A1—1 EMS MATERIEL LIST AND NOTES

EMS MATERIAL LIST

ITEM	INSTALLED BY	VENDOR
REFRIGERATION CONTROL NODES (IN RACKS)	UNIT MANUFACTURER	UNIT MANUFACTURER
REMOTE MT-NODE BOARDS #1 THROUGH #23, PART # 950-500Q	EMS CONTRACTOR	MICRO THERMO
COMPUTER	EMS CONTRACTOR	UNIT MANUFACTURER
UPS	EMS CONTRACTOR	MICRO THERMO
MAIN EMS CONTROL PANEL/ELECT. PLATFORM.PER EMS601	ELECT. PLATFORM MFG.	UNIT MANUFACTURER
RTU UNIT-COMFORT LINK CONTROL	RTU MANUFACTURER	UNIT MANUFACTURER
WALK-IN COOLER/FREEZER/PREP AREA SENSORS (TS) MICRO-THERMO PART #23-0159	EMS CONTRACTOR	MICRO THERMO
WALK-IN DEFROST TERMINATION (DT)	UNIT MANUFACTURER	UNIT MANUFACTURER
CASE SENSORS/SWITCHES (CS), (TS), (DT), [DTS]	UNIT MANUFACTURER	UNIT MANUFACTURER
DOOR AJAR/ENTRAPMENT ALARM/LEAK DETECTION ALARM (DA)	ELECT. CONTRACTOR	UNIT MANUFACTURER
RTU UNIT SENSORS (T) PART# 23-0046 (T)(H) PART # 23-0026	EMS CONTRACTOR	MICRO THERMO
LIQUID LINE SOLENOID (S)	REFRIG. CONTRACTOR	UNIT MANUFACTURER
1/4" PLASTIC TUBING- (LEAK DETECTION) PART # 255-001	EMS CONTRACTOR	MICRO THERMO
END OF LINE FILTERS (LS) PART # 255-0002	EMS CONTRACTOR	MICRO THERMO
REFRIGERANT LEAK DETECTION PANEL PART # 846-REFR	ELECT. PLATFORM MFG.	UNIT MANUFACTURER
MT-508 NODES & ENCLOSURE(LEAK DETECTION)	ELECT. PLATFORM MFG.	UNIT MANUFACTURER
INDOOR / OUTDOOR PHOTO CELL (PC)	EMS CONTRACTOR	MICRO THERMO
"VERIS" POWER MONITORING METER	EMS CONTRACTOR	MICRO THERMO
500VA TRANSFORMER FOR REMOTE MT-500 BOARDS	EMS CONTRACTOR	UNIT MANUFACTURER
MT-500 BOARDS IN RTU-3 & RTU-10 M# 950-500Q	RTU MANUFACTURER	MICRO THERMO
AMBIENT TEMP SENSOR @ CONDENSERS RA,RB,RC,RD	CONDENSER MANUFACTURER	UNIT MANUFACTURER

MATERIAL NOTES

1. ALL LOW VOLTAGE CONTROL WIRING WILL BE PROVIDED, INSTALLED AND TERMINATED BY THE EMS CONTRACTOR.
2. ALL POWER WIRING (120V) WILL BE PROVIDED, INSTALLED AND TERMINATED BY THE ELECTRICAL CONTRACTOR.
3. EACH (CS), (TS), [DTS], (T) AND (1)-(DT) PER SYSTEM WILL REQUIRE A (2)-CONDUCTOR 22 GAUGE SHIELDED CABLE (TWISTED PAIR) FROM THE SENSOR/SWITCH TO THE RESPECTIVE MT-BOARD OR HVAC UNIT AS OUTLINED ON DRAWINGS. AN EQUIVALENT OR LARGER GAUGE CABLE MAY BE SUBSTITUTED, BUT MUST BE APPROVED BY MICRO THERMO PRIOR TO INSTALLATION.
4. THE (H) HUMIDITY SENSORS WILL REQUIRE A (3)-CONDUCTOR 22 GAUGE SHIELDED CABLE (TWISTED PAIR) FROM THE SENSOR TO THE RESPECTIVE UNIT. AN EQUIVALENT OR LARGER GAUGE CABLE MAY BE SUBSTITUTED, BUT MUST BE APPROVED BY MICRO THERMO PRIOR TO INSTALLATION.
5. THE (S) LIQUID LINE SOLENOIDS WILL REQUIRE A 16 GAUGE, 2 CONDUCTOR SHIELDED (TWISTED PAIR) CABLE FROM THE SOLENOID COIL TO THE RESPECTIVE UNIT. AN EQUIVALENT OR LARGER GAUGE CABLE MAY BE SUBSTITUTED, BUT MUST BE APPROVED BY MICRO THERMO PRIOR TO INSTALLATION.
6. EACH (DA) WILL REQUIRE TWO SEPERATE (2)-CONDUCTOR CABLES AS FOLLOWS: (1)-22 GAUGE, 2 CONDUCTOR SHIELDED (TWISTED PAIR) CABLE WILL BE ROUTED TO THE MT-BOARD AS INDICATED ON DRAWINGS - THIS IS TO COMMUNICATE DOOR OPENINGS TO THE RACK CONTROLLER, AND (1)-16 GAUGE, 2 CONDUCTOR SHIELDED (TWISTED PAIR) CABLE WILL BE ROUTED TO THE REFRIGERANT LEAK DETECTION UNIT PANEL ON THE ELECTRICAL PLATFORM OVER THE RESTROOM -THIS IS TO INITIATE SIGNAL FOR AUDIO/VISUAL ALARMS IN CASE OF REFRIGERANT LEAK IN SPACE.

