

ABBREVIATIONS			
A		L	
ACFM	ACTUAL CUBIC FEET PER MINUTE	LAT	LEAVING AIR TEMPERATURE
AFF	ABOVE FINISHED FLOOR	LWT	LEAVING WATER TEMPERATURE
AL	ALUMINUM	LB	POUND WEIGHT
ARCH	ARCHITECTURAL	LAV	LAVATORY
ACU	AIR CONDITIONING UNIT	M	
AD	AIR DRYER	MAX	MAXIMUM
AH	AIR HANDLER	MAU	MAKEUP AIR UNIT
AW	ACID WASTE	MBH	THOUSAND BTU PER HOUR
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	MIN	MINIMUM
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MFR	MANUFACTURER
B		MS	MOP SINK
BHP	BRAKE HORSEPOWER	N	
BM	BEAM	(N)	NEW
BOD	BOTTOM OF DUCT	NC	NORMALLY CLOSED
BOP	BOTTOM OF PIPE	NIC	NOT IN CONTRACT
BOS	BOTTOM OF STEEL	NO	NORMALLY OPEN
BTU	BRITISH THERMAL UNITS	NTS	NOT TO SCALE
BO	BOILER	N/A	NOT APPLICABLE
BLDG	BUILDING	NFPA	NATIONAL FIRE PROTECTION ASSOC.
C		NPT	NATIONAL PIPE THREAD
CS	CARBON STEEL	NG	NATURAL GAS
C	COMPRESSOR	NPS	NATIONAL PIPE SIZE
CFM	CUBIC FEET PER MINUTE	O	
CLG	CEILING	OPNG	OPENING
CC	COOLING COIL	OSA	OUTSIDE AIR
CH	CHILLER	OD	OUTSIDE DIAMETER
CT	COOLING TOWER	OS&Y	OUTSIDE SCREW AND YOKE
CU	COPPER	P	
CV	CONSTANT VOLUME TERMINAL UNIT	POC	POINT OF CONNECTION
CL	CENTER LINE	PSI	POUNDS PER SQUARE INCH
COL	COLUMN	PSIA	PSI – ABSOLUTE
CO	CLEAN OUT	PSIG	PSI – GAUGE
CONC	CONCRETE	PVC	POLYVINYL CHLORIDE
CONT	CONTINUATION	P	PUMP
CI	CAST IRON	PF	PREFILTER
CW	COLD WATER	Q	
CMC	CALIFORNIA MECHANICAL CODE	QTY	QUANTITY
CBC	CALIFORNIA BUILDING CODE	R	
D		RAH	RECIRC AIR HANDLER
DB	DRY BULB	RC	REHEAT COIL
DIA	DIAMETER	REF	ROOF EXHAUST FAN
DN	DOWN	(R)	REMOVE
DWG	DRAWING	(RL)	RELOCATE
DH	DEHUMIDIFIER	RD	ROOF DRAIN
DI	DUCTILE IRON	RDO	OVERFLOW DRAIN
DIM	DIMENSION	RPBFP	REDUCED PRESSURE BACKFLOW PREVENTER
DF	DRINKING FOUNTAIN	S	
DS	DOWN SPOUT	SC	SCRUBBER
E		SCFM	STANDARD CUBIC FEET PER MINUTE
(E)	EXISTING	SD	SMOKE DETECTOR
(ER)	EXISTING TO BE RELOCATED	SIM	SIMILAR
EAT	ENTERING AIR TEMP.	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
EL	ELEVATION	SPEC(S)	SPECIFICATION(S)
ELEC	ELECTRICAL	STD(S)	STANDARD(S)
EWT	ENTERING WATER TEMP.	SS	STAINLESS STEEL
EXH	EXHAUST	ST	SOUND ATTENUATOR TRAP
EF	EXHAUST FAN	SMEF	SMOKE EXHAUST FAN
EW	EMERGENCY EYEWASH	ST	SOUND ATTENUATOR TRAP
EWC	ELECTRIC WATER COOLER	SCHD	SCHEDULE
EE/S	EMERGENCY EYEWASH/SHOWER	SL	SLOPE
ET	EXPANSION TANK	T	
F		TOS	TEMPERATURE INDICATOR
(F)	FUTURE	TE	TEMPERATURE ELEMENT
FI	FILTER	TEMP	TEMPERATURE
FLR	FLOOR	TYP	TYPICAL
FOB	FLAT ON BOTTOM	TOP	TOP OF PIPE
FOT	FLAT ON TOP	TP	TRAP PRIMER
FPM	FEET PER MINUTE	TDS	TOTAL DISSOLVED SOLIDS
FC	FLEXIBLE CONNECTION	U	
FCU	FAN COIL UNIT	UR	URINAL
FF	FINAL FILTER	UH	UNIT HEATER
FA	FIRE ALARM	UNO	UNLESS NOTED OTHERWISE
FFE	FINISHED FLOOR ELEVATION	V	
FM	FLOW METER	V	VOLTS
FT	FEET	VFD	VARIABLE FREQUENCY DRIVE
FCO	FLOOR CLEANOUT	VV	VARIABLE VOLUME TERMINAL UNIT
FD	FLOOR DRAIN	VVR	VARIABLE VOLUME UNIT WITH REHEAT
FS	FLOW SWITCH	VTR	VENT THRU ROOF
G		VERT	VERTICAL
GALV	GALVANIZED STEEL	VB	VACUUM BREAK
GPM	GALLONS PER MINUTE	W	
GPH	GALLONS PER HOUR	WT	WEIGHT
GR	GRADE	WB	WET BULB
H		W/O	WITHOUT
HP	MOTOR HORSEPOWER	W	WIDTH
HVAC	HEATING, VENTILATING AND AIR CONDITIONING	WLD	WELDED
HC	HEATING COIL	WC	WATER CLOSET
HX	HEAT EXCHANGER	WH	WATER HEATER
HORIZ	HORIZONTAL	I	
HB	HOSE BIBB	ID	INSIDE DIAMETER
HD	HEAD FEET OF WATER	IN.	INCHES
HW	HOT WATER	K	
I		KW	KILOWATT
K			

HVAC LEGEND AND SYMBOLS					
SYMBOL (DOUBLE LINE)	DESCRIPTION	SYMBOL (SINGLE LINE)	SYMBOL (DOUBLE LINE)	DESCRIPTION	SYMBOL (SINGLE LINE)
	FLEXIBLE CONNECTION			TRANSITION	
	FLEXIBLE DUCT RUNOUT TO DIFFUSER			FLARED TAKEOFF (RECTANGULAR DUCT)	
	DUCT SIZE (WIDTH X DEPTH)			SPIN-IN FITTING W/VD (ROUND BRANCH TAKEOFF FROM RECTANGULAR MAIN)	
	DUCT THROUGH BEAM PENETRATION			45° LATERAL TAKEOFF (ROUND/OVAL DUCT) COULD BE ANY ANGLE	
	DUCT OFFSET (RISE OR DROP)			90° LATERAL TAKEOFF (ROUND/OVAL DUCT)	
	VOLUME DAMPER			VARIABLE ANGLE CONICAL TAKEOFF 90° TAKEOFF W/BOOT FITTING (ROUND DUCT)	
	SPLITTER DAMPER			END CAP	
	EXTRACTOR DAMPER			RECTANGULAR MITERED ELBOW WITH TURNING VANES	
	FIRE, SMOKE OR FIRE-SMOKE DAMPER			ACOUSTICAL LINING DUCT DIMENSION IS I.D.	
	SUPPLY DUCT UP			MOTORIZED DAMPER (PARALLEL OR OPPOSED BLADE)	
	SUPPLY DUCT DOWN			TRANSFER DUCT	
	EXHAUST DUCT UP			INDICATES 8"11" TO BOTTOM OF DUCT	
	EXHAUST DUCT DOWN			CEILING SUPPLY DIFFUSER, SEE SCHEDULE. A=TYPE, X=NECK SIZE Y=CFM	
	RETURN DUCT UP			CEILING RETURN REGISTER, SEE SCHEDULE SCHEDULE. A=TYPE, X=NECK SIZE Y=CFM	
	RETURN DUCT DOWN			CEILING EXHAUST REGISTER, SEE SCHEDULE SCHEDULE. A=TYPE, X=NECK SIZE Y=CFM	
	CROSS SECTION OF EXHAUST AIR DUCT			WALL SUPPLY GRILLE OR WALL REGISTER SEE SCHEDULE, A=TYPE, X=SIZE Y=CFM	
	CROSS SECTION OF RETURN AIR DUCT			WALL RETURN REGISTER SEE SCHEDULE, A=TYPE, X=SIZE Y=CFM	
	CROSS SECTION OF ROUND DUCT			LINEAR SLOT DIFFUSER, "A" INDICATES SIZE	
	CROSS SECTION OF SUPPLY DUCT			SUPPLY AIR LIGHT TROFFER DIFFUSER	
	DUCT ELBOW WITH TURNING VANES				
	DUCT ELBOW WITHOUT TURNING VANES				

- GENERAL NOTES
1. ALL REQUIREMENTS IN THE BOOK OF SPECIFICATIONS ARE PART OF THIS CONTRACT. REFER TO THE SPECIFICATIONS FOR INFORMATION NOT SHOWN ON THE DRAWINGS.

2. ALL WORK SHALL BE IN FULL ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL CODES, LAWS AND REGULATIONS. ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE LATEST TITLE 24 CALIFORNIA CODE OF REGULATIONS, INCLUDING BUT NOT LIMITED TO: CALIFORNIA BUILDING CODE (PART 2), CALIFORNIA ELECTRIC CODE (PART 3), CALIFORNIA MECHANICAL CODE (PART 4), CALIFORNIA PLUMBING CODE (PART 5), CALIFORNIA ENERGY CODE (PART 6), CALIFORNIA FIRE CODE (PART 9).

3. ALL WORK SHALL BE IN FULL ACCORDANCE WITH THE FOLLOWING CODES, REGULATIONS AND STANDARDS: STATE FIRE MARSHALL REGULATIONS; THE SAFETY ORDERS OF THE DIVISION OF INDUSTRIAL SAFETY; THE NATIONAL ELECTRIC CODE (NEC); THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA); AMERICAN GAS ASSOCIATION (AGA); OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA); AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS (ASHRAE); AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI); AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME); SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA); AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM); INSTALLATION STANDARDS PUBLISHED BY THE INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO) AND OTHER APPLICABLE LAWS, CODES, OR REGULATIONS. NOTHING IN THESE PERFORMANCE SPECIFICATIONS SHALL BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES, REGULATIONS AND STANDARDS.

4. ALL MECHANICAL EQUIPMENT, FIXED OR FLEXIBLY MOUNTED, SHALL BE BRACED OR ANCHORED TO COMPLY WITH THE REQUIREMENTS OF TITLE 24, SECTION 1632A.

5. CONTRACTORS SHALL VISIT SITE AND BE FULLY AWARE OF ALL CONDITIONS PRIOR TO SUBMITTING PROPOSAL.

6. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED FEES, PERMITS AND INSPECTIONS.

7. COORDINATE ALL WORK WITH THE ARCHITECTURAL, STRUCTURAL DRAWINGS AND DRAWING OF OTHER TRADES. INSTALL ALL WORK TO CLEAR NEW AND EXISTING ARCHITECTURAL WORK, STRUCTURAL MEMBERS AND WORK OF OTHER TRADES. NO ITEM SUCH AS PIPE, DUCT, ETC., SHALL BE IN CONTACT WITH ANY EQUIPMENT. ANY ERRORS, OMISSIONS, DISCREPANCIES, DIFCENCIES, OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR, THE ARCHITECT AND THE ENGINEER PRIOR TO PROCEEDING WITH ANY AFFECTED WORK.

8. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER AND THE FIELD REPRESENTATIVE OF THE OFFICE OF THE STATE ARCHITECT.

9. COORDINATE ALL CUTING AND PATCHING WITH THE GENERAL CONTRACTOR. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR HIS WORK. OBTAIN WRITTEN PERMISSION FROM THE ARCHITECT BEFORE PROCEEDING WITH ANY CUTTING OR ALTERATION OF STRUCTURAL MEMBERS.

10. CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO ENSURE THE INSTALLATION OF COMPLETE AND FULLY FUNCTIONING SYSTEMS.

11. GUARANTEE ALL WORK AND MATERIALS FOR ONE YEAR FROM DATE OF FILING NOTICE OF COMPLETION.

12. RESTORE ALL DAMAGE RESULTING FROM YOUR WORK AND LEAVE PREMISES IN CLEAN CONDITION WHEN FINISHED WITH WORK.

13. CONNECT ALL EQUIPMENT FURNISHED UNDER OTHER TRADES AS SHHOWN OR AS REQUIRED.

14. ALL DUCTS CONNECTED TO SUPPLY AND RETURN DIFFUSERS SHALL HAVE A MANUAL VOLUME DAMPER FOR BALANCING. LOCATE DAMPER AS FAR AWAY FROM DIFFUSER AS POSSIBLE, BUT NO FARTHER THAN 20'.

15. PROVIDE TWO SETS OF "AS-BUILT" SEPIAS AND TWO BOUND SETS OF ALL OPERATION MANUALS, DIAGRAMS, SERVICE CONTRACTS, GUARANTEES, ETC., ONE SET SHALL BE DELIVERED TO THE OWNER AND ONE SET TO THE BUILDING OPERATIONS DEPARTMENT.

16. PROVIDE AND COORDINATE WITH THE ARCHITECT THE INSTALLATION OF ACCESS PANELS AS REQUIRED FOR MAINTENANCE AND INSPECTION OF ALL EQUIPMENT AND DEVICES.

17. NOT USED.

18. SUBMIT FOR APPROVAL (6) SETS OF MANUFACTURERS SUBMITTAL DATA ON ALL MATERIALS, EQUIPMENT AND DEVICES.

19. EACH SYSTEM OF PIPING AND DUCTWORK SHALL BE CLEANED OF ALL FOREIGN MATERIAL AND BURRS AND ROUGH SPOTS PRIOR TO BEING PLACED IN SERVICE AND BEFORE OERATIONAL TESTS ARE PERFORMED.

20. EACH SYSTEM OF PIPING AND DUCTWORK SHALL BE PRESSURE TESTED IN ACCORDANCE WITH RECOGNIZED INDUSTRY STANDARDS.

21. GENERAL CONTRACTOR SHALL RETAIN INDEPENDENT TESTING AGENCY FOR TESTING AND BALANCING AIR AND HYDRONIC SYSTEMS. BALANCE AIR FLOW AT ALL OPENINGS TO AIR QUANTITIES INDICATED. BALANCE WATER FLOW AT ALL EQUIPMENT TO GPM INDICATED. AGENCY SHALL BE MEMBER OF AABC OR NEBB. SUBMIT FINAL BALANCE REPORT FOR REVIEW.

22. DURING ENTIRE CONSTRUCTION PERIOD, THE CONTRACTOR SHALL MAINTAIN ADEQUATE FIRE EXTINGUISHERS AT THE SITE, RELAY FOR USE IN CASE OF FIRE.

23. CONTRACTOR SHALL PROTECT THE PUBLIC FROM INJURY DURING THE PROCESS OF WORK BY POSTING WARNING SIGNS, AND INSTALLING GUARD LIGHTS AND BARRICADES.

24. ALL DUCTS, PIPES AND EQUIPMENT SHALL BE CONCEALED ABOVE CEILING, UNLESS OTHERWISE NOTED.

25. MAXIMUM ALLOWABLE LENGTH OF FLEXIBLE DUCT: 5'-0".

26. SEAL AROUND ALL PIPES AND DUCTS PENETRATING FIRE SEPARATIONS WITH NON-COMBUSTIBLE PACKING RETAINED BY METAL COLLARS. THE ASSEMBLY SHALL BE APPROVED BY STATE FIRE MARSHALL.

27. CONNETION BETWEEN COPPER AND IRON OR STEEL PIPE SHALL BE MADE WITH DIELECTRIC ISOLATING UNIONS OR WATERWAYS.

28. NOT USED.

29. NOT USED.

30. NOT USED.

31. NOT USED.

32. NOT USED.

33. NOT USED.

34. PROVIDE REMOTE EXTENDED LUBRICATING FITTINGS FOR ALL SYSTEMS SO THAT LUBRICATION CAN BE ACCOMPLISHED WITHOUT OPENING PLENUM DOORS OR EQUIPMET ACESS PANELS.

35. NOT USED.

36. INSTALL ALL DUCTWORK AND PIPING AS HIGH AS POSSIBLE ABOVE FINISHED FLOOR. PROVIDE AND INSTALL ALL NECESSARY OFFSETS TO MAINTAIN MINIMUM 7" CLEARANCE ABOVE FINISHED CEILING WHERE POSSIBLE.

