



Environmental Services Department

Environmental Health Division

Guide to Constructing

Permitted Facilities

Purpose

This document is for use by architects, building contractors, owner/operators, and any other individuals involved in the design, construction, and operation of any facility regulated by the Maricopa County Environmental Health Division. What we have provided here is a guide that includes requirements and recommendations for permitted facilities in Maricopa County. This manual is based on the [Maricopa County Environmental Health Code](#) and various trade regulations (e.g. International Plumbing Code (IPC), International Mechanical Code (UMC), [Food and Drug Administration \(FDA\) guidelines](#)) and is not all inclusive.

This guide will provide the best information on facility construction, in accordance with Health Code Requirements, and designing an efficient, low maintenance facility.

In order for us to meet our objective, the Maricopa County Environmental Health Code requires the submittal of plans for review on all proposed facilities. No establishment shall be constructed, nor shall any major alteration or addition be made thereto, until detailed plans and specifications for the premises have been submitted to and approved by the Department; nor shall any construction, alteration, or addition be made except in accordance with approved plans and specifications. A remodel is an alteration to the structure or equipment of an existing establishment and also requires plan submittal. In addition to being law, plan review also allows our Department to preview the project and make any necessary corrections to the design, before they are completed, possibly saving time and money.

In addition to our Department, other jurisdictions, such as City/County Building & Zoning, Fire Department, County Water & Waste, and State Agencies, may require plan submittal (i.e. Grease Traps).

Should it be necessary or desirable to make any material change in the approved plans and specifications, revised plans (addendum) and specifications shall be submitted to our Department for review, and approval must be obtained before the work affected by the change is undertaken.

Important points to remember:

- 1) A menu is a **critical** part of the plan review process. The type of food and service style will influence the type of equipment required. Plans should be based on *HACCP (Hazard Analysis Critical Control Point)* quality assurance concepts. A menu based on risk assessment will help in the layout and design of the establishment. Submit a proposed menu with your plans for approval. For further information concerning *HACCP* based menus, contact our Department [HACCP program](#) specialist at 602-506-6972.
- 2) Install the equipment to be easily accessible for cleaning.
- 3) Develop an efficient food flow system, from the point of delivery to final service.

If you have any questions during the planning or construction of your establishment, please contact the Maricopa County Environmental Services Plan Review Office at 602-506-6980.

Objective

The regulations and requirements of the Maricopa County Health Code and Construction Guideline adopted and contained herein and the enforcement thereof by the department are designed and intended to provide minimum standards for the protection of the health of the people of Maricopa County and to prevent the creation or maintenance of unhealthful, unsanitary condition of public health nuisances and shall be liberally construed to accomplish those objectives.

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I. Plans, Inspections, Fees, Location, and Downloads

A. Plan Review

Complete a [Plan Review Application](#) and submit with:

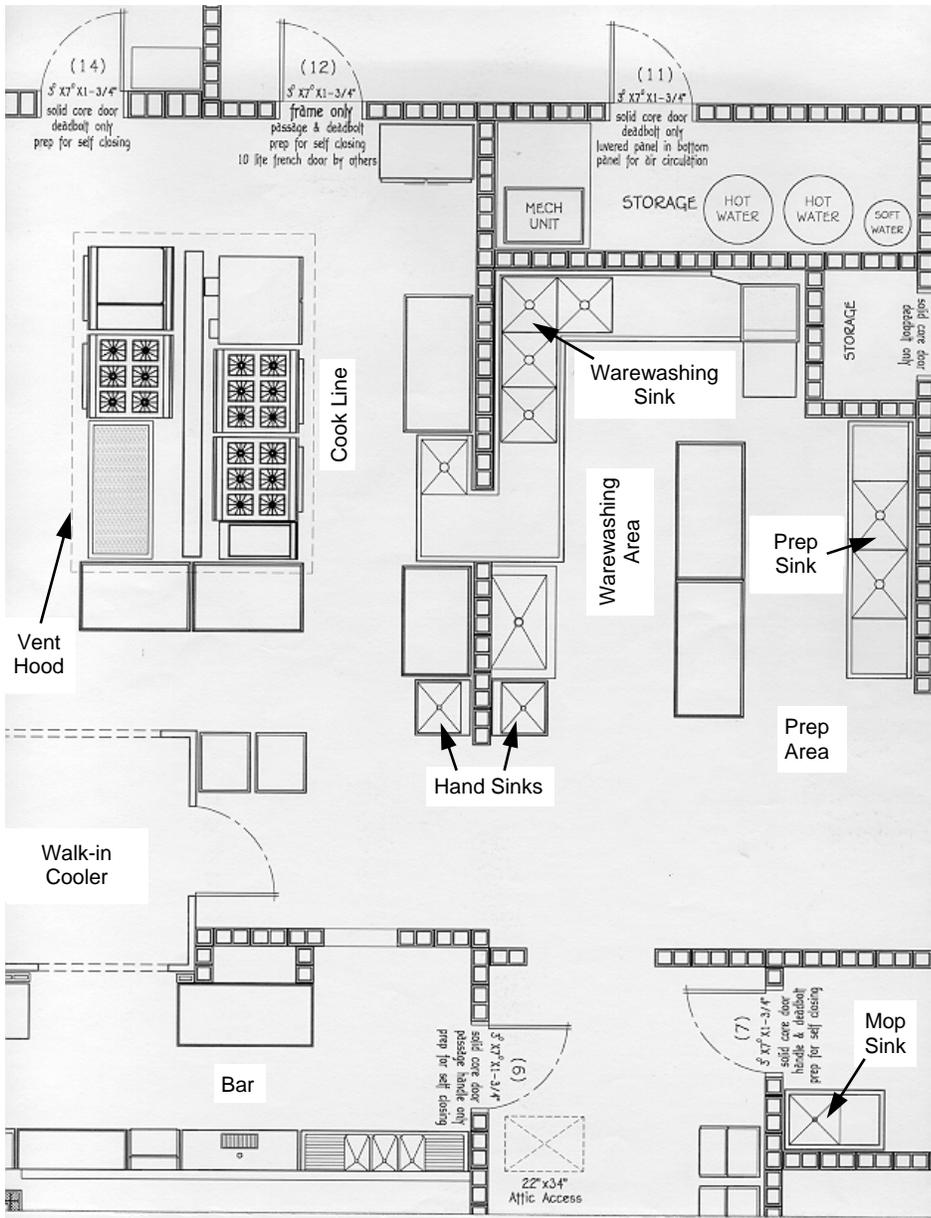
1. One (1) complete set of plans (minimum size 8.5" x 11" or larger). Plans shall be drawn to a scale, e.g. 1/4" = 1 foot, if no scale is included, provide all pertinent dimensions.
2. Plan Review fee (**for each permit required**)
3. Include one (1) plumbing site plan (including wells and septic systems if project is not connected to public sewer and water systems). Plans for wells and septic systems must be submitted to Maricopa County Environmental Services [Water & Waste Division](#). More information can be obtained by calling (602) 506-6666 or (602) 372-1364.
4. Plans submitted shall include the following for approval:
 - a. Complete floor plan - **See Figure 1**
 - b. Complete equipment layout and schedule showing type, manufacturer, and model numbers. Elevations of equipment, if available
 - c. Finish schedule of interior finishes. All existing equipment and finishes must be defined.
 - d. Plumbing schedule, including location and size of water heaters, overhead waste water lines, floor drains and floor sinks; type and location of equipment requiring drainage
 - e. Manufacturer specification sheets ("cut sheets") for each piece of equipment shown on the plan
 - f. Shop drawings of all custom-built equipment
 - g. Lighting plan, including all areas that are to be shielded
 - h. Complete exhaust ventilation plan (HVAC), including restroom ventilation
 - i. Site plan showing the location of restrooms, mop basin, alleys, streets, vacant lots, adjacent businesses, and outside equipment (dumpsters, well, septic system, etc.)
 - j. Proposed Menu (Including seasonal, off-site, banquet menus):
Service Style, Type of Food

**Plans &
Inspections**

AN INCOMPLETE PLAN SUBMITTAL WILL BE REJECTED!

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Figure 1. Kitchen Floor Plan Sample



**Plans &
Inspections**

B. Inspections

During construction, the Maricopa County Environmental Services Department will conduct inspections to assess construction and equipment installation. Three inspections are required during the timeline of the project. Please call to schedule inspections at the following stages: 1) Plumbing rough-in (20%) 2) Equipment drop-in (75%) 3) Final construction (100% complete with C of O). Please allow 5-7 business days to schedule inspections. Inspections are conducted Monday through Friday, between 8 AM and 5 PM. It is the responsibility of the owner, operator, or contractor to schedule inspections. All water, plumbing, electrical, gas, vent hoods, coolers, walk-ins, and other equipment shall be operational at time of the final inspection. The establishment will not be issued a Health permit until it passes a final inspection. If the establishment opens to the public prior to

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obtaining final approval from this department, the owner will be subject to legal action.

The approval of plans and specifications shall lapse and become invalid one year from the date of approval unless a substantial portion of the work described in the plans and specifications has commenced by such anniversary date. An approval of plans and specifications can be renewed for one year if an application for renewal is submitted within 180 days of expiration. A fee equal to one-half (1/2) of the initial plan review fee is paid. The approval will be effective for one year from the date of expiration.

C. Fees (Plan Review Fee Only; Operating Fee Separate)

<u>Plan Type</u>	<u>Amount</u>
Restaurant 0-9 seating	\$545.00
Restaurant 10+ seating	\$615.00
School Facilities Food Service	\$570.00
All other food establishments*	\$615.00
Public accommodations	\$535.00
Pet shop and Groomers	\$520.00
School grounds - No kitchen	\$640.00
Remodel fee: approved only by plan review office staff	
EXPEDITE FEE: 2x fee amount	
Plan extension fee: 1/2 original fee amount	

Plans &
Inspections

* Includes retail grocery, meat, bakery, food processor, school cafeteria, food jobber (food storage facility), catering.

