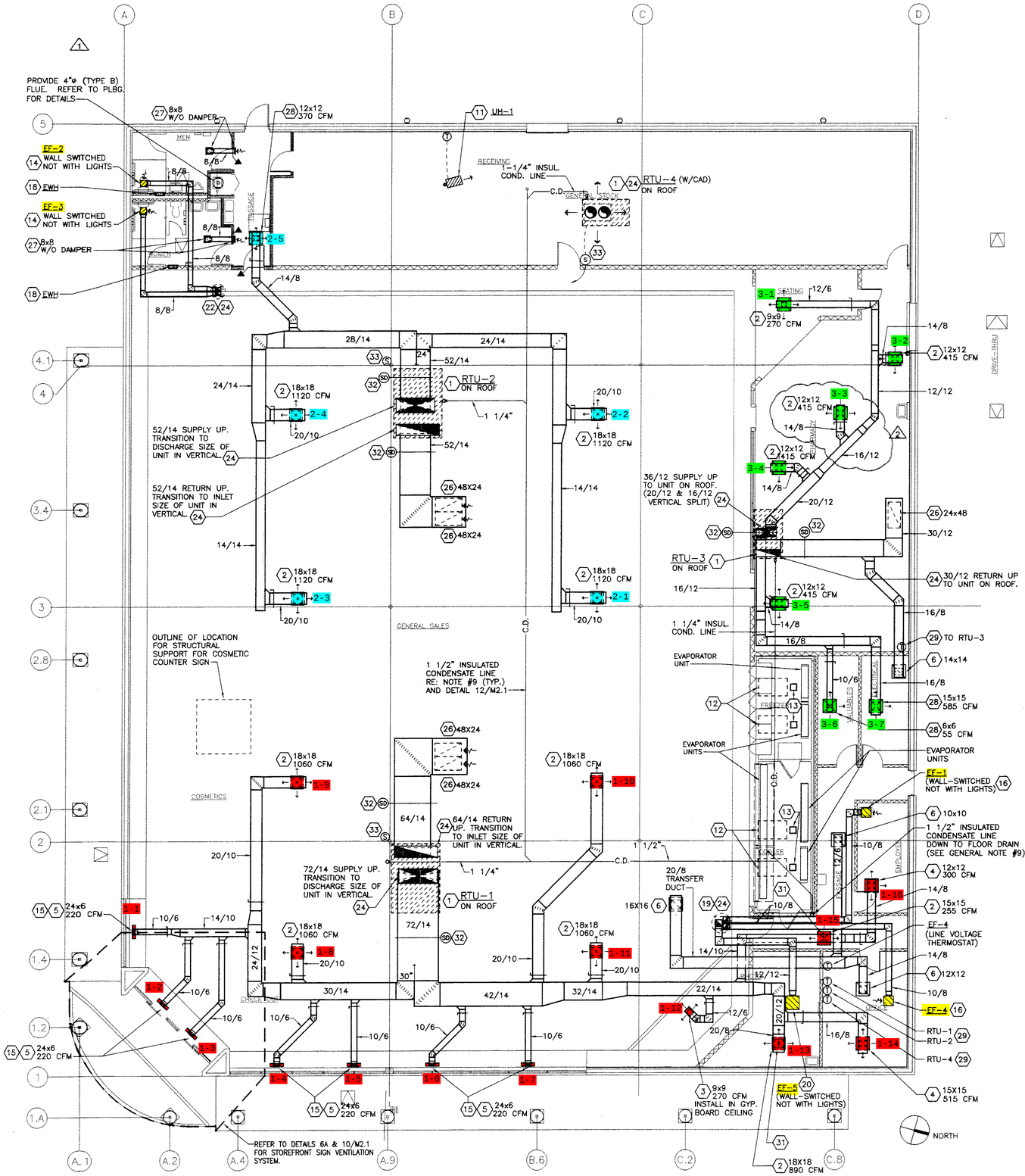

MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

LEGEND

- SUPPLY AIR
- RETURN / EXHAUST AIR
- TEE – TURNING VANES AND ADJUSTABLE SPLITTER DAMPER
- ELBOW – TURNING VANES
- MANUAL DAMPER (SEE DAMPER SCHEDULE ON SHEET M2.1).
- ▲ FIRE DAMPER (SEE MECH. SPECIFICATION 15840).
- Ⓣ THERMOSTAT (MOUNT 5'-0" UP) SEE CONTROL DIAGRAM, DRAWING M2.2.
- Ⓢ SENSOR FOR HONEYWELL THERMOSTAT (T7300); SEE CONTROL DIAGRAM, DWG.M2.2, (MOUNT 6'-0" UP)
- SD SMOKE DETECTOR IN AIR STREAM. (FURNISHED BY ELECTRICAL CONTRACTOR)
- AHU AIR HANDLING UNIT
- CAD CONCENTRIC AIR DIFFUSER AND BOX SHALL BE MICRO METL 1013 SERIES OR APPROVED EQUAL. MOUNT BOX TOP AT UNDERSIDE OF BAR JOIST.
- CFM CUBIC FEET PER MINUTE
- EF EXHAUST FAN
- EWH ELECTRIC WALL HEATER
- SAD SUPPLY AIR DIFFUSER (SEE DETAIL 1/M2.1); CFM AND SIZE AS NOTED.
- SAG SUPPLY AIR GRILLE (SEE DETAIL 2/M2.1), CFM AND SIZE AS NOTED.
- RAG RETURN AIR GRILLE (SEE DETAIL 3/M2.1), CFM AND SIZE AS NOTED.
- RTU ROOF TOP UNIT
- UH UNIT HEATER

NOTES

1 – ALL WORK SHOWN SHALL COMPLY WITH ALL NATIONAL, STATE AND LOCAL CODES, ORDINANCES, ETC.

2 – SEE ALL OTHER DRAWINGS AND WALGREENS SPECIFICATIONS FOR ADDITIONAL WORK OR CLARIFICATION OF NECESSARY WORK.

3 – PROVIDE BURGLAR PROOFING IN ALL OPENINGS GOING THRU ROOF OR WALL (12"X12" OR LARGER, EXCEPT SCUTTLE), SEE DETAIL 5/M2.1.

4 – ALL FRESH AIR INTAKES ON ROOF SHALL BE LOCATED A MINIMUM OF 15'-0" AWAY FROM ANY EXHAUST DUCT, BLOWER DISCHARGE, PLUMBING VENT, ETC.

