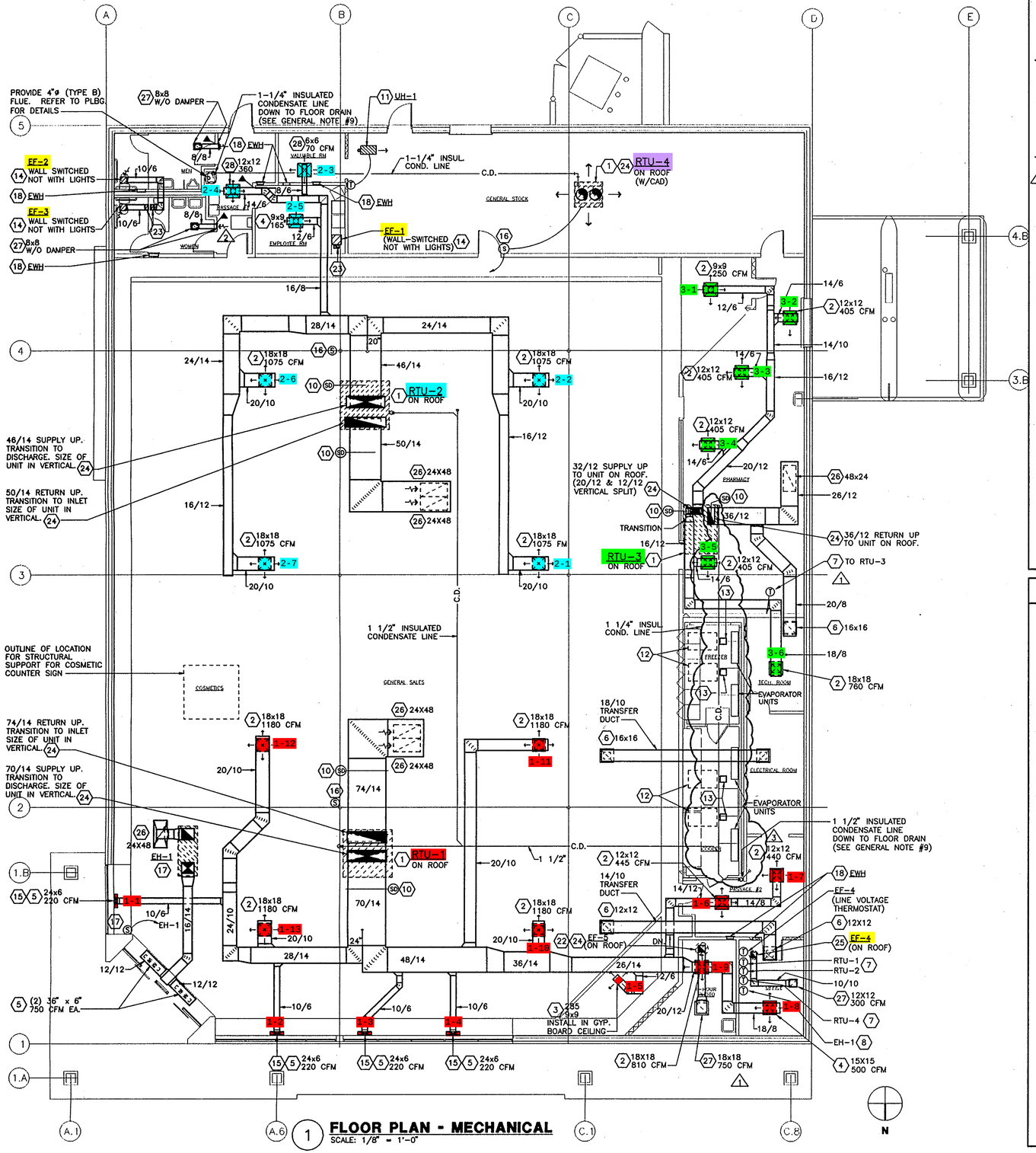

FLOOR PLAN - MECHANICAL

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

LEGEND

- SUPPLY AIR
- RETURN / EXHAUST AIR
- TEE – TURNING VANES AND ADJUSTABLE SPLITTER DAMPER
- ELBOW – TURNING VANES
- MANUAL DAMPER
- FIRE DAMPER (RE: SPEC. SECTION 15840)
- MOTOR (SEE SCHEDULE ON DRAWING M2.1)
- 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)
- SEE CONTROL DIAGRAM, DWG.M2.2, (MOUNT 6'-0" UP)

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
EH	ENTRANCE HEATER
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.
SF	SUPPLY FAN
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.

