TM-1436
Appendices I-III

FERMILAB CENTRAL COMPUTING FACILITY

SITE WEATHER DATA AND DESIGN PROFILES

12 NOVEMBER, 1986

ANALYST: S.F.KRSTULOVICH

FERMILAB CONSTRUCTION ENGINEERING SERVICES

WEATHER SUMMARY

Site Name : AURORA,IL FERMI, User Defined Date : 11-10-86

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TABLE 1. SITE DESIGN WEATHER DATA

Latitude = 42 deg. Elevation = 744 Feet
Summer design dry bulb = 93 F Winter design dry bulb = -6 F
Summer design wet bulb = 76 F Daily range = 20 F

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TABLE 2. PEAK SOLAR GAINS (Btu/(hr-sqft))

Month	N	NE	E	SE	S	SW	W	NW	H
January	5.6	13.2	107.4	173.8	189.1	173.8	107.4	13.2	107.6
July	17.1	144.7	189.6	148.8	88.4	148.8	189.6	144.7	264.5

Carrier peak solar data used.
Values corrected for altitude (744 ft), design dewpoint (69.3 F)
% Available Sunshine : Average data: Summer = 73 % ; Winter = 35 %

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TABLE 3. OCCUPANCY SCHEDULE DATA

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Begin	OFF	7 A	7 A	7 A	7 A	7 A	9 A
End	OFF	6 P	6 P	6 P	6 P	6 P	2 P

Average occupancy : 10.0 hrs/day; 6.0 days/week
Number of summer shutdown days = 0

****

TABLE 4. TEMPERATURE BIN DATA

Bin Dry Bulb (F)	Bin Wet Bulb (F)	Bin Specific Humidity (lb/lb)	Bin Hours (hr/yr) Total Hours	Occupied Hours	Unoccupied Hours
93	76.0	0.0153	0.0	0.0	0.0
90	71.8	0.0124	40.4	25.8	14.6
85	69.0	0.0114	95.7	59.4	36.3
80	66.3	0.0106	244.6	145.3	99.3
75	63.6	0.0099	453.0	237.7	215.3
70	60.9	0.0093	628.2	270.6	357.6
65	58.2	0.0087	727.8	264.5	463.3
60	55.4	0.0083	755.4	255.0	500.4
55	52.7	0.0079	726.7	244.7	482.0
50	50.0	0.0076	679.7	232.1	447.6
45	45.0	0.0063	652.2	229.5	422.7
40	40.0	0.0052	651.3	237.6	413.7
35	35.0	0.0043	655.5	238.5	417.0
30	30.0	0.0035	635.6	218.2	417.4
25	25.0	0.0028	569.7	174.5	395.2
20	20.0	0.0022	459.3	122.4	336.9
15	15.0	0.0017	330.9	78.1	252.8
10	10.0	0.0013	211.8	46.1	165.7
5	5.0	0.0010	121.4	25.1	96.3
0	0.0	0.0008	63.6	12.7	50.9
-5	-5.0	0.0006	31.5	6.2	25.3
-6	-6.0	0.0006	25.7	4.6	21.1
-6	-6.0	0.0006	0.0	0.0	0.0

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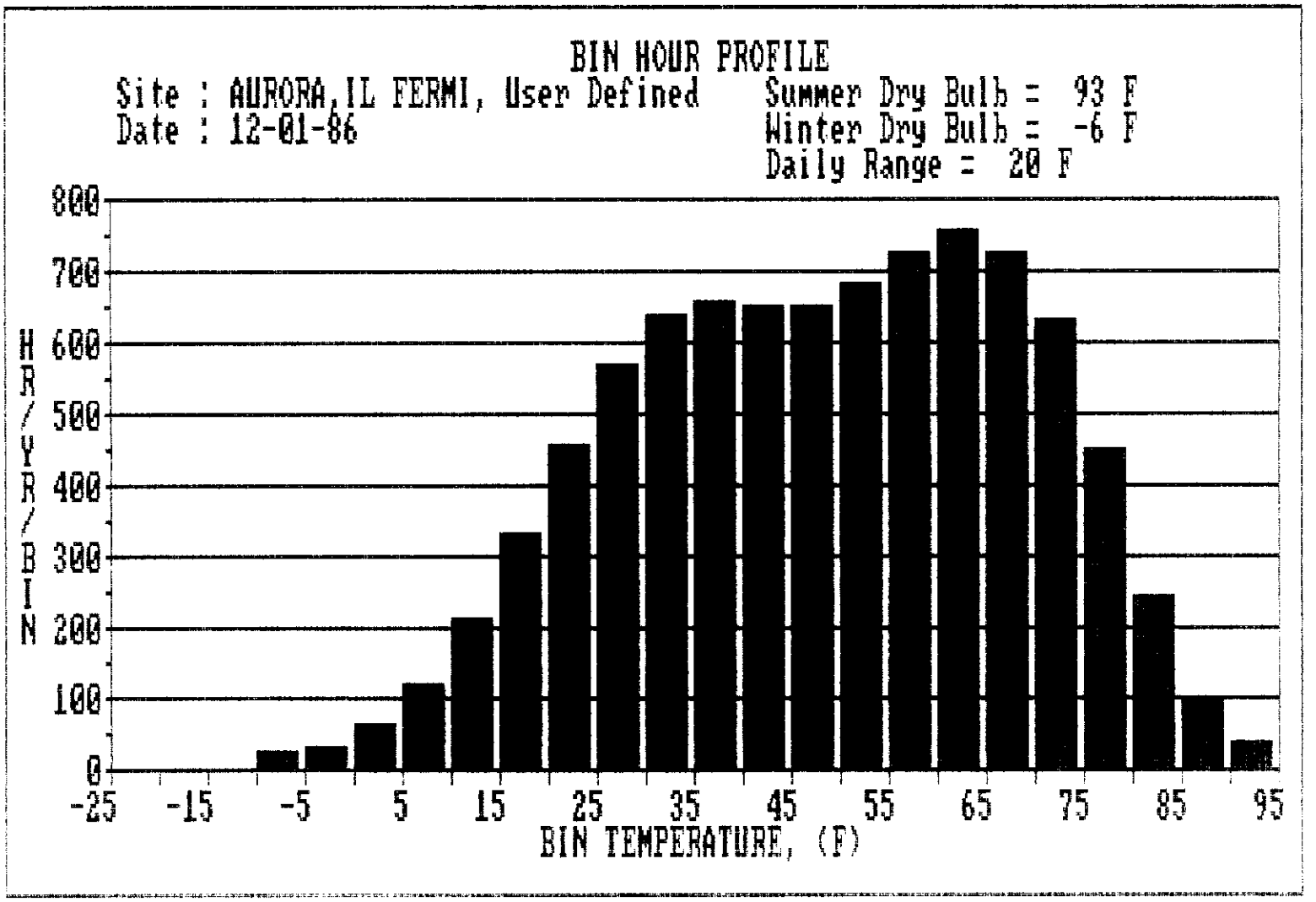

BIN HOUR PROFILE
Site : AURORA,IL FERMI, User Defined
Date : 12-01-86
Summer Dry Bulb = 93 F
Winter Dry Bulb = -6 F
Daily Range = 20 F
HR/YR/BIN
800
700
600
500
400
300
200
100
0
-25
-15
-5
5
15
25
35
45
55
65
75
85
95
BIN TEMPERATURE, (F)

FERMILAB CENTRAL COMPUTING FACILITY

SITE ICW COOLING POND DATA AND PROFILES

12 NOVEMBER, 1986

ANALYST: S.F.KRSTULOVICH

FERMILAB CONSTRUCTION ENGINEERING SERVICES

FERMILAB
ENGINEERING NOTE

SECTION	PROJECT	SERIAL-CATEGORY	PAGE
			1 of 1

SUBJECT: WATER QUALITY TABULATION ESTIMATE

NAME: S.F. KRSTULOVICH

DATE: 7.31.85

REVISION DATE:

