



2

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)	FINAL FILTER TYPE	THICKNS	PRE FILTER TYPE	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	①②③ ⑥⑦⑧ ⑩⑪⑬⑭
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	①②③ ⑥⑦⑧⑨ ⑪⑬⑭
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	②③ ⑥⑦⑧⑨ ⑪⑬⑭
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	②③ ⑥⑦⑧ ⑫⑬⑭
AC 5	AAON RM002 (FUTURE OPTION)	PACKAGED ROOFTOP UNIT	EAST SIDE ROOMS 201, 202, 203	750				18.1						16.0										208/3	777	②③ ⑥⑦⑧⑨ ⑫⑬⑭	

- 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
- ⑭

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

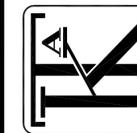
- NOTE:
- DIFFUSERS TO PROVIDE 4-WAY DIFFUSION PATTERN UNLESS OTHERWISE NOTED OR SHOWN ON PLANS.
  - IF THERMAFUSER IS NOT INSTALLED IN CEILING GRID, THEN INSTALL WITH FACE AT 9'-0" AFF, UON.

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

KOMOROUS-TOWEY ARCHITECTS  
 315 FOURTEENTH STREET  
 OAKLAND, CA 94612  
 Ph: 510.466.2244 Fax: 510.466.2242  
 www.ktarch.com



1537 WEBSTER ST. OAKLAND, CA  
 BUILDING REHABILITATION AND SEISMIC IMPROVEMENTS  
 EQUIPMENT SCHEDULES  
 HVAC

ACWMA  
 ALAMEDA COUNTY  
 WASTE MANAGEMENT AUTHORITY  
 777 DAVIS ST. #100  
 SAN LEANDRO, CA 94577

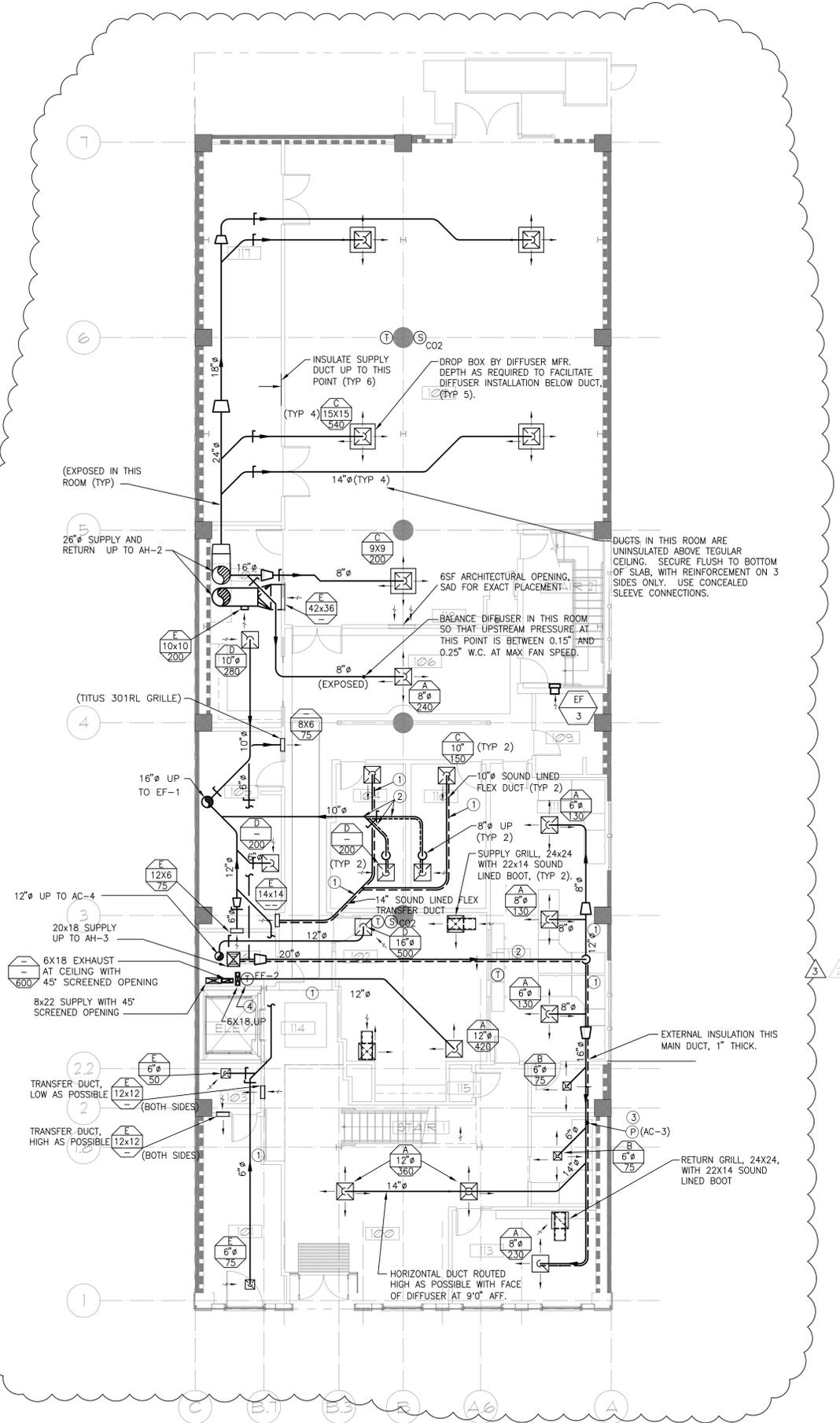
PERMIT SET  
 REVISIONS  
 ADDM. 3 03-13-06

© COPYRIGHT 2005



DATE: 03-09-06  
 DRAWN BY: EB  
 JOB NO.: 2513

M0.2



GROUND FLOOR PLAN

SCALE: 1/8" = 1'-0"  
 0 5' 10'

- SHEET NOTES:
- ① PLACE DUCT LOW AS POSSIBLE ON TOP OF LID.
  - ② DUCT LOCATED HIGH AS POSSIBLE NEXT TO SLAB ABOVE.
  - ③ PRESSURE SENSOR FOR DUCT STATIC PRESSURE CONTROL.
  - ④ LINE VOLTAGE THERMOSTAT FOR EF-2; ELEVATOR MACHINE ROOM COOLING CONTROL. SET T'STAT TO TURN FAN ON WHEN ROOM EXCEEDS 88°F.