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REVISIONS

ADDM. 3 03-13-06

ADDENDUM NO. 2

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DATE: 03-09-06

DRAWN BY: EB

JOB NO.: 2513

M0.1

PACKAGED ROOFTOP AIR CONDITIONING UNIT SCHEDULE																											
SYMBOL	MANUFACT. MODEL	TYPE	SERVICE	COMPRESSOR COOLING PERFORMANCE							ARI EER/ SEER	ECONOMIZER FAN PERFORMANCE		HEATING OUTPUT (MBH)	FILTERS				SUPPLY FAN			ELECTRICAL				OPER WGT (LBS)	REMARKS
				SUPPLY FLOW RATE (CFM)	ESP (IN WC)	EDB (°F)	EWB (°F)	SENSIBLE CAPACITY (NET MBH)	LDB (°F)	DESIGN OAT (°F)		FLOW RATE (CFM)	ESP (IN WC)		PRE FILTER TYPE	PRE FILTER THICKNS	HP	RPM	QTY	FLA	MCA	MOC	VOLT/PH				
AC 1	AAON RMxxx	PACKAGED ROOFTOP UNIT	2ND FLOOR EXTERIOR	6100	0.8	75.0	61.2	135.3		89	10.8	6100	0.8	132.2	PLEATED MERV 13	4"	MERV 8	1"	7.5	1760	1	21	21	21	208/3	1294	①②③⑥⑦⑧⑩⑪⑬⑭
AC 2	AAON RM-006	PACKAGED ROOFTOP UNIT	1ST FLOOR BOARD/TRAINING RM	2590	0.8	79.8	63.5	71.8		89	11.8	2900	0.8	94.5	PLEATED MERV 13	4"	MERV 8	1"	3	1760	1	34	39	50	208/3	953	①②③⑥⑦⑧⑨⑪⑬⑭
AC 3	AAON RM-A06	PACKAGED ROOFTOP UNIT	1ST FLOOR EXTERIOR	1595	0.7	74.7	60.8	38.5		89	11.8	1595	0.7	51.2	PLEATED MERV 13	4"	MERV 8	1"	3	1760	1	23	26	35	208/3	912	②③⑥⑦⑧⑨⑪⑬⑭
AC 4	AAON RM-A01	PACKAGED ROOFTOP UNIT	1ST FLOOR MEETING RM 2ND FLOOR INTERIOR	710	0.5	78.3	63.5	16.3		89	12.8	990	0.5	NONE	PLEATED MERV 13	4"	MERV 8	1"	1	1760	1	21	24	30	208/1	777	②③⑥⑦⑧⑫⑬⑭
AC 5	AAON RM002 (FUTURE OPTION)	PACKAGED ROOFTOP UNIT	EAST SIDE ROOMS 201, 202, 203	750				18.1						16.0										208/3	777	②③⑥⑦⑧⑨⑫⑬⑭	


- ① DUCT SMOKE DETECTOR.
- ② VARIABLE SPEED FAN.
- ③

- ④ NOT USED.
- ⑤ NOT USED.
- ⑥ INTERNALLY ISOLATED FAN & COMPRESSOR.

- ⑦
- ⑧ INCLUDE FACTORY-PROVIDED DOWNWARD DISCHARGE ROOF CURB.
- ⑨ GAS FURNACE, 2 STAGE HEATING, 81% EFFICIENCY.

- ⑩ GAS FURNACE, 4 STAGE HEATING, 81% EFFICIENCY.
- ⑪ DIGITALLY-CONTROLLED COMPRESSOR UNLOADER, REFRIGERANT: R-22 .
- ⑫ STANDARD COMPRESSOR CONTROL: REFRIGERANT R-410A
- ⑬ 100% OSA ECONOMIZER

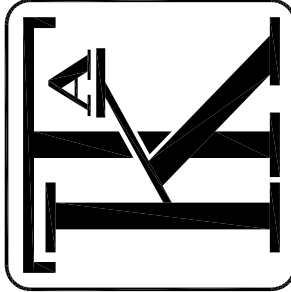
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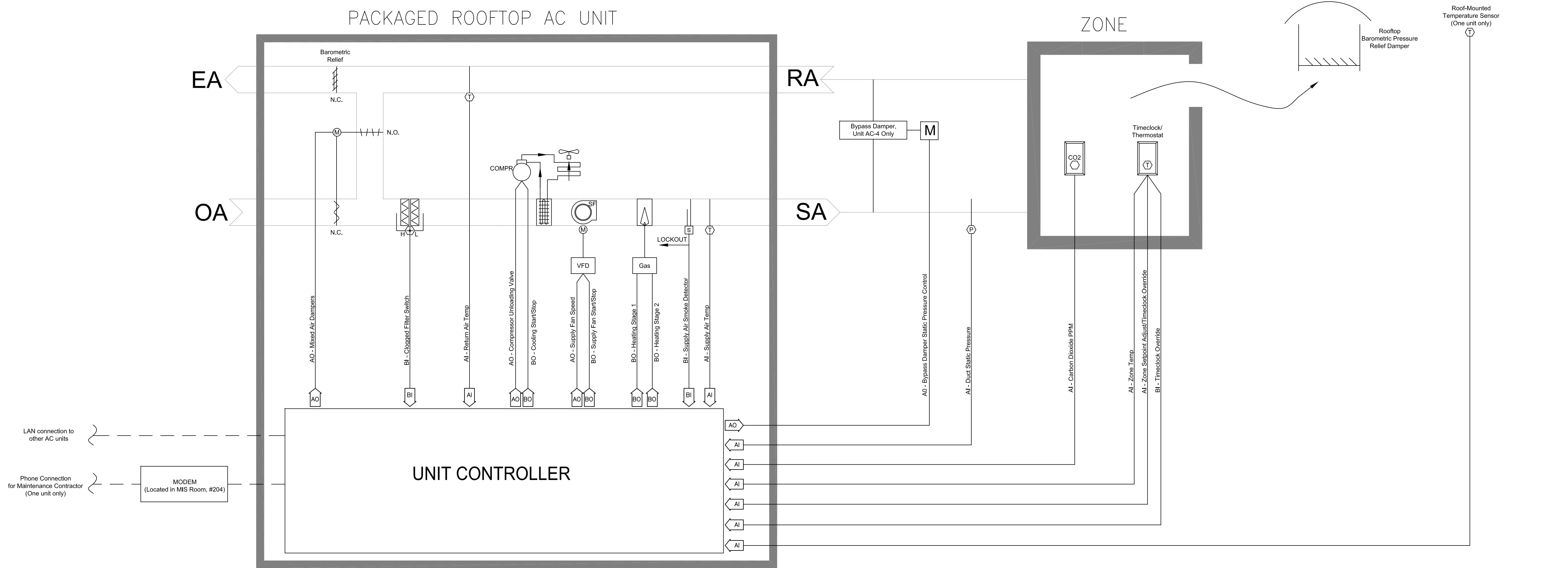
DIFFUSER/GRILLE SCHEDULE						
	TAG	TYPE	MFR & MODEL NUMBER	MODULE SIZE	FACE	NOTES
A		CEILING SUPPLY: THERMALLY-POWERED VAV DIFFUSER	ACCUTHERM THERMA-FUSER MODEL ST-HC	24"x24"	SQUARE PANEL	SEE DWG FOR NECK SIZE, NOTE 2
B		CEILING SUPPLY: THERMALLY-POWERED VAV DIFFUSER	ACCUTHERM THERMA-FUSER MODEL TK-HC	12"x12"	SQUARE PANEL	SEE DWG FOR NECK SIZE, NOTE 2
F		LINEAR SIDEWALL SUPPLY: THERMALLY-POWERED VAV DIFFUSER	ACCUTHERM THERMA-FUSER MODEL TLW-CW	PER TAG	LINEAR, 4 SLOTS	SEE DWG FOR MODULE WIDTH, NOTE 2
C		CEILING SUPPLY LOUVERED FACE TYPE	TITUS TDC	24"x24"	SQUARE PANEL	12" SQUARE NECK
D		CEILING RETURN/EXHAUST	TITUS PAR	SEE DWG	PERFORATED	SEE DWG FOR NECK SIZE
E		SIDEWALL EXHAUST/SUPPLY	TITUS 350FL	SEE DWG	35"BLADE, 3/4" SPACING	SEE DWG FOR NECK SIZE. NO OBD, UON

- NOTE:
1. DIFFUSERS TO PROVIDE 4-WAY DIFFUSION PATTERN UNLESS OTHERWISE NOTED OR SHOWN ON PLANS.
2. IF THERMAFUSER IS NOT INSTALLED IN CEILING GRID, THEN INSTALL WITH FACE AT 9'-0" AFF, UON.

FAN SCHEDULE																
SYMBOL	MANUFACTURER MODEL	TYPE	LOCATION	SERVICE	AIRFLOW (CFM)	SP (IN WC)	FAN RPM	SONES	ROTATION DISCHARGE ARRGMNT	DRIVE TYPE	FAN MOTOR			VIBRATION ISOLATION	OPER WGT (LBS)	NOTES
											BHP	HP	VOLTAGE/ PHASE/HZ			
EF 1	GREENHECK SWB-12	CENTRIFUGAL UTILITY SET	ROOF	GENERAL EXHAUST	1500	0.15	1650	—	N/A	BELT	0.31	0.5	120/1/60	NONE	170	1.
EF 2	GREENHECK SFD-7.5-B	CENTRIFUGAL UTILITY SET	ROOF	ELEVATOR MACHINE ROOM EXHAUST	600	0.25	1140	9.9	N/A	DIRECT	0.14	1/16	120/1/60	NONE	44	
EF 3	GREENHECK SP-B50	CENTRIFUGAL WALL EXHAUST	ROOM 109	JANITOR ROOM EXHAUST	70	0.10	625	1.9	N/A	DIRECT	0.03	0.05 (38 WATTS)	120/1/60	NONE	9	3.

- NOTE:
1. FAN CONTROLLED BY LIGHTING CONTROL PANEL TIMER (SED). INSTALL ON ROOF SUPPORTED BY REDWOOD SLEEPERS.
2. FAN CONTROLLED BY LINE VOLTAGE THERMOSTAT SUPPLIED BY MECHANICAL CONTRACTOR. INSTALL ON ROOF WITH FACTORY-FURNISHED ROOF CURB
3. FAN CONTROLLED BY LIGHTING CONTROL PANEL TIMER (SED). INSTALL WITH GREENHECK WL-10x3 WALL LOUVER LOCATED ABOVE FAN.





AC UNIT SEQUENCE OF CONTROL

General

Units AC-1, AC-3, and AC-4 serve zones for which the variable air volume (VAV) control is achieved with self-powered VAV diffusers, called "Thermafusers" (by Accutherm Corporation).

Unit AC-2 serves the Board/Training Room, #108, which has standard ceiling diffusers. VAV control for this zone is achieved by setpoint temperature control via the zone temperature sensor.

Alarm Log

The unit controller shall maintain an electronic alarm log, accessible at the unit by maintenance personnel, to record alarm causes and times.

Run Conditions - Scheduled:

The unit shall run according to a user definable time schedule in the following modes:

- * Occupied Mode: The unit shall maintain
 - A 72°F (adj.) cooling setpoint
 - A 70°F (adj.) heating setpoint.
- * Unoccupied Mode (night setback): The unit shall maintain
 - A 85°F (adj.) cooling setpoint.
 - A 55°F (adj.) heating setpoint.
 - Night Ventilation Cooling Mode (NVCN): The unit shall maintain a 68°F (adj.) cooling setpoint.

The unit shall start 3 hours before the occupied hours begin in the morning on Mondays and after holidays. The unit shall start 2 hours before the occupied hours begin on other days of the work week.

An entry in the controller alarm log shall be provided by the following conditions:

- * High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.). This shall not apply to the Night Ventilation Pre-Cooling Mode.
- * Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Zone Setpoint Adjust: Units AC-1, AC-3, and AC-4

Setpoints for heating and cooling shall be established at the zone temperature sensor and each individual Thermafuser. Setpoint temperature changes by the occupant will not be possible.

Zone Setpoint Adjust: Unit AC-2

This unit serves a zone for which setpoints for heating and cooling shall be established at the thermostat. The occupant shall be able to adjust the zone temperature heating and cooling setpoints at the zone sensor by ±2°F.

Zone Unoccupied Override:

A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.

Supply Air Smoke Detection:

Units AC-1 and AC-2 only: A signal from the smoke detector shall shut the unit down. Additionally, the smoke detector shall generate an entry in the controller alarm log.

Supply Fan:

The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.

Units AC-1 and AC-3. Duct Pressure Static Control for Thermafusers:

VFD Control: The VFD shall modulate in order to maintain a fixed static pressure, as measured by a static pressure sensor placed in the ductwork. The setpoint for the static pressure shall be 0.20" w.c. (adj.)

Unit AC-4. Duct Pressure Static Control for Thermafusers:

The supply fan shall run at constant speed. A bypass damper (D-1) from supply to return shall modulate in order to maintain a fixed static pressure, as measured by a static pressure sensor placed in the ductwork. The setpoint for the static pressure shall be 0.20" w.c. (adj.)

Unit AC-2. VAV Control for Standard Diffusers:

COOLING OPERATION: The unit VFD shall modulated fan speed in order to maintain the zone temperature setpoint. The upper and lower CFM limits per diffuser shall be as shown on the HVAC plans.

HEATING OPERATION: For the 1st Gas Heating Stage, the CFM per diffuser shall be 75% of the maximum CFM shown on the HVAC plans. For the 2nd Gas Heating Stage, the CFM per diffuser shall be the maximum CFM shown.

Supply Fan Status. The supply fan motor status shall be monitored through the unit VFD, or via the duct static pressure sensor where a VFD is not present. Alarms logs shall be provided as follows:

- * Supply Fan Failure: Commanded on, but the status is off.
- * Supply Fan in Hand: Commanded off, but the status is on.

Compressor Operation:

- Compressor cooling shall be enabled whenever:
- * Outside air temperature is greater than 60°F (adj.).
 - * AND the economizer is disabled or fully open.
 - * AND the zone temperature is above cooling setpoint.
 - * AND the supply fan status is on.
 - * AND the heating is not active.

To prevent short cycling, the compressor shall have a user definable (adj.) minimum runtime.

Compressor Load Control: Units AC-1, AC-2, and AC-3: A supply air temperature (SAT) sensor shall be installed in the unit supply air outlet, and a signal from the sensor shall be used to control the variable load control system for the compressor. Supply air temperature shall be reset based on outdoor air temperature: At OAT=60°F and below, SAT shall be 58°F. At OAT=80°F and above, SAT shall be 53°F. Between OATs of 60°F and 80°F, the SAT shall vary linearly.

SAT Schedule Override: If the zone space temperature exceeds the setpoint by 1°F for longer than 15 minutes, the SAT shall increment down by 0.5°F. Further 0.5°F SAT increments shall be made at 15 minute intervals if the space temperature remains greater than 1°F above setpoint. The setpoint shall increment back up if the space temperature falls below 1°F above setpoint for longer than 15 minutes. If the SAT increments down to 51°F, the control system shall make an entry in the alarm log and shall increment the SAT no further.

Unit AC-4: The thermostat shall measure the zone temperature and cycle the compressor on and off to maintain the cooling setpoint.

Gas Heating Stages:

- Heating shall be enabled whenever:
- * Outside air temperature is less than 70°F (adj.).
 - * AND the zone temperature is below heating setpoint.
 - * AND the supply fan status is on.
 - * AND the cooling is not active.

The controller shall use zone temperature sensor input and stage the heating to maintain its heating setpoint. To prevent short cycling, there shall be a user definable (adj.) delay between stages, and each stage shall have a user definable (adj.) minimum runtime.

Units AC-1, AC-3, and AC-4: In order to maintain the "Thermafuser" modules in full heating mode, the supply temperature in heating shall always be above 80°F.

Economizer:

- The economizer shall be enabled whenever:
- * Outside air temperature is equal or less than return air temperature,
 - * AND the supply fan status is on,
 - * AND the unit is in the cooling mode.

