

Air System Sizing Summary for Detention Center Default System

Project Name: Howard Co Detention Ctr
Prepared by: Global Facility Solutions, LLC

10/13/2008
09:31PM

Air System Information

Air System Name **Detention Center Default System**
Equipment Class **UNDEF**
Air System Type **SZCAV**

Number of zones 1
Floor Area 153700.0 ft²
Location Baltimore, Maryland

Sizing Calculation Information

Zone and Space Sizing Method:

Zone CFM Sum of space airflow rates
Space CFM Individual peak space loads

Calculation Months Jan to Dec
Sizing Data User-Modified

Central Cooling Coil Sizing Data

Total coil load 265.7 Tons
Total coil load 3188.8 MBH
Sensible coil load 2345.1 MBH
Coil CFM at Jul 1500 59578 CFM
Max block CFM 59578 CFM
Sum of peak zone CFM 59578 CFM
Sensible heat ratio 0.735
ft²/Ton 578.4
BTU/(hr-ft²) 20.7
Water flow @ 10.0 °F rise 638.10 gpm

Load occurs at Jul 1500
OA DB / WB 93.0 / 75.0 °F
Entering DB / WB 86.5 / 67.2 °F
Leaving DB / WB 49.9 / 48.4 °F
Coil ADP 45.8 °F
Bypass Factor 0.100
Resulting RH 36 %
Design supply temp. 55.0 °F
Zone T-stat Check 0 of 1 OK
Max zone temperature deviation 1.1 °F

Central Heating Coil Sizing Data

Max coil load 1500.1 MBH
Coil CFM at Des Htg 39274 CFM
Max coil CFM 59578 CFM
Water flow @ 20.0 °F drop 150.09 gpm

Load occurs at Des Htg
BTU/(hr-ft²) 9.8
Ent. DB / Lvg DB 53.4 / 88.9 °F

Preheat Coil Sizing Data

No heating coil loads occurred during this calculation.

Supply Fan Sizing Data

Actual max CFM 59578 CFM
Standard CFM 59247 CFM
Actual max CFM/ft² 0.39 CFM/ft²

Fan motor BHP 60.00 BHP
Fan motor kW 44.74 kW

Return Fan Sizing Data

Actual max CFM 59578 CFM
Standard CFM 59247 CFM
Actual max CFM/ft² 0.39 CFM/ft²

Fan motor BHP 15.00 BHP
Fan motor kW 11.19 kW

Outdoor Ventilation Air Data

Design airflow CFM 20000 CFM
CFM/ft² 0.13 CFM/ft²

CFM/person 31.75 CFM/person

Air System Design Load Summary for Detention Center Default System

Project Name: Howard Co Detention Ctr
Prepared by: Global Facility Solutions, LLC

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ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 93.0 °F / 75.0 °F			HEATING OA DB / WB 11.0 °F / 8.6 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	5340 ft²	205284	-	5340 ft²	-	-
Wall Transmission	15360 ft²	74755	-	15360 ft²	263046	-
Roof Transmission	47620 ft²	54645	-	47620 ft²	187342	-
Window Transmission	5340 ft²	50273	-	5340 ft²	214209	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	180 ft²	1729	-	180 ft²	3117	-
Floor Transmission	48100 ft²	0	-	48100 ft²	57344	-
Partitions	11160 ft²	76084	-	11160 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	153700 W	367012	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	115275 W	393295	-	0	0	-
People	630	176371	170100	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	96000	0	-	0	0
Safety Factor	5% / 5%	74772	8505	5%	36253	0
>> Total Zone Loads	-	1570221	178605	-	761310	0
Zone Conditioning	-	1390557	178605	-	716177	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	75%	163935	-	0	0	-
Plenum Lighting Load	30%	157327	-	0	0	-
Return Fan Load	39578 CFM	25981	-	39578 CFM	-17127	-
Ventilation Load	20000 CFM	297571	665116	13184 CFM	851493	0
Supply Fan Load	59578 CFM	152665	-	39274 CFM	-100638	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	10%	157022	-	10%	50186	-
>> Total System Loads	-	2345059	843721	-	1500091	0
Central Cooling Coil	-	2345059	843731	-	0	0
Central Heating Coil	-	0	-	-	1500091	-
Preheat Coil	-	0	-	-	0	-
>> Total Conditioning	-	2345059	843731	-	1500091	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Space Input Data