5 – HVAC ROOF-TOP UNIT TO INCLUDE FLEXIBLE CONNECTIONS, TURN VANES, AND VIBRATION ELIMINATORS. OUTSIDE AIR INTAKE TO BESIZED FOR A MINIMUM OF 100% OUTSIDE AIR FOR ECONOMIZER SYSTEMS. ALL HVAC ROOF-TOP EQUIPMENT AND VENT FLUES SHALL BE LOCATED A MINIMUM OF 4'-0" CLEAR OF ALL ROOF-TOP STRUCTURES, APPURTENANCES AND PARAPETS.

6 – ALL DUCTWORK TO BE GALVANIZED SHEET METAL. (LINED DUCTWORK WILL NOT BE ACCEPTED)

7 – ALL HVAC SUPPLY AND RETURN AIR DUCTS SHALL HAVE 1 1/2" EXTERNAL INSULATION. (OR MORE IF CODE REQUIRES)

8 – EACH HVAC UNIT TO HAVE ITS OWN CONTROLS. SEE DRAWING M2.2 FOR HVAC CONTROL WIRING DIAGRAM.

9 – PROVIDE CONDENSATE DRAIN (CD) WITH TRAP, WITHIN EACH HVAC UNIT, PIPE DOWN THRU ROOF WITHIN CURB, CONNECT INTO CD LINE ABOVE CEILING. INSULATE ALL CONDENSATE LINES, SIMILAR TO DOMESTIC COLD WATER PIPING.

10– ALL HVAC SYSTEMS TO BE BALANCED (BY AN INDEPENDENT CERTIFIED AIR BALANCE CONTRACTOR WITH A MINIMUM OF 5 YEARS EXPERIENCE) AFTER COMPLETION OF WORK.

11– NOT USED

12– PROVIDE FLUE TO ROOF (WITH WEATHER CAP) FOR GAS FIRED WATER HEATER (IF APPLICABLE), SEE DETAIL 3/P2.1.

13– EQUIPMENT MANUFACTURER SHALL PROVIDE ON EACH NEW WALGREEN STORE FACTORY SUPERVISED "CHECK, TEST & START" SERVICE, UTILIZING STANDARD WALGREEN FORMS AS PROVIDED BY FACILITIES PLANNING AND DESIGN DEPARTMENT. HVAC CONTRACTOR SHALL VERIFY COMPLIANCE WITH PLANS AND SPECIFICATIONS AND SHALL FORWARD TO THE WALGREEN CO., COMPLETED C.T.S. FORMS, ALONG WITH THREE COPIES OF SERVICE AND INSTALLATION MANUALS, PARTS LIST AND ALL RELATED WARRANTIES. SUBMITTAL SHALL BE IN BOOK FORM AND APPLICABLE TO ACTUAL EQUIPMENT INSTALLED.

14– HVAC UNITS MUST BE INSTALLED LEVEL ON ROOF.

15– THERMOSTAT SENSOR WIRING TO BE RUN INSIDE PIPE COLUMNS.

16– DO NOT INSTALL SUPPLY AIR DIFFUSERS IN CEILING PANEL ADJACENT TO ROW OF LIGHT FIXTURES. COORDINATE DIFFUSERS WITH REFLECTED CEILING PLAN ON DWG. A1.2.

17– FLEXIBLE DUCT LENGTH NOT TO EXCEED A MAXIMUM OF 7'-0".

18– SUPPLY AND/OR RETURN AIR CEILING PLENUMS WILL NOT BE ACCEPTED.

19– DO NOT INSTALL UNIT HEATER ABOVE STOCK ROOM SHELVING.

20– ELECTRIC WALL HEATERS (EWH) AND ELECTRIC UNIT HEATERS (EUH) ARE PROVIDED UNDER THE ELECTRICAL CONTRACT, SHOWN HERE FOR HVAC INFORMATION ONLY.

21– GAS PIPING SHALL BE RUN ABOVE CEILING, (OUT THRU ROOF, WITHIN UNIT CURB), PROVIDE SHUT-OFF VALVE AT EACH PIECE OF EQUIPMENT (NOT BELOW ROOF FOR RTU'S).

22– MECHANICAL SYSTEMS PIPING AND DUCTWORK TO BE HELD TO 14'-0" A.F.F. AND ABOVE. COORDINATE WITH STOCK ROOM SHELVING.

MECHANICAL KEYED NOTES

(1) HVAC ROOF-TOP UNIT. SEE GENERAL NOTES (ABOVE) AND SCHEDULE ON DRAWING M2.1 FOR ADDITIONAL INFORMATION.

(2) S.A.D. (TYPE "A"). CFM AND SIZE AS NOTED. SEE SCHEDULE AND DETAIL #1 ON SHEET M2.1

(3) S.A.D. (TYPE "E"). MOUNT AT GYP. BOARD CEILING. CFM AND SIZE AS NOTED. SEE DETAIL #1 AND GRILLE SCHEDULE ON SHEET M2.1

(4) S.A.D. (TYPE "C"), THERMALLY POWERED VARIABLE AIR VOLUME (VAV) DIFFUSER. ACUTHERM THERMA-FUSER HC OR KRUEGER VARIFUSER AVDP SERIES. CFM AND SIZE AS NOTED.

(5) S.A.G. (TYPE "B"). CFM AND SIZE AS NOTED. SEE SCHEDULE AND DETAIL #2 ON SHEET M2.1.

(6) R.A.G. (TYPE "G"). SIZE AS NOTED. SEE SCHEDULE AND DETAIL #3 ON SHEET M2.1.

(7) NOT USED.

(8) NOT USED.

(9) NOT USED.

(10) NOT USED.

(11) GAS FIRED, POWER VENTED UNIT HEATER (SEE SCHEDULE DWG. M2.1). BOTTOM 12'-0" UP THERMOSTAT MOUNTED 5'-0" UP ON WALL (SET AT 68 F). PROVIDE 4" FLUE TO ROOF WITH WEATHER CAP. SEE DETAIL 14/M2.1.

(12) ROOF-TOP CONDENSING UNIT FOR WALK-IN COOLER/FREEZER. SEE DETAIL 8/M2.1 FOR ADDITIONAL INFORMATION.

(13) PIPE PORTAL FOR WALK-IN COOLER/FREEZER CONDENSING UNIT REFRIGERANT AND ELECTRICAL LINES. SEE DETAIL 4 & 6/M2.1

(14) EXHAUST FAN (WITH BACK DRAFT DAMPER AND ALUMINUM GRILLE), WITH EXHAUST DUCT UP THROUGH ROOF TO VENTILATION HOOD. TRANSITION FROM EXHAUST DUCT TO EXHAUST FAN AS REQUIRED, 240 CFM, SEE SCHEDULE ON SHEET M2.1 FOR ADDITIONAL INFORMATION.

(15) ADJUST FRONT HORIZONTAL BARS TO AN ANGLE OF 45 SO THAT THE AIR FLOWS AWAY FROM THE WINDOW. THIS IS TO HELP PREVENT CONDENSATION ON THE GLASS IN HOT, HUMID CLIMATE CONDITIONS.