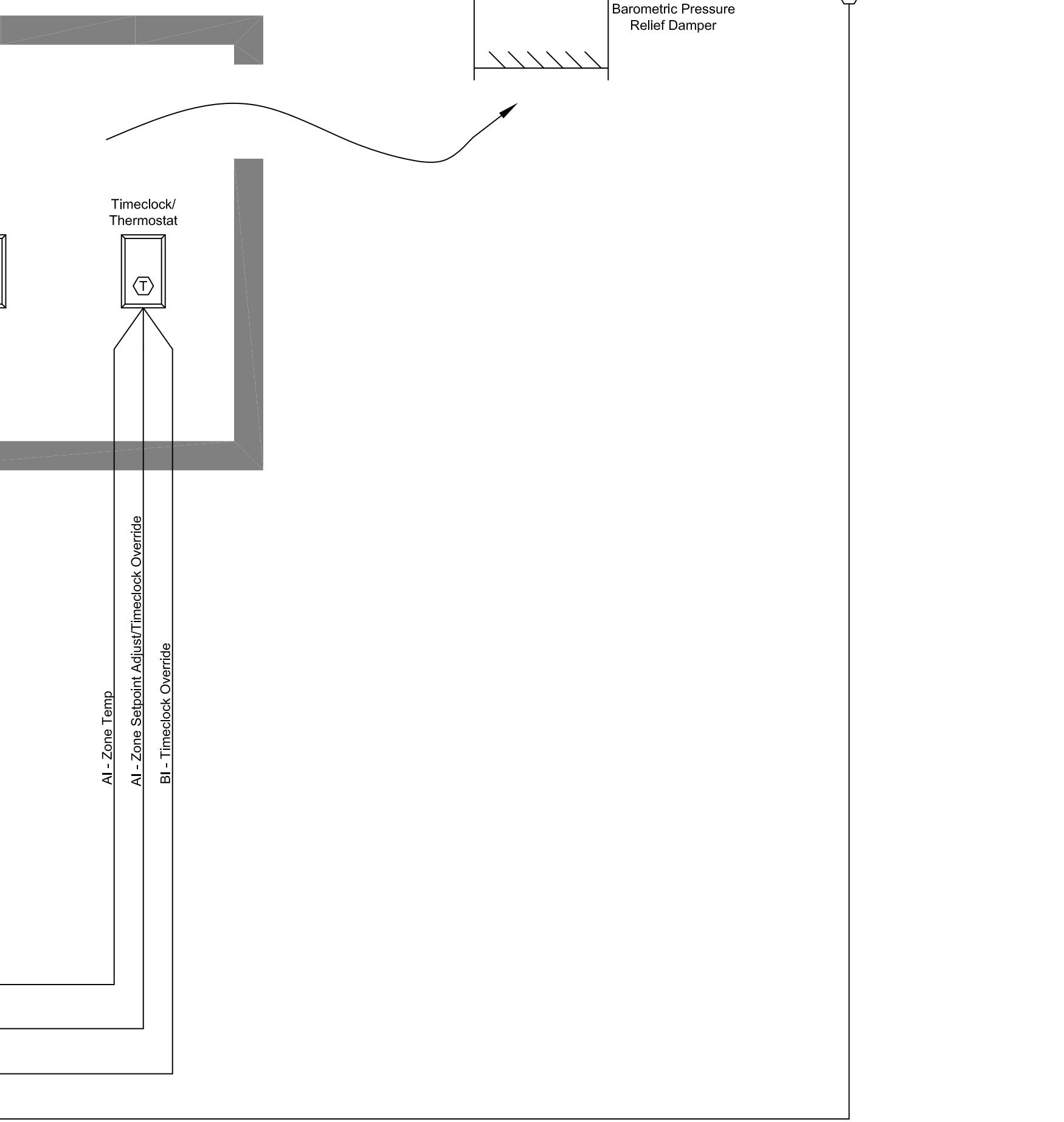
A temperature sensor in each unit shall measure unit supply air temp (SAT). The controller shall modulate the economizer dampers to maintain a SAT setpoint of 60°F. If the economizer damper is fully open and the SAT rises above 60°F, the damper shall remain fully open.

When the zone temperature is between the cooling setpoint and the heating setpoint, the economizer shall maintain the minimum required zone ventilation.

The economizer damper shall close whenever:

- * the unit is off
- * OR on loss of supply fan status.

ZONE



Minimum Outside Air Ventilation - Carbon Dioxide (CO2) Control:

When in the occupied mode, the controller shall measure the space CO2 levels and modulate the outside air dampers open on rising CO2 concentrations, overriding normal economizer damper operation in order to maintain a CO2 setpoint of 1200 ppm (adj.).

Two CO2 sensors are located in the zone for unit AC-1. The controller shall control to the sensor with the higher CO2 level.

Alarms shall be provided as follows:

- * High Return Air Carbon Dioxide Concentration: If the return air CO2 concentration is greater than 1400 ppm (adj.).

Minimum Outside Air Damper Position

Unit shall have a constant volume outdoor air controller that enables the maintenance of a minimum outdoor air CFM independent of supply CFM. A sensor shall measure the velocity pressure of the air entering the unit, and the outside air dampers shall modulate when necessary to maintain OA CFM at or above the minimum CFM.

Minimum OA CFM shall be enough to meet exhaust due to EF-1 and EF-3 without Unit AC-2 operating. Minimum outdoor air CFM for each unit shall be established as follows by the balance contractor:

Unit AC-1: 1130 CFM Unit AC-2: 150 CFM Unit AC-3: 280 CFM Unit AC-4: 180 CFM

Night Ventilation Cooling Mode (NVCN):

Units AC-1, AC-2, and AC-3 only: On any day for which the outside air temperature exceeds 75°F (adj) at 5 PM, the NVCN shall be enabled. The NVCN shall terminate the following morning at 8 AM.

If the system is in the NVCN, then if the zone temperature exceeds the NVCN setpoint temperature, AND the zone temperature exceeds the OAT by 7°F, then for each unit:

- The economizer shall fully open,
- AND the compressor shall be locked out,
- AND the fan shall operate, with fan speed control maintained by the duct static pressure sensor.

Total Filter Differential Pressure Monitor:

The controller shall monitor the sum of the differential pressures across both filters. A light at the thermostat shall turn on when:

- * Filter Change Required: Total Filter differential pressure exceeds a user definable limit (adj.).

Return Air Temperature:

The controller shall monitor the return air temperature and use as required for economizer control.

An entry in the controller alarm log shall be provided by the following conditions:

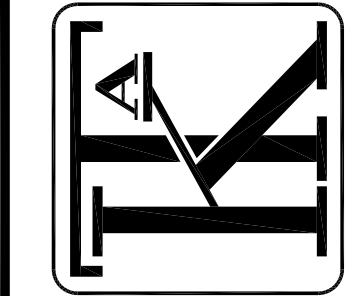
- * High Return Air Temp: If the return air temperature is greater than 90°F (adj.).
- * Low Return Air Temp: If the return air temperature is less than 45°F (adj.).

Outdoor Air Temperature Signal:

The control system shall provide an on-off signal output to the occupant's computer network to indicate when the outside air temperature is in the range of 55°F to 74°F (adj.). The signal shall be used by the occupants as an indication of the advisability of open windows as a cooling or ventilating resource.

Return Air Temperature:

The controller shall monitor the return air temperature and use as required for economizer control.



PERMIT SET

REVISIONS

ADDN. 3 03-13-06

ADDENDUM NO. 2

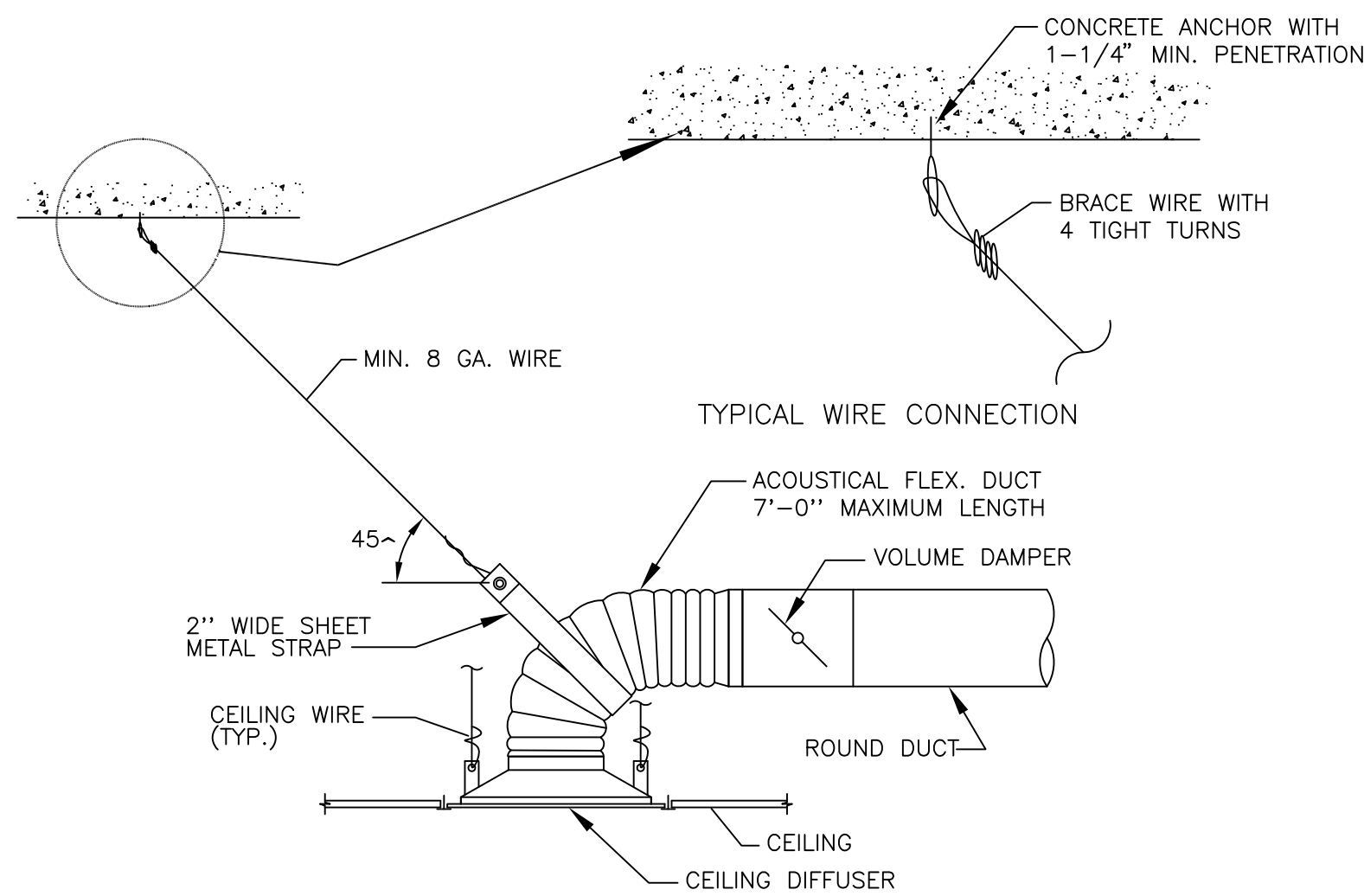
© COPYRIGHT 2005



DATE: 03-09-06

DRAWN BY: KM

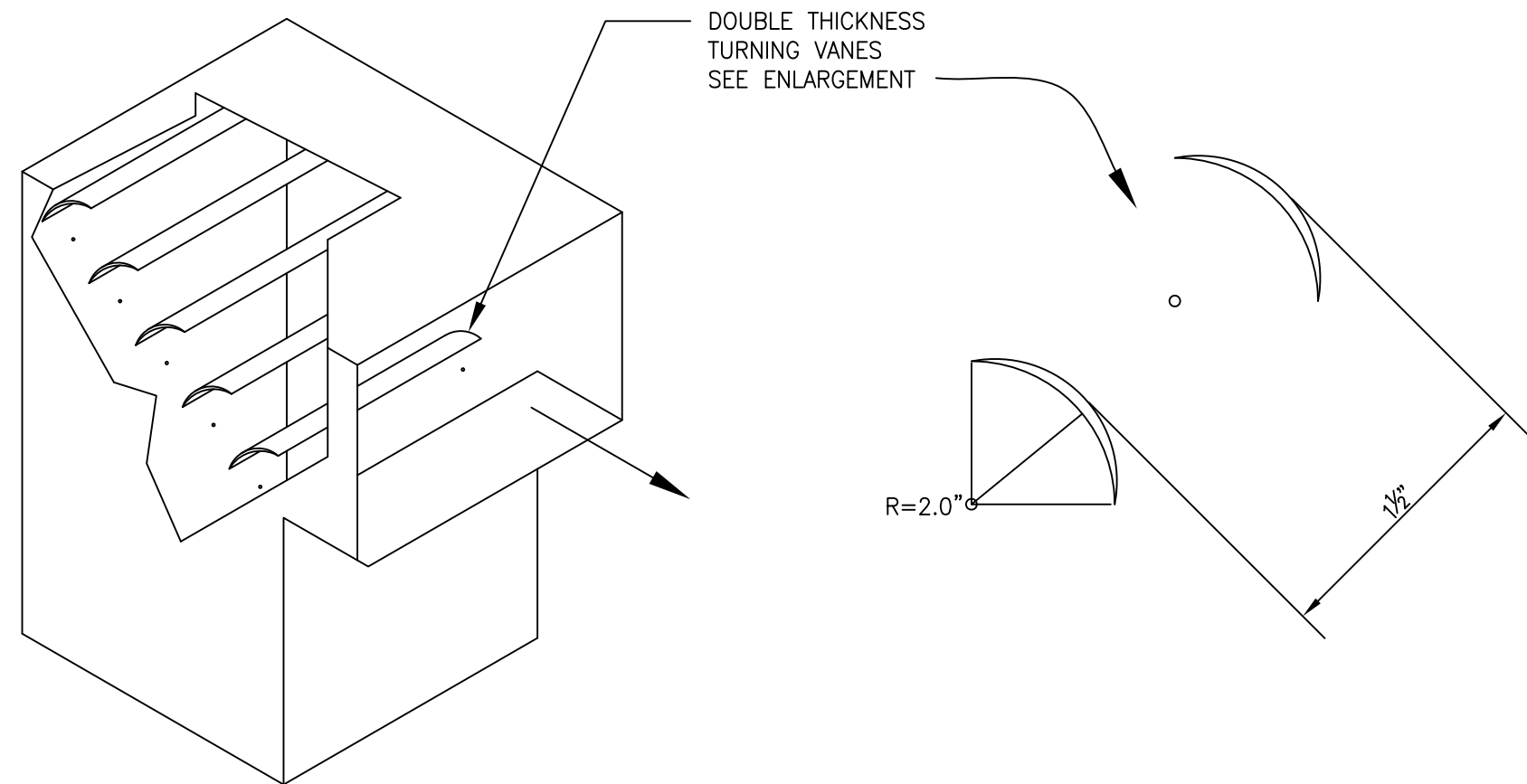
JOB NO.: 2513



CEILING DIFFUSER INSTALLATION DETAIL

SCALE: NTS

9
M6.1

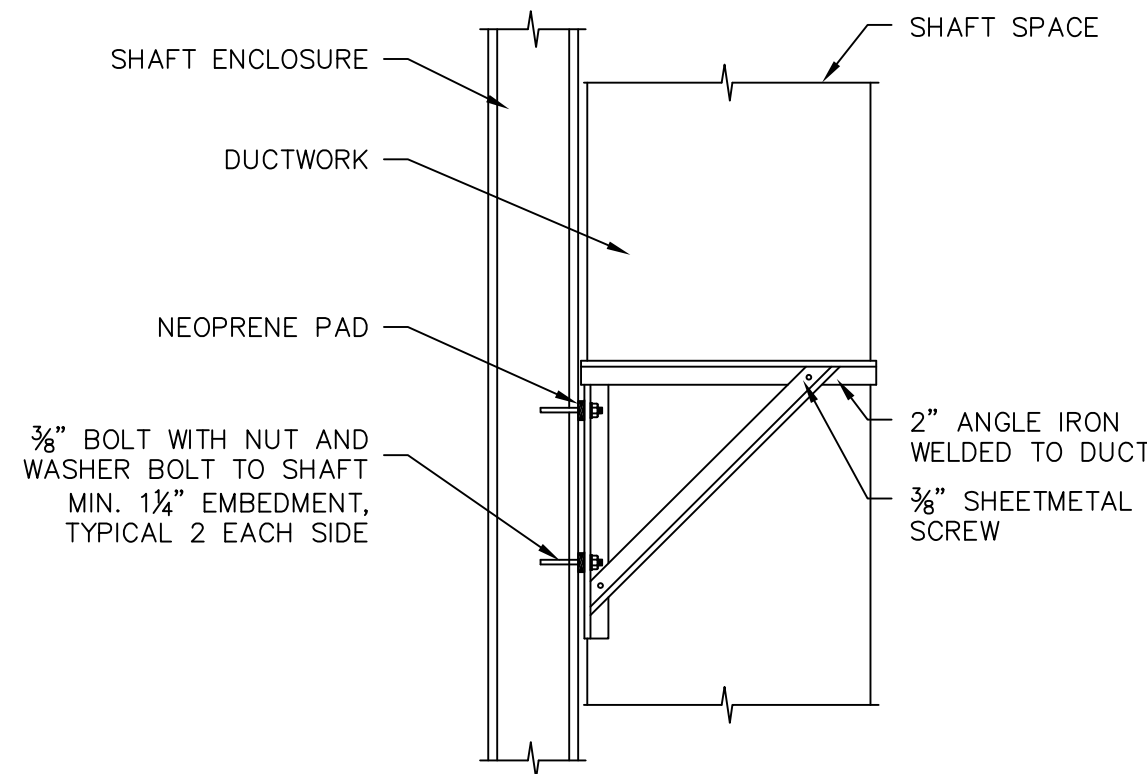


NOTE: TURNING VANES REQUIRED AT ALL 90° RECTANGULAR DUCT ELBOWS UNLESS NOTED OTHERWISE.