**KOMOROUS-TOWEY ARCHITECTS**  
 315 FOURTEENTH STREET  
 OAKLAND, CA 94612  
 PH: 510.438.2244 FX: 510.438.2242  
 WWW.KTARCH.COM



**RUMSEY ENGINEERS**  
 1537 WEBSTER ST. OAKLAND, CA  
 94612  
 PH: 510.438.2244

1537 WEBSTER ST. OAKLAND, CA  
**BUILDING REHABILITATION AND SEISMIC IMPROVEMENTS**  
 FLOOR PLANS  
 GROUND AND MEZZANINE

ACWMA  
 ALAMEDA COUNTY  
 WASTE MANAGEMENT AUTHORITY  
 777 DAVIS ST. # 100  
 SAN LEANDRO, CA 94577

PERMIT SET

REVISIONS  
 ADDM. 3 03-13-06

© COPYRIGHT 2005

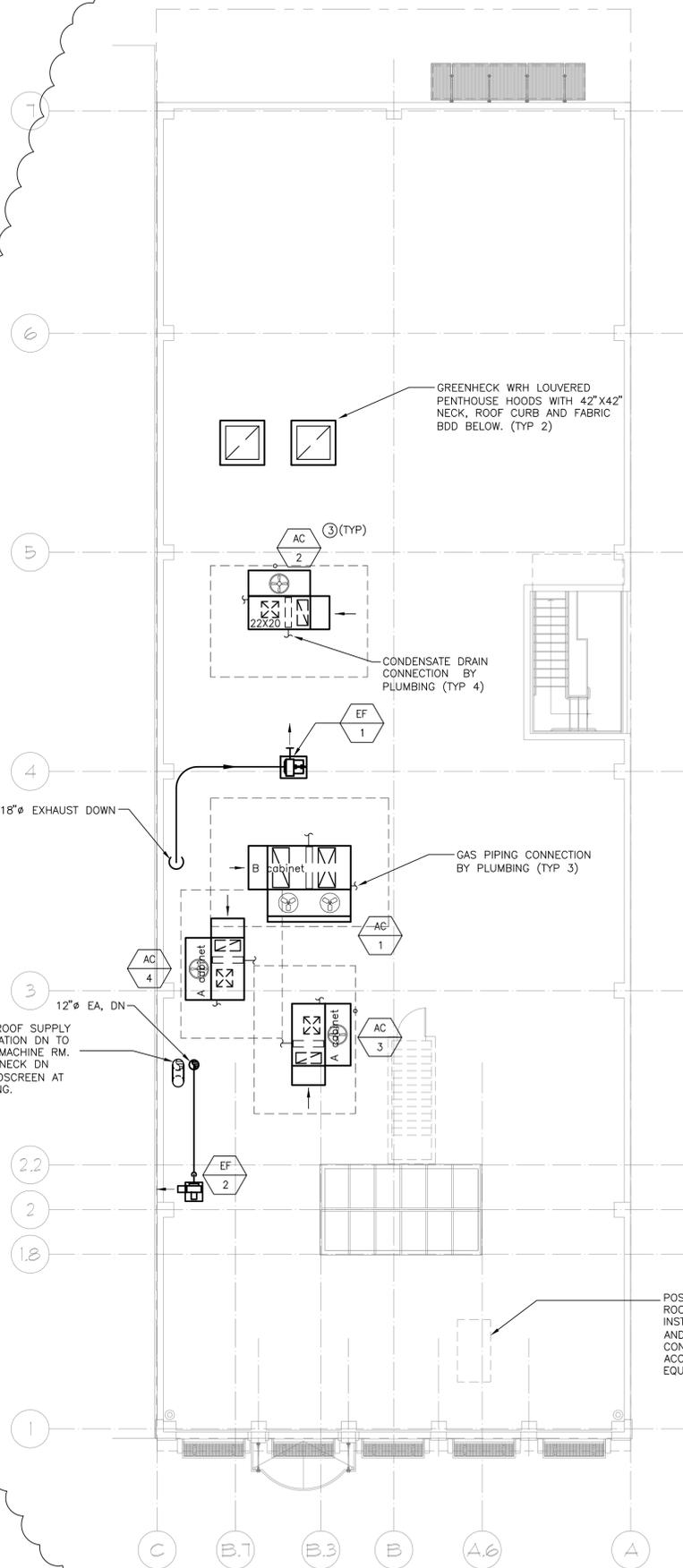


DATE: 03-09-06

DRAWN BY: EB

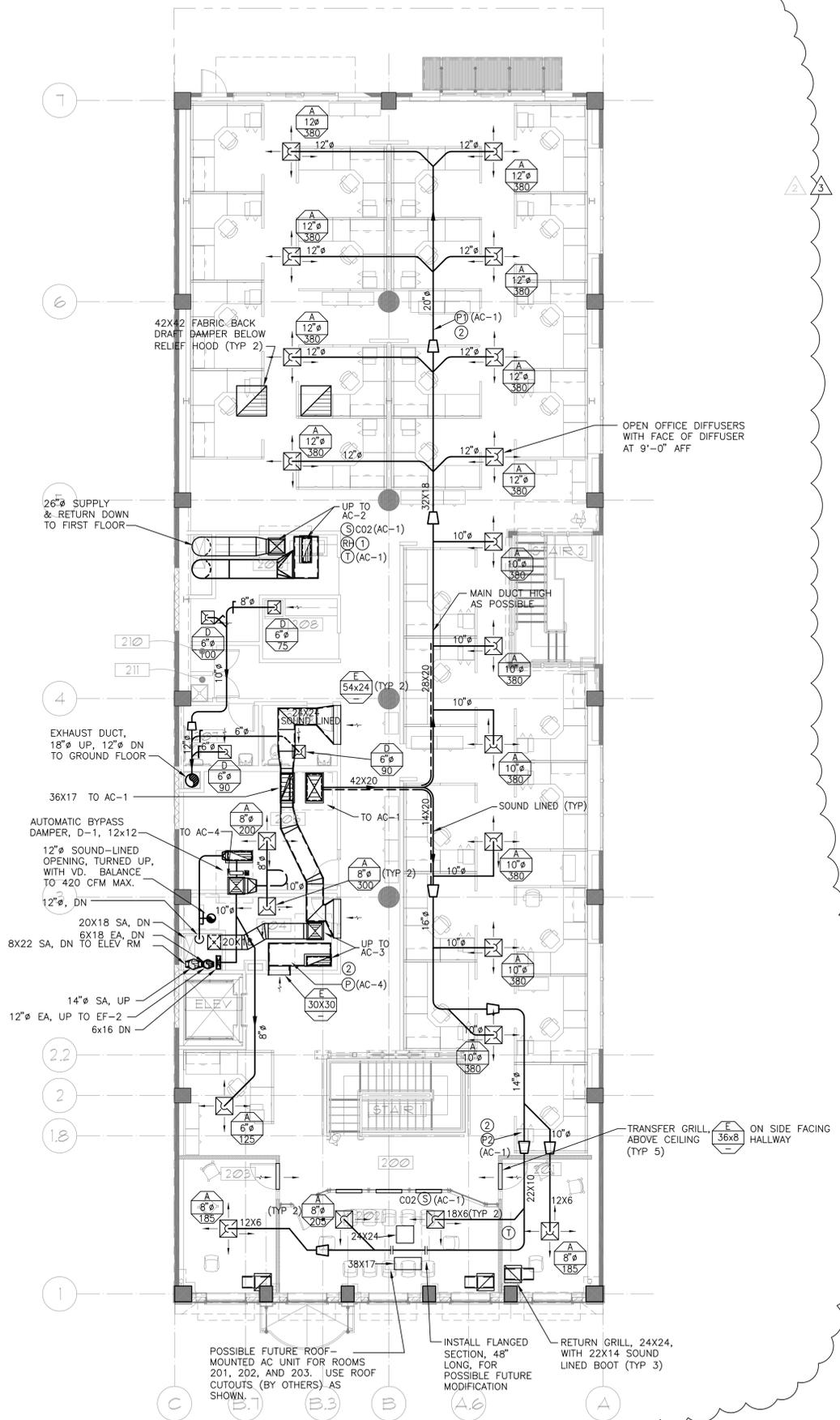
JOB NO.: 2513

**M2.0**



ROOF PLAN

SCALE: 1/8" = 1'-0"  
0 5' 10'

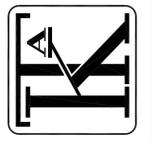


2nd FLOOR LEVEL PLAN

SCALE: 1/8" = 1'-0"  
0 5' 10'

SHEET NOTES:

- ① RH SENSOR FOR DISPLAY PURPOSES ONLY.
- ② PRESSURE SENSOR FOR DUCT STATIC PRESSURE CONTROL.
- ③ COORDINATE ROOF CURB HEIGHT WITH ROOF INSULATION DEPTH FOR ALL ROOFTOP AC UNITS, FANS, AND VENTILATORS. CURB HEIGHT TO BE A MINIMUM OF 8" ABOVE FINISHED LEVEL OF ROOF SURFACE. SEE ARCH. DWGS.



PERMIT SET

REVISIONS  
ADDM. 3 03-13-06

© COPYRIGHT 2005

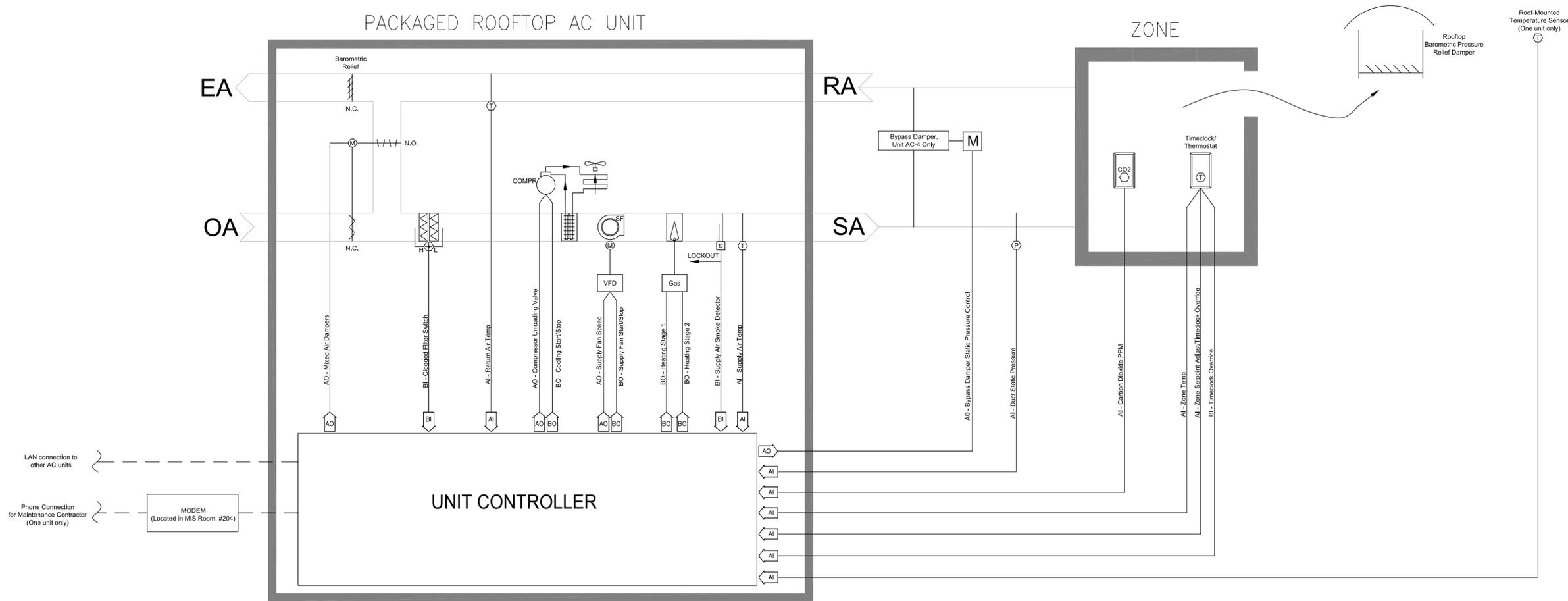


DATE: 03-09-06

DRAWN BY: EB

JOB NO.: 2513

PACKAGED ROOFTOP AC UNIT



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.

**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.

KOMOROUS-TOWEY  
ARCHITECTS  
315 FOURTEENTH STREET  
OAKLAND, CA 94612  
Ph: 510-466-2244 FX: 510-466-2242  
www.karchi.com



RUMSEY  
ENGINEERS  
OAKLAND COUNTY  
ENGINEERS  
PHYSICIAN ENGINEERS, P.L.C.