A1—2 VENDOR CONTACTS | GENERAL NOTES | SYMBOL LEGEND

VENDOR CONTACTS:

MICRO THERMO EAST USA / CANADA: 1-888-920-6284

MICRO THERMO CENTRAL USA: SALES - GLENN THIEMANN @ 1-513-703-5642

MICRO THERMO WEST USA: SALES - JIM KLEE @ 1-503-810-6892

GENERAL NOTES:

1. THE EMS CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING AND INSTALLING ALL CONDUIT (SEE MOUNTING / INSTALLATION DETAILS ON SHEET EMS604) AND LOW VOLTAGE CABLE/CONTROL WIRING INDICATED ON THIS SHEET. THE EMS CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING RUBBER GROMMETS OR SUITABLE PROTECTION AT ALL PENETRATION LOCATIONS IN ANY PANELS OR FIXTURES THROUGHOUT STORE TO PROTECT WIRING FROM DAMAGE.
2. EMS CONTROLS CONTRACTOR WILL BE RESPONSIBLE FOR MAKING ALL FINAL LOW VOLTAGE CABLE TERMINATIONS. THE EMS CONTROLS CONTRACTOR WILL BE RESPONSIBLE FOR START-UP OF THE COMPLETE EMS SYSTEM AND ALL PROGRAMMING AND SET POINTS.
3. THE EMS CONTROLS CONTRACTOR WILL BE PERMITTED TO GROUP CONTROL WIRING ON THIS SHEET, AS A COST SAVINGS OPPORTUNITY. THE EMS CONTRACTOR MAY USE MULTI-CONDUCTOR CABLE AS A FURTHER COST SAVINGS MEASURE AS LONG AS IT CONFORMS TO VENDOR REQUIREMENTS AND LOCAL CODES. CONTACT MICRO THERMO FOR VERIFICATION / APPROVAL PRIOR TO INSTALLATION.
4. THE EMS CONTRACTOR SHALL PROVIDE / INSTALL CONDUIT AS OUTLINED IN DETAILS ON SHEET EMS604. WHERE REQUIRED ALL CONDUIT ABOVE GROUND SHALL BE EMT CONDUIT. ALL UNDERGROUND EMS WIRING WILL BE INSTALLED IN NON-METALLIC SCHEDULE 40 PVC ELECTRICAL CONDUIT.
5. THE (CS) CLEANING SWITCH AND [SS] SUCTION LINE SOLENOID (ON THE SERVICE FISH CASES ONLY) WILL BE PROVIDED BY THE CASE MANUFACTURER. THE (CS) SWITCH WILL BE A DOUBLE POLE/ DOUBLE THROW SWITCH. THE SWITCH WILL DROP OUT THE SUCTION LINE SOLENOID VALVE IN THE INDIVIDUAL CASE TO PERMIT STORE PERSONNEL TO CLEAN THE CASE WITHOUT AFFECTING THE OTHER CASES ON THE SAME SYSTEM. THE SECOND POLE OF THE CLEAN SWITCH WILL BE WIRED BACK TO THE RESPECTIVE MT-NODE. THIS IS TO INHIBIT ALARMING WHILE CLEANING THE CASE.
6. THE [DTS] DUAL TEMP SWITCHES ON THE LWE END CAPS WILL BE PROVIDED BY THE CASE MANUFACTURER. THE [DTS] SWITCH WILL BE A DOUBLE POLE/ DOUBLE THROW SWITCH. THE SWITCH WILL ACTIVATE OR DE-ACTIVATE A SOLENOID BYPASS AROUND A ORIT EPR VALVE FACTORY MOUNTED IN THE CASE TO SWITCH THE CASE FROM LOW TO MEDIUM TEMP OR MEDIUM TEMP TO LOW TEMP. THE SECOND POLE OF THE CLEAN SWITCH WILL BE WIRED BACK TO THE RESPECTIVE MT-NODE. THIS IS TO INHIBIT ALARMING WHEN THE CASE IS SWITCHED FROM LOW TEMP TO MEDIUM TEMP MODE.
7. THE (T) LIQUID LINE SOLENOIDS WILL BE SET-UP TO DROP WHEN THE BRANCH CIRCUIT ON THE LOOP GOES INTO DEFROST. SOLENOIDS & 24 VOLT COILS WILL BE PROVIDED & MOUNTED (WELDED) BY THE REFRIGERATION CONTRACTOR. ALL WIRING WILL BE BY THE EMS CONTRACTOR.
8. UNDER NO CIRCUMSTANCES SHALL THE DRAIN PAN ON THE REFRIGERATED CASES BE PENETRATED, EXCEPT AS ALLOWED IN DRAWINGS. THE EMS CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING/REPLACEMENT OF FIXTURE IF THIS OCCURS DURING INSTALLATION.