90° RECTANGULAR DUCT ELBOW W/ TURNING VANES

SCALE: 1 1/2" = 1'-0"

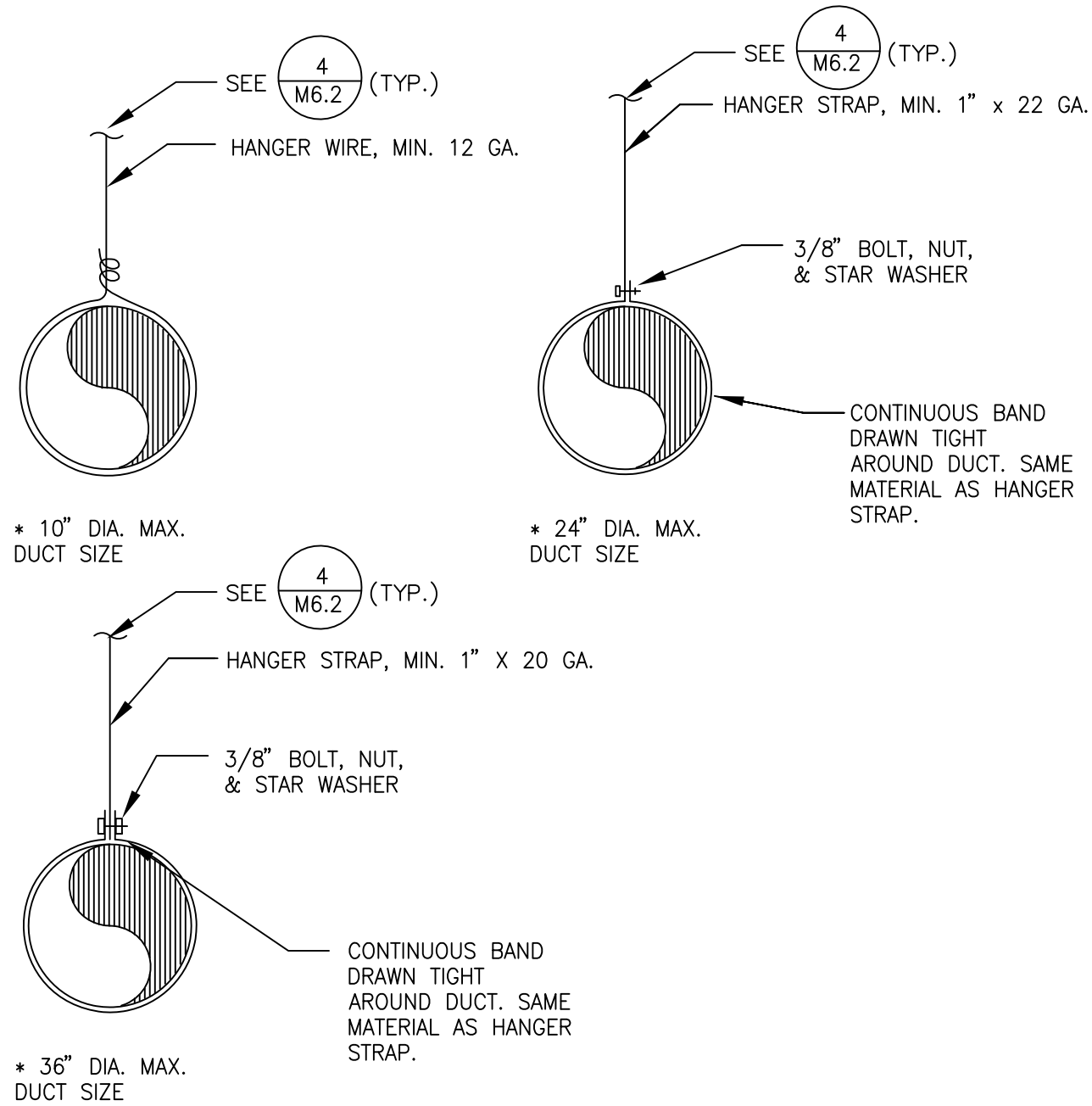
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M6.1



VERTICAL DUCT IN SHAFT SUPPORT DETAIL

SCALE: NTS

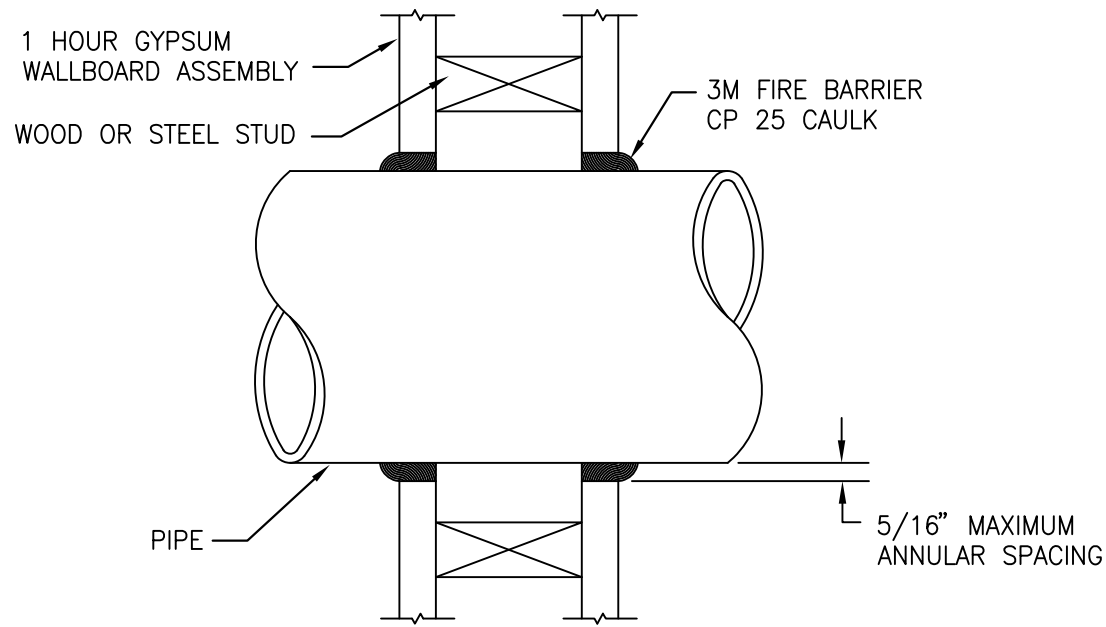
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M6.2



CONCEALED ROUND DUCT SUPPORT DETAIL

SCALE: NTS

6
M6.1

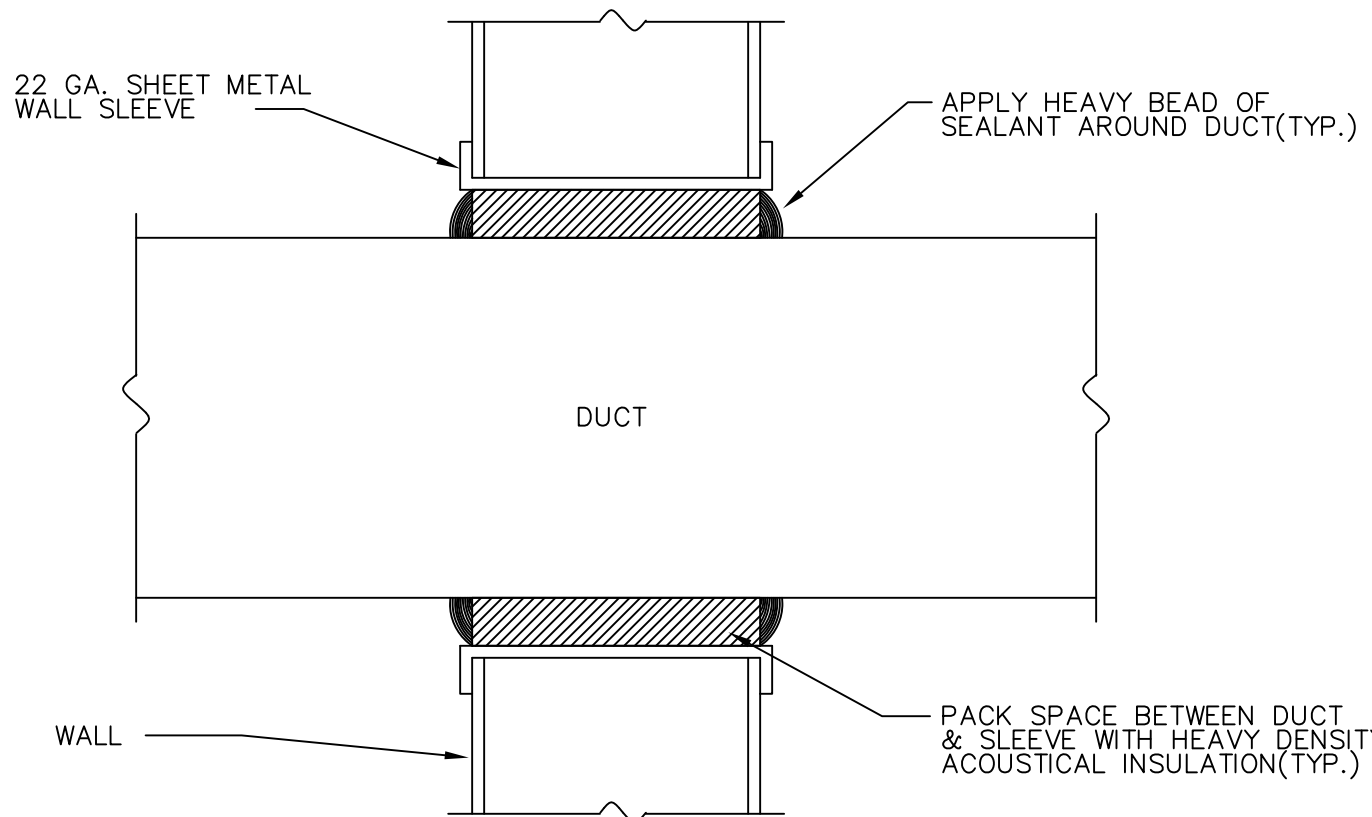


NOTES:
1. PENETRATION FIRESTOP FOR MAX. 12"Ø PIPE THROUGH A GYPSUM WALLBOARD ASSEMBLY

RATED WALL PIPE PENETRATION

SCALE: NTS

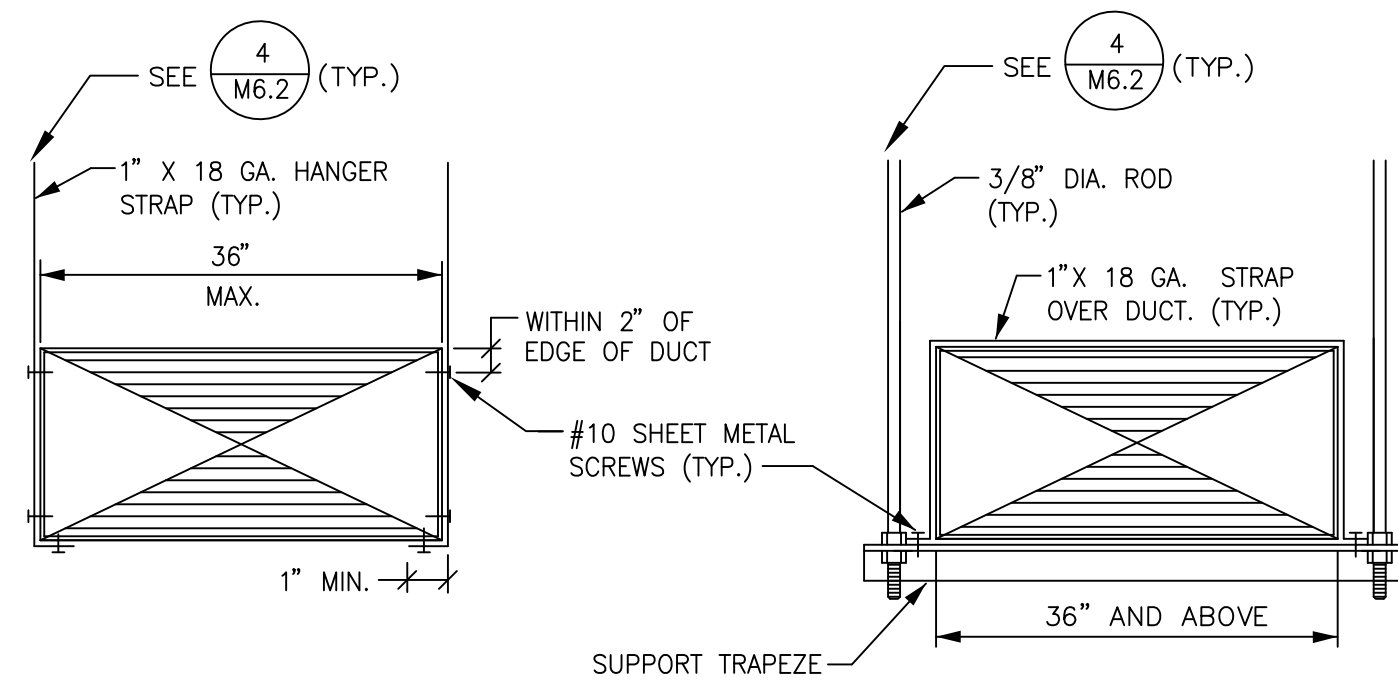
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M6.3



DUCT PENETRATION THROUGH INTERIOR WALL

SCALE: NONE

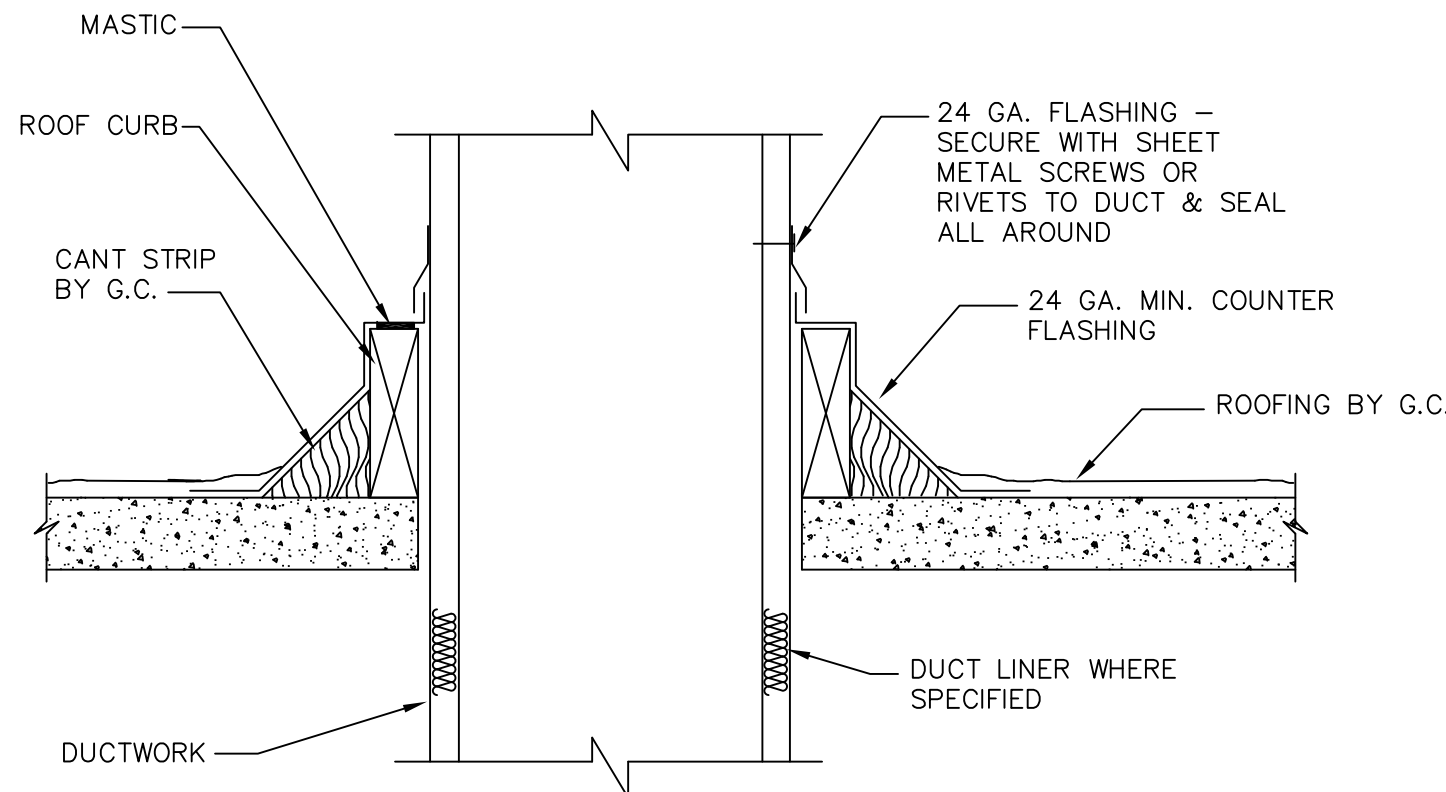
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M6.2



