## Mechanical Mandatory Measures

### Equipment and Systems Efficiency

☐ §111 Any appliance for which there is a California standard established in the Appliance Efficiency Regulations with comply with the applicable standard.

☐ §115(a) Fan type central furnaces shall not have pilot lights.

☐ §123 Piping, except that conveying fluids at temperatures between 60 and 105 degrees Fahrenheit, or within HVAC equipment, shall be insulated in accordance with Standards Section 123.

☐ §124 Air handling duct systems shall be installed and insulated in compliance with Sections 601, 603 and 604 of the Uniform Mechanical Code.

### Controls

☐ §12(e) Each space conditioning system shall installed with one of the following:

☐ §122(E) Each space conditioning system serving building types such as offices and manufacturing facilities (and all others not explicitly exempt from the requirements of section 122(d)) shall be installed with an automatic time switch with an accessible manual override that allows operation of the system during off-hours for up to 4 hours. The time switch shall be capable of programming different schedules for weekdays and weekends; incorporate an automatic holiday "shut off" feature that turns off all loads for at least 24 hours, then resumes the normally scheduled operation; and has program backup capabilities that prevent the loss of the device's program and time settings for at least 10 hours if power is interrupted; or

☐ §122(a) An occupancy sensor to control the operating period of the systems; or

☐ §113(b) A 4-hour timer that can be manually operated to control the operating period of the system.

☐ §122(e) Each space conditioning system shall be installed with controls that temporarily restart and temporarily operate the system as required to maintain a setback heating and/or a setup cooling thermostat setpoint.

☐ §122(g) Each space conditioning system serving multiple zones with combined conditioned floor area more than 25,000 square feet shall be provided with isolation zones. Each zone: shall not exceed 25,000 square feet; shall be provided with devices, such as valves or dampers, that allow supply of heating or cooling to be setback or shut off independently of other isolation areas; and shall be controlled by a time control device as described above.

☐ §122 (A&B) Each space conditioning zone shall be controlled by an individual thermostatic control that responds to temperature within the zone. Where used to control heating, the control shall be adjustable down to 55 degF or lower. For cooling, the control shall be adjustable up to 85 degF or higher. Where used to control both heating and cooling, the control shall be capable of providing a dead band of at least 5'F within which the supply of heating and cooling is shut-off or reduced to a minimum.

☐ §122(c) Thermostats shall have numeric setpoints in degrees Fahrenheit (F) and adjustable setpoint stops accessible only to authorized personnel.

☐ §122(b) Heat Pumps shall be installed with controls to prevent electric resistance supplementary heater operation when the heating load can be met by the heat pump alone.

### Ventilation

☐ §121(e) Controls shall be provided to allow outside air dampers or devices to be operated at the ventilation rates as specified in these plans.

☐ §122(f) Gravity or automatic dampers interlocked and closed on fan shutdown shall be provided on the outside air intakes and discharges of all space conditioning and exhaust systems.

☐ §122(f) All gravity ventilating systems shall be provided with automatic or readily accessible manually operated dampers in all openings to the outside, except for combustion air openings.

☐ §121(f) Air Balancing: The system shall be balanced in accordance with the National Environmental Balancing Bureau (NEBB) Procedural Standards (1983), or Associated Air Balance Council (AABC) National Standards (1986); or

☐ §121(f) Outside Air Certification: The system shall provide the minimum outside air as shown on the mechanical drawings, and shall be measured and certified by the installing licensed C-20 Mechanical contractor and certified by (1) the design mechanical engineer, (2) the installing licensed C-20 mechanical contractor, or (3) the person with overall responsibility for the design of the ventilation system; or

☐ §121(f) Outside Air Measurement: The System shall be equipped with a calibrated local or remote device capable of measuring the quantity of outside air on a continuous basis and displaying that quantity on a ready accessible displays; or

☐ §121(f) Another method approved by the Commission.

## Envelope Mandatory Measures

☐ §118(a) **Installed Insulating Material** shall have been certified by the manufacturer to comply with California Quality Standards for Insulating material, Title 20

☐ §118(c) **All Insulating Materials** shall be installed in compliance with the flame spread rating and smoke density requirements of Sections 2602 and 707 of the Title 24, Part 2

☐ §117(a) **All Exterior Joints** and openings in the building that are observable sources of air leakage shall be caulked, gasketed, weatherstripped or otherwise sealed.

☐ §116(b) **Site Constructed Doors, Windows, and Skylights** shall be caulked between the unit and the building, and shall be weatherstripped (except for unframed glass doors and fire doors).

☐ §116(a) **Manufactured Doors and Windows** installed shall have air infiltration rates not exceeding those shown in Table Number 1-E. of standards. manufactured fenestration products must be labeled for U-value according to NFRC procedures.

