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UCSB Environmental Health & Safety Food Facility Plan Check Guide

UCSB EH&S Environmental Health Program

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PREFACE

The EH&S Food Facility Plan Check Guide is based on the California Conference of Directors of Environmental Health California Plan Check Guide for Retail Food Facilities. The California Plan Check Guide for Retail Food Facilities is an outline of requirements for design plan preparation before the submission to the local enforcement agency. The requirements are provided to assist in meeting applicable health and safety requirements. The Plan Check Guide is intended to give basic information and not to supersede any state law, local ordinance, or code.

Code numbers in this document refer to the section of the California Health and Safety Code, also known as the California Retail Food Code (CalCode) that is the source of the requirements. Recommendations, which follow the requirement contained within the Guide, are not requirements in state law or regulation and are included for clarification and to give examples for meeting the intent of CalCode. The recommendations may not be applicable in all circumstances. Refer to CalCode (California Health and Safety Code, Division 104, Part 7, Section 113700 et. seq.) for specific code requirements.

Complete, easily-readable plans drawn to scale and specifications must be submitted to the local enforcement agency for review and approval before starting any new construction or remodeling of any facility for use as a retail food facility. Plans and specifications are required by Environmental Health & Safety to assure compliance with CalCode. CalCode applies throughout California. Other state regulations and policies may apply or may be used by the local health agency.

This guide only encompasses **food safety** aspects and should not be construed to encompass other agencies involved, such as the local planning and zoning department, the local building authority, or local fire department. Owners and agents are advised to contact the appropriate local agencies involved to obtain any permits and/or to clarify other local codes.

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Construction Plan Approval Procedures for Food Facilities

Pursuant to the California Health and Safety Code, Chapter 13, California Retail Food Code (CalCode), §114380, a plan approval must be obtained from the local health agency before constructing or remodeling any building for use as a food facility. Remodel of a food facility means construction, building, enlarging, altering, converting, or repairing that requires a permit from the local building authority. CalCode, Chapter 1, §113715, provides for the following: Any construction, alteration, remodeling, or operation of a food facility shall be approved by the enforcement agency and shall be in accordance with all applicable local, state, and federal statutes, regulations, and ordinances including, but not limited to, fire, building, and zoning codes.

The following procedures are required to process and approve food facility plans as well as to obtain final approval to open for business:

1. The plans must include sufficient information to demonstrate compliance with the "Minimum Requirements for Food Facility Plans." (see page 6)
2. Plans may be prepared by an architect, draftsman, designer, contractor or owner. All plans must be drawn to scale in a concise, detailed, and professional manner. Incomplete or inadequate plans will be rejected.
3. One complete set of detailed plans and specifications must be submitted.
4. Upon approval, a plan approval letter will be provided. An approved set of plans must be maintained at the construction site until the final inspection has been made.
5. If any changes on the approved plans are desired, revised plans must be submitted for review and approval prior to construction.
6. A construction check inspection is required before floor coverings and/or kitchen equipment is installed. In some cases, it may be advisable to call for an additional inspection upon completion of plumbing "rough-in," prior to pouring concrete.
7. All construction and equipment installation shall be subject to field inspection. The food facility must not open for business until final approval is obtained from the local enforcement agency and a valid food facility permit is issued. A pre-opening inspection is required before the food facility may operate. Call the Environmental Health Program at 805-893-2471 to schedule inspections.

I. Minimum Requirements for Food Facility Plans

Plans must be drawn to scale with a recommended scale of "1/4 inch = 1 foot." The plans must include the following:

- A. **Proposed Menu**
- B. **Site plan**- Indicate building location(s), work area(s), trash enclosure.
- C. **Building Plan**- Identify kitchen, food storage rooms, warewashing area, mop sink/janitorial closet, walk-ins, restrooms, bars, employee break area, dining areas, ancillary areas, hallways and display areas, and adjacent buildings. Identify all doors, windows, pass through windows and air curtains.
- D. **Equipment Plan**- Show the location of all cooking equipment, sinks, refrigerators, freezers, work tables, counters, dish machines, storage shelves, finfish and shell-fish tanks. Also show employee lockers, chemical storage cabinet, any countertop equipment and sneeze guards. **Include a cross referenced and numbered equipment list.**
- E. **Finish Schedule**- Indicate floor, base, wall, and ceiling finishes including the type of material, color, and surface for each room or area. Provide specific brand names. Samples or specifications of proposed finish materials are required. (see Appendices)
Provide a reflected ceiling plan and show lighting locations.
- F. **Plumbing Plan**- Show hot and cold-water lines, drain lines, floor sinks, floor drains, water heater, grease trap and/or interceptor. Indicate which sewer connections will be indirect. **Complete the Hot Water Demands Worksheet.** (see Appendices)
- G. **Elevations**- Provide an elevation view of counter and cabinet areas showing construction and finishes, legs, and or coving. Include scale drawings of any sneeze guards.
- H. **Ventilation Hood Plan**- Provide mechanical and architectural drawings to show the hood, exhaust ducting, insulation materials, location of equipment on roof, filter details, grease cup location, and make up air return registers. Include all fan specifications and listing information. **Complete the Hood Worksheet** (see Appendices) and draw cooking equipment as it will be located under the hood with proper clearances.
- I. **Include Manufacturer's Specification Sheets for all equipment.**

II. Field Construction Inspection Procedure

A. Preliminary construction inspection:

Contact the Environmental Health Program to request a preliminary construction inspection prior to installation of floor covering and food service equipment.

B. Final construction inspection:

Upon completion of construction, including finishing work, contact the Environmental Health Program to arrange for a final construction inspection. Approved materials and good workmanship are significant factors in the evaluation and final field approval of food facility

construction and equipment installation. A final inspection must be requested no less than five (5) working days prior to the proposed opening of the establishment. Final construction must be approved by the Environmental Health Program and food facility permit issued prior to opening for business or use of remodeled areas.

III. Structural Requirements

The plans must show and specify in detail the following:

Floors:

In all areas in which food is prepared, prepackaged, or stored, where any utensil is washed, where refuse or garbage is stored, where janitorial facilities are located, and in all toilet and handwashing areas, the floor surfaces must be smooth and of durable construction and nonabsorbent material that is easily cleanable. See UCSB Approved Flooring in a Food Facility handout for further detail. Vinyl composite tile (VCT) is not approvable. (CalCode 114268)

- A. Floor surfaces must be coved at the juncture of the floor and wall with a 3/8 inch minimum radius coving and shall extend up the wall at least 4 inches, except in areas where food is stored only in unopened bottles, cans, cartons, sacks, or other original shipping containers. Vinyl rubber top-set base coving is not acceptable. (CalCode 114268)
- B. Public or private schools constructed or remodeled after the effective date of this part must comply with subdivision B. Public and private schools constructed before the effective date of this part need not comply with subdivision B, provided that the existing floor surfaces are maintained in good repair and in a sanitary condition. (CalCode 114268)
- C. Exceptions include sales areas, or with respect to areas relating to guestroom accommodations and the private accommodations of owners and operators in restricted food service facilities, and in employee change and storage areas. (CalCode 114268)
- D. Upon new construction or extensive remodeling, floor drains must be installed in floors that are water-flushed for cleaning and in areas where pressure spray methods for cleaning equipment are used. Floor surfaces in areas pursuant to this subdivision shall be sloped 1:50 to the floor drains. (CalCode 114269)
- E. Upon new construction or extensive remodeling, floor sinks or equivalent devices must be installed to receive discharges of water or other liquid waste from equipment. (CalCode 114269)

Walls and Ceilings:

- A. Except as provided in subdivision B (below), the walls and ceilings of all rooms shall be of a durable, smooth, nonabsorbent, and easily cleanable surface (e.g., gloss or semigloss enamel paint, epoxy paint, FRP (fiberglass reinforced panel) or NRP (nylon reinforced plastic), stainless steel, ceramic tile, or other approved materials and finishes). Exposed brick, concrete block,

rough concrete, rough plaster, or textured gypsum board is not acceptable. A sample may be required for review. (CalCode 114271)

- B. This section shall not apply to any of the following areas:
 - 1. Walls and ceilings of bar areas in which alcoholic beverages are sold or served directly to the consumers, except wall areas adjacent to bar sinks and areas where food is prepared.
 - 2. Areas where food is stored only in unopened bottles, cans, cartons, sacks, or other original shipping containers.
 - 3. Dining and sales areas.
 - 4. Offices.
 - 5. Restrooms that are used exclusively by the consumers, except that the walls and ceilings in the restrooms shall be of a nonabsorbent and washable surface.
- C. Acoustical paneling may be utilized if it is installed not less than six feet above the floor. The paneling must meet the other requirements of this section. (CalCode 114271)
- D. Attachments to walls and ceilings, such as light fixtures, mechanical room ventilation system components, vent covers, wall mounted fans, decorative items, and other attachments, must be easily cleanable. (CalCode 114271)
- E. The wall behind sinks and dishtables must be covered with a durable waterproof material (e.g., FRP, ceramic tile, stainless steel, etc.) extending from the top of the coved base to at least twelve (12) inches above the backsplash. (CalCode 114271)
- F. Walls adjacent to floor-mounted mop sinks must be covered with a durable waterproof material (e.g., FRP, ceramic tile, stainless steel, etc.) extending from the top of the sink to at least forty-eight (48) inches above the floor. (CalCode 114271)
- G. Provide a durable, cleanable, smooth, non-corrodible, and nonflammable material (e.g., stainless steel, ceramic tile, etc.) behind the cook line and to any side walls adjacent or in close proximity. (CalCode 114271)
- H. When a dishtable is installed next to a wall, the integral metal backsplash must be sealed to the wall. Other equipment that is exposed to spillage must also be sealed to the wall. (CalCode 114169)

Conduits:

- A. All plumbing, electrical and gas lines must be concealed within the building structure to as great an extent as possible. When otherwise installed, they must be mounted or enclosed so as to facilitate cleaning (e.g., at least one-half inch from the wall and six (6) inches above the floor). (CalCode 114271)
- B. Where conduits or pipelines enter a wall, ceiling, or floor, the opening around the line must be tightly sealed and made smooth. (CalCode 114271)
- C. Conduits or pipelines must not be installed across any aisle, traffic area, or door opening. (CalCode 114271)
- D. Multiple runs or clusters of conduits or pipelines must be installed within the walls or encased in an approved sealed enclosure. (CalCode 114271)

Pass-through Windows:

Pass-through window service openings must be limited to 216 square inches each. The service openings shall not be closer together than 18 inches. Each opening must be provided with a solid or screened window, equipped with a self-closing device. Screening must be at least 16 mesh per square inch. Pass-through windows of up to 432 square inches are approved if equipped with an air curtain device. The counter surface of the service openings must be smooth and easily cleanable. (CalCode 114259.2)

Food Protection Equipment:

Food on display must be protected from contamination by the use of packaging, service counter, service line, sneeze guards (that intercept a direct line between the consumer's mouth and the food being displayed), containers with tight-fitting securely-attached lids, display cases, mechanical dispensers, and/or other effective means. (CalCode 114060, 114063, 114065)

Dry Food and Beverage Storage:

Adequate and suitable space must be provided and designated on plans for dry storage purposes. This area must be equipped with sufficient and approved shelving to accommodate anticipated needs. This section applies to aisle space and floor area where shelving, cabinets, or other storage facilities are located. This section does not apply to floor area where desks, equipment, ladders, or other items may be placed. (CalCode 114047)

Unfinished wood shelving is not acceptable. Painted wood is not recommended. The following recommended methods of determining adequate storage space may be used:

- A floor area equivalent to 25% of all kitchen space, or
- One square foot of floor space per customer seat, or
- Sufficient approved shelving dispersed throughout kitchen areas.

Sufficient approved shelving for a small food service establishment means ninety-six (96) linear feet of eighteen (18)-inch-deep shelving. More shelving may be required for larger establishments. (CalCode 114047)

Except as specified below, food must be protected from contamination by storing it in a clean, dry location, where it is not exposed to splash, dust, vermin, or other forms of contamination or adulteration, and at least six inches above the floor. (CalCode 114047)

Pressurized beverage containers, cased food in waterproof containers such as bottles or cans, and milk containers in plastic crates may be stored on a floor that is clean and not exposed to moisture. (CalCode 114047)

Other Required Storage Facilities:

Adequate and suitable space shall be provided for the storage of clean linens. (CalCode 114185.4)

A room, area, or cabinet separated from any food preparation area, food storage area, warewashing area, or ware storage area, must be provided for the storage of cleaning equipment and supplies (e.g., mops, buckets, brooms, cleaning compounds, waxes, insecticides, rodenticides,

pesticides, detergents, bleaches, cleaning compounds, or any other injurious or poisonous materials). (CalCode 114281)

Recyclables and Refuse Disposal Facilities:

Each food facility shall be provided with any facilities and equipment necessary to store or dispose of all waste material, including used oil and fryer grease. A receptacle shall be provided in each area of the food facility or premises where refuse is generated or commonly discarded, or where recyclables or returnables are placed. (CalCode 114244)

Garbage and waste oil or grease must be disposed into adequate, watertight, non-absorbent, rodent-proof containers with close-fitting lids. There shall be an area provided for the storage of these containers and facilities for their washing. If provided, an outdoor storage area or enclosure used for refuse, recyclables, and returnables must be constructed of nonabsorbent material, such as concrete or asphalt, and must be easily cleanable, durable, and sloped to drain. (CalCode 114245)

All recyclables must be stored so as to prevent attraction and harborage of vermin. (CalCode 114259)

Suitable cleaning implements and supplies such as high pressure pumps, hot water, steam, and detergent must be provided as necessary for effective cleaning of receptacles and waste handling units for refuse, recyclables, and returnables. (CalCode 114245.7)

Other structural requirements for refuse disposal rooms and areas:

1. Floors shall be smooth, durable, oil-resistant, non-absorbent, coved, easily cleanable, and sloped to a floor drain discharging to the sanitary sewer. (CalCode 114268)
2. Walls and ceilings shall be durable, easily cleanable, impervious to grease and moisture, and capable of withstanding the expected impacts. (CalCode 114271)
3. The room or enclosure shall be well ventilated. (CalCode 114149)

Toilet Facilities:

Clean toilet rooms in good repair shall be provided and conveniently located and accessible for use by employees during all hours of operation. The number of toilet facilities required shall be in accordance with applicable local building and plumbing ordinances. Toilet tissue must be provided in a permanently installed dispenser at each toilet. (CalCode 114250)

Food facilities located within amusement parks, stadiums, arenas, food courts, fairgrounds, and similar premises shall not be required to provide toilet facilities for employee use within each food facility if approved toilet facilities are located within 200 feet in travel distance of each food facility and are readily available for use by employees. Food facilities subject to this section must be provided with approved handwashing facilities for employee use.

Notwithstanding the section above, food facilities approved prior to the effective date of this part with toilet facilities within 300 feet are not required to meet the 200-foot requirement. (CalCode 114250.1)

A permanent food facility must provide clean toilet facilities in good repair for consumers, guests, or invitees when:

- There is onsite consumption of foods
- OR
- When the food facility was constructed after July 1, 1984, *and* has more than 20,000 square feet of floor space.

