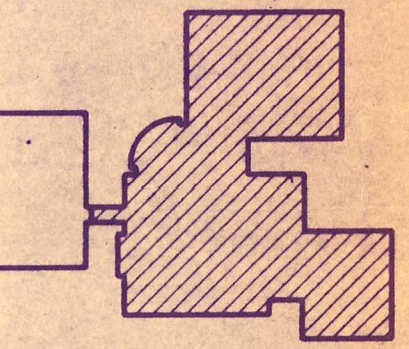




TMP Associates, Inc.
Architects Engineers Planners
1191 W. Square Lake Rd.
P.O. Box 289
Bloomfield Hills, Mich.
48303-0289
(313) 338-4561

project title
**Marshall
Elementary
Renovation**

sheet title
**Mechanical Plan
Zone "A"**



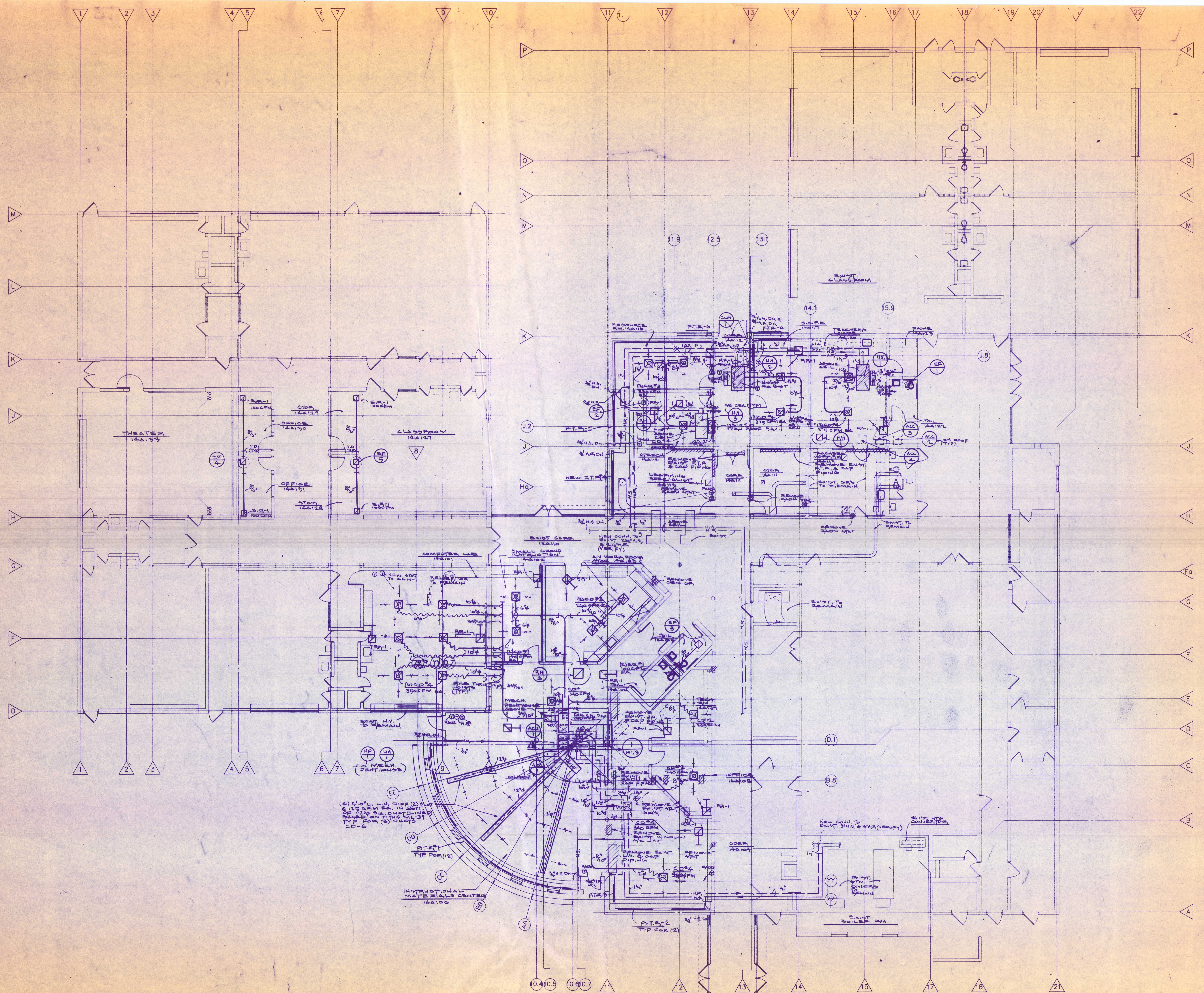
KEY PLAN

8-24-92 C.D.S.
