0.574	-0.065	911.899	289.03			20.23	28.90	49.14
14:30	85.5	-94.5	-0.078	52	0.616	-0.048	904.014	286.53			20.06	28.65	48.71
14:45	86.5	-93.5	-0.061	48	0.669	-0.041	891.633	282.61			19.78	28.26	48.04
15:00	87.2	-92.8	-0.049	45	0.707	-0.035	880.694	279.14			19.54	27.91	47.45
15:15	88.2	-91.8	-0.031	42	0.743	-0.023	868.062	275.14			19.26	27.51	46.77
15:30	89.5	-90.5	-0.009	38	0.788	-0.007	848.017	268.78			18.81	26.88	45.69
15:45	90	-90	0.000	35	0.819	0.000	830.019	263.08	0.000	0.00	18.42	26.31	44.72
16:00	91	-89	0.017	32	0.848	0.015	808.834	256.37	11.971	3.79	17.95	25.64	47.38
16:15	91.5	-88.5	0.026	29	0.875	0.023	783.671	248.39	17.942	5.69	17.39	24.84	47.91
16:30	92.5	-87.5	0.044	24	0.914	0.040	729.764	231.30	29.080	9.22	16.19	23.13	48.54
16:45	94	-86	0.070	20	0.940	0.066	671.144	212.72	43.993	13.94	14.89	21.27	50.11
17:00	95	-85	0.087	16	0.961	0.084	591.249	187.40	49.535	15.70	13.12	18.74	47.56

*Azimute:negative for am,positive for pm

A=1186,B=0.156

k=0.14,Fss=0.5

Og=0.2,Fsg=0.5

* 90<Y<270 =Surface ln shade

ตารางแสดงการหาปริมาณรังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันออกเฉียงใต้ ณ วันที่ 13/4/99

I total vertical :SOUTH-EAST SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

13/4/99	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	Ireflected=Idn*Og*Fsg	I total vertical=Idv+Idif+I _r
TIME		(w=-45)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft)	(W/sq.m.)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)
9:00	-87.2	-42.2	0.741	45	0.707	0.524	880.694	279.14	461.332	146.22	19.54	27.91	193.68
9:15	-86.5	-41.5	0.749	48	0.669	0.501	891.633	282.61	446.841	141.63	19.78	28.26	189.67
9:30	-85.5	-40.5	0.760	52	0.616	0.468	904.014	286.53	423.217	134.14	20.06	28.65	182.85
9:45	-83.5	-38.5	0.783	55	0.574	0.449	911.899	289.03	409.338	129.74	20.23	28.90	178.88
10:00	-82	-37	0.799	58	0.530	0.423	918.752	291.21	388.827	123.24	20.38	29.12	172.75
10:15	-80	-35	0.819	62	0.469	0.385	926.493	293.66	356.300	112.93	20.56	29.37	162.85
10:30	-78	-33	0.839	67	0.391	0.328	934.231	296.11	306.143	97.03	20.73	29.61	147.37
10:45	-74.5	-29.5	0.870	69	0.358	0.312	936.793	296.92	292.193	92.61	20.78	29.69	143.09
11:00	-72	-27	0.891	73	0.292	0.261	941.095	298.29	245.160	77.71	20.88	29.83	128.41
11:15	-65	-20	0.940	76	0.242	0.227	943.653	299.10	214.523	67.99	20.94	29.91	118.84
11:30	-55	-10	0.985	79	0.191	0.188	945.676	299.74	177.702	56.32	20.98	29.97	107.28
11:45	-37.5	7.5	0.991	82	0.139	0.138	947.190	300.22	130.696	41.42	21.02	30.02	92.46
12:00	0	45	0.707	84	0.105	0.074	947.927	300.45	70.064	22.21	21.03	30.05	73.28
12:15	37.5	82.5	0.131	82	0.139	0.018	947.190	300.22	17.206	5.45	21.02	30.02	56.49
12:30	55	100	-0.174	79	0.191	-0.033	945.676	299.74			20.98	29.97	50.96
12:45	65	110	-0.342	76	0.242	-0.083	943.653	299.10			20.94	29.91	50.85
13:00	72	117	-0.454	73	0.292	-0.133	941.095	298.29			20.88	29.83	50.71
13:15	74.5	119.5	-0.492	69	0.358	-0.176	936.793	296.92			20.78	29.69	50.48
13:30	78	123	-0.545	67	0.391	-0.213	934.231	296.11			20.73	29.61	50.34
13:45	80	125	-0.574	62	0.469	-0.269	926.493	293.66			20.56	29.37	49.92
14:00	82	127	-0.602	58	0.530	-0.319	918.752	291.21			20.38	29.12	49.50
14:15	83.5	128.5	-0.623	55	0.574	-0.357	911.899	289.03			20.23	28.90	49.14
14:30	85.5	130.5	-0.649	52	0.616	-0.400	904.014	286.53			20.06	28.65	48.71
14:45	86.5	131.5	-0.663	48	0.669	-0.443	891.633	282.61			19.78	28.26	48.04
15:00	87.2	132.2	-0.672	45	0.707	-0.475	880.694	279.14			19.54	27.91	47.45
15:15	88.2	133.2	-0.685	42	0.743	-0.509	868.062	275.14			19.26	27.51	46.77
15:30	89.5	134.5	-0.701	38	0.788	-0.552	848.017	268.78			18.81	26.88	45.69
15:45	90	135	-0.707	35	0.819	-0.579	830.019	263.08			18.42	26.31	44.72
16:00	91	136	-0.719	32	0.848	-0.610	808.834	256.37			17.95	25.64	43.58
16:15	91.5	136.5	-0.725	29	0.875	-0.634	783.671	248.39			17.39	24.84	42.23
16:30	92.5	137.5	-0.737	24	0.914	-0.674	729.764	231.30			16.19	23.13	39.32
16:45	94	139	-0.755	20	0.940	-0.709	671.144	212.72			14.89	21.27	36.16
17:00	95	140	-0.766	16	0.961	-0.736	591.249	187.40			13.12	18.74	31.86

*Azimute:negative for am,positive for pm

A=1186,B=0.156

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณรังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันตกเฉียงใต้ ณ วันที่ 13/4/99

I total vertical :SOUTH-WEST SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

13/4/99	azimuth	Y=azimute-w		altitude		cosOv=	Idn		ldv = Idn*cosOv		ldiffuse=k*Idn*Fss	lreflected=Idn*Og*Fsg	ltotal vertical=ldv+ldif+l
TIME		(w=45)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft)	(W/sq.m.)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)
9:00	-87.2	-132.2	-0.672	45	0.707	-0.475	880.694	279.14			19.54	27.91	47.45
9:15	-86.5	-131.5	-0.663	48	0.669	-0.443	891.633	282.61			19.78	28.26	48.04
9:30	-85.5	-130.5	-0.649	52	0.616	-0.400	904.014	286.53			20.06	28.65	48.71
9:45	-83.5	-128.5	-0.623	55	0.574	-0.357	911.899	289.03			20.23	28.90	49.14
10:00	-82	-127	-0.602	58	0.530	-0.319	918.752	291.21			20.38	29.12	49.50
10:15	-80	-125	-0.574	62	0.469	-0.269	926.493	293.66			20.56	29.37	49.92
10:30	-78	-123	-0.545	67	0.391	-0.213	934.231	296.11			20.73	29.61	50.34
10:45	-74.5	-119.5	-0.492	69	0.358	-0.176	936.793	296.92			20.78	29.69	50.48
11:00	-72	-117	-0.454	73	0.292	-0.133	941.095	298.29			20.88	29.83	50.71
11:15	-65	-110	-0.342	76	0.242	-0.083	943.653	299.10			20.94	29.91	50.85
11:30	-55	-100	-0.174	79	0.191	-0.033	945.676	299.74			20.98	29.97	50.96
11:45	-37.5	-82.5	0.131	82	0.139	0.018	947.190	300.22	17.206	5.45	21.02	30.02	56.49
12:00	0	-45	0.707	84	0.105	0.074	947.927	300.45	70.064	22.21	21.03	30.05	73.28
12:15	37.5	-7.5	0.991	82	0.139	0.138	947.190	300.22	130.696	41.42	21.02	30.02	92.46
12:30	55	10	0.985	79	0.191	0.188	945.676	299.74	177.702	56.32	20.98	29.97	107.28
12:45	65	20	0.940	76	0.242	0.227	943.653	299.10	214.523	67.99	20.94	29.91	118.84
13:00	72	27	0.891	73	0.292	0.261	941.095	298.29	245.160	77.71	20.88	29.83	128.41
13:15	74.5	29.5	0.870	69	0.358	0.312	936.793	296.92	292.193	92.61	20.78	29.69	143.09
13:30	78	33	0.839	67	0.391	0.328	934.231	296.11	306.143	97.03	20.73	29.61	147.37
13:45	80	35	0.819	62	0.469	0.385	926.493	293.66	356.300	112.93	20.56	29.37	162.85
14:00	82	37	0.799	58	0.530	0.423	918.752	291.21	388.827	123.24	20.38	29.12	172.75
14:15	83.5	38.5	0.783	55	0.574	0.449	911.899	289.03	409.338	129.74	20.23	28.90	178.88
14:30	85.5	40.5	0.760	52	0.616	0.468	904.014	286.53	423.217	134.14	20.06	28.65	182.85
14:45	86.5	41.5	0.749	48	0.669	0.501	891.633	282.61	446.841	141.63	19.78	28.26	189.67
15:00	87.2	42.2	0.741	45	0.707	0.524	880.694	279.14	461.332	146.22	19.54	27.91	193.68
15:15	88.2	43.2	0.729	42	0.743	0.542	868.062	275.14	470.254	149.05	19.26	27.51	195.82
15:30	89.5	44.5	0.713	38	0.788	0.562	848.017	268.78	476.627	151.07	18.81	26.88	196.76
15:45	90	45	0.707	35	0.819	0.579	830.019	263.08	480.770	152.38	18.42	26.31	197.11
16:00	91	46	0.695	32	0.848	0.589	808.834	256.37	476.487	151.03	17.95	25.64	194.61
16:15	91.5	46.5	0.688	29	0.875	0.602	783.671	248.39	471.808	149.54	17.39	24.84	191.77
16:30	92.5	47.5	0.676	24	0.914	0.617	729.764	231.30	450.398	142.76	16.19	23.13	182.08
16:45	94	49	0.656	20	0.940	0.616	671.144	212.72	413.756	131.14	14.89	21.27	167.31
17:00	95	50	0.643	16	0.961	0.618	591.249	187.40	365.325	115.79	13.12	18.74	147.65

*Azimute:negative for am,positive for pm

A=1186,B=0.156

k=0.14,Fss=0.5 Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณรังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันตกเฉียงเหนือ ณ วันที่ 13/4/99

I total vertical :NORTH-WEST SURFACE ORIENTATION ON CLEARDAY (LAT.=14NORTH)

13/4/99	azimuth	Y=azimute-w		altitude		cosOv=	Idn		ldv = Idn*cosOv		ldiffuse=k*Idn*Fss	lreflected=Idn*Og*Fsg	ltotal vertical=ldv+ldif+lr
TIME		(w=135)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft)	(W/sq.m.)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)
9:00	-87.2	-222.2	-0.741	45	0.707	-0.524	880.694	279.14			19.54	27.91	47.45
9:15	-86.5	-221.5	-0.749	48	0.669	-0.501	891.633	282.61			19.78	28.26	48.04
9:30	-85.5	-220.5	-0.760	52	0.616	-0.468	904.014	286.53			20.06	28.65	48.71
9:45	-83.5	-218.5	-0.783	55	0.574	-0.449	911.899	289.03			20.23	28.90	49.14
10:00	-82	-217	-0.799	58	0.530	-0.423	918.752	291.21			20.38	29.12	49.50
10:15	-80	-215	-0.819	62	0.469	-0.385	926.493	293.66			20.56	29.37	49.92
10:30	-78	-213	-0.839	67	0.391	-0.328	934.231	296.11			20.73	29.61	50.34
10:45	-74.5	-209.5	-0.870	69	0.358	-0.312	936.793	296.92			20.78	29.69	50.48
11:00	-72	-207	-0.891	73	0.292	-0.261	941.095	298.29			20.88	29.83	50.71
11:15	-65	-200	-0.940	76	0.242	-0.227	943.653	299.10			20.94	29.91	50.85
11:30	-55	-190	-0.985	79	0.191	-0.188	945.676	299.74			20.98	29.97	50.96
11:45	-37.5	-172.5	-0.991	82	0.139	-0.138	947.190	300.22			21.02	30.02	51.04
12:00	0	-135	-0.707	84	0.105	-0.074	947.927	300.45			21.03	30.05	51.08
12:15	37.5	-97.5	-0.131	82	0.139	-0.018	947.190	300.22			21.02	30.02	51.04
12:30	55	-80	0.174	79	0.191	-0.033	945.676	299.74	31.334	9.93	20.98	29.97	60.89
12:45	65	-70	0.342	76	0.242	0.083	943.653	299.10	78.080	24.75	20.94	29.91	75.59
13:00	72	-63	0.454	73	0.292	0.133	941.095	298.29	124.915	39.59	20.88	29.83	90.30
13:15	74.5	-60.5	0.492	69	0.358	0.176	936.793	296.92	165.315	52.40	20.78	29.69	102.87
13:30	78	-57	0.545	67	0.391	0.213	934.231	296.11	198.811	63.01	20.73	29.61	113.35
13:45	80	-55	0.574	62	0.469	0.269	926.493	293.66	249.484	79.08	20.56	29.37	129.00
14:00	82	-53	0.602	58	0.530	0.319	918.752	291.21	293.002	92.87	20.38	29.12	142.37
14:15	83.5	-51.5	0.623	55	0.574	0.357	911.899	289.03	325.602	103.20	20.23	28.90	152.34
14:30	85.5	-49.5	0.649	52	0.616	0.400	904.014	286.53	361.461	114.57	20.06	28.65	163.28
14:45	86.5	-48.5	0.663	48	0.669	0.443	891.633	282.61	395.332	125.30	19.78	28.26	173.35
15:00	87.2	-47.8	0.672	45	0.707	0.475	880.694	279.14	418.310	132.59	19.54	27.91	180.04
15:15	88.2	-46.8	0.685	42	0.743	0.509	868.062	275.14	441.598	139.97	19.26	27.51	186.74
15:30	89.5	-45.5	0.701	38	0.788	0.552	848.017	268.78	468.380	148.46	18.81	26.88	194.15
15:45	90	-45	0.707	35	0.819	0.579	830.019	263.08	480.770	152.38	18.42	26.31	197.11
16:00	91	-44	0.719	32	0.848	0.610	808.834	256.37	493.417	156.39	17.95	25.64	199.97
16:15	91.5	-43.5	0.725	29	0.875	0.634	783.671	248.39	497.182	157.59	17.39	24.84	199.81
16:30	92.5	-42.5	0.737	24	0.914	0.674	729.764	231.30	491.523	155.79	16.19	23.13	195.11
16:45	94	-41	0.755	20	0.940	0.709	671.144	212.72	475.972	150.86	14.89	21.27	187.03
17:00	95	-40	0.766	16	0.961	0.736	591.249	187.40	435.377	138.00	13.12	18.74	169.85

*Azimute:negative for am,positive for pm

A=1186,θ=0.156

k=0.14,Fss=0.5

Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ตารางแสดงการหาปริมาณรังสีในแนวตั้งทั้งหมดบนพื้นผิวทางทิศตะวันออกเฉียงเหนือ ณ วันที่ 13/4/99

I total vertical :NORTH-EAST SURFACE ORIENTATION ON CLEAR DAY (LAT.=14NORTH)

13/4/99	azimuth	Y=azimute-w		altitude		cosOv=	Idn		Idv = Idn*cosOv		Idiffuse=k*Idn*Fss	Ireflected=Idn*Og*Fsg	I total vertical=Idv+Idif+Iref
TIME		(w=-135)	cos Y	(B)	cosB	cosB*cosY	(W/sq.m.)	(Btu/h.sq.ft)	(W/sq.m.)	(Btu/h.so.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)	(Btu/h.sq.ft)
9:00	-87.2	47.8	0.672	45	0.707	0.475	880.694	279.14	418.310	132.59	19.54	27.91	180.04
9:15	-86.5	48.5	0.663	48	0.669	0.443	891.633	282.61	395.332	125.30	19.78	28.26	173.35
9:30	-85.5	49.5	0.649	52	0.616	0.400	904.014	286.53	361.461	114.57	20.06	28.65	163.28
9:45	-83.5	51.5	0.623	55	0.574	0.357	911.899	289.03	325.602	103.20	20.23	28.90	152.34
10:00	-82	53	0.602	58	0.530	0.319	918.752	291.21	293.002	92.87	20.38	29.12	142.37
10:15	-80	55	0.574	62	0.469	0.269	926.493	293.66	249.484	79.08	20.56	29.37	129.00
10:30	-78	57	0.545	67	0.391	0.213	934.231	296.11	198.811	63.01	20.73	29.61	113.35
10:45	-74.5	60.5	0.492	69	0.358	0.176	936.793	296.92	165.315	52.40	20.78	29.69	102.87
11:00	-72	63	0.454	73	0.292	0.133	941.095	298.29	124.915	39.59	20.88	29.83	90.30
11:15	-65	70	0.342	76	0.242	0.083	943.653	299.10	78.080	24.75	20.94	29.91	75.59
11:30	-55	80	0.174	79	0.191	0.033	945.676	299.74	31.334	9.93	20.98	29.97	60.89
11:45	-37.5	97.5	-0.131	82	0.139	-0.018	947.190	300.22			21.02	30.02	51.04
12:00	0	135	-0.707	84	0.105	-0.074	947.927	300.45			21.03	30.05	51.08
12:15	37.5	172.5	-0.991	82	0.139	-0.138	947.190	300.22			21.02	30.02	51.04
12:30	55	190	-0.985	79	0.191	-0.188	945.676	299.74			20.98	29.97	50.96
12:45	65	200	-0.940	76	0.242	-0.227	943.653	299.10			20.94	29.91	50.85
13:00	72	207	-0.891	73	0.292	-0.261	941.095	298.29			20.88	29.83	50.71
13:15	74.5	209.5	-0.870	69	0.358	-0.312	936.793	296.92			20.78	29.69	50.48
13:30	78	213	-0.839	67	0.391	-0.328	934.231	296.11			20.73	29.61	50.34
13:45	80	215	-0.819	62	0.469	-0.385	926.493	293.66			20.56	29.37	49.92
14:00	82	217	-0.799	58	0.530	-0.423	918.752	291.21			20.38	29.12	49.50
14:15	83.5	218.5	-0.783	55	0.574	-0.449	911.899	289.03			20.23	28.90	49.14
14:30	85.5	220.5	-0.760	52	0.616	-0.468	904.014	286.53			20.06	28.65	48.71
14:45	86.5	221.5	-0.749	48	0.669	-0.501	891.633	282.61			19.78	28.26	48.04
15:00	87.2	222.2	-0.741	45	0.707	-0.524	880.694	279.14			19.54	27.91	47.45
15:15	88.2	223.2	-0.729	42	0.743	-0.542	868.062	275.14			19.26	27.51	46.77
15:30	89.5	224.5	-0.713	38	0.788	-0.562	848.017	268.78			18.81	26.88	45.69
15:45	90	225	-0.707	35	0.819	-0.579	830.019	263.08			18.42	26.31	44.72
16:00	91	226	-0.695	32	0.848	-0.589	808.834	256.37			17.95	25.64	43.58
16:15	91.5	226.5	-0.688	29	0.875	-0.602	783.671	248.39			17.39	24.84	42.23
16:30	92.5	227.5	-0.676	24	0.914	-0.617	729.764	231.30			16.19	23.13	39.32
16:45	94	229	-0.656	20	0.940	-0.616	671.144	212.72			14.89	21.27	36.16
17:00	95	230	-0.643	16	0.961	-0.618	591.249	187.40			13.12	18.74	31.86

*Azimute:negative for am,positive for pm

A=1186,B=0.156

k=0.14,Fss=0.5

Og=0.2,Fsg=0.5

* 90<Y<270 =Surface in shade

ภาคผนวก ง.