RECTANGULAR AIR DISTRIBUTION SUPPORT DETAIL

SCALE: NTS

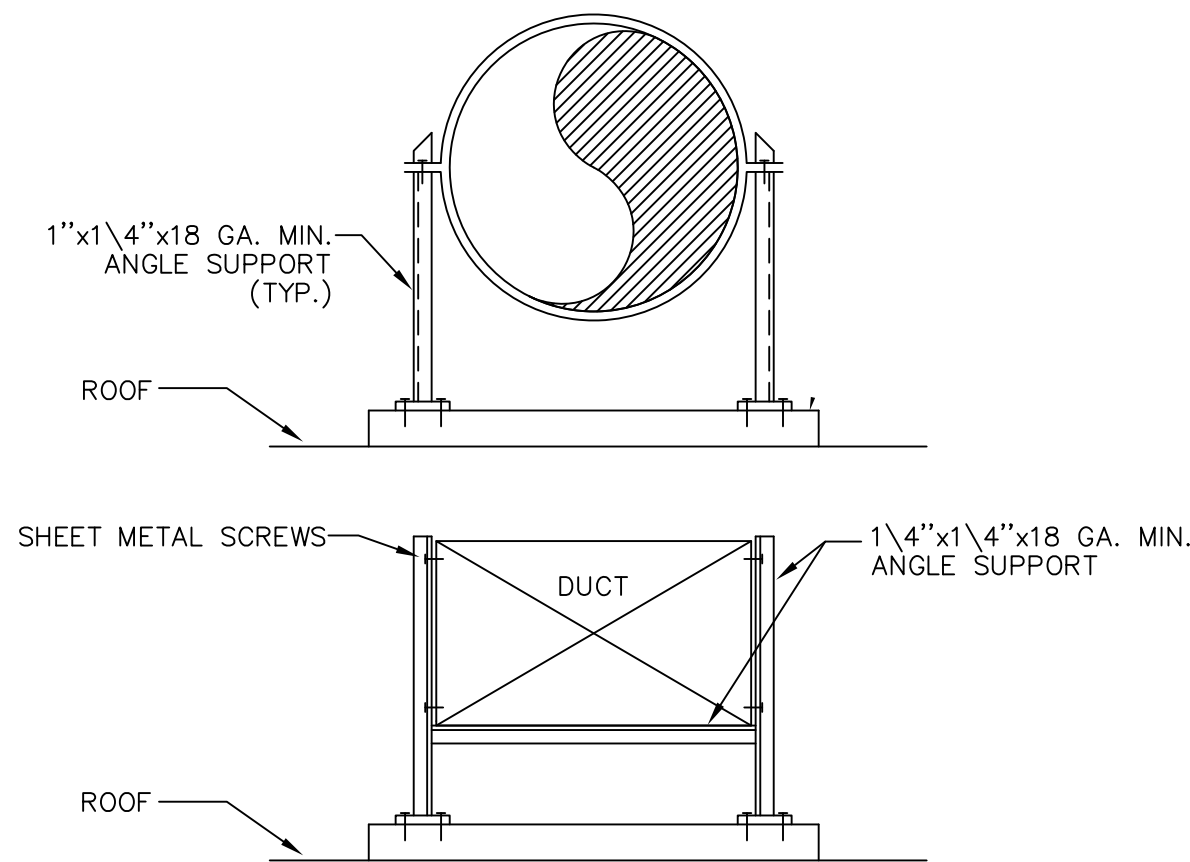
3
M6.1



ROOF PENETRATION DETAIL

SCALE: NTS

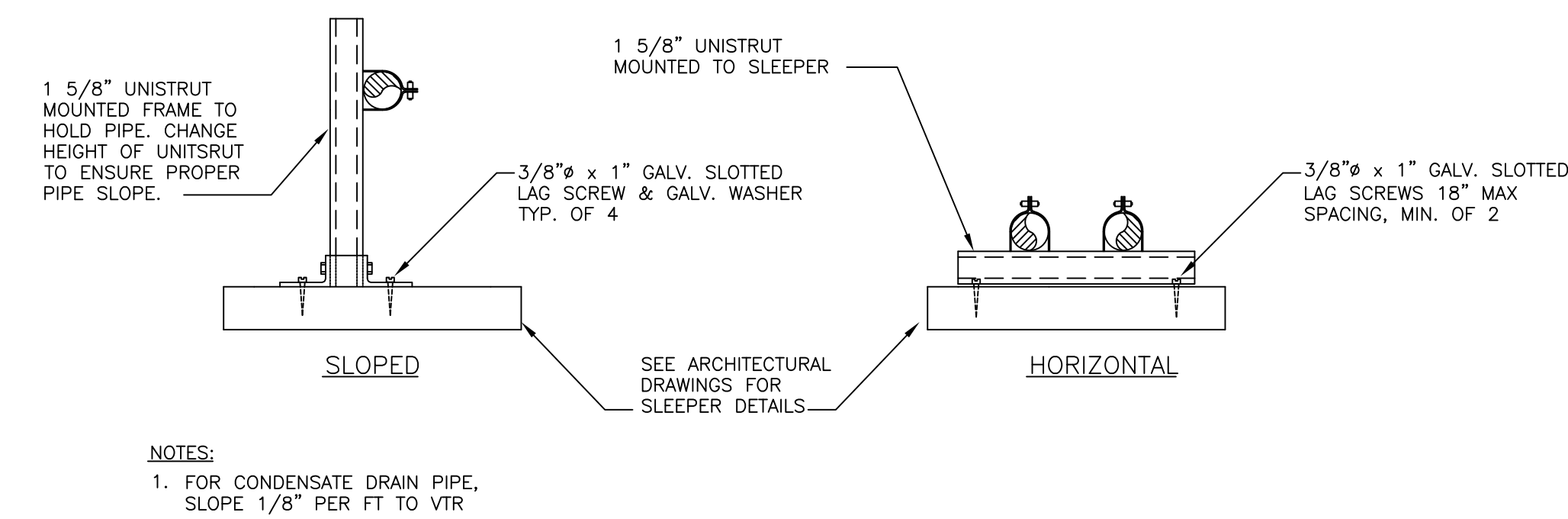
2
M6.1



DUCT SUPPORT ON ROOF DETAIL

SCALE: 1 1/2" = 1'-0"

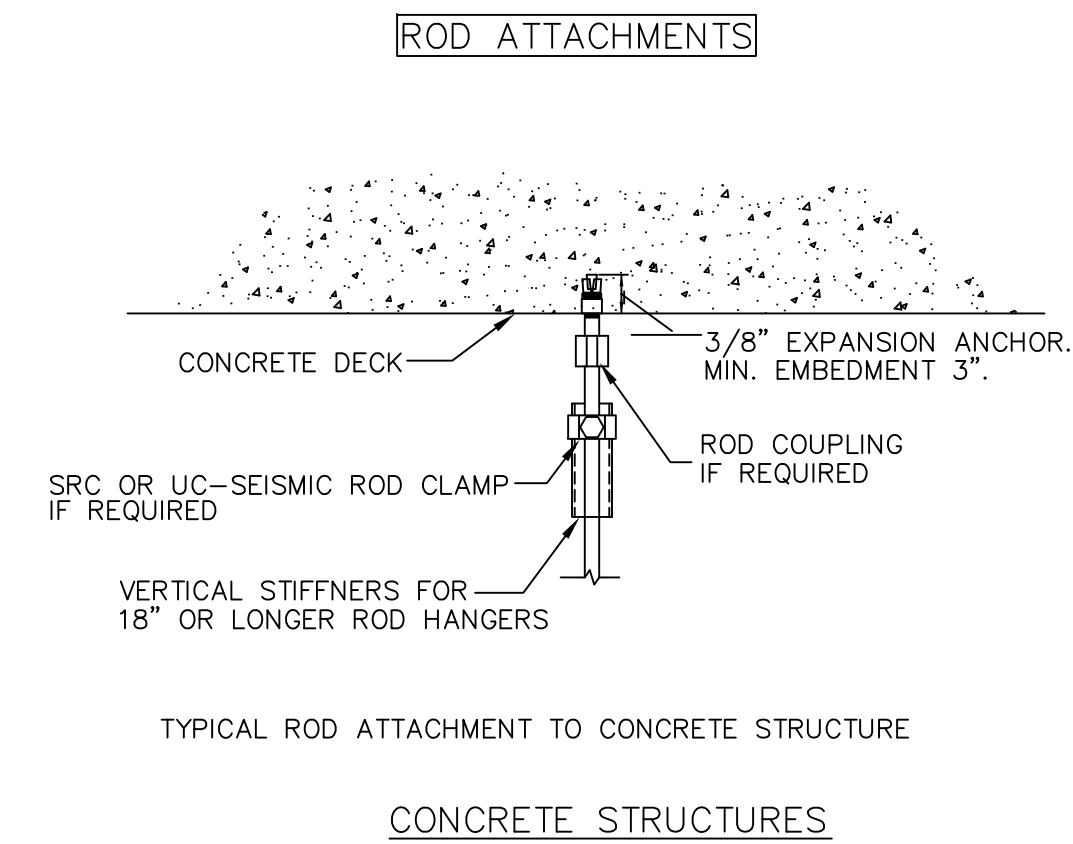
1
M6.1



ROOF MOUNTED PIPE SUPPORT DETAIL

SCALE: NTS

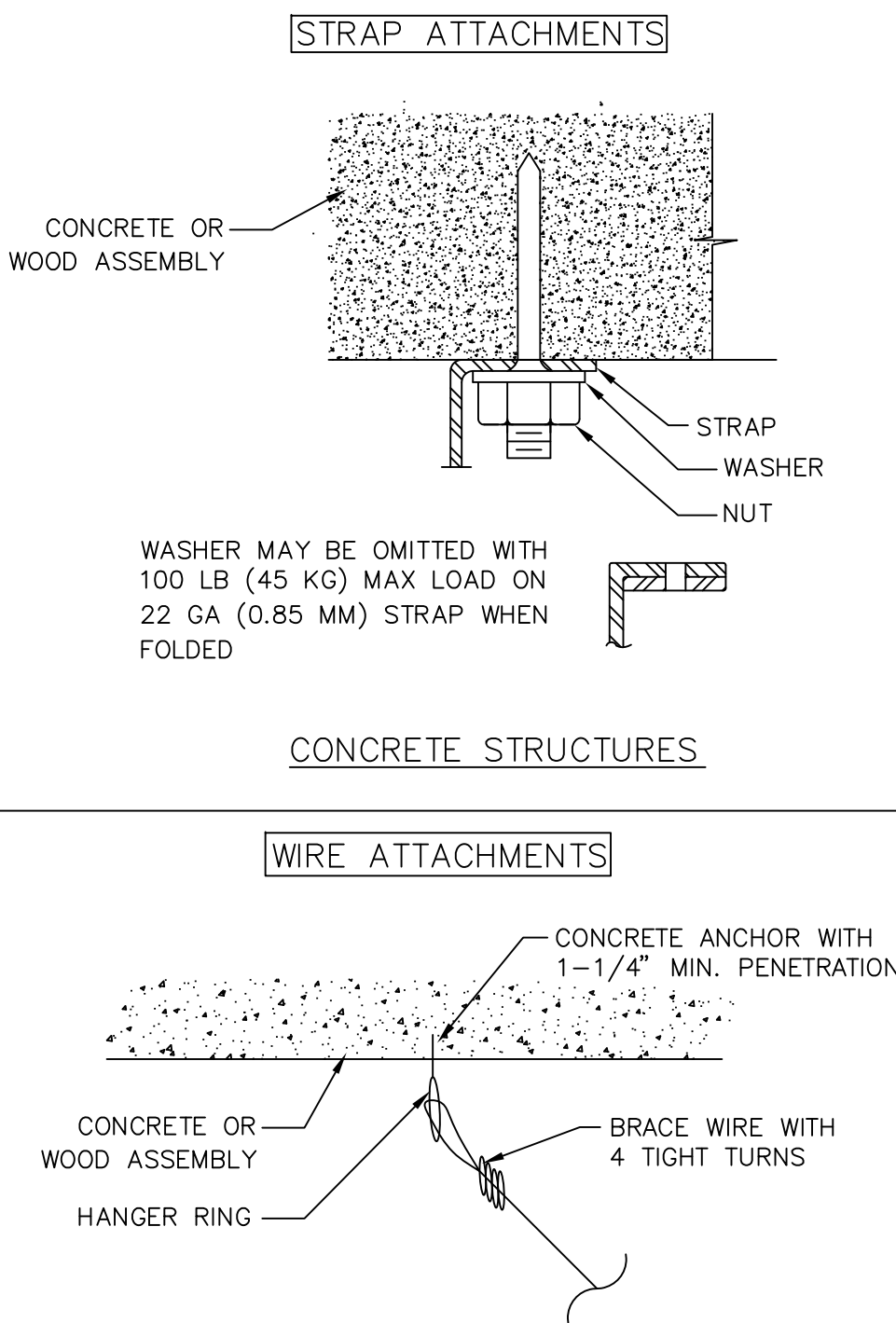
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M6.2



SUPPORT ATTACHMENTS DETAIL

SCALE: NTS

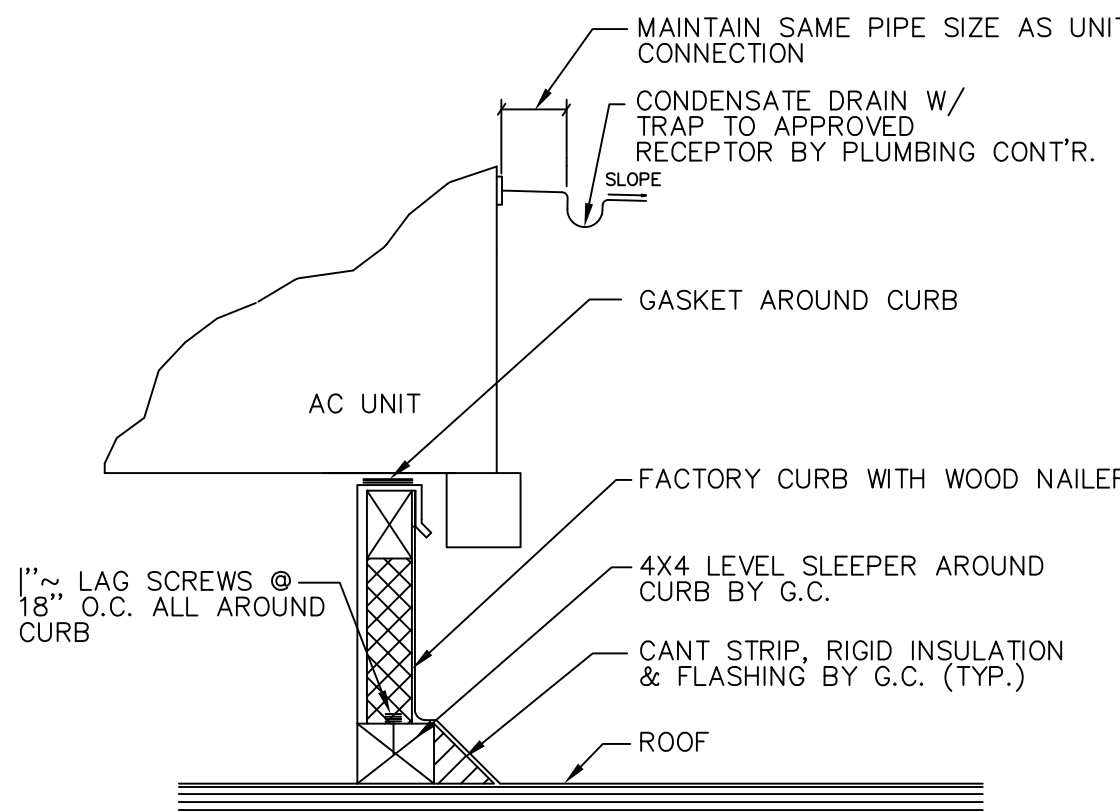
4
M6.2



EXPOSED ROUND DUCT SUPPORT DETAIL

SCALE: NTS

2
M6.2



AC MOUNTING DETAIL

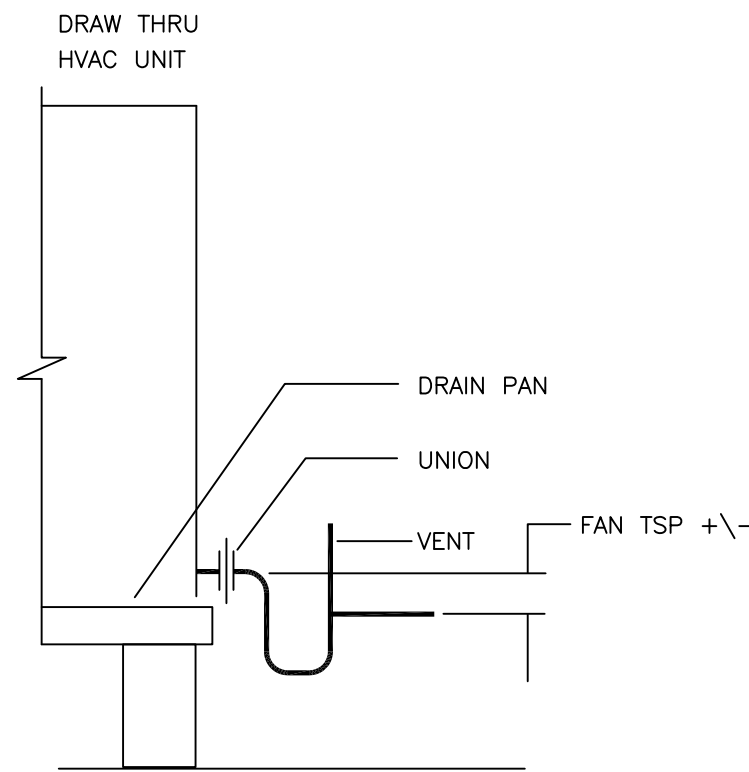
SCALE: NTS

1
M6.2

PITCH ALL LINES A MINIMUM SLOPE OF 1/8" PER FOOT

CONDENSATE DRAIN SIZES

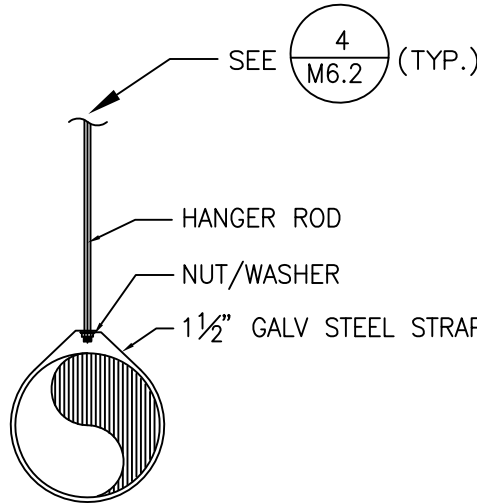
UP TO 20 TONS	3/4"
21 TO 40 TONS	1"
41 TO 90 TONS	1 1/4"
91 TO 125 TONS	1-1/2"
126 TO 250 TONS	2"