After plans are submitted to the Department a three to four week plan review takes place. If a quicker plan review response is desired, an expedited plan review process may be requested at a cost of twice the standard fee. The expedited process will approximately cut the review time in half. Expedited fees only speed up the review process, not inspections. Inspections will still be scheduled based on availability. * Any establishment opening within 15 business days or is already in operation at the time of application will be enforced an expedited fee.

D. Location

Plan Review Office: 1001 N. Central #300, Phoenix, AZ 85004
Phone Number: (602) 506-6980

Central Region: 1001 N. Central #300, Phoenix, AZ 85004
Phone Number: (602) 506-6272

Eastern Region: 1255 W. Baseline Rd. #266, Mesa, AZ 85202

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Phone Number: (480) 820-7655

Northern Region: 3101 E. Shea #201, Phoenix, AZ 85028

Phone Number: (602) 867-1780

Western Region: 8910 N. 43rd Ave. #101, Glendale, AZ 85302

Phone Number: (623) 939-5788

Mobile Food Program: 1645 E. Roosevelt St., Phoenix, AZ 85006

Phone Number: (602) 506-6872

E. Downloads:

For any additional forms or documents, please visit our website at <http://www.maricopa.gov/EnvSvc/EnvHealth/> and visit the corresponding program's website.

II. Equipment

A. Materials and Design

All food service equipment shall be commercial grade and meet the standards of design and construction in accordance with the [American National Standards Institute](#) or the [National Sanitation Foundation](#). Only equipment which is designed and constructed in accordance with the applicable standard may be installed as new or replacement equipment (Maricopa County Environmental Health Code, Chapter 8, Sec. 2, Reg. 2). The ANSI/NSF seal is generally a good indicator the equipment is approved.

B. Specialty Equipment

Custom Built Equipment: Shop drawings are required, final on-site approval required, must meet ANSI, NSF, Department approval.

Cold Plates: When installed in ice bins, the cold plates must be an integral part of the bin. Drop-in cold plates are not allowed. **See Figure 2.**

Dipper Wells: Provide dipper wells with running water where you dispense bulk ice cream. Utilize dipper wells with dispensing utensils for other bulk foods such as cooked rice, whipped butter, etc. An indirect drainline with air gap (min 1-inch) is required.

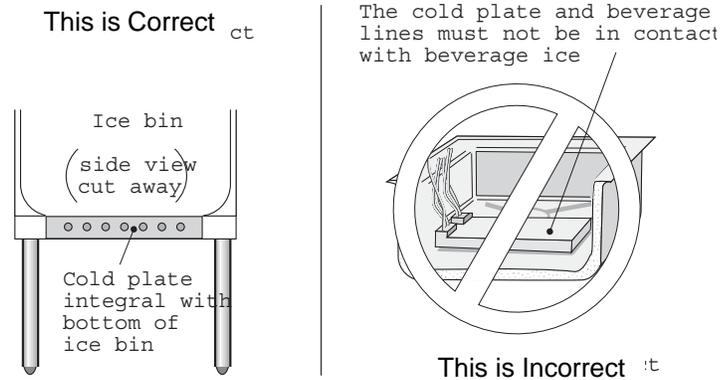
Food preparation sink: Install separate sinks designed solely for vegetable washing or food preparation in the food preparation area. The food preparation sink must be indirectly drained to a floor sink with an air gap. Do not install garbage grinders on food preparation sinks.

Plans &
Inspections

Equipment

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Figure 2. Integral Cold Plate



Garbage

Grinders: Garbage grinders shall be connected and trapped separately from any other fixtures or sink compartments.

Single Service Dispensing Equipment: Install equipment for properly handling single service items like paper cups, lids, and straws.

Food Contact Surfaces: Install work surfaces made of solid surfaces (i.e. S.S. Corian). NSF approved cutting surfaces are acceptable in food preparation areas.

Fryers: Recommend metal splash guards on the side of deep fryers.

Ovens / Cooking Equipment: Shall be NSF approved commercial grade or meet ANSI equivalent. Domestic type cooking equipment is not approved for food service.

Microwave Ovens: Commercial grade and domestic microwave ovens are approved for food service.

Food Shield Design: Salad bars, buffets, serving lines, and sneeze guards shall comply with the standards (standard #2) of an ANSI accredited certification program and or meet Department approval. Sneeze guards shall be constructed of approved durable materials such as tempered glass, plexi-glass, plastic, stainless steel or other finished metal. There are three common installation types of food shields and each has different design criteria. **See Appendix A.**

Drive-Through and Walk-Up Windows: Both types of windows shall be self-closing. Exterior pass-through food drawers, with removable pans, shall have seamless coved corners, smooth counters, and open-ended slide channels for easy clean ability.

Equipment

C. Equipment Installation Directions

Table-Mounted Equipment: Install table-mounted equipment on 4-inch legs, or seal the equipment to the table using silicone caulk, unless it is

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easily movable. Easily movable equipment must: a) be less than 30 lbs. (14 kg.) or on casters, gliders, or rollers; b) have no utility connection or have a quick disconnect utility connection. Maintain pieces of table-mounted equipment at least 6 inches apart to facilitate cleaning access.

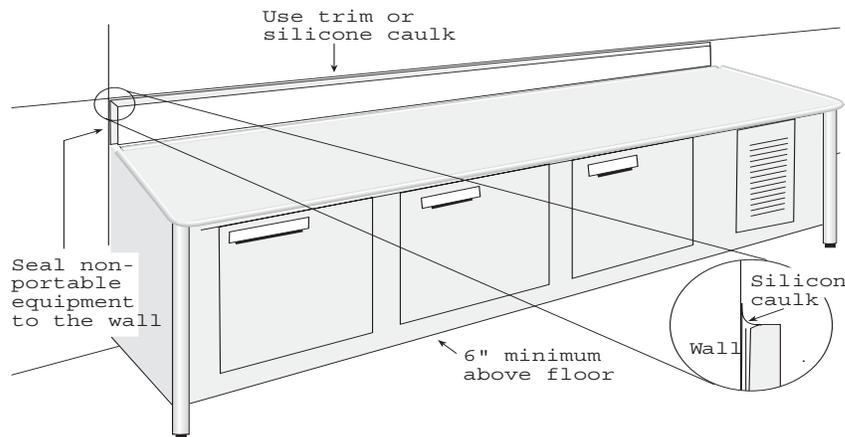
Floor-Mounted Equipment. The preferred method of installation is to place equipment on casters, gliders, or rollers. Use coated steel, commercial grade, NSF approved, utility connections that are smooth and flexible with quick disconnects. The connections must be long enough to move the equipment so the area around and behind can be cleaned.

Equipment may be elevated on legs, as long as a minimum 6-inch clearance between the floor and equipment is provided. Floor mixers may be elevated to provide at least a four-inch clearance between the floor and equipment. Install stationary equipment with sufficient space between adjacent equipment, floors, walls, cabinets and ceilings to facilitate proper cleaning. Maintain 8 inches of spacing when the area to be cleaned is less than 4 feet long and 18 inches when the area is greater than 4 feet.

If sufficient space is not possible between, behind, and above each piece of fixed equipment, or if the spaces between such equipment is greater than 1/32 inch, the spaces must be sealed. Use silicone caulk or cleanable trim/flushing to seal ovens, proofers, walk-ins, sinks spaces, etc. Seal all gaps, cracks, voids, protrusions, and penetrations using silicone caulk or trim that meets the finish material standard. The silicone bead must be smooth and covered. **Tip:** If you can place a business/credit card in the crack gap seal it! **See Figure 4.**

Equipment

Figure 4. Immoveable Equipment Sealant



Conceal all plumbing, electrical, and gas lines in walls or ceilings, whenever possible. Otherwise keep all exposed lines at least 6 inches above floor level and at least 1/2 inch away from walls and ceilings. Conduits or pipes shall not be installed across any drains or ice bins.

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Walk-in Units: Walk-in refrigerators, freezers, or other large equipment, with spaces 30 inches or less between the top surfaces of the equipment and the ceiling require flashing or closing off in a clean, tight, and vermin proof manner. Flash, trim, or caulk spaces between walk-in refrigerators and adjacent walls. Penetrations shall be sealed smooth w/ceiling & wall panels. Utilize silver metal silicone.

III. Refrigeration

A. General Storage

Refrigerators and freezers are required to maintain potentially hazardous foods at or below 41°F and 0°F respectively. It is recommended that refrigerators be maintained between 36°F and 38°F. These units must be commercial grade and meet ANSI/NSF standard #7. **Domestic-style refrigerators and freezers will not be approved for food storage.**

Refrigeration and freezer storage involves six major areas:

1. Storage for short-term holding of perishable and potentially hazardous food items.
2. Long-term storage.
3. Storage space for quick chilling of foods.
4. Space for assembling and processing of potentially hazardous foods.
5. Display storage.
6. Display storage for customer service.

Calculating the amount of refrigeration and freezer space should be based on the menu and expected food volume. The amount and location of refrigeration and freezer equipment should complement the food flow of the operation from receiving, storage and food processing, to the point of service.

FDA Formulas:

When assessing the refrigeration needs, shelving space within the refrigeration and freezer units should be designed to prevent the cross-contamination of foods. Separate raw meats and poultry from ready-to-eat foods such as produce and prepared food items. Thermometers must be conspicuously located in all units. Thermometer sensing elements should be located near the door(s). Reach-in and walk-in refrigerators and freezers should be located within an enclosed establishment. Any refrigerator or freezer unit located outside an establishment should contain only pre-packaged food items.