Howard Co Detention Ctr
Global Facility Solutions, LLC

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Lower Level New

1. General Details:

Floor Area 22100.0 ft²
Avg. Ceiling Height 9.0 ft
Building Weight 110.0 lb/ft²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
OA Requirement 1 4600.0 CFM
OA Requirement 2 0.00 CFM/ft²
Space Usage Defaults ASHRAE Std 62-2001

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
Wattage 1.00 W/ft²
Ballast Multiplier 1.00
Schedule Detention Schedule

2.2. Task Lighting:

Wattage 0.00 W/ft²
Schedule None

2.3. Electrical Equipment:

Wattage 0.75 W/ft²
Schedule Detention Schedule

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (ft ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
SW	900.0	5	0	1
NW	1800.0	18	0	0
NE	1600.0	0	16	0

3.1. Construction Types for Exposure SW

Wall Type Detention Center Exterior Wall
1st Window Type Detention Center Window
Door Type Detention Door

3.2. Construction Types for Exposure NW

Wall Type Detention Center Exterior Wall
1st Window Type Detention Center Window

3.3. Construction Types for Exposure NE

Wall Type Detention Center Exterior Wall
2nd Window Type Detention Center Window

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling 0.00 CFM
Design Heating 1000.00 CFM
Energy Analysis 0.00 CFM
Infiltration occurs only when the fan is off.

6. Floors:

Type Slab Floor On Grade
Floor Area 22100.0 ft²
Total Floor U-Value 0.100 BTU/(hr-ft²-°F)
Exposed Perimeter 500.0 ft
Edge Insulation R-Value 0.10 (hr-ft²-°F)/BTU

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition
Area 2800.0 ft²
U-Value 0.500 BTU/(hr-ft²-°F)

2.4. People:

Occupancy 150.0 People
Activity Level Sedentary Work
Sensible 280.0 BTU/hr/person
Latent 270.0 BTU/hr/person
Schedule Detention Schedule

2.5. Miscellaneous Loads:

Sensible 24000 BTU/hr
Schedule Detention Schedule
Latent 0 BTU/hr
Schedule None

Uncondit. Space Max Temp 90.0 °F
Ambient at Space Max Temp 95.0 °F
Uncondit. Space Min Temp 80.0 °F
Ambient at Space Min Temp 55.0 °F

Space Input Data

Howard Co Detention Ctr
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Lower Level Old

1. General Details:

Floor Area 56100.0 ft²
Avg. Ceiling Height 9.0 ft
Building Weight 110.0 lb/ft²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
OA Requirement 1 10800.0 CFM
OA Requirement 2 0.00 CFM/ft²
Space Usage Defaults ASHRAE Std 62-2001

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
Wattage 1.00 W/ft²
Ballast Multiplier 1.00
Schedule Detention Schedule

2.2. Task Lighting:

Wattage 0.00 W/ft²
Schedule None

2.3. Electrical Equipment:

Wattage 0.75 W/ft²
Schedule Detention Schedule

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (ft ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
SW	2000.0	5	0	2
SE	1780.0	18	0	0
NE	2000.0	0	20	0

3.1. Construction Types for Exposure SW

Wall Type Detention Center Exterior Wall
1st Window Type Detention Center Window
Door Type Detention Door

3.2. Construction Types for Exposure SE

Wall Type Detention Center Exterior Wall
1st Window Type Detention Center Window

3.3. Construction Types for Exposure NE

Wall Type Detention Center Exterior Wall
2nd Window Type Detention Center Window

4. Roofs, Skylights:

(No Roof or Skylight data).

5. Infiltration:

Design Cooling 0.00 CFM
Design Heating 1000.00 CFM
Energy Analysis 0.00 CFM
Infiltration occurs only when the fan is off.

6. Floors:

Type Slab Floor On Grade
Floor Area 26000.0 ft²
Total Floor U-Value 0.100 BTU/(hr-ft²-°F)
Exposed Perimeter 1000.0 ft
Edge Insulation R-Value 0.10 (hr-ft²-°F)/BTU

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition
Area 2760.0 ft²
U-Value 0.500 BTU/(hr-ft²-°F)

2.4. People:

Occupancy 160.0 People
Activity Level Sedentary Work
Sensible 280.0 BTU/hr/person
Latent 270.0 BTU/hr/person
Schedule Detention Schedule