(16) EXHAUST FAN (WITH SOLID STATE CONTROLLER, BACK DRAFT DAMPER AND ALUMINUM GRILLE), WITH EXHAUST DUCT UP THROUGH ROOF TO VENTILATION HOOD. TRANSITION FROM EXHAUST DUCT TO EXHAUST FAN AS REQUIRED, 300 CFM, SEE SCHEDULE ON SHEET M2.1 FOR ADDITIONAL INFORMATION.

(17) NOT USED.

(18) ELECTRIC WALL HEATER (EWH) FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. SEE DRAWING E1.2 FOR FURTHER INFORMATION.

(19) ROUTE DUCTS FROM EXHAUST FANS UP TO ROOF VENTILATOR, GREENHECK GRS-24 WITH GPS SERIES CURB, OR ACCEPTABLE EQUAL. TRANSITION DUCTS IN VERTICAL. SEE VENTILATOR DETAIL 7/M2.1.

(20) EXHAUST FAN (WITH BACK DRAFT DAMPER AND ALUMINUM GRILLE), WITH EXHAUST DUCT UP THROUGH ROOF TO VENTILATION HOOD. TRANSITION FROM EXHAUST DUCT TO EXHAUST FAN AS REQUIRED, 750 CFM, SEE SCHEDULE ON SHEET M2.1 FOR ADDITIONAL INFORMATION.

(21) NOT USED.

(22) ROUTE DUCTS FROM EXHAUST FANS UP TO ROOF VENTILATOR, GREENHECK GRS-18 WITH GPS SERIES CURB, OR ACCEPTABLE EQUAL. TRANSITION DUCTS IN VERTICAL. SEE VENTILATOR DETAIL 7/M2.1.

(23) NOT USED.

(24) ALL OPENINGS 12"X12" AND LARGER THROUGH ROOF OR WALLS SHALL BE EQUIPPED WITH BURGLAR BARS. SEE DETAIL 5/M2.1.

(25) NOT USED.

(26) R.A.G. (TYPE "D"). SIZE AS NOTED. SEE SCHEDULE AND DETAIL #3 ON SHEET M2.1.

(27) R.A.G. (TYPE "F"). SIZE AS NOTED. SEE SCHEDULE ON SHEET M2.1.

(28) S.A.D. (TYPE "E") CFM AND SIZE AS NOTED. SEE SCHEDULE AND DETAIL #1 ON SHEET M2.1

(29) THERMOSTAT 5'-0" AFF FOR HEATING AND COOLING. SEE SHEET M2.2 FOR DETAILS AND PROGRAMING.

(30) NOT USED.

(31) D-2 DAMPER IN VERTICAL.

(32) INSTALL SMOKE DETECTOR IN AIR STREAM. DETECTOR FURNISHED BY ELECTRICAL CONTRACTOR.

(33) THERMOSTATIC REMOTE SENSOR MOUNTED 6'-0" AFF. PROVIDE STAINLESS STEEL COVER (RE: ARCHITECTURAL DWGS.) ROUTE WIRING WITHIN COLUMN (OR WALL). SEE DETAIL 13/M2.1.

R.H. George and Associates, Inc.
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8700 Jameel, Suite 150
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Walgreens

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Pasadena, Texas

Development of
LSI Burke, Ltd.

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Levinson Associates, Inc.
Architecture • Planning • Interior Design

One Greenway Plaza
Suite 880
Houston, Texas 77046
(713) 850-7660

REVISIONS

1	10-7-96	DESIGN CHANGE
2	11-1-96	WALGREENS COMMENTS

STATE OF TEXAS
MELVIN KALMANS
24070
REGISTERED
PROFESSIONAL ENGINEER

FACILITIES
NOV 01 1996
PLANNING & DESIGN

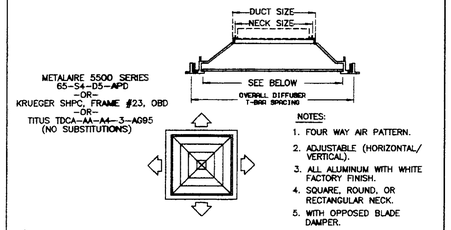
LAI Project No.	96189.001
Walgreen Store Number	04133
Walgreen Criteria Date	08-96
Issued for Permit	
Issued for Bidding	
Issued for Construction	

SD 11/7/97

M1.1
Floor Plan-Mechanical

Date: October 4, 1996

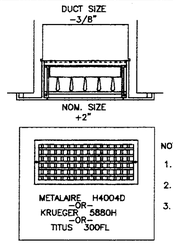
SUPPLY AIR DIFFUSER DETAIL



NOTES:
1. FOUR WAY AIR PATTERN.
2. ADJUSTABLE (HORIZONTAL/VERTICAL).
3. ALL ALUMINUM WITH WHITE FACTORY FINISH.
4. SQUARE, ROUND, OR RECTANGULAR NECK.
5. WITH OPPOSED BLADE DAMPER.

1 M2.1

SUPPLY AIR GRILLE DETAIL

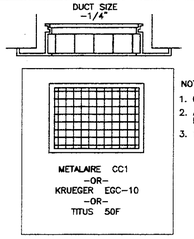


NOTES:
1. ADJUSTABLE, DOUBLE DEFLECTION.
2. ALL ALUMINUM WITH WHITE FACTORY FINISH.
3. WITH APPOSED BLADE DAMPER.

(NO SUBSTITUTION ACCEPTED FOR METALAIRE, KRUEGER, AND TITUS)

2 M2.1

RETURN AIR GRILLE DETAIL

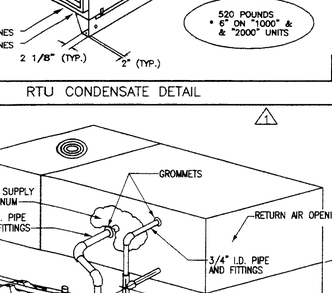


NOTES:
1. 0 DEGREE DEFLECTION.
2. ALL ALUMINUM WITH WHITE FACTORY FINISH.
3. 1"X1"X1" EGGCRATE GRID.