Refrigeration

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B. Walk-in Cooler/Freezer units

Plastic curtain strips are recommended at doors, in certain locations. Walk-in coolers should be installed when there is a need for long-term storage of perishable and potentially hazardous foods or **when cooling space is needed for prepared and cooked foods**. These coolers should be located near delivery or receiving areas. Outdoor walk-in refrigerators or freezers are discouraged and must have Department approval. Walk-in unit and pathway shall have overhead protection.

C. Reach-in Refrigerators

These units are for short-term storage of perishable and potentially hazardous foods. These units should be considered to meet the daily storage demands of the kitchen operation. They are to be conveniently located at points of food preparation and food assembly. **These units are not to be considered for the quick chilling of cooked and prepared foods. Glass door units are designed for soda and prepackaged foods only.**

D. Freezers

Freezers are for long-term storage. They are not designed to be used as quick-chill units. These units should be located near delivery and dry storage areas.

E. Blast Chillers

These units should be considered when handling large volumes of food that require quick chilling. A blast chiller is an efficient cooling mechanism for any amount of food to be chilled, and where refrigeration storage space is limited.

F. Refrigerated Worktables

These units are needed when the menu includes assembling potentially hazardous foods. These units provide easy access of foods from the top of the unit. **These units are not designed for long-term storage of food or cooling.**

G. Refrigerated Processing Rooms

These areas should be considered when there is extensive handling of cold potentially hazardous foods (e.g. meat cutting rooms).

Refrigeration

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III

H. Display Storage Refrigerators

These units are designed to display potentially hazardous foods under refrigeration. Examples of these units are deli display, fresh fish, and meat and poultry cases.

I. Customer Service Display Units

These units are designed for holding foods under refrigeration for customer access. They are designed for short-term display and are not designed for cooling of foods. Beverage display coolers are not approved for storing open potentially hazardous foods.

J. Cold Buffet Units

Cold buffets and salad bars are designed for short-term display. They should be mechanically refrigerated, and have approved sneeze guards with side panel protection.

K. Ice Machines

If ice is to be used as a cooling medium, the unit should be adequately designed and sized to meet all operational needs in a clean room.

IV. Storage

A. Dry Storage

Adequate and suitable floor space shall be provided for the storage of food and beverages. In addition to working storage (i.e., wall-mounted shelves and cabinets over food preparation equipment or under counter storage) additional dry-storage space shall be provided.

Storage space should consist of 25% of the food preparation area, or one square foot per seat, whichever is greater, but not less than a total of 100 square feet of floor space.

At least 32 linear feet of approved shelving units, a minimum of 18 inches deep, should be installed in the minimum 100 square feet of floor space provided. All shelving must be at least 6 inches above the floor with a clear unobstructed area below or an upper shelf surface above a completely sealed minimum four-inch base.

Refrigeration

Storage

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B. Wet Storage

Storage of packaged food in contact with water or un-drained ice is prohibited. Wrapped food items shall not be stored in direct contact with ice. All equipment and containers used for the storage of packaged food items in contact with ice shall be designed to allow gravity drainage only of melted ice to a floor sink with an approved air gap.

Guidelines on approved methods of live seafood storage is available upon request.

C. Storage Locations

Cooking utensils: Designate areas for clean cooking utensils, cutting boards, glassware and dishware. Store them at least 6 inches off the floor in a clean, dry location where they will be protected from dust and splash.

Clean Linen: An area, separate from soiled linens, should be provided, to store and protect clean linen from contamination.

Soiled Linens: Specify the location of covered, non-absorbent containers or washable laundry bags designated for holding damp or soiled linens, soiled uniforms, aprons, etc.

Chemicals: Designate an area for toxic material storage that is away from food and clean utensils. These include detergents, sanitizers, related cleaning or drying agents and caustics, acids, polishes and other chemicals. Install cabinets, cages, or physically separate shelves for storing chemicals.

Pesticides are **NOT** permitted in the establishment. Pest control shall be provided by a properly certified pest control applicator.

Maintenance Equipment: Designate an area, away from food or dishware, for storing maintenance equipment and cleaning supplies. Supply adequate broom racks to keep brooms, dust pans, etc., off the floor. Install heavy-duty mop hooks that can support wet mops over the janitorial sink so that wet mops may drip dry into the sink basin. Provide open wire or solid metal shelving at each janitorial station for a working supply of cleaning items. The use of peg-board is not approved.

Firewood: If any firewood is used, designate an area for firewood separate from food service and storage areas. Provide special measures to ensure insect and rodent control. Interior/exterior firewood storage areas shall be elevated on metal racks at least 6-inches above flooring.

Storage

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D. Shelving

Kitchen shelving must meet NSF standards. Shelves should be constructed of metal or material which has been finished to provide durable smooth, easily cleanable, non-absorbent surfaces. Shelves subject to heat or moisture must be of rust-resistant metal or plastic. Shelving not approved by NSF may be used for dry storage, provided the area used: is a separate room isolated from other food service operations; does not contain open foods; and all wood is sanded smooth, free of open joints and sealed or painted to a smooth non-absorbent finish. **Final on site approval is required.**

All refrigerator and freezer shelving must meet NSF standards. In addition, shelving installed in refrigerators must be made of rust-resistant metal or other impervious material. The minimum height of a bottom shelf above the floor of a walk-in refrigerator or freezer is 6 inches.

V. Employee Areas, Restrooms, and Hand Wash Sinks

A. Employee Areas

A coat rack, coat hooks or other suitable facilities for employees to store their clothing and other personal belongings should be provided. Consider installing lockers in a designated area away from food production and storage locations.

If employees change clothes on-site, provide a dressing room where they may change and store their personal, non-working garments. This cannot be in areas used for storing, preparing or serving food, or for washing or storing utensils.

Designate a separate break room or area away from food preparation and utensil washing areas, if employees are not allowed to eat in the dining room. It is recommended a speed rack be used for employee beverage container storage.

Personal medications and first aid kits shall not be stored in food storage, preparation or service areas. May be placed at hand sink or office.

B. Restrooms

Number: A minimum of one employee restroom is required. In facilities that allow the onsite consumption of alcohol, men's and women's public restrooms are required, and must include at least one urinal (in the men's restroom). Fixture counts are based on seating capacity and must meet IPC requirements.

Americans with Disabilities Act of 1990 (ADA): This Department does not have enforcement authority or jurisdiction over [ADA regulations](#). Contact the local building department.

Storage

Employee Area

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Location: Restrooms for employees must be conveniently located as determined by this Department. Conveniently located means it is located inside the same building as the food establishment and the path between to two does NOT require the employee to exit to the outside environment. Customer restrooms can be centrally located (within 500 feet) and can include a path that leads to the outside environment. Provide a written legal agreement, if restrooms are shared with other facilities. Advisory: Some municipalities require separate men's and Women's restrooms where dine in seating is available. Separate restroom facilities are recommended.

Hand wash signs: Hand wash signs are required in all restrooms used by employees.

Access: Public access to restrooms through food preparation or utensil washing areas is prohibited.

Fly-Control: A toilet room located on the premises shall be completely enclosed and provided with a tight-fitting and self-closing door except that this requirement does not apply to a toilet room that is located outside a food establishment and does not open directly into the food establishment such as a toilet room that is provided by the management of a shopping mall.

Ventilation: Mechanically vent restrooms to the outside of the building.

Dispensers: Each hand wash sink must have a supply of dispensed, hand cleansing soap. Also, provide disposable paper towels. Dispensers must be conveniently located near each hand wash sink. Hand wash sinks for public use may have hot air hand drying devices. If employees share restrooms, provide dispensed, disposable paper towels. Restrooms specifically for employees should be provided with dispensed disposable paper towels only. Hot air hand dryers in kitchens are not allowed in food prep/production areas.

Water Supply: Provide each hand wash sink with hot and cold water by means of a mixing valve or combination faucet. Any self-closing, slow closing, or meter-faucet used must provide a flow of water for at least 20 seconds without the need to reactivate the faucet. Hot water must be provided within 45 seconds.

Refuse Containers: Provide containers for the disposal of paper towels.

Sanitary Containers: Provide covered sanitary containers for the disposal of feminine hygiene products.

Diaper Changing Stations: If diaper-changing tables are provided, you must provide covered waste containers. We recommend the container have tight-fitting lids.

Restrooms

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V

C. Hand Wash Sinks

Location: Provide a sufficient number of hand wash sinks. Handsinks shall be easily accessible with no barriers or obstructions restricting their accessibility. A handsink must be located within 25 feet of all work stations, food preparation, food service and ware washing areas without going through a door. Handwash sinks are required in all bars.

Tip: “Out of sight out of mind.”

Water supply: Provide each hand wash sink with hot and cold water under pressure by means of a mixing valve, combination faucet, or tempered water at the faucet at least 20 seconds. Tempered water by definition is 85°F to 110°F and is only allowed at hand sinks.

Dispensers: Provide disposable paper towels at each kitchen and bar hand wash sink. A waste receptacle should be located near the sink. The use of common towels is not allowed. hand drying devices using air are not allowed in food preparation, service, or bar areas. Hand sanitizers or gloves may be used **in addition** to conventional hand washing, but never as a substitute. Sanitizers and gloves shall be dispensed at your hand wash sinks or POS area. Latex gloves are prohibited.

Splash protection: Splash guards are needed when a hand wash sink is within 24 inches of a food contact surface, food/utensil storage shelves, food service areas, vegetable preparation sink or dish washing sink. Install a waterproof splashguard at least as high as the faucet and as deep as the hand sink, between the sink and food/dish related areas. We recommend the use of stainless steel. Securely fasten splashguards to the wall, counter top, or sink. Seal the seam created by the splashguard with silicone. **See Figure 5.**

Hand Wash Sinks

Figure 5. Hand Sink With Splash Guards



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V

VI. Plumbing

Install and maintain plumbing according to the 2006 IPC and local requirements. If a well or septic system is used, plans must be submitted to our Department's [Water & Waste Division](#) for approval.