8-11-92 95% REVIEW
date issued for

drawn R.B.
checked R.B.
approved K.J.

job. no.
92014

sheet no.
M1.2



FLOOR PLAN - MECH.
ZONE "A"

project title

Marshall
Elementary
Renovation

Livonia
Public Schools

sheet title

Mechanical Details
and Schedules

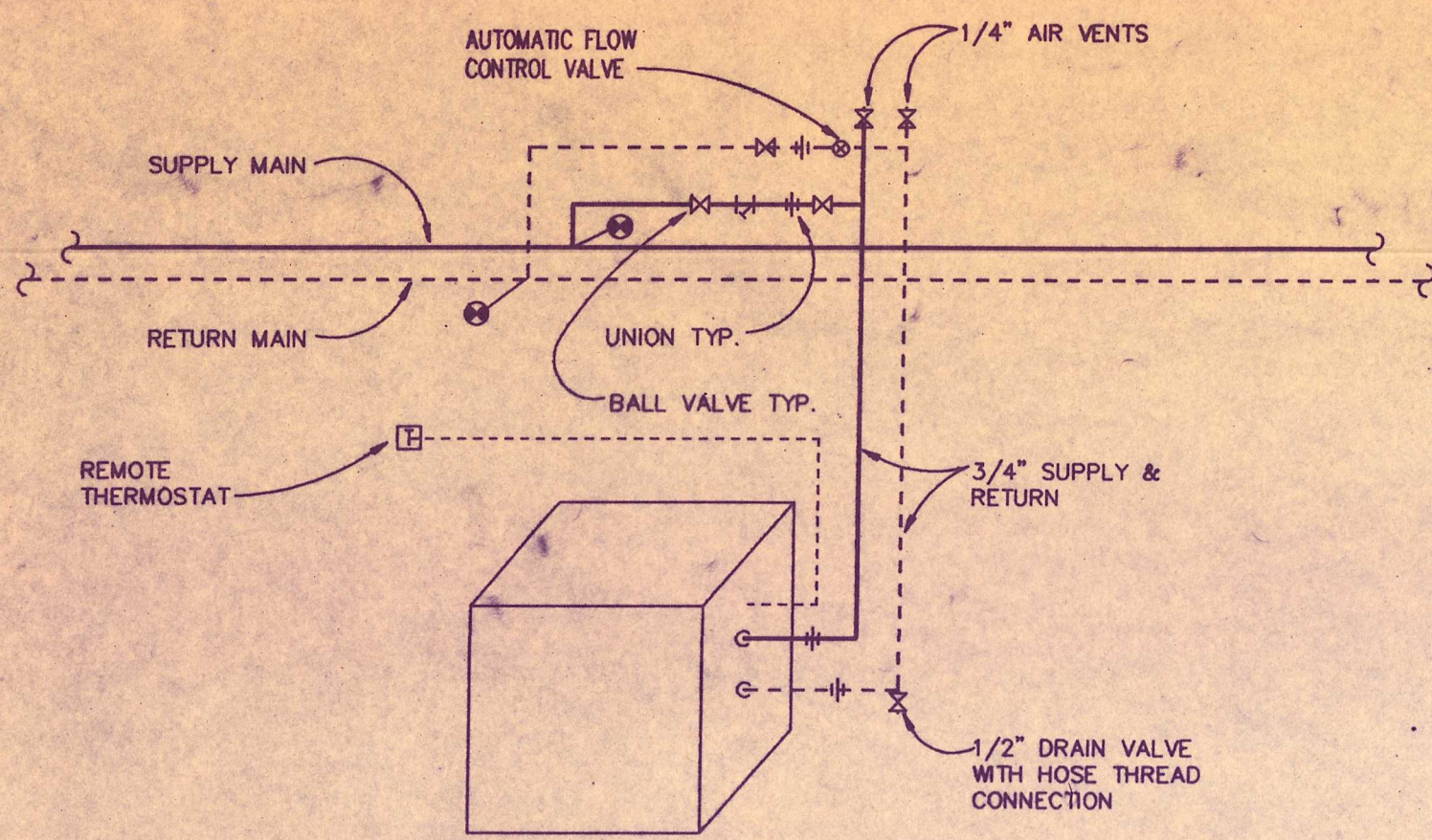
8-24-92 8:10 PM
4/17/92 15% REVIEW
date issued for