A building subject to the above conditions that has a food facility with more than 20,000 square feet of floor space must provide at least one separate toilet facility for men and one separate toilet facility for women.

Any building that was constructed before January 1, 2004, that has a food facility that provides space for the consumption of food on the premises must either provide clean toilet facilities in good repair for consumers, guests, or invitees on property used in connection with, or in, the food facility or prominently post a sign within the food facility in a public area stating that toilet facilities are not provided. (CalCode 114276)

Toilet facilities that are provided for use by consumers, guests, or invitees shall be in a location where consumers, guests, and invitees do not pass through food preparation, food storage, or utensil washing areas to reach the toilet facilities. (CalCode 114276)

Handwashing facilities must be provided within or adjacent to toilet rooms and must be equipped with an adequate supply of hot and cold running water under pressure from a premixing faucet. Handwashing cleanser and single-use sanitary towels in permanently installed dispensers or hot air blowers must be provided at handwashing facilities. (CalCode 113953, 113953.3)

Toilet rooms must be separated by well-fitted, self-closing doors that prevent the passage of flies, dust, or odors. (CalCode 114276)

Toilet rooms shall be vented to the outside air by means of an openable, screened window, an air shaft, or a light-switch-activated exhaust fan, consistent with the requirements of local building codes. (CalCode 114149)

Clothing Change Rooms and Areas:

Lockers or other suitable facilities must be provided and used for the orderly storage of employee clothing and other possessions. Dressing rooms or dressing areas must be provided and used by employees if the employees regularly change their clothes in the facility. Restricted food service facilities and nonpermanent food facilities must not be required to comply with the above requirements, but no person shall store clothing or personal effects in any area used for the storage and preparation of food. (CalCode 114256.1)

Areas designated for employees to eat and drink must be located so that food, equipment, linens, and single-use articles are protected from contamination. Lockers or other suitable facilities must be located in a designated room or area where contamination of food, equipment, utensils, linens, and single-use articles cannot occur. (CalCode 114256)

Exterior Doors and Windows:

A food facility must at all times be constructed, equipped, maintained, and operated as to prevent the entrance and harborage of animals, birds, and vermin, including, but not limited to, rodents and insects. All exterior doors must be well-fitted and self-closing to effectively prevent the entrance of animals, birds, and vermin. All exterior windows which open to food preparation areas, food storage areas and utensil washing areas must be screened with no less than sixteen (16) mesh per square inch. (CalCode 114259)

Delivery and Cargo Doors:

All delivery doors leading to the outside must open outward and be self-closing. Overhead air curtains must be provided when delivery doors remain open for an extended period of time and when necessary to exclude insects, dust, dirt, and fumes. Large cargo-type doors must not open directly into a food preparation area. Cargo-type doors that open into any food warehouse of a food facility may only be open during deliveries. An overhead air curtain is not a substitute device to permit a door to remain open constantly. The air curtain when installed inside the building shall produce a downward and outward air flow not less than three (3) inches thick at the nozzle with an air velocity of not less than 1600 FPM (feet per minute) across the entire opening at a point three (3) feet above the floor. (CalCode 114259, 114259.1), (State of California, Food and Drug Circular 80-7)

Insect Control Devices:

Insect control devices that are used to electrocute or stun flying insects must be designed to retain the insect within the device. Insect control devices must be installed so that the devices are not located over a food or utensil handling area and dead insects and insect fragments are prevented from being impelled onto or from falling on nonprepackaged food, clean equipment, utensils, linens, and unwrapped single-use articles. (CalCode 114259.3)

Lighting:

In every room and area in which any food is prepared, manufactured, processed, or prepackaged, or in which equipment or utensils are cleaned, sufficient natural or artificial lighting must be provided to produce the following light intensity, while the area is in use:

A. At least 10-foot candles for the following:

1. At a distance of 30 inches above the floor, in walk-in refrigeration units and dry food storage areas.
2. At a working surface on which alcoholic beverages are prepared or where utensils used in the preparation of service of alcoholic beverages are cleaned.
3. Inside equipment, such as reach-in or under-the-counter refrigerators.

B. At least 20-foot candles for the following:

1. At a surface where food is provided for consumer self-service or where fresh produce or prepackaged foods are sold or offered for consumption.
2. In server stations where food is prepared.

3. At a distance of 30 inches above the floor in areas used for handwashing, warewashing, equipment storage, utensil storage, and in toilet rooms.
 4. In all areas and rooms during periods of cleaning.
- C. Except in server stations where food is prepared, at least 50-foot candles at a surface where a food employee is working with food, or working with utensils or equipment, such as knives, slicers, grinders, or saws where employee safety is a factor and in other areas and rooms during periods of cleaning. (CalCode 114252)

Light bulbs must be shielded, coated, or otherwise shatter-resistant in areas where there is nonprepackaged ready-to-eat food, clean equipment, utensils, linens, or unwrapped single-use articles. Shielded, coated, or otherwise shatter-resistant bulbs need not be used in areas used only for storing prepackaged food in unopened packages, if the integrity of the packages cannot be affected by broken glass falling onto them and the packages are capable of being cleaned of debris from broken bulbs before the packages are opened. Infrared and other heat lamps must be protected against breakage by a shield surrounding and extending beyond the bulb so that only the face of the bulb is exposed, or by using approved coated shatter-resistant bulbs. (CalCode 114252.1)

Water:

An adequate, protected, pressurized, potable supply of hot water and cold water must be provided. Hot water must be supplied at a minimum temperature of at least 120°F measured from the faucet, unless otherwise specified in this part. The water supply must be from a water system approved by the health officer or the local enforcement agency. (CalCode 114192)

The enforcement agency may monitor and enforce the potable drinking water standards provided in the California Safe Drinking Water Act (Chapter 4 commencing with Section 116275) for purposes of enforcing this part and compliance with any requirements with regard to potable water. If your proposed facility is located in an unincorporated area, your water supply may require additional review, including on-going biological sampling, and may be subject to the State of California drinking water regulations, titled "Transient Non-Community Water System." (CalCode 113869, 114189)

In sizing the water heater, the peak hourly demands for all sinks, dishwashing machines, etc., are added together to determine the minimum required recovery rate. (Refer to "CCDEH Water Heater Sizing Guidelines").

Backflow Protection:

The potable water supply must be protected with a backflow or back siphonage protection device when required by applicable plumbing codes. Exposed piping of a non-potable water system must be identified so that it is readily distinguishable from piping that carries potable water. (CalCode 114192)

Indirect Waste Receptors:

All steam tables, ice machines and bins, food preparation sinks, warewashing sinks, display cases, walk-in refrigeration units, and other similar equipment that discharge liquid waste must be drained

by means of indirect waste pipes, and all wastes drained by them must discharge through an air gap into a floor sink or other approved type of receptor.

Drainage from reach-in refrigeration units must be conducted in a sanitary manner to a floor sink or other approved device by an indirect connection or to a properly installed and functioning evaporator.

Indirect waste receptors must be located to be readily accessible for inspection and cleaning. Warewashing machines may be connected directly to the sewer immediately downstream from a floor drain, or they may be drained through an approved indirect connection.

Warewashing sinks in use on January 1, 1996, that are directly plumbed, may be continued in use. This section does not require warewashing sinks to be indirectly plumbed when the local building official determines that the sink should be directly plumbed. (CalCode 114193)

An air gap between the water supply inlet and the flood level rim of the plumbing fixture, equipment, or nonfood equipment must be at least twice the diameter of the water supply inlet and may not be less than one inch. (CalCode 114193.1)

In general, floor sinks must be installed flush with the final grade of the finished floor to prevent tripping hazards and prevent harborage of dirt and debris. However, some situations may require floor sinks above grade.