A. Water Supply

Provide an adequate supply of potable water, under pressure, to satisfy the needs of the food service establishment. Water must be from an approved public water supply source or from a source approved by the Maricopa County Environmental Services Water & Waste Management Division or the [Arizona Department of Environmental Quality](#).

B. Sewage Disposal

All sewage must go to an approved sewage system.

C. Grease Interceptors / Grease Traps

Local municipalities determine the number and size of grease traps, grease interceptors or catch basins. If required, refer to the local municipality for the installation requirements. If the establishment is located outside a municipality on county land, contact the Water & Waste Division for ISDS inspections or current code requirements.

D. Janitorial Stations, Can Wash and Mop Sinks

Design: Provide service sinks or janitorial stations for general clean up activities in **all** permitted establishments. Include either a floor basin, leg-mounted mop sink, or a concrete or ceramic tile curbed basin. The minimum size of the basin must be 3 feet square and the curbing at least 4 inches high and 4 inches wide. Connect the basin or sink, with a drain, to the sanitary sewer. Provide hot and cold water, under pressure, with a mixing faucet and approved back flow protection. Wall surfaces shall be smooth durable, S.S., tile, FRP, etc. CMU is not acceptable. **See Figure 6.**

Location: Janitorial stations should be within 200 feet of the establishment. They should be separate from food and beverage preparation and storage areas. The janitorial station must be accessible for use during operation.

Additional Equipment: Stationary equipment, such as water softeners or water filter systems, may not obstruct the mop basin or sink. Allow for space adjacent to the mop basin/sink for storage of mop buckets. Place approved chemical dispensing systems so they do not interfere with maintenance equipment storage or use. Install a separate water line for chemical cleaning systems and include appropriate back flow protection.

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If you suspend a water heater over the mop basin, maintain a minimum clearance of 80 inches to provide adequate space for the storage of wet mops. Ceilings in the mop sink area shall be smooth and easily cleanable.

Figure 6. Quarry Tile Mop Sink / Janitorial Station



Plumbing

E. Overhead Sewer Lines

Location: Waste lines and roof drains should not be directly above food preparation areas, ice bins, jockey boxes, food display, food storage and utensil washing areas.

Shielding: If you have sewer lines over any of these areas, provide seamless gutters under the pipes that will divert leakage away from the food or utensil zone. Gutters shall drain to the sanitary sewer or open at the wall.

F. Potable Water Backflow Protection

Inlets: All water inlets (faucets, etc.) must have an air gap between the water inlet and the fixture it is serving. The air gap must be at least twice the diameter of the water inlet or faucet. Any water inlet, faucet, etc., that does not meet this requirement is a submerged inlet. A water faucet that can have a hose attached to it is a submerged inlet.

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Vacuum Breakers: Provide vacuum breakers on submerged inlets such as urinals, dish washing machine, garbage grinders and any threaded water outlets. **See Figure 7.** Atmospheric vacuum breakers must be installed at least 6 inches above the highest outlet and cannot have a valve installed down line

Figure 7. Vacuum Breaker with Submerged Inlet



Plumbing

Special Conditions: Provide approved double check valves with atmospheric vents, pressure vacuum breakers, or reduced pressure backflow preventers on water inlets where you cannot install an atmospheric vacuum breaker after the last shut-off valve or solenoid switch (i.e., pressure spray hoses).

Carbonators: An [ASSE 1022](#) or [ASSE 1032](#) approved device is the minimum level of protection required for carbonator systems. These devices are not testable, therefore if these devices are used as the only level of protection, a written maintenance policy must be in place that requires the annual replacement of these devices. It is highly recommended an approved testable reduced pressure backflow preventer be installed between the water supply line and the carbonator. Conduit and fittings between the backflow preventer and the carbonator should be flex line or stainless steel. Do not use copper or brass. These units should also meet all other Plumbing Code requirements. The department recommends the use of a stainless steel backflow preventer. Check your local building department requirements. They may have more stringent regulations. **See Figure 8.**

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G. Indirect Waste Connections

Provide indirect waste lines, with an air gap, for all warewashing sinks, dish wash machines, soda fountains, prep sinks, potato peelers, ice machines, steam tables, steam cookers, ice bins, salad bars, dipper wells, walk-in refrigerator or freezer condensate drain lines, and other similar fixtures.

See appendix B for instructions on how to plumb warewashing sinks when local jurisdictions restrict an indirect waste line.

A 1-inch minimum air gap is required, and the drain line must not exceed 10 feet from the fixture. **See Figure 9.**

Figure 8. RPZ on Carbonator Supply Line



Plumbing

Figure 9. Air Gap On Food Prep Sink



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All indirectly drained fixtures must discharge to receptors (floor sinks, etc.) that have a vented trap placed as close as possible to the fixture and in the same room. To avoid cross connections, each fixture will require a separate line. Install receptors in accessible and ventilated areas. Design and size drain lines & receptors to prevent overflows and splashing.

Food service equipment, sinks or buckets cannot receive the discharge of an indirect waste pipe.

H. Floor Drains

Number: A sufficient number of floor drains and/or floor sinks should be located throughout the establishment to facilitate cleaning. Floor drains are required in school restrooms, locker rooms, and shower areas.

Location: Floor drains/floor sinks are to be located in areas that require frequent water flushing to clean the floor or equipment. Floor drains must not be installed in walk-in refrigeration units except under the following condition:

Trough-type floor drains may be located in refrigerated processing rooms or high moisture storage areas, such as produce coolers or meat/poultry coolers, provided that the doors to the area or room have been undercut or are swing doors.

I. Water Softeners

Due to the presence of hard water in Maricopa County it is recommended that a quality water softener be installed to reduce problems typically associated with hard water such as lime scale, mineral buildup, etc. The water softeners will help in maintaining clean faucets, fixtures, drain lines, dishwashers, ice machines, and other similar equipment. An approved backflow preventer must be installed immediately upstream from the water softener.

VII. Sanitizing Equipment

A. Hot Water System

Minimum Size: A minimum 30-gallon capacity water heater, with a 100% recovery rate, is required. For establishments that use a three compartment warewashing sink, the minimum capacity is 50 gallons, with a 100% recovery rate. If mechanical dishwashing is utilized a minimum 75 gallon capacity water heater with at least 100% recovery rate is required and must meet the hot water demands of all the facilities' fixtures. Larger water heaters shall have at least 75%

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recovery. Tank less water heater units approved by this Department are acceptable on a case by case basis. Hot and cold water must be provided to all sink compartments. A single tempered water line (85°F-105°F) may be provided at hand washing sinks. An additional cold water line is not allowed at a handsink if tempered water is provided.

Note: Small tankless water heaters are not approved for use with mechanical dishwashers. Metered faucets shall not be installed with tankless water heaters.

Key: Recovery rate of the hot water unit is more important than actual capacity. In the absence of specific hot water usage figures for equipment, the following table may be used to provide an approximation. Hot water should be provided within 45 seconds to all sinks plumbed for hot water. **See Table 1.**

Table 1: Approximate Fixture Hot Water Usage

<u>Equipment Type</u>	<u>Gallons Per Hour</u>	
	<u>High*</u>	<u>Low*</u>
Vegetable Prep Sink	15	15
Three Compartment Sink	60	45
Pre-Rinse Spray Hose Sink	30	30
Commercial Dish wash Machine	Varies with Unit	
Bar Three Compartment Sink	20	
Chemical Sanitizing Glass Washer	60	
Hand Sink – Kitchen & Restroom	5	5
Bain Marie	10	10
Mop Sink	10	10
Garbage Can Wash Station	30	30
Clothes Washer	45	45
Employee Shower	20	20

*High – to be used when multi-use eating utensils are used.

*Low – to be used when single service eating utensils are used.

Note: A recirculation pump or point of use water heaters may be necessary to provide hot water within 45 seconds or if heater source is more than 60 feet away.

Sanitizing Equipment

Dish Wash Machine Demand: Facilities using a commercial dish wash machine must provide hot water (temperature and volume) to meet the maximum demand for the make and model of machine to be installed. A booster heater is required.

B. Manual Dish Washing

Design: Provide a three compartment, stainless steel sink with two integral drain boards where pots, pans or multi-use utensils are washed by hand. All three compartments should be drained indirectly to a floor sink with an air gap. **See appendix B for instructions on how to plumb warewashing sinks when local jurisdictions restrict an indirect waste line.**

Install this sink to minimize cross-contamination to, or from your mop sink, hand sink, or food/utensil related areas. Garbage grinders are not approved to be installed on 3 compartment sinks. **Garbage grinders shall be connected and trapped separately from any other fixtures or sink compartments.** Chemical dispensers with built-in backflow prevention or air gap supplied to 3 compartment sinks shall meet code. Chemical test strips shall be provided for appropriate chemical(s) in use. A three compartment sink is required in retail grocery stores that prepare/display cut produce and all food service facilities.

Size: Each compartment must be large enough to submerge the largest item to be washed by 50%. Each drain board must be equal to the area of the largest compartment. An approved drying rack or roller cart may be substituted for one drain board only. Manual dish washing water shall be maintained not less than 120°F.

Sanitizing Equipment

C. Mechanical Dish Washing

General Requirements

A minimum 75-gallon water heater with adequate recovery rate is required. All dish washing machines must comply with NSF standard 3.

A dish table of adequate size is needed to handle soiled utensils before washing. The soiled dish table must not drain into the washing compartment of the dish wash machine. Install a table scupper across the entire flat section of the table to prevent soiled water and debris from draining into the wash tank. Install a pre-rinse sink as needed, so those larger food particles can be rinsed off before entering the dish washing machine.

A dish table or drain board must be provided for clean dishware to drain and air dry. This installation must provide room for the temporary storage of utensils and racks immediately after being removed from dish machines. It must be at least the size of the soiled dish table.

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Easily readable, numerically scaled indicating thermometers are required. They must be accurate to $\pm 2^{\circ}\text{F}$ and show the water temperature in each tank of the machine, including the temperature of the final rinse water as it enters the manifold.