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).

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"). CFM AND SIZE AS NOTED. SEE SCHEDULE AND DETAIL #3 ON SHEET M2.1.
7. THERMOSTAT 5'-0" AFF FOR HEATING AND COOLING. SEE SHEET M2.2 FOR DETAILS AND PROGRAMING.
8. THERMOSTAT 5'-0" AFF FOR HEATING ONLY. SEE SHEET M2.2 FOR DETAILS AND PROGRAMING.
9. NOT USED.
10. INSTALL SMOKE DETECTOR IN AIR STREAM. DETECTOR FURNISHED BY ELECTRICAL CONTRACTOR.
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 6/M2.1
14. EXHAUST FAN (WITH BACK DRAFT DAMPER), WITH EXHAUST DUCT UP THROUGH ROOF TO VENTILATION HOOD. TRANSITION FROM EXHAUST DUCT TO EXHAUST FAN AS REQUIRED, CFM AS NOTED ON SCHEDULE, SHEET M2.1.
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. 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.
17. ROOF-TOP ENCLOSED BLOWER/ENTRANCE HEATER. INCLUDE VIBRATION ELIMINATORS AND FLEXIBLE CONNECTIONS, 100% RETURN AIR WITH SENSOR AT ENTRANCE AND THERMOSTAT IN OFFICE. SEE SCHEDULE FOR ADDITIONAL INFORMATION.
18. ELECTRIC WALL HEATER (EWH) FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. SEE DRAWING E1.2 FOR FURTHER INFORMATION.
19. NOT USED.
20. NOT USED.
21. NOT USED.
22. 12/12 DUCT FROM 750 CFM EXHAUST GRILLE TO EXHAUST FAN ON ROOF. TRANSITION AS REQ'D. SEE SCHEDULE AND DETAIL #4 ON SHEET M2.1.
23. 12/6 DUCT FROM EXHAUST FAN UP TO VENTILATOR ON ROOF. TRANSITIONS AS REQ'D. SEE VENTILATOR DETAIL 7/M2.1.
24. ALL OPENINGS 12"X12" AND LARGER THROUGH ROOF OR WALLS SHALL BE EQUIPPED WITH BURGLAR BARS. SEE DETAIL 5/M2.1.
25. 10/10 DUCT FROM 300 CFM 12x12 EXHAUST GRILLE TO EXHAUST FAN ON ROOF. TRANSITION AS REQUIRED. SEE SCHEDULE AND DETAIL #4 ON SHEET M2.1.
26. R.A.G. (TYPE "D"). CFM AND SIZE AS NOTED. SEE SCHEDULE AND DETAIL #3 ON SHEET M2.1.
27. R.A.G. (TYPE "F"). CFM AND 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

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REVISIONS

1	4-10-96	REVISIONS FOR CONSTRUCTION
2	4-24-96	ADDED FIRE DAMPERS
3	6-12-96	CRITERIA UPGRADE DM 7/9/96

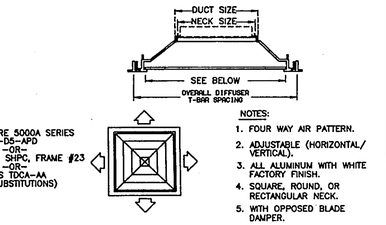
STATE OF TEXAS · KELVIN KALMANS · 84070 · REGISTERED PROFESSIONAL ENGINEER

LAI Project No.	95182.000
Walgreen Store Number	03909
Issued for Permit	
Issued for Bidding	
Issued for Construction	

M1.1
Mechanical Floor Plan

Date: Jan. 16, 1996

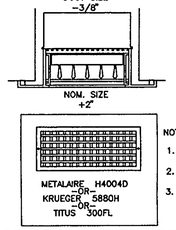
SUPPLY AIR DIFFUSER DETAIL



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

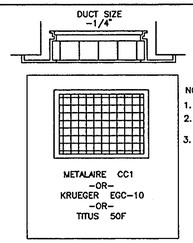


NOTES:
1. ADJUSTABLE, DOUBLE DEFLECTION.
2. ALL ALUMINUM WITH WHITE FACTORY FINISH.
3. WITH APPOSED BLADE DAMPER.