SYMBOL LEGEND

- (CS) CLEANING SWITCH
- (DA) M & S SYSTEMS DOOR AJAR/ENTRAPMENT ALARM SYSTEM/LEAK DETECTION ALARM.
- (TS) 10 K TEMPERATURE SENSOR
- (DT) DEFROST TERMINATION THERMOSTAT
- [DTS] DOUBLE POLE/DOUBLE THROW SWITCH FOR TWIN TEMP OPERATION
- (T) MT HVAC TEMPERATURE SENSOR
- (H) MT HVAC HUMIDITY SENSOR
- (S) LIQUID LINE SOLENOID
- (LS) LEAK DETECTION SENSOR
- (PC) PHOTO CELL
- (PM) INPUT FROM POWER MONITORING METER

A1—3 KEYED NOTES

KEYED NOTES:

1. TO RACK RA CONTROL PANEL.
2. TO RACK RB CONTROL PANEL.
3. TO RACK RC CONTROL PANEL.
4. TO RACK RD CONTROL PANEL
5. TO MT-NODE #1
6. TO MT-NODE #2
7. TO MT-NODE #3
8. TO MT-NODE #4
9. TO MT-NODE #5
10. TO MT-NODE #6
11. TO MT-NODE #7
12. TO MT-NODE #8
13. TO MT-NODE #9
14. TO MT-NODE #10
15. TO MT-NODE #11
16. TO MT-NODE #12
17. TO MT-NODE #13
18. TO MT-NODE #14
19. TO MT-NODE #15
20. TO MT-NODE #16
21. TO MT-NODE #17
22. TO MT-NODE #18
23. TO MT-NODE #19
24. TO MT-NODE #20
25. TO MT-NODE #21
26. TO MT-NODE #22
27. TO MT-NODE #23
28. TO RTU-1 ON ROOF
29. TO MT-500 BOARD IN RTU-3 CONTROL PANEL ON ROOF
30. TO MT-500 BOARD IN RTU-3 CONTROL PANEL ON ROOF
31. TO RTU-4 ON ROOF
32. TO MT-500 BOARD IN RTU-3 CONTROL PANEL ON ROOF
33. TO RTU-6 ON ROOF
34. TO RTU-7 ON ROOF
35. TO RTU-8 ON ROOF
36. TO RTU-9 ON ROOF
37. TO MT-500 BOARD IN RTU-10 CONTROL PANEL ON ROOF
38. TO RTU-11 ON ROOF
39. TO RTU-12 ON ROOF
40. TO RTU-13 ON ROOF
41. TO MT-500 BOARD IN RTU-10 CONTROL PANEL ON ROOF
42. TO MT-500 BOARD IN RTU-10 CONTROL PANEL ON ROOF
43. TO RTU-16 ON ROOF
44. 1/4" PLASTIC TUBING FROM (LS) LEAK DETECTION SENSOR TO REFRIGERANT LEAK DETECTION PANEL ON ELECTRICAL PLATFORM (SEE SHEET EMS603 FOR TUBING SPECS.).
45. (1)-2 CONDUCTOR 16 GAUGE SHIELDED CABLE (TWISTED PAIR) FROM TERMINAL 11 & 12 ON (DA) DOOR ALARM TO OUTPUTS ON REFRIGERATION LEAK DETECTION UNIT ON ELECTRICAL PLATFORM. (THIS IS TO ACTIVATE AUDIO/ VISUAL ALARMS IN THE EVENT OF A REFRIGERANT LEAK).
46. (1) 2" UNDERGROUND CONDUIT FOR EMS WIRING TO REFRIGERATION UNITS. THE CONDUIT WILL EXIT THE BUILDING NEXT TO THE REFRIGERANT PIPING (RB,RC & RD @ 11'-2" A.F.F., RA @ 1'-0" A.F.F.). MOUNT TO EXTERIOR WALL W/1-1/2" UNISTRUT & HYDROSORB CLAMPS. IMMEDIATELY AFTER EXITING BUILDING TURN DOWN AND ENTER SLAB AS TIGHT TO THE BUILDING AS POSSIBLE, ROUTE UNDERGROUND TO THE CONTROL PANEL ON THE UNIT AS SHOWN. RISE UP AT THE PROPER SIDE OF THE CONTROL PANEL AS INDICATED. ALL CONDUIT WILL BE SUPPLIED/INSTALLED BY THE EMS CONTRACTOR. DO NOT ROUTE CONDUIT ABOVE GROUND FROM BUILDING TO THE UNIT.