2.5. Miscellaneous Loads:

Sensible 24000 BTU/hr
Schedule Detention Schedule
Latent 0 BTU/hr
Schedule None

Uncondit. Space Max Temp 90.0 °F
Ambient at Space Max Temp 95.0 °F
Uncondit. Space Min Temp 80.0 °F
Ambient at Space Min Temp 55.0 °F

Space Input Data

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Upper Level New

1. General Details:

Floor Area 19400.0 ft²
Avg. Ceiling Height 9.0 ft
Building Weight 110.0 lb/ft²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
OA Requirement 1 4600.0 CFM
OA Requirement 2 0.00 CFM/ft²
Space Usage Defaults ASHRAE Std 62-2001

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
Wattage 1.00 W/ft²
Ballast Multiplier 1.00
Schedule Detention Schedule

2.2. Task Lighting:

Wattage 0.00 W/ft²
Schedule None

2.3. Electrical Equipment:

Wattage 0.75 W/ft²
Schedule Detention Schedule

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (ft ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
SW	1600.0	18	0	1
NW	1800.0	18	0	0
NE	1600.0	0	16	0

3.1. Construction Types for Exposure SW

Wall Type Detention Center Exterior Wall
1st Window Type Detention Center Window
Door Type Detention Door

3.2. Construction Types for Exposure NW

Wall Type Detention Center Exterior Wall
1st Window Type Detention Center Window

3.3. Construction Types for Exposure NE

Wall Type Detention Center Exterior Wall
2nd Window Type Detention Center Window

4. Roofs, Skylights:

Exp.	Roof Gross Area (ft ²)	Roof Slope (deg.)	Skylight Qty.
H	19400.0	0	0

4.1. Construction Types for Exposure H

Roof Type Detention Center Roof

5. Infiltration:

Design Cooling 0.00 CFM
Design Heating 1000.00 CFM
Energy Analysis 0.00 CFM
Infiltration occurs only when the fan is off.

6. Floors:

Type Floor Above Conditioned Space
(No additional input required for this floor type).

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition

2.4. People:

Occupancy 150.0 People
Activity Level Sedentary Work
Sensible 280.0 BTU/hr/person
Latent 270.0 BTU/hr/person
Schedule Detention Schedule

2.5. Miscellaneous Loads:

Sensible 24000 BTU/hr
Schedule Detention Schedule
Latent 0 BTU/hr
Schedule None

Space Input Data

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Area 2800.0 ft²
U-Value 0.500 BTU/(hr-ft²-°F)
Uncondit. Space Max Temp 90.0 °F
Ambient at Space Max Temp 95.0 °F
Uncondit. Space Min Temp 80.0 °F
Ambient at Space Min Temp 55.0 °F

7.2. 2nd Partition Details:
(No partition data).

Space Input Data

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Upper Level Old

1. General Details:

Floor Area 56100.0 ft²
Avg. Ceiling Height 9.0 ft
Building Weight 110.0 lb/ft²

1.1. OA Ventilation Requirements:

Space Usage User-Defined
OA Requirement 1 10800.0 CFM
OA Requirement 2 0.00 CFM/ft²
Space Usage Defaults ASHRAE Std 62-2001

2. Internals:

2.1. Overhead Lighting:

Fixture Type Recessed (Unvented)
Wattage 1.00 W/ft²
Ballast Multiplier 1.00
Schedule Detention Schedule

2.2. Task Lighting:

Wattage 0.00 W/ft²
Schedule None

2.3. Electrical Equipment:

Wattage 0.75 W/ft²
Schedule Detention Schedule

3. Walls, Windows, Doors:

Exp.	Wall Gross Area (ft ²)	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
SW	2000.0	18	0	0
SE	1800.0	10	0	0
NE	2000.0	0	16	0

3.1. Construction Types for Exposure SW

Wall Type Detention Center Exterior Wall
1st Window Type Detention Center Window

3.2. Construction Types for Exposure SE

Wall Type Detention Center Exterior Wall
1st Window Type Detention Center Window

3.3. Construction Types for Exposure NE

Wall Type Detention Center Exterior Wall
2nd Window Type Detention Center Window

4. Roofs, Skylights:

Exp.	Roof Gross Area (ft ²)	Roof Slope (deg.)	Skylight Qty.
H	28220.0	0	0

4.1. Construction Types for Exposure H

Roof Type Detention Center Roof

5. Infiltration:

Design Cooling 0.00 CFM
Design Heating 1000.00 CFM
Energy Analysis 0.00 CFM
Infiltration occurs only when the fan is off.