drawn R.B.
checked B.B.
approved H.J.
job no.

92014

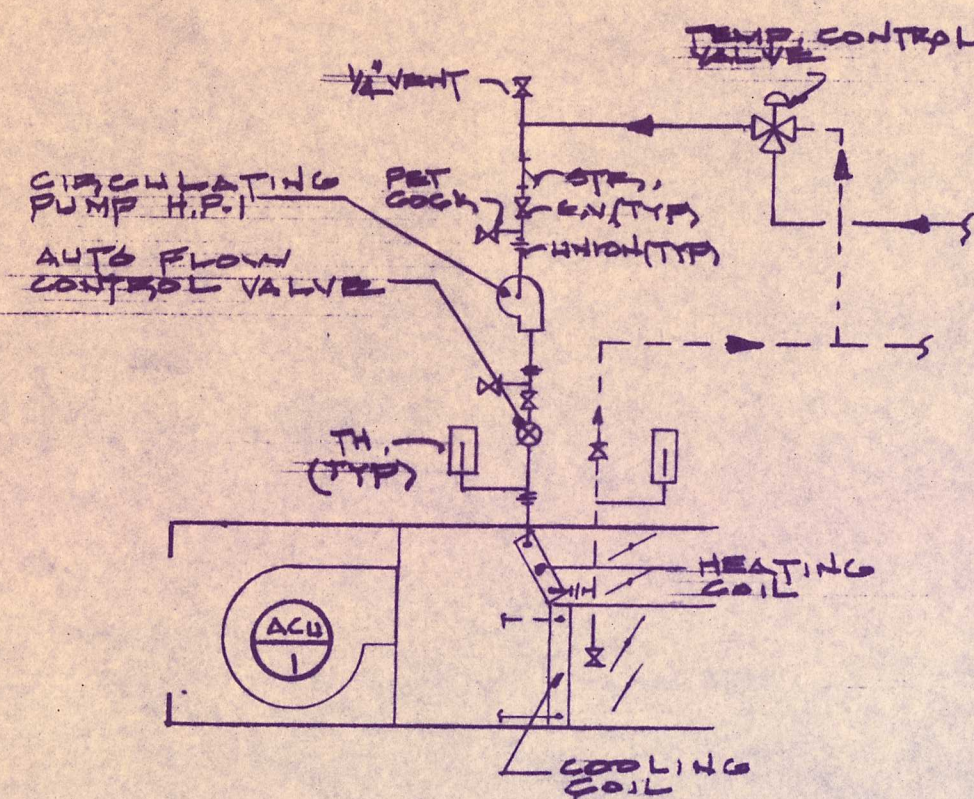
sheet no.