(NO SUBSTITUTIONS ACCEPTED FOR METALAIRE, KRUEGER, AND TITUS)

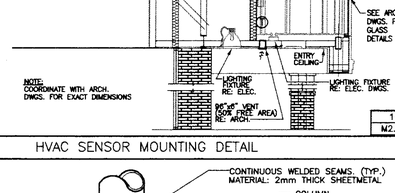
3 M2.1

PIPE PORTAL FOR ELECTRICAL, GAS AND CONDENSATE LINES



4 M2.1

BURGLAR PROOFING DETAIL

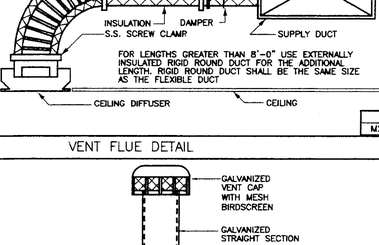


NOTE:
2" X 3/8" STEEL WELDED FRAME, ALL SIDES, WITH 3/4" DIA. STEEL RODS ON 6" CENTERS (MAX.) IN BOTH DIRECTIONS, WELDED TO FRAME AND EACH OTHER. (ARCHITECTURAL DRAWING A4.2 FOR FURTHER INFORMATION).

ONLY REQUIRED FOR OPENINGS 12" X 12" AND LARGER.

5 M2.1

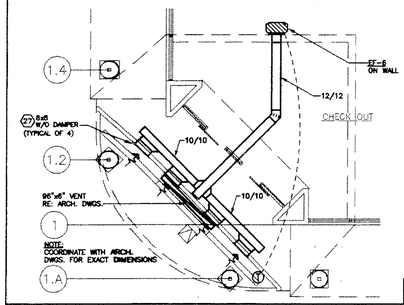
PIPE PORTAL FOR REFRIGERANT LINES



NOTE:
1. SEE DRAWING A4.2 FOR ADDITIONAL INFORMATION.

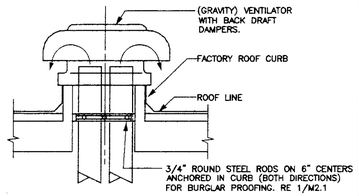
6 M2.1

PARTIAL ROOF PLAN (NO SCALE)



6A M2.1

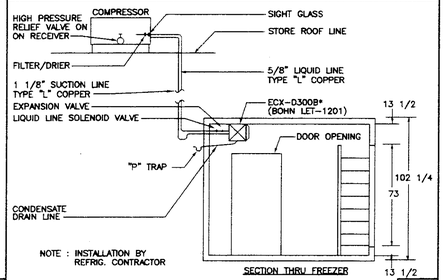
ROOF TOP VENTILATOR DETAIL



MANUFACTURER: ACME, COOK, GREENHECK, JENN-AIRE OR PENN.

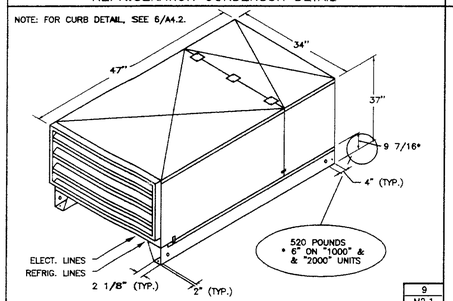
7 M2.1

REFRIGERATION PIPING SCHEMATIC



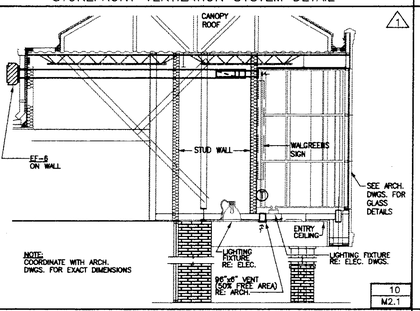
8 M2.1

REFRIGERATION CONDENSOR DETAIL



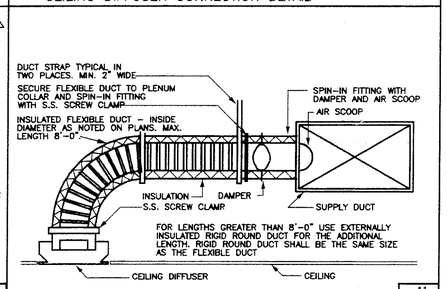
9 M2.1

STOREFRONT VENTILATION SYSTEM DETAIL



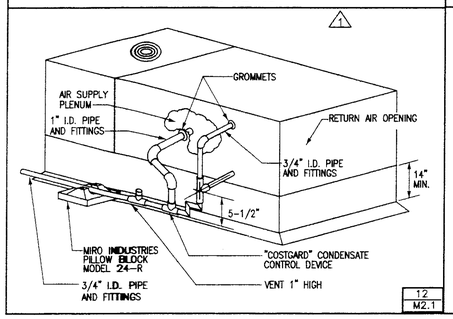
10 M2.1

CEILING DIFFUSER CONNECTION DETAIL



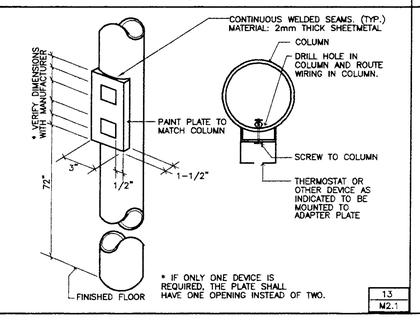
11 M2.1

RTU CONDENSATE DETAIL



12 M2.1

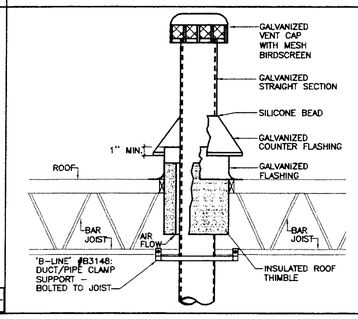
HVAC SENSOR MOUNTING DETAIL



* IF ONLY ONE DEVICE IS REQUIRED, THE PLATE SHALL HAVE ONE OPENING INSTEAD OF TWO.