A1—4 INPUT NOTES

REMOTE - FIELD INSTALLED - MT-500 INPUT NODES - SEE EMS101 FOR LOCATIONS

MT-01	MT-02	MT-03	MT-04	MT-05	MT-06
U1. TS RADA03a	U1. TS RADA01d	U1. TS RADA01a	U1. DT RAIC11	U1. TS RADA02	U1. TS RAFF12a
U2. TS RADA03b	U2. TS RADA01e	U2. TS RADA01b	U2. TS RAIC13a	U2. TS RAIC08a	U2. TS RAFF12b
U3. TS RADA04	U3. TS RADA01f	U3. TS RADA01c	U3. TS RAIC13b	U3. TS RAIC08b	U3. TS RAFF12c
U4. DA RADA04	U4. TS RAFF10a	U4. TS RAFF10c	U4. TS RAFF14a	U4. DT RAIC08	U4. TS RAFF15C
U5. TS RADA05a	U5. TS RAFF10b	U5. TS RAFF10d	U5. TS RAFF14b	U5. TS RAIC09a	U5. TS RAFF15d
U6. TS RADA05b	U6. DT RAFF10	U6. TS RAIC11a	U6. TS RAFF14c	U6. TS RAIC09b	U6. TS RAFF15e
U7. TS RADA06a	U7. TS RAIC13c	U7. TS RAIC11b	U7. TS RAFF14d	U7. TS RAIC09c	U7. SPARE
U8. TS RADA06b	U8. DT RAIC13	U8. TS RAIC11c	U8. DT RAFF14	U8. DT RAIC09	U8. SPARE

REMOTE - FIELD INSTALLED - MT-500 INPUT NODES - SEE EMS101 FOR LOCATIONS

MT-07	MT-08	MT-09	MT-10	MT-11	MT-12
U1. TS RAFF12d	U1. TS RAFF16a	U1. TS RBIC12	U1. DA RBIC12	U1. TS RBMK07	U1. TS RCDE01a
U2. TS RAFF12e	U2. TS RAFF16b	U2. DT RBIC12	U2. TS RBMK08	U2. DT RBMK07	U2. TS RCDE01b
U3. DT RAFF12	U3. TS RAFF16c	U3. TS RBFF13	U3. DT RBMK08	U3. TS RCMK07a	U3. TS RCDE01c
U4. TS RAFF15a	U4. TS RAFF16d	U4. DT RBFF13	U4. TS RCDE03a	U4. TS RCMK07b	U4. TS RBMK06
U5. TS RAFF15b	U5. DT RAFF16	U5. DA RBFF13	U5. TS RCDE03b	U5. TS RCMK07c	U5. DTS RBMK06
U6. DT RAFF15	U6. SPARE	U6. TS RBFF14	U6. TS RCDE03c	U6. TS RCMK07d	U6. TS RCMK06b
U7. SPARE	U7. SPARE	U7. DT RBFF14	U7. TS RCDE03d	U7. TS RCMK07e	U7. TS RCMK06c
U8. SPARE	U8. SPARE	U8. DA RBFF14	U8. SPARE	U8. SPARE	U8. TS RCMK06d