CONDENSATE TRAP DETAIL

SCALE: NTS

3
M6.2



NOTES:
1. COMPLY WITH SMACNA DUCT CONSTRUCTION STANDARDS FOR LATERAL BRACING

PERFORMANCE CERTIFICATE OF COMPLIANCE Part 1 of 3 PERF-1

PROJECT NAME Alameda County Waste Management Authority	DATE 03/07/2006
PROJECT ADDRESS 777 Davis St. #100 San Leandro	Building Permit #
PRINCIPAL DESIGNER - ENVELOPE Komorous Towey Architect	TELEPHONE 510-446-2244
DOCUMENTATION AUTHOR Rumsey Engineers, Inc.	TELEPHONE (510) 663-2070
Checked by/Date Enforcement Agency Use	

GENERAL INFORMATION

DATE OF PLANS	BUILDING CONDITIONED FLOOR AREA 11,574 Sq.Ft.	CLIMATE ZONE 3
BUILDING TYPE	<input checked="" type="checkbox"/> NONRESIDENTIAL <input type="checkbox"/> HIGH RISE RESIDENTIAL <input type="checkbox"/> HOTEL/MOTEL GUEST ROOM	
PHASE OF CONSTRUCTION	<input checked="" type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> ADDITION <input type="checkbox"/> ALTERATION <input type="checkbox"/> EXISTING + ADDITION	

STATEMENT OF COMPLIANCE

This Certificate of Compliance lists the building features and performance specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations. This certificate applies only to a Building using the performance compliance approach. The documentation prepared hereby certifies that the documentation is accurate and complete.

DOCUMENTATION AUTHOR SIGNATURE DATE

K. Mehta, Rumsey Engineers

The Principal Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building as designed meets the energy efficiency requirements contained in sections 110, 116, through 118, and 140, 142, 143 or 149 of Title 24, Part 6.

ENV. LTG. MECH.

☐ ☐ ☐ 1. I hereby affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am licensed in the State of California as a civil engineer, mechanical engineer, or I am a licensed architect.

☐ ☐ ☐ 2. I affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code Section 5537.2 or 6737.3 to sign this document as the person responsible for its preparation; and that I am a licensed contractor performing this work.

☐ ☐ ☐ 3. I affirm that I am eligible under Division 3 of the Business and Professions Code to sign this document because it pertains to a structure or type of work described as exempt pursuant to Business and Professions Code Sections 5537, 5538, and 6737.1. (These sections of the Business and Professions Code are printed in full in the Nonresidential Manual.)

ENVELOPE COMPLIANCE

Indicate location on plans of Note Block for Mandatory Measures

Required Forms ENV-1

PRINCIPAL ENVELOPE DESIGNER - NAME SIGNATURE LIC. NO. DATE

Komorous Towey Architect

LIGHTING COMPLIANCE

Indicate location on plans of Note Block for Mandatory Measures

Lighting Compliance Not In The Scope Of This Submittal

PRINCIPAL LIGHTING DESIGNER - NAME SIGNATURE LIC. NO. DATE

MECHANICAL COMPLIANCE

Indicate location on plans of Note Block for Mandatory Measures

Required Forms MECH-1, MECH-2, MECH-3, MECH-5

PRINCIPAL MECHANICAL DESIGNER - NAME SIGNATURE LIC. NO. DATE

Rumsey Engineers, Inc.

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529

EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page:1 of 131

PERFORMANCE CERTIFICATE OF COMPLIANCE Part 2 of 3 PERF-1

PROJECT NAME Alameda County Waste Management Authority	DATE 03/07/2006
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ANNUAL TDV ENERGY USE SUMMARY (kBtu/sqft-yr)

ENERGY COMPONENT	Standard Design	Proposed Design	Compliance Margin	Stacked	Proposed
Space Heating	25.33	0.45	24.88		
Space Cooling	58.67	44.12	14.55		
Indoor Fans	3.52	0.95	2.57		
Heat Rejection	0.00	0.00	0.00		
Pumps & Misc.	3.70	0.00	3.70		
Domestic Hot Water	0.00	0.00	0.00		
Lighting	70.29	70.29	0.00		
Receptacle	68.74	68.74	0.00		
Process	0.00	0.00	0.00		
TOTALS:	230.56	184.55	46.01		

Percent better than Standard: 20.0% (20.0% excluding process)

GENERAL INFORMATION

Building Orientation	(E) 90 deg	Conditioned Floor Area	11,574 sqft
Number of Stories	3	Unconditioned Floor Area	647 sqft
Number of Systems	4	Conditioned Footprint Area	5,606 sqft
Number of Zones	24	Fuel Type	Natural Gas

Orientation	Gross Area	Glazing Area	Glazing Ratio
Front Elevation	(E) 1,270 sqft	327 sqft	25.8%
Left Elevation	(S) 2,604 sqft	0 sqft	0.0%
Rear Elevation	(W) 1,662 sqft	404 sqft	24.3%
Right Elevation	(N) 3,986 sqft	807 sqft	20.2%
Total	9,532 sqft	1,538 sqft	16.1%
Roof	6,017 sqft	238 sqft	4.0%

	Standard	Proposed
Lighting Power Density	1.202 W/sqft.	0.638 W/sqft.
Prescriptive Env. Heat Loss	5,347 Btu/h	2,040 Btu/h
Prescriptive Env. Heat Gain	247,182 Btu/h-F	133,882 Btu/h-F

Remarks:

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529

EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page:2 of 131

PERFORMANCE CERTIFICATE OF COMPLIANCE Part 3 of 3 PERF-1

PROJECT NAME Alameda County Waste Management Authority	DATE 03/07/2006
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ZONE INFORMATION

System Name	Zone Name	Occupancy Type	Floor Area (sqft)	Inst. LPD (W/sf)	Ctrl. Credits (W/sf)	Allowed Area (W/sf)	LPD Tailored (W/sf)	Proc. Loads (W/sf)
Aaon RM Series A 05 - Board	Display	Corridor/Restroom/Support	325	*0.900				
	Board Room	Convention/Conference/Meeting	2,200	*0.810				
Aaon RM Series A 05 - 1st flr	Entry Recp & Hallway	Office	978	*0.420				
	Trash & Bicycle	Comp Bldg All Other	230	*0.540				
	Electric Room	Electrical, Mechanical Room	45	*0.600				
	Bathrooms	Corridor/Restroom/Support	331	*0.540				
	Mail Copy Room	Office	225	*1.000				
	Break Room	Office	200	*0.900				
	Storage/Janitor	Office	72	*0.540				
	Private Room	Office	48	*1.000				
	Open Office 1st Flr	Office	480	*0.560				
	Library	Office	194	*0.900				
	Hall	Corridor/Restroom/Support	80	*0.600				
	Storage	Comp Bldg All Other	417	*0.800				
Aaon RM Series B10-2nd floor	Conference Rm, 2nd Flr	Convention/Conference/Meeting	283	*0.840				
	Private Room Left 203	Office	164	*0.900				
	Private Room Left 201	Office	154	*0.700				
	Bathroom	Corridor/Restroom/Support	139	*0.540				
	Break Room 2	Office	60	*0.900				
	Copy Area	Office	141	*0.900				

Notes: 1. See LTG-2-C (Items marked with asterisk see LTG-2-C by others) 2. See LTG-4-C 3. See LTG-5-C (by others) 4. See LTG-6-C Items above require special documentation

EXCEPTIONAL CONDITIONS COMPLIANCE CHECKLIST

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

The HVAC System "Aaon RM Series A 05 - Board" includes a Variable Speed Drive on the Fan.

The HVAC System "Aaon RM Series A 05 - Board" includes an Economizer. This system has a cooling output < 75,000 Btu/h or a supply cfm < 2500.

The HVAC System "Aaon RM Series A 05 - Board: Premium EHP 0.10 BHP Supply Fan Motor has been specified.

The HVAC System "Aaon RM Series A 05 - 1st FLR" includes a Variable Speed Drive on the Fan.

The HVAC System "Aaon RM Series A 05 - 1st FLR" includes an Economizer. This system has a cooling output < 75,000 Btu/h or a supply cfm < 2500.

The HVAC System "Aaon RM Series A 05 - 1st FLR: Premium EHP 0.10 BHP Supply Fan Motor has been specified.

The HVAC System "Aaon RM Series A 02" includes a Variable Speed Drive on the Fan.

The HVAC System "Aaon RM Series A 02" includes an Economizer. This system has a cooling output < 75,000 Btu/h or a supply cfm < 2500.

The HVAC System "Aaon RM Series A 02: Premium EHP 0.02 BHP Supply Fan Motor has been specified.

The HVAC System "Aaon RM Series B 10" includes a Variable Speed Drive on the Fan.

The HVAC System "Aaon RM Series B 10: Premium EHP 0.23 BHP Supply Fan Motor has been specified.

The Hot Water Pump includes a Variable Speed Drive.

The exceptional features listed in this performance approach application have specifically been reviewed. Adequate written justification and documentation for their use have been provided by the applicant.

Authorized Signature or Stamp

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529

EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page:3 of 131

PERFORMANCE CERTIFICATE OF COMPLIANCE Part 3 of 3 PERF-1

PROJECT NAME Alameda County Waste Management Authority	DATE 03/07/2006
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System Name	Zone Name	Occupancy Type	Floor Area (sqft)	Inst. LPD (W/sf)	Ctrl. Credits (W/sf)	Allowed Area (W/sf)	LPD Tailored (W/sf)	Proc. Loads (W/sf)
Aaon RM Series A - 1&2nd flr	Open Office 2nd Flr	Office	4,514	*0.560				
	Conference Rm, 1st Flr	Convention/Conference/Meeting	356	*1.060				
	Graphics & Misc Rooms	Office	394	*0.900				
	Open Office 2nd Flr sml	Office	191	*0.540				

Notes: 1. See LTG-2-C (Items marked with asterisk see LTG-2-C by others) 2. See LTG-4-C 3. See LTG-5-C (by others) 4. See LTG-6-C Items above require special documentation

EXCEPTIONAL CONDITIONS COMPLIANCE CHECKLIST

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

MECH-2-A: Ventilation System Acceptance Document

-Variable Air Volume Systems Outdoor Air Acceptance

-Constant Air Volume Systems Outdoor Air Acceptance

Equipment requiring acceptance testing

Test required on all new systems both New Construction and Retrofit.

MECH-3-A: Packaged HVAC Systems Acceptance Document

Equipment requiring acceptance testing

Test required on all new systems both New Construction and Retrofit.

MECH-4-A: Air-Side Economizer Acceptance Document

Equipment requiring acceptance testing

Test required on all new systems both New Construction and Retrofit. Units with economizers that are installed at the factory and certified with the commission do not require equipment testing but do require construction inspection.

MECH-5-A: Air Distribution Acceptance Document

Equipment requiring acceptance testing

This test required if the unit serves 5,000 sq ft of space or less and 25% or more of the ducts are in nonconditioned or semiconditioned space like an attic. New systems that meet the above requirements. Retrofit systems that meet the above requirements and either outdoor ducts, replace ducts or replace the packaged unit.

MECH-6-A: Demand Control Ventilation Acceptance Document

Equipment requiring acceptance testing

All new DCV controls installed on new or existing packaged systems must be tested.

MECH-7-A: Supply Fan Variable Flow Control Acceptance Document

Equipment requiring acceptance testing

All new VAV fan volume controls installed on new or existing systems must be tested.

MECH-8-A: Hydronic System Control Acceptance Document

-Variable Flow Controls Applies to chilled and hot water systems.

-Automatic Isolation Controls Applies to new boilers and chillers and the primary pumps are connected to a common header.

-Supply Water Temperature Reset Controls Applies to new constant flow chilled and hot water systems that have a design capacity greater than or equal to 500,000 Btu/hr.

-Water-loop Heat Pump Controls Applies to all new water-loop heat pump systems where the combined loop pumps are greater than 5 hp.

-Variable Frequency Controls Applies to all new distribution pumps or new variable flow chilled, hydronic heat pump or condenser water systems where the pump motors are greater than 5 hp.

Equipment requiring acceptance testing

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529

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CERTIFICATE OF COMPLIANCE MECH-1-C

PROJECT NAME Alameda County Waste Management Authority	DATE 03/07/2006
---	--------------------

Designer:

This form is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for mechanical systems. The designer is required to check the boxes by all acceptance tests that apply and list all equipment that requires an acceptance test. If all equipment of a certain type requires a test, list the equipment description and the number of systems to be tested in parentheses. The N.J. number designates the Section in the Appendix of the Nonresidential ACM Manual that describes the test. Also indicate the person responsible for performing the tests (i. e. the installing contractor, design professional or an agent selected by the owner). Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately.

Building Departments:

SYSTEM ACCEPTANCE. Before an occupancy permit is granted for a newly constructed building or space, or a new space-conditioning system serving a building or space is operated for normal use, all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance.

In addition a Certificate of Acceptance, MECH-1-A Form shall be submitted to the building department that certifies plans, specifications, installation certificates and operating and maintenance information meet the requirements of Section 10-103(b) and Title 24 Part 6.

STATEMENT OF COMPLIANCE

MECH-2-A: Ventilation System Acceptance Document

-Variable Air Volume Systems Outdoor Air Acceptance

-Constant Air Volume Systems Outdoor Air Acceptance

Equipment requiring acceptance testing

Test required on all new systems both New Construction and Retrofit.

MECH-3-A: Packaged HVAC Systems Acceptance Document

Equipment requiring acceptance testing

Test required on all new systems both New Construction and Retrofit.

MECH-4-A: Air-Side Economizer Acceptance Document

Equipment requiring acceptance testing

Test required on all new systems both New Construction and Retrofit. Units with economizers that are installed at the factory and certified with the commission do not require equipment testing but do require construction inspection.

MECH-5-A: Air Distribution Acceptance Document

Equipment requiring acceptance testing

This test required if the unit serves 5,000 sq ft of space or less and 25% or more of the ducts are in nonconditioned or semiconditioned space like an attic. New systems that meet the above requirements. Retrofit systems that meet the above requirements and either outdoor ducts, replace ducts or replace the packaged unit.

MECH-6-A: Demand Control Ventilation Acceptance Document

Equipment requiring acceptance testing

All new DCV controls installed on new or existing packaged systems must be tested.

MECH-7-A: Supply Fan Variable Flow Control Acceptance Document

Equipment requiring acceptance testing

All new VAV fan volume controls installed on new or existing systems must be tested.

MECH-8-A: Hydronic System Control Acceptance Document

-Variable Flow Controls Applies to chilled and hot water systems.

-Automatic Isolation Controls Applies to new boilers and chillers and the primary pumps are connected to a common header.

-Supply Water Temperature Reset Controls Applies to new constant flow chilled and hot water systems that have a design capacity greater than or equal to 500,000 Btu/hr.

-Water-loop Heat Pump Controls Applies to all new water-loop heat pump systems where the combined loop pumps are greater than 5 hp.

-Variable Frequency Controls Applies to all new distribution pumps or new variable flow chilled, hydronic heat pump or condenser water systems where the pump motors are greater than 5 hp.