13 M2.1

VENT FLUE DETAIL



14 M2.1

GRILLE SCHEDULE

MARK	DESCRIPTION	TYPE VOLUME CONTROL	CONSTRUCT. MATERIAL	FINISH	MANUFACTURER	MODEL	REMARKS
A	SUPPLY AIR DIFFUSER	ALUM OBD	ALUM.	OFF WHITE	METAL-AIRE KRUEGER TITUS	5500 65-54-05-APD SHPC, FRAME #23,OBD TDCA-AA-A4-3-AQ95	SUPPLY AIR DIFFUSER, 24"X24" FACE. FRAME STYLE FOR EXPOSED T-BAR CEILING.
B	SUPPLY AIR GRILLE	ALUM OBD	ALUM.	OFF WHITE	METAL-AIRE KRUEGER TITUS	H4004D 5880H 300FL	DOUBLE DEFLECTION SUPPLY AIR GRILLE WITH EXPOSED ADJUSTMENT KNOB.
C	VAV DIFFUSER	ALUM OBD	STEEL	OFF WHITE	ACUTHERM	THERMAFUSER HC	SELF CONTAINED VARIABLE VOLUME DIFFUSER, 24"X24" FACE. FRAME STYLE FOR EXPOSED T-BAR CEILING.
D	RETURN AIR GRILLE	--	ALUM.	OFF WHITE	METAL-AIRE KRUEGER TITUS	CC1 EGC-10 50F	EGGCRATE TYPE RETURN AIR GRILLE. FRAME STYLE FOR EXPOSED T-BAR CEILING. 24"X48" FACE.
E	SUPPLY AIR DIFFUSER	ALUM OBD	ALUM.	OFF WHITE	METAL-AIRE KRUEGER TITUS	5500A 5SHPC TDCA-AA	SURFACE MOUNTED.
F	EXHAUST/RETURN AIR REGISTER	ALUM OBD	ALUM.	OFF WHITE	METAL-AIRE KRUEGER TITUS	RHD 5580H 3FL	FIXED 45 DEGREE RETURN AIR GRILLE. FRAME TO BE SURFACE MOUNTED WITH DAMPER.
G	RETURN AIR GRILLE	--	ALUM.	OFF WHITE	METAL-AIRE KRUEGER TITUS	CC1 EGC-10 50F	EGGCRATE TYPE RETURN AIR GRILLE. FRAME STYLE FOR EXPOSED T-BAR CEILING. 24"X24" FACE.

UNIT HEATER SCHEDULE

UNIT	AREA SERVED	BTU/HR INPUT	CFM	MOTOR HP.	MOTOR VOLT PHASE	RPM	TYPE	MAKE AND MODEL	REMARKS
UH-1	RECEIVING	50,000	650	1/40	120-1-60	1550	INDOOR POWER VENTED	REZNOR FE50	MIN. COMBUSTION EFFICIENCY SHALL BE 75% AT MAX. RATED OUTPUT

1

FAN SCHEDULE

UNIT	AREA SERVED	CFM.	SP.	MOTOR HP	MOTOR VOLTS PHASE	RPM	TYPE	MAKE AND MODEL
EF-1	LOUNGE	300	0.375	120 WATTS	120 1	1000	CEILING MOUNTED EXHAUST FAN	GREENHECK #SP-250 W/ BACKDRAFT DAMPER AND WHITE PLASTIC GRILLE.
EF-2	MEN TOILET RM.	240	0.375	120 WATTS	120 1	1000	CEILING MOUNTED EXHAUST FAN	GREENHECK #SP-226 W/ BACKDRAFT DAMPER AND WHITE PLASTIC GRILLE.
EF-3	WOMEN TOILET RM.	240	0.375	120 WATTS	120 1	1000	CEILING MOUNTED EXHAUST FAN	GREENHECK #SP-226 W/ BACKDRAFT DAMPER AND WHITE PLASTIC GRILLE.
EF-4	OFFICE	300	0.375	120 WATTS	120 1	1000	CEILING MOUNTED EXHAUST FAN	GREENHECK #SP-250 W/ BACKDRAFT DAMPER AND WHITE PLASTIC GRILLE.
EF-5	PHOTO	750	0.375	285 WATTS	120 1	1000	CEILING MOUNTED EXHAUST FAN	GREENHECK #SP-260 W/ BACKDRAFT DAMPER AND WHITE PLASTIC GRILLE.
EF-6	STOREFRONT SIGN	700	0.375	1/12	120 1	1140	WALL MOUNTED EXHAUST FAN	GREENHECK #GW-120-B, FAN SHALL BE CONTROLLED BY THERMOSTAT, SET TO 85°F, ADJUSTABLE

HEATING/COOLING UNIT SCHEDULE

NOTE: AT 95 DEG. CONDENSER ENTRANCE AIR TEMPERATURE & ARI CONDITIONS.

UNIT	AREA SERVED	FUSE SIZE MAX AMP 480 VOLTS 3 PHASE	BLOWER CFM. S.A.	BLOWER CFM. O.A.	BLOWER MOTOR HP.	BLOWER MOTOR VOLTS/PHASE	COMPRESSOR ELECT. REQ. FL AMPS	COMPRESSOR ELECT. REQ. VOLTS/PHASE	COMPRESSOR COOLING CAPACITY TOTAL	COMPRESSOR COOLING CAPACITY SENSIBLE	AIR COOLED CONDENSER ELECT. REQ. FL AMPS	AIR COOLED CONDENSER ELECT. REQ. HP.	AIR COOLED CONDENSER ELECT. REQ. VOLTS/PHASE	GAS FIRED FURNACE BTU/HR RATE INPUT	GAS FIRED FURNACE BTU/HR RATE OUTPUT	MAKE/MODEL/WEIGHT/FILTERS
RTU-1	GENERAL SALES	SEE ELECT. DRAWINGS	8,010	785	7.5 11.0	460/3	17.7	460/3	262,675	179,440	2.9	2 AT 1	460/3	250,000	203,000	W/(1)(5)(6)(7)(8)(9)(10)(11)
RTU-2	GENERAL SALES	SEE ELECT. DRAWINGS	4,850	800	3.0 4.8	460/3	12.7	460/3	170,390	116,985	1.6	2 AT .50	460/3	250,000	203,000	W/(2)(5)(6)(7)(8)(9)(10)(11)
RTU-3	PHARMACY	SEE ELECT. DRAWINGS	2,570	225	1.0 3.2	460/3	10.0	460/3	79,425	56,670	2.4	1/2	460/3	120,000	97,000	W/(3)(5)(6)(7)(8)(9)(10)(11)
RTU-4	STOCK ROOM	SEE ELECT. DRAWINGS	1,400	198	0.5 2.0	460/3	7.1	460/3	48,145	33,560	0.9	1/4	460/3	90,000	73,000	W/(4)(5)(6)(7)(8)(9)(10)(11)

NOTES:
1) TRANE YCD300B, 2,400 LBS, WITH DISPOSABLE FILTERS.
2) TRANE YCD181B, 2,275 LBS, WITH DISPOSABLE FILTERS.
3) TRANE YCD086C, 950 LBS, WITH DISPOSABLE FILTERS.
4) TRANE YCD049C, 850 LBS, WITH FILTER RACK & DISPOSABLE FILTERS. PROVIDE "MICRO METL" CURB ADAPTOR, FLEX DUCT PACKAGE, AND CONCENTRIC DIFFUSER PAC.
5) EXTENDED 5 YEAR WARRANTY ON COMPRESSOR.
6) EXTENDED 10 YEAR WARRANTY ON HEAT EXCHANGER.
7) WARRANTIES OR A COPY OF WARRANTIES IS TO BE GIVEN TO WALGREEN'S PROJECT ARCHITECT UPON COMPLETION OF PROJECT.
8) ECONOMIZER SYSTEMS NOT REQUIRED.
9) UNITS SHALL HAVE THE HIGHEST EFFICIENCY RATINGS AVAILABLE FROM THE MANUFACTURER FOR BOTH HEATING AND COOLING.
10) SEE M2.2 FOR OUTSIDE AIR CALCULATIONS.
11) UNIT SUPPLIED WITH ROOF CURB.