REMOTE - FIELD INSTALLED - MT-500 INPUT NODES - SEE EMS101 FOR LOCATIONS

MT-13	MT-14	MT-15	MT-16	MT-17	MT-18
U1. TS RCMK06a	U1. TS RCDE02a	U1. TS RCMK04a	U1. TS RCMK09	U1. TS RDDE08	U1.TS RDBK06a
U2. TS RCMK05a	U2. TS RCDE02b	U2. TS RCMK04b	U2. DT RCMK09	U2. TS RDDE09a	U2. TS RDBK06b
U3. TS RCMK05b	U3. TS RCDE02c	U3. TS RBMK05	U3. TS RCMK10	U3.TS RDDE09b	U3.TS RDBK06c
U4. TS RCMK05c	U4. TS RBMK03a	U4. DT RBMK05	U4. DT RCMK10	U4. TS RDDE09c	U4. TS RDBK06d
U5. TS RCMK08	U5. TS RBMK03b	U5. TS RDMK10	U5. DA RCMK10	U5. TS RDDE16a	U5. TS RBBK11
U6. DT RCMK08	U6. TS RBMK03c	U6. TS RCMK13	U6. TS RBMK10	U6. TS RDDE16b	U6. DT RBBK11
U7. DA RCMK08	U7. TS RBMK03d	U7. DA RC09,12,13	U7. DT RBMK10	U7. TS RDDE16c	U7. DA RBBK11
U8. PM POWER MON.	U8. TS RBMK03e	U8. TS RBMK04	U8. DA RBMK10	U8. TS RDDE16d	U8. DA RDDE17

REMOTE - FIELD INSTALLED - MT-500 INPUT NODES - SEE EMS101 FOR LOCATIONS

MT-19	MT-20	MT-21	MT-22	MT-23	
U1. TS RDDE17	U1. TS RDMK03a	U1. DT RBMK02	U1. TS RDBW15a	U1. TS RDPR01a	
U2. TS RDDE07	U2. CS RDMK03a	U2. TS RDPR11a	U2. TS RDPR05a	U2. TS RDPR01b	
U3. DT RDDE07	U3. TS RDMK03b	U3. TS RDPR11b	U3. TS RDPR05b	U3. TS RDPR01c	
U4. DA RDDE07	U4. CS RDMK03b	U4. TS RDPR12	U4. TS RDPR05c	U4. TS RDPR02a	
U5. TS RDFL18	U5. TS RCMK12	U5. DA RDPR12	U5. TS RDBW14a	U5. TS RDPR02b	
U6. DA RDFL18	U6. TS RDMK04	U6. TS RDPR13	U6. TS RDBW14b	U6. TS RDPR02c	
U7. TS RDBW15b	U7. TS RBMK02a	U7. DA RDPR13	U7. TS RDBW14c	U7. TS RDPR02d	
U8. TS RDBW15c	U8. TS RBMK02b	U8. SPARE	U8. TS RDBW14d	U8. TS RDPR02e	

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DATE	DESCRIPTION	REV.

ARCHITECT :

CLIENT :

AUTOMATISATION / CONTROL :

MICRO THERMO TECHNOLOGIES
2584 boul. Le Corbusier
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PROJECT NAME :

PROTOTYPE STORE 70K

DRAWN BY :	DESIGN BY :	APPROVED BY :	PROJECT NO :
D.P.	L.M.	A.H.	XXX-XXX
SCALE :	DATE :	REVISION :	DRAWN NO :
N.T.S	05-11-2004	00	EMS-106

B2—1 INPUT NODES FOR POWER SUPPLY

MT-500 INPUT NODES FOR POWER SUPPLY #1 TABLE ZONE #1

MT-01	MT-02	MT-03	MT-04	MT-05	MT-06	MT-07	MT-08
U1. TS RADA03a	U1. TS RADA01d	U1. TS RADA01a	U1. DT RAIC11	U1. TS RADA02	U1. TS RAFF12a	U1. TS RAFF12d	U1. TS RAFF16a
U2. TS RADA03b	U2. TS RADA01e	U2. TS RADA01b	U2. TS RAIC13a	U2. TS RAIC08a	U2. TS RAFF12b	U2. TS RAFF12e	U2. TS RAFF16b
U3. TS RADA04	U3. TS RADA01f	U3. TS RADA01c	U3. TS RAIC13b	U3. TS RAIC08b	U3. TS RAFF12c	U3. DT RAFF12	U3. TS RAFF16c
U4. DA RADA04	U4. TS RAFF10a	U4. TS RAFF10c	U4. TS RAFF14a	U4. DT RAIC08	U4. TS RAFF15C	U4. TS RAFF15a	U4. TS RAFF16d
U5. TS RADA05a	U5. TS RAFF10b	U5. TS RAFF10d	U5. TS RAFF14b	U5. TS RAIC09a	U5. TS RAFF15d	U5. TS RAFF15b	U5. DT RAFF16
U6. TS RADA05b	U6. DT RAFF10	U6. TS RAIC11a	U6. TS RAFF14c	U6. TS RAIC09b	U6. TS RAFF15e	U6. DT RAFF15	U6. SPARE
U7. TS RADA06a	U7. TS RAIC13c	U7. TS RAIC11b	U7. TS RAFF14d	U7. TS RAIC09c	U7. SPARE	U7. SPARE	U7. SPARE
U8. TS RADA06b	U8. DT RAIC13	U8. TS RAIC11c	U8. DT RAFF14	U8. DT RAIC09	U8. SPARE	U8. SPARE	U8. SPARE