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON EASTSIDE VERTICAL SURFACE (TEST)

จามจุรี

16/3/99	OUTDOOR RADIATION		INSHADE VERTICAL RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU /HR.SQ.FT.	BTU /HR.SQ.FT.	BTU /HR.SQ.FT.						%
8:30	87	85.0	60.0	35.0	30.0	35.0	28.0	37.6	90
9:00	120	110.0	38.0	48.0	30.0	30.0	28.0	34.8	80
9:30	33	32.0	22.0	21.0	25.0	26.0	25.0	23.8	70
10:00	165	105.0	30.0	35.0	38.0	32.0	31.0	33.2	50
10:30	175	105.0	43.0	28.0	32.0	28.0	28.0	31.8	40
11:00	162	90.0	32.0	35.0	33.0	35.0	28.0	32.6	40
11:30	152	51.0	21.0	22.0	22.0	22.0	23.0	22.0	30
12:00	140	32.0	15.0	15.0	18.0	21.0	22.0	18.2	30
12:30	90	28.0	16.0	15.0	13.0	13.0	16.0	14.6	30
13:00	90	34.0	12.0	12.0	13.0	13.0	13.0	12.6	10
13:30	115	22.0	11.0	11.0	11.0	12.0	12.0	11.4	0
14:00	70	15.0	12.0	11.0	11.0	11.0	11.0	11.2	0
14:30	90	20.0	12.0	11.0	11.0	11.0	11.0	11.2	0
15:00	110	13.0	10.0	9.0	10.0	9.0	9.0	9.4	0
15:30	127	20.0	12.0	12.0	12.0	12.0	12.0	12.0	0
16:00	72	20.0	10.0	10.0	10.0	10.0	10.0	10.0	0
16:30	61	11.0	10.0	10.0	10.0	10.0	10.0	10.0	0
17:00	30	9.0	9.0	9.0	9.0	9.0	9.0	9.0	0
17:30	19	6.0	6.0	6.0	6.0	6.0	6.0	6.0	0

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON EASTSIDE VERTICAL SURFACE (TEST)

จามจุรี

17/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU /HR.SQ.FT.	BTU /HR.SQ.FT.	BTU /HR.SQ.FT.						%
8:30	36	35.0	20.0	19.0	19.5	19.0	19.0	19.3	80
9:00	115	105.0	20.0	40.0	42.0	23.0	22.0	29.4	70
9:30	118	108.0	38.0	21.0	32.0	25.0	31.0	29.4	60
10:00	32	31.0	15.0	14.0	14.0	15.0	14.0	14.4	60
10:30	32	58.0	22.0	21.0	28.0	22.0	25.0	23.6	50
11:00	80	51.0	19.0	21.0	25.0	22.0	22.0	21.8	30
11:30	145	45.0	19.0	19.0	21.0	20.0	22.0	20.2	30
12:00	142	32.0	20.0	19.5	20.0	19.0	20.0	19.7	15
12:30	148	37.0	14.0	15.0	18.0	18.0	19.0	16.8	10
13:00	130	25.0	19.0	18.0	18.0	19.0	19.0	18.6	5
13:30	141	29.0	14.0	14.0	16.0	17.0	18.0	15.8	0
14:00	151	24.0	12.0	15.0	15.0	16.0	15.0	14.6	0
14:30	151	22.0	13.0	15.0	15.0	15.0	15.0	14.6	0
15:00	138	20.0	13.0	15.0	12.0	12.0	12.0	12.8	0
15:30	130	19.0	10.0	11.0	11.0	12.0	12.0	11.2	0
16:00	80	19.0	10.0	10.0	10.0	10.0	10.0	10.0	0
16:30	63	15.0	12.0	12.0	12.0	12.0	12.0	12.0	0
17:00	38	14.0	10.0	10.0	10.0	10.0	10.0	10.0	0
17:30	23	10.0	9.0	9.0	9.0	9.0	9.0	9.0	0

ตาราง แสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON WESTSIDE VERTICAL SURFACE (TEST)

จามจุรี

16/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.						%
8:30	87	19.0	19.0	19.0	19.0	19.0	19.0	19.0	90
9:00	120	18.0	18.0	18.0	18.0	18.0	18.0	18.0	80
9:30	33	21.0	21.0	22.0	20.0	21.0	21.0	21.0	70
10:00	165	30.0	25.0	28.0	25.0	25.0	28.0	26.2	50
10:30	175	38.0	22.0	25.0	25.0	28.0	28.0	25.6	40
11:00	162	30.0	22.0	23.0	26.0	27.0	27.0	25.0	40
11:30	152	32.0	28.0	29.0	30.0	32.0	32.0	30.2	30
12:00	140	32.0	32.0	32.0	32.0	32.0	32.0	32.0	30
12:30	90	32.0	29.0	25.0	29.0	30.0	32.0	29.0	30
13:00	90	30.0	28.0	25.0	28.0	28.0	28.0	27.4	10
13:30	115	34.0	25.0	29.0	25.0	27.0	25.0	26.2	0
14:00	70	35.0	25.0	25.0	28.0	23.0	25.0	25.2	0
14:30	90	40.0	28.0	25.0	24.0	24.0	25.0	25.2	0
15:00	110	70.0	34.0	28.0	22.0	25.0	28.0	27.4	0
15:30	127	120.0	32.0	28.0	35.0	27.0	32.0	30.8	0
16:00	72	65.0	23.0	21.0	22.0	20.0	23.0	21.8	0
16:30	61	60.0	19.0	16.0	18.0	18.0	18.0	17.8	0
17:00	30	45.0	13.0	12.0	15.0	32.0	19.0	18.2	0
17:30	19	42.0	25.0	12.0	10.0	12.0	16.0	15.0	0

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON WESTSIDE VERTICAL SURFACE (TEST)

จามจุรี

17/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.						%
8:30	36	9.0	9.0	9.0	9.0	9.0	9.0	9.0	80
9:00	115	19.0	19.0	19.0	20.0	20.0	19.0	19.4	70
9:30	118	19.0	19.0	19.0	19.0	19.0	19.0	19.0	60
10:00	32	28.0	19.0	19.0	19.0	19.0	19.0	19.0	60
10:30	32	11.0	11.0	11.0	11.0	11.0	11.0	11.0	50
11:00	80	29.0	20.0	20.0	20.0	20.0	20.0	20.0	30
11:30	145	30.0	22.0	22.0	22.0	22.0	22.0	22.0	30
12:00	142	31.0	27.0	27.0	28.0	27.0	28.0	27.4	15
12:30	148	32.0	20.0	21.0	22.0	22.0	22.0	21.4	10
13:00	130	39.0	22.0	25.0	25.0	27.0	29.0	25.6	5
13:30	141	51.0	30.0	25.0	25.0	28.0	29.0	27.4	0
14:00	151	72.0	29.0	32.0	30.0	31.0	30.0	30.4	0
14:30	151	80.0	30.0	28.0	35.0	32.0	36.0	32.2	0
15:00	138	120.0	28.0	32.0	25.0	32.0	30.0	29.4	0
15:30	130	122.0	55.0	20.0	21.0	38.0	20.0	30.8	0
16:00	80	122.0	32.0	18.0	19.0	14.0	19.0	20.4	0
16:30	63	125.0	11.0	15.0	11.0	20.0	10.0	13.4	0
17:00	38	110.0	12.0	15.0	12.0	15.0	12.0	13.2	0
17:30	23	85.0	35.0	40.0	15.0	11.0	15.0	23.2	0

ตาราง แสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON NORTHSIDE VERTICAL SURFACE (TEST)

จามจุรี

16/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU /HR.SQ.FT	BTU /HR.SQ.FT						BTU /HR.SQ.FT	%
8:30	87	18.0	18.0	18.0	18.0	19.0	19.0	18.4	90
9:00	120	15.0	15.0	16.0	18.0	15.0	15.0	15.8	80
9:30	33	14.0	13.0	15.0	15.0	14.0	13.0	14.0	70
10:00	165	21.0	21.0	21.0	20.0	20.0	20.0	20.4	50
10:30	175	30.0	22.0	21.0	22.0	20.0	21.0	21.2	40
11:00	162	32.0	21.0	23.0	22.0	25.0	25.0	23.2	40
11:30	152	31.0	22.0	25.0	23.0	25.0	26.0	24.2	30
12:00	140	32.0	22.0	22.0	24.0	23.0	26.0	23.4	30
12:30	90	22.0	21.0	22.0	19.0	19.0	19.0	20.0	30
13:00	90	19.0	16.0	18.0	17.0	18.0	16.0	17.0	10
13:30	115	21.0	18.0	19.0	17.0	15.0	15.0	16.8	0
14:00	70	21.0	15.0	18.0	15.0	13.0	12.0	14.6	0
14:30	90	19.0	10.0	10.0	10.0	10.0	10.0	10.0	0
15:00	110	20.0	12.0	13.0	12.0	12.0	12.0	12.2	0
15:30	127	22.0	12.0	12.0	12.0	12.0	12.0	12.0	0
16:00	72	12.0	8.0	8.0	8.0	8.0	8.0	8.0	0
16:30	61	12.0	8.0	8.0	8.0	8.0	8.0	8.0	0
17:00	30	9.0	8.0	8.0	8.0	8.0	8.0	8.0	0
17:30	19	6.0	6.0	6.0	6.0	6.0	6.0	6.0	0

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON NORTHSIDE VERTICAL SURFACE (TEST)

จามจุรี

17/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU /HR.SQ.FT	BTU /HR.SQ.FT						BTU /HR.SQ.FT	%
8:30	36	18.0	18.0	18.0	18.0	18.0	18.0	18.0	80
9:00	115	15.0	15.0	15.0	15.0	15.0	15.0	15.0	70
9:30	118	18.0	18.0	18.0	18.0	18.0	18.0	18.0	60
10:00	32	21.0	19.0	19.0	19.0	19.0	19.0	19.0	60
10:30	32	12.0	9.0	9.0	9.0	9.0	9.0	9.0	50
11:00	80	31.0	18.0	18.0	18.0	18.0	18.0	18.0	30
11:30	145	31.0	21.0	21.0	21.0	21.0	21.0	21.0	30
12:00	142	32.0	23.0	23.0	23.0	23.0	23.0	23.0	15
12:30	148	32.0	18.0	18.0	18.0	18.0	18.0	18.0	10
13:00	130	31.0	20.0	20.0	20.0	20.0	20.0	20.0	5
13:30	141	32.0	19.5	20.0	20.0	20.0	20.0	19.9	0
14:00	151	32.0	21.0	21.0	21.0	21.0	21.0	21.0	0
14:30	151	29.0	15.0	15.0	15.0	15.0	15.0	15.0	0
15:00	138	28.0	13.0	13.0	13.0	13.0	13.0	13.0	0
15:30	130	22.0	12.0	10.0	10.0	10.0	10.0	10.4	0
16:00	80	21.0	10.0	10.0	10.0	10.0	10.0	10.0	0
16:30	63	18.0	8.0	8.0	8.0	8.0	8.0	8.0	0
17:00	38	12.0	9.5	9.5	9.5	9.5	9.5	9.5	0
17:30	23	9.5	5.0	5.0	5.0	5.0	5.0	5.0	0

ตาราง แสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON SOUTH-EASTSIDE VERTICAL SUI (TEST)

จามจรี

16/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU /HR SQ.FT	BTU /HR SQ.FT							%
8:30	87	38.0	25.0	25.0	24.0	28.0	31.0	26.6	90
9:00	120	50.0	21.0	22.0	25.0	30.0	28.0	25.2	80
9:30	33	32.0	26.0	28.0	28.0	30.0	30.0	28.4	70
10:00	165	38.0	30.0	28.0	29.0	25.0	28.0	28.0	50
10:30	175	49.0	48.0	30.0	29.0	30.0	29.0	33.2	40
11:00	162	48.0	28.0	30.0	29.0	30.0	30.5	29.5	40
11:30	152	50.0	28.0	31.0	29.0	30.0	32.0	30.0	30
12:00	140	32.0	26.0	28.0	29.0	29.0	29.0	28.2	30
12:30	90	40.0	25.0	25.0	25.0	24.0	23.0	24.4	30
13:00	90	39.0	14.0	13.0	18.0	18.0	16.0	15.8	10
13:30	115	28.0	16.0	15.0	13.0	12.0	18.0	14.8	0
14:00	70	20.0	15.0	11.0	11.0	11.0	11.0	11.8	0
14:30	90	34.0	12.0	12.0	12.0	12.0	12.0	12.0	0
15:00	110	30.0	18.0	19.0	18.0	18.0	19.0	18.4	0
15:30	127	30.0	18.0	18.0	18.0	18.0	18.0	18.0	0
16:00	72	19.0	12.0	12.0	12.0	12.0	12.0	12.0	0
16:30	61	15.0	11.0	11.0	11.0	11.0	11.0	11.0	0
17:00	30	11.0	11.0	11.0	11.0	11.0	11.0	11.0	0
17:30	19	8.0	8.0	8.0	8.0	8.0	8.0	8.0	0

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON SOUTH-EASTSIDE VERTICAL SUI (TEST)

จามจรี

17/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU /HR SQ.FT	BTU /HR SQ.FT							%
8:30	36	25.0	18.0	18.0	18.0	18.0	18.0	18.0	80
9:00	115	98.0	21.0	20.0	25.0	30.0	28.0	24.8	70
9:30	118	79.0	21.0	29.0	23.0	32.0	25.0	26.0	60
10:00	32	48.0	25.0	22.0	22.0	25.0	25.0	23.8	60
10:30	32	35.0	21.0	24.0	23.0	21.0	22.0	22.2	50
11:00	80	78.0	22.0	25.0	30.0	28.0	21.0	25.2	30
11:30	145	35.0	16.0	15.0	14.0	13.0	13.0	14.2	30
12:00	142	39.0	21.0	20.0	20.0	21.0	21.0	20.6	15
12:30	148	60.0	18.0	21.0	19.0	18.0	18.0	18.8	10
13:00	130	42.0	17.0	18.0	18.0	18.0	19.0	18.0	5
13:30	141	38.0	17.0	18.0	19.0	19.0	19.0	18.4	0
14:00	151	30.0	17.0	24.0	27.0	26.0	28.0	24.4	0
14:30	151	22.0	26.0	14.0	15.0	13.0	14.0	16.4	0
15:00	138	26.0	16.0	15.0	17.0	14.0	12.0	14.8	0
15:30	130	20.0	15.0	12.0	12.0	12.0	13.0	12.8	0
16:00	80	19.0	12.0	12.0	12.0	12.0	12.0	12.0	0
16:30	63	18.0	11.0	11.0	11.0	11.0	11.0	11.0	0
17:00	38	12.0	10.0	10.5	10.0	10.5	10.5	10.3	0
17:30	23	12.0	8.0	8.0	8.0	8.0	8.0	8.0	0

ตารางที่ แสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆ ในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON SOUTH-WESTSIDE VERTICAL SL (TEST)