NATIONAL ACCOUNTS

WALGREEN CO. INTENDS TO HAVE INSTALLED ON ALL PROJECTS EAST OF THE MISSISSIPPI RIVER PLUS PUERTO RICO (EXCEPT FOR THE STATE OF ILLINOIS), CARRIER EQUIPMENT, AND WEST OF THE MISSISSIPPI RIVER AND THE STATE OF ILLINOIS, TRANE EQUIPMENT.

FOR TRANE EQUIPMENT, CALL ANNA SPEAR HANAS ✪ (800)453-6954) TO COORDINATE YOUR PURCHASE ORDER AGREEMENT AND EQUIPMENT DELIVERY.

FOR CARRIER EQUIPMENT, CALL DEBORAH ROY JONES ✪ (315)432-7941) TO COORDINATE YOUR PURCHASE ORDER AGREEMENT AND EQUIPMENT DELIVERY.

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REVISIONS

1 10-7-96 DESIGN CHANGE
2 11-1-96 WALGREENS COMMENTS

STATE OF TEXAS
MELVIN KALMANS
24070
REGISTERED PROFESSIONAL ENGINEER
10 SEPT 96

LAI Project No.	96189.001
Walgreen Store Number	04133
Walgreen Criteria Date	08-96
Issued for Permit	
Issued for Bidding	
Issued for Construction	

SD 11/8/97

M2.1
Mechanical Schedule & Details

Date: October 4, 1996

OUTSIDE AIR CALCULATIONS

ROOF TOP UNIT #1

		CFM OA	CFM SA	Z
RETAIL SALES	5,704 Sq. Ft. x $\frac{8 \text{ PEOPLE}}{1000 \text{ Sq. Ft.}}$ x $\frac{15 \text{ CFM}}{1 \text{ PERSON}}$ =	685 CFM	6,050 CFM	.113
OFFICE	221 Sq. Ft. x $\frac{7 \text{ PEOPLE}}{1000 \text{ Sq. Ft.}}$ x $\frac{20 \text{ CFM}}{1 \text{ PERSON}}$ =	31 CFM	515 CFM	.060
PHOTO	204 Sq. Ft. x .05 CFM/Sq. Ft. =	10 CFM	890 CFM	.011
EMPLOYEE LOUNGE	4 PEOPLE x 15 CFM / PERSON x .5 (DIVERSITY) =	30 CFM	300 CFM	.100
PASSAGE #1	288 Sq. Ft. x .05 CFM/Sq. Ft. =	15 CFM	255 CFM	.059
		771 CFM	8,010 CFM	

X = 771/8,010 = .096

Y = .096/(1 + .096 − .113) = .098

CFM OUTSIDE AIR = 8,010 CFM SA x .098 = 785 CFM OA

ROOF TOP UNIT #2

		CFM OA	CFM SA	Z
RETAIL SALES	5,152 Sq. Ft. x $\frac{8 \text{ PEOPLE}}{1000 \text{ Sq. Ft.}}$ x $\frac{15 \text{ CFM}}{1 \text{ PERSON}}$ =	618 CFM	4,480 CFM	.138
PASSAGE #2	150 Sq. Ft. x .05 CFM/Sq. Ft. =	8 CFM	155 CFM	.052
REST ROOMS	4 PEOPLE x 50 CFM / FIXTURE =	200 CFM	215 CFM	---
		826 CFM	4,850 CFM	

X = 826/4,850 = .170

Y = .170/(1 + .170 − .138) = .165

CFM OUTSIDE AIR = 4,850 CFM SA x .165 = 800 CFM OA

ROOF TOP UNIT #3

		CFM OA	CFM SA	Z
PHARMACY	1,311 Sq. Ft. x $\frac{8 \text{ PEOPLE}}{1000 \text{ Sq. Ft.}}$ x $\frac{15 \text{ CFM}}{1 \text{ PERSON}}$ =	158 CFM	1,930 CFM	.082
VALUABLE ROOM	96 Sq. Ft. x .15 CFM/Sq. Ft. =	14 CFM	55 CFM	.255
ELECTRICAL ROOM	120 Sq. Ft. x .05 CFM/Sq. Ft. =	6 CFM	585 CFM	.010
		178 CFM	2,570 CFM	

