Location/Run: CHICAGO\_IL\_USA TMY2-94846

Location: Chicago, IL

Design Days:   
CHICAGO\_IL\_USA Annual Heating 99% Design Conditions DB, MaxDB= -17.3°C

CHICAGO\_IL\_USA Annual Cooling 1% Design Conditions, MaxDB= 31.5°C MCWB= 23.0°C

Building:

Single floor rectangular building 100 ft x 50 ft. 5 zones - 4 exterior, 1 interior, zone height 8 feet. Exterior zone depth is 12 feet. There is a 2 foot high return plenum: the overall building height is 10 feet. There are windows on all 4 facades; the south and north facades have glass doors.

The south facing glass is shaded by overhangs. The walls are woodshingle over plywood, R11 insulation, and gypboard. The roof is a gravel built up roof with R-3 mineral board insulation and plywood sheathing.

The windows are of various single and double pane construction with 3mm and 6mm glass and either 6mm or 13mm argon or air gap. The window to wall ratio is approxomately 0.29.

The south wall and door have overhangs.

The building is oriented 30 degrees east of north.

Floor Area: 463.6 m2 (5000 ft2)

Number of Stories: 1

Zone Description Details:

(0,15.2,0) (30.5,15.2,0)

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| \ (26.8,11.6,0) / |

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\* |(3.7,11.6,0) | \*

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\* | (26.8,3.7,0)| \*

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\* / (3.7,3.7,0) \ \*

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| Overhang | |

|\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_| | window/door = \*

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(0,0,0) (30.5,0,0)

Internal gains description: lighting is 1.5 watts/ft2, office equip is 1.0 watts/ft2. There is 1 occupant per 100 ft2 of floor area. The infiltration is 0.25 air changes per hour.

Internal Mass: None

People: 50

Lights: 7500 W

HVAC: 3 zone terminal reheat system using single constant volume air loop. Central chilled water coil scheduled to provide 16 C winter and 13 C summer supply air temperature. Terminal reheat coils trim supply air temperature to meet zone thermostat set point. Thermostat setting at 20 C in winter with 15 C set back temperature, 24 C in summer with 30 C set back temperature. Cooling coil off in winter, reheat coil on all year.

Zonal Equipment: AirTerminal:SingleDuct:ConstantVolume:Reheat

Central Air Handling Equipment: Yes

System Equipment Autosize: No (chilled water, condenser, and hot water loop volumes are autosized)

Coils: Coil:Cooling:Water:DetailedGeometry

Pumps: Pump:VariableSpeed

Boilers: None

Chillers: Chiller:Electric, water cooled condenser (PlantEquipmentOperation:CoolingLoad set up for electric chiller only). Chiller:ConstantCOP or DistrictCooling may be used if desired in various combinations by changing priority control equipment list name in COOLING LOAD RANGE BASED OPERATION object.

Towers: CoolingTower:SingleSpeed (leaving water set point = Wet bulb, each towers UA = 175, water flow rate = 0.0011 m3/s, air flow rate = 8 m3/s, capacity is determined using UA and Design Water Flow Rate method)