1537 WEBSTER ST. OAKLAND, CA  
BUILDING REHABILITATION AND  
SEISMIC IMPROVEMENTS  
CONTROL DIAGRAM  
AND SEQUENCE

ACWMA  
ALAMEDA COUNTY  
WASTE MANAGEMENT AUTHORITY  
777 DAVIS ST. # 100  
SAN LEANDRO, CA 94577

PERMIT SET

REVISIONS  
ADDM. 3 03-13-06

ADDENDUM NO. 2

© COPYRIGHT 2005

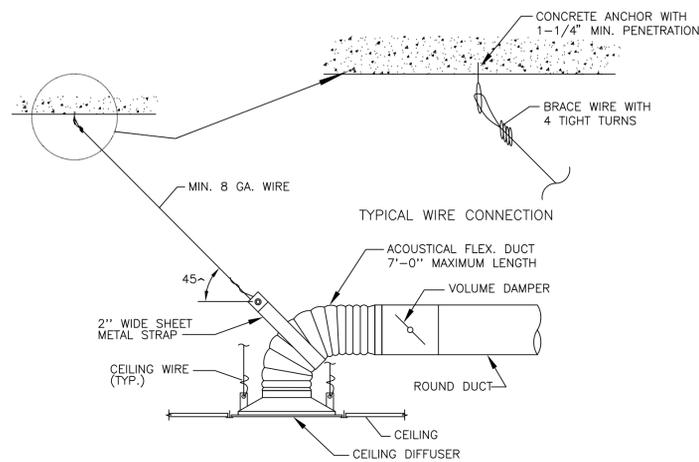


DATE: 03-09-06

DRAWN BY: KM

JOB NO.: 2513

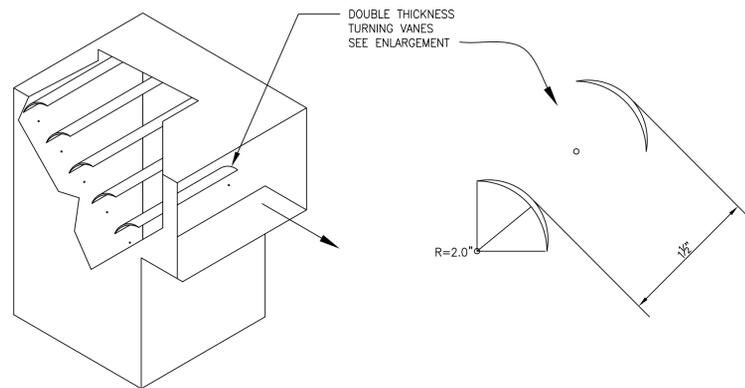
M5.01



**CEILING DIFFUSER INSTALLATION DETAIL**

SCALE: NTS

9  
M6.1

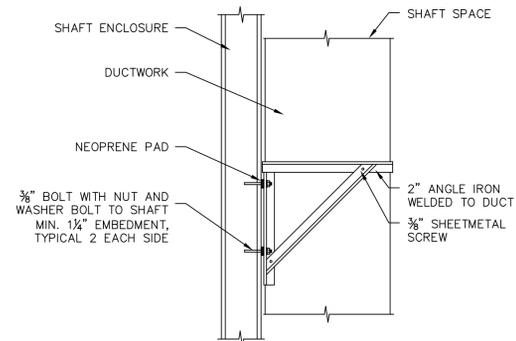


NOTE: TURNING VANES REQUIRED AT ALL 90° RECTANGULAR DUCT ELBOWS UNLESS NOTED OTHERWISE.