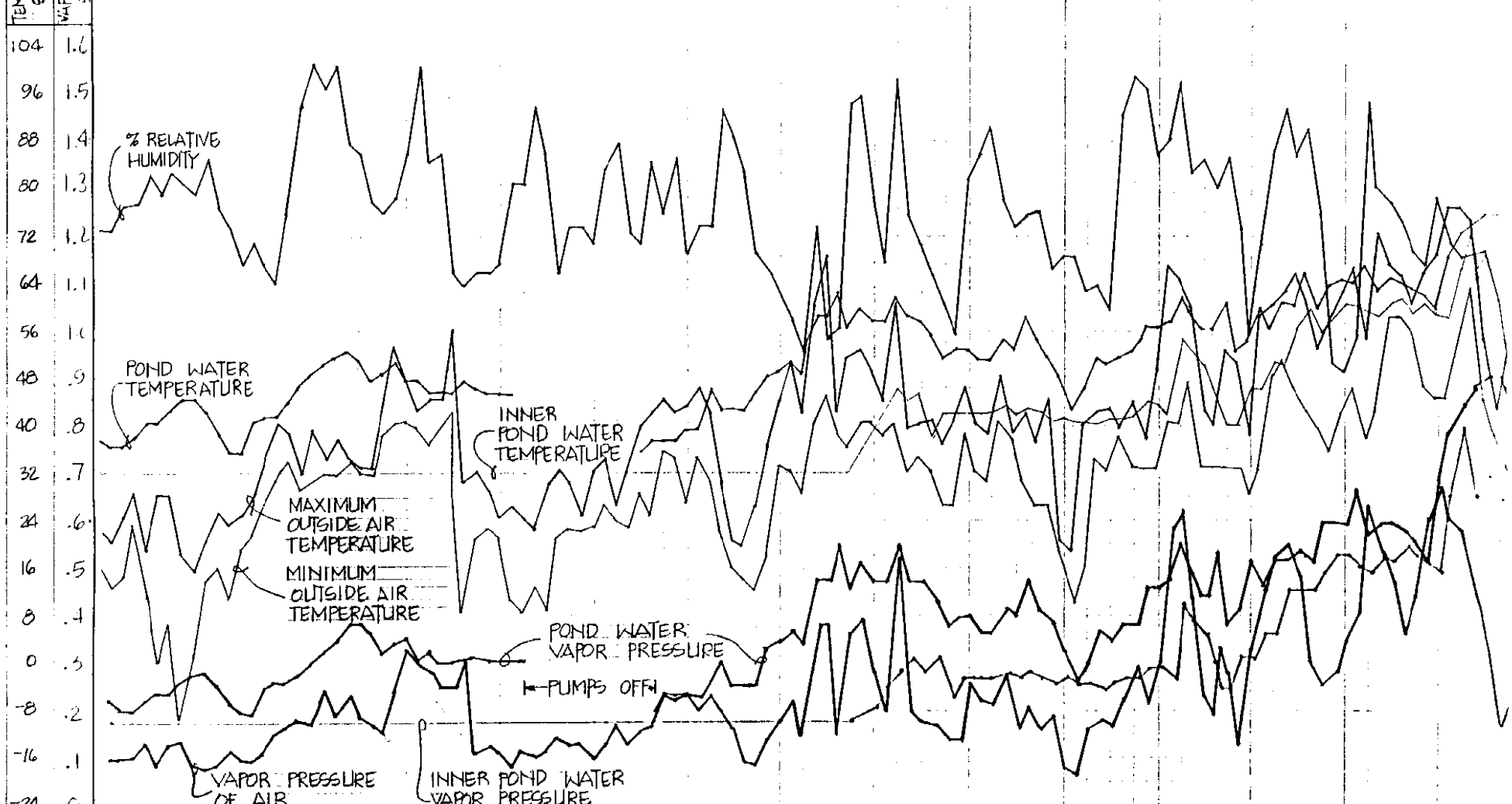
PARAMETER	PER. D. BOWRON DOMESTIC WATER	PER D. BOWRON ICY WATER	PER U.S. GEO SURVEY EST. LOCAL WELLS
SOURCE	2 DEEP WELLS	CASEY'S POND	PEORIA IL MOD. BY 7 STATE FACTORS
TOTAL HARDNESS AS $CaCO_3$			394-455 ppm
HCO_3 AS $CaCO_3$			292-348 ppm
Ca AS $CaCO_3$	300 ppm	200-250 ppm (INCREASES IN WINTER)	227-275 ppm
TOTAL ALKALINITY	350 ppm EST.	140 ppm	292-348 ppm
DISSOLVED SOLIDS	475-500 ppm	350 ppm	448-583 ppm
LANGELIER pCa	2.5	2.6 TO 2.4 EST.	2.6
LANGELIER p ALK.	2.2	2.6	2.2
LANGELIER C AT 120°	1.75	1.72	1.75
SUM pH	6.45	6.92 TO 6.72 EST.	6.55
ACTUAL pH	7.5	8.0 TO 8.5	7.5
LANGELIER SATURATION INDEX	+1.05	+1.08 TO +1.78 EST.	+.95
WATER ANTICIPATED CHARACTERISTICS	MODERATELY SCALING	MODERATE TO HEAVY SCALING.	MODERATELY SCALING

FERMILAB
ENGINEERING NOTE

SECTION	PROJECT	SERIAL-CATEGORY	PAGE

SUBJECT: FERMILAB PONDS
"1974" TEMPERATURE, HUMIDITY, & VAPOR PRESSURE

NAME: PER: M. PALMER
DATE: 8-5-85
REVISION DATE:



FERMILAB ENGINEERING NOTE

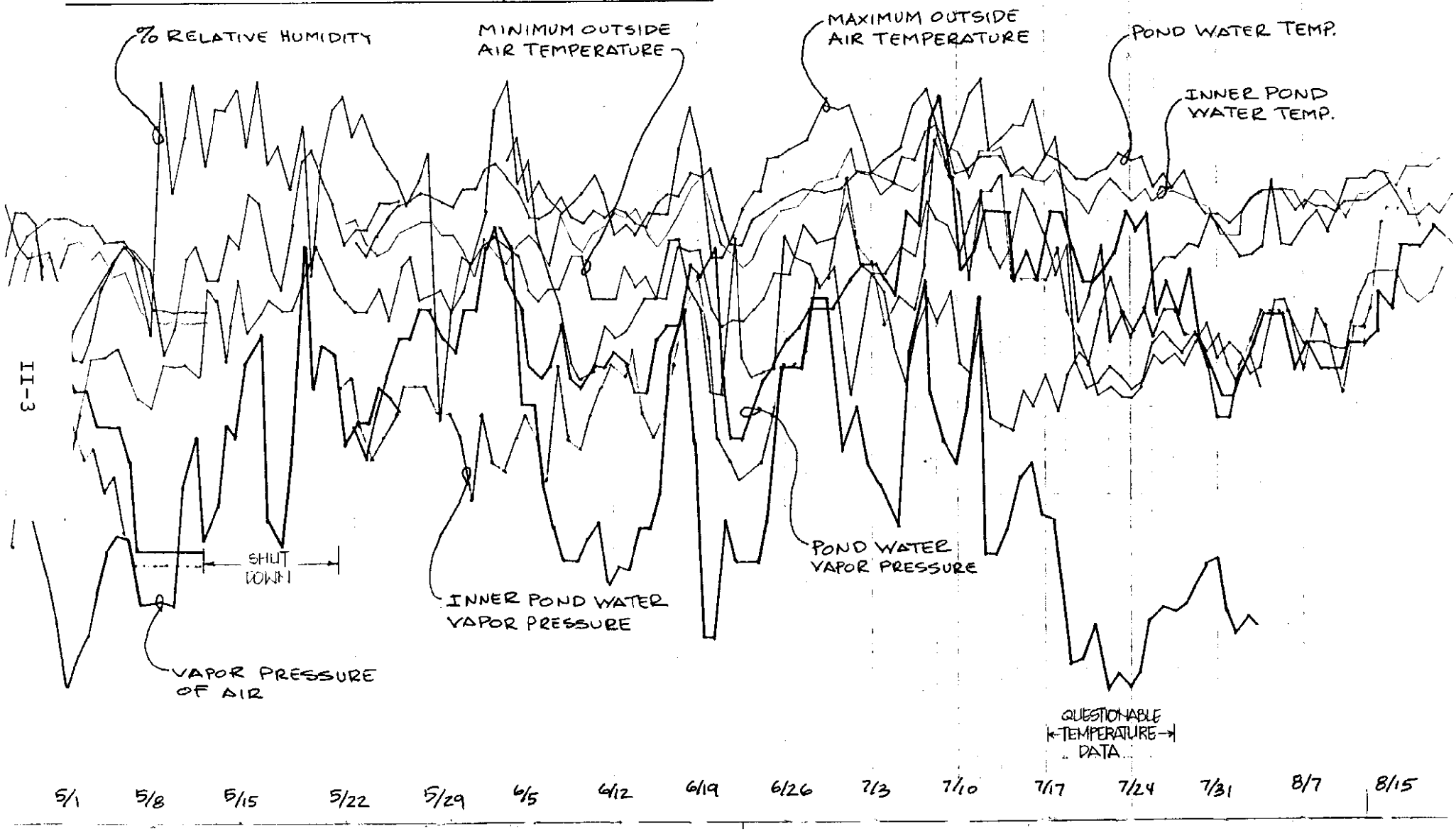
SECTION	PROJECT	SERIAL-CATEGORY	PAGE

SUBJECT: FERMILAB PONDS

NAME: PER: M. PALMER

DATE | REVISION DATE

NOTE: SEE EU SCALES ON PREVIOUS SHEET



FERMILAB
ENGINEERING NOTE

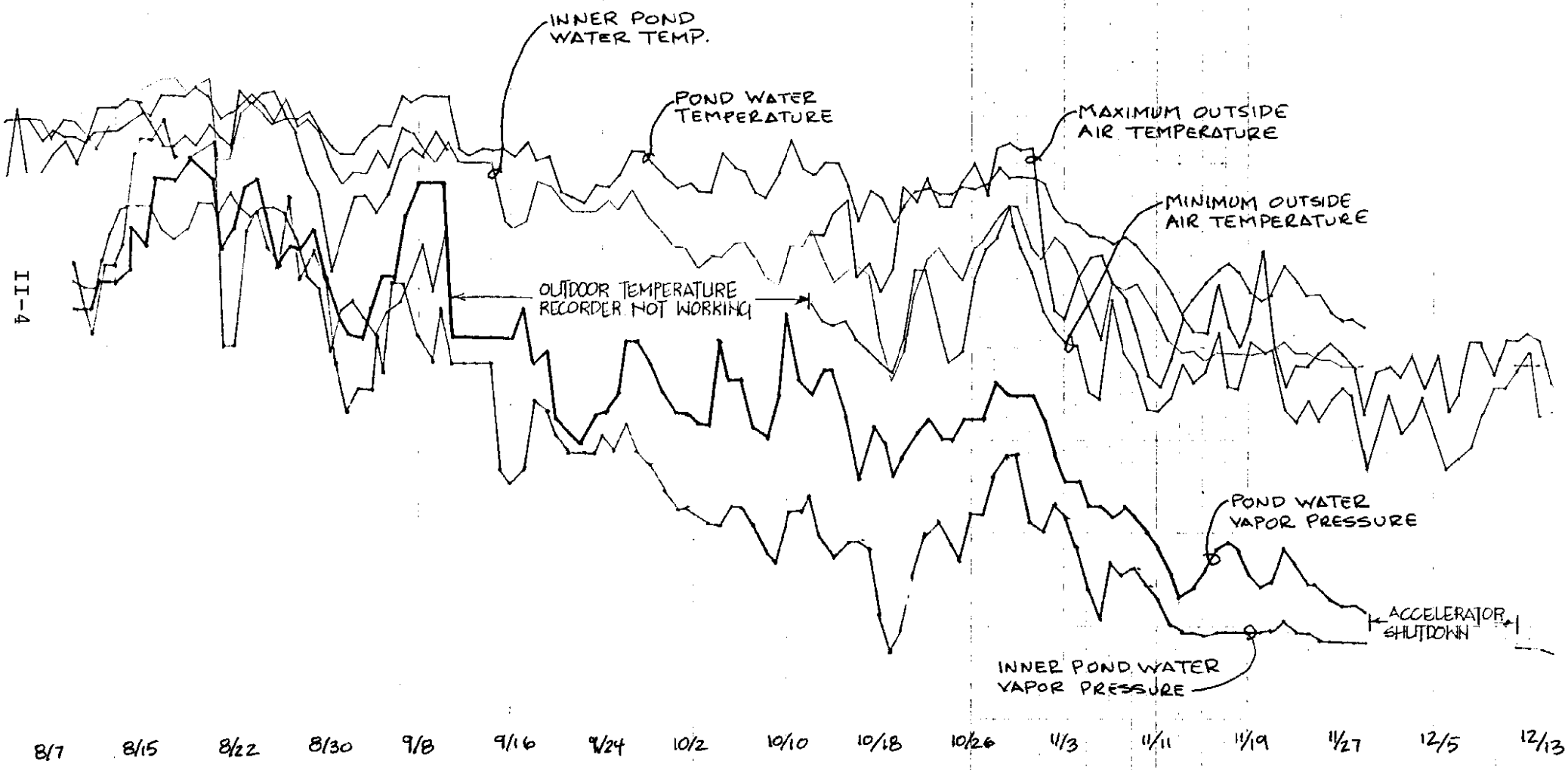
SECTION	PROJECT	SERIAL-CATEGORY	PAGE

SUBJECT: FERMILAB PONDS

NAME: PER: M. PALMER

DATE | REVISION DATE

NOTE: SEE EU SCALES ON PREVIOUS PAGE



FERMILAB CENTRAL COMPUTING FACILITY

BASIC BUILDING COMPUTER SIMULATION MODEL

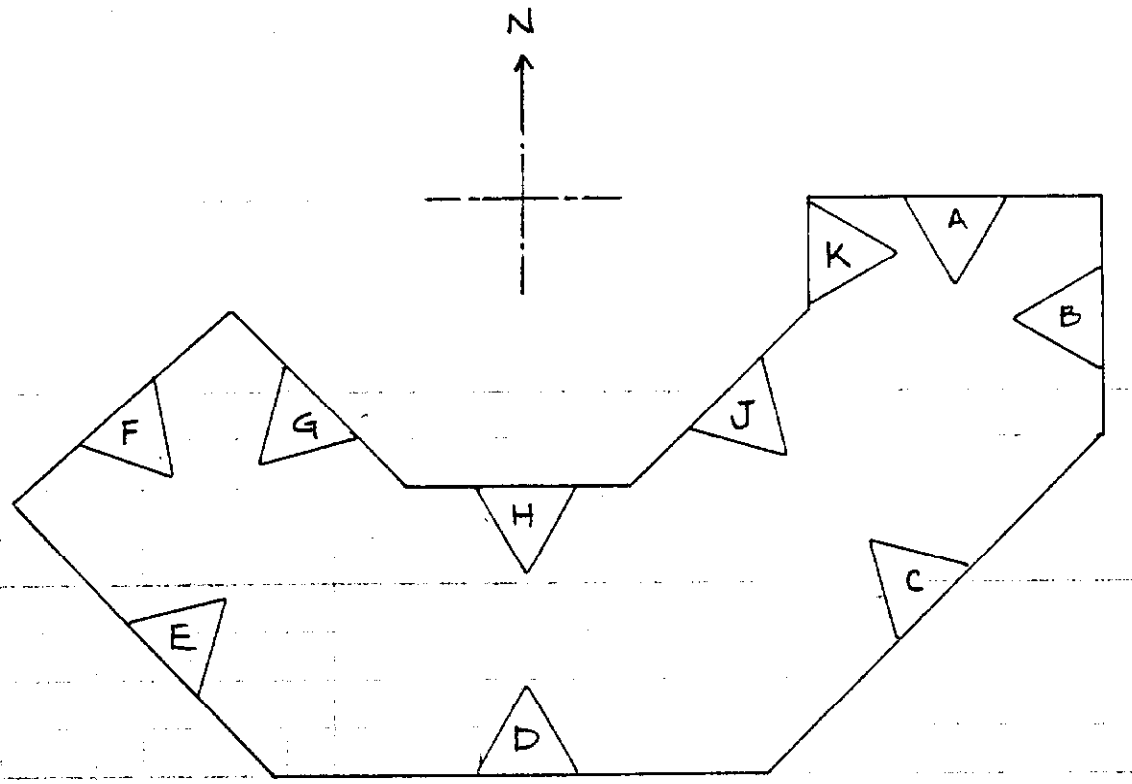
12 NOVEMBER, 1986

ANALYST: S.F.KRSTULOVICH

FERMILAB CONSTRUCTION ENGINEERING SERVICES

FERMILAB ENGINEERING NOTE	SECTION	PROJECT	SERIAL-CATEGORY	PAGE
	C.E.S.	10.5.3	CCF	

SUBJECT	NAME	
CCF - COMPUTER BASIC SIMULATION MODEL	S.F. KRSTULOVICH	
	DATE 11.12.86	REVISION DATE

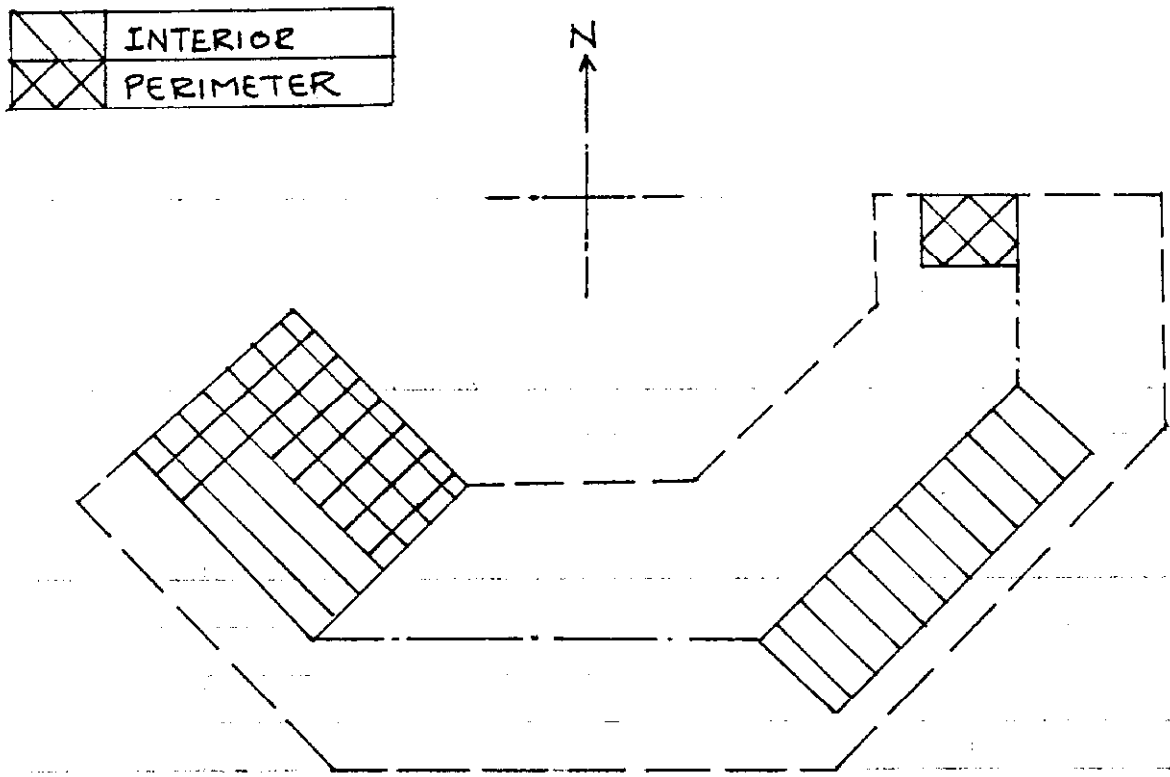


CCF PHYSICAL SURFACE PARAMETERS

SURFACE	ORIENTATION	AREA (SF PER FLOOR)	GLASS COEFFICIENT	NON-GLASS COEFFICIENT
A	NORTH	1560	1.0 (1560)	0.0 (0)
B	EAST	2320	0.3 (690)	0.7 (1630)
C	SOUTHEAST	4640	0.3 (1380)	0.7 (3260)
D	SOUTH	4640	0.3 (1380)	0.7 (3260)
E	SOUTHWEST	4640	0.3 (1380)	0.7 (3260)
F	NORTHWEST	1560	1.0 (1560)	0.0 (0)
G	NORTHEAST	760	1.0 (760)	0.0 (0)
H	NORTH	760	1.0 (760)	0.0 (0)
J	NORTHWEST	760	1.0 (760)	0.0 (0)
K	WEST	380	1.0 (380)	0.0 (0)
ROOF	HORIZONTAL	25500 (3RD FL. ONLY)	0.0 (0)	1.0 (25500)