Mechanical exhaust ventilation is needed above high temperature sanitizing machines to remove steam and vapors effectively. Type II hoods are recommended over chemical sanitizing dish machines.

Additional drain boards, dish tables, or shelving for air drying utensils after being washed in a low-temperature machine will be needed.

Chemical Sanitizing Machines

A sanitizer alert system is required, which includes a visual or audible alarm, designed and approved for the specific machine installed, to notify the employee when the sanitizer supply has depleted. Chemical sanitizing machines shall meet current code requirements and meet manufacturer specifications. Chlorine sanitizers are approved for general dish wash use only. NSF approved glass washers for use at bars that use iodine are approved. Chemical sanitizing dish machines shall provide not less than 120°F wash solution. Chlorine sanitizer must be maintained between 50-100ppm and iodine at 12.5ppm.

Sanitizing Equipment

Hot Water Sanitizing Machines:

A booster heater is needed to supply at least 180°F water for the final rinse at the manifold and 140°F water temp at supply. The rinse demand of the machine will determine the heater capacity. Final 'plate' temperature must be at least 160°F .

A temperature gauge is required on the service line just before the booster heater.

Installation of the water heater and the booster heater should be as close as possible to the dish wash machine to avoid heat loss in the lines.

The water system should deliver hot water to the final rinse when the rinse valve opens. Machines designed for intermittent operation will require special equipment. When the length of the line from the booster to this type of machine exceeds 60 feet, the system should have a re-circulating pump.

A pressure regulator is needed on the final rinse line. The flow pressure needs to be 15 to 25 pounds per square inch.

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VIII. Lighting

A. Food Service Areas

Food preparation and utensil washing areas must be well lit. The light intensity shall be at least 20 foot candles (220 lux), measured 30 inches above the floor. This requirement also applies to surfaces where food is provided for consumer self-service, such as buffets and salad bars, and where fresh produce or packaged foods are sold or offered for consumption. Intermittent light is not acceptable. The inside of equipment, such as reach-in and under counter refrigerators, shall have a light intensity of 20 foot candles.

It is required that the light intensity be at least 50 foot candles (540 lux) at a surface where an employee is working with food, utensils or equipment such as grinders or saws where employee safety is a factor.

B. Walk-in Refrigerators and Freezers

The light intensity shall be at least 10 foot candles (110 lux) measured 30 inches above the floor. It is recommended that fluorescent lights with cold-tolerant ballasts and vapor-proof fixtures be installed. Install lights to avoid obstruction by food stored on shelves.

Tip: Corners/cove base shall be illuminated to meet sufficient lighting requirements.

Lighting

C. Storage, Ware washing and Restrooms

The light intensity shall be at least 10 foot candles (110 lux) measured 30 inches above the floor in storage rooms and 20 foot candles (220 lux) in the restrooms and ware washing areas.

D. Bars

Adequate shielded lighting must be provided under the bar counter, directly above bar sinks, jockey boxes, ice bins, and glass chillers. Dimmer switches, on general lighting, are acceptable as a suitable alternative for use in bar areas. Provide at least 20 foot candles of lighting for clean-up purposes.

E. Protective Light Shielding

Provide shielded light fixtures above all food preparation, service, display, food storage and utensil washing areas. This includes all refrigerators, food display cases, bar equipment, coffee, soda and condiment stations, and under vent hoods. Protective tubes/lenses, plastic sleeves with end caps, or coated

shatterproof bulbs may be used. Protect heat lamps against breakage with a shield surrounding and extending beyond the bulb, leaving only the face of the bulb exposed. Including all can lights & compact fluorescent lights.

IX. Laundry

A. Location

Laundry facilities in a food service establishment shall be restricted to the washing and drying of linens, clothes, uniforms and aprons necessary to the operation. Such operations may be conducted in separate storage rooms containing packaged foods or packaged single-service articles. This excludes food preparation areas. A separate room or enclosure is required for wash machines and dryers with a vented door grill. We recommend using an outside linen/uniform company. A wash machine can be used for wiping cloths without a dryer or separate room.

B. Clothes Dryer

If linens are laundered on the premises, an electric or gas dryer is required. Dryers must be vented to the outside.

C. Linen and Clothes Storage

Clean clothes and linens shall be stored in a clean place and protected from contamination until used. Soiled clothes and linens shall be stored in non-absorbent containers or washable laundry bags until removed for laundering.

X. Finishes

A. Walls

Provide a smooth, nonabsorbent, easily cleanable wall surface. Heavy textured skip trowel finish is not acceptable. Raw wood or unfinished studded walls are not permitted. Walls shall be constructed with material that leaves a smooth finish such as stainless steel, approved FRP (fiberglass reinforced panels), ceramic tile, painted dry wall (orange peel), etc. All splash areas must be finished smooth with durable and waterproof materials such as FRP or stainless steel. Painted dry wall in splash and moisture related areas, wet zone areas, such as 3-comp, dishwashers, prep sinks are not acceptable.

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Painted wall surfaces in all food service and ware washing, storage and restroom areas should be smooth. Use a quality semi-gloss or high gloss type paint. Dark colors are not recommended & require more light.

Wainscoting in all establishments must meet the same requirements as kitchen areas. Grout shall be smooth and finished flush with the surface of all tile.

Wall finishes behind cook lines and under vent hoods shall be of stainless steel or its equivalent. Wall surfaces from lower edge of kitchen exhaust hoods to the floor surface including the wall/ floor junctures shall be finished with coved metal, coved ceramic tile, or other similar durable, easily cleanable materials.

Construction masonry units (CMU), brick and other masonry units installed as a finish material shall be free of pits, voids, cracks, depressions, and shall be smooth and easily cleanable. Light colored Astra-glaze® masonry units are recommended.

FRP (Fiberglass Reinforced Panels) should be light in color and easily cleanable (Pebble surface or Smooth surface). Grooved and/or painted FRP panels are not approved.

Finish faced medium density fiberboard panels (MDF) are acceptable in non-moisture related areas **only**. However, the material is not recommended and not approved in moisture related areas due to durability concerns.

Apply a clean, smooth, raised bead of silicone caulk on all gaps or seams between immovable equipment and walls. Seal all gaps, seams, and cracks. Seal spaces around pipes or conduit at all wall penetrations.

Finishes

B. Floors

Floor finishes shall be commercial grade, durable, smooth, non-slip, nonabsorbent, grease-resistant, and easily cleanable. Smooth, bare concrete floors are approved & must have an appropriate concrete sealer applied (not just a water sealer). The use of poured monolithic floors may require specific approval for kitchen applications. Carpet is not allowed in any food prep, storage, service, refuse, restrooms or utensil washing areas. Carpeting material approved by this office is permitted in customer areas & prepackaged retail areas.

Concrete floors shall be finished smooth, sealed, and have all expansion joints, saw cuts, and cracks properly filled. Provide at least 3 feet of VCT or washable surface around perimeter of retail reach-in cooler units. Grout shall be smooth and finished flush with the surface of all tile.

Samples may need to be submitted for prior approval.

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C. Ceilings

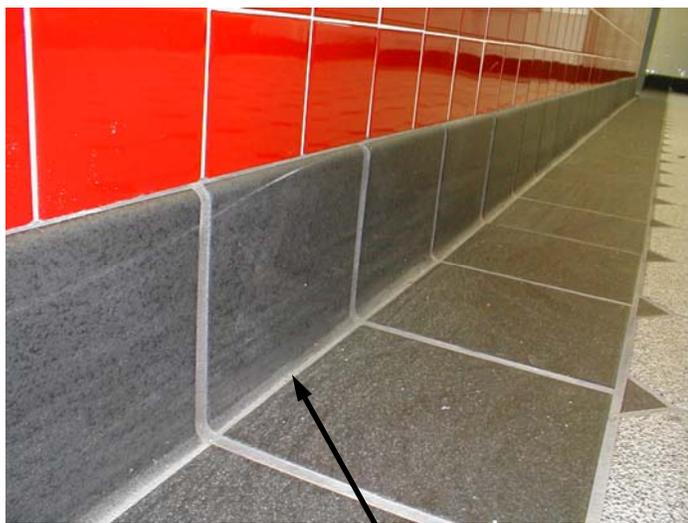
Provide smooth durable, non-absorbent, easily cleanable, and light-colored ceiling surfaces that can withstand frequent cleaning. Exposed joists, studs or other support structures will not be accepted. Acoustical fissured/perforated ceiling tiles are not permitted in restrooms, kitchens, mop sink area, or high moisture related areas. Vinyl faced tiles or a drywall hard lid are acceptable. Open structure in approved areas must be at least 10 ft high ceiling.

D. Coving

Provide a smooth, coved base (3/8 inch radius or greater) at the juncture of walls and floors. Cove bases are also required at the juncture of cabinets and floors. Examples of acceptable materials for cove base are 4-inch vinyl or rubber, ceramic or quarry tile, and stainless steel.

Ceramic tile used as coving shall not be installed on top of floor tiles at floor/wall junctures. The floor/wall juncture shall be a true flush cove base with at least a 3/8-inch radius or greater. **See Figure 10.**

Figure 10. Ceramic Tile Cove Base



Flush 3/8" radius

When applicable, "tool-in" colored siliconized grout caulk at floor/base junctures to create an acceptable cove base. A 1/4 inch cove base is acceptable in metal floored/pre-fab walk-in units.

Concrete curbs in a walk-in cooler/freezer shall be finished smooth, properly coved, beveled away from the wall at the top edge, and thoroughly sealed. Rubber/vinyl cove base is not permitted inside walk-in cooler/freezer units. Provide a metal cove base inside walk-in units. Monolithic flooring, tile, or metal cove base is required under hoods.