**90° RECTANGULAR DUCT ELBOW W/ TURNING VANES**

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

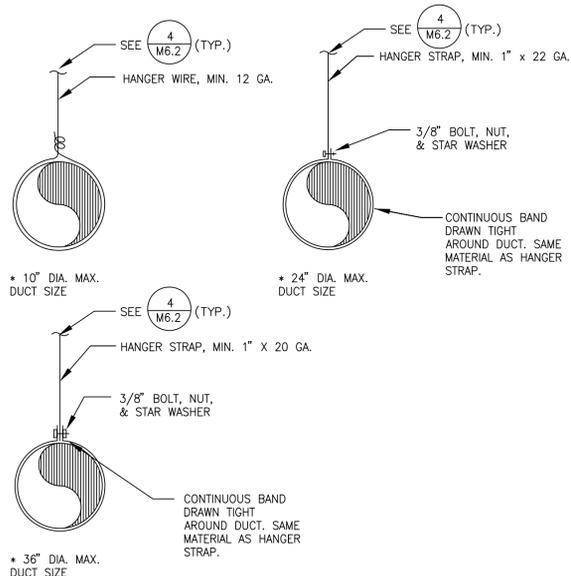
8  
M6.1



**VERTICAL DUCT IN SHAFT SUPPORT DETAIL**

SCALE: NTS

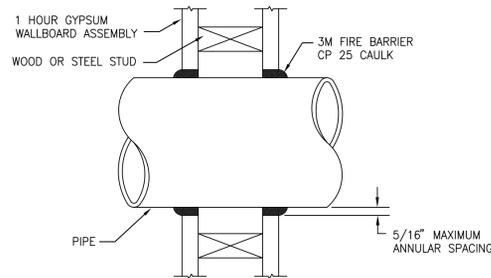
7  
M6.2



**CONCEALED ROUND DUCT SUPPORT DETAIL**

SCALE: NTS

6  
M6.1

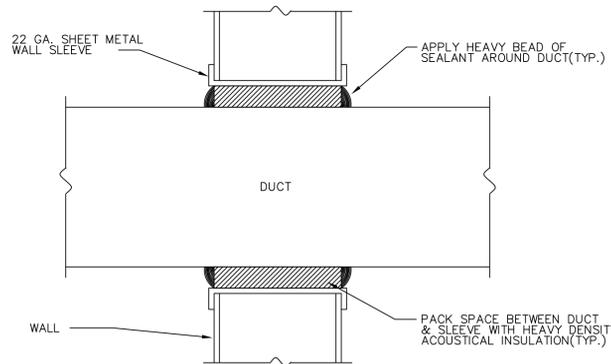


NOTES:  
1. PENETRATION FIRESTOP FOR MAX. 12" PIPE THROUGH A GYPSUM WALLBOARD ASSEMBLY

**RATED WALL PIPE PENETRATION**

SCALE: NTS

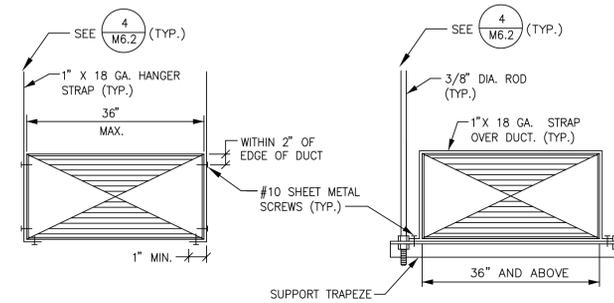
5  
M6.3



**DUCT PENETRATION THROUGH INTERIOR WALL**

SCALE: NONE

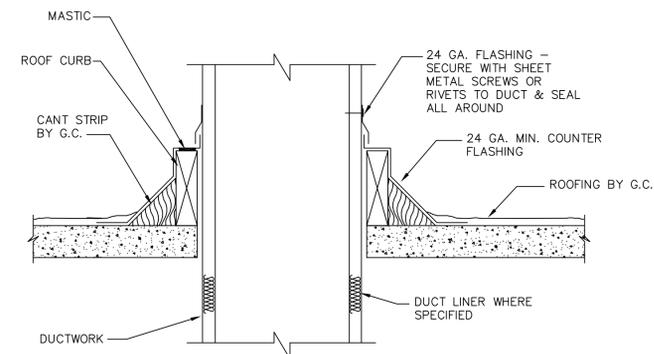
4  
M6.2



**RECTANGULAR AIR DISTRIBUTION SUPPORT DETAIL**

SCALE: NTS

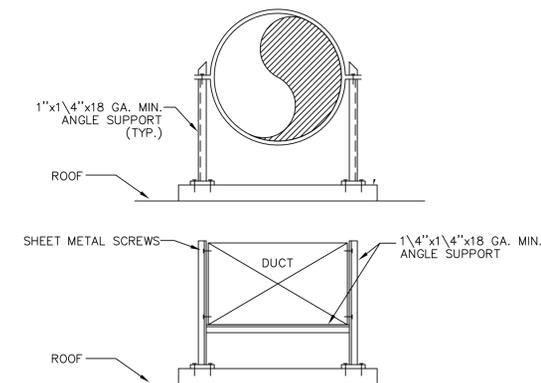
3  
M6.1



**ROOF PENETRATION DETAIL**

SCALE: NTS

2  
M6.1



**DUCT SUPPORT ON ROOF DETAIL**

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

1  
M6.1

**KOMOROUS-TOWEY ARCHITECTS**  
315 FOURTEENTH STREET  
OAKLAND, CA 94612  
PH: 510.466.2244 FAX: 510.466.2242  
www.ktorch.com



**RUMSEY ENGINEERS**  
OAKLAND COUNTY  
PUBLIC BUILDINGS DIVISION  
PH: 510.466.2244 FAX: 510.466.2242  
www.rumsey.com

1537 WEBSTER ST. OAKLAND, CA  
**BUILDING REHABILITATION AND SEISMIC IMPROVEMENTS**  
HVAC DETAILS

ACWMA  
ALAMEDA COUNTY  
WASTE MANAGEMENT AUTHORITY  
777 DAVIS ST. # 100  
SAN LEANDRO, CA 94577

PERMIT SET  
REVISIONS  
ADDM. 3 03-13-06  
ADDENDUM NO. 2  
© COPYRIGHT 2005



DATE: 03-09-06  
DRAWN BY: EB  
JOB NO.: 2513

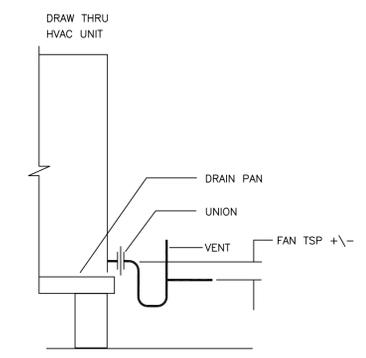
**M6.01**



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

**CONDENSATE DRAIN SIZES**

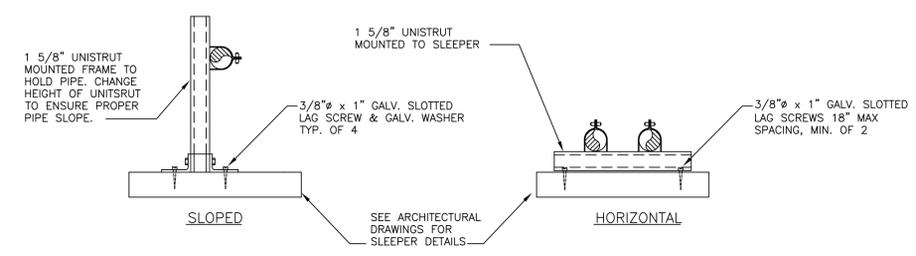
UP TO 20 TONS	3/4"
21 TO 40 TONS	1"
41 TO 90 TONS	1 1/4"
91 TO 125 TONS	1-1/2"
126 TO 250 TONS	2"



**CONDENSATE TRAP DETAIL**

SCALE: NTS

3  
M6.2

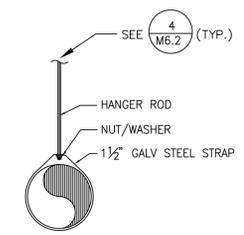


**NOTES:**  
 1. FOR CONDENSATE DRAIN PIPE, SLOPE 1/8" PER FT TO VTR

**ROOF MOUNTED PIPE SUPPORT DETAIL**

SCALE: NTS

5  
M6.2

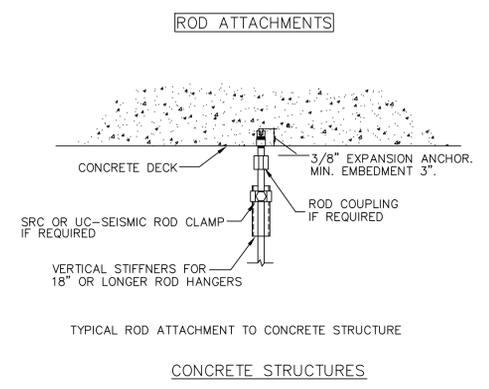


**NOTES:**  
 1. COMPLY WITH SMACNA DUCT CONSTRUCTION STANDARDS FOR LATERAL BRACING

**EXPOSED ROUND DUCT SUPPORT DETAIL**

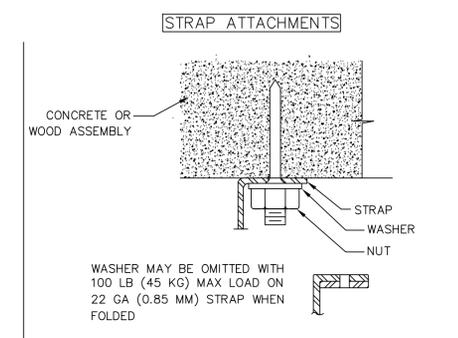
SCALE: NTS

2  
M6.2

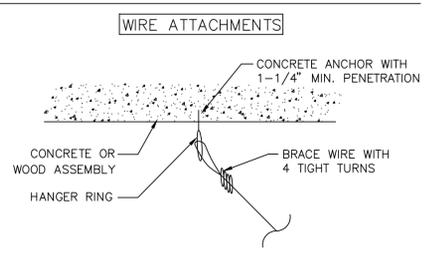


TYPICAL ROD ATTACHMENT TO CONCRETE STRUCTURE

CONCRETE STRUCTURES



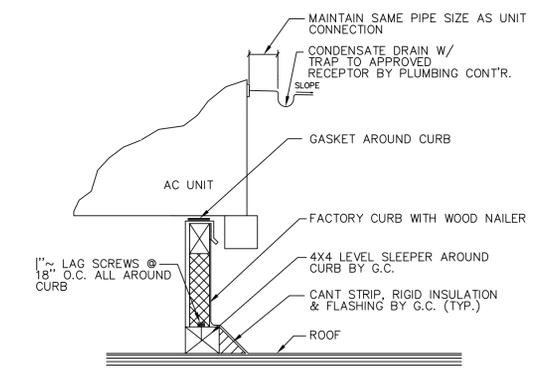
CONCRETE STRUCTURES



**SUPPORT ATTACHMENTS DETAIL**

SCALE: NTS

4  
M6.2



**AC MOUNTING DETAIL**

SCALE: NTS

1  
M6.2

**PERFORMANCE CERTIFICATE OF COMPLIANCE** Part 1 of 3 **PERF-1**

PROJECT NAME: Alameda County Waste Management Authority  
 PROJECT ADDRESS: 777 Davis St. #100 San Leandro  
 PRINCIPAL DESIGNER - ENVELOPE: Komorous Towey Architect  
 DOCUMENTATION AUTHOR: Rumsey Engineers, Inc.