FERMILAB ENGINEERING NOTE	SECTION	PROJECT	SERIAL-CATEGORY	PAGE
	C.E.S.	10.5.3	CCF	

SUBJECT	NAME	
SUBCONSTRUCT 1/4 (FIRST FLOOR) OF THREE	S.F. KRSTULOVICH	
	DATE 11.12.86	REVISION DATE

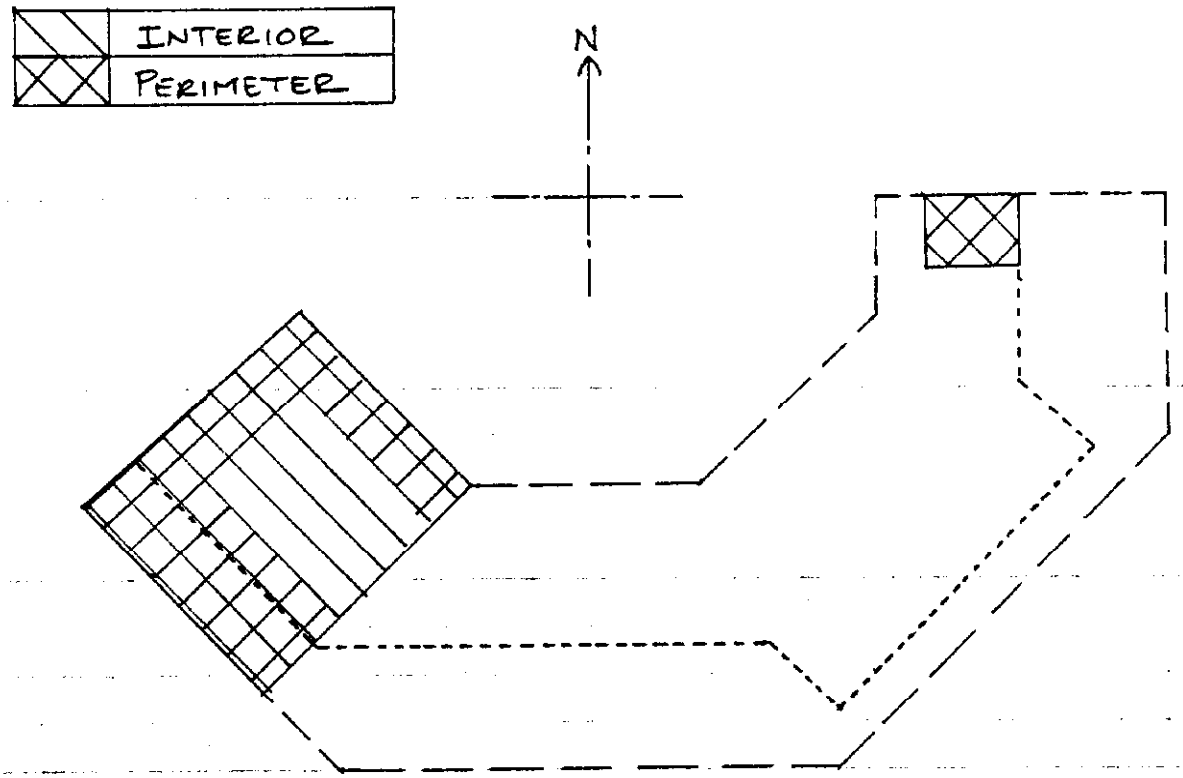


SUBCONSTRUCT 1/4 PHYSICAL PARAMETERS

PERIMETER ZONE		INTERIOR ZONE	
LINE ITEM	DESCRIPTION	LINE ITEM	DESCRIPTION
FLOOR AREA	3150 SF	FLOOR AREA	7360 SF (3180 W/ MEZZ)
UNCONDITIONED WALLS	840 SF	UNCONDITIONED WALLS	5900 SF
NORTH GLASS	520 SF		
NORTHWEST GLASS	900 SF		
NORTH EAST GLASS	760 SF		

FERMILAB ENGINEERING NOTE	SECTION	PROJECT	SERIAL-CATEGORY	PAGE
	C.E.S.	10-5-3	CCF	

SUBJECT	NAME	
SUBCONSTRUCT 1/4 (SECOND FLOOR) OF THREE	S.F. KRSTULOVICH	
	DATE 11·12·86	REVISION DATE

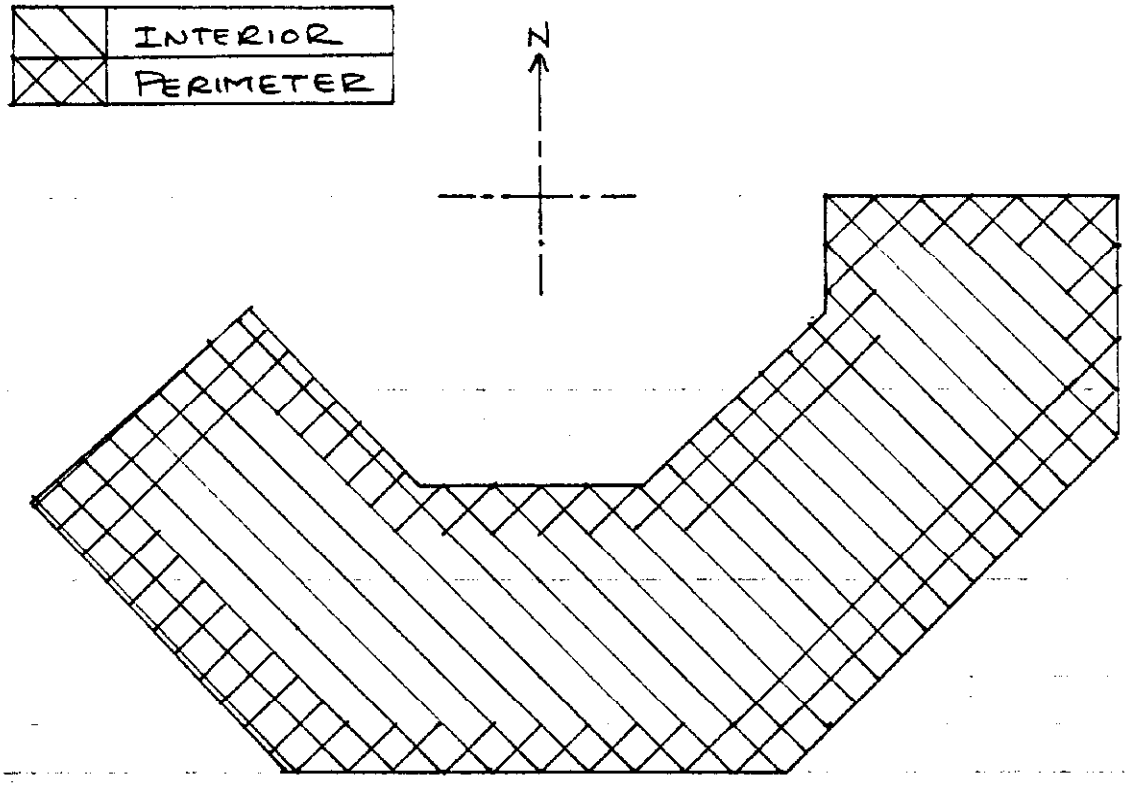


SUBCONSTRUCT 1/4 PHYSICAL PARAMETERS

PERIMETER ZONE		INTERIOR ZONE	
LINE ITEM	DESCRIPTION	LINE ITEM	DESCRIPTION
FLOOR AREA	4010 SF	FLOOR AREA	1650 SF
UNCONDITIONED FLOOR	1800 SF		
NORTH GLASS	520 SF		
SOUTHWEST GLASS	960 SF		
NORTHWEST GLASS	1560 SF		
NORTHEAST GLASS	760 SF		
SOUTHWEST WALL	2280 SF		