จามจุรี

16/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.							%
8:30	87	19.0	19.0	19.0	19.0	19.0	19.0	19.0	90
9:00	120	21.0	21.0	22.0	22.0	22.0	22.0	21.8	80
9:30	33	19.0	20.0	19.0	20.0	20.0	21.0	20.0	70
10:00	165	28.0	21.0	22.0	25.0	25.0	23.0	23.2	50
10:30	175	38.0	28.0	29.0	29.5	30.0	30.0	29.3	40
11:00	162	38.0	28.0	28.0	28.0	28.0	28.0	28.0	40
11:30	152	39.0	29.0	30.0	30.0	32.0	32.0	30.6	30
12:00	140	39.0	29.0	31.0	31.0	32.0	32.0	31.0	30
12:30	90	45.0	28.0	29.0	29.0	29.0	29.0	28.8	30
13:00	90	35.0	25.0	25.0	31.0	28.0	29.0	27.6	10
13:30	115	46.0	24.0	26.0	28.0	30.0	26.0	26.8	0
14:00	70	49.0	25.0	28.0	26.0	31.0	26.0	27.2	0
14:30	90	51.0	26.0	23.0	21.0	21.0	23.0	22.8	0
15:00	110	80.0	35.0	27.0	30.0	25.0	27.0	28.8	0
15:30	127	120.0	38.0	23.0	25.0	42.0	25.0	30.6	0
16:00	72	53.0	20.0	19.0	19.0	19.0	15.0	18.4	0
16:30	61	50.0	13.0	13.0	19.0	28.0	18.0	18.2	0
17:00	30	42.0	22.0	12.0	18.0	19.0	15.0	17.2	0
17:30	19	39.0	11.0	16.0	13.0	12.0	13.0	13.0	0

ตาราง แสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆ ในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON SOUTH-WESTSIDE VERTICAL SL (TEST)

จามจุรี

17/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.							%
8:30	36	12.0	12.0	12.0	12.0	12.0	12.0	12.0	80
9:00	115	21.0	21.0	21.0	21.0	21.0	21.0	21.0	70
9:30	118	21.0	21.0	21.0	21.0	21.0	21.0	21.0	60
10:00	32	32.0	22.0	22.0	22.0	22.0	22.0	22.0	60
10:30	32	25.0	18.0	15.0	18.0	13.0	18.0	16.4	50
11:00	80	32.0	22.0	22.0	22.0	22.0	22.0	22.0	30
11:30	145	23.0	20.0	20.0	21.0	20.0	20.0	20.2	30
12:00	142	29.5	25.0	25.0	23.0	23.0	28.0	24.8	15
12:30	148	50.0	22.0	23.0	23.0	22.0	20.0	22.0	10
13:00	130	79.0	28.0	26.0	26.0	25.0	31.0	27.2	5
13:30	141	98.0	32.0	30.0	24.0	26.0	31.0	28.6	0
14:00	151	99.0	35.0	35.0	29.0	29.0	32.0	32.0	0
14:30	151	123.0	35.0	32.0	35.0	40.0	30.0	34.4	0
15:00	138	132.0	45.0	48.0	45.0	41.0	48.0	45.4	0
15:30	130	125.0	35.0	31.0	40.0	35.0	42.0	36.6	0
16:00	80	114.0	26.0	26.0	29.0	32.0	25.0	27.6	0
16:30	63	98.0	15.0	15.0	18.0	18.0	14.0	16.0	0
17:00	38	102.0	18.0	18.0	18.0	20.0	35.0	21.8	0
17:30	23	60.0	8.0	8.0	13.0	10.0	10.0	9.8	0

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆ ในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON NORTH-WESTSIDE VERTICAL SURFACE (TEST)

จามจุรี

16/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.						BTU./HR.SQ.FT.	%
8:30	87	19.0	16.0	19.0	19.0	19.0	19.0	18.4	90
9:00	120	19.0	18.0	19.0	18.0	19.0	19.0	18.6	80
9:30	33	13.0	13.0	12.0	13.0	13.0	13.0	12.8	70
10:00	165	25.0	21.0	21.0	20.5	20.0	22.0	20.9	50
10:30	175	29.0	21.0	25.0	25.0	25.0	28.0	24.8	40
11:00	162	31.0	22.0	22.0	25.0	25.0	25.0	23.8	40
11:30	152	29.0	21.0	22.0	25.0	24.0	26.0	23.6	30
12:00	140	31.0	18.0	20.0	21.0	21.0	30.0	22.0	30
12:30	90	32.0	27.0	29.0	29.0	29.0	30.0	28.8	30
13:00	90	29.0	25.0	24.0	25.0	24.0	24.0	24.4	10
13:30	115	28.0	24.0	24.0	24.0	24.0	24.0	24.0	0
14:00	70	24.0	19.0	19.0	19.0	19.0	19.0	19.0	0
14:30	90	23.0	15.0	13.0	12.0	13.0	15.0	13.6	0
15:00	110	28.0	16.0	16.0	16.0	16.0	16.0	16.0	0
15:30	127	39.0	20.0	21.0	21.0	19.0	21.0	20.4	0
16:00	72	21.0	18.0	18.0	12.0	12.0	10.0	14.0	0
16:30	61	31.0	9.0	9.0	12.0	10.0	12.0	10.4	0
17:00	30	30.0	11.0	9.0	12.0	10.0	9.0	10.2	0
17:30	19	30.0	10.0	10.0	15.0	14.0	13.0	12.4	0

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆ ในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON NORTH-WESTSIDE VERTICAL SURFACE (TEST)

จามจุรี

17/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.						BTU./HR.SQ.FT.	%
8:30	36	14.0	14.0	14.0	14.0	14.0	14.0	14.0	80
9:00	115	15.0	18.0	18.0	18.0	18.0	18.0	18.0	70
9:30	118	21.0	21.0	21.0	21.0	21.0	21.0	21.0	60
10:00	32	31.0	22.0	22.0	22.0	22.0	22.0	22.0	60
10:30	32	16.0	15.0	15.0	15.0	15.0	15.0	15.0	50
11:00	80	31.0	21.0	21.0	21.0	21.0	21.0	21.0	30
11:30	145	21.0	16.0	16.0	16.0	16.0	16.0	16.0	30
12:00	142	31.0	24.0	24.0	24.0	24.0	24.0	24.0	15
12:30	148	31.0	20.0	20.0	20.5	20.0	20.0	20.1	10
13:00	130	34.0	20.0	25.0	26.0	26.0	26.0	24.6	5
13:30	141	38.0	22.0	29.0	25.0	25.0	21.0	24.4	0
14:00	151	48.0	24.0	25.0	20.0	20.0	20.0	21.8	0
14:30	151	34.0	20.0	20.0	20.0	19.0	19.0	19.6	0
15:00	138	44.0	18.0	17.0	18.0	19.0	29.0	20.2	0
15:30	130	48.0	21.0	20.0	22.0	21.0	20.0	20.8	0
16:00	80	67.0	10.0	18.0	11.0	10.0	10.0	11.8	0
16:30	63	78.0	21.0	22.0	10.0	11.0	10.0	14.8	0
17:00	38	100.0	11.0	16.0	15.0	15.0	14.0	14.2	0
17:30	23	55.0	15.0	10.0	10.0	11.0	18.0	12.8	0

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON NORTH-EASTSIDE VERTICAL SUR (TEST)

จามจุรี

16/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.						%
8:30	87	31.0	20.0	23.0	28.0	22.0	29.0	25.4	90
9:00	120	22.0	22.0	22.0	19.0	19.0	19.0	20.2	80
9:30	33	21.0	14.0	15.0	17.0	14.0	18.0	15.6	70
10:00	165	45.0	22.0	28.0	28.0	28.0	28.0	26.8	50
10:30	175	33.0	25.0	28.0	25.0	27.0	22.0	25.4	40
11:00	162	38.0	20.0	23.0	22.0	20.0	22.0	21.4	40
11:30	152	32.0	29.0	21.0	20.0	22.0	22.0	22.8	30
12:00	140	32.0	15.0	16.0	18.0	18.0	19.0	17.2	30
12:30	90	15.0	10.0	10.0	11.0	10.0	10.0	10.2	30
13:00	90	25.0	15.0	15.0	15.0	15.0	15.0	15.0	10
13:30	115	21.0	18.0	18.0	15.0	15.0	12.0	15.6	0
14:00	70	20.0	12.0	12.0	12.0	12.0	12.0	12.0	0
14:30	90	19.0	10.0	10.0	10.0	10.0	10.0	10.0	0
15:00	110	21.0	11.0	11.0	11.0	11.0	11.0	11.0	0
15:30	127	21.0	13.0	13.0	13.0	13.0	13.0	13.0	0
16:00	72	12.0	9.0	9.0	9.0	9.0	9.0	9.0	0
16:30	61	10.0	9.0	9.0	9.0	9.0	9.0	9.0	0
17:00	30	9.0	8.0	8.0	8.0	8.0	8.0	8.0	0
17:30	19	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆในช่วงเวลา 8.30-17.30 น.

SOLAR RADIATION ON NORTH-EASTSIDE VERTICAL SUR (TEST)

จามจุรี

17/3/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.						%
8:30	36	14.0	14.0	14.0	14.0	14.0	14.0	14.0	80
9:00	115	39.0	23.0	40.0	20.0	30.0	31.0	28.8	70
9:30	118	41.0	19.0	21.0	23.0	23.0	25.0	22.2	60
10:00	32	38.0	21.0	21.0	21.0	21.0	21.0	21.0	60
10:30	32	30.0	17.0	17.0	17.0	17.0	17.0	17.0	50
11:00	80	32.0	19.0	20.0	21.0	21.0	21.0	20.4	30
11:30	145	29.0	20.0	18.0	20.0	16.0	18.0	18.4	30
12:00	142	30.0	19.5	19.5	19.5	19.5	19.5	19.5	15
12:30	148	30.0	20.0	20.0	20.0	20.0	20.0	20.0	10
13:00	130	30.0	17.0	17.0	17.0	17.0	17.0	17.0	5
13:30	141	30.0	19.0	19.0	19.0	19.0	19.0	19.0	0
14:00	151	30.0	19.0	19.0	19.0	19.0	19.0	19.0	0
14:30	151	27.0	15.0	15.0	15.0	15.0	15.0	15.0	0
15:00	138	33.0	14.0	14.0	14.0	14.0	14.0	14.0	0
15:30	130	21.0	11.0	11.0	11.0	11.0	11.0	11.0	0
16:00	80	19.0	12.0	11.0	11.0	11.0	11.0	11.2	0
16:30	63	18.0	10.0	10.0	10.0	10.0	10.0	10.0	0
17:00	38	15.0	9.5	9.5	9.5	9.5	9.5	9.5	0
17:30	23	10.0	5.0	5.0	5.0	5.0	5.0	5.0	0

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $O_g=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันออก

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16,17/3/99

จามจุรี

16/3/99	TEST			Og=0.2	Decrease irradiance
	I TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot O_g \cdot F_{sg}$	I reflected	EAST SURFACE
TIME	Btu./hr.sq.ft.		Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
8:30	87	0.215	9.35	8.70	0.65
9:00	120	0.215	12.90	12.00	0.90
9:30	33	0.197	3.25	3.30	-0.05
10:00	165	0.197	16.25	16.50	-0.25
10:30	175	0.197	17.24	17.50	-0.26
11:00	162	0.197	15.96	16.20	-0.24
11:30	152	0.197	14.97	15.20	-0.23
12:00	140	0.197	13.79	14.00	-0.21
12:30	90	0.196	8.82	9.00	-0.18
13:00	90	0.196	8.82	9.00	-0.18
13:30	115	0.196	11.27	11.50	-0.23
14:00	70	0.196	6.86	7.00	-0.14
14:30	90	0.196	8.82	9.00	-0.18
15:00	110	0.223	12.27	11.00	1.27
15:30	127	0.223	14.16	12.70	1.46
16:00	72	0.223	8.03	7.20	0.83
16:30	61	0.223	6.80	6.10	0.70
17:00	30	0.223	3.35	3.00	0.35
17:30	19	0.233	2.21	1.90	0.31
17/3/99	I TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot O_g \cdot F_{sg}$	I reflected	Decrease irradiance
8:30	36	0.215	3.87	3.60	0.27
9:00	115	0.215	12.36	11.50	0.86
9:30	118	0.197	11.62	11.80	-0.18
10:00	32	0.197	3.15	3.20	-0.05
10:30	32	0.197	3.15	3.20	-0.05
11:00	80	0.197	7.88	8.00	-0.12
11:30	145	0.197	14.28	14.50	-0.22
12:00	142	0.197	13.99	14.20	-0.21
12:30	148	0.196	14.50	14.80	-0.30
13:00	130	0.196	12.74	13.00	-0.26
13:30	141	0.196	13.82	14.10	-0.28
14:00	151	0.196	14.80	15.10	-0.30
14:30	151	0.196	14.80	15.10	-0.30
15:00	138	0.223	15.39	13.80	1.59
15:30	130	0.223	14.50	13.00	1.50
16:00	80	0.233	9.32	8.00	1.32
16:30	63	0.223	7.02	6.30	0.72
17:00	38	0.223	4.24	3.80	0.44
17:30	23	0.223	2.56	2.30	0.26

Fsg= 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $Og=0.2$ ณ พื้นผิวแนวตั้งทางทิศใต้

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16/3/99

จามจรี

16/3/99	TEST			Og=0.2	Decrease irradiance
	I TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot Og \cdot F_{sg}$	I reflected	SOUTH SURFACE
TIME	Btu./hr.sq.ft.		Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
8:30	87	0.29	12.62	8.70	3.92
9:00	120	0.29	17.40	12.00	5.40
9:30	33	0.182	3.00	3.30	-0.30
10:00	165	0.182	15.02	16.50	-1.49
10:30	175	0.182	15.93	17.50	-1.58
11:00	162	0.182	14.74	16.20	-1.46
11:30	152	0.182	13.83	15.20	-1.37
12:00	140	0.182	12.74	14.00	-1.26
12:30	90	0.176	7.92	9.00	-1.08
13:00	90	0.176	7.92	9.00	-1.08
13:30	115	0.176	10.12	11.50	-1.38
14:00	70	0.176	6.16	7.00	-0.84
14:30	90	0.176	7.92	9.00	-1.08
15:00	110	0.32	17.60	11.00	6.60
15:30	127	0.32	20.32	12.70	7.62
16:00	72	0.32	11.52	7.20	4.32
16:30	61	0.32	9.76	6.10	3.66
17:00	30	0.32	4.80	3.00	1.80
17:30	19	0.32	3.04	1.90	1.14
17/3/99	I TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot Og \cdot F_{sg}$	I reflected	Decrease irradiance
8:30	36	0.29	5.22	3.60	1.62
9:00	115	0.29	16.68	11.50	5.18
9:30	118	0.182	10.74	11.80	-1.06
10:00	32	0.182	2.91	3.20	-0.29
10:30	32	0.182	2.91	3.20	-0.29
11:00	80	0.182	7.28	8.00	-0.72
11:30	145	0.182	13.20	14.50	-1.31
12:00	142	0.182	12.92	14.20	-1.28
12:30	148	0.176	13.02	14.80	-1.78
13:00	130	0.176	11.44	13.00	-1.56
13:30	141	0.176	12.41	14.10	-1.69
14:00	151	0.176	13.29	15.10	-1.81
14:30	151	0.176	13.29	15.10	-1.81
15:00	138	0.32	22.08	13.80	8.28
15:30	130	0.32	20.80	13.00	7.80
16:00	80	0.32	12.80	8.00	4.80
16:30	63	0.32	10.08	6.30	3.78
17:00	38	0.32	6.08	3.80	2.28
17:30	23	0.32	3.68	2.30	1.38

Fsg= 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $O_g=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันตก

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16/3/99

จามจุรี

16/3/99	TEST			Og=0.2	Decrease irradiance
	I TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot O_g \cdot F_{sg}$	I reflected	WEST SURFACE
TIME	Btu./hr.sq.ft		Btu./hr.sq.ft	Btu./hr.sq.ft	Btu./hr.sq.ft
8:30	87	0.223	9.70	8.70	1.00
9:00	120	0.223	13.38	12.00	1.38
9:30	33	0.196	3.23	3.30	-0.07
10:00	165	0.196	16.17	16.50	-0.33
10:30	175	0.196	17.15	17.50	-0.35
11:00	162	0.196	15.88	16.20	-0.32
11:30	152	0.196	14.90	15.20	-0.30
12:00	140	0.196	13.72	14.00	-0.28
12:30	90	0.196	8.82	9.00	-0.18
13:00	90	0.196	8.82	9.00	-0.18
13:30	115	0.196	11.27	11.50	-0.23
14:00	70	0.196	6.86	7.00	-0.14
14:30	90	0.196	8.82	9.00	-0.18
15:00	110	0.233	12.82	11.00	1.82
15:30	127	0.233	14.80	12.70	2.10
16:00	72	0.233	8.39	7.20	1.19
16:30	61	0.233	7.11	6.10	1.01
17:00	30	0.233	3.50	3.00	0.50
17:30	19	0.233	2.21	1.90	0.31
17/3/99	I TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot O_g \cdot F_{sg}$	I reflected	Decrease irradiance
8:30	36	0.223	4.01	3.60	0.41
9:00	115	0.223	12.82	11.50	1.32
9:30	118	0.196	11.56	11.80	-0.24
10:00	32	0.196	3.14	3.20	-0.06
10:30	32	0.196	3.14	3.20	-0.06
11:00	80	0.196	7.84	8.00	-0.16
11:30	145	0.196	14.21	14.50	-0.29
12:00	142	0.196	13.92	14.20	-0.28
12:30	148	0.196	14.50	14.80	-0.30
13:00	130	0.196	12.74	13.00	-0.26
13:30	141	0.196	13.82	14.10	-0.28
14:00	151	0.196	14.80	15.10	-0.30
14:30	151	0.196	14.80	15.10	-0.30
15:00	138	0.233	16.08	13.80	2.28
15:30	130	0.233	15.15	13.00	2.15
16:00	80	0.233	9.32	8.00	1.32
16:30	63	0.233	7.34	6.30	1.04
17:00	38	0.233	4.43	3.80	0.63
17:30	23	0.233	2.68	2.30	0.38

Fsg= 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $Og=0.2$ ณ พื้นผิวแนวตั้งทางทิศเหนือ