GENERAL INFORMATION  
 DATE OF PLANS: BUILDING CONDITIONED FLOOR AREA: 11,574 sq.ft.  
 BUILDING TYPE: NONRESIDENTIAL  
 PHASE OF CONSTRUCTION: NEW CONSTRUCTION

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 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.

- 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.
- 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.
- 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: Komorous Towey Architect  
 SIGNATURE: [Signature]  
 LIC. NO.: [Blank]  
 DATE: [Blank]

LIGHTING COMPLIANCE  
 Indicate location on plans of Note Block for Mandatory Measures  
 Required Forms: Lighting Compliance Not In The Scope Of This Submittal

PRINCIPAL LIGHTING DESIGNER - NAME: [Blank]  
 SIGNATURE: [Blank]  
 LIC. NO.: [Blank]  
 DATE: [Blank]

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: Rumsey Engineers, Inc.  
 SIGNATURE: [Signature]  
 LIC. NO.: [Blank]  
 DATE: [Blank]

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529  
 EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: [Blank] Page:1 of 131

**PERFORMANCE CERTIFICATE OF COMPLIANCE** Part 2 of 3 **PERF-1**

PROJECT NAME: Alameda County Waste Management Authority  
 PROJECT ADDRESS: 777 Davis St. #100 San Leandro  
 PRINCIPAL DESIGNER - ENVELOPE: Komorous Towey Architect  
 DOCUMENTATION AUTHOR: Rumsey Engineers, Inc.

ANNUAL TDV ENERGY USE SUMMARY (kBtu/sqft-yr)

ENERGY COMPONENT	Standard Design	Proposed Design	Compliance Margin
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)

**BUILDING COMPLIES**

GENERAL INFORMATION  
 Building Orientation: (E) 90 deg  
 Number of Stories: 3  
 Number of Systems: 4  
 Number of Zones: 24

Orientation	Gross Area	Glazing Area	Glazing Ratio
Front Elevation	1,270 sqft	327 sqft	25.8%
Left Elevation	2,604 sqft	0 sqft	0.0%
Rear Elevation	1,682 sqft	404 sqft	24.3%
Right Elevation	3,996 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	0.639 W/sqft
Prescriptive Env. Heat Loss	5.347 Btu/h	2.040 Btu/h
Prescriptive Env. Heat Gain	247.183 Btu/h-F	133.832 Btu/h-F

Remarks:  
 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.

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529  
 EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: [Blank] Page:2 of 131

**PERFORMANCE CERTIFICATE OF COMPLIANCE** Part 3 of 3 **PERF-1**

PROJECT NAME: Alameda County Waste Management Authority  
 PROJECT ADDRESS: 777 Davis St. #100 San Leandro  
 PRINCIPAL DESIGNER - ENVELOPE: Komorous Towey Architect  
 DOCUMENTATION AUTHOR: Rumsey Engineers, Inc.

EXCEPTIONAL CONDITIONS COMPLIANCE CHECKLIST

System Name	Zone Name	Occupancy Type	Floor Area (sqft)	Inst. LPD (W/sqft)	Crit. Credits (W/sqft)	Allowed Area (W/sqft)	LPD Tailored (W/sqft)	Proc. Loads (W/sqft)
Aaon RM Series A 05 - Board	Display	Corridor/Restroom/Support	325	0.900				
Aaon RM Series A 05 - 1st flr	Entry Recp & Hallway	Office	978	0.420				
Aaon RM Series B10-2nd floor	Conference Rm, 2nd Flr	Convention/Conference/Meeting	283	0.840				

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

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: [Blank] Page:3 of 131

**PERFORMANCE CERTIFICATE OF COMPLIANCE** Part 3 of 3 **PERF-1**

PROJECT NAME: Alameda County Waste Management Authority  
 PROJECT ADDRESS: 777 Davis St. #100 San Leandro  
 PRINCIPAL DESIGNER - ENVELOPE: Komorous Towey Architect  
 DOCUMENTATION AUTHOR: Rumsey Engineers, Inc.

ZONE INFORMATION

System Name	Zone Name	Occupancy Type	Floor Area (sqft)	Inst. LPD (W/sqft)	Crit. Credits (W/sqft)	Allowed LPD Area Tailored (W/sqft)	Proc. Loads (W/sqft)
Open Office 2nd Flr	Office	Office	4,514	0.560			
Aaon RM Series A - 1&2nd flr	Conference Rm, 1st Flr	Convention/Conference/Meeting	356	1.060			
Graphics & Misc Rooms	Office	Office	294	0.900			
Open Office 2nd Flr sml	Office	Office	191	0.540			

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
- MECH-3-A: Packaged HVAC Systems Acceptance Document
- MECH-4-A: Air-Side Economizer Acceptance Document
- MECH-5-A: Air Distribution Acceptance Document
- MECH-6-A: Demand Control Ventilation Acceptance Document
- MECH-7-A: Supply Fan Variable Flow Control Acceptance Document
- MECH-8-A: Hydronic System Control Acceptance Document

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529  
 EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: [Blank] Page:4 of 131

**CERTIFICATE OF COMPLIANCE** MECH-1-C

PROJECT NAME: Alameda County Waste Management Authority  
 PROJECT ADDRESS: 777 Davis St. #100 San Leandro  
 PRINCIPAL DESIGNER - ENVELOPE: Komorous Towey Architect  
 DOCUMENTATION AUTHOR: Rumsey Engineers, Inc.

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.

- MECH-2-A: Ventilation System Acceptance Document
- MECH-3-A: Packaged HVAC Systems Acceptance Document
- MECH-4-A: Air-Side Economizer Acceptance Document
- MECH-5-A: Air Distribution Acceptance Document
- MECH-6-A: Demand Control Ventilation Acceptance Document
- MECH-7-A: Supply Fan Variable Flow Control Acceptance Document
- MECH-8-A: Hydronic System Control Acceptance Document

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529  
 EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: [Blank] Page:10 of 131

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

PROJECT NAME: Alameda County Waste Management Authority  
 PROJECT ADDRESS: 777 Davis St. #100 San Leandro  
 PRINCIPAL DESIGNER - ENVELOPE: Komorous Towey Architect  
 DOCUMENTATION AUTHOR: Rumsey Engineers, Inc.