Sewage Disposal, Grease Traps and Interceptors:

Liquid waste must be disposed of through the approved plumbing system and must discharge into the public sewerage or into an approved private sewage disposal system. If your proposed facility is located in an unincorporated area, your water and sewage disposal systems may require additional review. If a public sewer system is available in your area, you will be required to connect. If no public sewer system is available, you must have an approved on-site sewage disposal system. (CalCode 114197)

If provided, a grease trap or grease interceptor shall not be located in a food or utensil handling area unless specifically approved by the Environmental Health Program. Grease traps and grease interceptors must be easily accessible for servicing. Food facilities approved with a grease trap or grease interceptor that are in operation before the effective date of this part are not required to comply with this section. (CalCode 114201)

IV. Ventilation

All areas of a food facility must have sufficient ventilation to facilitate proper food storage and to provide a reasonable condition of comfort for each employee, consistent with the job performed by the employee. (CalCode 114149)

Exhaust Hoods and Ducts:

Mechanical exhaust ventilation equipment must be provided over all cooking equipment such as commercial-type deep fat fryers, broilers, fry grills, steam-jacketed kettles, ranges, griddles, ovens,

barbecues, rotisseries, high temperature warewash machines (160°F rinse water), and other similar equipment as required to effectively remove cooking odors, smoke, steam, grease, heat, and vapors. All mechanical exhaust ventilation equipment must be installed and maintained in accordance with the California Mechanical Code, except that for units subject to Part 2 (commencing with Section 18000) of Division 13, an alternative code adopted pursuant to Section 18028 shall govern the construction standards. Makeup air must be provided at the rate of that exhausted. (CalCode 114149.1)

Ventilation plans for each system must include front and side elevations of the exhaust hood and duct details to the roof fans (both exhaust and make-up air). Provide manufacturer specification sheets for exhaust fan, make-up air fan, and hood filters along with the static pressure calculations. Specify the number and location of make-up air diffuser(s). A balance report completed by a third party may be required prior to final clearance.

Refer to California Mechanical Code Chapter on Commercial Kitchen Ventilation Systems. Refer to CCDEH's [Mechanical Exhaust Ventilation and Hood Systems for Commercial Food and Utensil Heat Processing Equipment Guidelines](#).

NOTE: A maximum of two (2) pieces of electrical cooking equipment may be exempt from mechanical exhaust ventilation requirements when this department has determined that the equipment does not produce toxic gases, smoke, grease, vapors, or heat and when operated under conditions recommended by the manufacturer.

V. Equipment Requirements

New and replacement food-related and utensil-related equipment must be certified or classified for sanitation by an American National Standards Institute (ANSI) accredited certification program. (CalCode 114130)

Materials used in the construction of utensils and food-contact surfaces of equipment (display cases, windows, counters, shelves, tables, refrigeration units, sinks, dishwashing machines, and other equipment or utensils used in the preparation, sale, service, and display of food) must not allow the migration of deleterious substances or impart colors, odors, or tastes to food. Under normal-use conditions equipment materials must be safe, durable, corrosion-resistant, nonabsorbent, sufficient in weight and thickness to withstand repeated warewashing, finished to have a smooth, easily cleanable surface, and resistant to pitting, chipping, crazing, scratching, scoring, distortion, and decomposition. (CalCode 114130.1)

All floor-mounted equipment shall be placed on casters to allow cleaning of the equipment and areas underneath and around the equipment. Equipment that is fixed because it is not easily movable must be installed so that it is:

- Spaced to allow access for cleaning along the sides, behind, and above the equipment.
- Spaced from adjoining equipment, walls, and ceilings a distance of not more than one millimeter or one thirty-second inch.
- Sealed to adjoining equipment or walls, if the equipment is exposed to spillage or seepage.

Floor-mounted equipment that is not easily movable must be sealed to the floor or elevated on legs that provide at least a six-inch clearance between the floor and the equipment.

This section shall not apply to display shelving units, display refrigeration units, and display freezer units located in the consumer shopping areas of a food facility if the floor under the units is maintained clean.

Table-mounted equipment that is not easily movable must be installed to allow cleaning of the equipment and areas underneath and around the equipment by being sealed to the table or elevated on legs that provide at least a four-inch clearance between the table and the equipment. (CalCode 114169)

Refrigeration:

All reach-in and walk-in refrigeration and freezer units shall be adequate in capacity and usage to meet the needs of the proposed operation and must be certified or classified for sanitation by an American National Standards Institute (ANSI) accredited certification program. In the absence of an applicable ANSI certified sanitation standard, food-related and utensil-related equipment must be evaluated for approval by the enforcement agency. Domestic model refrigerators and freezers will not be accepted. (CalCode 114130)

All reach-in and walk-in refrigeration and freezer units shall have shelving that is non-absorbent, non-corrodible, easily cleanable, that is at least six (6) inches above the floor, and shall meet or be equivalent to applicable NSF standards. Wood is not acceptable. (CalCode 114047, 114130.1)

A thermometer must be provided for each refrigeration unit. (CalCode 114157)

Condensate and other liquid waste must drain in a sanitary manner to a floor sink or other approved receptor that is properly connected to an approved plumbing system and must discharge into the public sewerage or into an approved private sewage disposal system. Condensate from reach-in refrigerators and freezers may be drained to a properly installed and functioning evaporator. (CalCode 114197, 114268)

All reach-in and walk-in refrigeration and freezer units shall open into an approved area of the food facility. (CalCode 114266)

Walk-in refrigeration and storage freezer units shall also be designed to be closed and sealed to the floor or be constructed integral with the floor, and must be flashed or sealed to walls and/or ceiling as needed to prevent rodent and vermin harborage or inaccessible areas. Coved bases shall be provided at the intersection of interior floors and walls. (CalCode 114268, 114259)

Sinks:

When a sink is installed next to a wall, the integral metal backsplash shall be sealed to the wall. (CalCode 114271)

Hot and cold water under pressure must be provided through a mixing valve to each compartment of the following sinks:

Kitchen Utensil Sinks:

Manual warewashing sinks must have at least three compartments with two integral metal drainboards for manually washing, rinsing, and sanitizing equipment and utensils. Sink compartments must be large enough to accommodate immersion of the largest equipment and utensils. A compartment size of approximately 18 x 18 x 12 inches deep will generally be adequate for most utensils. A three-compartment sink may be required within each separate section of a large food establishment which handles unpackaged foods (i.e., deli, meat, bakery, sushi bars, oyster bars, etc.). (CalCode 114099)

Eating and Drinking "Multi-Service" Utensil Sinks:

Dishwashing machines are recommended where a large volume of eating and drinking utensils are washed. (CalCode 114099)

Food Preparation Sink:

A food preparation sink shall be provided in permanent food facilities for the washing, rinsing, soaking, thawing, or similar preparation of foods, that drains by means of an indirect connection. The food preparation sink shall have a minimum dimension of 18 inches by 18 inches in length and width, and 12 inches in depth, with an integral drainboard or adjacent table at least 18 inches by 18 inches in length and width. (CalCode 114163)

Handwashing Sinks:

Handwashing facilities must be sufficient in number and conveniently located so as to be accessible at all times for use by food employees. (CalCode 113953)

Handwashing sinks must be provided in each food preparation area (i.e., deli, meat department, bakery, sushi bar, etc.) and in warewashing areas that are not located within or immediately adjacent to food preparation areas. (CalCode 113953)