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16,17/3/99

จามจรี

16/3/99	TEST			Og=0.2	Decrease irradiance
	I TOTAL HORIZONTAL	Og	I reflected=Ith*Og*Fsg	I reflected	NORTH SURFACE
TIME	Btu./hr.sq.ft.		Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
8:30	87	0.225	9.79	8.70	1.09
9:00	120	0.225	13.50	12.00	1.50
9:30	33	0.225	3.71	3.30	0.41
10:00	165	0.225	18.56	16.50	2.06
10:30	175	0.225	19.69	17.50	2.19
11:00	162	0.225	18.23	16.20	2.03
11:30	152	0.225	17.10	15.20	1.90
12:00	140	0.225	15.75	14.00	1.75
12:30	90	0.214	9.63	9.00	0.63
13:00	90	0.214	9.63	9.00	0.63
13:30	115	0.214	12.31	11.50	0.81
14:00	70	0.214	7.49	7.00	0.49
14:30	90	0.214	9.63	9.00	0.63
15:00	110	0.214	11.77	11.00	0.77
15:30	127	0.214	13.59	12.70	0.89
16:00	72	0.214	7.70	7.20	0.50
16:30	61	0.214	6.53	6.10	0.43
17:00	30	0.214	3.21	3.00	0.21
17:30	19	0.214	2.03	1.90	0.13
17/3/99	I TOTAL HORIZONTAL	Og	I reflected=Ith*Og*Fsg	I reflected	Decrease irradiance
8:30	36	0.225	4.05	3.60	0.45
9:00	115	0.225	12.94	11.50	1.44
9:30	118	0.225	13.28	11.80	1.48
10:00	32	0.225	3.60	3.20	0.40
10:30	32	0.225	3.60	3.20	0.40
11:00	80	0.225	9.00	8.00	1.00
11:30	145	0.225	16.31	14.50	1.81
12:00	142	0.225	15.98	14.20	1.78
12:30	148	0.214	15.84	14.80	1.04
13:00	130	0.214	13.91	13.00	0.91
13:30	141	0.214	15.09	14.10	0.99
14:00	151	0.214	16.16	15.10	1.06
14:30	151	0.214	16.16	15.10	1.06
15:00	138	0.214	14.77	13.80	0.97
15:30	130	0.214	13.91	13.00	0.91
16:00	80	0.214	8.56	8.00	0.56
16:30	63	0.214	6.74	6.30	0.44
17:00	38	0.214	4.07	3.80	0.27
17:30	23	0.214	2.46	2.30	0.16

Fsg= 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $Og=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันออกเฉียงใต้
 ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16,17/3/99 จามจุรี

16/3/99	TEST			Og=0.2	Decrease irradiance
	TOTAL HORIZONTAL	Og	I reflected=Ith*Og*Fsg	I reflected	SOUTH-EAST SURFACE
TIME	Btu./hr.sq.ft		Btu./hr.sq.ft	Btu./hr.sq.ft	Btu./hr.sq.ft
8:30	87	0.32	13.92	8.70	5.22
9:00	120	0.32	19.20	12.00	7.20
9:30	33	0.176	2.90	3.30	-0.40
10:00	165	0.176	14.52	16.50	-1.98
10:30	175	0.176	15.40	17.50	-2.10
11:00	162	0.176	14.26	16.20	-1.94
11:30	152	0.176	13.38	15.20	-1.82
12:00	140	0.176	12.32	14.00	-1.68
12:30	90	0.176	7.92	9.00	-1.08
13:00	90	0.176	7.92	9.00	-1.08
13:30	115	0.176	10.12	11.50	-1.38
14:00	70	0.176	6.16	7.00	-0.84
14:30	90	0.176	7.92	9.00	-1.08
15:00	110	0.32	17.60	11.00	6.60
15:30	127	0.32	20.32	12.70	7.62
16:00	72	0.32	11.52	7.20	4.32
16:30	61	0.32	9.76	6.10	3.66
17:00	30	0.32	4.80	3.00	1.80
17:30	19	0.32	3.04	1.90	1.14
17/3/99	TOTAL HORIZONTAL	Og	I reflected=Ith*Og*Fsg	I reflected	Decrease irradiance
8:30	36	0.32	5.76	3.60	2.16
9:00	115	0.32	18.40	11.50	6.90
9:30	118	0.176	10.38	11.80	-1.42
10:00	32	0.176	2.82	3.20	-0.38
10:30	32	0.176	2.82	3.20	-0.38
11:00	80	0.176	7.04	8.00	-0.96
11:30	145	0.176	12.76	14.50	-1.74
12:00	142	0.176	12.50	14.20	-1.70
12:30	148	0.176	13.02	14.80	-1.78
13:00	130	0.176	11.44	13.00	-1.56
13:30	141	0.176	12.41	14.10	-1.69
14:00	151	0.176	13.29	15.10	-1.81
14:30	151	0.176	13.29	15.10	-1.81
15:00	138	0.32	22.08	13.80	8.28
15:30	130	0.32	20.80	13.00	7.80
16:00	80	0.32	12.80	8.00	4.80
16:30	63	0.32	10.08	6.30	3.78
17:00	38	0.32	6.08	3.80	2.28
17:30	23	0.32	3.68	2.30	1.38

Fsg= 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $Og=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันตกเฉียงใต้

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16,17/3/99

จามจุรี

16/3/99	TEST			Og=0.2	Decrease irradiance SOUTH-WEST SURFACE
	I TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot Og \cdot F_{sg}$	I reflected	
TIME	Btu./hr.sq.ft		Btu./hr.sq.ft	Btu./hr.sq.ft	Btu./hr.sq.ft
8:30	87	0.32	13.92	8.70	5.22
9:00	120	0.32	19.20	12.00	7.20
9:30	33	0.176	2.90	3.30	-0.40
10:00	165	0.176	14.52	16.50	-1.98
10:30	175	0.176	15.40	17.50	-2.10
11:00	162	0.176	14.26	16.20	-1.94
11:30	152	0.176	13.38	15.20	-1.82
12:00	140	0.176	12.32	14.00	-1.68
12:30	90	0.176	7.92	9.00	-1.08
13:00	90	0.176	7.92	9.00	-1.08
13:30	115	0.176	10.12	11.50	-1.38
14:00	70	0.176	6.16	7.00	-0.84
14:30	90	0.176	7.92	9.00	-1.08
15:00	110	0.32	17.60	11.00	6.60
15:30	127	0.32	20.32	12.70	7.62
16:00	72	0.32	11.52	7.20	4.32
16:30	61	0.32	9.76	6.10	3.66
17:00	30	0.32	4.80	3.00	1.80
17:30	19	0.32	3.04	1.90	1.14
17/3/99	I TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot Og \cdot F_{sg}$	I reflected	Decrease irradiance
8:30	36	0.32	5.76	3.60	2.16
9:00	115	0.32	18.40	11.50	6.90
9:30	118	0.176	10.38	11.80	-1.42
10:00	32	0.176	2.82	3.20	-0.38
10:30	32	0.176	2.82	3.20	-0.38
11:00	80	0.176	7.04	8.00	-0.96
11:30	145	0.176	12.76	14.50	-1.74
12:00	142	0.176	12.50	14.20	-1.70
12:30	148	0.176	13.02	14.80	-1.78
13:00	130	0.176	11.44	13.00	-1.56
13:30	141	0.176	12.41	14.10	-1.69
14:00	151	0.176	13.29	15.10	-1.81
14:30	151	0.176	13.29	15.10	-1.81
15:00	138	0.32	22.08	13.80	8.28
15:30	130	0.32	20.80	13.00	7.80
16:00	80	0.32	12.80	8.00	4.80
16:30	63	0.32	10.08	6.30	3.78
17:00	38	0.32	6.08	3.80	2.28
17:30	23	0.32	3.68	2.30	1.38

Fsg = 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $Og=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันตกเฉียงเหนือ

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16,17/3/99

16/3/99	TEST			Og=0.2	Decrease irradiance
	I TOTAL HORIZONTAL	Og	I reflected=Ith*Og*Fsg	I reflected	NORTH-WEST SURFACE
TIME	Btu./hr.sq.ft.		Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
8:30	87	0.225	9.79	8.70	1.09
9:00	120	0.225	13.50	12.00	1.50
9:30	33	0.225	3.71	3.30	0.41
10:00	165	0.225	18.56	16.50	2.06
10:30	175	0.225	19.69	17.50	2.19
11:00	162	0.225	18.23	16.20	2.03
11:30	152	0.225	17.10	15.20	1.90
12:00	140	0.225	15.75	14.00	1.75
12:30	90	0.218	9.81	9.00	0.81
13:00	90	0.218	9.81	9.00	0.81
13:30	115	0.218	12.54	11.50	1.04
14:00	70	0.218	7.63	7.00	0.63
14:30	90	0.218	9.81	9.00	0.81
15:00	110	0.218	11.99	11.00	0.99
15:30	127	0.218	13.84	12.70	1.14
16:00	72	0.218	7.85	7.20	0.65
16:30	61	0.218	6.65	6.10	0.55
17:00	30	0.218	3.27	3.00	0.27
17:30	19	0.218	2.07	1.90	0.17
17/3/99	I TOTAL HORIZONTAL	Og	I reflected=Ith*Og*Fsg	I reflected	Decrease irradiance
8:30	36	0.225	4.05	3.60	0.45
9:00	115	0.225	12.94	11.50	1.44
9:30	118	0.225	13.28	11.80	1.48
10:00	32	0.225	3.60	3.20	0.40
10:30	32	0.225	3.60	3.20	0.40
11:00	80	0.225	9.00	8.00	1.00
11:30	145	0.225	16.31	14.50	1.81
12:00	142	0.225	15.98	14.20	1.78
12:30	148	0.218	16.13	14.80	1.33
13:00	130	0.218	14.17	13.00	1.17
13:30	141	0.218	15.37	14.10	1.27
14:00	151	0.218	16.46	15.10	1.36
14:30	151	0.218	16.46	15.10	1.36
15:00	138	0.218	15.04	13.80	1.24
15:30	130	0.218	14.17	13.00	1.17
16:00	80	0.218	8.72	8.00	0.72
16:30	63	0.218	6.87	6.30	0.57
17:00	38	0.218	4.14	3.80	0.34
17:30	23	0.218	2.51	2.30	0.21

Fsg = 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $Og=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันออกเฉียงเหนือ

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16,17/3/99

จามจรี

16/3/99	TEST			Og=0.2	Decrease irradiance
	i TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot Og \cdot F_{sg}$	I reflected	NORTH-EAST SURFACE
TIME	Btu./hr.sq.ft.		Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
8:30	87	0.225	9.79	8.70	1.09
9:00	120	0.225	13.50	12.00	1.50
9:30	33	0.225	3.71	3.30	0.41
10:00	165	0.225	18.56	16.50	2.06
10:30	175	0.225	19.69	17.50	2.19
11:00	162	0.225	18.23	16.20	2.03
11:30	152	0.225	17.10	15.20	1.90
12:00	140	0.225	15.75	14.00	1.75
12:30	90	0.21	9.45	9.00	0.45
13:00	90	0.21	9.45	9.00	0.45
13:30	115	0.21	12.08	11.50	0.57
14:00	70	0.21	7.35	7.00	0.35
14:30	90	0.21	9.45	9.00	0.45
15:00	110	0.21	11.55	11.00	0.55
15:30	127	0.21	13.34	12.70	0.63
16:00	72	0.21	7.56	7.20	0.36
16:30	61	0.21	6.41	6.10	0.30
17:00	30	0.21	3.15	3.00	0.15
17:30	19	0.21	2.00	1.90	0.09
17/3/99	i TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot Og \cdot F_{sg}$	I reflected	Decrease irradiance
8:30	36	0.225	4.05	3.60	0.45
9:00	115	0.225	12.94	11.50	1.44
9:30	118	0.225	13.28	11.80	1.48
10:00	32	0.225	3.60	3.20	0.40
10:30	32	0.225	3.60	3.20	0.40
11:00	80	0.225	9.00	8.00	1.00
11:30	145	0.225	16.31	14.50	1.81
12:00	142	0.225	15.98	14.20	1.78
12:30	148	0.21	15.54	14.80	0.74
13:00	130	0.21	13.65	13.00	0.65
13:30	141	0.21	14.81	14.10	0.70
14:00	151	0.21	15.86	15.10	0.75
14:30	151	0.21	15.86	15.10	0.75
15:00	138	0.21	14.49	13.80	0.69
15:30	130	0.21	13.65	13.00	0.65
16:00	80	0.21	8.40	8.00	0.40
16:30	63	0.21	6.62	6.30	0.31
17:00	38	0.21	3.99	3.80	0.19
17:30	23	0.21	2.42	2.30	0.12

Fsg= 0.5

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันออกที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON EASTSIDE VERTICAL SURFACE

(Og=0.2)

16/3/99	OUTDOOR RADIATION (TEST)		INSHADE RADIATION (TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	EAST SURFACE	VERTICAL	VERTICAL @
	BTU /HR SQ FT	BTU /HR SQ FT.	BTU /HR SQ FT	BTU /HR SQ FT	BTU /HR SQ FT.	BTU /HR SQ FT.
8:30	87	85.0	37.6	0.65	84.4	36.95
9:00	120	110.0	34.8	0.9	109.1	33.9
9:30	33	32.0	23.8	-0.05	32.1	23.85
10:00	165	105.0	33.2	-0.25	105.3	33.45
10:30	175	105.0	31.8	-0.26	105.3	32.06
11:00	162	90.0	32.6	-0.24	90.2	32.84
11:30	152	51.0	22	-0.23	51.2	22.23
12:00	140	32.0	18.2	-0.21	32.2	18.41
12:30	90	28.0	14.6	-0.18	28.2	14.78
13:00	90	34.0	12.6	-0.18	34.2	12.78
13:30	115	22.0	11.4	-0.23	22.2	11.63
14:00	70	15.0	11.2	-0.14	15.1	11.34
14:30	90	20.0	11.2	-0.18	20.2	11.38
15:00	110	13.0	9.4	1.27	11.7	8.13
15:30	127	20.0	12	1.46	18.5	10.54
16:00	72	20.0	10	0.83	19.2	9.17
16:30	61	11.0	10	0.7	10.3	9.3
17:00	30	9.0	9	0.35	8.7	8.65
17:30	19	6.0	6	0.31	5.7	5.69

17/3/99	HORIZONTAL	OUTDOOR RADIATION	INSHADE RADIATION	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
8:30	36	35.0	19.3	0.27	34.7	19.03
9:00	115	105.0	29.4	0.86	104.1	28.54
9:30	118	108.0	29.4	-0.18	108.2	29.58
10:00	32	31.0	14.4	-0.05	31.1	14.45
10:30	32	56.0	23.6	-0.05	58.1	23.65
11:00	80	51.0	21.8	-0.12	51.1	21.92
11:30	145	45.0	20.2	-0.22	45.2	20.42
12:00	142	32.0	19.7	-0.21	32.2	19.91
12:30	148	37.0	16.8	-0.3	37.3	17.1
13:00	130	25.0	18.6	-0.26	25.3	18.86
13:30	141	29.0	15.8	-0.28	29.3	16.08
14:00	151	24.0	14.6	-0.3	24.3	14.9
14:30	151	22.0	14.6	-0.3	22.3	14.9
15:00	138	20.0	12.8	1.59	18.4	11.21
15:30	130	19.0	11.2	1.5	17.5	9.7
16:00	80	19.0	10	1.32	17.7	8.68
16:30	63	15.0	12	0.72	14.3	11.28
17:00	38	14.0	10	0.44	13.6	9.56
17:30	23	10.0	9	0.26	9.7	8.74

ตาราง แสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศใต้ที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON SOUTHSIDE VERTICAL SURFACE(Og= 0.2)

(Og=0.2)

16/3/99	OUTDOOR RADIATION (TEST)		INSHADE RADIATION (TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	SOUTH SURFACE	VERTICAL	VERTICAL @
	BTU /HR.SQ.FT	BTU /HR.SQ.FT	BTU /HR.SQ.FT	BTU /HR.SQ.FT	BTU /HR.SQ.FT	BTU /HR.SQ.FT
8:30	87	23.0	21.2	3.92	19.1	17.28
9:00	120	30.0	20.6	5.4	24.6	15.2
9:30	33	22.0	21.4	-0.3	22.3	21.7
10:00	165	35.0	30.7	-1.49	36.5	32.19
10:30	175	39.0	29.2	-1.58	40.6	30.78
11:00	162	40.0	29.4	-1.46	41.5	30.86
11:30	152	45.0	30.0	-1.37	46.4	31.37
12:00	140	41.0	28.0	-1.26	42.3	29.26
12:30	90	28.0	22.2	-1.08	29.1	23.28
13:00	90	31.0	18.6	-1.08	32.1	19.68
13:30	115	35.0	20.2	-1.38	36.4	21.58
14:00	70	35.0	22.6	-0.84	35.8	23.44
14:30	90	32.0	19.8	-1.08	33.1	20.88
15:00	110	48.0	20.0	6.6	41.4	13.4
15:30	127	62.0	23.2	7.62	54.4	15.58
16:00	72	39.0	14.8	4.32	34.7	10.48
16:30	61	21.0	14.0	3.66	17.3	10.34
17:00	30	15.0	12.0	1.8	13.2	10.2
17:30	19	12.0	10.0	1.14	10.9	8.85
17/3/99	HORIZONTAL	OUTDOOR RADIATION	INSHADE RADIATION	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
8:30	36	17.0	15.8	1.62	15.4	14.18
9:00	115	31.0	21.8	5.18	25.8	16.62
9:30	118	22.0	22	-1.06	23.1	23.06
10:00	32	30.0	19	-0.29	30.3	19.29
10:30	32	18.0	17	-0.29	18.3	17.29
11:00	80	38.0	22.4	-0.72	38.7	23.12
11:30	145	34.0	21.6	-1.31	35.3	22.91
12:00	142	39.0	25.2	-1.28	40.3	26.48
12:30	148	68.0	20.7	-1.78	69.8	22.48
13:00	130	71.0	21.1	-1.56	72.6	22.66
13:30	141	70.0	21	-1.69	71.7	22.69
14:00	151	68.0	20.7	-1.81	69.8	22.51
14:30	151	58.0	19.2	-1.81	59.8	21.01
15:00	138	63.0	14.4	8.28	54.7	6.12
15:30	130	60.0	13.6	7.8	52.2	5.8
16:00	80	57.0	13	4.8	52.2	8.2
16:30	63	22.0	12.6	3.78	18.2	8.82
17:00	38	16.0	11.5	2.28	13.7	9.22
17:30	23	12.0	10.5	1.38	10.6	9.12