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E. Shelving, Woodwork, Millwork & Countertops

All wood shelving or millwork shall be sanded smooth, free of open gaps, cracks, joints and sealed or painted to a smooth, final finish. All wood edges shall be smooth and easily cleanable. Raw exposed wood is not permitted. Countertops shall be smooth and durable, solid surface type materials, easily cleanable, impervious to moisture, and free of cracks or crevices. Food contact surfaces should be stainless steel or ANSI/NSF approved cutting surfaces. Formica, Melamine, and other laminated counter top surfaces are not permitted in ice, soda tower, food preparation, storage, production, hand wash or ware washing areas. These materials are acceptable only at & P.O.S. stations!

F. Walk-in Refrigerator and Freezer Units

Walk-in refrigerator and freezer walls, ceilings, and floor/wall junctures shall be metal and properly coved. Flash, trim, or caulk spaces between walk-in refrigerators and adjacent walls. Spaces 30 inches or less in height between the top surfaces and the ceiling may require flashing or closing off in a clean, tight vermin proof manner. We recommend that all walk in coolers be flashed off to the ceiling.

We recommend the installation of screeds to create effective 3/8-inch radius cove on both the interior and exterior of the unit. Other approved methods include a grout radius as an integral part of the flooring material or corrosion-resistant metals.

Because of separation problems, vinyl cove base is not acceptable in walk-in units. Due to breakage and separation concerns, we do not recommend the installation of ceramic or quarry tile as coving in walk-in units. Galvanized metal will rust when installed as a finish in a walk-in cooler. It is not recommended. Stainless steel is the preferred material.

G. Dining Room

Generally dining room finishes are not regulated. However, we recommend that if carpeting is used as a floor covering, it should be of durable, closely woven, stain resistant material, properly installed, cleaned and maintained in good repair.

H. Bars, Beverage Stations, Salad Bars, and Buffets, Server & Wait Stations

Floors: The floor finishes must be of durable, waterproof, grease-resistant,

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cleanable materials extending sufficiently from the serving side(s) of the beverage stations, salad bars, and buffets.

Coving: A 3/8-inch base coving must be provided at the juncture of the floor and wall or cabinet base.

Walls: The walls in these areas shall be smooth, non-absorbent, and easily cleanable. Heavy skip trowel finishes are not allowed. The interior walls of radius wall sections (e.g. radiused bar counters) should be constructed straight to allow equipment to be sealed to the walls.

Ceilings: The same finish as the dining room may be used in these areas, except that splash and moisture related areas require the installation of smooth, non-absorbent, and easily cleanable materials.

I. Multiple Use Areas

Multiple use areas must meet the more stringent requirements imposed on that area. Clearly define the finishes in these areas for final approval by the Department.

J. Outdoor Areas

The outdoor walking and driving areas shall be surfaced with concrete, asphalt, or other materials that have been effectively treated to minimize dust, facilitate maintenance, and prevent muddy conditions.

K. Summary of Finishes and Additional Recommendations

Floors: Quarry or ceramic tile, poured epoxy, and sealed concrete is preferred flooring because of their durability. Commercial grade vinyl composite tile (VCT) is acceptable but not recommended due to deterioration over time. The use of diamond-plate steel or corrosion-resistant aluminum as flooring under beer kegs, or where durability is essential, should be considered.

Walls: Stainless steel, FRP, and ceramic tile meet the standard for durability and non-absorbency in splash areas. High-gloss or quality semi-gloss paints are appropriate in food preparation areas. High-gloss paints work well in most other areas. We recommend stainless steel corner guards in high-traffic areas. Skip trowel finishes are not recommended.

Ceilings: Install smooth, washable, vinyl faced tiles in suspended ceilings. Drywall painted with a high-gloss, semi-gloss (quality) washable finish is acceptable. Perforated, fissured, or other textured surfaces are not allowed in food service areas.

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XI. Insect and Rodent Control

All openings to the outside shall be effectively protected against the entrance of insects, dust and rodents. Effective barriers include:

1. Solid, tight fitting, self-closing doors.
2. Fixed or self-closing screens of #16 mesh or finer.
3. Approved air curtains. See air curtain section for specifications.

All roller door, nano door, or similar movable wall systems that are not self-closing and create a continuous opening must have an approved air curtain installed across the entire opening. This includes customer serve-out areas located in stadiums, ballparks, and snack bars/concession stands. This does not apply if a food establishment opens into a larger completely enclosed structure such as a coliseum, arena, warehouse, shopping mall, superstores, airport, or office building, where the outer openings from the larger structure are protected against the entry of insects and rodents. This requirement does not apply to a toilet room that is located outside a food establishment and does not open directly into the food establishment such as a toilet room that is provided by the management of a shopping mall. Restrooms are handled on a case by case basis.

A. Building

All masonry or cement foundations must be rodent proof. Seal all openings into the foundation and exterior walls, including openings & penetrations around wall and ceiling penetrations.

Cover all building vents with a minimum #16 mesh wire screen.

Effectively seal all air ducts, skylight, transoms and other openings to the outside.

B. Fly Protection Methods

Self-closing: Install serve-out windows with a self-closing device, such as a spring-loaded mechanism, bump pad, electronic opener, or gravity operated system.

Air Curtain: All air curtains must meet NSF standard 37. Install an air curtain so that a layer of fast moving air is produced vertically downward and directed to blow outward. The flow of air must run parallel and within 1 inch, inside or outside, across the entire width of the opening. Minimum air velocities are a 3 inch column of air at 1600 feet per minute measured at 3 feet above the floor for service entrances, and an 8 inch column of air at 600 feet per minute at customer entrances. All air curtains shall be controlled by door-activated micro-switches. No manual switches are allowed. **See Figure 11.**

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Figure 11. Air Curtain with micro-switch



Door activated
micro-switch

C. Delivery, Customer, and Restroom Doors

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Pest Control: All delivery doors must be self-closing and tight fitting. Air curtains are recommended over exterior doors located within 50 feet of garbage areas, grease containers, vacant land spaces or located in rural areas.

Garage Doors, Roller Doors, and Loading Docks: Garage and roller type delivery doors must be protected against pests. Loading docks shall have properly installed tight fitting dock seals at all loading bays.

Exterior doors: All outside doors shall be self-closing and tight fitting. Install a door sweep and weather stripping to prevent the entrance of insects and rodents. **Note: Daylight is not to be visible around the perimeter of the door.**

Restroom doors: All toilet rooms located in or adjacent to food related areas shall be provided with tight fitting, self-closing doors or air curtains approved by an inspector. This requirement does not apply to a toilet room that is located outside a food establishment and does not open directly into the food establishment such as a toilet room that is provided by the management of a shopping mall. Restrooms are handled on a case by case basis.

D. Windows

Windows that open to the outside, which include serve out windows, must be properly protected with #16 mesh wire screen, except drive-up windows and serve-out windows.

E. Lighting

It is recommended that outside lighting around loading areas and entrances be sodium vapor rather than mercury vapor to decrease insect attraction.

F. Insect Control Devices, Design and Installation

Insect control devices that are used to electrocute or stun flying insects shall be designed to retain the insect within the device.

These devices should not be located above food preparation areas. Units should be installed so as to prevent the contamination of exposed food, clean equipment, utensils, and linens, from insect fragments.

**Insect & Rodent
Control**

Garbage & Refuse

XII. Garbage and Refuse

A. Garbage Containers

Number: Each establishment is to secure their own garbage. Remember to provide sufficient garbage containers, sized to hold any garbage or refuse in a nuisance-free manner, until it is picked up.

Trash Compactors: The cleaning and proper disposal of the solid/liquid waste requirements may vary between municipalities.

B. Garbage Area

Outside Storage: Place outdoor refuse and grease containers and compactor systems on smooth non-absorbent surfaces such as concrete or machine-laid asphalt. Use a concrete or asphalt pad for storing grease containers. These areas should be as far as possible from the building's doors and windows.

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Pest control: When outside refuse containers and grease containers are within 50 feet of a food establishment's exterior delivery/service door, an air curtain, in addition to a self-closure device on doors, is recommended.

Enclosures: If you propose a garbage enclosure, construct it of durable, non-absorbent materials and a washable interior finish able to withstand frequent washing.

XIII. Heating, Ventilation, and Air Conditioning (HVAC)

A. Exhaust Plan Submittal

Submit complete HVAC plans, including restroom ventilation. Indicate the type of equipment located under the exhaust hood.

B. Exhaust Hood Requirements

General: Commercial cooking or display equipment, which produces smoke, steam, grease, mists, particulate matter, condensation, vapors, fumes, odors, or create sanitation or indoor air quality problems, will require a hood. Hoods shall be designed and installed to prevent grease and condensation from collecting on walls, ceilings, and dripping into food or onto food contact surfaces. Canopy hoods must have at least a 6-inch overlap, over all cooking surfaces, on all open sides. All hoods shall be flashed solid to the ceiling or adjacent walls with approved solid material. All hoods must comply with the 2006 IMC and all local building and fire safety codes. Exhaust and makeup air fans shall be interlocked so they operate simultaneously, while being operated by a single switch. These units shall also be interlocked with the hood fire suppression system so that upon activation of the fire suppression system, the make-up air unit shuts down but the exhaust fans continue to operate. It is recommended that the lights be interlocked with the exhaust and make-up air switches. Label all vent hood/light switches.

A high temperature sanitizing dish wash machine will require an overlapping canopy or pant leg hood with forced ventilation to the outside air. The hood system must effectively remove steam, heat, and moisture to the outside air.

All hood systems shall be inspected and tagged for approval by the local municipality prior to a final inspection by this Department. Final field approval must be obtained from this Department. A smoke test may be performed. All hoods shall be tested & air balanced.

Garbage & Refuse

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The installation of fire suppression system piping in the unfiltered air space of exhaust hoods should be limited to vertical runs as much as possible to minimize grease collection. Exposed piping must be cleanable. Fire suppression tanks must not be located over food storage or preparation areas.