☐ §118(e) **Demising Walls In Nonresidential Buildings:** The Opaque portions of rates not exceeding those shown in framed demising walls in nonresidential buildings shall have insulation with an installed R-value of no less than R-11 between framing members.

## Mechanical Mandatory Measures – Cont.

### Service Water Heating Systems

☐ §113(b) If a circulating hot water system is installed, it shall have a control capable of automatically turning off the circulating pump(s) when hot water is not required.

☐ §113(b) Lavatories in restrooms of public facilities shall be equipped with controls to limit the outlet temperature to 110'F.

☐ §113(b) Lavatories in restrooms of public facilities shall be equipped within of the following:

☐ Outlet devices that limit the flow of hot water to a maximum of 0.5 gallons per minute

☐ Foot actuated control valves, and outlet devices that limit the flow of hot water to a maximum of 0.75 gallons per minute.

☐ Proximity sensors actuated control valves, and outlet devices that limit the flow of hot water to a maximum of 0.75 gallons per minute

☐ Self-closing valves, and outlets devices that limit the flow of hot water to a maximum of 2.5 gallons per minute, and 0.25 gallons/cycle (circulating system).

☐ Self-closing valves, and outlet devices that limit the flow of hot water to a maximum of 2.5 gallons per minute, and 0.50 gallons/cycle (non-circulating system)

☐ Self-closing valves, and outlet devices that limit the flow of hot water to a maximum of 2.5 gallons per minute, and 0.75 gallons/cycle (foot switches and proximity sensor controls).

### Pools and Spas

☐ Pool and/or spa heating systems or equipment shall be installed only if the manufacturer has certified that the system or equipment meets the requirements of *114 and *115 of the Energy Efficiency Standards. Equipment shall not have a pilot light. All such systems shall be installed with at least 36" of pipe between the filter and the heater to allow for the future addition of solar heating equipment.

☐ A cover shall be provided for outdoor pools.

☐ A cover shall be provided for outdoor spas.

☐ Pools shall be installed with directional inlets that adequately mix the pool water.

☐ Pool circulation pump(s) shall be provided with a time switch that allows the pump to be set to run in the off-peak electrical demand period, and for the minimum time necessary to maintain the water in the conditions required by applicable public health standards.

## Lighting Mandatory Measures

☐ §131(d)1 **For every floor, all interior lighting** systems shall be equipped with a separate automatic control to shut off the lighting. This automatic control shall meet the requirements of Section 119 and may be an occupancy sensor, automatic time switch, or other device capable of automatically shutting off the lighting.

☐ §131(d)2 **Override for Building Lighting Shut-Off** The automatic building shut-off system is provided with a manual, accessible override switch in sight of the lights. The area of override is not to exceed 5,000 square feet.

☐ §119(h) **Automatic control Devices Certified** All automatic devices specified are certified, all alternate equipment shall be certified and installed as directed by the manufacturer.

☐ §113(b) **Fluorescent Ballast and Luminaries Certified** All fluorescent fixtures specified for the project are certified and listed in the Directory. All installed fixtures shall be certified.

☐ §132 **Tandem Wiring for One and Three Lamp Fluorescent Fixtures:** All one and three lamp fluorescents fixtures are tandem wired with two lamp ballasts were required by Standards Section 132; or all three lamp fluorescents fixtures are specified with electronic high-frequency ballasts and are exempt from tandem wiring requirements.

☐ §131(a) **Individual Room/Area Controls:** Each room and area in this building is equipped with a separate switch or occupancy sensor device for each area with floor-to-ceiling walls.

☐ §131(b) **Uniform Reduction for Individual Rooms** All rooms and areas greater than 100 square feet and more than 0.8 watts per square foot of lighting shall be controlled with Bi-level switching for uniform reduction of lighting within the room.

☐ §131(c) **Daylit Area Control** All rooms with windows and skylights, that are greater than 250 square feet, and that allow for the effective use of daylight in the area shall have 50% of the lamps in each daylit area controlled by a separate switch; or The effective use of daylight cannot be accomplished because the windows are continuously shaded by a building on the adjacent lot. Diagram of shading during different times of year is included on plans.

☐ §131(f) **Control of Exterior Lights** Exterior mounted fixtures and served from the electrical panel inside the building are controlled with a directional photo cell control on the roof and a corresponding relay in the electrical panel.

☐ §131(e) **Display Lighting: Display lighting** Exterior mounted fixtures and served shall be separately switched on circuits that are 20 amps of less.

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RANDALL PATRICK CAVANAGH
No. C 12631
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AMS
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CUSTOMER:

ENERGY MANDATORY MEASURES

DATE: 06-12-03
SCALE: NONE
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