Equipment requiring acceptance testing

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529

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AIR SYSTEM REQUIREMENTS Part 1 of 2 MECH-2-C

PROJECT NAME Alameda County Waste Management Authority	DATE 03/07/2006
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SYSTEM FEATURES

Number of Systems

Aaon RM Series A 05 - Board

Aaon RM Series A 05 - 1st flr

Aaon RM Series B10-2nd floor

Reference on Plans or Specification

121(a) 80% AFUE 80% AFUE 80% AFUE

121(b) 12.0 SEER / 11.8 EER 12.0 SEER / 11.8 EER 11.0 EER

121(c) n/a n/a n/a

121(d) n/a n/a n/a

121(e) Yes Yes Yes

121(f) 398 cfm 398 cfm 818 cfm

121(g) No No No

121(h) No No No

121(i) Programmable Switch Programmable Switch Programmable Switch

AIR SYSTEM REQUIREMENTS

Part 1 of 2 MECH-2-C

PROJECT NAME Alameda County Waste Management Authority DATE 03/07/2006

SYSTEM FEATURES

ITEM OR SYSTEM TAG(S)	AIR SYSTEMS, Central or Single Zone
Number of Systems	Aeon RM Series A - 1&2nd

MANDATORY MEASURES

T-24 Section	Reference on Plans or Specification ¹
Heating Equipment Efficiency	112(a) 80% AFUE
Cooling Equipment Efficiency	112(a) 13.0 SEER / 12.8 EER
Heat Pump Thermostat	112(b) n/a
Furnace Controls	112(c), 115(a) n/a
Natural Ventilation	121(b) Yes
Minimum Ventilation	121(b) 141 cfm
VAV Minimum Position Control	121(c) No
Demand Control Ventilation	121(c) No
Time Control	121(c), 122(e) Programmable Switch
Setback and Setup Control	122(e) Heating Required
Outdoor Damper Control	122(f) Auto
Isolation Zones	122(g) n/a
Pipe Insulation	123
Duct Insulation	124 R-8.0

PRESCRIPTIVE MEASURES

Calculated Heating Capacity $\times 1.43^2$	144 (a & b) n/a
Proposed Heating Capacity ²	144 (a & b) 0 btuh
Calculated Sensible Cooling Capacity $\times 1.21^2$	144 (a & b) n/a
Proposed Sensible Cooling Capacity ²	144 (a & b) 10,659 btuh
Fan Control	144 (c) Variable Speed
DP Sensor Location	144 (c)
Supply Pressure Reset (DDC only)	144 (c) Yes
Simultaneous Heat/Cool	144 (d) No
Economizer	144 (e) Diff. Temp (Integrated)
Heating Air Supply Reset	144 (f) Coldest Zone
Cooling Air Supply Reset	144 (f) OA Reset
Duct Sealing for Prescriptive Compliance ³	144 (k) No

1: For each central and single zone air systems (or group of similar units) fill in the reference to sheet number and/or specification section and paragraph number where the required features are documented. If a requirement is not applicable, put "N/A" in the column.

2: Not required for hydronic heating and cooling. Either enter a value here or put in reference of plans and specifications per footnote 1.

3: Enter Yes if System is: Constant Volume, Single Zone; Serves < 5,000 sqft; Has > 25% duct in unconditioned space. Duct sealing is required for Prescriptive Compliance, see PERP-1 for performance method duct sealing requirements.

NOTES TO FIELD - For Building Department Use Only

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MECHANICAL VENTILATION

MECH-3-C

PROJECT NAME Alameda County Waste Management Authority DATE 03/07/2006

MECHANICAL VENTILATION (Section 121(b)(2))

AREA BASIS														OCCUPANCY BASIS														VAV MINIMUM													
A		B		C		D		E		F		G		H		I		J		K		L		M		N															
ZONE/SYSTEM				Area (SF)	Condition per sq ft	Max CFM by Area	Min CFM by Area	Number of People	CFM per Person	CFM by Occupant (EXF)	Min CFM	Max CFM	RECO VAV	Max of RECO VAV	Design Air Flow	30% of Design Air Flow	CFM x 0.4	Max of Columns H x 0.50 CFM	CFM x 0.4	Design Air Flow	Max of Columns H x 0.50 CFM	Design Min. Airflow	Transfer Air																		
Display				325	0.15	49								49	49																										
Board Room				2,200	0.50	1,100								1,100	846													254													
Aeon RM Series A 05 - Board													Total	1,149	895																										
Entry Recp & Hallway				978	0.15	147								147	147																										
Electric Room				45	0.15	7								7	7																										
Bathrooms				331	0.15	50								50	50																										
Mail Copy Room				225	0.15	34								34	34																										
Break Room				200	0.15	30								30	30																										
Storage/ Janitor				72	0.15	11								11	11																										
Private Room				48	0.15	7								7	7																										
Open Office 1st Flr				480	0.15	72								72	72																										
Library				194	0.15	29								29	29																										
Hall				80	0.15	12								12	12																										
Aeon RM Series A 05 - 1st flr													Total	398	398																										
Conference Rm, 2nd Flr				283	0.50	142								142	42													99													
Private Room Left 203				164	0.15	25								25	25																										
Private Room Left 201				154	0.15	23								23	23																										
Bathroom				139	0.15	21								21	21																										
Break Room 2				60	0.15	9								9	9																										
Copy Area				141	0.15	21								21	21																										
Open Office 2nd Flr				4,514	0.15	677								677	677																										
Aeon RM Series B10-2nd floor													Total	917	818																										
Conference Rm, 1st Flr				356	0.50	178								178	53													125													
Graphics & Misc Rooms				394	0.15	59								59	59																										
Open Office 2nd Flr smll				191	0.15	29								29	29																										

C Minimum ventilation rate per Section 121, Table 121.A.
D Based on fixed seat or the greater of the expected number of occupants and 50% of the CBC occupant load for spaces without fixed seating.
H Required Ventilation Air (REQD VAV) is the larger of the ventilation rates calculated on and AREA, or OCCUPANCY BASIS (column D or G).
I Must be greater than or equal to H, or use Transfer Air (column N) to make up the difference.
J Design fan supply cfm (Fan CFM) x 30%, or
K Condition area (ft. sq.) x 14 cfm/ft. sq., or
L Maximum of Columns H, I, K, or 200 cfm.
M This must be less than or equal to Column L and greater than or equal to the sum of Columns H + N.
N Transfer air must be provided where the Required Ventilation Air (column H) is greater than the Design Minimum Air (column M). Where required, transfer air must be greater than or equal to the difference between the Required Ventilation Air (column H) and the Design Minimum Air (column M), column H - M.

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MECHANICAL VENTILATION

MECH-3-C

PROJECT NAME Alameda County Waste Management Authority DATE 03/07/2006

MECHANICAL VENTILATION (Section 121(b)(2))

		AREA BASIS			OCCUPANCY BASIS			VAV MINIMUM							
A		B	C	D	E	F	G	H	I	J	K	L	M	N	
ZONE/SYSTEM				Min CFM by Area 15 to 150 CFM per Square Foot	Number of People	Person	CFM per Person (E x F)	Max of 100 CFM by Occupant (E x F)	RECOVA Max of 100 CFM by Occupant (E x F)	Design Air Vol. CFM	35% of Design Total CFM	35% of Design Total CFM	Columns H, J 1 to 100 CFM	Design Min. Air Supply	Transfer Air
Aeon RM Series A - 1&2nd flr								Total	298	141					

C Minimum ventilation rate per Section 121, Table 121.A.
D Based on fixed seat or the greater of the expected number of occupants and 50% of the CBC occupant load for spaces without fixed seating.
H Required Ventilation Air (REQD VAV) is the larger of the ventilation rates calculated on and AREA, or OCCUPANCY BASIS (column D or G).
I Must be greater than or equal to H, or use Transfer Air (column N) to make up the difference.
J Design fan supply cfm (Fan CFM) x 30%, or
K Condition area (ft. sq.) x 14 cfm/ft. sq., or
L Maximum of Columns H, I, K, or 200 cfm.
M This must be less than or equal to Column L and greater than or equal to the sum of Columns H + N.
N Transfer air must be provided where the Required Ventilation Air (column H) is greater than the Design Minimum Air (column M). Where required, transfer air must be greater than or equal to the difference between the Required Ventilation Air (column H) and the Design Minimum Air (column M), column H - M.

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MECHANICAL EQUIPMENT DETAILS

Part 1 of 2 MECH-5-C

PROJECT NAME Alameda County Waste Management Authority DATE 03/07/2006

CHILLER AND TOWER SUMMARY

Equipment Name	Equipment Type	Qty.	Efficiency	Tons	Tot. Qty	GPM	BHP	Motor Eff.	Drive Eff.	Pump Control

DHW / BOILER SUMMARY

System Name	System Type	Distribution Type	Qty	Rated Input	Vol. (Gals.)	Condition Status	Energy Factor or RE	Standby Loss or Pilot	TANK INSUL. Ext. R-Val.

MULTI-FAMILY CENTRAL WATER HEATING DETAILS

Hot Water Pump				Hot Water Piping Length (ft)			Add 1/2" Insulation
Control	#	HP	Type	In Plenum	Outside	Buried	

CENTRAL SYSTEM RATINGS

System Name	System Type	Qty	Output	Aux. kW	Eff.	Output	Efficiency	Condition Status	Economizer Type
Aeon RM Series A 05 - Board	Packaged VAV	1	97,230	0.0	80% AFUE	57,242	12.0 SEER / 11.8 EER	New	Diff. Temp (Integrated)
Aeon RM Series A 05 - 1st Flr	Packaged VAV	1	77,770	0.0	80% AFUE	53,000	12.0 SEER / 11.8 EER	New	Diff. Temp (Integrated)
Aeon RM Series B 10	Packaged VAV	1	153,310	0.0	80% AFUE	109,500	11.0 EER	New	Diff. Temp (Integrated)
Aeon RM Series A 02	Packaged VAV	1	0	0.0	80% AFUE	13,100	13.0 SEER / 12.8 EER	New	Diff. Temp (Integrated)

CENTRAL SYSTEM FAN SUMMARY

System Name	Fan Type	Motor Location	CFM	BHP	Motor Eff.	Drive Eff.	CFM	BHP	Motor Eff.	Drive Eff.
Aeon RM Series A 05 - Board	Variable Speed	Draw-Through	1,963	0.10	49.0%	97.0%	none	none	none	none
Aeon RM Series A 05 - 1st Flr	Variable Speed	Draw-Through	1,986	0.10	49.0%	97.0%	none	none	none	none
Aeon RM Series B 10	Variable Speed	Draw-Through	4,333	0.23	60.0%	97.0%	none	none	none	none
Aeon RM Series A 02	Variable Speed	Draw-Through	400	0.02	40.2%	97.0%	none	none	none	none

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MECHANICAL EQUIPMENT DETAILS

Part 2 of 2 MECH-5-C

PROJECT NAME Alameda County Waste Management Authority DATE 03/07/2006

ZONE TERMINAL SUMMARY

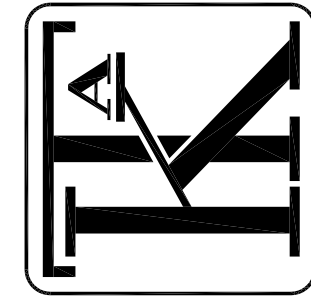
Zone Name	System Type	Qty.	Min. CFM	Reheat Coil Type	Delta T	CFM	BHP	Motor Eff.	Drive Eff.	Type	Output
Display	VAV Box	1	10%	none	n/a					none	n/a
Board Room	VAV Box	1	10%	none	n/a					none	n/a
Entry Recp & Hallway	VAV Box	1	10%	none	n/a					none	n/a
Trash & Bicycle	VAV Box	1	10%	none	n/a					none	n/a
Electric Room	VAV Box	1	10%	none	n/a					none	n/a
Bathrooms	VAV Box	1	10%	none	n/a					none	n/a
Mail Copy Room	VAV Box	1	10%	none	n/a					none	n/a
Break Room	VAV Box	1	10%	none	n/a					none	n/a
Storage/ Janitor	VAV Box	1	10%	none	n/a					none	n/a
Private Room	VAV Box	1	10%	none	n/a					none	n/a
Open Office 1st Flr	VAV Box	1	10%	none	n/a					none	n/a
Library	VAV Box	1	10%	none	n/a					none	n/a
Hall	VAV Box	1	10%	none	n/a					none	n/a
Conference Rm, 2nd Flr	VAV Box	1	10%	none	n/a					none	n/a
Private Room Left 203	VAV Box	1	10%	none	n/a					none	n/a
Private Room Left 201	VAV Box	1	10%	none	n/a					none	n/a
Bathroom	VAV Box	1	10%	none	n/a					none	n/a
Break Room 2	VAV Box	1	10%	none	n/a					none	n/a
Copy Area	VAV Box	1	10%	none	n/a					none	n/a
Open Office 2nd Flr	VAV Box	1	10%	none	n/a					none	n/a
Conference Rm, 1st Flr	VAV Box	1	10%	none	n/a					none	n/a
Graphics & Misc Rooms	VAV Box	1	10%	none	n/a					none	n/a
Open Office 2nd Flr sml	VAV Box	1	10%	none	n/a					none	n/a

EXHAUST FAN SUMMARY

Room Name	Qty.	CFM	BHP	Motor Eff.	Drive Eff.	Room Name	Qty.	CFM	BHP	Motor Eff.	Drive Eff.

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24 FORMS
TITLE

ACWMA
ALAMEDA COUNTY
WASTE MANAGEMENT AUTHORITY
777 DAVIS ST. #100
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DATE: 03-09-06

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JOB NO.: 2513

M7.02



CERTIFICATE OF COMPLIANCE ENV-1-C

PROJECT NAME Alameda County Waste Management Authority DATE 03/07/2006

OPAQUE SURFACES										
#	Surface Type	Area	U-Fac.	Insulation Cav.	Cont.	Act. Azm.	Tilt	Cond. Status	Joint Appendix IV Reference	Location / Comments
1	Wall	166	0.164	R-19	R-0.0	27	90	New	11-A7	Display
2	Wall	241	0.049	None	R-19.0	297	90	New	13-D5	Board Room
3	Wall	221	0.049	None	R-19.0	297	90	New	13-D5	Board Room
4	Demising	720	0.049	None	R-19.0	0	90	New	13-D5	Board Room (fices Storage)
5	Wall	152	0.164	R-19	R-0.0	117	90	New	11-A7	Board Room
6	Wall	183	0.049	None	R-19.0	27	90	New	13-D5	Board Room
7	Wall	327	0.049	None	R-19.0	27	90	New	13-D5	Board Room
8	Wall	23	0.630	None	R-0.0	27	90	New	13-J5	Board Room
9	Wall	23	0.630	None	R-0.0	27	90	New	13-J5	Board Room
10	Wall	23	0.630	None	R-0.0	27	90	New	13-J5	Board Room
11	Wall	23	0.630	None	R-0.0	297	90	New	13-J5	Board Room
12	Wall	23	0.630	None	R-0.0	297	90	New	13-J5	Board Room
13	Wall	23	0.049	None	R-19.0	297	90	New	13-D5	Board Room
14	Wall	104	0.630	None	R-0.0	117	90	New	13-J5	Entry Recp & Hallway
15	Wall	61	0.164	R-19	R-0.0	117	90	New	11-A7	Entry Recp & Hallway
16	Wall	243	0.164	R-19	R-0.0	0	90	New	11-A7	Entry Recp & Hallway
17	Wall	65	0.159	None	R-4.8	27	90	New	13-H5	Entry Recp & Hallway
18	Wall	23	0.630	None	R-0.0	207	90	New	13-J5	Electric Room
19	Wall	40	0.164	R-19	R-0.0	207	90	New	11-A7	Electric Room
20	Wall	23	0.630	None	R-0.0	207	90	New	13-J5	Mail Copy Room

*N, E, & R (New, Existing, Altered, Removed)

FENESTRATION SURFACES

More than or equal to 10,000 sq.ft. of site-built fenestration area must include a label certificate either issued by NFRC or provide a CEC Default Label Certificate using the default U-factors from Standards Table 116-A and B. Certificate shall be filed in the contractor's project office during construction and in the building manager's office after construction.