Make-up Air. The amount of air to be exhausted must be in accordance with the 2006 IMC, where make-up air shall be balanced, tempered, and in the proximity of the exhaust system. The generally accepted minimum make-up air to replenish exhausted air shall be:

$$\text{Minimum CFM (Cubic feet of air per minute, volume of air)} = 80\% \times \text{Hood Exhaust CFM.}$$

Make up air intakes must be screened and filtered to prevent the entrance of dust, dirt, insects, and other contaminating material.

Type I or Type II hood requirements: Every type I or Type II hood shall be constructed of stainless steel, galvanized steel, copper or other material approved by the building official for the use intended and of minimum thickness as specified in the IMC. The interior of vent hoods are not allowed to be painted. We recommend not painting the exterior of the vent hood.

HVAC

Examples of equipment that require installation under a hood include: Kettles, pasta cookers, hot plates, salamanders, Mongolian style grills, gas cooking equipment, table side cooking equipment, such as Teppan Yaki style cooking, Tandoori ovens, rotisserie units, Panini grills,

Type I Hoods are required over equipment that produce grease, smoke, excessive steam, heat, and condensation, particulate matter, odors, or create indoor sanitation or indoor quality problems. **See Figure 12.**

Type II Hoods shall be installed over equipment that produce steam, heat, mists, condensation, fumes, vapors, and non grease laden foods. **See Figure 13.**

Figure 12. Type I Hood Over Cook Line



Figure 13. Type II Hood Over Dishwash Machine



Exceptions: A commercial exhaust hood is required for each cooking appliance with the following exceptions:

1. Approved completely enclosed convection type ovens
2. Steam tables
3. Auxiliary cooking equipment that does not create a sanitation or indoor air quality problem, for example: Toasters, coffee makers, electric rice cookers, soup wells, special event set ups, and temporary events. etc.

XIV. Outdoor Bars Areas, Outdoor Cooking, Outdoor Facilities, Catering, Temporary Food Service Establishments, and Seasonal Operations

A. General

All equipment, including but not limited to, windows, counters, shelves, vats, tables, refrigerators and sinks shall be kept clean and free from dust, dirt, insects, and all contamination. All food and drink shall be stored, displayed, and served so as to be protected from dust, insects, vermin, rodents, handling, droplet infection, overhead leakage, flooding, drainage, coughing, sneezing, inclement weather, and other contamination. Effective dust control measures shall be taken in the vicinity of all outdoor food operations. Adequate and convenient hand washing facilities and toilet facilities shall be provided.

B. Outdoor Bar Areas

Bars associated with food service establishments that have facilities with approved external barriers may be installed in areas that are exposed to the outside environment as long as the following criteria are met.

1. Handwash sinks must be installed at all bars
2. There is no food preparation at the bar. Drink service only. Condiment preparation (e.g. limes, etc.) must be done in the kitchen. Wait staff may deliver food directly to customers from the kitchen.
3. Warewashing sinks are not installed at the bar. Warewashing is limited to enclosed commercial glass wash machines.
4. All ice bins and condiment containers are installed with covers. Ice machines are not allowed outside unless they are [NAMA certified](#).
5. Blended and frozen drinks are only allowed if a warewashing machine is installed at the bar.
6. All glassware and utensils must be installed in the kitchen during non-operational hours.
7. All ice bins must be cleaned and sanitized prior to use each day, not at the end of the shift. It is recommended a hot water hose bib be installed above each ice bin to facilitate ice burn off.

C. Outdoor Cooking

The food code does not itself allow for outdoor cooking associated with a food establishment. Because of this, all food service establishments that want to have outdoor food service must submit plans for review and apply for a variance. Please see the current [outdoor cooking guideline](#), [plan review application](#), and [variance application](#).

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D. Outdoor facilities

Any non-specific place or operation applicable to any establishment, place, or operation shall meet the same regulations noted elsewhere in this construction guide.

E. Catering Facilities

Food Catering is a food establishment where a pre-arranged number of meals and/or food products are prepared at one permitted premise for immediate service and consumption at another pre-arranged off-site location for a temporary event or other occurrence.

All catering activities must be conducted from an approved and permitted food establishment/commissary.

Equipment used for the transport, storage, and service of food products shall be stored at the commissary constructed of approved materials and easily cleanable. A portable self-contained handwash station must be provided, which includes a water tank, waste tank, pump, water heater, soap dispenser, and towel dispenser.

All food products requiring temperature control shall be transported and stored in equipment whose intended use is for such activities and must maintain food at safe temperatures as defined by the health code.

Any vehicle carrying food and food products shall be constructed, equipped and maintained as to protect the purity and wholesomeness of the transported products and shall conform to the applicable general regulations found in the Maricopa County Health Code and this construction guide. Personal vehicles (passenger cars, sport-utility-vehicles, open bed trucks, station wagons, etc.) are prohibited for use with a food catering operation. Vehicles used in transporting catering equipment and food shall be of a closed type, dust, and fly proof. Examples include large enclosed trucks, delivery vans, modified mini-vans, etc. All shelves used in such vehicles shall be readily removable and easily cleanable. Enclosed trailers may be used in conjunction with personal vehicles as long as all food and transport/service equipment is stored inside the trailer.

F. Temporary Food Service Establishments

Refer to, the [Special Events Guideline](#) or contact the Special Events Program Coordinator at 602-506-6978.

G. Seasonal Operations

Seasonal operations, such as swimming pool concession stands and spring baseball league, shall meet the same requirements set forth in this construction guide. For further general requirements and inquiries contact the Special Events Program Coordinator.

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XV. Mobile Food Units, Commissaries, Vending Machines, Mobile Pet Groomers, Farmer's Markets and Swap Meets

Contact the Mobile Food Program Coordinator at 602-506-6865 or refer to the [Mobile Food Program website](#) for resources.

XVI. Public School Grounds, Pet Shops and Groomers

These operations shall meet regulations stipulated in Title 9, Chapter 8, Section 7 of the [Arizona State School Code](#) and Chapter XI of the [Maricopa County Health Code](#).

A. Public School Grounds

Fixture counts shall be based on the 2006 International Plumbing Code and the Arizona Administration Code.

Provide hot and cold water under pressure to all hand wash sinks and utility sinks. Tempered water (85°F to 105°F) may be supplied to handsinks. Hot water lines are not required to be provided at water bubbler/drinking fountains or rinse sinks inside of student classrooms.

Provide a large floor-mounted; wall hung or leg-supported utility sink with hot and cold water for mop use. It is recommended if a school has more than one level a mop sink be installed on each level.

Walls and ceilings should be, durable, smooth, non-absorbent and easily cleanable.

Floor surfaces in the toilet areas and shower rooms shall be commercial grade, smooth, nonabsorbent, easily cleanable, and slope to a floor drain, (cove base required).

Play yards and fields shall provide adequate drainage to prevent flooding and standing water.

Food service shall comply with Chapter VIII of the Maricopa County Health Code. Additional permits may be required for food service, (i.e. snack bars concession stands, service kitchen, book stores, cafeteria).

Mobile Food

Schools & Pet Shops

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The water supply shall be from an approved supply system. Drinking water shall be dispensed by means of an angle jet sanitary fountain, sanitary cooler or a system approved by the department. The use of a vertical bubbler type fountains is prohibited. School grounds shall comply with current codes and [safe water & ice handling policies](#).

B. Pet Shops and Groomers

Provide a smooth, nonabsorbent, easily cleanable surface for the walls and ceilings of the grooming, pet holding, toilet rooms and mop basin area (skip trowel finish is not recommended). Walls around bathing areas shall be smooth, **waterproof**, and easily cleanable, to the level of splash. Use ceramic tiles, FRP, plastic board, or similar material.

Floor surfaces in the bathing, grooming, pet holding, and toilet areas shall be smooth, non-slip, nonabsorbent, and easily cleanable. In areas where birds are on perches, floors shall be of impervious construction. No carpeting shall be allowed within 18 inches of the outer end of the perch.

Keep all plumbing and conduit at least 6 inches above the floor level. All back flow prevention devices must be visible for inspection and not hidden in walls or other equipment. Provide a removable hair strainer in the grooming tub basin drain line.

Provide adequate lighting. Minimum lighting requirements are 20-foot candles (220 lux) in all bathing, grooming, and toilet areas. At least 10 foot-candles (110 lux) shall be provide in all other areas.

Provide adequate ventilation to the outside air for toilet rooms, bathing and grooming areas, and any areas where animals and birds are kept. ***Bird and reptile areas should be ventilated on an isolated circuit to the outside.***

All animal cages and grooming tables must be of approved materials, which may be readily cleaned and disinfected.

Birds shall be housed at least 12 inches above the floor.

No portion of a pet shop or pet groomer, in which animals or birds are kept, caged, or boarded, shall be used for human habitation.

RECOMMENDATION: Provide a separate utility/mop sink from the bathing sink.

Schools & Pet Shops

XVII. Bottled Water, Beverage Plants, Ice Manufacturing, and Water Outlet Stores

Every bottled water and water dispensing establishment, in which the process of placing water from an approved source into a sealed or unsealed container, shall be operated and maintained in a clean and sanitary condition in compliance with the Chapter VIII, Section 7 of [Maricopa County Health Code](#) and federal regulations, [21 CFR Chapter 1, subpart 129](#). This also includes beverage and ice establishments. Establishments selling more than water and ice will require additional permits to operate.

In addition to all general requirements, water bottling facilities must meet the following requirements.

The bottling room shall be separate from other plant operations or storage areas by tight walls, ceilings, and self-closing doors to protect from contamination. Conveyor openings shall not exceed the size required to permit passage of containers.

The washing and sanitizing of containers for bottled drinking water shall be performed in an enclosed room. The washing and sanitizing operation shall be positioned within the room so as to minimize any possible post-sanitizing contamination of the containers before they enter the bottling room.