MANDATORY REQUIREMENTS

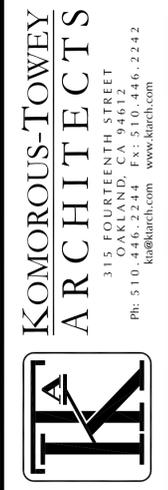
Item or System Tag(s)	Aaon RM Series A 05 - Board	Aaon RM Series A 05 - 1st flr	Aaon RM Series B10-2nd floor
Heating Equipment Efficiency	80% AFUE	80% AFUE	80% AFUE
Cooling Equipment Efficiency	12.0 SEER / 11.8 EER	12.0 SEER / 11.8 EER	11.0 EER
Heat Pump Thermostat	n/a	n/a	n/a
Furnace Controls	n/a	n/a	n/a
Natural Ventilation	Yes	Yes	Yes
Minimum Ventilation	895 cfm	398 cfm	818 cfm
VAV Minimum Position Control	No	No	No
Demand Control Ventilation	No	No	No
Time Control	Programmable Switch	Programmable Switch	Programmable Switch
Setback and Setup Control	Heating Required	Heating Required	Heating Required
Outdoor Damper Control	Auto	Auto	Auto
Isolation Zones	n/a	n/a	n/a
Pipe Insulation	n/a	n/a	n/a
Duct Insulation	R-4.2	R-4.2	R-4.2

PRESCRIPTIVE MEASURES

Item or System Tag(s)	Aaon RM Series A 05 - Board	Aaon RM Series A 05 - 1st flr	Aaon RM Series B10-2nd floor
Calculated Heating Capacity x 1.43 <sup>2</sup>	n/a	n/a	n/a
Proposed Heating Capacity <sup>2</sup>	97,200 btuh	77,700 btuh	153,300 btuh
Calculated Sensible Cooling Capacity x 1.21 <sup>2</sup>	n/a	n/a	n/a
Proposed Sensible Cooling Capacity <sup>2</sup>	55,450 btuh	47,418 btuh	101,346 btuh
Fan Control	Variable Speed	Variable Speed	Variable Speed
DP Sensor Location	Yes	Yes	Yes
Supply Pressure Reset (DDC only)	Yes	Yes	Yes
Simultaneous Heat/Cool	No	No	No
Economizer	Diff. Temp (Integrated)	Diff. Temp (Integrated)	Diff. Temp (Integrated)
Heating Air Supply Reset	Coldest Zone	Coldest Zone	Coldest Zone
Cooling Air Supply Reset	Constant Temp	Coldest Zone	Coldest Zone
Duct Sealing for Prescriptive Compliance <sup>3</sup>	No	No	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 to 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 REIR-1 for performance method duct sealing requirements.

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529  
 EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: [Blank] Page:11 of 131



KOMOROUS-TOWEY ARCHITECTS  
 315 FOURTEENTH STREET  
 OAKLAND, CA 94612  
 Ph: 510-446-2244 Fax: 510-446-2242  
 info@ktarch.com www.ktarch.com

1537 WEBSTER ST. OAKLAND, CA  
 BUILDING REHABILITATION AND SEISMIC IMPROVEMENTS  
 24 FORMS TITLE

ACWMA ALAMEDA COUNTY WASTE MANAGEMENT AUTHORITY  
 777 DAVIS ST. # 100 SAN LEANDRO, CA 94577

PERMIT SET  
 REVISIONS  
 ADDM. 3 03-13-06



DATE: 03-09-06  
 DRAWN BY: KM  
 JOB NO.: 2513

M7.01

**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
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 <sup>3</sup>	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**

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529  
 EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page 12 of 131

**MECHANICAL VENTILATION** MECH-3-C

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

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

A	AREA BASIS				E	F	G	H	I	PRESCRIPTIVE REHEAT LIMITATION (Section 144(d))				N
	B	C	D	J						K	L	M		
ZONE/SYSTEM	Area (SF)	Supply per foot (CFM)	Min. CFM (7.5 x A)	Max. CFM (15 x A)	Number of People	CFM per Person	By Occupant (E/F)	Min. CFM (18 x V)	REQD VAV (I) or (J)	Design VAV (K) or (L)	Max. of Columns K, L or (M) (300 CFM)	Design Min. Air (M)	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 sml	191	0.15	29					29	29					

C: Minimum ventilation rate per Section 121, Table 121A.  
 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 ASEA, 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 (A) x 0.18 cfm/sq. ft. 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).

EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page 13 of 131

**MECHANICAL VENTILATION** MECH-3-C

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

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

A	AREA BASIS				E	F	G	H	I	PRESCRIPTIVE REHEAT LIMITATION (Section 144(d))				N
	B	C	D	J						K	L	M		
ZONE/SYSTEM	Area (SF)	Supply per foot (CFM)	Min. CFM (7.5 x A)	Max. CFM (15 x A)	Number of People	CFM per Person	By Occupant (E/F)	Min. CFM (18 x V)	REQD VAV (I) or (J)	Design VAV (K) or (L)	Max. of Columns K, L or (M) (300 CFM)	Design Min. Air (M)	Transfer Air	
Aeon RM Series A - 1&2nd flr								Total	296	141				

C: Minimum ventilation rate per Section 121, Table 121A.  
 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 ASEA, 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 (A) x 0.18 cfm/sq. ft. 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).

EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page 14 of 131

**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	PUMPS					
					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)				
Control	#	HP	Type	In Plenum	Outside	Buried	Add 1/2" Insulation

**CENTRAL SYSTEM RATINGS**

System Name	System Type	Qty.	HEATING			COOLING			Condition Status	Economizer Type
			Output	Aux. kW	Eff.	Output	Efficiency			
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	SUPPLY FAN				RETURN FAN			
			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%				
Aeon RM Series A 05 - 1st Flr	Variable Speed	Draw-Through	1,986	0.10	49.0%	97.0%				
Aeon RM Series B 10	Variable Speed	Draw-Through	4,333	0.23	60.0%	97.0%				
Aeon RM Series A 02	Variable Speed	Draw-Through	400	0.02	40.2%	97.0%				

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529  
 EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page 15 of 131

**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	VAV TERMINAL BOX					TERMINAL FAN			BASEBOARD	
	System Type	Qty.	Min. Ratio	Reheat Coil Type	Delta T	CFM	BHP	Motor 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**

EXHAUST FAN					EXHAUST FAN				
Room Name	Qty.	CFM	BHP	Motor Eff.	Room Name	Qty.	CFM	BHP	Motor Eff.