FERMILAB ENGINEERING NOTE	SECTION	PROJECT	SERIAL-CATEGORY	PAGE
	C.E.S.	10-5-3	CCF	

SUBJECT	NAME	
SUBCONSTRUCT 1/4 (THIRD FLOOR) OF THREE	S. F. KRSTULOVICH	
	DATE 11.12.86	REVISION DATE

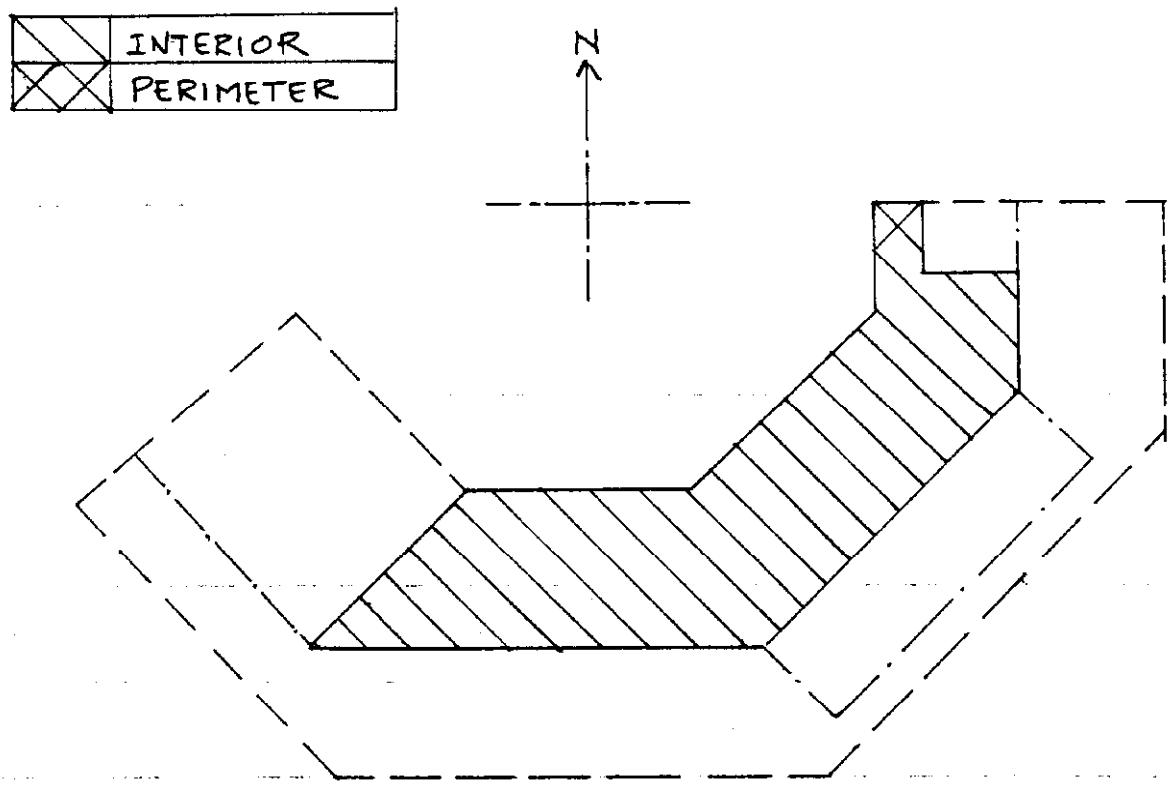


SUBCONSTRUCT 1/4 PHYSICAL PARAMETERS

PERIMETER ZONE		INTERIOR ZONE	
LINE ITEM	DESCRIPTION	LINE ITEM	DESCRIPTION
FLOOR AREA	12740 SF	FLOOR AREA	14000 SF (1240 W/MEZZ.)
ROOF AREA	12740 SF	ROOF AREA	12760 SF
NORTH GLASS	2320 SF		
EAST GLASS	690 SF		
SOUTHEAST GLASS	1380 SF		
SOUTH GLASS	1380 SF		
SOUTHWEST GLASS	1380 SF		
WEST GLASS	380 SF		
NORTHWEST GLASS	760 SF		
NORTHEAST GLASS	760 SF		
EAST WALL	1630 SF		
SOUTHEAST WALL	3260 SF		
SOUTHWEST WALL	3260 SF		
SOUTH WALL	3260 SF		

FERMILAB ENGINEERING NOTE	SECTION	PROJECT	SERIAL-CATEGORY	PAGE
	C.E.S.	10-5-3	CCF	

SUBJECT	NAME	
SUBCONSTRUCT 2/4 (FIRST FLOOR) OF TWO	S.F. KRSTULOVICH	
	DATE 11·12·86	REVISION DATE

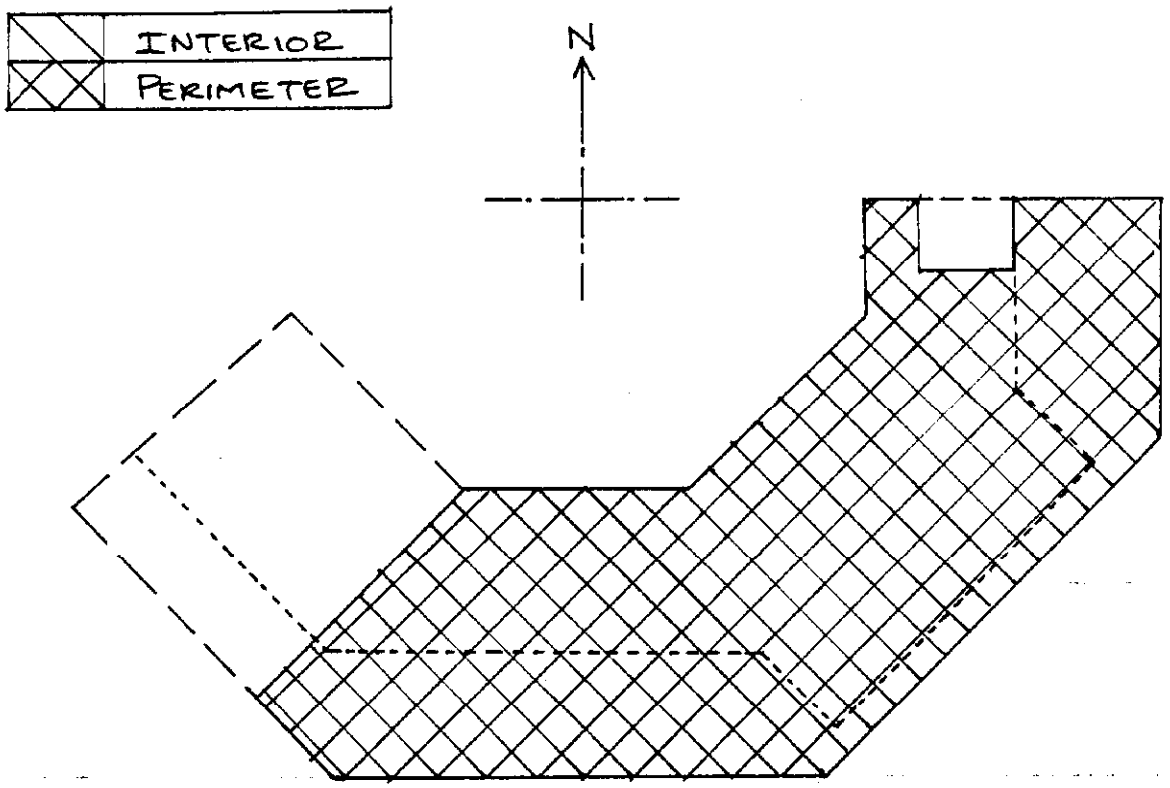


SUBCONSTRUCT 2/4 PHYSICAL PARAMETERS

PERIMETER ZONE		INTERIOR ZONE	
LINE ITEM	DESCRIPTION	LINE ITEM	DESCRIPTION
FLOOR AREA	9920 SF		
UNCONDITIONED WALLS	1980 SF		
NORTH GLASS	260 SF		
NORTHWEST GLASS	760 SF		
WEST GLASS	380 SF		