M1.3



UNIT HEATER PIPING DIAGRAM

NO SCALE



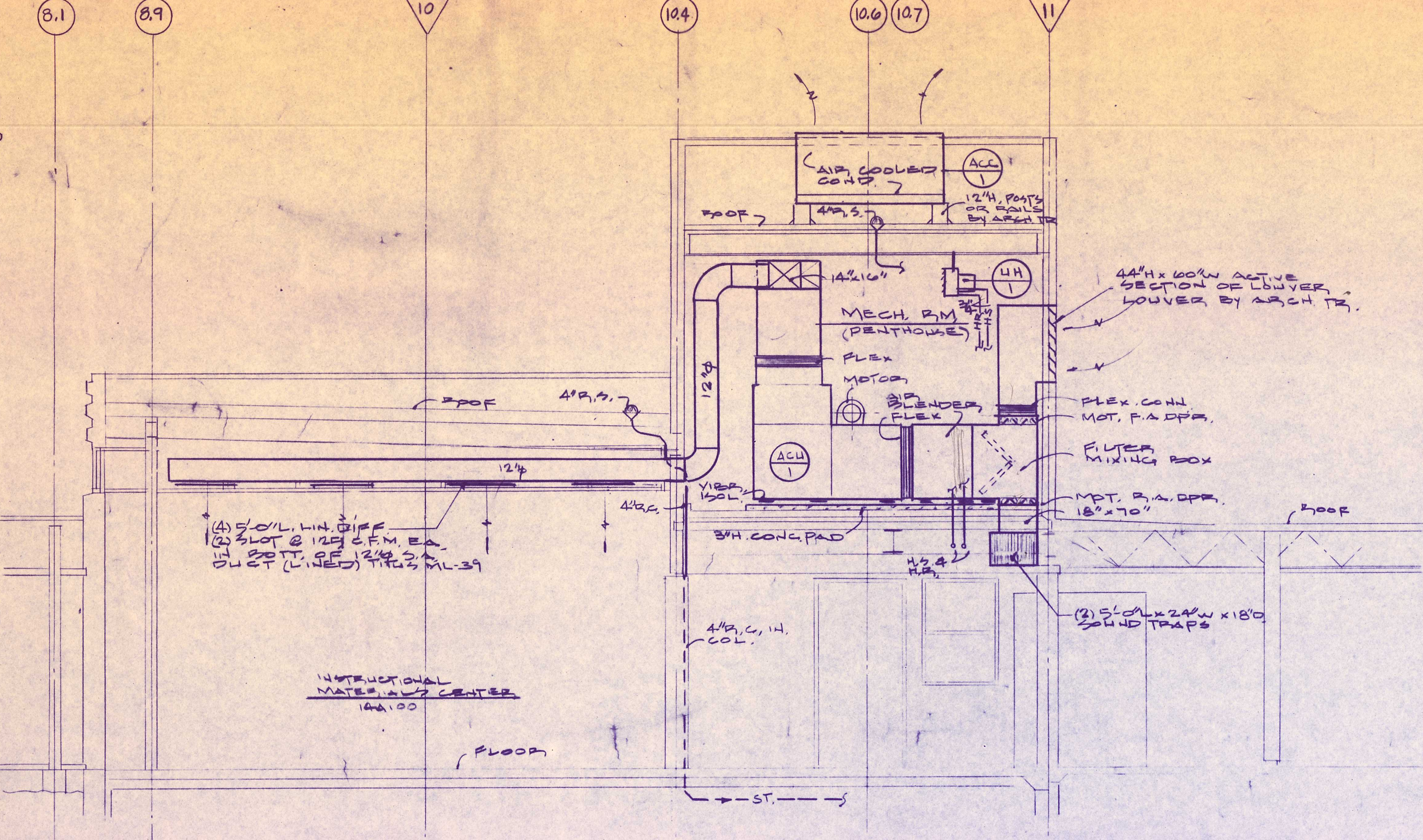
MULTIZONE UNIT
PIPING DIAGRAM FOR ACU-1

NO SCALE

UNIT VENTILATOR											
ITEM	SIZE	HTG MBH	GPM	TOTAL CLG. MBH	CFM	MIN. O.A. CFM	EWB.	EDB.	E.S.P. W.G.	MOTOR HP	REMARKS
UV-1	750	39.8	3.9	24.0	750	180	67.2	80.2	0.45	1/2	1,2,3,4,6,7,8,9,10,12
UV-2	750	25.7	2.6	24.1	750	180	67.0	79.6	0.45	1/2	1,2,3,4,6,7,8,9,10,12
UV-3	1000	26.2	2.8	28.1	1000	150	66.7	79.6	0.45	1/2	1,2,3,4,6,7,8,9,11,12