6. Floors:

Type Floor Above Conditioned Space
(No additional input required for this floor type).

7. Partitions:

7.1. 1st Partition Details:

Partition Type Wall Partition

Area 2800.0 ft²
U-Value 0.500 BTU/(hr-ft²-°F)

Space Input Data

Howard Co Detention Ctr
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Uncondit. Space Max Temp 90.0 °F
Ambient at Space Max Temp 95.0 °F
Uncondit. Space Min Temp 80.0 °F
Ambient at Space Min Temp 55.0 °F

7.2. 2nd Partition Details:
(No partition data).

Detention Center Default System Input Data

Project Name: Howard Co Detention Ctr
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1. General Details:

Air System Name Detention Center Default System
Equipment Type Undefined
Air System Type Single Zone CAV
Number of zones 1

2. System Components:

Ventilation Air Data:

Airflow Control Constant Ventilation Airflow
Ventilation Sizing Method Sum of Space OA Airflows
Unocc. Damper Position Closed
Damper Leak Rate 5 %
Outdoor Air CO2 Level 400 ppm

Preheat Coil Data:

Setpoint 50.0 °F
Heating Source Any
Schedule JFMAMJJASOND
Coil position Downstream of Mixing Point

Central Cooling Data:

Supply Air Temperature 55.0 °F
Coil Bypass Factor 0.100
Cooling Source Any
Schedule JFMAMJJASOND
Capacity Control Constant Temperature - Fan Cycled

Central Heating Data:

Supply Temperature 100.0 °F
Heating Source Any
Schedule JFMAMJJASOND
Capacity Control Constant Temperature - Fan Cycled

Supply Fan Data:

Fan Type Forward Curved
Configuration Draw-thru
Fan Performance 60.0 BHP

Duct System Data:

Supply Duct Data:

Duct Heat Gain 10 %
Duct Leakage 10 %

Return Duct or Plenum Data:

Return Air Via Return Air Plenum
Wall Heat Gain to Plenum 0 %
Roof Heat Gain to Plenum 75 %
Lighting Heat Gain to Plenum 30 %

Return Fan Data:

Fan Type Forward Curved
Fan Performance 15.0 BHP

3. Zone Components:

Space Assignments:

Zone 1: Zone 1	
Lower Level New	x1
Lower Level Old	x1
Upper Level New	x1
Upper Level Old	x1

Thermostats and Zone Data:

Zone All
Cooling T-stat: Occ. 75.0 °F
Cooling T-stat: Unocc. 80.0 °F
Heating T-stat: Occ. 73.0 °F
Heating T-stat: Unocc. 65.0 °F
T-stat Throttling Range 3.00 °F
Diversity Factor 100 %
Direct Exhaust Airflow 20000.0 CFM

Detention Center Default System Input Data

Project Name: Howard Co Detention Ctr
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Direct Exhaust Fan kW 60.0 kW

Thermostat Schedule Detention Center Tstat

Unoccupied Cooling is Available

Supply Terminals Data:

Zone All

Terminal Type Diffuser

Minimum Airflow 0.00 CFM/person

Zone Heating Units:

Zone All

Zone Heating Unit Type None

Zone Unit Heat Source Any

Zone Heating Unit Schedule JFMAMJJASOND

4. Sizing Data (User-Modified):

System Sizing Data:

Cooling Supply Temperature 55.0 °F

Supply Fan Airflow 59577.8 CFM

Ventilation Airflow 20000.0 CFM

Heating Supply Temperature 90.0 °F

Hydronic Sizing Specifications:

Chilled Water Delta-T 10.0 °F

Hot Water Delta-T 20.0 °F

Safety Factors:

Cooling Sensible 5 %

Cooling Latent 5 %

Heating 5 %

Zone Sizing Data:

Zone Airflow Sizing Method Sum of space airflow rates

Space Airflow Sizing Method Individual peak space loads

Zone	Supply Airflow (CFM)	Zone Htg Unit (MBH)	Reheat Coil (MBH)	- (CFM)
1	53620.0	-	-	

5. Equipment Data

No Equipment Data required for this system.