Each handwashing facility must be provided with dispensers of handwashing cleanser and sanitary single-use towels. A heated-air hand drying device may be used instead of single-use towels. Handwashing facilities must be equipped to provide warm water (minimum 100°) under pressure for a minimum of 15 seconds through a mixing valve or combination faucet. (CalCode 113953)

Handwashing facilities must be provided within or adjacent to toilet rooms. The number of handwashing facilities required must be in accordance with local building and plumbing codes. (CalCode 113953)

Janitorial Sink:

At least one curbed cleaning facility or janitorial sink equipped with a drain must be provided and conveniently located for the cleaning of mops or similar wet floor cleaning tools and for the disposal of mop water and similar liquid waste. (CalCode 114279)

An adequate, protected, pressurized, potable supply of hot water and cold water must be provided. Hot water must be supplied at a minimum temperature of at least 120°F measured from the faucet, unless otherwise specified in this part. (CalCode 114192)

The mixing valve faucet must be equipped with a backflow or back siphonage protection device when required by applicable plumbing codes. (CalCode 114192)

A room, area, or cabinet separated from any food preparation or storage area, or warewashing or storage area must be provided for the storage of cleaning equipment and supplies. (CalCode 114281)

Dishwashing and Glass Washing Machines:

During manual or mechanical warewashing, food debris on equipment and utensils must be scraped over a waste disposal unit, scupper, or garbage receptacle. If necessary for effective cleaning, utensils and equipment must be pre-flushed, pre-soaked, or scrubbed with abrasives. (CalCode 114099.1)

Warewashing machines may be connected directly to the sewer immediately downstream from a floor drain, or they may be drained through an approved indirect connection. (CalCode 114193)

If hot water is used for sanitization in manual warewashing operations, the sanitizing compartment of the sink shall be designed with an integral heating device that is capable of maintaining water at a temperature not less than 171°F and provided with a rack or basket to allow complete immersion of equipment and utensils into the hot water. (CalCode 114099.4)

A warewashing machine must be provided with an easily accessible and readable data plate affixed to the machine by the manufacturer that indicates the machine's design and operating specifications including the temperatures required for washing, rinsing, and sanitizing, the pressure required for the fresh water sanitizing rinse, unless the machine is designed to use only a pumped sanitizing rinse, and the conveyor speed for conveyor machines or cycle time for stationary rack machines. (CalCode 114101.1)

A warewashing machine must be equipped with a temperature measuring device that indicates the temperature of the water as the water enters the hot water sanitizing final rinse manifold or in the chemical sanitizing solution tank. (CalCode 114101.2)

All warewashing equipment must be provided with two integral metal drainboards of adequate size and construction. One drainboard shall be attached at the point of entry for soiled equipment and utensils and one shall be attached at the point of exit for cleaned and sanitized equipment and utensils. Where an under counter warewashing machine is used, there must be two metal drainboards, one for soiled equipment and utensils, and one for clean equipment and utensils, located adjacent to the machine. This requirement may be satisfied by using the drainboards that are part of the manual warewashing sinks if the facilities are located adjacent to the machine. Pot and pan washers must be equipped with drainboards or shall be equipped with approved alternative equipment that provides adequate and suitable space for soiled and clean

equipment and utensils. Drainboards, utensil racks, or tables large enough to accommodate all soiled and cleaned items that may accumulate during hours of operation shall be provided for necessary utensil holding before cleaning and after sanitizing. Sinks and drainboards of warewashing equipment shall be sloped and drained to an approved liquid waste receptor. (CalCode 114103)

All food facilities in which food is prepared, or in which multi-service utensils and equipment are used, must provide manual methods to effectively clean and sanitize utensils. A minimum of a three-compartment stainless steel sink with dual integral metal drainboards is required in addition to any dishwashing machine. (CalCode 114095)

When a dishtable is installed next to a wall, the integral metal backsplash must be sealed to the wall. (CalCode 114169)

Dipper Well:

A cold running water dipper well shall be provided, if scoops or other reusable serving utensils are stored in water. The dipper well must be drained by means of an indirect connection. (CalCode 114193)

VI. Appendices

The following is to help understand the minimum requirements needed for the submission of plans for review and approval.

- Accepted Flooring Materials in a UCSB Food Facility
- Hot Water Demands Worksheet (must be completed and submitted)
- Requirements for Ventilation Hood Plans
- Hood Worksheet (must be completed and submitted)

ACCEPTED FLOORING MATERIALS IN A UCSB FOOD FACILITY

When installing a new floor or replacing an existing floor on UCSB property, contact the EH&S Environmental Health Program to assure the floor and base meet the current requirements.

The California Retail Food Code (CalCode) §114268 provides the following:

(a) Except in sales areas, dining areas, and serving areas, the floor surfaces in all areas in which food is prepared, prepackaged, or stored, where any utensil is washed, where refuse or garbage is stored, where janitorial facilities are located in all toilet and handwashing areas, except with respect to areas relating to guestroom accommodations and the private accommodations of owners and operators in restricted food service facilities, and in employee change and storage areas shall be smooth and of durable construction and nonabsorbent material that is easily cleanable.

(b) Floor surfaces shall be coved at the juncture of the floor and wall with a 3/8 inch minimum radius coving and shall extend up the wall at least 4 inches, except in areas where food is stored only in unopened bottles, cans, cartons, sacks, or other original shipping containers.

Floor materials used in retail food facilities must be of smooth and durable construction, of nonabsorbent materials, and easily cleanable. It must be provided in the following areas:

- Where food is prepared, packaged, or stored
- Where any utensil is washed
- Where refuse or garbage is stored
- Where janitorial facilities are located
- In all toilet and handwashing areas
- At unpackaged customer self-service food and beverage areas
- At wait stations
- In employee change and storage areas

Contact EH&S prior to ordering, purchase, or installation of new and replacement flooring.

NOTE: *Vinyl Tile* (VCT, VAT) Vinyl tile is **not** acceptable for floors in any area except customer dining or pre-packaged retail display. Concrete floors are not acceptable finishes in any area EXCEPT customer dining, pre-packaged retail display, pre-packaged grocery warehouse areas, inside walk-in or reach-in refrigeration units. **Rubber base or wood base cove are not approved.**

TYPES OF FLOORING

I. Commercial Sheet Vinyl

Vinyl floor proposals must be approved prior to installation. Submit a sample to EH&S for all flooring installations prior to ordering, purchasing or installing materials, including any alternative or "green" product proposals.

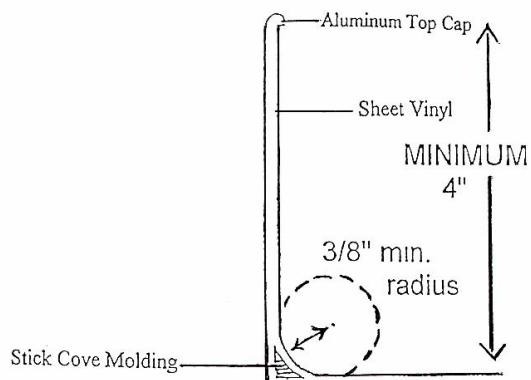
If sheet vinyl flooring is proposed, check the manufacturer's specifications and recommendations for installation areas. While sheet vinyl flooring may perform well in many food service areas (i.e., retail sales areas, dining rooms, waitress stations), some manufacturers do not recommend its use in portions of a commercial kitchen, i.e., cooking or WAREWASHING areas. If you have any questions regarding the accepted flooring manufacturer's recommendations, check with your flooring dealer, request a manufacturer specification sheet and material sample to submit to EH&S.