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

2 M2.1

RETURN AIR GRILLE DETAIL

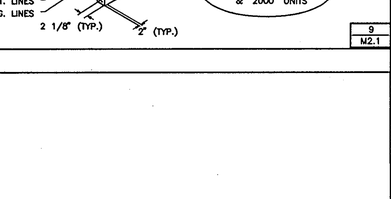


NOTES:
1. 0 DEGREE DEFLECTION.
2. ALL ALUMINUM WITH WHITE FACTORY FINISH.
3. 1"X1"X1" EGGCRATE GRID.

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

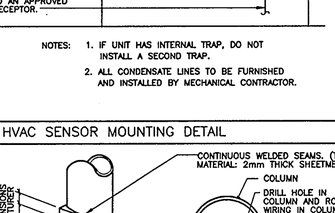
3 M2.1

ROOF TOP EXHAUST BLOWER DETAIL



4 M2.1

BURGLAR PROOFING DETAIL

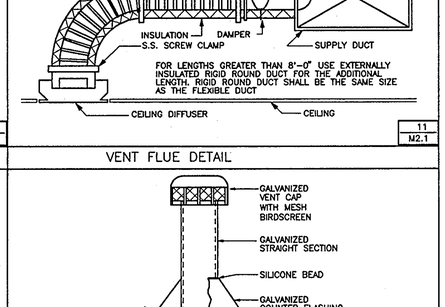


NOTE:
2" x 3/8" STEEL WELDED FRAME ALL SIDES WITH 3/4" DIA. STEEL RODS ON 6" (MAX.) CENTERS (BOTH WAYS) WELDED TO FRAME AND EACH OTHER. ANCHOR FRAME TO CURB WITH 1/2" DIA. STEEL BOLTS (TAMPER-PROOF) ON 6" (MAX.) CENTERS, MIN. 2 PER SIDE.

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

5 M2.1

ALUMINUM DUCT FOR REFRIGERANT LINES (DETAIL A)



NOTE: CONTRACTOR TO SELECT EITHER PIPE PORTAL DETAIL 6A OR 6B.

6A M2.1

ALUMINUM DUCT FOR REFRIGERANT LINES (DETAIL B)

6B 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

HVAC UNIT CONDENSATE DRAIN TRAP DETAIL

NOTES:
1. IF UNIT HAS INTERNAL TRAP, DO NOT INSTALL A SECOND TRAP.
2. ALL CONDENSATE LINES TO BE FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.

10 M2.1

CEILING DIFFUSER CONNECTION DETAIL

11 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	5000A M-6-D5 5SHPC TDCA-AA	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 S5580H 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
UH-1	RECEIVING	50,000	650	1/40	120-1-60	1550	INDOOR POWER VENTED	REZNOR FE50
EH-1	ENTRANCE	175,000	1500	1/2	120-1-60	760	OUTDOOR POWER VENTED	REZNOR RGB175 MIN. COMBUSTION EFFICIENCY SHALL BE 75% AT MAX. RATED OUTPUT

FAN SCHEDULE

UNIT	AREA SERVED	CFM.	SP.	MOTOR HP	MOTOR VOLTS PHASE	RPM	TYPE	MAKE AND MODEL
EF-1	LOUNGE	300	0.125	190 WATTS	120 1	1580	CEILING MOUNTED EXHAUST FAN	GREENHECK #SP-127 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-150 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-150 W/ BACKDRAFT DAMPER AND WHITE PLASTIC GRILLE.
EF-4	OFFICE	300	0.125	1/30	120 1	1300	ROOF MOUNTED EXHAUST FAN	GREENHECK #G-85-G W/ MOTORIZED BACKDRAFT DAMPER, FACTORY ROOF CURB (GPS) AND BIRDSCREEN.
EF-5	PHOTO	750	0.250	1/6	120 1	1140	ROOF MOUNTED EXHAUST FAN	GREENHECK #G-100-B W/ MOTORIZED BACKDRAFT DAMPER, FACTORY ROOF CURB (GPS) AND BIRDSCREEN.