MT-500 INPUT NODES FOR POWER SUPPLY #2 TABLE ZONE #2

MT-17	MT-18	MT-19
U1. TS RDDE08	U1.TS RDBK06a	U1. TS RDDE17
U2. TS RDDE09a	U2. TS RDBK06b	U2. TS RDDE07
U3.TS RDDE09b	U3.TS RDBK06c	U3. DT RDDE07
U4. TS RDDE09c	U4. TS RDBK06d	U4. DA RDDE07
U5. TS RDDE16a	U5. TS RBBK11	U5. TS RDFL18
U6. TS RDDE16b	U6. DT RBBK11	U6. DA RDFL18
U7. TS RDDE16c	U7. DA RBBK11	U7. TS RDBW15b
U8. TS RDDE16d	U8. DA RDDE17	U8. TS RDBW15c

MT-500 INPUT NODES FOR POWER SUPPLY #3 TABLE ZONE #3

MT-09	MT-10	MT-11	MT-12	MT-13
U1. TS RBIC12	U1. DA RBIC12	U1. TS RBMK07	U1. TS RCDE01a	U1. TS RCMK06a
U2. DT RBIC12	U2. TS RBMK08	U2. DT RBMK07	U2. TS RCDE01b	U2. TS RCMK05a
U3. TS RBFF13	U3. DT RBMK08	U3. TS RCMK07a	U3. TS RCDE01c	U3. TS RCMK05b
U4. DT RBFF13	U4. TS RCDE03a	U4. TS RCMK07b	U4. TS RBMK06	U4. TS RCMK05c
U5. DA RBFF13	U5. TS RCDE03b	U5. TS RCMK07c	U5. DTS RBMK06	U5. TS RCMK08
U6. TS RBFF14	U6. TS RCDE03c	U6. TS RCMK07d	U6. TS RCMK06b	U6. DT RCMK08
U7. DT RBFF14	U7. TS RCDE03d	U7. TS RCMK07e	U7. TS RCMK06c	U7. DA RCMK08
U8. DA RBFF14	U8. SPARE	U8. SPARE	U8. TS RCMK06d	U8. SPARE

MT-500 INPUT NODES FOR POWER SUPPLY #4 TABLE ZONE #4

MT-14	MT-15	MT-16	MT-20	MT-21	MT-22	MT-23
U1. TS RCDE02a	U1. TS RCMK04a	U1. TS RCMK09	U1. TS RDMK03a	U1. DT RBMK02	U1. TS RDBW15a	U1. TS RDPR01a
U2. TS RCDE02b	U2. TS RCMK04b	U2. DT RCMK09	U2. CS RDMK03a	U2. TS RDPR11a	U2. TS RDPR05a	U2. TS RDPR01b
U3. TS RCDE02c	U3. TS RBMK05	U3. TS RCMK10	U3. TS RDMK03b	U3. TS RDPR11b	U3. TS RDPR05b	U3. TS RDPR01c
U4. TS RBMK03a	U4. DT RBMK05	U4. DA RCMK10	U4. CS RDMK03b	U4. TS RDPR12	U4. TS RDPR05c	U4. TS RDPR02a
U5. TS RBMK03b	U5. TS RDMK10	U5. DA RCMK12	U5. TS RCMK12	U5. DA RDPR12	U5. TS RDBW14a	U5. TS RDPR02b
U6. TS RBMK03c	U6. TS RCMK13	U6. TS RBMK10	U6. TS RDMK04	U6. TS RDPR13	U6. TS RDBW14b	U6. TS RDPR02c
U7. TS RBMK03d	U7. DA RC09,12,13	U7. DT RBMK10	U7. TS RBMK02a	U7. DA RDPR13	U7. TS RDBW14c	U7. TS RDPR02d
U8. TS RBMK03e	U8. SPARE	U8. DA RBMK10	U8. TS RBMK02b	U8. SPARE	U8. TS RDBW14d	U8. TS RDPR02e