Standards:

- A. Vinyl composition throughout (no paper backing).
- B. No embossed imprint or wear layer.
- C. Minimum .080 inch wear layer thickness of vinyl material throughout.
- D. A "no wax" coating on surface is not acceptable.

Installation:

- A. Flooring shall continue up walls, partitions and cabinetry at least four (4) inches, forming an integral 3/8 inch minimum radius cove base. Most installers, however, cove the vinyl up to six inches high for ease of installation. The cove base must be backed with a cove molding and topped with a metal cap. VINYL TOPSET OR RUBBER BASE COVE ARE NOT APPROVED.
- B. Manufacturer's installation criteria and standards must be followed.
- C. All seams must be "heat welded" to form a continuous sheet vinyl surface of durable construction.
- D. Subfloor shall be sloped to at 1/4" to 1' to floor drains, if installed.
- E. Sheet vinyl flooring may not be installed in areas maintained below a temperature of 55 degree F. (i.e., walk-ins, reach-ins).



Sheet Vinyl Installation
Cross Section View at Cove Base

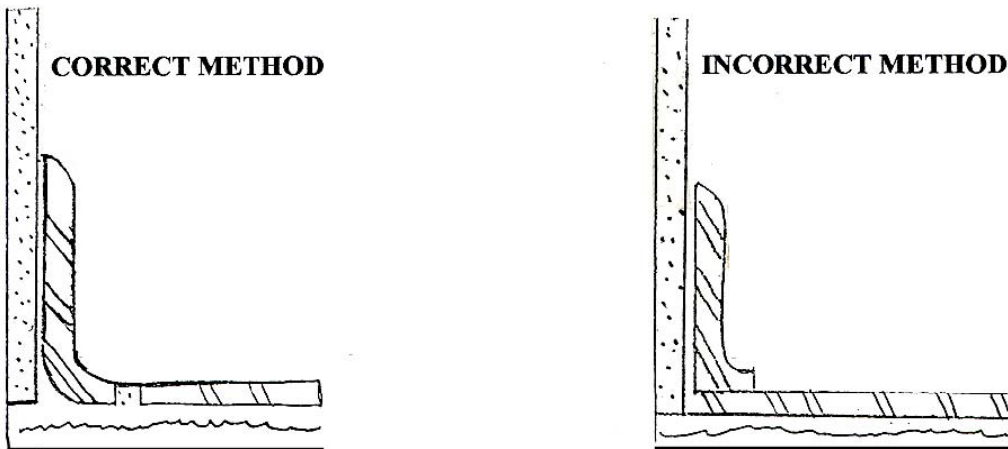
II. Quarry, Ceramic or Porcelain Tile

Standards:

- A. Minimum thickness $\frac{1}{4}$ inch and impact resistant.
- B. Non-skid varieties must be reviewed on an individual basis, and shall be installed with floor drains and a high-pressure cleaning system. This type of floor tile shall be limited to traffic areas. Tile installed under equipment must be smooth.

Installation:

- A. The grout spacing width between tiles shall not exceed $\frac{1}{4}$ inch.
- B. Grout between lines and quarry tile types without a glazed surface finish must be sealed to be impervious to water, grease and acid. Epoxy grout is the required standard for tile floor.
- C. Flooring shall continue up the walls, partitions, and stationary cabinetry at least four (4) inches, forming an integral, $\frac{3}{8}$ inch minimum radius base cove. The tile shall be a "Bull Nose" design at the top where it meets the wall. A 90 degree angle at the base floor/wall juncture is NOT APPROVED.



Quarry/Ceramic Tile Floor and Cove Base Installation

III. Troweled Epoxy Type Floor

- A. Minimum finish thickness shall be $\frac{1}{4}$ inch.
- B. The surface shall be sealed to be impervious to water, grease and acid.
- C. Flooring shall continue up the walls, partitions and cabinetry at least four (4) inches, forming an integral $\frac{3}{8}$ inch minimum radius base cove.
- D. Non-skid flooring with an abrasive texture shall be limited to traffic areas only. Cove base and floor surface areas under equipment shall be smooth. Depending on the degree of abrasive finish texture achieved, a high-pressure cleaning system and floor drains may be required. A finish floor plan must be submitted for approval of exact installation areas. Provide material samples to verify degree of texture.

IV. Sealed Concrete

If concrete sealant is proposed, check the manufacturer's specifications and recommendations. Most sealants should be reapplied every six months. If you have any questions regarding the approved sealants, check with EH&S. A sealed concrete floor is ONLY approved inside customer dining, pre-packaged retail display, pre-packaged grocery warehouse areas, and inside walk-in or reach-in refrigeration units.

Standard:

- A. The finished surface shall be SMOOTH and EASILY CLEANABLE and sealed to be impervious to water, grease and acid.

Installation:

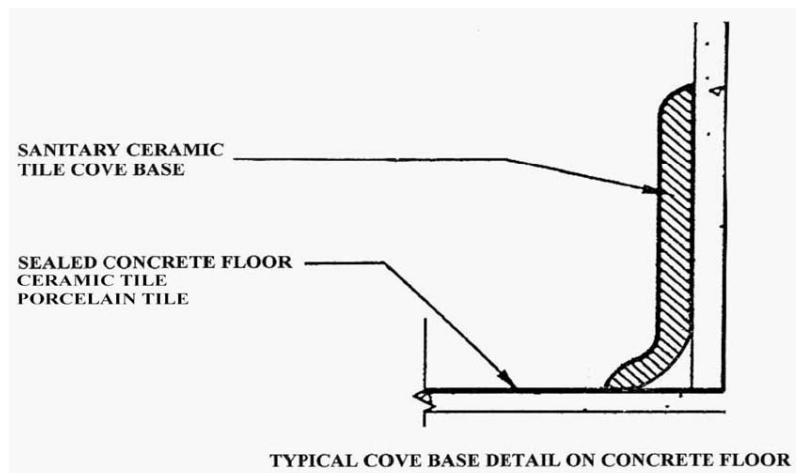
- A. The floor shall be a smooth, single pour variety.
- B. Flooring shall continue up the walls, partitions and up the toe kick of stationary cabinetry a minimum of four (4) inches forming a 3/8 inch minimum radius base cove.
- C. The floor shall be sealed with an Environmental Health approved, USDA approved, 2-component water based epoxy concrete floor sealant.
- D. Concrete floor areas with open seams, pitted, chipped, or rough surface areas, shall be covered with an approved tile and base cove material.

V. Cove Base

Only a pre-formed cove base molding (a.k.a. SpeedCove®), slimfoot ceramic or porcelain tile base cove, or a fabricated 3/8" radius metal cove may be installed on sealed concrete floor.

Note 1: Vinyl, rubber topset or wood base cove will not be approved in any areas of a food facility where a SMOOTH, continuously coved floor is required. (CalCode Section 114268)

Note 2: In walk-in coolers, a metal topset base may be installed in lieu of a continuously coved flooring against the metal walls if the base cove and wall finish are the same type of metal. (i.e., aluminum base on an aluminum wall) The base cove must have a minimum 3/8" radius cove and be sealed to both the floor and the wall with a clear silicone based sealant.



FLOORING USE GUIDELINES

Kitchens with cooking equipment (ranges, fryers, ovens, etc.) and very heavy use facilities:

- Quarry tile
- Aggregate seamless troweled-on epoxy floorings (1/4-inch thickness minimum)
- Homogenous sheet vinyl flooring with heat welded seams, .080 minimum thickness.

Medium to light facility use (small restaurants and deli's, coffee shop, mini-marts, etc.), areas with high moisture (around mop sinks, WAREWASHING), service counters and FOOD PREPARATION areas:

Above types, or:

- Quarry tile, ceramic or porcelain tile (with slip resistance)
- Aggregate seamless epoxy flooring (1/4-inch thickness)
- Homogenous sheet vinyl flooring with heat welded seams, .080 minimum thickness.