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. AMPS	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	8,080	606	10.0 14.6	460/3	35.6	460/3	212,982	187,257	5.6	2 AT 1	460/3	270,000	216,000	W/(1)(5)(6)(7)(8)(9)(10)(11)
RTU-2	GENERAL SALES	SEE ELECT. DRAWINGS	4,895	812	5.0 7.9	460/3	28.2	460/3	153,339	125,560	2.4	3 AT 1/2	460/3	270,000	216,000	W/(2)(5)(6)(7)(8)(9)(10)(11)
RTU-3	PHARMACY	SEE ELECT. DRAWINGS	2,630	124	1.5 2.6	460/3	9.6	460/3	62,390	58,414	0.6	1/4	460/3	72,000	59,040	W/(3)(5)(6)(7)(8)(9)(10)(11)
RTU-4	STOCK ROOM	SEE ELECT. DRAWINGS	955	114	1.5 2.2	460/3	5.1	460/3	25,995	23,110	0.4	1/4	460/3	72,000	59,040	W/(4)(5)(6)(7)(8)(9)(10)(11)

NOTES:
1) CARRIER 48HJD025, 2,735 LBS, WITH DISPOSABLE FILTERS.
2) CARRIER 48HJE017, 2,510 LBS, WITH DISPOSABLE FILTERS.
3) CARRIER 48HJD007, 715 LBS, WITH DISPOSABLE FILTERS.
4) CARRIER 48HJE004, 630 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 ME1.1 FOR OUTSIDE AIR CALCULATIONS.
11) ROOF CURB.

ROOF TOP HVAC UNITS (TONNAGE/EFFICIENCY RATING)

(Manufacturer shall be Carrier, Lennox, Trane, or York, only the exact Trade or Signature Name and the Highest Efficiency Units Available From Each of These Manufacturers will be Acceptable.)

MANUFACTURER	3 / SEER	6 / SEER	15 / EER	20 / EER
CARRIER	HJE004 13.0	HJ007 11.0	HJ017 10.3	HJ025 9.3
LENNOX	16-413 10.1	24-653 10.0	LGA/LCA 180 9.2	LGA/LCA 240 9.0
TRANE	037 12.0	061 12.0	181 10.0	241 9.0
YORK	036 11.1	060 11.0	180 9.5	240 9.5

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REVISIONS

STATE OF TEXAS
KEVIN KAMAMS
REGISTERED
PROFESSIONAL
ENGINEER
1-16

LAI Project No.	95182.000
Walgreen Store Number	03909
Issued for Permit	
Issued for Bidding	
Issued for Construction	

6-12-96

M2.1
Mechanical Schedule & Details

Date: Jan. 16, 1996

OUTSIDE AIR CALCULATIONS

ROOF TOP UNIT #1

			CFM OA	CFM SA	Z
RETAIL SALES					
4640 Sq. Ft.	x 8 PEOPLE / 1000 Sq. Ft. x 15 CFM / 1 PERSON	=	556 CFM	5885 CFM	.094
OFFICE					
140 Sq. Ft.	x 7 PEOPLE / 1000 Sq. Ft. x 20 CFM / 1 PERSON	=	20 CFM	500 CFM	.040
PHOTO					
140 Sq. Ft.	x .05 CFM/Sq. Ft.	=	7 CFM	810 CFM	.008
PASSAGE #2					
345 Sq. Ft.	x .05 CFM/Sq. Ft.	=	17 CFM	885 CFM	.019
			600 CFM	7,990 CFM	