NOTES

- AHRAE II CONTROLS TO BE INSTALLED BY TEMP. CONTROL CONTRACTOR.
- HEATING ENTERING WATER TEMP. 200°F.
- D-X COOLING COIL.
- MOTORS 120V, 1 PHASE.
- VERTICAL AIRSET WITH 6" FALSE BACK.
- HORIZONTAL AIRSET.
- DUCTED INLET & DISCHARGE.
- WITH CONDENSATE DRAIN PAN.
- BASED ON AAF MODEL AH.
- WITH RCU24 AIR-COOLED CONDENSING UNIT.
- WITH RCU30 AIR-COOLED CONDENSING UNIT.
- INLET AIR LOCATION #2 AND DISCHARGE AIR ARRANGEMENT F.
-



SECTION
SCALE 1/4"=1'-0"

MECHANICAL EQUIP. SCHEDULE

PUMPS											
ITEM	MODEL	TYPE	SUCT. SIZE	DISCH. SIZE	GPM	TDH	RPM	VOLTS	PHASE	HP	REMARKS
HP-1	60V1-AA	IN LINE	1"	1"	11.7	10'	1750	120	1	1/4	SEE NOTES 1,2

NOTES

- LOCATED IN MECH. ROOM.
- BASED ON BELL & GOSSETT.

UNIT HEATERS										
ITEM	TYPE	SIZE	MBH	EWT °F	LWT °F	GPM	CFM	HP	VOLTS/ PH	REMARKS
UH-1	HORZ.	UHH-0168	18.0	200	184	2.2	380	1/80	120/1	SEE NOTES 1,2,3

NOTES

- BASED ON MCQUAY.
- LOCATED IN MECH. ROOM.
- FURNISH LINE VOLTAGE WALL THERMOSTAT TO BE INSTALLED BY MECH. CONTRACTOR.

CABINET UNIT HEATERS									
ITEM	ARRGT.	SIZE	MBH	EWT	LWT	GPM	CFM	FAN HP	REMARKS
CUH-1	WALL REC.	004A	28.8	200	180	3.00	400	1/12	SEE NOTE 1