FERMILAB ENGINEERING NOTE	SECTION	PROJECT	SERIAL-CATEGORY	PAGE
	C.E.S.	10-5-3	CCF	

SUBJECT	NAME	DATE	REVISION DATE
SUBCONSTRUCT 2/4 (SECOND FLOOR) OF TWO	S.F. KRSTULOVICH	11·12·86	

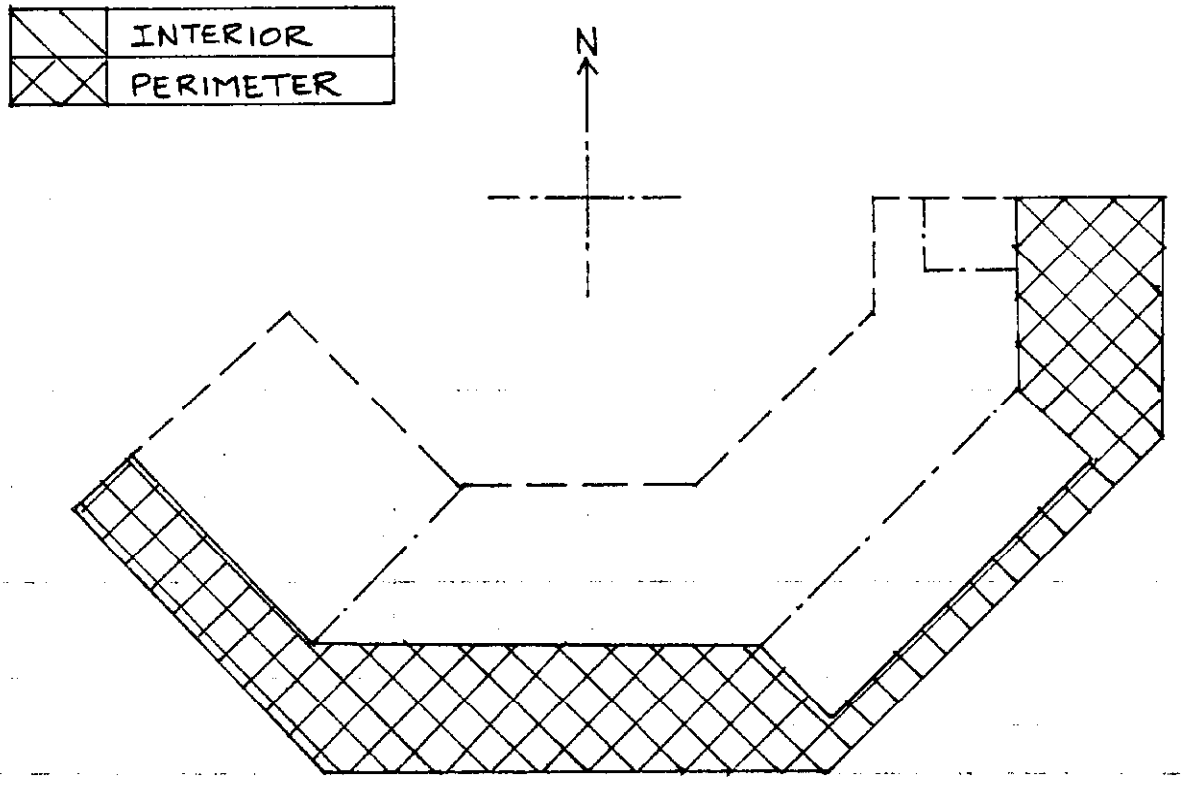


SUBCONSTRUCT 2/4 PHYSICAL PARAMETERS

PERIMETER ZONE		INTERIOR ZONE	
LINE ITEM	DESCRIPTION	LINE ITEM	DESCRIPTION
FLOOR AREA	19840 SF		
UNCONDITIONED FLOOR	6450 SF		
NORTH GLASS	1800 SF		
EAST GLASS	690 SF		
SOUTHEAST GLASS	1380 SF		
SOUTH GLASS	1380 SF		
SOUTHWEST GLASS	420 SF		
NORTHWEST GLASS	760 SF		
WEST GLASS	380 SF		
EAST WALL	1630 SF		
SOUTHEAST WALL	3260 SF		
SOUTH WALL	3260 SF		
SOUTHWEST WALL	980 SF		

FERMILAB ENGINEERING NOTE	SECTION	PROJECT	SERIAL-CATEGORY	PAGE
	C.E.S.	10-5-3	CCF	

SUBJECT	NAME	DATE	REVISION DATE
SUBCONSTRUCT 3/4 (FIRST FLOOR) OF ONE	S.F. KRSTULOVICH	11·12·86	

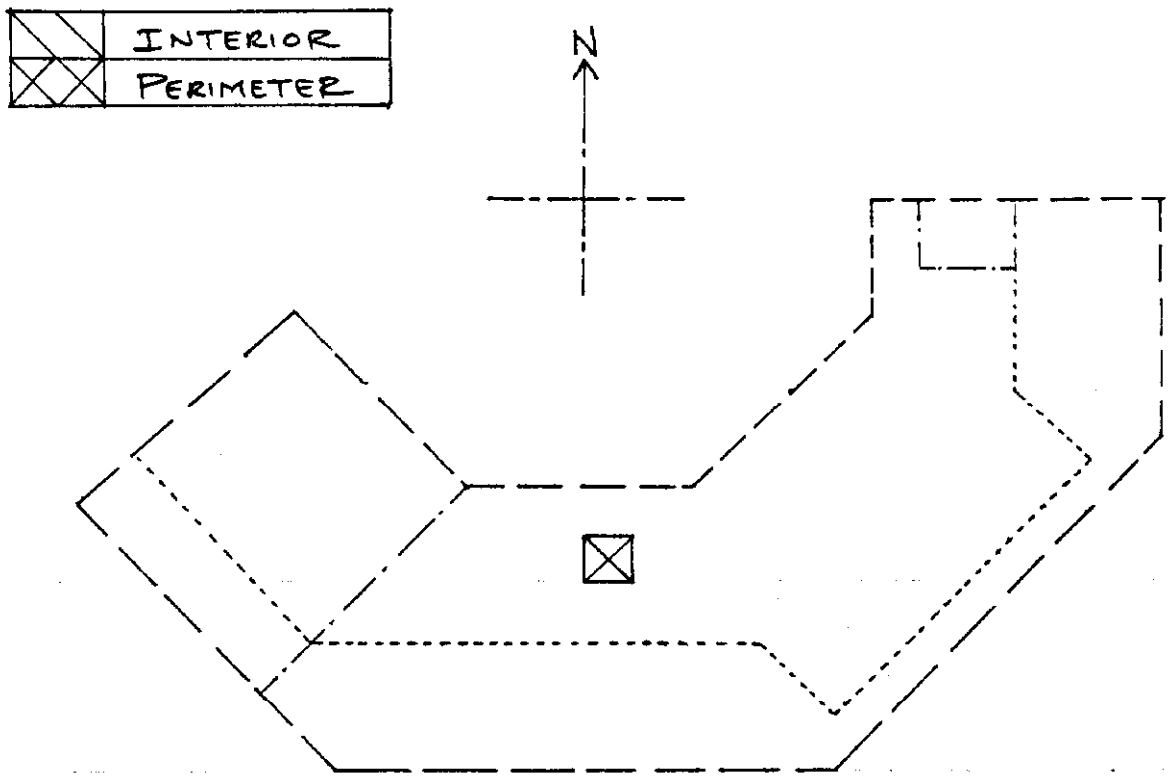


SUBCONSTRUCT 3/4 PHYSICAL PARAMETERS

PERIMETER ZONE		INTERIOR ZONE	
LINE ITEM	DESCRIPTION	LINE ITEM	DESCRIPTION
FLOOR AREA	8250 SF		
NORTH GLASS	780 SF		
EAST GLASS	690 SF		
SOUTHEAST GLASS	1380 SF		
SOUTH GLASS	1380 SF		
SOUTHWEST GLASS	1380 SF		
NORTHWEST GLASS	660 SF		
EAST WALL	1630 SF		
SOUTHEAST WALL	3260 SF		
SOUTH WALL	3260 SF		
SOUTHWEST WALL	3260 SF		

FERMILAB ENGINEERING NOTE	SECTION	PROJECT	SERIAL-CATEGORY	PAGE
	C.E.S.	10-5-3	CCF	

SUBJECT	NAME	
SUBCONSTRUCT 4/4 (SECOND FLOOR) OF ONE	S.F. KRSTULOVICH	
	DATE 11·12·86	REVISION DATE



SUBCONSTRUCT 4/4 PHYSICAL PARAMETERS			
PERIMETER ZONE		INTERIOR ZONE	
LINE ITEM	DESCRIPTION	LINE ITEM	DESCRIPTION
FLOOR AREA	1 SF		

COMPLEX BUILDING INPUT SUMMARY

Building Name : CCF SUBCONSTRUCT 1/4 Date : 11-10-86
Site : AURORA,IL FERMI, User Defined 60117862.0

****

1. ROOM CONDITIONS AND FLOOR AREAS
   Thermostat settings : Cooling = 78 F; Heating = 68 F; Setback = 5 F
   Warm-up factor = 0 %; Room design relative humidity = 50 %
   Floor Areas: Perimeter = 19,900 Sqft; Interior = 23,010 Sqft
   Cooling provided during unoccupied period.

2. WALLS, ROOF, GLASS, SKYLIGHTS:

Exposure	Area (Sqft)	U-Factor BTU/(hr-sqft-F)	Glass Area (Sqft)	Glass U-Factor BTU/(hr-sqft-F)
North Wall	0	0.060	3,360	0.550
Northeast Wall	0	0.060	5,640	0.550
East Wall	1,630	0.060	690	0.550
Southeast Wall	3,260	0.060	1,380	0.550
South Wall	3,260	0.060	1,380	0.550
Southwest Wall	5,540	0.060	2,340	0.550
West Wall	0	0.060	380	0.550
Northwest Wall	0	0.060	3,220	0.550
Perimeter Roof	12,740	0.050	0	0.001
Interior Roof	12,760	0.050	0	0.001

WALLS: Color = Light; Wt. = Medium; ROOF: Color = Medium; Wt. = Medium
BUILDING WT. = Medium; VERTICAL GLASS : Double Glazed
Shade Factors : Glass = 0.650 ; Skylights = 0.000
Internal shades are used. ; A ceiling plenum is used.

3. LIGHTS:
   Perimeter : 3.000 Watts/Sqft = 59,700 Watts Total
   Interior : 3.000 Watts/Sqft = 69,030 Watts Total
   Diversity Factors : Occupied = 95 %; Unoccupied = 20 %
   Perimeter Lights : Ballast , recessed
   Interior Lights : Ballast , recessed

4. MISCELLANEOUS ELECTRICAL LOADS:
   Perimeter : Occupied = 2.198 Watts/Sqft = 43,750 Watts Total
   Unoccupied = 0.942 Watts/Sqft = 18,750 Watts Total
   Interior : Occupied = 3.839 Watts/Sqft = 88,340 Watts Total
   Unoccupied = 2.742 Watts/Sqft = 63,100 Watts Total

5. PEOPLE LOADS
   Total Occupancy = 550 sqft/person = 78 people total
   Activity Level: 2. Office or retail
   Sensible = 245.0 BTU/hr/person; Latent = 205.0 BTU/hr/person
   Diversity Factors : Occupied = 70 %; Unoccupied = 20 %

6. MISCELLANEOUS INTERNAL LOADS:
   Sensible : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr
   Latent : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr

7. WALLS ADJACENT TO NON-CONDITIONED REGIONS:
   Wall Areas : Perimeter = 2,640 Sqft; Interior = 5,900 Sqft
   Wall U-Factor = 0.380 BTU/(hr-sqft-F)
   Adjacent region heating temperature = 65 F
   Adjacent region is not cooled

8. INFILTRATION DATA:
   Air Flow Rates: Occupied = 600 cfm; Unoccupied = 200 cfm

COMPLEX BUILDING INPUT SUMMARY

Building Name : CCF SUBCONSTRUCT 2/4 Date : 11-25-86

Site : AURORA,IL FERMI, User Defined 60117861.0

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1. ROOM CONDITIONS AND FLOOR AREAS

Thermostat settings : Cooling = 68 F; Heating = 68 F; Setback = 0 F

Warm-up factor = 0 %; Room design relative humidity = 45 %

Floor Areas: Perimeter = 29,760 Sqft; Interior = 0 Sqft

Cooling provided during unoccupied period.