EMS NOTES EMS-106

B2—2 GENERAL SPECIFICATIONS

1. ADJUSTMENT TO VALVES AND CONTROL SETTINGS PER SPECIFICATION AND DRAWINGS SHALL BEGIN ON TURNOVER OF STORE TO OPERATIONS. THIS OCCURS 2-3 WEEKS PRIOR TO GRAND OPENING.
2. ALL SENSORES SHALL BE CALIBRATED.
3. RTU UNITS OPERATION AND SETPOINTS: RTU-2,3,5,10,14 & 15
   - FANS ARE TO RUN CONTINUOUSLY WITH AUXILIARY SHUTDOWN RELAY INTERLOCKED WITH DUCT SMOKE DETECTORS.
   - EACH UNIT SHALL HAVE A DEDICATED TEMPERATURE AND DEW POINT SENSOR AS INPUTS FOR CONTROL. AN RH SENSOR CAN BE USED IN LIEU OF THE DEWPOINT DEVICE, PROVIDED THAT THE CONTROLLER CAN CONVERT TO DEWPOINT.
   - THE CONTROLLER SHALL MODULATE INDIVIDUAL STAGES OF HEATING, COOLING, REHEAT AND BE ABLE TO OPEN/CLOSE THE OUTSIDE AIR DAMPER BASED ON A SINGLE DIGITAL OUTPUT.
   - DESIGN SALES AREA CONDITIONS:
     TEMPERATURE : 75°F (MAX) 71°F (MIN)
     DEWPOINT : 55°F (MAX)
   - CONTROL SEQUENCING:
     STAGE 1 COOL = 74°F - 73°F
     STAGE 2 COOL = 75°F - 74°F
     STAGE 1 HEAT = 70°F - 71°F
     STAGE 2 HEAT = 69°F - 70°F
     INTERSTAGE TIME DELAYS TO PREVENT COMPRESSOR SHORT CYCLING.
     DEHUMIDIFICATION SEQUENCE:
     STAGE 1 COOL = 54°F DEWPOINT - 53°F.
     STAGE 2 COOL = 55°F DEWPOINT - 54°F.
     COMPRESSOR REHEAT ENERGIZED ONLY IF THE STORE DRY BULB TEMPERATURE SENSOR REACHES 72°F. REHEAT CANNOT BE ENERGIZED UNTIL A MINIMUM 3 MINUTE DELAY OCCURS AFTER COMPRESSOR #1 (STAGE 1) HAS BEEN OPERATIONAL. REHEAT COIL TO DEACTIVATE 3 MINUTES PRIOR TO SHUT DOWN OF DEHUMIDIFICATION COMPRESSORS.
   - AN INTEGRAL FREEZESTAT SHALL BE LOCATED IN THE MIXED AIR STREAM TO DE-ENERGIZE THE COMPRESSORS IF THE DRY BULB TEMPERATURE DROPS BELOW 38°F.
   - ALL CONTROL FUNCTIONS MUST NOT VIOLATE ANY OPERATIONAL PROCEDURES WHICH ARE MANDATED BY THE EQUIPMENT MANUFACTURER.
4. RTU UNITS OPERATION AND SETPOINTS: RTU-4,6,9,11,12,13 & 16:
   - FANS ARE TO RUN CONTINUOUSLY WITH AUXILIARY SHUTDOWN RELAY INTERLOCKED WITH DUCT SMOKE DETECTORS.
   - CONTROL SYSTEM SHALL ENERGIZE HEATING OR COOLING AS REQUIRED BY SPACE.
   - SET POINTS:
     STAGE 1 COOL = 74°F - 73°F
     STAGE 2 COOL = 75°F - 74°F
     STAGE 1 HEAT = 70°F - 71°F
     STAGE 2 HEAT = 69°F - 70°F
   - A FREEZESTAT SHALL BE LOCATED IN THE MIXED AIR STREAM TO DE-ENERGIZE THE COMPRESSOR IF THE TEMPERATURE DROPS BELOW 38°F.

   RTU UNIT OPERATION AND SETPOINTS: RTU-7.
   - FANS ARE TO RUN CONTINUOUSLY WITH AUXILIARY SHUTDOWN RELAY INTERLOCKED WITH DUCT SMOKE DETECTORS.
   - CONTROL SYSTEM SHALL ENERGIZE COOLING AS REQUIRED BY SPACE.
   - SET POINTS: STAGE 1 COOL = 74°F - 73°F
     STAGE 2 COOL = 75°F - 74°F
   - A FREEZESTAT SHALL BE LOCATED IN THE MIXED AIR STREAM TO DE-ENERGIZE THE COMPRESSOR IF THE TEMPERATURE DROPS BELOW 38°F.

   RTU UNIT OPERATION AND SETPOINTS: RTU-8
   - FANS ARE TO RUN CONTINUOUSLY WITH AUXILIARY SHUTDOWN RELAY INTERLOCKED WITH DUCT SMOKE DETECTORS.
   - CONTROL SYSTEM SHALL ENERGIZE HEATING OR COOLING AS REQUIRED BY SPACE.
   - SET POINTS: STAGE 1 COOL = 68°F - 67°F
     STAGE 2 COOL = 69°F - 68°F
     STAGE 1 HEAT = 65°F - 66°F
     STAGE 2 HEAT = 66°F - 67°F
   - A FREEZESTAT SHALL BE LOCATED IN THE MIXED AIR STREAM TO DE-ENERGIZE THE COMPRESSOR IF THE TEMPERATURE DROPS BELOW 38°F.