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันตกที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON WESTSIDE VERTICAL SURFACE

(Og=0.2)

16/3/99	OUTDOOR RADIATION (TEST)		INSHADE RADIATION (TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	WEST SURFACE	VERTICAL	VERTICAL @
	BTU /HR SQ FT	BTU /HR SQ FT	BTU /HR SQ FT	BTU /HR SQ FT	BTU /HR SQ FT	BTU /HR SQ FT
8:30	87	19.0	19	1	18.0	18
9:00	120	18.0	18	1.38	16.6	16.62
9:30	33	21.0	21	-0.07	21.1	21.07
10:00	165	30.0	26.2	-0.33	30.3	26.53
10:30	175	38.0	25.6	-0.35	38.4	25.95
11:00	162	30.0	25	-0.32	30.3	25.32
11:30	152	32.0	30.2	-0.3	32.3	30.5
12:00	140	32.0	32	-0.28	32.3	32.28
12:30	90	32.0	29	-0.16	32.2	29.18
13:00	90	30.0	27.4	-0.18	30.2	27.58
13:30	115	34.0	26.2	-0.23	34.2	26.43
14:00	70	35.0	25.2	-0.14	35.1	25.34
14:30	90	40.0	25.2	-0.18	40.2	25.38
15:00	110	70.0	27.4	1.82	68.2	25.58
15:30	127	120.0	30.8	2.1	117.9	28.7
16:00	72	65.0	21.8	1.19	63.8	20.61
16:30	61	60.0	17.8	1.01	59.0	16.79
17:00	30	45.0	18.2	0.5	44.5	17.7
17:30	19	42.0	15	0.31	41.7	14.69

17/3/99	HORIZONTAL	OUTDOOR RADIATION	INSHADE RADIATION	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
8:30	36	9.0	9	0.41	8.6	8.59
9:00	115	19.0	19.4	1.32	17.7	18.08
9:30	118	19.0	19	-0.24	19.2	19.24
10:00	32	28.0	19	-0.06	28.1	19.06
10:30	32	11.0	11	-0.06	11.1	11.06
11:00	80	29.0	20	-0.16	29.2	20.16
11:30	145	30.0	22	-0.29	30.3	22.29
12:00	142	31.0	27.4	-0.28	31.3	27.68
12:30	148	32.0	21.4	-0.3	32.3	21.7
13:00	130	39.0	25.6	-0.26	39.3	25.66
13:30	141	51.0	27.4	-0.28	51.3	27.68
14:00	151	72.0	30.4	-0.3	72.3	30.7
14:30	151	80.0	32.2	-0.3	80.3	32.5
15:00	138	120.0	29.4	2.28	117.7	27.12
15:30	130	122.0	30.8	2.15	119.9	28.65
16:00	80	122.0	20.4	1.32	120.7	19.08
16:30	63	125.0	13.4	1.04	124.0	12.36
17:00	38	110.0	13.2	0.63	109.4	12.57
17:30	23	85.0	23.2	0.38	84.6	22.82

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศเหนือที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON NORTHSIDE VERTICAL SURFACE

(Og=0.2)

16/3/99	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	NORTH SURFACE	VERTICAL	VERTICAL @
	BTU /HR SQ.FT	BTU /HR SQ.FT.	BTU /HR SQ.FT	BTU /HR SQ.FT	BTU /HR SQ.FT	BTU /HR SQ.FT
8:30	87	16.0	18.4	1.09	16.9	17.31
9:00	120	15.0	15.8	1.5	13.5	14.3
9:30	33	14.0	14	0.41	13.6	13.59
10:00	165	21.0	20.4	2.06	18.9	18.34
10:30	175	30.0	21.2	2.19	27.8	19.01
11:00	162	32.0	23.2	2.03	30.0	21.17
11:30	152	31.0	24.2	1.9	29.1	22.3
12:00	140	32.0	23.4	1.75	30.3	21.65
12:30	90	22.0	20	0.63	21.4	19.37
13:00	90	19.0	17	0.63	18.4	16.37
13:30	115	21.0	16.8	0.81	20.2	15.99
14:00	70	21.0	14.6	0.49	20.5	14.11
14:30	90	19.0	10	0.63	18.4	9.37
15:00	110	20.0	12.2	0.77	19.2	11.43
15:30	127	22.0	12	0.89	21.1	11.11
16:00	72	12.0	8	0.5	11.5	7.5
16:30	61	12.0	8	0.43	11.6	7.57
17:00	30	9.0	8	0.21	8.8	7.79
17:30	19	6.0	6	0.13	5.9	5.87

17/3/99	HORIZONTAL	OUTDOOR RADIATION	INSHADE RADIATION	Decrease Irradiance	OUTDOOR RADIATION	INSHADE RADIATION
8:30	36	18.0	18	0.45	17.6	17.55
9:00	115	15.0	15	1.44	13.6	13.56
9:30	118	18.0	18	1.48	16.5	16.52
10:00	32	21.0	19	0.4	20.6	18.6
10:30	32	12.0	9	0.4	11.6	8.6
11:00	80	31.0	18	1	30.0	17
11:30	145	31.0	21	1.81	29.2	19.19
12:00	142	32.0	23	1.78	30.2	21.22
12:30	148	32.0	18	1.04	31.0	16.96
13:00	130	31.0	20	0.91	30.1	19.09
13:30	141	32.0	19.9	0.99	31.0	18.91
14:00	151	32.0	21	1.06	30.9	19.94
14:30	151	29.0	15	1.06	27.9	13.94
15:00	138	28.0	13	0.97	27.0	12.03
15:30	130	22.0	10.4	0.91	21.1	9.49
16:00	80	21.0	10	0.56	20.4	9.44
16:30	63	18.0	8	0.44	17.6	7.56
17:00	38	12.0	9.5	0.27	11.7	9.23
17:30	23	9.5	5	0.16	9.3	4.84

ตาราง แสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันออกเฉียงใต้ที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON SOUTH-EASTSIDE VERTICAL SURFACE

(Og=0.2)

16/3/99	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	SE SURFACE	VERTICAL	VERTICAL @
	BTU /HR SQ. FT.	BTU /HR SQ. FT.	BTU /HR SQ. FT.	BTU /HR SQ. FT.	BTU /HR SQ. FT.	BTU /HR SQ. FT.
8:30	87	38.0	26.6	5.22	32.8	21.38
9:00	120	50.0	25.2	7.2	42.8	18
9:30	33	32.0	28.4	-0.4	32.4	28.8
10:00	165	38.0	28	-1.98	40.0	29.98
10:30	175	49.0	33.2	-2.1	51.1	35.3
11:00	162	48.0	29.5	-1.94	49.9	31.44
11:30	152	50.0	30	-1.82	51.8	31.82
12:00	140	32.0	28.2	-1.68	33.7	29.88
12:30	90	40.0	24.4	-1.08	41.1	25.48
13:00	90	39.0	15.8	-1.08	40.1	16.88
13:30	115	28.0	14.8	-1.38	29.4	16.18
14:00	70	20.0	11.8	-0.84	20.8	12.64
14:30	90	34.0	12	-1.08	35.1	13.08
15:00	110	30.0	18.4	6.6	23.4	11.8
15:30	127	30.0	18	7.62	22.4	10.38
16:00	72	19.0	12	4.32	14.7	7.68
16:30	61	15.0	11	3.66	11.3	7.34
17:00	30	11.0	11	1.8	9.2	9.2
17:30	19	8.0	8	1.14	6.9	6.86

17/3/99	HORIZONTAL	OUTDOOR RADIATION	INSHADE RADIATION	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
8:30	36	25.0	18	2.16	22.8	15.84
9:00	115	98.0	24.8	6.9	91.1	17.9
9:30	118	79.0	26	-1.42	80.4	27.42
10:00	32	48.0	23.8	-0.38	48.4	24.18
10:30	32	35.0	22.2	-0.38	35.4	22.58
11:00	80	78.0	25.2	-0.96	79.0	26.16
11:30	145	35.0	14.2	-1.74	36.7	15.94
12:00	142	39.0	20.6	-1.7	40.7	22.3
12:30	148	60.0	18.8	-1.78	61.8	20.58
13:00	130	42.0	18	-1.56	43.6	19.56
13:30	141	38.0	18.4	-1.69	39.7	20.09
14:00	151	30.0	24.4	-1.81	31.8	26.21
14:30	151	22.0	16.4	-1.81	23.8	18.21
15:00	138	26.0	14.8	8.28	17.7	6.52
15:30	130	20.0	12.8	7.8	12.2	5
16:00	80	19.0	12	4.8	14.2	7.2
16:30	63	18.0	11	3.78	14.2	7.22
17:00	38	12.0	10.3	2.28	9.7	8.02
17:30	23	12.0	8	1.38	10.6	6.62

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันตกเฉียงใต้ที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON SOUTH-WESTSIDE VERTICAL SURFACE

(Og=0.2)

16/3/99	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease Irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	SW SURFACE	VERTICAL	VERTICAL @
	BTU./HR.SQ.FT	BTU./HR.SQ.FT	BTU./HR.SQ.FT	BTU./HR.SQ.FT	BTU./HR.SQ.FT	BTU./HR.SQ.FT
8:30	87	19.0	19	5.22	13.8	13.78
9:00	120	21.0	21.8	7.2	13.8	14.6
9:30	33	19.0	20	-0.4	19.4	20.4
10:00	166	28.0	23.2	-1.98	30.0	25.18
10:30	175	38.0	29.3	-2.1	40.1	31.4
11:00	162	38.0	28	-1.94	39.9	29.94
11:30	152	39.0	30.6	-1.82	40.8	32.42
12:00	140	39.0	31	-1.68	40.7	32.68
12:30	90	45.0	28.8	-1.08	46.1	29.88
13:00	90	35.0	27.6	-1.08	36.1	28.68
13:30	115	53.0	26.8	-1.38	54.4	28.18
14:00	70	49.0	27.2	-0.84	49.8	28.04
14:30	90	51.0	22.8	-1.08	52.1	23.88
15:00	110	80.0	28.8	6.6	73.4	22.2
15:30	127	120.0	30.6	7.62	112.4	22.98
16:00	72	53.0	18.4	4.32	48.7	14.08
16:30	61	50.0	18.2	3.66	46.3	14.54
17:00	30	42.0	17.2	1.8	40.2	15.4
17:30	19	39.0	13	1.14	37.9	11.86

17/3/99	HORIZONTAL	OUTDOOR RADIATION	INSHADE RADIATION	Decrease Irradiance	OUTDOOR RADIATION	INSHADE RADIATION
8:30	36	12.0	12	2.16	9.8	9.84
9:00	115	21.0	21	6.9	14.1	14.1
9:30	118	21.0	21	-1.42	22.4	22.42
10:00	32	32.0	22	-0.38	32.4	22.38
10:30	32	25.0	16.4	-0.38	25.4	16.78
11:00	80	32.0	22	-0.96	33.0	22.96
11:30	145	23.0	20.2	-1.74	24.7	21.94
12:00	142	29.5	24.8	-1.7	31.2	26.5
12:30	148	50.0	22	-1.78	51.8	23.78
13:00	130	79.0	27.2	-1.56	80.6	28.76
13:30	141	98.0	28.6	-1.69	99.7	30.29
14:00	151	99.0	32	-1.81	100.8	33.81
14:30	151	123.0	34.4	-1.81	124.8	36.21
15:00	138	132.0	45.4	8.28	123.7	37.12
15:30	130	125.0	36.6	7.8	117.2	28.8
16:00	80	114.0	27.6	4.8	109.2	22.8
16:30	63	98.0	16	3.78	94.2	12.22
17:00	38	102.0	21.8	2.28	99.7	19.52
17:30	23	60.0	9.8	1.38	58.6	8.42

ตาราง แสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันตกเฉียงเหนือที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON NORTH-WESTSIDE VERTICAL SURFACE

(Og=0.2)

16/3/99	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	NW SURFACE	VERTICAL	VERTICAL @
	BTU /HR SQ FT	BTU /HR SQ FT	BTU /HR SQ FT.	BTU /HR SQ FT	BTU /HR SQ FT.	BTU /HR SQ FT
8:30	87	19.0	18.4	1.09	17.9	17.31
9:00	120	19.0	18.6	1.5	17.5	17.1
9:30	33	13.0	12.8	0.41	12.6	12.39
10:00	165	25.0	20.9	2.06	22.9	18.84
10:30	175	29.0	24.8	2.19	26.8	22.61
11:00	162	31.0	23.8	2.03	29.0	21.77
11:30	152	29.0	23.6	1.9	27.1	21.7
12:00	140	31.0	22	1.75	29.3	20.25
12:30	90	32.0	28.8	0.81	31.2	27.99
13:00	90	29.0	24.4	0.81	28.2	23.59
13:30	115	28.0	24	1.04	27.0	22.96
14:00	70	24.0	19	0.63	23.4	18.37
14:30	90	23.0	13.6	0.81	22.2	12.79
15:00	110	28.0	16	0.99	27.0	15.01
15:30	127	39.0	20.4	1.14	37.9	19.26
16:00	72	21.0	14	0.65	20.4	13.35
16:30	61	31.0	10.4	0.55	30.5	9.85
17:00	30	30.0	10.2	0.27	29.7	9.93
17:30	19	30.0	12.4	0.17	29.8	12.23

17/3/99	HORIZONTAL	OUTDOOR RADIATION	INSHADE RADIATION	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
8:30	36	14.0	14	0.45	13.6	13.55
9:00	115	15.0	18	1.44	13.6	16.56
9:30	118	21.0	21	1.48	19.5	19.52
10:00	32	31.0	22	0.4	30.6	21.6
10:30	32	16.0	15	0.4	15.6	14.6
11:00	80	31.0	21	1	30.0	20
11:30	145	21.0	16	1.81	19.2	14.19
12:00	142	31.0	24	1.78	29.2	22.22
12:30	148	31.0	20.1	1.33	29.7	18.77
13:00	130	34.0	24.6	1.17	32.8	23.43
13:30	141	38.0	24.4	1.27	36.7	23.13
14:00	151	48.0	21.8	1.36	46.6	20.44
14:30	151	34.0	19.6	1.36	32.6	18.24
15:00	138	44.0	20.2	1.24	42.8	18.96
15:30	130	48.0	20.8	1.17	46.8	19.63
16:00	80	67.0	11.8	0.72	66.3	11.08
16:30	63	78.0	14.8	0.57	77.4	14.23
17:00	38	100.0	14.2	0.34	99.7	13.86
17:30	23	55.0	12.8	0.21	54.8	12.59

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันออกเฉียงเหนือที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON NORTH-EASTSIDE VERTICAL SURFACE

(Og=0.2)

16/3/99	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	NE SURFACE	VERTICAL	VERTICAL @
	BTU /HR SQ.FT	BTU /HR SQ.FT	BTU /HR SQ.FT	BTU /HR SQ.FT	BTU /HR SQ.FT	BTU /HR SQ.FT
8:30	87	31.0	25.4	1.09	29.9	24.31
9:00	120	22.0	20.2	1.5	20.5	18.7
9:30	33	21.0	15.6	0.41	20.6	15.19
10:00	165	45.0	26.8	2.06	42.9	24.74
10:30	175	33.0	25.4	2.19	30.8	23.21
11:00	162	38.0	21.4	2.03	36.0	19.37
11:30	152	32.0	22.8	1.9	30.1	20.9
12:00	140	32.0	17.2	1.75	30.3	15.45
12:30	90	15.0	10.2	0.45	14.6	9.75
13:00	90	25.0	15	0.45	24.6	14.55
13:30	115	21.0	15.6	0.57	20.4	15.03
14:00	70	20.0	12	0.35	19.7	11.65
14:30	90	19.0	10	0.45	18.6	9.55
15:00	110	21.0	11	0.55	20.5	10.45
15:30	127	21.0	13	0.63	20.4	12.37
16:00	72	12.0	9	0.36	11.6	8.64
16:30	61	10.0	9	0.3	9.7	8.7
17:00	30	9.0	8	0.15	8.9	7.85
17:30	19	4.0	4	0.09	3.9	3.91

17/3/99	HORIZONTAL	OUTDOOR RADIATION	INSHADE RADIATION	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
8:30	36	14.0	14	0.45	13.6	13.55
9:00	115	39.0	28.8	1.44	37.6	27.36
9:30	118	41.0	22.2	1.48	39.5	20.72
10:00	32	38.0	21	0.4	37.6	20.6
10:30	32	30.0	17	0.4	29.6	16.6
11:00	80	32.0	20.4	1	31.0	19.4
11:30	145	29.0	18.4	1.81	27.2	16.59
12:00	142	30.0	19.5	1.78	28.2	17.72
12:30	148	30.0	20	0.74	29.3	19.26
13:00	130	30.0	17	0.65	29.4	16.35
13:30	141	30.0	19	0.7	29.3	18.3
14:00	151	30.0	19	0.75	29.3	18.25
14:30	151	27.0	15	0.75	26.3	14.25
15:00	138	33.0	14	0.69	32.3	13.31
15:30	130	21.0	11	0.65	20.4	10.35
16:00	80	19.0	11.2	0.4	18.6	10.8
16:30	63	18.0	10	0.31	17.7	9.69
17:00	38	15.0	9.5	0.19	14.8	9.31
17:30	23	10.0	5	0.12	9.9	4.88

ภาคผนวก จ.