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2. WALLS, ROOF, GLASS, SKYLIGHTS:

Exposure	Area (Sqft)	U-Factor BTU/(hr-sqft-F)	Glass Area (Sqft)	Glass U-Factor BTU/(hr-sqft-F)
North Wall	0	0.060	2,060	0.550
Northeast Wall	0	0.060	0	0.550
East Wall	1,630	0.060	690	0.550
Southeast Wall	3,260	0.060	1,380	0.550
South Wall	3,260	0.060	1,380	0.550
Southwest Wall	980	0.060	420	0.550
West Wall	0	0.060	760	0.550
Northwest Wall	0	0.060	1,520	0.550
Perimeter Roof	0	0.050	0	0.001
Interior Roof	0	0.050	0	0.001

WALLS: Color = Light; Wt. = Medium; ROOF: Color = Medium; Wt. = Medium

BUILDING WT. = Medium; VERTICAL GLASS : Double Glazed

Shade Factors : Glass = 0.650 ; Skylights = 0.000

Internal shades are used. ; A ceiling plenum is used.

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3. LIGHTS:

Perimeter : 1.000 Watts/Sqft = 29,760 Watts Total

Interior : 0.000 Watts/Sqft = 0 Watts Total

Diversity Factors : Occupied = 100 %; Unoccupied = 90 %

Perimeter Lights : Ballast , recessed

Interior Lights : Ballast , recessed

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4. MISCELLANEOUS ELECTRICAL LOADS:

Perimeter : Occupied = 6.720 Watts/Sqft = 200,000 Watts Total

Unoccupied = 6.720 Watts/Sqft = 200,000 Watts Total

Interior : Occupied = 0.000 Watts/Sqft = 0 Watts Total

Unoccupied = 0.000 Watts/Sqft = 0 Watts Total

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5. PEOPLE LOADS

Total Occupancy = 1,488 sqft/person = 20 people total

Activity Level: 2. Office or retail

Sensible = 245.0 BTU/hr/person; Latent = 205.0 BTU/hr/person

Diversity Factors : Occupied = 80 %; Unoccupied = 50 %

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6. MISCELLANEOUS INTERNAL LOADS:

Sensible : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr

Latent : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr

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7. WALLS ADJACENT TO NON-CONDITIONED REGIONS:

Wall Areas : Perimeter = 8,340 Sqft; Interior = 0 Sqft

Wall U-Factor = 0.380 BTU/(hr-sqft-F)

Adjacent region heating temperature = 65 F

Adjacent region is not cooled

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8. INFILTRATION DATA:

Air Flow Rates: Occupied = 149 cfm; Unoccupied = 89 cfm

COMPLEX BUILDING INPUT SUMMARY

Building Name : CCF SUBCONSTRUCT 2/4 FUT — Date : 11-25-86

Site : AURORA,IL FERMI, User Defined — 60117862.0

****

1. ROOM CONDITIONS AND FLOOR AREAS

Thermostat settings : Cooling = 68 F; Heating = 68 F; Setback = 0 F
Warm-up factor = 0 %; Room design relative humidity = 45 %
Floor Areas: Perimeter = 29,760 Sqft; Interior = 0 Sqft
Cooling provided during unoccupied period.

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2. WALLS, ROOF, GLASS, SKYLIGHTS:

Exposure	Area (Sqft)	U-Factor BTU/(hr-sqft-F)	Glass Area (Sqft)	Glass U-Factor BTU/(hr-sqft-F)
North Wall	0	0.060	2,060	0.550
Northeast Wall	0	0.060	0	0.550
East Wall	1,630	0.060	690	0.550
Southeast Wall	3,260	0.060	1,380	0.550
South Wall	3,260	0.060	1,380	0.550
Southwest Wall	980	0.060	420	0.550
West Wall	0	0.060	760	0.550
Northwest Wall	0	0.060	1,520	0.550
Perimeter Roof	0	0.050	0	0.001
Interior Roof	0	0.050	0	0.001

WALLS: Color = Light; Wt. = Medium; ROOF: Color = Medium; Wt. = Medium
BUILDING WT. = Medium; VERTICAL GLASS : Double Glazed
Shade Factors : Glass = 0.650 ; Skylights = 0.000
Internal shades are used. ; A ceiling plenum is used.

---

3. LIGHTS:

Perimeter : 1.000 Watts/Sqft = 29,760 Watts Total
Interior : 0.000 Watts/Sqft = 0 Watts Total
Diversity Factors : Occupied = 100 %; Unoccupied = 90 %
Perimeter Lights : Ballast , recessed
Interior Lights : Ballast , recessed

---

4. MISCELLANEOUS ELECTRICAL LOADS:

Perimeter : Occupied = 20.161 Watts/Sqft = 600,000 Watts Total
Unoccupied = 20.161 Watts/Sqft = 600,000 Watts Total
Interior : Occupied = 0.000 Watts/Sqft = 0 Watts Total
Unoccupied = 0.000 Watts/Sqft = 0 Watts Total

---

5. PEOPLE LOADS

Total Occupancy = 1,488 sqft/person = 20 people total
Activity Level: 2. Office or retail
Sensible = 245.0 BTU/hr/person; Latent = 205.0 BTU/hr/person
Diversity Factors : Occupied = 80 %; Unoccupied = 50 %

---

6. MISCELLANEOUS INTERNAL LOADS:

Sensible : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr
Latent : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr

---

7. WALLS ADJACENT TO NON-CONDITIONED REGIONS:

Wall Areas : Perimeter = 8,340 Sqft; Interior = 0 Sqft
Wall U-Factor = 0.380 BTU/(hr-sqft-F)
Adjacent region heating temperature = 65 F
Adjacent region is not cooled

---

8. INFILTRATION DATA:

Air Flow Rates: Occupied = 149 cfm; Unoccupied = 89 cfm

COMPLEX BUILDING INPUT SUMMARY

Building Name : CCF SUBCONSTRUCT 3/4 Date : 11-26-86
Site : AURORA,IL FERMI, User Defined 60117862.0

****

1. ROOM CONDITIONS AND FLOOR AREAS
   Thermostat settings : Cooling = 90 F; Heating = 65 F; Setback = 0 F
   Warm-up factor = 0 %; Room design relative humidity = 50 %
   Floor Areas: Perimeter = 8,250 Sqft; Interior = 0 Sqft
   No cooling during unoccupied period. (Pulldown cycle not considered)

2. WALLS, ROOF, GLASS, SKYLIGHTS:

Exposure	Area (Sqft)	U-Factor BTU/(hr-sqft-F)	Glass Area (Sqft)	Glass U-Factor BTU/(hr-sqft-F)
North Wall	0	0.060	780	0.550
Northeast Wall	0	0.060	0	0.550
East Wall	1,630	0.060	690	0.550
Southeast Wall	3,260	0.060	1,380	0.550
South Wall	3,260	0.060	1,380	0.550
Southwest Wall	3,260	0.060	1,380	0.550
West Wall	0	0.060	0	0.550
Northwest Wall	0	0.060	660	0.550
Perimeter Roof	0	0.050	0	0.001
Interior Roof	0	0.050	0	0.001

WALLS: Color = Light; Wt. = Medium; ROOF: Color = Medium; Wt. = Medium
BUILDING WT. = Medium; VERTICAL GLASS : Double Glazed
Shade Factors : Glass = 0.650 ; Skylights = 0.000
Internal shades are used. ; A ceiling plenum is not used.

3. LIGHTS:
   Perimeter : 2.000 Watts/Sqft = 16,500 Watts Total
   Interior : 0.000 Watts/Sqft = 0 Watts Total
   Diversity Factors : Occupied = 100 %; Unoccupied = 100 %
   Perimeter Lights : Ballast , exposed
   Interior Lights : Ballast , recessed

4. MISCELLANEOUS ELECTRICAL LOADS:
   Perimeter : Occupied = 3.273 Watts/Sqft = 27,000 Watts Total
   Unoccupied = 3.273 Watts/Sqft = 27,000 Watts Total
   Interior : Occupied = 0.000 Watts/Sqft = 0 Watts Total
   Unoccupied = 0.000 Watts/Sqft = 0 Watts Total

5. PEOPLE LOADS
   Total Occupancy = 8,250 sqft/person = 1 people total
   Activity Level: 2. Office or retail
   Sensible = 245.0 BTU/hr/person; Latent = 205.0 BTU/hr/person
   Diversity Factors : Occupied = 100 %; Unoccupied = 0 %

6. MISCELLANEOUS INTERNAL LOADS:
   Sensible : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr
   Latent : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr

7. WALLS ADJACENT TO NON-CONDITIONED REGIONS:
   Wall Areas : Perimeter = 0 Sqft; Interior = 0 Sqft
   Wall U-Factor = 0.000 BTU/(hr-sqft-F)
   Adjacent region is not heated
   Adjacent region is not cooled

8. INFILTRATION DATA:
   Air Flow Rates: Occupied = 413 cfm; Unoccupied = 165 cfm

COMPLEX BUILDING INPUT SUMMARY

Building Name : CCF SUBCONSTRUCT 4/4 Date : 11-26-86
Site : AURORA,IL FERMI, User Defined 60117862.0

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1. ROOM CONDITIONS AND FLOOR AREAS
   Thermostat settings : Cooling = 85 F; Heating = 85 F; Setback = 0 F
   Warm-up factor = 0 %; Room design relative humidity = 50 %
   Floor Areas: Perimeter = 1 Sqft; Interior = 0 Sqft
   Cooling provided during unoccupied period.