X = 178/2,570 = .070

Y = .070/(1 + .070 − .255) = .086

CFM OUTSIDE AIR = 2,570 CFM SA x .086 = 225 CFM OA

ROOF TOP UNIT #4

STOCK ROOM

1,974 Sq. Ft. x .10 CFM/Sq. Ft. = 198 CFM

SECTION 15F

AUTOMATIC TEMPERATURE CONTROL

1. SCOPE OF WORK
   THE CONTRACTOR UNDER THIS HEADING SHALL BE THE HEATING AND AIR CONDITIONING CONTRACTOR WHO SHALL FURNISH ALL CONTROL EQUIPMENT, ENGINEERING SERVICES, JOB DRAWINGS AND FIELD SUPERVISION FOR TEMPERATURE CONTROL.
   THIS SPECIFICATION IS INTENDED TO COVER EQUIPMENT FOR THE AUTOMATIC TEMPERATURE CONTROL FOR:
   HEATING
   VENTILATION
   AIR CONDITIONING
2. SERVICE AND GUARANTEE
   THE CONTROL SYSTEM AS HEREIN SPECIFIED SHALL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIAL UNDER NORMAL USE AND SERVICE. IF WITHIN TWELVE (12) MONTHS FROM DATE OF ACCEPTANCE BY THE ENGINEER, ANY OF THE EQUIPMENT HEREIN DESCRIBED IS PROVED TO BE DEFECTIVE IN WORKMANSHIP OR MATERIAL, IT SHALL BE REPLACED OR REPAIRED FREE OF CHARGE.
   THIS CONTRACTOR SHALL, AFTER COMPLETION OF THE ORIGINAL TEST OF THE INSTALLATION AND ACCEPTANCE BY THE ENGINEER, PROVIDE ANY SERVICE INCIDENTAL TO THE PROPER PERFORMANCE OF THE TEMPERATURE CONTROL SYSTEM UNDER GUARANTEES OUTLINED ABOVE FOR THE PERIOD OF ONE (1) YEAR. AFTER COMPLETION OF THE INSTALLATION, THIS CONTRACTOR SHALL REGULATE AND ADJUST ALL EQUIPMENT PROVIDED UNDER THIS CONTRACT. HE SHALL PLACE THEM IN COMPLETE OPERATING CONDITION SUBJECT TO THE APPROVAL OF WALGREEN CO..
3. DRAWINGS AND LAYOUTS
   THIS CONTRACTOR SHALL SUBMIT TO WALGREEN CO. A COMPLETE SHOP DRAWING OF THE ENTIRE CONTROL SYSTEM BEFORE STARTING WORK. UPON COMPLETION OF ALL WORK, HE SHALL PROVIDE, FOUR COPIES OF AS-BUILT LAYOUTS OF THE CONTROL SYSTEM TO WALGREEN CO. ENGINEERING DEPARTMENT.
4. INSTALLATION OF VALVES AND DAMPERS MOTORS
   ALL CONTROL VALVES AND DAMPER MOTORS, WHERE REQUIRED, SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR.
5. POSITIONING OF DAMPERS
   ALL DAMPERS SHALL BE POSITIONED BY THE VENTILATION CONTRACTOR. VENTILATION CONTRACTOR SHALL ALSO MARK POSITIONS OF DAMPERS ON AS-BUILT LAYOUTS.
6. CONTROL MOTORS
   ALL MOTORS MUST BE SPRING RETURN AND MUST HAVE OIL IMMERSED GEAR TRAIN.
7. ELECTRIC WIRING
   ALL WIRING AND MOUNTING OF TEMPERATURE CONTROL DEVICES SHALL BE PROVIDED UNDER THE ELECTRICAL CONTRACT AND SHALL BE IN ACCORDANCE WITH ALL EXISTING CODES. THE ELECTRICAL CONTRACTOR SHALL RUN ALL CONDUIT IN ACCORDANCE WITH SCHEMATIC DIAGRAM. THIS CONTRACTOR SHALL PROVIDE FINAL JOB WIRING DRAWINGS TO THE ELECTRICAL CONTRACTOR FOR INSTALLATION.
8. HONEYWELL T7300 – SEQUENCE OF OPERATIONS
   THE HEATING AND COOLING SETPOINTS SHALL BE INDIVIDUALLY ADJUSTABLE FOR BOTH OCCUPIED AND UNOCCUPIED PERIODS. THE THERMOSTATS SHALL HAVE A MINIMUM DEADBAND OF 2° F AND A MAXIMUM DEADBAND OF 48° F (NO MECHANICAL HEATING OR COOLING SHALL OPERATE WITHIN THIS DEADBAND). SPACE TEMPERATURE DEVIATION ABOVE COOLING SETPOINT OR BELOW THE HEATING SETPOINT SHALL GENERATE A DEMAND SIGNAL TO CONTROL THE SYSTEM AS FOLLOWS:
   A. HEATING
      1) THE THERMOSTAT SHALL CONTROL THE HEATING OUTPUTS BASED ON THE DEMAND SIGNAL COMMUNICATED FROM THE THERMOSTAT PROGRAM, TAKING INTO ACCOUNT BOTH SPACE TEMPERATURE DEVIATION (PROPORTIONAL ERROR) AND THE DURATION OF THAT TEMPERATURE DEVIATION (INTEGRAL ERROR).
      2) THE OUTDOOR AIR DAMPER SHALL BE AT A MINIMUM POSITION DURING THE OCCUPIED PERIOD, AND SHALL BE CLOSED DURING THE UNOCCUPIED PERIOD OF THE HEATING MODE.
      3) AUXILIARY HEAT SHALL BE CONTROLLED AT 2° F BELOW HEATING SETPOINT ON HEAT PUMP SYSTEMS.
   B. COOLING
      THE THERMOSTAT SHALL CONTROL THE COOLING OUTPUTS BASED ON THE DEMAND SIGNAL COMMUNICATED FROM THE THERMOSTAT PROGRAM, TAKING INTO ACCOUNT BOTH SPACE TEMPERATURE DEVIATION (PROPORTIONAL ERROR) AND THE DURATION OF THAT TEMPERATURE DEVIATION (INTEGRAL ERROR).
   C. HEATING SETBACK AND COOLING SETUP
      INITIATION OF HEATING SETBACK OR COOLING SETUP FOR EACH OF 7 DAYS SHALL BE PROVIDED BY A PROGRAMMED TIME SCHEDULE MANUALLY ENTERED INTO THE THERMOSTAT. WHEN ALL OR A PORTION OF A MANUALLY PROGRAMMED SCHEDULE IS UNAVAILABLE, THE THERMOSTAT SHALL CONTROL THE UNAVAILABLE PROGRAM FUNCTIONS TO OCCUPIED MODE AND DEFAULT SETPOINT RANGES AS FOLLOWS:

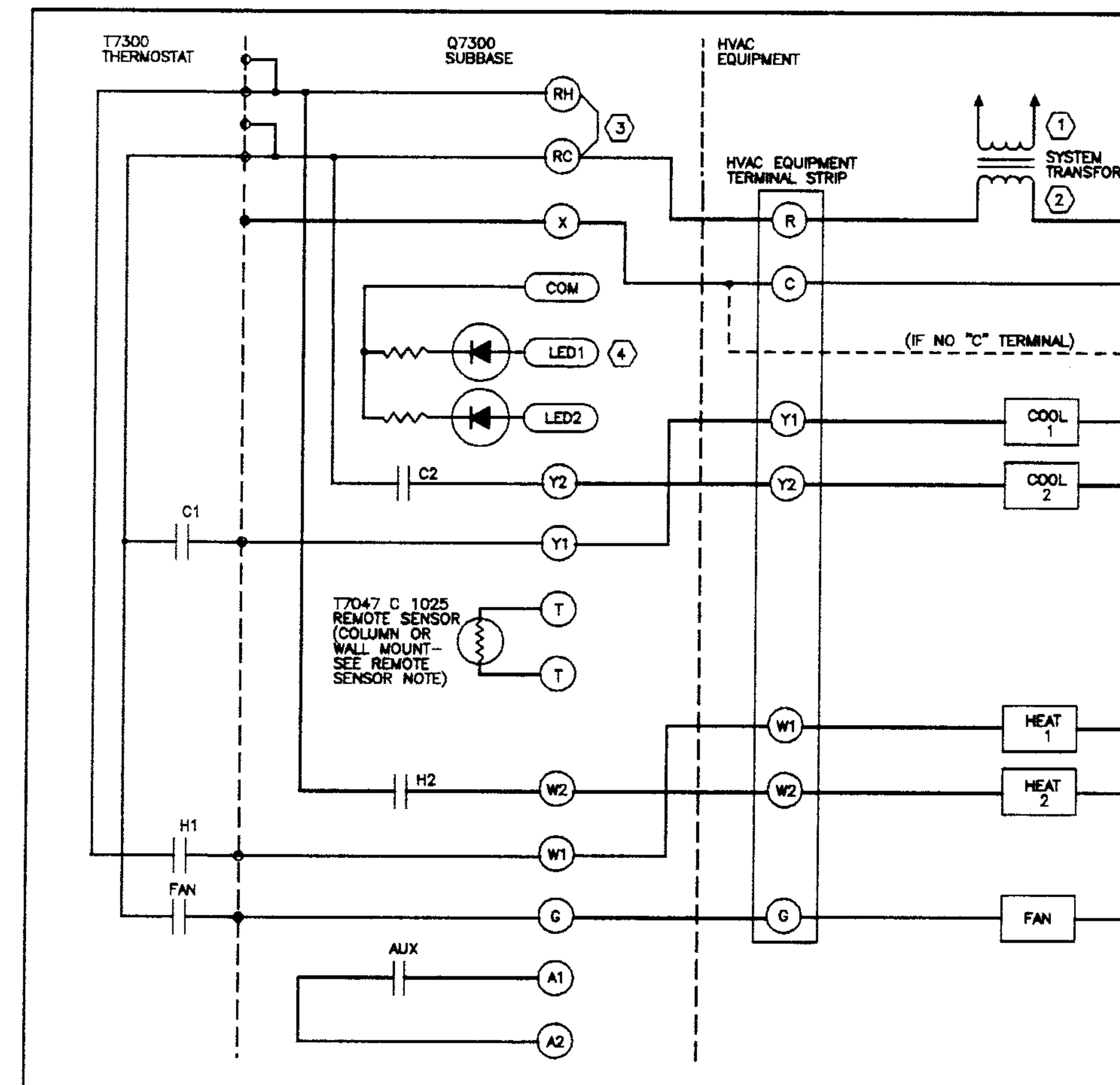
	TABLE OF DEFAULT SETPOINT RANGES			
	OCCUPIED		UNOCCUPIED	
	°F	°C	°F	°C
HEATING	68	20	55	13
COOLING	78	26	90	32