Run Initiation Time: 03/07/06 15:52:09 Run Code: 1141775529  
 EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page 16 of 131

**KOMOROUS-TOWEY ARCHITECTS**  
 315 FOURTEENTH STREET  
 OAKLAND, CA 94612  
 Ph: 510.466.2244 Fax: 510.466.2242  
 www.karchitect.com



1537 WEBSTER ST. OAKLAND, CA  
**BUILDING REHABILITATION AND SEISMIC IMPROVEMENTS**  
 24 FORMS TITLE

ACWMA  
 ALAMEDA COUNTY  
 WASTE MANAGEMENT AUTHORITY  
 777 DAVIS ST. # 100  
 SAN LEANDRO, CA 94577

PERMIT SET

REVISIONS  
 ADDM. 3 03-13-06

© COPYRIGHT 2005



DATE: 03-09-06

DRAWN BY: KM

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
2	Wall	241	0.049	None	R-19.0	297	90	New	13-D5
3	Wall	221	0.049	None	R-19.0	297	90	New	13-D5
4	Breaking	720	0.049	None	R-19.0	0	90	New	13-D5
5	Wall	152	0.164	R-19	R-0.0	117	90	New	11-A7
6	Wall	183	0.049	None	R-19.0	27	90	New	13-D5
7	Wall	327	0.049	None	R-19.0	27	90	New	13-D5
8	Wall	23	0.630	None	R-0.0	27	90	New	13-J5
9	Wall	23	0.630	None	R-0.0	27	90	New	13-J5
10	Wall	23	0.630	None	R-0.0	27	90	New	13-J5
11	Wall	23	0.630	None	R-0.0	297	90	New	13-J5
12	Wall	23	0.630	None	R-0.0	297	90	New	13-D5
13	Wall	23	0.049	None	R-19.0	297	90	New	13-D5
14	Wall	104	0.630	None	R-0.0	117	90	New	13-J5
15	Wall	61	0.164	R-19	R-0.0	117	90	New	11-A7
16	Wall	243	0.164	R-19	R-0.0	0	90	New	11-A7
17	Wall	85	0.159	None	R-4.8	27	90	New	13-H5
18	Wall	23	0.630	None	R-0.0	207	90	New	13-J5
19	Wall	40	0.164	R-19	R-0.0	207	90	New	11-A7
20	Wall	23	0.630	None	R-0.0	207	90	New	13-J5

\*13, 14, 15, 16, 17 New Existing Altered/Restored

**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 Tables 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.	SHGC	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 Wsq/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  
EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page: 8 of 131

**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
21	Wall	427	0.049	None	R-19.0	207	90	New	13-D5
22	Demising	133	0.049	None	R-19.0	0	90	New	13-D5
23	Wall	170	0.159	None	R-4.8	207	90	New	13-H5
24	Wall	23	0.630	None	R-19.0	207	90	New	13-J5
25	Wall	170	0.159	None	R-4.8	207	90	New	13-H5
26	Wall	131	0.164	R-19	R-0.0	297	90	New	11-A7
27	Wall	56	0.049	None	R-19.0	27	90	New	13-D5
28	Wall	23	0.630	None	R-0.0	27	90	New	13-J5
29	Wall	60	0.049	None	R-19.0	27	90	New	13-D5
30	Wall	71	0.049	None	R-19.0	27	90	New	13-D5
31	Wall	56	0.049	None	R-19.0	27	90	New	13-D5
32	Wall	0	0.630	None	R-0.0	27	90	New	13-J5
33	Wall	441	0.049	None	R-19.0	27	90	New	13-D5
34	Wall	12	0.630	None	R-0.0	27	90	New	13-J5
35	Wall	135	0.164	R-19	R-0.0	117	90	New	11-A7
36	Wall	78	0.159	None	R-4.8	27	90	New	13-H5
37	Wall	78	0.164	R-19	R-0.0	207	90	New	11-A7
38	Wall	129	0.049	None	R-19.0	117	90	New	13-D5
39	Wall	20	0.630	None	R-0.0	117	90	New	13-J5
40	Wall	20	0.630	None	R-0.0	117	90	New	13-J5

\*13, 14, 15, 16 New Existing Altered/Restored

**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 Tables 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.	SHGC	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 Wsq/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  
EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page: 8 of 131

**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
41	Roof	283	0.025	6 in.	R-38.4	27	0	New	06-A4
42	Wall	56	0.049	None	R-19.0	117	90	New	13-D5
43	Wall	63	0.049	None	R-19.0	207	90	New	13-D5
44	Wall	16	0.049	None	R-19.0	117	90	New	13-D5
45	Wall	22	0.049	None	R-19.0	117	90	New	13-D5
46	Wall	16	0.630	None	R-0.0	117	90	New	13-J5
47	Wall	16	0.630	None	R-0.0	117	90	New	13-J5
48	Roof	147	0.025	6 in.	R-38.4	27	0	New	06-A4
49	Wall	120	0.049	None	R-19.0	207	90	New	13-D5
50	Wall	16	0.049	None	R-19.0	117	90	New	13-D5
51	Wall	22	0.049	None	R-19.0	117	90	New	13-D5
52	Wall	16	0.630	None	R-0.0	117	90	New	13-J5
53	Roof	147	0.025	6 in.	R-38.4	27	0	New	06-A4
54	Wall	197	0.159	None	R-4.8	27	90	New	13-H5
55	Roof	139	0.015	6 in.	R-63.7	27	0	New	06-A4
56	Wall	7	0.049	None	R-19.0	207	90	New	13-D5
57	Wall	56	0.049	None	R-19.0	207	90	New	13-D5
58	Wall	6	0.159	None	R-4.8	207	90	New	13-H5
59	Wall	52	0.159	None	R-4.8	207	90	New	13-H5
60	Roof	60	0.015	6 in.	R-63.7	27	0	New	06-A4

\*13, 14, 15, 16 New Existing Altered/Restored

**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 Tables 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.	SHGC	Act. Azm.	Cond. Stat.	Glazing Type	Location/Comments
27	Window Right (NE)	120	0.497/NFRC	0.38/NFRC	27	New	ACWMA Custom Window	Open Office 2nd Flr
28	Skylight Right (NE)	138	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.
27	None	0.76				
28	None	1.00				

**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 Wsq/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  
EnergyPro 4.0 by EnergySoft User Number: 4715 Job Number: Page: 7 of 131

**CERTIFICATE OF COMPLIANCE ENV-1-C**

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

**OPAQUE SURFACES**

#	Surface Type	Area	U-Fac.
---	--------------	------	--------