NOTES

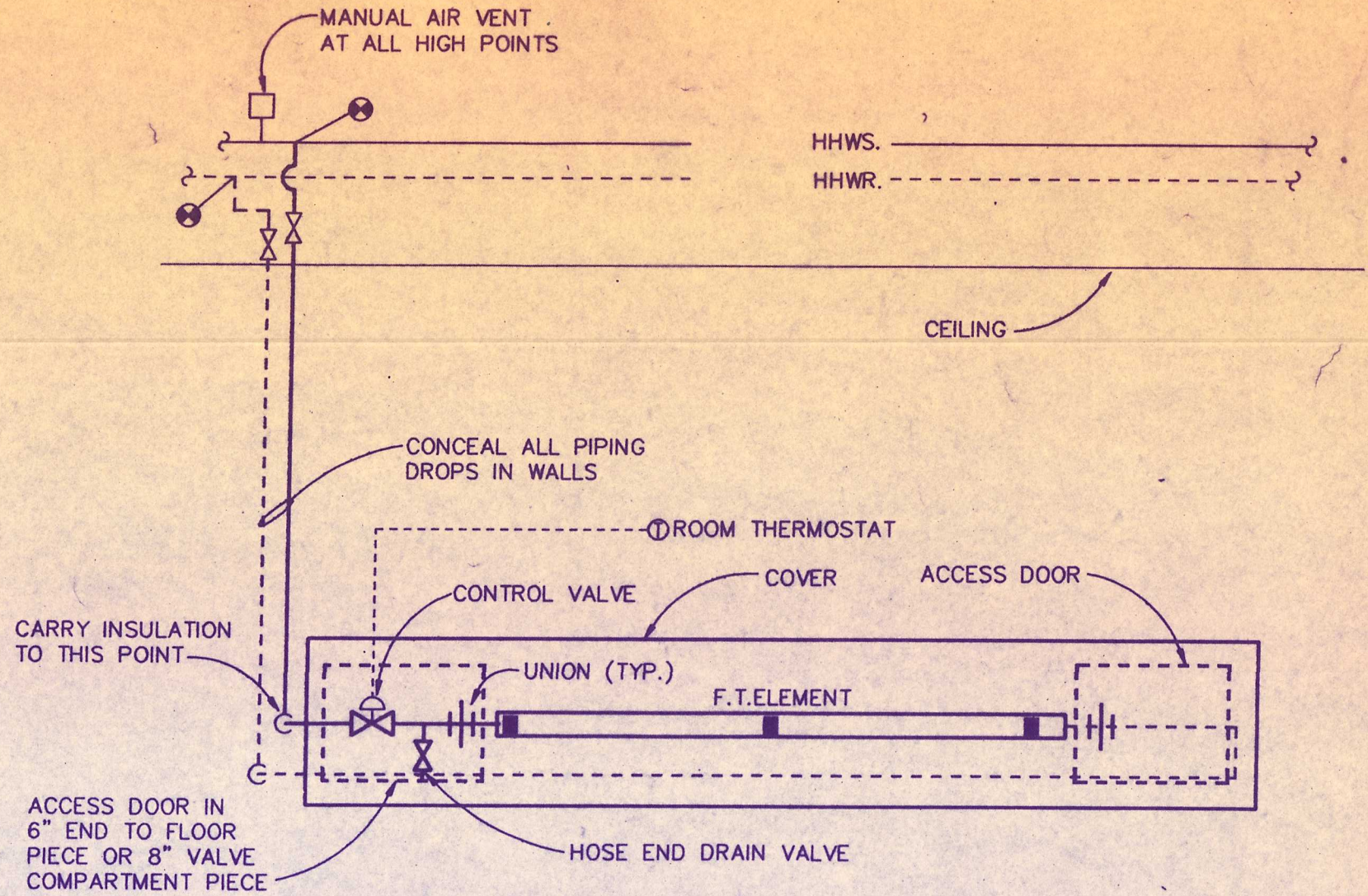
- BASED ON MCQUAY.

FIN TUBE RADIATION								
ITEM	NO. OF TIERS	TUBE SIZE	FIN SIZE	FINS/ FT.	BTUH/ FT.	ACTIVE LENGTH	TOTAL BTUH	REMARKS
TR-1	1	3/4"	2" X 3"	50	771	3'-0"	2313	SEE NOTES 1,2,3,4
TR-2	1	3/4"	2 3/4" X 4	32	820	3'-0"	2460	NOTES 1,2,3,5,6
TR-3	1	3/4"	2 3/4" X 4	32	820	1'-0"	820	NOTES 1,2,3,5,6
TR-4	1	1 1/4"	3 1/4" X 1 1/4"	32	760	10'-0"	7600	NOTES 1,2,3,5,6
TR-5	1	1 1/4"	3 1/4" X 3 1/4"	32	670	4'-0"	2680	NOTES 1,2,3,5,6
TR-6	1	1 1/4"	3 1/4" X 3 1/4"	48	920	7'-0"	6440	NOTES 1,2,3,5,6