Food and food related storage, restrooms, lockers or other lower use areas:

Above types, or:

- Quarry tile, ceramic or porcelain tile (with slip resistance)
- Aggregate seamless epoxy flooring (1/4 inch thickness)
- Homogenous sheet vinyl flooring with heat welded seams, .080 minimum thickness.

Storage (dry storage in original containers only, no open foods).

Above types, or:

- Concrete with an approved, water-base sealant.

Walk-ins and Reach-ins:

- Quarry tile or sealed concrete floor (with slip resistance)
- Aggregate seamless epoxy flooring (1/4 inch thickness)
- Concrete with an approved, 2-component water based epoxy concrete floor sealant.

NOTE:

Surface repellants must be reapplied at least once a year.

Epoxy grout shall be used with tile floor installations.

Non-skid tile or abrasive epoxy flooring SHALL BE LIMITED to walkway areas ONLY. Smooth floor shall be installed under all equipment and on all base cove areas.

Preparation of the subfloor surface is often the issue when a floor prematurely fails. Remove grease, dirt and chemicals that interrupt the sealing or adhering process.

HOT WATER DEMANDS FOR A FOOD FACILITY

Establishment _____

Type of Fixture	Gallons per Hour (GPH) per Compartment	Number of Compartments	GPH Totals
Utensil Wash			
Dishwasher	<i>Refer to manufacturer specs for the GPH</i>	_____	_____
Pre-rinse units	45	_____	_____
18" x 18" compartments	14	_____	_____
24" x 24" compartments	25	_____	_____
Custom sink	<i>Length x Width x Depth x 7.5 = gals/compartments</i>	_____	_____
Bar sink (12" x 12") compartments	6	_____	_____
Food Preparation			
Food preparation sink	5	_____	_____
Handwash			
Handwash sink	5	_____	_____
Janitorial			
Janitorial Sink	15	_____	_____
Miscellaneous			
Employee shower	20	_____	_____
Clothes washer (9-12lb.)	45	_____	_____
Clothes washer (16 lb.)	60	_____	_____
Other: _____	_____	_____	_____
TOTAL GPH:			_____

TOTAL GPH _____ x _____ % (See sizing requirements below) _____ = GPH Required

COMPUTING THE BTU INPUT (gas water heaters)

GPH required _____ x 60° rise x 11 = _____ BTU input of water heater

FORMULA FOR ELECTRIC WATER HEATERS

GPH required _____ x 0.149 = _____ KW input

SIZING REQUIREMENTS FOR STORAGE WATER HEATERS (not instantaneous water heaters)

- Food facilities with multi service eating utensils, heavy use (serving 3 meals a day) 100% GPH required
- Food facilities with multi service eating utensils, moderate use 90% GPH required
- Food facilities with single-service eating utensils, or don't use utensils at all 80% GPH required

Food facilities that sell **only** prepackaged foods -- A water heater with a minimum storage capacity of 10 gallons must be provided.

SIZING REQUIREMENTS FOR INSTANTANEOUS WATER HEATERS (Tankless)

One of the advantages of an instantaneous water heater is its ability to provide a continuous supply of hot water. However, since the water passes through a heat exchanger, the water must flow through the unit slowly to ensure proper heat transfer. Therefore, the quantity, or rate, at which the hot water is delivered can be significantly less than that provided by a storage water heater. When hot water is utilized at several locations of the food facility at the same time the flow of hot water to each fixture can be severely restricted. As a result of the restricted output of instantaneous water heaters, more than one unit may be required, depending on the numbers and types of sinks and equipment present. Instantaneous water heaters must be sized to provide hot water of at least 120° Fahrenheit. The average temperature of tap water varies throughout the State depending upon the location, elevation, and time of year. In order to properly size the water heater, provide a specification sheet for the proposed water heater which includes a graph of GPM vs. temperature rise. In this instance, a tap water temperature of 60° Fahrenheit will be used. Therefore, to achieve a temperature of 120° Fahrenheit at the faucet, the proposed water heater would need to provide the required GPM at a 60° F rise in temperature.

Type of Fixture	Gallons per Minute (GPM)	X (Number of fixtures) =	GPM Totals
Three compartment sink	2		
Hand lavatories	½		
Janitorial sink	2		
Prep sink	½		
Automatic Warewasher*	Per ANSI standards	N/A	

*Food facilities that install an automatic warewashing machine that utilizes a large quantity of hot water may be required to provide an instantaneous water heater exclusively for the warewashing machine. NSF International listings or listings established by other nationally recognized testing laboratories are used to determine the minimum GPM hot water demand for automatic warewashing machines.