   D. SETPOINT RECOVERY FROM UNOCCUPIED TO OCCUPIED
      THE THERMOSTAT SHALL EMPLOY INTELLIGENT RECOVERY™. THIS SHALL SELECT THE OPTIMUM TIME TO BEGIN BUILDING WARM UP OR COOL DOWN BASED ON SETPOINTS AND OCCUPIED PROGRAM.
      1) THE TEMPERATURE SHALL RAMP 5 DEGREES PER HOUR FOR BOTH HEATING AND COOLING ON A CONVENTIONAL SYSTEM.
      2) THE TEMPERATURE SHALL RAMP 3 DEGREES PER HOUR FOR HEATING AND 5 DEGREES FOR COOLING ON A HEAT PUMP SYSTEM.
   E. FAN OPERATION
      1) FAN OPERATION SHALL BE CONSTANT DURING THE OCCUPIED PERIOD WHEN USED WITH A CONVENTIONAL SYSTEM.
      2) FAN OPERATION SHALL BE INTERMITTENT DURING THE UNOCCUPIED PERIOD.
   F. HEATING AND COOLING OPERATION MINIMUM ON/OFF TIMES
      THE THERMOSTAT SHALL INCORPORATE A PROGRAM TO MAINTAIN MINIMUM-STAGE OPERATION TIMES OF 2 MINUTES "ON" AND 4 MINUTES "OFF" FOR COMPRESSOR STAGES, AND 2 MINUTES "ON" AND 2 MINUTES "OFF" FOR HEAT (GAS OR ELECTRIC RESISTIVE).
9. PERFORMANCE OF WORK
   ALL WORK OUTLINED ABOVE SHALL BE DONE BY THE TEMPERATURE CONTROL CONTRACTOR UNLESS NOTED OTHERWISE.

BILL OF MATERIAL			
THE FOLLOWING CONTROLS TO BE FURNISHED BY TEMPERATURE CONTROL CONTRACTOR			
NO.	QUANTITY	MAKE	REMARKS
T1	1 (PER UNIT)	HONEYWELL T707581006	−20° F TO 80° F SCALE 1 DEGREE DIFFERENCE (USE AS COMPRESSOR LOCKOUT SET AT 50° F).
T2	1 (PER UNIT)	HONEYWELL T7300A1005 MODEL Q7300A1018	NOTE: FOR PHARMACY UNIT USE T7300/Q7300B1008
	1 (PER UNIT)	HONEYWELL T7047C1025	REMOTE SENSOR (NOTE: EXCEPT PHARMACY UNIT)

REMOTE SENSOR NOTE:

REMOTE SENSOR (T7047C1025) IS TO BE MOUNTED ON COLUMN (OR WALL), 6'-0" UP, WITH THE SUBBASE (T/Q7300) LOCATED IN OFFICE (AS SHOWN ON PLAN). CONNECT REMOTE SENSOR TO T-T TERMINALS OF SUBBASE VIA TWO (2) #16 AWG WIRES. SEE CONTROL WIRING DIAGRAM.
(NOTE: NOT TO INCLUDE PHARMACY UNIT.)



(1) POWER FROM HVAC FEEDERS WITH FUSED PROTECTION.
(2) 24 VAC SECONDARY. MUST BE ABLE TO CARRY ADDITIONAL 6 VA LOAD OF THERMOSTAT AND SUBBASE.
(3) FIELD INSTALLED JUMPER.
(4) 24 VAC ONLY.

T7300/Q7300 (CONFIGURED FOR 2H-2C) USED IN SINGLE TRANSFORMER, 2 STAGE HEATING/ 2 STAGE COOLING SYSTEM WITHOUT ECONOMIZER.

HVAC CONTROL DIAGRAM (EACH UNIT)

T-7300 THERMOSTATS (HONEYWELL)
NO SUBSTITUTIONS

(CONTROLS WITH OTHER NAMEPLATES, SUCH AS 'LENNOX' AND 'YORK', WHICH ARE MADE BY HONEYWELL AND PERFORM EXACTLY AS HONEYWELL ARE ACCEPTABLE).

PROGRAM

1) COOLING	76° F	OCCUPIED SALES AND PHARMACY
2) HEATING	72° F	
1) COOLING	78° F	OCCUPIED GENERAL STOCKROOM
2) HEATING	68° F	
1) COOLING	85° F	NOT OCCUPIED SALES/ GENERAL STOCKROOM
2) HEATING	60° F	
1) COOLING	80° F	NOT OCCUPIED PHARMACY
2) HEATING	68° F	

OCCUPIED (ON) 8 AM
UNOCCUPIED (OFF) 10 PM

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M2.2
HVAC Control Wiring Diagrams

Date: October 4, 1996