NOTES

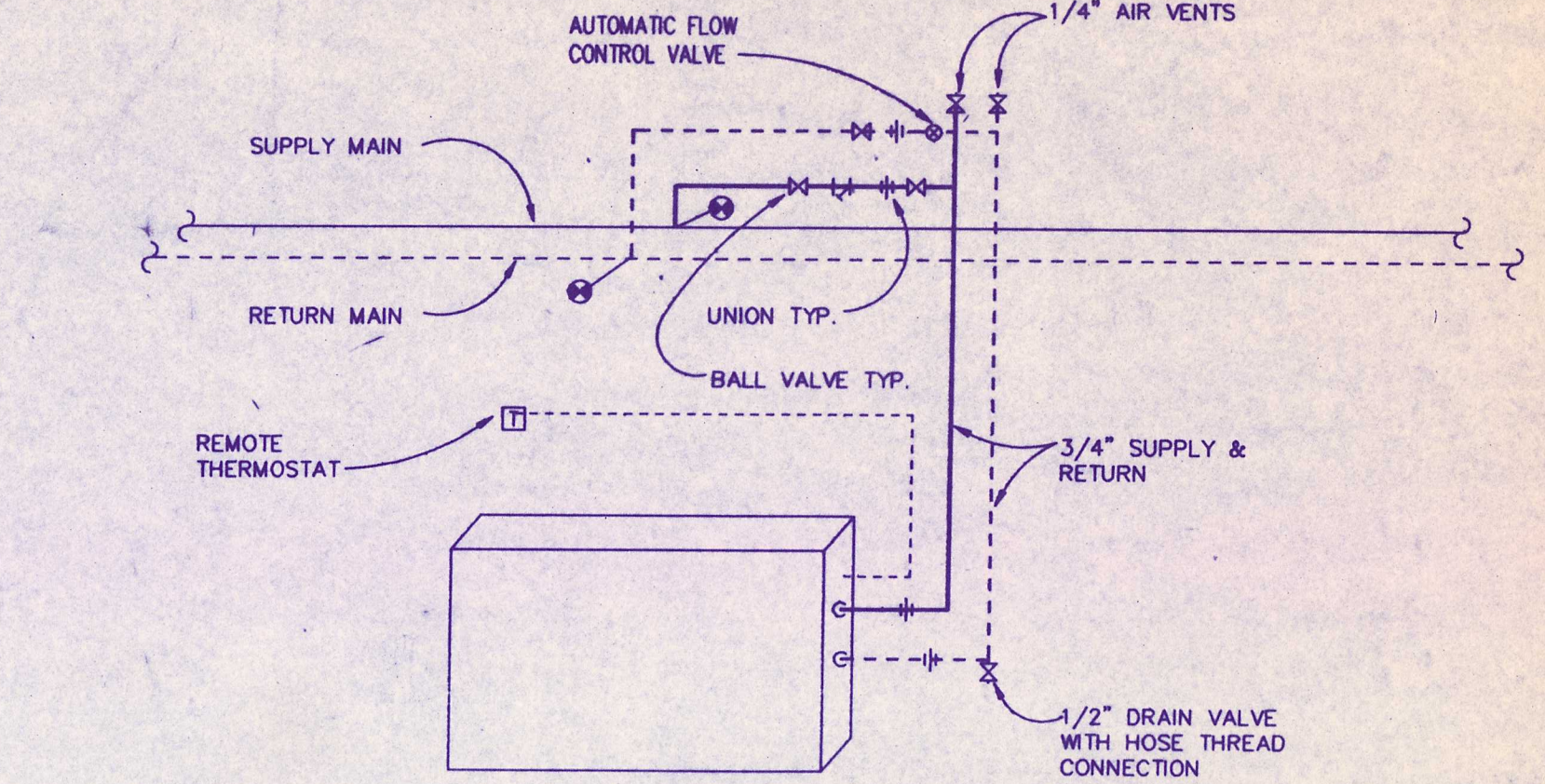
- PERFORMANCE BASED ON 190°F AVG. WATER, 20°F ΔT.
- COPPER TUBE, ALUMINUM FINS.
- BASED ON RITTLING.
- BASED ON RITTLING.
- FSOL ENCLOSURE FULL LENGTH OF WALL, INSTALLED HT. 12".
- WITH DAMPER.

GRILLES, REGISTERS & DIFFUSERS (BASED ON TITUS)					
EM	MAX CFM	NECK SIZE	FACE SIZE	MODEL	REMARKS
D-1	160	6"	24" X 24"	PAS	SUPPLY
D-2	245	8"	24" X 24"	PAS	SUPPLY
D-3	325	10"	24" X 24"	PAS	SUPPLY
D-4	395	12"	24" X 24"	PAS	SUPPLY
D-5	520	14"	24" X 24"	PAS	SUPPLY
D-6	400	22" X 22"	24" X 24"	ML-39	SUPPLY, (2) 1" SLOTS X 5'-0" LG
R-1	2690	22" X 22"	24" X 24"	PAR	RETURN, WITH OB DAMPER
R-1	145	6" X 4"	--	350FL	EXHAUST, WITH OB DAMPER, 35" FIXED, 3/4" SPACING
S-1	900	--	--	CT-540	SUPPLY, 6" W X 5'-0" LG
S-2	700	--	--	CT-540	SUPPLY, 6" W X 4'-0" LG
S-2	700	--	--	CT-540	RETURN, 6" W X 4'-0" LG
S-2	2690	22" X 22"	24" X 24"	PAR	RETURN