Wall Constructions

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Detention Center Exterior Wall

Wall Details

Outside Surface Color **Medium**
Absorptivity **0.675**
Overall U-Value **0.276** BTU/(hr-ft²-°F)

Wall Layers Details (Inside to Outside)

Layers	Thickness in	Density lb/ft ³	Specific Ht. BTU / (lb - °F)	R-Value (hr-ft ² -°F)/BTU	Weight lb/ft ²
Inside surface resistance	0.000	0.0	0.00	0.68500	0.0
1/2-in gypsum plaster	0.500	45.0	0.32	0.32051	1.9
LW concrete block	4.000	38.0	0.20	1.51500	12.7
8-in HW concrete	8.000	140.0	0.20	0.76667	93.3
Outside surface resistance	0.000	0.0	0.00	0.33300	0.0
Totals	12.500	-		3.62018	107.9

Roof Constructions

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Detention Center Roof

Roof Details

Outside Surface Color **Dark**
Absorptivity **0.900**
Overall U-Value **0.063** BTU/(hr-ft²-°F)

Roof Layers Details (Inside to Outside)

Layers	Thickness in	Density lb/ft ³	Specific Ht. BTU / (lb - °F)	R-Value (hr-ft ² -°F)/BTU	Weight lb/ft ²
Inside surface resistance	0.000	0.0	0.00	0.68500	0.0
1/2-in gypsum plaster	0.500	45.0	0.32	0.32051	1.9
22 gage steel deck	0.034	489.0	0.12	0.00011	1.4
R-14 board insulation	2.000	2.0	0.22	13.88889	0.3
Built-up roofing	0.600	70.0	0.35	0.53191	3.5
Outside surface resistance	0.000	0.0	0.00	0.33300	0.0
Totals	3.134	-		15.75942	7.1

Window Constructions

Howard Co Detention Ctr
Global Facility Solutions, LLC

10/13/2008
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Detention Cell Window

Window Details:

Detailed Input **Yes**
Height **1.00** ft
Width **5.00** ft
Frame Type **Aluminum with thermal breaks**
Internal Shade Type **None**
Overall U-Value **0.669** BTU/(hr-ft²-°F)
Overall Shade Coefficient **0.524**

Glass Details:

Gap Type **1/4" Air Space**

Glazing	Glass Type	Transmissivity	Reflectivity	Absorptivity
Outer Glazing	1/4" clear	0.792	0.079	0.129
Glazing #2	1/4" bronze reflective	0.312	0.305	0.383
Glazing #3	not used	1.000	0.000	0.000

Detention Center Window

Window Details:

Detailed Input **Yes**
Height **6.00** ft
Width **5.00** ft
Frame Type **Aluminum with thermal breaks**
Internal Shade Type **None**
Overall U-Value **0.647** BTU/(hr-ft²-°F)
Overall Shade Coefficient **0.749**

Glass Details:

Gap Type **1/4" Air Space**

Glazing	Glass Type	Transmissivity	Reflectivity	Absorptivity
Outer Glazing	1/8" clear	0.841	0.078	0.081
Glazing #2	1/8" gray tint	0.631	0.065	0.304
Glazing #3	not used	1.000	0.000	0.000

Design Weather Parameters & MSHGs

Howard Co Detention Ctr
Global Facility Solutions, LLC

10/13/2008
09:32PM

Design Parameters:

City Name **Baltimore**
 Location **Maryland**
 Latitude **39.2** Deg.
 Longitude **76.7** Deg.
 Elevation **154.0** ft
 Summer Design Dry-Bulb **93.0** °F
 Summer Coincident Wet-Bulb **75.0** °F
 Summer Daily Range **18.8** °F
 Winter Design Dry-Bulb **11.0** °F
 Winter Design Wet-Bulb **8.6** °F
 Atmospheric Clearness Number **1.00**
 Average Ground Reflectance **0.20**
 Soil Conductivity **0.800** BTU/(hr-ft-°F)
 Local Time Zone (GMT +/- N hours) **5.0** hours
 Consider Daylight Savings Time **No**
 Simulation Weather Data **Baltimore (TM2)**
 Current Data is **2001 ASHRAE Handbook**
 Design Cooling Months **January to December**

Design Day Maximum Solar Heat Gains

(The MSHG values are expressed in BTU/(hr-ft²))