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆทางทิศตะวันออก
 SOLAR RADIATION ON EASTSIDE VERTICAL SURFACE (TEST)

พิกัด

13/4/99	OUTDOOR RADIATION		INSHADE VERTICAL RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.							%
9:00	110	78	17	13	17	16	15	15.5	80
9:15	122	82	18	17	17	16	17	16.6	90
9:30	136	112	15	17	17	19	18	17.0	80
9:45	141	122	18	17	18	18	17	17.1	85
10:00	106	42	16	15	15	15	14	14.8	85
10:15	108	43	14	14	14	13	12	13.1	85
10:30	142	64	16	16	15	15	14	15.1	80
10:45	144	64	16	16	15	16	15	15.2	70
11:00	66	30	11	11	11	11	11	10.5	70
11:15	84	47	15	15	14	13	13	13.8	70
11:30	55	32	11	11	10	11	11	10.7	70
11:45	72	36	16	16	15	13	13	14.4	70
12:00	106	66	16	16	16	16	16	16.0	65
12:15	120	58	16	16	16	16	16	16.0	70
12:30	72	38	13	13	13	13	13	13.0	75
12:45	-	-	-	-	-	-	-	-	ฝนตก
13:00	64	36	11	11	11	11	11	10.5	60
13:15	100	44	13	14	16	16	18	15.2	40
13:30	140	44	24	24	23	24	24	23.5	40
13:45	151	49	26	24	26	24	25	24.8	35
14:00	136	43	23	24	24	23	24	23.5	40
14:15	108	44	17	18	21	21	21	19.4	35
14:30	108	46	20	21	20	23	20	20.7	40
14:45	63	26	16	16	16	16	16	15.5	40
15:00	58	28	14	14	14	14	14	13.8	35
15:15	76	36	20	20	21	20	20	19.9	50
15:30	51	32	13	15	15	15	15	14.3	55
15:45	55	26	16	16	16	16	16	15.5	50
16:00	49	30	15	15	14	15	15	14.6	90
16:15	44	21	13	13	13	13	13	13.0	90
16:30	24	15	9	9	9	9	9	9.0	100
16:45	18	13	8	8	8	8	8	7.8	100
17:00	10	8	6	6	6	6	6	5.5	100

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆทางทิศใต้
 SOLAR RADIATION ON SOUTHSIDE VERTICAL SURFAC (TEST)

พิกัด

13/4/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.						BTU./HR.SQ.FT.	%
9:00	110	42	15	15	14	13	10	13.3	80
9:15	122	51	15	14	15	14	16	14.8	90
9:30	136	56	15	16	16	16	18	16.2	80
9:45	141	63	16	16	18	16	18	16.6	85
10:00	106	38	13	11	11	11	11	11.3	85
10:15	108	36	11	11	12	13	13	11.8	85
10:30	142	50	15	14	15	15	14	14.5	80
10:45	144	52	15	15	16	15	14	14.7	70
11:00	66	34	11	11	11	11	11	10.5	70
11:15	84	47	13	13	13	13	12	12.6	70
11:30	55	32	10	10	11	11	10	10.4	70
11:45	72	36	11	11	11	11	11	11.0	70
12:00	106	58	14	14	14	14	14	13.5	65
12:15	120	70	16	16	15	16	16	15.7	70
12:30	72	38	11	11	11	11	11	11.0	75
12:45	-	-	-	-	-	-	-	-	ฝนตก
13:00	64	31	11	11	11	11	11	10.5	60
13:15	100	46	11	11	12	13	14	12.1	40
13:30	140	48	15	15	16	18	17	16.1	40
13:45	151	50	16	19	17	18	18	17.4	35
14:00	136	42	15	16	15	15	16	15.4	40
14:15	108	49	15	15	14	16	16	15.2	35
14:30	108	52	16	16	16	17	16	16.2	40
14:45	63	26	12	12	12	12	12	12.0	40
15:00	58	31	11	11	11	11	11	11.0	35
15:15	76	34	15	15	15	15	15	15.0	50
15:30	51	26	11	13	12	14	14	12.3	55
15:45	55	26	13	13	13	13	13	13.0	50
16:00	49	25	11	13	13	11	11	11.7	90
16:15	44	21	11	11	11	11	11	11.0	90
16:30	24	14	9	9	9	9	9	8.5	100
16:45	18	12	6	6	6	6	6	6.0	100
17:00	10	10	6	6	6	6	6	5.5	100

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆทางทิศตะวันตก
 SOLAR RADIATION ON WESTSIDE VERTICAL SURFACI (TEST)

พิกษ

13/4/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.							%
9:00	110	28	17	16	16	16	16	16.1	80
9:15	122	37	19	18	19	18	19	18.3	90
9:30	136	38	24	24	24	24	24	24.0	80
9:45	141	46	21	20	22	20	21	20.8	85
10:00	106	32	19	19	20	20	20	19.3	85
10:15	108	32	19	20	20	20	20	19.6	85
10:30	142	42	20	19	23	19	23	20.6	80
10:45	144	49	23	23	23	24	23	22.8	70
11:00	66	30	19	19	19	19	15	18.2	70
11:15	84	40	21	21	21	22	21	21.0	70
11:30	55	33	19	18	19	19	18	18.2	70
11:45	72	40	20	20	20	20	20	20.0	70
12:00	106	58	23	24	25	24	23	23.7	65
12:15	120	66	24	25	25	27	24	24.8	70
12:30	72	41	21	21	21	21	21	21.0	75
12:45	-	-	-	-	-	-	-	-	ฝนตก
13:00	64	40	16	16	16	16	16	15.5	60
13:15	100	50	11	10	11	11	11	10.8	40
13:30	140	60	13	14	15	15	16	14.4	40
13:45	151	66	17	13	14	14	15	14.5	35
14:00	136	68	17	14	14	16	16	15.4	40
14:15	108	64	11	13	14	11	11	11.9	35
14:30	108	70	13	14	14	15	13	13.6	40
14:45	63	42	10	10	10	10	10	10.0	40
15:00	58	48	11	11	11	11	11	10.5	35
15:15	76	58	14	15	14	15	15	14.2	50
15:30	51	37	11	13	12	11	12	11.7	55
15:45	55	31	10	10	10	9	10	9.5	50
16:00	49	27	10	10	9	10	10	9.5	90
16:15	44	22	7	7	8	8	8	7.4	90
16:30	24	12	6	6	6	6	6	5.5	100
16:45	18	10	5	5	5	5	5	5.0	100
17:00	10	10	5	5	5	5	5	5.0	100

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆทางทิศเหนือ
 SOLAR RADIATION ON NORTHSIDE VERTICAL SURFACE (TEST)

พิกัด

13/4/99	OUTDOOR RADIATION		INSHADE RADIATION					CLOUD	
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.							%
9:00	110	46	17	17	17	17	17	16.8	80
9:15	122	54	18	18	18	18	18	18.0	90
9:30	136	58	19	19	19	19	19	19.0	80
9:45	141	64	20	20	20	20	20	19.6	85
10:00	106	29	18	18	17	19	18	17.7	85
10:15	108	30	19	19	19	19	19	18.5	85
10:30	142	48	20	21	20	20	21	20.2	80
10:45	144	49	21	23	23	24	23	22.6	70
11:00	66	30	17	18	18	18	17	17.3	70
11:15	84	38	19	19	19	19	19	19.0	70
11:30	55	31	17	17	17	17	17	17.0	70
11:45	72	38	20	20	20	20	20	19.5	70
12:00	106	57	21	23	24	20	21	21.7	65
12:15	120	67	25	23	24	22	23	23.0	70
12:30	72	38	20	20	20	20	20	20.0	75
12:45	-	-	-	-	-	-	-	-	ฝนตก
13:00	64	42	18	18	18	19	18	17.9	60
13:15	100	42	15	15	15	15	15	15.0	40
13:30	140	44	18	18	18	18	18	18.0	40
13:45	151	47	18	18	18	18	18	17.8	35
14:00	136	48	15	16	16	16	16	15.8	40
14:15	108	50	15	16	16	15	16	15.6	35
14:30	108	56	16	18	18	16	19	17.2	40
14:45	63	26	13	13	12	12	13	12.3	40
15:00	58	36	13	13	14	14	14	13.3	35
15:15	76	49	16	17	16	17	17	16.3	50
15:30	51	36	13	14	13	13	13	13.1	55
15:45	55	30	11	11	11	11	11	10.5	50
16:00	49	30	12	11	11	12	12	11.3	90
16:15	44	24	11	9	10	11	10	10.0	90
16:30	24	14	9	9	9	9	9	9.0	100
16:45	18	12	7	7	7	7	7	7.0	100
17:00	10	10	7	7	7	7	7	7.0	100

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆทางทิศตะวันออกเฉียงใต้
 SOLAR RADIATION ON SOUTH-EASTSIDE VERTICAL SURFACE (TEST)

พิกัด

13/4/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.						BTU./HR.SQ.FT.	%
9:00	110	58	12	12	12	12	12	11.8	80
9:15	122	64	13	12	12	13	13	12.3	90
9:30	136	104	13	14	14	13	13	13.2	80
9:45	141	104	13	14	14	14	14	13.4	85
10:00	106	34	10	10	10	11	10	10.1	85
10:15	108	38	11	10	11	10	11	10.5	85
10:30	142	66	13	14	13	14	14	13.6	80
10:45	144	66	14	14	14	14	14	13.8	70
11:00	66	28	11	11	11	11	11	11.0	70
11:15	84	46	13	13	13	13	13	12.6	70
11:30	55	26	10	10	10	10	10	10.0	70
11:45	72	34	11	11	11	11	11	11.0	70
12:00	106	46	16	15	15	15	16	15.2	65
12:15	120	49	16	17	16	16	17	16.3	70
12:30	72	32	11	11	11	11	11	11.0	75
12:45	-	-	-	-	-	-	-	-	ฝนตก
13:00	64	30	12	12	12	12	12	12.0	60
13:15	100	42	16	16	16	16	16	16.0	40
13:30	140	45	21	22	22	21	22	21.4	40
13:45	151	46	21	22	22	21	22	21.5	35
14:00	136	46	21	21	21	21	22	21.0	40
14:15	108	44	19	19	19	18	18	18.4	35
14:30	108	47	20	20	19	19	20	19.3	40
14:45	63	26	15	15	15	15	15	15.0	40
15:00	58	28	15	15	15	15	15	15.0	35
15:15	76	31	19	18	16	15	15	16.5	50
15:30	51	26	15	15	15	15	15	14.6	55
15:45	55	24	15	15	15	15	15	14.5	50
16:00	49	24	15	15	15	15	15	14.5	90
16:15	44	19	12	12	12	13	13	12.0	90
16:30	24	14	9	9	9	9	9	9.0	100
16:45	18	10	7	7	7	7	7	7.0	100
17:00	10	9	7	7	7	7	7	7.0	100

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆทางทิศตะวันตกเฉียงเหนือ
 SOLAR RADIATION ON NORTH-WESTSIDE VERTICAL SURFACE (TEST)

พิกัด

13/4/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.							%
9:00	110	36	16	16	16	16	16	16.0	80
9:15	122	39	24	23	23	24	25	23.6	90
9:30	136	48	23	23	23	22	22	22.4	80
9:45	141	42	22	21	23	21	21	21.4	85
10:00	106	27	20	21	21	20	21	20.4	85
10:15	108	34	19	20	19	21	20	19.8	85
10:30	142	40	24	25	24	24	25	24.4	80
10:45	144	45	21	23	23	23	23	22.4	70
11:00	66	44	20	21	20	21	21	20.3	70
11:15	84	44	21	21	21	21	21	20.5	70
11:30	55	30	19	19	19	19	19	18.5	70
11:45	72	34	18	18	18	18	18	17.5	70
12:00	106	52	23	23	23	23	23	22.5	65
12:15	120	50	25	26	25	26	25	25.2	70
12:30	72	34	21	21	21	21	21	21.0	75
12:45	-	-	-	-	-	-	-	-	ฝนตก
13:00	64	41	23	23	23	23	18	21.9	60
13:15	100	50	21	22	21	22	21	21.1	40
13:30	140	51	16	16	15	16	15	15.3	40
13:45	151	71	17	17	18	18	20	17.6	35
14:00	136	74	14	16	15	16	18	15.7	40
14:15	108	86	14	15	14	14	15	14.4	35
14:30	108	96	15	14	14	15	15	14.3	40
14:45	63	42	14	14	14	14	14	13.5	40
15:00	58	56	15	15	15	15	15	15.0	35
15:15	76	68	10	13	14	13	13	12.4	50
15:30	51	45	10	10	10	10	10	10.0	55
15:45	55	38	11	10	10	11	11	10.5	50
16:00	49	28	10	9	9	9	9	9.0	90
16:15	44	26	9	9	9	8	9	8.5	90
16:30	24	13	6	6	5	5	6	5.4	100
16:45	18	10	5	5	5	6	5	5.1	100
17:00	10	8	5	5	5	5	5	5.0	100

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ ตำแหน่งต่างๆทางทิศตะวันออกเฉียงเหนือ
SOLAR RADIATION ON NORTH-EASTSIDE VERTICAL SURFACE (TEST)

พิกุล

13/4/99	OUTDOOR RADIATION		INSHADE RADIATION						CLOUD
TIME	HORIZONTAL	VERTICAL	POS.1	POS.2	POS.3	POS.4	POS.5	@	QUANTITY
	BTU./HR.SQ.FT.	BTU./HR.SQ.FT.						BTU./HR.SQ.FT.	%
9:00	110	54	16	15	15	14	14	14.5	80
9:15	122	58	15	14	14	17	15	14.9	90
9:30	136	64	20	18	17	19	17	17.9	80
9:45	141	60	19	19	20	17	16	18.1	85
10:00	106	33	18	16	16	18	16	16.5	85
10:15	108	31	16	16	15	16	16	15.7	85
10:30	142	50	18	18	19	18	19	18.1	80
10:45	144	42	15	19	19	19	19	18.2	70
11:00	66	32	18	18	18	18	18	17.5	70
11:15	84	41	18	18	18	18	18	18.0	70
11:30	55	30	15	15	15	15	15	15.0	70
11:45	72	32	16	16	16	16	16	16.0	70
12:00	106	56	20	20	20	20	20	19.5	65
12:15	120	56	20	20	19	20	20	19.6	70
12:30	72	41	15	15	15	15	15	15.0	75
12:45	-	-	-	-	-	-	-	-	ฝนตก
13:00	64	34	18	18	18	18	18	17.5	60
13:15	100	42	14	15	16	16	15	15.2	40
13:30	140	43	18	18	18	18	18	17.7	40
13:45	151	42	17	17	17	17	17	17.0	35
14:00	136	41	18	18	18	18	18	17.9	40
14:15	108	44	14	16	16	18	18	16.2	35
14:30	108	42	14	15	14	14	14	14.1	40
14:45	63	33	14	14	14	14	14	14.0	40
15:00	58	32	14	14	14	14	14	13.7	35
15:15	76	38	15	15	15	15	15	14.8	50
15:30	51	27	14	14	14	14	14	13.5	55
15:45	55	25	14	14	15	15	14	14.2	50
16:00	49	24	14	15	14	14	14	14.0	90
16:15	44	22	14	14	14	14	14	14.0	90
16:30	24	13	8	9	8	7	7	7.7	100
16:45	18	10	6	6	6	6	6	6.0	100
17:00	10	9	6	6	6	6	6	5.5	100

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $Og=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันออก

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 13/4/99

พิภูล

13/4/99	TEST			Og=0.2	Decrease irradiance
	TOTAL HORIZONTAL	Og	I reflected=Ith*Og*Fsg	I reflected	EAST SURFACE
TIME	Btu./hr.sq.ft.		Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
9:00	110	0.208	11.44	11.00	0.44
9:15	122	0.208	12.69	12.20	0.49
9:30	136	0.208	14.14	13.60	0.54
9:45	141	0.208	14.66	14.10	0.56
10:00	106	0.208	11.02	10.60	0.42
10:15	108	0.208	11.23	10.80	0.43
10:30	142	0.208	14.77	14.20	0.57
10:45	144	0.208	14.98	14.40	0.58
11:00	66	0.208	6.86	6.60	0.26
11:15	84	0.208	8.74	8.40	0.34
11:30	55	0.208	5.72	5.50	0.22
11:45	72	0.208	7.49	7.20	0.29
12:00	106	0.208	11.02	10.60	0.42
12:15	120	0.208	12.48	12.00	0.48
12:30	72	0.208	7.49	7.20	0.29
12:45	-	-	-	-	-
13:00	64	0.208	6.66	6.40	0.26
13:15	100	0.208	10.40	10.00	0.40
13:30	140	0.358	25.06	14.00	11.06
13:45	151	0.358	27.03	15.10	11.93
14:00	136	0.358	24.34	13.60	10.74
14:15	108	0.358	19.33	10.80	8.53
14:30	108	0.358	19.33	10.80	8.53
14:45	63	0.358	11.28	6.30	4.98
15:00	58	0.358	10.38	5.80	4.58
15:15	76	0.358	13.60	7.60	6.00
15:30	51	0.358	9.13	5.10	4.03
15:45	55	0.358	9.85	5.50	4.35
16:00	49	0.358	8.77	4.90	3.87
16:15	44	0.358	7.88	4.40	3.48
16:30	24	0.358	4.30	2.40	1.90
16:45	18	0.358	3.22	1.80	1.42
17:00	10	0.358	1.79	1.00	0.79