RADIATION PIPING SCHEMATIC

NO SCALE



CABINET UNIT HEATER PIPING DIAGRAM

NO SCALE

AIR CONDITIONING UNIT											
SUPPLY FAN				HEATING COIL				COOLING COIL			
ITEM	CFM	MIN O.A. CFM	EXT. S.P.	TYPE	HP	MBH	EDB °F	WATER FLOW GPM	EDB	EWB	SENSIBLE MBH
ACU-1	6320	1245	1 1/2"	16 1/2" FC	5	116.5	57.8	11.7	79.8	67	189.2

NOTES

- HEATING ENTERING WATER TEMPERATURE, 200°F.
- D-X COOLING COIL.
- WITH FACE & BYPASS DAMPERS.
- WITH 2" THROWAWAY FLAT FILTERS.
- TYPE 3 SPRING ISOLATORS, MASON TYPE SLF.
- 208V, 3
- BASED ON MCQUAY MODEL LML SIZE 111E MULTIZONE, 3 ZONES.
- FILTER/MIXING BOX.
- AIR BLENDER, BLENDER PRODUCTS, 30" LG.

AIR-COOLED CONDENSING UNIT											
ITEM	TONS	REFRI-GERANT	NO. OF FANS	FAN HP EA	NO. OF COMPRESSORS	COMPRESSOR				REMARKS	
						VOLTS	RLA	LRA	FLA		
ACC-1	20"	R-22	2	1/2	1	208/3	68	362	3.5	8.8	SEE NOTES 1,2
ACC-2	2.0	R-22	1	1/12	1	208/1	13.2	54	--	--	SEE NOTES 1,3
ACC-3	2.0	R-22	1	1/12	1	208/1	13.2	54	--	--	SEE NOTES 1,3
ACC-4	2.3	R-22	1	1/12	1	208/3	16.7	69	--	--	SEE NOTES 1,4

NOTES

- OUTDOOR AMBIENT 87°F.
- BASED ON MCQUAY MODEL ALP021C
- BASED ON AAF MODEL RCU24-1
- BASED ON AAF MODEL RCU30-1

EXHAUST FANS (BASED ON GREENHECK)						
ITEM	MODEL	TYPE	CFM	E.S.P. IN W.G.	WATTS	REMARKS
EF-1	SP-6	CEILING	75	.25	40	SEE NOTES 1,2,3
EF-2	SP-117	CEILING	150	.25	75	SEE NOTES 1,2,3
EF-3	G-75-	ROOF	200	.25	1/2" HP	SEE NOTES 1,3,4
EF-4	G-75-	ROOF	200	.25	1/2" HP	SEE NOTES 1,3,4
EF-5	G-75-	ROOF	200	.25	1/2" HP	SEE NOTES 1,3,4

NOTES

- 120 V, 1 PH.
- WITH CURB-TYPE ROOF CAP & 12" HIGH CURB FOR FLAT ROOF.
- WITH MOTORIZED BACKDRAFT DAMPER.
- WITH 12" HIGH CURB FOR FLAT ROOF.

INTAKE & RELIEF HOODS					
ITEM	CFM	THROAT SIZE	S.P. DROP	CURB CAP	REMARKS
RH-1	2500	30" X 30"	.038	38" X 38"	SEE NOTES 1,3,4
RH-2	1500	24" X 24"	.033	32" X 32"	
RH-3	6320	42" X 42"	.064	50" X 50"	

NOTES

- WITH GRAVITY BACKDRAFT DAMPER.
- WITH M.O. BACKDRAFT DAMPER.
- WITH BIRDSCREEN.
- BASED ON GREENHECK FABRA HOOD.