Month	N	NNE	NE	ENE	E	ESE	SE	SSE	S
January	19.9	19.9	19.9	83.1	153.9	210.8	240.9	250.7	253.7
February	24.3	24.3	47.8	131.8	190.2	234.0	248.2	244.2	239.0
March	29.1	29.1	102.3	166.2	219.3	238.4	236.0	215.6	202.9
April	33.8	67.9	142.1	194.8	219.4	224.8	200.1	167.9	149.0
May	37.1	103.1	163.5	206.7	219.0	206.8	170.1	128.8	107.0
June	46.7	113.7	171.1	208.4	214.5	197.7	156.5	112.2	90.7
July	38.1	99.0	163.2	202.4	212.3	202.8	167.1	125.8	104.7
August	35.5	66.2	138.6	186.6	213.6	216.8	193.9	162.4	144.4
September	30.1	30.1	96.7	156.2	206.1	229.2	225.8	208.3	195.5
October	25.1	25.1	53.4	118.9	186.2	223.8	241.4	237.6	231.1
November	20.2	20.2	20.2	84.1	150.2	205.2	237.5	249.4	248.6
December	17.9	17.9	17.9	65.8	135.4	196.6	231.7	248.4	252.0
Month	SSW	SW	WSW	W	WNW	NW	NNW	HOR	Mult
January	253.6	243.0	205.2	156.3	81.7	19.9	19.9	137.1	1.00
February	243.9	248.3	235.2	191.0	128.3	54.4	24.3	183.6	1.00
March	213.9	232.4	240.5	214.0	171.2	100.0	29.1	225.2	1.00
April	166.9	199.0	224.0	221.6	195.6	139.7	72.0	252.4	1.00
May	128.1	171.1	206.0	220.1	206.4	161.8	104.3	265.0	1.00
June	110.8	158.3	195.4	216.7	207.0	168.6	116.0	267.7	1.00
July	124.3	167.8	199.8	216.3	201.6	159.1	104.4	262.8	1.00
August	160.9	192.3	215.9	213.9	188.9	135.6	71.3	248.2	1.00
September	208.4	226.0	228.9	206.5	155.1	96.7	30.1	216.2	1.00
October	237.5	240.9	223.1	185.1	125.2	46.8	25.1	179.5	1.00
November	248.3	234.2	207.1	147.2	84.6	20.2	20.2	135.4	1.00
December	250.0	230.6	196.4	130.6	67.7	17.9	17.9	116.0	1.00

Mult. = User-defined solar multiplier factor.

Cooling Design Temperature Profiles

Howard Co Detention Ctr
Global Facility Solutions, LLC

10/13/2008
09:33PM

Location: Baltimore, Maryland

(Dry and Wet Bulb temperatures are expressed in °F)

Hr	January		February		March		April		May		June	
	DB	WB	DB	WB	DB	WB	DB	WB	DB	WB	DB	WB
0000	39.4	38.3	41.8	41.1	51.6	50.5	60.4	58.3	69.2	65.9	74.6	68.5
0100	38.4	37.5	40.8	40.2	50.6	49.7	59.4	57.8	68.2	65.6	73.6	68.2
0200	37.5	36.7	39.9	39.4	49.7	49.0	58.5	57.3	67.3	65.2	72.7	67.9
0300	36.8	36.1	39.2	38.6	49.0	48.3	57.8	56.9	66.6	65.0	72.0	67.7
0400	36.2	35.7	38.6	38.1	48.4	47.9	57.2	56.6	66.0	64.8	71.4	67.5
0500	36.0	35.5	38.4	37.9	48.2	47.7	57.0	56.5	65.8	64.8	71.2	67.5
0600	36.4	35.8	38.8	38.3	48.6	48.0	57.4	56.7	66.2	64.9	71.6	67.6
0700	37.3	36.6	39.7	39.2	49.5	48.8	58.3	57.2	67.1	65.2	72.5	67.9
0800	39.0	38.0	41.4	40.8	51.2	50.2	60.0	58.1	68.8	65.7	74.2	68.4
0900	41.5	39.9	43.9	43.0	53.7	52.1	62.5	59.3	71.3	66.5	76.7	69.1
1000	44.3	42.0	46.7	45.5	56.5	54.3	65.3	60.7	74.1	67.4	79.5	70.0
1100	47.5	44.4	49.9	48.1	59.7	56.6	68.5	62.3	77.3	68.4	82.7	70.9
1200	50.5	46.5	52.9	50.5	62.7	58.7	71.5	63.7	80.3	69.3	85.7	71.8
1300	52.7	48.0	55.1	52.3	64.9	60.2	73.7	64.7	82.5	70.0	87.9	72.4
1400	54.2	49.0	56.6	53.4	66.4	61.2	75.2	65.4	84.0	70.4	89.4	72.9
1500	54.8	49.4	57.2	53.8	67.0	61.6	75.8	65.6	84.6	70.6	90.0	73.0
1600	54.2	49.0	56.6	53.4	66.4	61.2	75.2	65.4	84.0	70.4	89.4	72.9
1700	52.9	48.2	55.3	52.4	65.1	60.4	73.9	64.8	82.7	70.0	88.1	72.5
1800	50.9	46.7	53.3	50.8	63.1	59.0	71.9	63.8	80.7	69.4	86.1	71.9
1900	48.4	45.0	50.8	48.9	60.6	57.3	69.4	62.7	78.2	68.7	83.6	71.2
2000	46.0	43.3	48.4	46.9	58.2	55.5	67.0	61.5	75.8	67.9	81.2	70.5
2100	43.9	41.7	46.3	45.1	56.1	54.0	64.9	60.5	73.7	67.3	79.1	69.9
2200	42.0	40.3	44.4	43.5	54.2	52.6	63.0	59.6	71.8	66.7	77.2	69.3
2300	40.5	39.1	42.9	42.1	52.7	51.4	61.5	58.8	70.3	66.2	75.7	68.9