Fsg= 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $Og=0.2$ ณ พื้นผิวแนวตั้งทางทิศใต้

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16/3/99

พิกุล

13/4/99	TEST			$Og=0.2$	Decrease irradiance
	TOTAL HORIZONTAL	Og	$I_{\text{reflected}}=I_{\text{th}}*Og*F_{\text{sg}}$	$I_{\text{reflected}}$	SOUTH SURFACE
TIME	Btu./hr.sq.ft		Btu./hr.sq.ft	Btu./hr.sq.ft	Btu./hr.sq.ft
9:00	110	0.25	13.75	11.00	2.75
9:15	122	0.25	15.25	12.20	3.05
9:30	136	0.25	17.00	13.60	3.40
9:45	141	0.25	17.63	14.10	3.53
10:00	106	0.25	13.25	10.60	2.65
10:15	108	0.25	13.50	10.80	2.70
10:30	142	0.25	17.75	14.20	3.55
10:45	144	0.25	18.00	14.40	3.60
11:00	66	0.25	8.25	6.60	1.65
11:15	84	0.25	10.50	8.40	2.10
11:30	55	0.25	6.88	5.50	1.38
11:45	72	0.25	9.00	7.20	1.80
12:00	106	0.25	13.25	10.60	2.65
12:15	120	0.25	15.00	12.00	3.00
12:30	72	0.25	9.00	7.20	1.80
12:45	-	-	-	-	-
13:00	64	0.25	8.00	6.40	1.60
13:15	100	0.25	12.50	10.00	2.50
13:30	140	0.25	17.50	14.00	3.50
13:45	151	0.25	18.88	15.10	3.78
14:00	136	0.25	17.00	13.60	3.40
14:15	108	0.25	13.50	10.80	2.70
14:30	108	0.25	13.50	10.80	2.70
14:45	63	0.25	7.88	6.30	1.58
15:00	58	0.25	7.25	5.80	1.45
15:15	76	0.25	9.50	7.60	1.90
15:30	51	0.25	6.38	5.10	1.28
15:45	55	0.25	6.88	5.50	1.38
16:00	49	0.25	6.13	4.90	1.23
16:15	44	0.25	5.50	4.40	1.10
16:30	24	0.25	3.00	2.40	0.60
16:45	18	0.25	2.25	1.80	0.45
17:00	10	0.25	1.25	1.00	0.25

$F_{\text{sg}} = 0.5$

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $O_g=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันตก

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16/3/99

พิกุล

13/4/99	TEST			$O_g=0.2$	Decrease irradiance
	TOTAL HORIZONTAL	O_g	$I_{\text{reflected}}=I_{\text{th}}*O_g*F_{\text{sg}}$	I reflected	WEST SURFACE
TIME	Btu./hr.sq.ft.		Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
9:00	110	0.3	16.50	11.00	5.50
9:15	122	0.3	18.30	12.20	6.10
9:30	136	0.3	20.40	13.60	6.80
9:45	141	0.3	21.15	14.10	7.05
10:00	106	0.3	15.90	10.60	5.30
10:15	108	0.3	16.20	10.80	5.40
10:30	142	0.3	21.30	14.20	7.10
10:45	144	0.3	21.60	14.40	7.20
11:00	66	0.3	9.90	6.60	3.30
11:15	84	0.3	12.60	8.40	4.20
11:30	55	0.3	8.25	5.50	2.75
11:45	72	0.3	10.80	7.20	3.60
12:00	106	0.3	15.90	10.60	5.30
12:15	120	0.3	18.00	12.00	6.00
12:30	72	0.3	10.80	7.20	3.60
12:45	-	-	-	-	-
13:00	64	0.3	9.60	6.40	3.20
13:15	100	0.3	15.00	10.00	5.00
13:30	140	0.2	14.00	14.00	0.00
13:45	151	0.2	15.10	15.10	0.00
14:00	136	0.2	13.60	13.60	0.00
14:15	108	0.2	10.80	10.80	0.00
14:30	108	0.2	10.80	10.80	0.00
14:45	63	0.2	6.30	6.30	0.00
15:00	58	0.2	5.80	5.80	0.00
15:15	76	0.2	7.60	7.60	0.00
15:30	51	0.2	5.10	5.10	0.00
15:45	55	0.2	5.50	5.50	0.00
16:00	49	0.2	4.90	4.90	0.00
16:15	44	0.2	4.40	4.40	0.00
16:30	24	0.2	2.40	2.40	0.00
16:45	18	0.2	1.80	1.80	0.00
17:00	10	0.2	1.00	1.00	0.00

$F_{\text{sg}}= 0.5$

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $O_g=0.2$ ณ พื้นผิวแนวตั้งทางทิศเหนือ

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16/3/99

พิกุล

13/4/99	TEST			$O_g=0.2$	Decrease irradiance
	I TOTAL HORIZONTAL	O_g	I reflected = I _{th} * O_g *F _{sg}	I reflected	NORTH SURFACE
TIME	Btu./hr.sq.ft.		Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
9:00	110	0.3	16.50	11.00	5.50
9:15	122	0.3	18.30	12.20	6.10
9:30	136	0.3	20.40	13.60	6.80
9:45	141	0.3	21.15	14.10	7.05
10:00	106	0.3	15.90	10.60	5.30
10:15	108	0.3	16.20	10.80	5.40
10:30	142	0.3	21.30	14.20	7.10
10:45	144	0.3	21.60	14.40	7.20
11:00	66	0.3	9.90	6.60	3.30
11:15	84	0.3	12.60	8.40	4.20
11:30	55	0.3	8.25	5.50	2.75
11:45	72	0.3	10.80	7.20	3.60
12:00	106	0.3	15.90	10.60	5.30
12:15	120	0.3	18.00	12.00	6.00
12:30	72	0.3	10.80	7.20	3.60
12:45	-	-	-	-	-
13:00	64	0.3	9.60	6.40	3.20
13:15	100	0.3	15.00	10.00	5.00
13:30	140	0.25	17.50	14.00	3.50
13:45	151	0.25	18.88	15.10	3.78
14:00	136	0.25	17.00	13.60	3.40
14:15	108	0.25	13.50	10.80	2.70
14:30	108	0.25	13.50	10.80	2.70
14:45	63	0.25	7.88	6.30	1.58
15:00	58	0.25	7.25	5.80	1.45
15:15	76	0.25	9.50	7.60	1.90
15:30	51	0.25	6.38	5.10	1.28
15:45	55	0.25	6.88	5.50	1.38
16:00	49	0.25	6.13	4.90	1.23
16:15	44	0.25	5.50	4.40	1.10
16:30	24	0.25	3.00	2.40	0.60
16:45	18	0.25	2.25	1.80	0.45
17:00	10	0.25	1.25	1.00	0.25

F_{sg} = 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $O_g=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันออกเฉียงใต้

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16/3/99

พิภพ

13/4/99	TEST			$O_g=0.2$	Decrease irradiance
	I TOTAL HORIZONTAL	O_g	I reflected= $I_{th} \cdot O_g \cdot F_{sg}$	I reflected	SOUTH-EAST SURFACE
TIME	Btu./hr.sq.ft		Btu./hr.sq.ft	Btu./hr.sq.ft	Btu./hr.sq.ft
9:00	110	0.202	11.11	11.00	0.11
9:15	122	0.202	12.32	12.20	0.12
9:30	136	0.202	13.74	13.60	0.14
9:45	141	0.202	14.24	14.10	0.14
10:00	106	0.202	10.71	10.60	0.11
10:15	108	0.202	10.91	10.80	0.11
10:30	142	0.202	14.34	14.20	0.14
10:45	144	0.202	14.54	14.40	0.14
11:00	66	0.202	6.67	6.60	0.07
11:15	84	0.202	8.48	8.40	0.08
11:30	55	0.202	5.56	5.50	0.06
11:45	72	0.202	7.27	7.20	0.07
12:00	106	0.202	10.71	10.60	0.11
12:15	120	0.202	12.12	12.00	0.12
12:30	72	0.202	7.27	7.20	0.07
12:45	-	-	-	-	-
13:00	64	0.202	6.46	6.40	0.06
13:15	100	0.202	10.10	10.00	0.10
13:30	140	0.279	19.53	14.00	5.53
13:45	151	0.279	21.06	15.10	5.96
14:00	136	0.279	18.97	13.60	5.37
14:15	108	0.279	15.07	10.80	4.27
14:30	108	0.279	15.07	10.80	4.27
14:45	63	0.279	8.79	6.30	2.49
15:00	58	0.279	8.09	5.80	2.29
15:15	76	0.279	10.60	7.60	3.00
15:30	51	0.279	7.11	5.10	2.01
15:45	55	0.279	7.67	5.50	2.17
16:00	49	0.279	6.84	4.90	1.94
16:15	44	0.279	6.14	4.40	1.74
16:30	24	0.279	3.35	2.40	0.95
16:45	18	0.279	2.51	1.80	0.71
17:00	10	0.279	1.40	1.00	0.40

$F_{sg} = 0.5$

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $O_g=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันตกเฉียงใต้

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16/3/99

พิภพ

13/4/99	TEST			Og=0.2	Decrease irradiance
	TOTAL HORIZONTAL	Og	I reflected= $I_{th} \cdot O_g \cdot F_{sg}$	I reflected	SOUTH-WEST SURFACE
TIME	Btu./hr.sq.ft		Btu./hr.sq.ft	Btu./hr.sq.ft.	Btu./hr.sq.ft.
9:00	110	0.3	16.50	11.00	5.50
9:15	122	0.3	18.30	12.20	6.10
9:30	136	0.3	20.40	13.60	6.80
9:45	141	0.3	21.15	14.10	7.05
10:00	106	0.3	15.90	10.60	5.30
10:15	108	0.3	16.20	10.80	5.40
10:30	142	0.3	21.30	14.20	7.10
10:45	144	0.3	21.60	14.40	7.20
11:00	66	0.3	9.90	6.60	3.30
11:15	84	0.3	12.60	8.40	4.20
11:30	55	0.3	8.25	5.50	2.75
11:45	72	0.3	10.80	7.20	3.60
12:00	106	0.3	15.90	10.60	5.30
12:15	120	0.3	18.00	12.00	6.00
12:30	72	0.3	10.80	7.20	3.60
12:45	-	-	-	-	-
13:00	64	0.3	9.60	6.40	3.20
13:15	100	0.3	15.00	10.00	5.00
13:30	140	0.2	14.00	14.00	0.00
13:45	151	0.2	15.10	15.10	0.00
14:00	136	0.2	13.60	13.60	0.00
14:15	108	0.2	10.80	10.80	0.00
14:30	108	0.2	10.80	10.80	0.00
14:45	63	0.2	6.30	6.30	0.00
15:00	58	0.2	5.80	5.80	0.00
15:15	76	0.2	7.60	7.60	0.00
15:30	51	0.2	5.10	5.10	0.00
15:45	55	0.2	5.50	5.50	0.00
16:00	49	0.2	4.90	4.90	0.00
16:15	44	0.2	4.40	4.40	0.00
16:30	24	0.2	2.40	2.40	0.00
16:45	18	0.2	1.80	1.80	0.00
17:00	10	0.2	1.00	1.00	0.00

Fsg = 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $O_g=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันตกเฉียงเหนือ

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16/3/99

พิภูล

13/4/99	TEST			Og=0.2	Decrease irradiance
	TOTAL HORIZONTAL	Og	I reflected=Ith*Og*Fsg	I reflected	NORTH-WEST SURFACE
TIME	Btu /hr.sq.ft.		Btu /hr.sq.ft.	Btu /hr.sq.ft.	Btu /hr.sq.ft.
9:00	110	0.3	16.50	11.00	5.50
9:15	122	0.3	18.30	12.20	6.10
9:30	136	0.3	20.40	13.60	6.80
9:45	141	0.3	21.15	14.10	7.05
10:00	106	0.3	15.90	10.60	5.30
10:15	108	0.3	16.20	10.80	5.40
10:30	142	0.3	21.30	14.20	7.10
10:45	144	0.3	21.60	14.40	7.20
11:00	66	0.3	9.90	6.60	3.30
11:15	84	0.3	12.60	8.40	4.20
11:30	55	0.3	8.25	5.50	2.75
11:45	72	0.3	10.80	7.20	3.60
12:00	106	0.3	15.90	10.60	5.30
12:15	120	0.3	18.00	12.00	6.00
12:30	72	0.3	10.80	7.20	3.60
12:45	-	-	-	-	-
13:00	64	0.3	9.60	6.40	3.20
13:15	100	0.3	15.00	10.00	5.00
13:30	140	0.2	14.00	14.00	0.00
13:45	151	0.2	15.10	15.10	0.00
14:00	136	0.2	13.60	13.60	0.00
14:15	108	0.2	10.80	10.80	0.00
14:30	108	0.2	10.80	10.80	0.00
14:45	63	0.2	6.30	6.30	0.00
15:00	58	0.2	5.80	5.80	0.00
15:15	76	0.2	7.60	7.60	0.00
15:30	51	0.2	5.10	5.10	0.00
15:45	55	0.2	5.50	5.50	0.00
16:00	49	0.2	4.90	4.90	0.00
16:15	44	0.2	4.40	4.40	0.00
16:30	24	0.2	2.40	2.40	0.00
16:45	18	0.2	1.80	1.80	0.00
17:00	10	0.2	1.00	1.00	0.00

Fsg= 0.5

ตารางการหาค่ารังสีดวงอาทิตย์แบบสะท้อนที่ลดลงเมื่อ $O_g=0.2$ ณ พื้นผิวแนวตั้งทางทิศตะวันออกเฉียงเหนือ

ในช่วงเวลาต่างๆของวันเก็บข้อมูล 16/3/99

พิกุล

13/4/99	TEST			Og=0.2	Decrease irradiance
	I TOTAL HORIZONTAL	Og	I reflected=lth*Og*Fsg	I reflected	NORTH-EAST SURFACE
TIME	Btu /hr sq ft		Btu /hr.sq ft	Btu /hr sq ft.	Btu /hr sq ft.
9:00	110	0.212	11.66	11.00	0.66
9:15	122	0.212	12.93	12.20	0.73
9:30	136	0.212	14.42	13.60	0.82
9:45	141	0.212	14.95	14.10	0.85
10:00	106	0.212	11.24	10.60	0.64
10:15	108	0.212	11.45	10.80	0.65
10:30	142	0.212	15.05	14.20	0.85
10:45	144	0.212	15.26	14.40	0.86
11:00	66	0.212	7.00	6.60	0.40
11:15	84	0.212	8.90	8.40	0.50
11:30	55	0.212	5.83	5.50	0.33
11:45	72	0.212	7.63	7.20	0.43
12:00	106	0.212	11.24	10.60	0.64
12:15	120	0.212	12.72	12.00	0.72
12:30	72	0.212	7.63	7.20	0.43
12:45	-	-	-	-	-
13:00	64	0.212	6.78	6.40	0.38
13:15	100	0.212	10.60	10.00	0.60
13:30	140	0.24	16.80	14.00	2.80
13:45	151	0.24	18.12	15.10	3.02
14:00	136	0.24	16.32	13.60	2.72
14:15	106	0.24	12.96	10.80	2.16
14:30	108	0.24	12.96	10.80	2.16
14:45	63	0.24	7.56	6.30	1.26
15:00	58	0.24	6.96	5.80	1.16
15:15	76	0.24	9.12	7.60	1.52
15:30	51	0.24	6.12	5.10	1.02
15:45	55	0.24	6.60	5.50	1.10
16:00	49	0.24	5.88	4.90	0.98
16:15	44	0.24	5.28	4.40	0.88
16:30	24	0.24	2.88	2.40	0.48
16:45	18	0.24	2.16	1.80	0.36
17:00	10	0.24	1.20	1.00	0.20

Fsg= 0.5

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันออกที่มีการปรับค่า Ground Reflectance แล้ว พิภุล

SOLAR RADIATION ON EASTSIDE VERTICAL SURFACE

(Og=0.2)

13/4/99	OUTDOOR RADIATION (TEST)		INSHADE RADIATION (TEST)	Decrease Irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	EAST SURFACE	VERTICAL	VERTICAL @
	Btu /hr sq.ft	Btu /hr sq.ft.	Btu /hr sq.ft.	Btu /hr sq.ft.	Btu /hr sq.ft.	Btu /hr sq.ft.
9:00	110	78	15.5	0.44	77.96	15.06
9:15	122	82	16.6	0.49	81.11	16.11
9:30	136	112	17.0	0.54	111.46	16.46
9:45	141	122	17.1	0.56	121.04	16.54
10:00	106	42	14.8	0.42	41.18	14.38
10:15	108	43	13.1	0.43	42.77	12.67
10:30	142	64	15.1	0.57	63.43	14.53
10:45	144	64	15.2	0.58	63.42	14.62
11:00	66	30	10.5	0.26	30.14	10.24
11:15	84	47	13.8	0.34	46.86	13.46
11:30	55	32	10.7	0.22	31.78	10.48
11:45	72	36	14.4	0.29	35.71	14.11
12:00	106	66	16.0	0.42	65.98	15.58
12:15	120	58	16.0	0.48	57.12	15.52
12:30	72	38	13.0	0.29	38.11	12.71
12:45	-	-	-	-	-	-
13:00	64	36	10.5	0.26	35.74	10.24
13:15	100	44	15.2	0.40	43.60	14.80
13:30	140	44	23.5	11.06	32.94	12.44
13:45	151	49	24.8	11.93	36.87	12.87
14:00	136	43	23.5	10.74	32.46	12.76
14:15	108	44	19.4	8.53	35.47	10.87
14:30	108	46	20.7	8.53	37.87	12.17
14:45	63	26	15.5	4.98	21.42	10.52
15:00	58	28	13.8	4.58	23.42	9.22
15:15	76	36	19.9	6.00	30.00	13.90
15:30	51	32	14.3	4.03	27.97	10.27
15:45	55	26	15.5	4.35	22.06	11.16
16:00	49	30	14.6	3.87	25.73	10.73
16:15	44	21	13.0	3.48	17.32	9.52
16:30	24	15	9.0	1.90	13.30	7.10
16:45	18	13	7.8	1.42	11.58	6.38
17:00	10	8	5.5	0.79	7.21	4.71