X = 600/8080 = .075

Y = .075/(1 + .075 − .094) = .075

CFM OUTSIDE AIR = 8,080 CFM SA x .075 = 606 CFM OA

ROOF TOP UNIT #2

RETAIL SALES					
4640 Sq. Ft.	x 8 PEOPLE / 1000 Sq. Ft. x 15 CFM / 1 PERSON	=	556 CFM	4300 CFM	.129
EMPLOYEE LOUNGE					
	DIVERSITY				
4 PEOPLE x 15 CFM / PERSON x .5		=	30 CFM	165 CFM	.181
PASSAGE #1					
120 Sq. Ft.	x .05 CFM/Sq. Ft.	=	6 CFM	120 CFM	.050
REST ROOMS					
4 PEOPLE x 50 CFM / FIXTURE		=	200 CFM	240 CFM	---
VALUABLE ROOM					
70 Sq. Ft.	x .15 CFM/Sq. Ft.	=	11 CFM	70 CFM	.157
			803 CFM	4,895 CFM	

X = 803/4895 = .164

Y = .164/(1 + .164 − .181) = .166

CFM OUTSIDE AIR = 4895 CFM SA x .166 = 812 CFM OA

ROOF TOP UNIT #3

PHARMACY					
920 Sq. Ft.	x 8 PEOPLE / 1000 Sq. Ft. x 15 CFM / 1 PERSON	=	110 CFM	1870 CFM	.058
TECH. ROOM					
119 Sq. Ft.	x 8 PEOPLE / 1000 Sq. Ft. x 15 CFM / 1 PERSON	=	14 CFM	760 CFM	.018
			124 CFM	2,630 CFM	

X = 124/2630 = .047

Y = .047/(1 + .047 − .058) = .047

CFM OUTSIDE AIR = 2630 CFM SA x .047 = 124 CFM OA

ROOF TOP UNIT #4

STOCK ROOM

1,140 Sq. Ft. x .10 CFM/Sq. Ft. = 114 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.

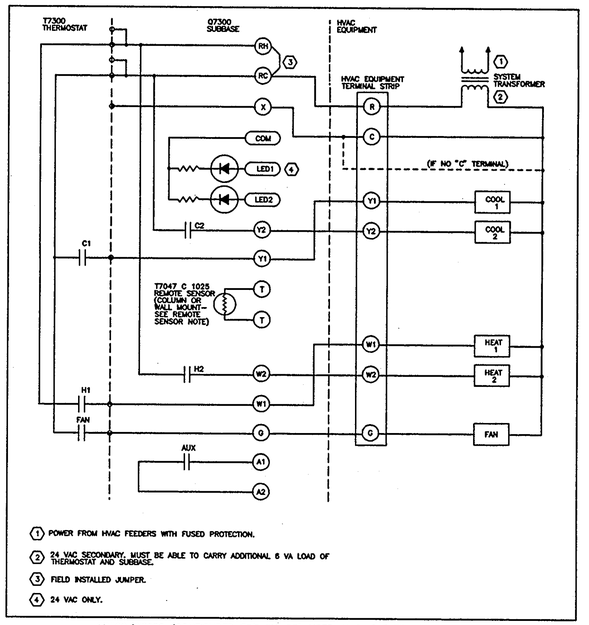
2) FAN OPERATION SHALL BE INTERMITTENT DURING THE UNOCCUPIED PERIOD.

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 T7075B1006	-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.)



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 2) HEATING 72° F	}	OCCUPIED SALES AND PHARMACY
1) COOLING 78° F 2) HEATING 68° F	}	OCCUPIED GENERAL STOCKROOM
1) COOLING 85° F 2) HEATING 60° F	}	NOT OCCUPIED SALES/ GENERAL STOCKROOM
1) COOLING 80° F 2) HEATING 68° F	}	NOT OCCUPIED PHARMACY
OCCUPIED (ON)		8 AM
UNOCCUPIED (OFF)		10 PM

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REVISIONS

LAI Project No.	95182.000
Walgreen Store Number	03909
Issued for Permit	
Issued for Bidding	
Issued for Construction	

6-12-96

M2.2
HVAC Control Wiring Diagrams

Date: Jan. 16, 1996