#	Type	Area	U-Fac. ¹	SHGC ²	Act. Azm.	Cond. Stat.	Glazing Type	Location/Comments
1	Window Rear (NW)	72	0.497/NFRC	0.38/NFRC	297	New	ACWMA Custom Window	Board Room
2	Window Rear (NW)	82	0.497/NFRC	0.38/NFRC	297	New	ACWMA Custom Window	Board Room
3	Window Right (NE)	80	0.497/NFRC	0.38/NFRC	27	New	ACWMA Custom Window	Board Room
4	Window Right (NE)	80	0.497/NFRC	0.38/NFRC	27	New	ACWMA Custom Window	Board Room
5	Window Front (SE)	20	0.497/NFRC	0.38/NFRC	117	New	ACWMA Custom Window	Entry Recp & Hallway
6	Window Front (SE)	47	0.497/NFRC	0.38/NFRC	117	New	ACWMA Custom Window	Entry Recp & Hallway
7	Window Right (N)	20	0.497/NFRC	0.38/NFRC	0	New	ACWMA Custom Window	Entry Recp & Hallway
8	Window Right (N)	20	0.497/NFRC	0.38/NFRC	0	New	ACWMA Custom Window	Entry Recp & Hallway
9	Window Right (N)	20	0.497/NFRC	0.38/NFRC	0	New	ACWMA Custom Window	Entry Recp & Hallway
10	Window Right (N)	20	0.497/NFRC	0.38/NFRC	0	New	ACWMA Custom Window	Entry Recp & Hallway
11	Window Right (N)	20	0.497/NFRC	0.38/NFRC	0	New	ACWMA Custom Window	Entry Recp & Hallway
12	Window Right (NE)	40	0.497/NFRC	0.38/NFRC	27	New	ACWMA Custom Window	Open Office 1st Flr
13	Window Right (NE)	28	0.497/NFRC	0.38/NFRC	27	New	ACWMA Custom Window	Open Office 1st Flr

(1) U-factor Type 116-A Default Table from Standards, Table 16-1 Default Table from the ACM Manual Appendix, NFRC Labeled value
(2) SHGC Type 116-B Default Table from Standards, COG Center of Glass, NFRC Labeled Value

EXTERIOR SHADING						
#	Exterior Shade Type	SHGC	Window Hgt. Wd.	Overhang Len. Hgt.	Left Fin Dist. Len. Hgt.	Right Fin Dist. Len. Hgt.
1	None	0.76	6.0 12.0	4.0 0.1 3.0 3.0		
2	None	0.76	7.7 12.0	4.0 0.1 3.0 3.0		
3	None	0.76				
4	None	0.76				
5	None	0.76				
6	None	0.76	7.2 5.5	3.0 0.1 3.0 3.0		
7	None	0.76				
8	None	0.76				
9	None	0.76				
10	None	0.76				
11	None	0.76				
12	None	0.76				
13	None	0.76				

MINIMUM SKYLIGHT AREA FOR LARGE ENCLOSED SPACES

The proposed building contains an enclosed space with floor area greater than 25,000 sq.ft. a ceiling height greater than 16 feet and a LPD for general lighting of at least 0.5 W/sq.ft. If this box is checked, ENV-4-C must be filled out when submitting under the Prescriptive Compliance Approach.

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CERTIFICATE OF COMPLIANCE ENV-1-C

PROJECT NAME Alameda County Waste Management Authority DATE 03/07/2006

OPAQUE SURFACES										
#	Surface Type	Area	U-Fac.	Insulation Cav.	Cont. Cont.	Act. Azm.	Tilt	Cond: Status	Joint Appendix IV Reference	Location / Comments
21	Wall	427	0.049	None	R-19.0	207	90	New	13-D5	Mail Copy Room
22	Demising	133	0.049	None	R-19.0	0	90	New	13-D5	Break Room (fices Storage)
23	Wall	170	0.159	None	R-4.8	207	90	New	13-H5	Break Room
24	Wall	23	0.630	None	R-0.0	207	90	New	13-J5	Break Room
25	Wall	170	0.159	None	R-4.8	207	90	New	13-H5	Break Room
26	Wall	131	0.164	R-19	R-0.0	297	90	New	11-A7	Storage/ Janitor
27	Wall	56	0.049	None	R-19.0	27	90	New	13-D5	Storage/ Janitor
28	Wall	23	0.630	None	R-0.0	27	90	New	13-J5	Storage/ Janitor
29	Wall	60	0.049	None	R-19.0	27	90	New	13-D5	Storage/ Janitor
30	Wall	7	0.049	None	R-19.0	27	90	New	13-D5	Private Room
31	Wall	56	0.049	None	R-19.0	27	90	New	13-D5	Private Room
32	Wall	0	0.630	None	R-0.0	27	90	New	13-J5	Open Office 1st Flr
33	Wall	441	0.049	None	R-19.0	27	90	New	13-D5	Open Office 1st Flr
34	Wall	12	0.630	None	R-0.0	27	90	New	13-J5	Library
35	Wall	135	0.164	R-19	R-0.0	117	90	New	11-A7	Library
36	Wall	78	0.159	None	R-4.8	27	90	New	13-H5	Library
37	Wall	78	0.164	R-19	R-0.0	207	90	New	11-A7	Hall
38	Wall	129	0.049	None	R-19.0	117	90	New	13-D5	Conference Rm. 2nd Flr
39	Wall	20	0.630	None	R-0.0	117	90	New	13-J5	Conference Rm. 2nd Flr
40	Wall	20	0.630	None	R-0.0	117	90	New	13-J5	Conference Rm. 2nd Flr

*N, E, & R (New, Existing, Altered, Removed)

FENESTRATION SURFACES

More than or equal to 10,000 sq.ft. of site-built fenestration area must include a label certificate either issued by NFRC or provide a CEC Default Label Certificate using the default U-factors from Standards Table 116-A and B. Certificate shall be filed in the contractor's project office during construction and in the building manager's office after construction.

#	Type	Area	U-Fac. ¹	SHGC ²	Act. Azm.	Cond. Stat.	Glazing Type	Location/Comments
14	Window Front (SE)	20	0.497/NFRC	0.38/NFRC	117	New	ACWMA Custom Window	Library
15	Window Front (SE)	20	0.497/NFRC	0.38/NFRC	117	New	ACWMA Custom Window	Library
16	Window Front (SE)	44	0.497/NFRC	0.38/NFRC	117	New	ACWMA Custom Window	Conference Rm. 2nd Flr
17	Window Front (SE)	44	0.497/NFRC	0.38/NFRC	117	New	ACWMA Custom Window	Conference Rm. 2nd Flr
18	Window Front (SE)	44	0.497/NFRC	0.38/NFRC	117	New	ACWMA Custom Window	Conference Rm. 2nd Flr
19	Window Front (SE)	44	0.497/NFRC	0.38/NFRC	117	New	ACWMA Custom Window	Private Room Left 203
20	Window Front (SE)	44	0.497/NFRC	0.38/NFRC	117	New	ACWMA Custom Window	Private Room Left 201
21	Skylight Right (NE)	120	0.497/NFRC	0.38/NFRC	27	New	ACWMA Custom Window	Open Office 2nd Flr
22	Window Rear (NW)	120	0.497/NFRC	0.38/NFRC	297	New	ACWMA Custom Window	Open Office 2nd Flr
23	Window Rear (NW)	120	0.497/NFRC	0.38/NFRC	297	New	ACWMA Custom Window	Open Office 2nd Flr
24	Window Right (NE)	120	0.497/NFRC	0.38/NFRC	27	New	ACWMA Custom Window	Open Office 2nd Flr
25	Window Right (NE)	120	0.497/NFRC	0.38/NFRC	27	New	ACWMA Custom Window	Open Office 2nd Flr
26	Window Right (NE)	120	0.497/NFRC	0.38/NFRC	27	New	ACWMA Custom Window	Open Office 2nd Flr

(1) U-factor Type 116-A Default Table from Standards, Table 16-1 Default Table from the ACM Manual Appendix, NFRC Labeled value
(2) SHGC Type 116-B Default Table from Standards, COG Center of Glass, NFRC Labeled Value

EXTERIOR SHADING						
#	Exterior Shade Type	SHGC	Window Hgt. Wd.	Overhang Len. Hgt.	Left Fin Dist. Len. Hgt.	Right Fin Dist. Len. Hgt.
14	None	0.76				
15	None	0.76				
16	None	0.76	9.8 4.5	18.0 0.5 1.0 1.0		
17	None	0.76	9.8 4.5	18.0 0.5 1.0 1.0		
18	None	0.76	9.8 4.5	18.0 0.5 1.0 1.0		
19	None	0.76	9.8 4.5	18.0 0.5 1.0 1.0		
20	None	0.76	9.8 4.5	18.0 0.5 1.0 1.0		
21	None	1.00				
22	None	0.76	10.0 12.0	4.0 0.1 3.0 3.0		
23	None	0.76	10.0 12.0	4.0 0.1 3.0 3.0		
24	None	0.76				
25	None	0.76				
26	None	0.76				

MINIMUM SKYLIGHT AREA FOR LARGE ENCLOSED SPACES

The proposed building contains an enclosed space with floor area greater than 25,000 sq.ft. a ceiling height greater than 16 feet and a LPD for general lighting of at least 0.5 W/sq.ft. If this box is checked, ENV-4-C must be filled out when submitting under the Prescriptive Compliance Approach.

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529
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CERTIFICATE OF COMPLIANCE ENV-1-C

PROJECT NAME Alameda County Waste Management Authority DATE 03/07/2006

OPAQUE SURFACES										
#	Surface Type	Area	U-Fac.	Insulation Cav.	Cond. Azm.	Act. Azm.	Tilt	Cond. Status	Joint Appendix IV Reference	Location / Comments
61	Roof	141	0.015	6 in.	R-63.7	27	0	New	06-A4	Copy Area
62	Wall	5	0.159	None	R-4.8	207	90	New	13-H5	Copy Area
63	Wall	40	0.159	None	R-4.8	207	90	New	13-H5	Copy Area
64	Roof	1,062	0.015	6 in.	R-63.7	27	0	New	06-A4	Open Office 2nd Flr
65	Roof	2,443	0.011	6 in.	R-91.0	27	0	New	06-A4	Open Office 2nd Flr
66	Wall	34	0.159	None	R-4.8	207	90	New	13-H5	Open Office 2nd Flr
67	Wall	20	0.630	None	R-0.0	207	90	New	13-J5	Open Office 2nd Flr
68	Wall	122	0.049	None	R-19.0	297	90	New	13-D5	Open Office 2nd Flr
69	Wall	122	0.049	None	R-19.0	297	90	New	13-D5	Open Office 2nd Flr
70	Wall	58	0.049	None	R-19.0	297	90	New	13-D5	Open Office 2nd Flr
71	Wall	58	0.159	None	R-4.8	297	90	New	13-H5	Open Office 2nd Flr
72	Wall	115	0.164	R-19	R-0.0	207	90	New	11-A7	Open Office 2nd Flr
73	Wall	101	0.164	R-19	R-0.0	297	90	New	11-A7	Open Office 2nd Flr
74	Wall	292	0.049	None	R-19.0	207	90	New	13-D5	Open Office 2nd Flr
75	Wall	198	0.049	None	R-19.0	207	90	New	13-D5	Open Office 2nd Flr
76	Wall	68	0.049	None	R-19.0	207	90	New	13-D5	Open Office 2nd Flr
77	Wall	20	0.630	None	R-0.0	207	90	New	13-J5	Open Office 2nd Flr
78	Wall	20	0.630	None	R-0.0	207	90	New	13-J5	Open Office 2nd Flr
79	Wall	20	0.630	None	R-0.0	207	90	New	13-J5	Open Office 2nd Flr
80	Wall	135	0.164	R-19	R-0.0	117	90	New	11-A7	Open Office 2nd Flr

PROJECT NAME	Alameda County Waste Management Authority	DATE	03/08/2006
INSTALLED INDOOR LIGHTING POWER FOR CONDITIONED AND UNCONDITIONED SPACES			
		INSTALLED WATTS	
INSTALLED LIGHTING, CONDITIONED SPACES (From LTG-2-C)		7,793	
PORTABLE LIGHTING (From LTG-3-C)		166	
LIGHTING CONTROL CREDIT, CONDITIONED SPACES (From LTG-4-C)		0	
CONDITIONED SPACE ADJUSTED INSTALLED LIGHTING POWER		7,960	
INSTALLED LIGHTING, UNCONDITIONED SPACES (From LTG-2-C)		374	
LIGHTING CONTROL CREDIT, UNCONDITIONED SPACES (From LTG-4-C)		0	
UNCONDITIONED SPACE ADJUSTED INSTALLED LIGHTING POWER		374	

ALLOWED LIGHTING POWER

388

[illegible]

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[illegible]

Test Description	Test Performed By:
<input type="checkbox"/> LTG-2-A: Lighting Control Acceptance Document - Occupancy Sensor Acceptance - Manual Daylight Controls Acceptance - Automatic Time Switch Control Acceptance Equipment requiring acceptance testing _____ _____	
<input type="checkbox"/> LTG-3-A: Automatic Daylighting Controls Acceptance Document Equipment requiring acceptance testing _____ _____ _____ _____ _____	
_____ _____ _____ _____ _____	
_____ _____ _____ _____ _____	

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 User Number: 4715
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PROJECT NAME	Alameda County Waste Management Authority	DATE	03/08/2016
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A	B	C	D
ROOM # OR ZONE ID	DEFAULT (W/sqft)	AREA (SF)	TOTAL WATTS (B X C)
Private Room	0.2	48	10
Open Office 1st Flr	0.2	480	96
Open Office 2nd Flr sml	0.2	191	38
TOTAL		719	144

A	B	C	D	E	F	G
ROOM # OR ZONE ID	PORTABLE LIGHTING Description	# OF FXT.	LUMEN WATTS PER FIXTURE	TASK AREA (SF)	# OF TASK AREAS	TOTAL AREA (D X E) (C X F)
Mail Copy Room	0.10 w/sqft - See attached documentation			225	1	225
TOTAL					225	22

ROOM # OR ZONE ID	TOTAL AREA (SF)
TOTAL	0

Designer needs to provide detailed documentation that the lighting level provided by the overhead lighting meets the needs of the space. The details include luminaire types and mounting locations relative to work areas.

BUILDING SUMMARY	TOTAL AREA (SF) (FROM TABLES 1+2+3)	TOTAL WATTS
TOTAL	944	166

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PROJECT NAME		Alameda County Waste Management Authority							DATE		03/08/2006	
INSTALLED LIGHTING POWER FOR CONDITIONED SPACES												
Luminaire		Lamps/Ballasts					Installed Watts					
		C	D	E	F	G	H	I	J			
Name	Type Description	Lamp Type	Number of Lamps per Luminaire	Watts per Lamp	Number of Ballasts per Luminaire	Watts per Luminaire	CEC Demand	Number of Luminaires	Installed Watts (G x I)	Installed Watts (J x I)		
	Designed Allowance: 136 sqft at 0.540 w/sf									75		
	Designed Allowance: 141 sqft at 0.900 w/sf									127		
	Designed Allowance: 154 sqft at 0.700 w/sf									108		
	Designed Allowance: 164 sqft at 0.900 w/sf									148		
	Designed Allowance: 191 sqft at 0.540 w/sf									103		
	Designed Allowance: 194 sqft at 0.900 w/sf									175		
	Designed Allowance: 200 sqft at 0.900 w/sf									180		
	Designed Allowance: 200 sqft at 0.810 w/sf									1,782		
	Designed Allowance: 225 sqft at 1.000 w/sf									225		
	Designed Allowance: 283 sqft at 0.840 w/sf									238		
	Designed Allowance: 325 sqft at 0.900 w/sf									292		
	Designed Allowance: 331 sqft at 0.540 w/sf									179		
	Designed Allowance: 356 sqft at 1.080 w/sf									384		
	Designed Allowance: 394 sqft at 0.900 w/sf									355		
	Designed Allowance: 45 sqft at 0.600 w/sf									27		
	Designed Allowance: 4514 sqft at 0.580 w/sf									2,528		
	Designed Allowance: 48 sqft at 1.000 w/sf									48		
	Designed Allowance: 480 sqft at 0.560 w/sf									269		
	Designed Allowance: 60 sqft at 0.900 w/sf									54		
	Designed Allowance: 72 sqft at 0.540 w/sf									39		
	Designed Allowance: 80 sqft at 0.600 w/sf									48		
	Designed Allowance: 978 sqft at 0.420 w/sf									411		

PAGE TOTAL	7,793
BUILDING TOTAL (sum of all pages)	7,793
PORTABLE LIGHTING (From LTG-3-C)	166
CONTROL CREDIT (From LTG-4-C)	0
ADJUSTED ACTUAL WATTS	7,960

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PROJECT NAME	Alameda County Waste Management Authority	DATE	03/08/2006
ALLOWED LIGHTING POWER (Choose One Method)			
COMPLETE BUILDING METHOD - CONDITIONED SPACES			
BUILDING CATEGORY (From Section 146 Table 146-B)	WATTS PER SF	COMPLETE BLDG. AREA	ALLOWED WATTS
Relocatable Public School	1,20	11,574	13,889
AREA CATEGORY METHOD - CONDITIONED SPACES			
AREA CATEGORY (From Section 146 Table 146-C)	WATTS PER SF	AREA (SF)	ALLOWED WATTS
PAGE TOTAL			
BUILDING TOTAL			
	AREA	WATTS	
TAILORED METHOD - CONDITIONED SPACES			
TOTAL ALLOWED WATTS (From LTG-6-C or from computer run.)			
UNCONDITIONED SPACES			
Complete Building and Area Category Methods Category (From Section 146 Table 146-B&C)	WATTS PER SF	AREA (SF)	ALLOWED WATTS
Relocatable Public School	1,20	647	776
PAGE TOTAL			
BUILDING TOTAL			
	AREA	WATTS	
TAILORED METHOD - UNCONDITIONED SPACES			
TOTAL UNCONDITIONED SPACES ALLOWED WATTS (From LTG-5-C and LTG-6-C)			
<div style="display: flex; justify-content: space-between; font-size: small;"> EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page: 7 of 7 </div>			