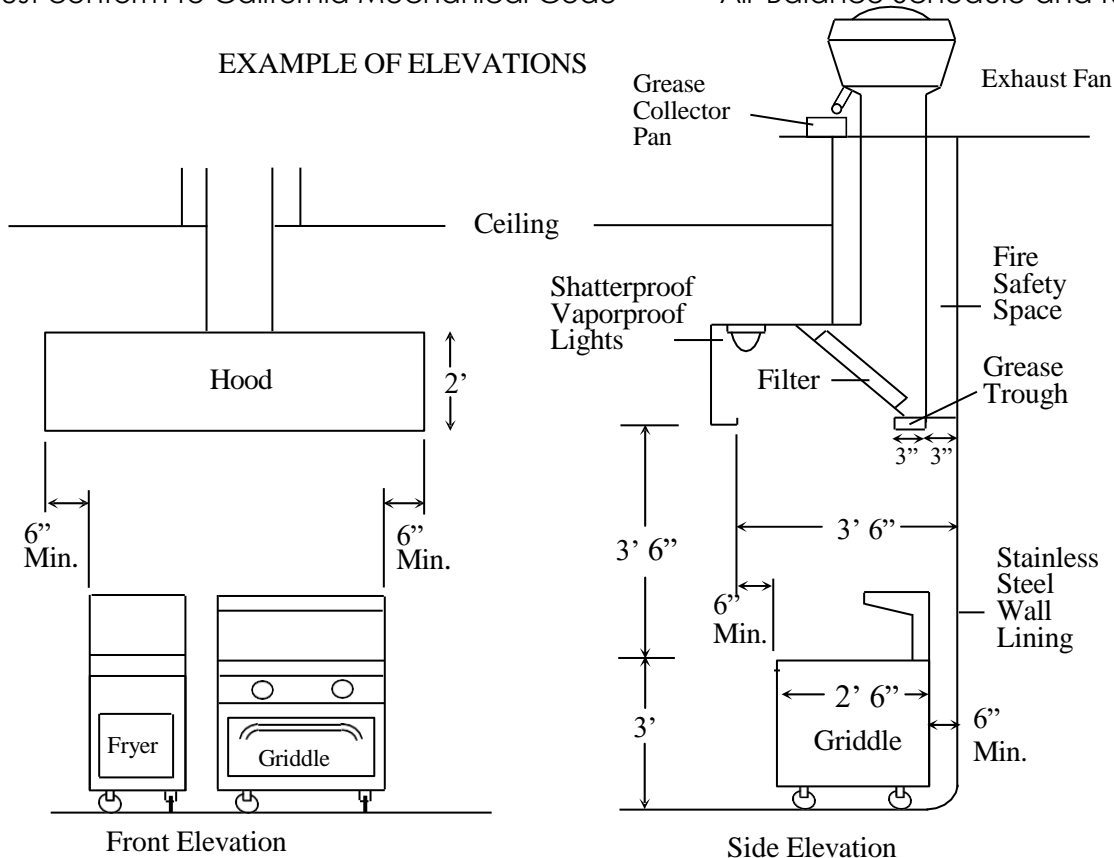
HOURLY HOT WATER DEMAND TABLE

Utensil Sinks			
16" x 20"	14 gallons per compartment		
18" x 18"	14 gallons per compartment		
18" x 24"	19 gallons per compartment		
18" x 26"	20 gallons per compartment		
18" x 30"	23 gallons per compartment		
20" x 28"	24 gallons per compartment		
24" x 24"	25 gallons per compartment		
24" x 30"	31 gallons per compartment		
Custom sink sizes can be calculated using the following formula: Length (ft) x Width (ft) x Depth (ft) x 7.5 = gallons per compartment			
Bar Sinks (12" x 12")		Hand Sinks	
6 gallons per compartment		5 gallons per sink	
Pre-Rinse Units		Clothes Washers	
Hand spray type	45 gallons	9 and 12 lb Washers	45 gallons
Other type	Refer to manufacturer's specifications for the equipment.	16 lb Washers	60 gallons
Food Preparation Sinks		Employee Shower	
5 gallons per sink		20 gallons per shower	
Janitorial Sinks & Garbage Can Wash Facilities		Other Fixtures That Use Hot Water	
15 gallons per sink or facility		Refer to manufacturer's specifications for the equipment or NSF® listing.	

REQUIREMENTS FOR HOOD PLANS

- Provide 1 set of plans, ¼ inch per foot, containing:
 - HOOD WORKSHEET (on the back of this page)
 - Plan view:
 - Outline of exhaust hood over cooking equipment
 - Clearances around equipment & to walls
 - Exhaust & make-up air ducts with details to the fans on the roof
 - Exhaust & make-up air fans on roof
 - Make-up air diffusers on ceiling
 - Make & model numbers of equipment & fans
 - All dimensions of equipment & ducts
 - Front & side elevations showing:
 - Cooking equipment
 - Exhaust Hood overhang
 - Duct elbows and fans
 - Type & gauge of metal used in exhaust hood & ducts
 - Specify if exhaust hood is Type I, Type II, UL Listed, non- canopy, compensating, etc.
 - Name, address & phone number of facility & exhaust hood designer
-
- Submit one set of manufacturers' specification sheets for:
 - Cooking equipment, Exhaust & Make-Up Air fans with performance charts, UL Listing Card for hood system (if applicable)
 - Plans must conform to California Mechanical Code
 - Air-Balance Schedule and Report

EXAMPLE OF ELEVATIONS



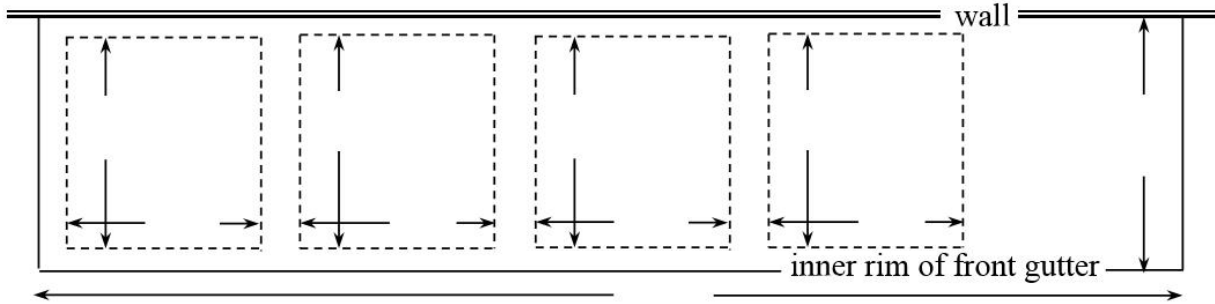
HOOD WORKSHEET

Facility Name: _____ Date: _____

Site Address: _____

Submitted by: _____ Phone Number: _____

Fill in cooking equipment & hood dimensions in feet in the plan view below:



COOKING EQUIPMENT & EXHAUST HOOD:

- What type of Exhaust Hood? TYPE I TYPE II Compensating Non-Compensating
- Are casters & quick disconnecting gas lines with restraining cables specified? YES NO
- Gas line exit wall at least 24" above floor specified? YES NO
- Exhaust Hood long enough to allow at least 6" from the inner rim on sides of equipment? YES NO
- Exhaust Hood wide enough to allow at least 6" in front & back of equipment? YES NO
- Canopy lip at least 6.5' above floor & no more than 4' above cooking surface? YES NO
- Canopy free of exposed horizontal electrical & Ansul lines? YES NO
- Are the Duct and Hood material in compliance with the California Mechanical Code? YES NO

EXHAUST CALCULATIONS:

Backshelf Double Island Canopy Eyebrow Single Island Wall-mounted

NON LISTED: Exhaust CFM = AIRFLOW X Length of Hood

Exhaust Hood Length _____ ft X Airflow _____ CFM/ft = _____ CFM

LISTED HOOD: Exhaust CFM = Listing Card at Rated Temperature X Length of Hood

Exhaust Hood Length _____ ft X Listing Card _____ CFM/ft = _____ CFM

FILTERS:

Size: Height _____ in. Width _____ in. Usable Grease Filter Area _____ in²

_____ CFM ÷ 360 FPM = _____ ft² (filter area needed)

Usable Grease Filter Area _____ in² ÷ 144 = _____ ft² (filter area per filter)

_____ ft² (filter area needed) ÷ _____ ft² (filter area per filter) = _____ # of Filters Min _____ # of Filters Actual

_____ CFM ÷ (_____ ft² (filter area per filter) X _____ # of Filters Actual) = _____ FPM

Ideal FPM = 300; should be 250-350 (Listed Hoods can be above or below) YES NO N/A

Horizontal Slot Filters ideal FPM= 1,000; should be between 800-1,200 YES NO N/A

Total width of filters must be less than the Exhaust Hood Length YES NO N/A

DUCT:

Square: Length _____ in. X Width _____ in. = _____ in²

Round: 3.14 X _____ radius² = _____ in²

_____ in² ÷ 144 = _____ ft²

_____ CFM ÷ _____ ft² = _____ FPM

Is the FPM between 500 – 2,500? YES NO

Exhaust Hood greater than 12 feet long must have more than one outlet to main exhaust duct unless it is a Listed Hood.

Is there more than one outlet to the main exhaust duct? YES NO LISTED N/A

STATIC PRESSURE AND EXHAUST FAN:

Number of elbows _____

Is there a cleanout at each elbow? YES NO N/A

Total System Static Pressure _____ "sp

Exhaust Fan: Manufacturer _____ Model Number _____ Horse Power _____

Exhaust Fan Static Pressure _____ "sp Exhaust Fan _____ CFM

Is the Exhaust Fan UL 762 specified for the Type I hood? YES NO N/A

Does the Exhaust Fan CFM pull at the Total System Static Pressure? YES NO

MAKE-UP AIR:

_____ CFM ÷ 2,000 CFM = _____ **Number of Diffusers**

Make-up Air Static Pressure _____ " sp

Make-up Air Fan: Manufacturer _____ Model Number _____ Horse Power _____

Is the Make-up Air 90-100% of exhaust CFM at the sp? YES NO

Is the Make-up Air intake on roof at least 10 feet from exhaust? YES NO

Are the diffusers on ceiling at least five feet from the edge of the exhaust hood? YES NO N/A

Are the Exhaust and Make-up Air fans interlocked? YES NO

Submitted by: _____ Phone Number: _____

Prepared by: _____ Phone Number: _____