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศใต้ที่มีการปรับค่า Ground Reflectance แล้ว

พิกุล

SOLAR RADIATION ON SOUTHSIDE VERTICAL SURFACE(Og=0.2)

(Og=0.2)

13/4/99	OUTDOOR RADIATION (TEST)		INSHADE RADIATION (TEST)	Decrease irradianc	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	SOUTH SURFACE	VERTICAL	VERTICAL @
	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
9:00	110	42	13.3	2.75	38.85	10.55
9:15	122	51	14.8	3.05	48.15	11.75
9:30	136	56	16.2	3.40	52.60	12.80
9:45	141	63	16.6	3.53	59.68	13.08
10:00	106	38	11.3	2.65	35.75	8.65
10:15	108	36	11.8	2.70	33.30	9.10
10:30	142	50	14.5	3.55	46.85	10.95
10:45	144	52	14.7	3.60	48.40	11.10
11:00	66	34	10.5	1.65	31.95	8.85
11:15	84	47	12.6	2.10	45.10	10.50
11:30	55	32	10.4	1.38	30.63	9.03
11:45	72	36	11.0	1.80	34.20	9.20
12:00	106	58	13.5	2.65	55.75	10.85
12:15	120	70	15.7	3.00	67.40	12.70
12:30	72	38	11.0	1.80	36.60	9.20
12:45	-	-	-	-	-	-
13:00	64	31	10.5	1.60	29.60	8.90
13:15	100	46	12.1	2.50	43.90	9.60
13:30	140	48	16.1	3.50	44.50	12.60
13:45	151	50	17.4	3.78	45.83	13.63
14:00	136	42	15.4	3.40	38.20	12.00
14:15	108	49	15.2	2.70	46.10	12.50
14:30	108	52	16.2	2.70	49.30	13.50
14:45	63	26	12.0	1.58	24.03	10.43
15:00	58	31	11.0	1.45	29.75	9.55
15:15	76	34	15.0	1.90	31.70	13.10
15:30	51	26	12.3	1.28	25.13	11.03
15:45	55	26	13.0	1.38	24.23	11.63
16:00	49	25	11.7	1.23	23.58	10.48
16:15	44	21	11.0	1.10	19.70	9.90
16:30	24	14	8.5	0.60	13.00	7.90
16:45	18	12	6.0	0.45	11.55	5.55
17:00	10	10	5.5	0.25	9.35	5.25

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันตกที่มีการปรับค่า Ground Reflectance แล้ว พิภุด

SOLAR RADIATION ON WESTSIDE VERTICAL SURFACE

(Og=0.2)

13/4/99	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	WEST SURFACE	VERTICAL	VERTICAL @
	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
9:00	110	28	16.1	5.50	22.50	10.60
9:15	122	37	18.3	6.10	30.70	12.20
9:30	136	38	24.0	6.80	31.60	17.20
9:45	141	46	20.8	7.05	39.35	13.75
10:00	106	32	19.3	5.30	26.70	14.00
10:15	108	32	19.6	5.40	26.60	14.20
10:30	142	42	20.6	7.10	34.50	13.50
10:45	144	49	22.8	7.20	41.60	15.60
11:00	66	30	18.2	3.30	27.10	14.90
11:15	84	40	21.0	4.20	35.80	16.80
11:30	55	33	18.2	2.75	30.05	15.45
11:45	72	40	20.0	3.60	36.40	16.40
12:00	106	58	23.7	5.30	52.30	18.40
12:15	120	66	24.8	6.00	59.60	18.80
12:30	72	41	21.0	3.60	37.20	17.40
12:45	-	-	-	-	-	-
13:00	64	40	15.5	3.20	36.80	16.79
13:15	100	50	10.8	0.00	49.60	10.80
13:30	140	60	14.4	0.00	60.00	14.40
13:45	151	66	14.5	0.00	65.60	14.50
14:00	136	68	15.4	0.00	65.00	15.40
14:15	108	64	11.9	0.00	64.00	11.90
14:30	108	70	13.6	0.00	70.40	13.60
14:45	63	42	10.0	0.00	42.40	10.00
15:00	58	48	10.5	0.00	48.00	10.50
15:15	76	58	14.2	0.00	57.60	14.20
15:30	51	37	11.7	0.00	36.80	11.70
15:45	55	31	9.5	0.00	31.20	9.50
16:00	49	27	9.5	0.00	27.20	9.50
16:15	44	22	7.4	0.00	21.60	7.40
16:30	24	12	5.5	0.00	12.00	5.50
16:45	18	10	5.0	0.00	10.40	5.00
17:00	10	10	5.0	0.00	9.60	5.00

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศเหนือที่มีการปรับค่า Ground Reflectance แล้ว

พิกุล

SOLAR RADIATION ON NORTHSIDE VERTICAL SURFACE

(Og=0.2)

13/4/99	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	NORTH SURFACE	VERTICAL	VERTICAL @
	Btu./hr sq.ft.	Btu./hr sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
9:00	110	46	16.8	5.50	40.10	11.30
9:15	122	54	18.0	6.10	48.30	11.90
9:30	136	58	19.0	6.80	50.80	12.20
9:45	141	64	19.6	7.05	56.95	12.55
10:00	106	29	17.7	5.30	23.50	12.40
10:15	108	30	18.5	5.40	24.20	13.10
10:30	142	48	20.2	7.10	40.90	13.10
10:45	144	49	22.6	7.20	41.60	15.40
11:00	66	30	17.3	3.30	27.10	14.00
11:15	84	38	19.0	4.20	34.20	14.80
11:30	55	31	17.0	2.75	28.45	14.25
11:45	72	38	19.5	3.60	34.80	15.90
12:00	106	57	21.7	5.30	51.50	16.40
12:15	120	67	23.0	6.00	61.20	17.00
12:30	72	38	20.0	3.60	34.80	16.40
12:45	-	-	-	-	-	-
13:00	64	42	17.9	3.20	38.40	14.70
13:15	100	42	15.0	5.00	36.60	10.00
13:30	140	44	18.0	3.50	40.50	14.50
13:45	151	47	17.8	3.78	43.43	14.03
14:00	136	48	15.8	3.40	44.60	12.40
14:15	108	50	15.6	2.70	46.90	12.90
14:30	108	56	17.2	2.70	53.30	14.50
14:45	63	26	12.3	1.58	24.03	10.73
15:00	58	36	13.3	1.45	34.55	11.85
15:15	76	49	16.3	1.90	46.90	14.40
15:30	51	36	13.1	1.28	34.73	11.83
15:45	55	30	10.5	1.38	29.03	9.13
16:00	49	30	11.3	1.23	29.18	10.08
16:15	44	24	10.0	1.10	22.90	8.90
16:30	24	14	9.0	0.60	13.40	8.40
16:45	18	12	7.0	0.45	11.55	6.55
17:00	10	10	7.0	0.25	9.75	6.75

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันออกเฉียงใต้ที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON SOUTH-EASTSIDE VERTICAL SURFACE

(Og=0.2) พิภูล

13/4/99	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	SE SURFACE	VERTICAL	VERTICAL @
	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
9:00	110	58	11.8	0.11	57.49	11.69
9:15	122	64	12.3	0.12	63.88	12.18
9:30	136	104	13.2	0.14	103.86	13.06
9:45	141	104	13.4	0.14	103.86	13.26
10:00	106	34	10.1	0.11	33.49	9.99
10:15	108	38	10.5	0.11	38.29	10.39
10:30	142	66	13.6	0.14	65.46	13.46
10:45	144	66	13.8	0.14	65.46	13.65
11:00	66	28	11.0	0.07	27.93	10.93
11:15	84	46	12.6	0.08	46.32	12.52
11:30	55	26	10.0	0.06	26.35	9.95
11:45	72	34	11.0	0.07	33.53	10.93
12:00	106	46	15.2	0.11	45.89	15.09
12:15	120	49	16.3	0.12	48.88	16.18
12:30	72	32	11.0	0.07	31.93	10.93
12:45	-	-	-	-	-	-
13:00	64	30	12.0	0.06	30.34	11.94
13:15	100	42	16.0	0.10	41.50	15.90
13:30	140	45	21.4	5.53	39.27	15.87
13:45	151	46	21.5	5.96	40.44	15.54
14:00	136	46	21.0	5.37	41.03	15.63
14:15	108	44	18.4	4.27	39.73	14.13
14:30	108	47	19.3	4.27	42.93	15.03
14:45	63	26	15.0	2.49	23.11	12.51
15:00	58	28	15.0	2.29	25.71	12.71
15:15	76	31	16.5	3.00	28.20	13.50
15:30	51	26	14.6	2.01	24.39	12.59
15:45	55	24	14.5	2.17	21.83	12.33
16:00	49	24	14.5	1.94	22.06	12.56
16:15	44	19	12.0	1.74	17.46	10.26
16:30	24	14	9.0	0.95	12.65	8.05
16:45	18	10	7.0	0.71	8.89	6.29
17:00	10	9	7.0	0.40	8.41	6.61

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันตกเฉียงใต้ที่มีการปรับค่า Ground Reflectance แล้ว พิภูล

SOLAR RADIATION ON SOUTH-WESTSIDE VERTICAL SURFACE

(Og=0.2)

13/4/99	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	SW SURFACE	VERTICAL	VERTICAL @
	Btu./hr.sq.ft	Btu./hr.sq.ft	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
9:00	110	34	17.1	5.50	28.10	11.60
9:15	122	42	17.8	6.10	35.50	11.70
9:30	136	44	18.9	6.80	37.20	12.10
9:45	141	49	18.9	7.05	41.75	11.85
10:00	106	39	16.0	5.30	33.90	10.70
10:15	108	32	17.2	5.40	26.60	11.80
10:30	142	44	18.1	7.10	36.90	11.00
10:45	144	56	19.5	7.20	48.80	12.30
11:00	66	36	15.0	3.30	32.70	11.70
11:15	84	46	15.2	4.20	42.20	11.00
11:30	55	37	14.3	2.75	34.05	11.55
11:45	72	47	14.7	3.60	43.60	11.10
12:00	106	66	16.6	5.30	60.30	11.30
12:15	120	58	18.0	6.00	51.60	12.00
12:30	72	42	14.7	3.60	38.00	11.10
12:45	-	-	-	-	-	-
13:00	64	41	13.8	3.20	37.60	10.60
13:15	100	56	15.6	5.00	51.00	10.60
13:30	140	58	12.3	0.00	57.60	12.30
13:45	151	64	12.1	0.00	64.00	12.10
14:00	136	64	10.4	0.00	64.00	10.40
14:15	108	64	10.2	0.00	64.00	10.20
14:30	108	70	10.5	0.00	69.60	10.50
14:45	63	38	11.0	0.00	37.60	11.00
15:00	58	36	10.0	0.00	36.00	10.00
15:15	76	48	10.7	0.00	48.00	10.70
15:30	51	43	11.0	0.00	43.20	11.00
15:45	55	33	10.5	0.00	32.80	10.50
16:00	49	22	10.4	0.00	22.00	10.40
16:15	44	16	9.6	0.00	16.00	9.60
16:30	24	9	9.0	0.00	9.00	9.00
16:45	18	9	9.0	0.00	9.00	9.00
17:00	10	8	8.0	0.00	8.00	8.00

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันตกเฉียงเหนือที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON NORTH-WESTSIDE VERTICAL SURFACE

(Og=0.2) พิภุด

13/4/99	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
TIME	HORIZONTAL	VERTICAL	VERTICAL @	NW SURFACE	VERTICAL	VERTICAL @
	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.	Btu./hr.sq.ft.
9:00	110	36	16.0	5.50	30.50	10.50
9:15	122	39	23.6	6.10	33.10	17.50
9:30	136	48	22.4	6.80	41.20	15.60
9:45	141	42	21.4	7.05	34.55	14.35
10:00	106	27	20.4	5.30	21.90	15.10
10:15	106	34	19.8	5.40	28.20	14.40
10:30	142	40	24.4	7.10	32.90	17.30
10:45	144	45	22.4	7.20	37.60	15.20
11:00	66	44	20.3	3.30	40.70	17.00
11:15	84	44	20.5	4.20	39.80	16.30
11:30	55	30	18.5	2.75	27.65	15.75
11:45	72	34	17.5	3.60	30.00	13.90
12:00	106	52	22.5	5.30	46.70	17.20
12:15	120	50	25.2	6.00	43.60	19.20
12:30	72	34	21.0	3.60	30.00	17.40
12:45	-	-	-	-	-	-
13:00	64	41	21.9	3.20	37.60	18.70
13:15	100	50	21.1	5.00	44.60	16.10
13:30	140	51	15.3	0.00	51.20	15.30
13:45	151	71	17.6	0.00	71.20	17.60
14:00	136	74	15.7	0.00	74.40	15.70
14:15	108	86	14.4	0.00	86.40	14.40
14:30	108	96	14.3	0.00	96.00	14.30
14:45	63	42	13.5	0.00	41.60	13.50
15:00	58	56	15.0	0.00	56.00	15.00
15:15	76	68	12.4	0.00	68.00	12.40
15:30	51	45	10.0	0.00	44.60	10.00
15:45	55	38	10.5	0.00	38.40	10.50
16:00	49	28	9.0	0.00	28.00	9.00
16:15	44	26	8.5	0.00	25.60	8.50
16:30	24	13	5.4	0.00	12.80	5.40
16:45	18	10	5.1	0.00	9.60	5.10
17:00	10	8	5.0	0.00	8.00	5.00

ตารางแสดงค่าปริมาณรังสีดวงอาทิตย์ ณ พื้นผิวแนวตั้งทิศตะวันออกเฉียงเหนือที่มีการปรับค่า Ground Reflectance แล้ว

SOLAR RADIATION ON NORTH-EASTSIDE VERTICAL SURFACE

(Og=0.2) พิภูล

13/4/99 TIME	OUTDOOR RADIATION(TEST)		INSHADE RADIATION(TEST)	Decrease irradiance	OUTDOOR RADIATION	INSHADE RADIATION
	HORIZONTAL	VERTICAL	VERTICAL @	NE SURFACE	VERTICAL	VERTICAL @
	Btu./hr. sq.ft.	Btu./hr. sq.ft.	Btu./hr. sq.ft.	Btu./hr. sq. ft.	Btu./hr. sq.ft.	Btu./hr. sq.ft.
9:00	110	54	14.5	0.66	52.94	13.84
9:15	122	58	14.9	0.73	57.67	14.17
9:30	136	64	17.9	0.82	63.18	17.08
9:45	141	60	18.1	0.85	59.15	17.25
10:00	106	33	16.5	0.64	32.16	15.86
10:15	108	31	15.7	0.65	30.55	15.05
10:30	142	50	18.1	0.85	48.75	17.25
10:45	144	42	18.2	0.86	40.74	17.34
11:00	66	32	17.5	0.40	31.60	17.10
11:15	84	41	18.0	0.50	40.30	17.50
11:30	55	30	15.0	0.33	30.07	14.67
11:45	72	32	16.0	0.43	31.57	15.57
12:00	106	56	19.5	0.64	55.36	18.86
12:15	120	56	19.6	0.72	55.28	18.88
12:30	72	41	15.0	0.43	40.37	14.57
12:45	-	-	-	-	-	-
13:00	64	34	17.5	0.38	34.02	17.12
13:15	100	42	15.2	0.60	41.00	14.60
13:30	140	43	17.7	2.80	40.40	14.90
13:45	151	42	17.0	3.02	38.58	13.98
14:00	136	41	17.9	2.72	38.08	15.18
14:15	108	44	16.2	2.16	41.84	14.04
14:30	108	42	14.1	2.16	40.24	11.94
14:45	63	33	14.0	1.26	31.54	12.74
15:00	58	32	13.7	1.16	30.84	12.54
15:15	76	38	14.8	1.52	36.08	13.28
15:30	51	27	13.5	1.02	26.18	12.48
15:45	55	25	14.2	1.10	23.70	13.10
16:00	49	24	14.0	0.98	23.02	13.02
16:15	44	22	14.0	0.88	21.52	13.12
16:30	24	13	7.7	0.48	12.32	7.22
16:45	18	10	6.0	0.36	9.24	5.64
17:00	10	9	5.5	0.20	8.60	5.30

ประวัติผู้เขียน

นางสาวกาญจนา สิริภักทรวิช เกิดเมื่อวันที่ 10 สิงหาคม พ.ศ. 2510 ที่จังหวัด เพชรบุรี เข้ารับการศึกษาที่โรงเรียนอรุณประดิษฐ์ และโรงเรียนสมถวิลราชดำริ ตามลำดับ สำเร็จ การศึกษาสถาปัตยกรรมศาสตร์บัณฑิตจากจุฬาลงกรณ์มหาวิทยาลัย ปีการศึกษา 2533 เมื่อจบ การศึกษาได้ทำงานในบริษัท ดีไซน์ บวก ดีเวลลอป จำกัด, บริษัท อิตาเลียนไทย และ บริษัท จุลดิศ ดีเวลลอป มหาชน ในตำแหน่งสถาปนิก และเข้ารับการศึกษาคณะต่อหลักสูตร สถาปัตยกรรมศาสตร์มหาบัณฑิต จุฬาลงกรณ์มหาวิทยาลัย ในภาควิชาสถาปัตยกรรมศาสตร์ สาขาวิชาเทคโนโลยีอาคาร ในปีการศึกษา 2538 ปัจจุบันเป็นสถาปนิกอิสระ