Hr	July		August		September		October		November		December	
	DB	WB	DB	WB	DB	WB	DB	WB	DB	WB	DB	WB
0000	77.6	70.7	77.6	70.7	73.2	68.1	64.0	61.7	55.6	53.9	44.4	43.3
0100	76.6	70.4	76.6	70.4	72.2	67.8	63.0	61.2	54.6	53.3	43.4	42.5
0200	75.7	70.1	75.7	70.1	71.3	67.5	62.1	60.8	53.7	52.7	42.5	41.8
0300	75.0	69.9	75.0	69.9	70.6	67.2	61.4	60.5	53.0	52.2	41.8	41.1
0400	74.4	69.8	74.4	69.8	70.0	67.1	60.8	60.2	52.4	51.8	41.2	40.7
0500	74.2	69.7	74.2	69.7	69.8	67.0	60.6	60.1	52.2	51.7	41.0	40.5
0600	74.6	69.8	74.6	69.8	70.2	67.1	61.0	60.3	52.6	52.0	41.4	40.8
0700	75.5	70.1	75.5	70.1	71.1	67.4	61.9	60.7	53.5	52.6	42.3	41.6
0800	77.2	70.6	77.2	70.6	72.8	67.9	63.6	61.5	55.2	53.7	44.0	43.0
0900	79.7	71.3	79.7	71.3	75.3	68.7	66.1	62.6	57.7	55.2	46.5	44.9
1000	82.5	72.1	82.5	72.1	78.1	69.5	68.9	63.8	60.5	56.9	49.3	47.1
1100	85.7	73.0	85.7	73.0	81.3	70.5	72.1	65.2	63.7	58.8	52.5	49.4
1200	88.7	73.8	88.7	73.8	84.3	71.4	75.1	66.5	66.7	60.5	55.5	51.5
1300	90.9	74.5	90.9	74.5	86.5	72.0	77.3	67.4	68.9	61.7	57.7	53.0
1400	92.4	74.8	92.4	74.8	88.0	72.4	78.8	68.0	70.4	62.5	59.2	54.0
1500	93.0	75.0	93.0	75.0	88.6	72.6	79.4	68.2	71.0	62.8	59.8	54.4
1600	92.4	74.8	92.4	74.8	88.0	72.4	78.8	68.0	70.4	62.5	59.2	54.0
1700	91.1	74.5	91.1	74.5	86.7	72.1	77.5	67.4	69.1	61.8	57.9	53.2
1800	89.1	73.9	89.1	73.9	84.7	71.5	75.5	66.6	67.1	60.7	55.9	51.8
1900	86.6	73.3	86.6	73.3	82.2	70.8	73.0	65.6	64.6	59.3	53.4	50.1
2000	84.2	72.6	84.2	72.6	79.8	70.1	70.6	64.6	62.2	57.9	51.0	48.3
2100	82.1	72.0	82.1	72.0	77.7	69.4	68.5	63.7	60.1	56.7	48.9	46.8
2200	80.2	71.5	80.2	71.5	75.8	68.9	66.6	62.8	58.2	55.5	47.0	45.3
2300	78.7	71.0	78.7	71.0	74.3	68.4	65.1	62.2	56.7	54.6	45.5	44.2