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2. WALLS, ROOF, GLASS, SKYLIGHTS:

Exposure	Area (Sqft)	U-Factor BTU/(hr-sqft-F)	Glass Area (Sqft)	Glass U-Factor BTU/(hr-sqft-F)
North Wall	0	0.060	0	0.550
Northeast Wall	0	0.060	0	0.550
East Wall	0	0.060	0	0.550
Southeast Wall	0	0.060	0	0.550
South Wall	0	0.060	0	0.550
Southwest Wall	0	0.060	0	0.550
West Wall	0	0.060	0	0.550
Northwest Wall	0	0.060	0	0.550
Perimeter Roof	0	0.050	0	0.001
Interior Roof	0	0.050	0	0.001

WALLS: Color = Light; Wt. = Medium; ROOF: Color = Medium; Wt. = Medium
BUILDING WT. = Medium; VERTICAL GLASS : Double Glazed
Shade Factors : Glass = 0.650 ; Skylights = 0.000
Internal shades are not used. ; A ceiling plenum is not used.

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3. LIGHTS:
   Perimeter : 0.000 Watts/Sqft = 0 Watts Total
   Interior : 0.000 Watts/Sqft = 0 Watts Total
   Diversity Factors : Occupied = 0 %; Unoccupied = 0 %
   Perimeter Lights : Ballast , recessed
   Interior Lights : Ballast , recessed

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4. MISCELLANEOUS ELECTRICAL LOADS:
   Perimeter : Occupied = %350000.000 Watts/Sqft = 350,000 Watts Tota
l
   Unoccupied = %350000.000 Watts/Sqft = 350,000 Watts Tota
l
   Interior : Occupied = 0.000 Watts/Sqft = 0 Watts Total
   Unoccupied = 0.000 Watts/Sqft = 0 Watts Total

---

5. PEOPLE LOADS
   Total Occupancy = 0 sqft/person = 0 people total
   Activity Level: 6. User defined activity level
   Sensible = 0.0 BTU/hr/person; Latent = 0.0 BTU/hr/person
   Diversity Factors : Occupied = 0 %; Unoccupied = 0 %

---

6. MISCELLANEOUS INTERNAL LOADS:
   Sensible : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr
   Latent : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr

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7. WALLS ADJACENT TO NON-CONDITIONED REGIONS:
   Wall Areas : Perimeter = 0 Sqft; Interior = 0 Sqft
   Wall U-Factor = 0.000 BTU/(hr-sqft-F)
   Adjacent region is not heated
   Adjacent region is not cooled

---

8. INFILTRATION DATA:

COMPLEX BUILDING INPUT SUMMARY

Building Name : CCF SUBCONSTRUCT 4/4 FUT Date : 11-26-86
Site : AURORA,IL FERMI, User Defined 60117862.0

****

1. ROOM CONDITIONS AND FLOOR AREAS

Thermostat settings : Cooling = 85 F; Heating = 85 F; Setback = 0 F
Warm-up factor = 0 %; Room design relative humidity = 50 %
Floor Areas: Perimeter = 1 Sqft; Interior = 0 Sqft
Cooling provided during unoccupied period.

---

2. WALLS, ROOF, GLASS, SKYLIGHTS:

Exposure	Area (Sqft)	U-Factor BTU/(hr-sqft-F)	Glass Area (Sqft)	Glass U-Factor BTU/(hr-sqft-F)
North Wall	0	0.060	0	0.550
Northeast Wall	0	0.060	0	0.550
East Wall	0	0.060	0	0.550
Southeast Wall	0	0.060	0	0.550
South Wall	0	0.060	0	0.550
Southwest Wall	0	0.060	0	0.550
West Wall	0	0.060	0	0.550
Northwest Wall	0	0.060	0	0.550
Perimeter Roof	0	0.050	0	0.001
Interior Roof	0	0.050	0	0.001

WALLS: Color = Light; Wt. = Medium; ROOF: Color = Medium; Wt. = Medium
BUILDING WT. = Medium; VERTICAL GLASS : Double Glazed
Shade Factors : Glass = 0.650 ; Skylights = 0.000
Internal shades are not used. ; A ceiling plenum is not used.

---

3. LIGHTS:

Perimeter : 0.000 Watts/Sqft = 0 Watts Total
Interior : 0.000 Watts/Sqft = 0 Watts Total
Diversity Factors : Occupied = 0 %; Unoccupied = 0 %
Perimeter Lights : Ballast , recessed
Interior Lights : Ballast , recessed

---

4. MISCELLANEOUS ELECTRICAL LOADS:

Perimeter : Occupied = %630000.000 Watts/Sqft = 630,000 Watts Tota
l
Unoccupied = %630000.000 Watts/Sqft = 630,000 Watts Tota
l
Interior : Occupied = 0.000 Watts/Sqft = 0 Watts Total
Unoccupied = 0.000 Watts/Sqft = 0 Watts Total

---

5. PEOPLE LOADS

Total Occupancy = 0 sqft/person = 0 people total
Activity Level: 6. User defined activity level
Sensible = 0.0 BTU/hr/person; Latent = 0.0 BTU/hr/person
Diversity Factors : Occupied = 0 %; Unoccupied = 0 %

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6. MISCELLANEOUS INTERNAL LOADS:

Sensible : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr
Latent : Occupied = 0 BTU/hr; Unoccupied = 0 BTU/hr

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7. WALLS ADJACENT TO NON-CONDITIONED REGIONS:

Wall Areas : Perimeter = 0 Sqft; Interior = 0 Sqft
Wall U-Factor = 0.000 BTU/(hr-sqft-F)
Adjacent region is not heated
Adjacent region is not cooled

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8. INFILTRATION DATA:

REFERENCE PAGES FOR STATISTICS USED TO COMPLETE PERFORMANCE SUMMARY SHEETS

(Analysis Data Summary Section - Pages 12 to 28)

1. Designed Configuration

Present Scope: (IV-49)+(V-50)+(VII-8)+(VIII-5)
Ultimate Scope: (IV-49)+(VI-7)+(VII-8)+(IX-5)

2. FY1975 Configuration

Present Scope: (IV-115)+(V-74)+(VII-8)+(VIII-25)
Ultimate Scope: (IV-115)+(VI-31)+(VII-8)+(IX-25)

3. Alterate A Configuration

Present Scope: (IV-49)+(V-50)+(VII-8)+(VIII-15)
Ultimate Scope: (IV-49)+(VI-7)+(VII-8)+(IX-15)

4. Alternate B Configuration

Present Scope: (IV-49)+(V-62)+(VII-8)+(VIII-5)
Ultimate Scope: (IV-49)+(VI-19)+(VII-8)+(IX-5)

5. Alternate C Configuration

Present Scope: (IV-49)+(V-62)+(VII-8)+(VIII-15)
Ultimate Scope: (IV-49)+(VI-19)+(VII-8)+(IX-15)

6. Alternate D Configuration

Present Scope: (IV-70)+(V-50)+(VII-8)+(VIII-5)
Ultimate Scope: (IV-70)+(VI-7)+(VII-8)+(IX-5)

7. Alternate E Configuration

Present Scope: (IV-70)+(V-50)+(VII-8)+(VIII-15)
Ultimate Scope: (IV-70)+(VI-7)+(VII-8)+(IX-15)

8. Alternate F Configuration

Present Scope: (IV-70)+(V-62)+(VII-8)+(VIII-5)
Ultimate Scope: (IV-70)+(VI-19)+(VII-8)+(IX-5)

9. Alternate G Configuration

Present Scope: (IV-70)+(V-62)+(VII-8)+(VIII-15)
Ultimate Scope: (IV-70)+(VI-19)+(VII-8)+(IX-15)

10. Alternate H Configuration

Present Scope: (IV-85)+(V-50)+(VII-8)+(VIII-5)
Ultimate Scope: (IV-85)+(VI-7)+(VII-8)+(IX-5)

11. Alternate J Configuration

Present Scope: (IV-85)+(V-50)+(VII-8)+(VIII-15)
Ultimate Scope: (IV-85)+(VI-7)+(VII-8)+(IX-15)

12. Alternate K Configuration

Present Scope: (IV-85)+(V-62)+(VII-8)+(VIII-5)
Ultimate Scope: (IV-85)+(VI-19)+(VII-8)+(IX-5)

13. Alternate L Configuration

Present Scope: (IV-85)+(V-62)+(VII-8)+(VIII-15)
Ultimate Scope: (IV-85)+(V-19)+(VII-8)+(IX-15)

14. Alternate M Configuration

Present Scope: (IV-100)+(V-50)+(VII-8)+(VIII-5)
Ultimate Scope: (IV-100)+(VI-7)+(VII-8)+(IX-5)

15. Alternate N Configuration

Present Scope: (IV-100)+(V-50)+(VII-8)+(VIII-15)
Ultimate Scope: (IV-100)+(VI-7)+(VII-8)+(IX-15)

16. Alternate P Configuration

Present Scope: (IV-100)+(V-62)+(VII-8)+(VIII-5)
Ultimate Scope: (IV-100)+(VI-19)+(VII-8)+(IX-5)

17. Alternate Q Configuration

Present Scope: (IV-100)+(V-62)+(VII-8)+(VIII-15)
Ultimate Scope: (IV-100)+(VI-19)+(VII-8)+(IX-15)