   RTU UNIT OPERATION AND SETPOINTS: RTU-1:
   - FANS ARE TO RUN CONTINUOUSLY WITH AUXILIARY SHUTDOWN RELAY INTERLOCKED WITH DUCT SMOKE DETECTORS.
   - CONTROL SYSTEM SHALL ENERGIZE HEATING OR COOLING AS REQUIRED BY SPACE.
   - SET POINTS: STAGE 1 COOL = 74°F - 73°F
     STAGE 1 HEAT = 70°F - 71°F
   - A FREEZESTAT SHALL BE LOCATED IN THE MIXED AIR STREAM TO DE-ENERGIZE THE COMPRESSOR IF THE TEMPERATURE DROPS BELOW 38°F.
5. REFRIGERATION OPERATION AND SETPOINTS
   - COMPRESSORS CONTROLLED BY SUCTION PRESSURE TO MAINTAIN TO WITHIN 1 PSI OF SETPOINT WHILE CYCLING EACH COMPRESSOR A MAXIMUM OF 24 TIMES PER DAY.
   - REFRIGERATION COMPRESSORS SETPOINT TO MATCH REFRIGERATION SCHEDULE SST. MAY BE RAISED DURING COMMISSIONING IF SYSTEM PRESSURE DROP IS LOWER THAN DESIGNED PRESSURE DROP.
   - REFRIGERATION CONDENSERS SHALL MAINTAIN VALUE OF [CONDENSER DROP LEG SCT-AMBIENT AIR] AT 3 DEGREES BELOW CONDENSER DESIGN TEMPERATURE DIFFERENCE (TD). WHEN SCT DROPS TO 70° CONDENSER FANS SHALL BE CYCLED TO MAINTAIN 70°. WHEN DISCHARGE PRESSURE RISES ABOVE 95° SCT THE DIFFERENTIAL CONTROL SHALL BE SUSPENDED AND THE CONDENSERS FANS SHALL BE CYCLED TO MAINTAIN 105° SCT.
   - RECEIVER HOLDBACK VALVE SHALL BE SET AT 65° SCT.
   - RECEIVER PRESSURIZATION VALVE SHALL BE SET AT 60° SCT.
   - CONDENSER SPLIT (IF USED) AT AMBIENT OF 50°F.
   - LIQUID SOLENOID VALVE SHALL CLOSE AND UNIT COOLER FANS SHALL TURN OFF ON FREEZERS WHEN DOOR INPUT IS RECEIVED ON AI BOARD.
   - TEMPERATURE OF PREP ROOMS VIA PROBE IN PREP ROOM AND LIQUID SOLENOID VALVE AT WALK-IN.
   - TERMINATION TEMPERATURE VIA PROBE (AS USED) SHALL BE OPTIMIZED TO REDUCE DEFROST TIME.
   - DEFROST FAILSAFE ADJUSTED TO EQUAL TERMINATION TIME + 10 MINUTES.
   - DEFROST CONTROL SHALL CYCLE CONTROL RELAYS TO ACTIVATE DEFROST.
   - DEFROST SCHEDULE PROGRAMMED TO GIVE A CONSTANT LOAD.
   - CASE DISCHARGE AIR TEMPERATURE SHALL BE HELD TO WITHIN 1° OF SETPOINT EXPECT DURING DEFROST.
6. LIGHTING
   - CONTROL SYSTEM SHALL CYCLE CONTACTORS FOR MAIN SALES LIGHTING, CASE LIGHTING AND PARKING LOT LIGHTING, ETC PER CONTRACT DOCUMENTS
   - COORDINATE WITH STORE TO DETERMINE LIGHTING SCHEDULE
7. CONTROL POINTS
   - REFRIGERATION
     COMPRESSORS
     DEFROST
     CONDENSER FANS WITH SPLIT CONTROL (IF USED)
   - HVAC
     EACH COOLING STAGE
     EACH HEATING STAGE
     DEHUMIDIFICATION - HOT GAS REHEAT FOR UNITS
     RTU-2,3,5,10,14 & 15
   - LIGHTING
     MAIN SALES 60% CASES
     LIGHTS PARKING LIGHT
     LIGHTS BERM SIGN
     PYLON SIGN
8. MONITOR FUNCTION
   - REFRIGERATION
     AMBIENT TEMP PER UNIT.
     CONDENSING PRESSURE.
     DISCHARGE PRESSURE
     SUCTION PRESSURE
     SUCTION MANIFOLD TEMPERATURE
     DEFROST TERMINATION OF ALL CASE LINE-UPS AND COOLERS/FREEZER UNDER 32°F.
     FREEZER DOOR OPENINGS (SWITCH BY HEB S