Filling, capping, and closing of containers shall be done with a "hands free" process, using approved equipment and methods.

Bottled Water

**Public
Accommodations**

XVIII. Public/Residence Accommodations

These establishments include any place such as a hotel, motel, motor hotel, tourist court, tourist camp, rooming house, boarding house, inn, and similar facility consisting of (2) or more dwelling units where sleeping accommodations are available. This includes any bed and breakfast, transient establishment, suite, cottage, bedroom or other unit established, maintained, held out or offered for occupancy. However, this does not include apartments and similar facilities if occupancy is on a permanent basis.

Bed and Breakfast or public/resident accommodations with less than 6 rooms **do not** require an eating & drinking permit if breakfast is the only meal offered and the consumer is informed by a written disclosure that the kitchen is not regulated or inspected by the local health authority.

Establishments with pools, spas, or food service facilities, including continental breakfasts, will require additional permits. The public or residence

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accommodation shall comply with the Chapter X regulations of the [Maricopa County Environmental Health Code](#) and the same requirements noted elsewhere in this construction guide and the following stipulations.

Rooms or dwelling units shall not be less than 100 square feet in floor area exclusive of bathrooms, closets, kitchens, and similar ancillary facilities. The walls and ceilings of all bedrooms and living rooms shall be of a finish that will permit easy cleaning.

Windows capable of being opened shall be effectively screened, with a minimum #16 mesh.

All units shall be adequately heated, cooled, lighted, and ventilated, including toilet rooms. Heaters and stoves, which use carbonaceous or gas fuels, shall be properly ventilated with continuous gas-tight vents discharging all gaseous products of combustion directly to the outside air.

An adequate and safe water supply shall be provided from an approved source. Ice shall be properly protected and dispensed. All ice machines located in an open air environment must be [NAMA certified](#). All other ice machines must be located in an enclosed room protected from the environmental using approved methods described in this construction guide.

If private or connecting toilet rooms are not available for each dwelling unit, separate and plainly marked central toilets for each sex shall be provided and located within 200 feet of such units. Central toilets shall provide no less than one toilet, one hand sink, and one tub or shower, for each sex, for every 10 dwelling units. At least one urinal shall be provided in each central toilet room designated for men.

Any dishwasher used by employees, for the washing of patron's glasses, must be commercial type and NSF approved. **Home-style dishwashers are not allowed to wash any dishware.**

If there are rooms that include kitchenettes with multi-use dishware, the dishware should be cleaned and sanitized at a central location using approved commercial equipment and procedures as defined by the Code. If residential dish machines in the units are used by employees to clean dishware between residents, a written disclaimer must be placed in the room stating that the cleaning and sanitizing of all kitchen dishware is not regulated or inspected by the health department and that customers are advised to clean and sanitize the dishware using proper methods.

Clean linen shall be provided to each new guest and shall be changed at least once each week when occupancy exceeds this period.

**Public
Accommodations**

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XIX. Service Kitchens, Food Banks, Continental Breakfasts and Animals in Food Establishments

These establishments shall be operated and maintained in compliance with the appropriate provisions of the Maricopa County Environmental Health Code and meet the same regulations noted elsewhere in this construction guide. Detailed plans are required for service kitchens, food banks and continental breakfast kitchens. Prepackaged non-potentially hazardous foods displayed in an area of less than 10 lineal feet is exempt from permitting.

A. Service Kitchens

Refers to a food service establishment that operates in conjunction with a central kitchen licensed by this Department.

Service kitchens are limited to the service of pre-prepared food. All food requiring extensive preparation, cooking, and cooling, etc., shall be produced in the central kitchen.

All potentially hazardous food must be maintained at proper temperature and protected from contamination during transportation, storage, and service. An approved thermometer shall be provided and used to assure the attainment and maintenance of proper holding temperatures of all potentially hazardous food. Reheating equipment is recommended at central kitchens to reheat food if it is not delivered at proper temperatures and the duration of delivery is still within an acceptable timeframe.

Service kitchens shall be restricted to the onsite use of utensils only. Where utensils are limited in type to tongs, scoops, and similar articles, an NSF approved single compartment sink will be required. Handsinks are required to be installed in all holding and service areas and must meet accessibility criteria described in this construction guide.

B. Food Banks

Shall be assessed as a “Food Jobber”. The establishment may distribute food items that have been acquired through purchase or donation. All food items must be wholesome, unadulterated, unspoiled and not deteriorating.

C. Continental Breakfast

Continental breakfast kitchens shall meet retail food or eating and drinking establishment requirements.

Service Kitchens

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E. Animals In Food Establishments

Guide Animals: The Maricopa County Environmental Health Code Chapter VIII, Section 1, Regulation 9, states, "Live animals or birds are prohibited in any area of a food establishment where food is stored, processed, offered for sale or served"; except that guide animals may be allowed in the sales or serving area according to [ADA regulations](#).

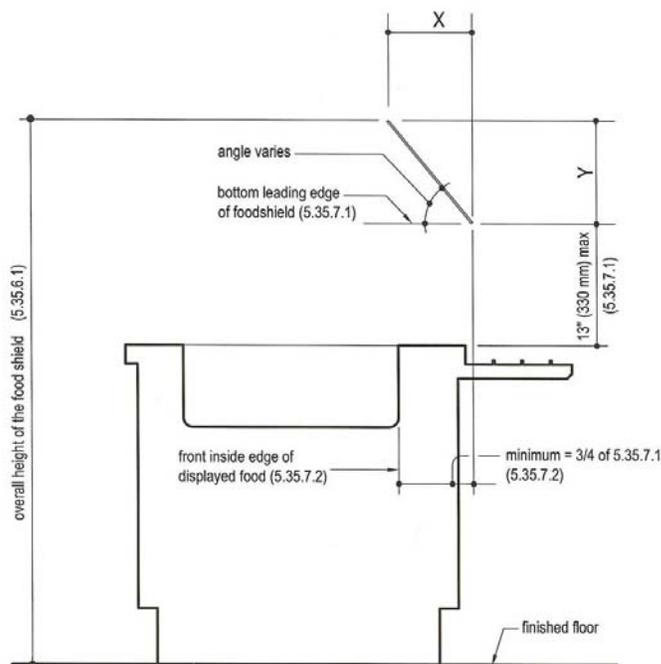
Animals

Appendix A—Sneeze Guard/Food Shield Criteria

Type 1. Self service food shields

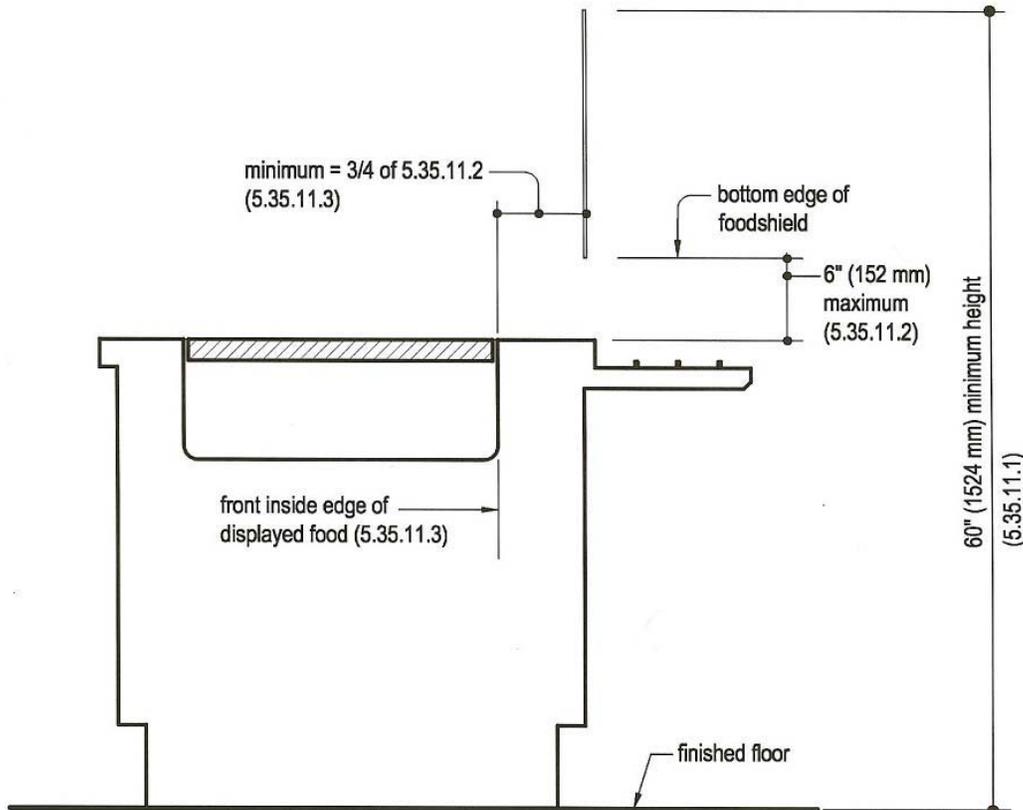
1. The maximum vertical distance between a counter top and the bottom leading edge of a food shield shall be 13 in (330 mm).
2. The minimum horizontal distance between the front inside edge of displayed food and the bottom leading edge of a food shield shall be three-quarters of the maximum vertical distance (0.75 x maximum vertical distance) of item 1.
3. The sum of a food shield's protected horizontal plane (X) and its protected vertical plane (Y) shall be greater than or equal to 20 in (508 mm). Either X or Y may equal 0 in (0 mm).
4. Food shields shall be designed and manufactured to minimize obstruction of a customer's view of the food.
5. The maximum horizontal distance between vertical, horizontal and angled panels at post and framing member locations shall be 2 in (51 mm).

Compliance Criteria: $X + Y \geq 20"$;
either X or Y may = 0



Type 2. Food shields for use on cooking and/or carving station operations

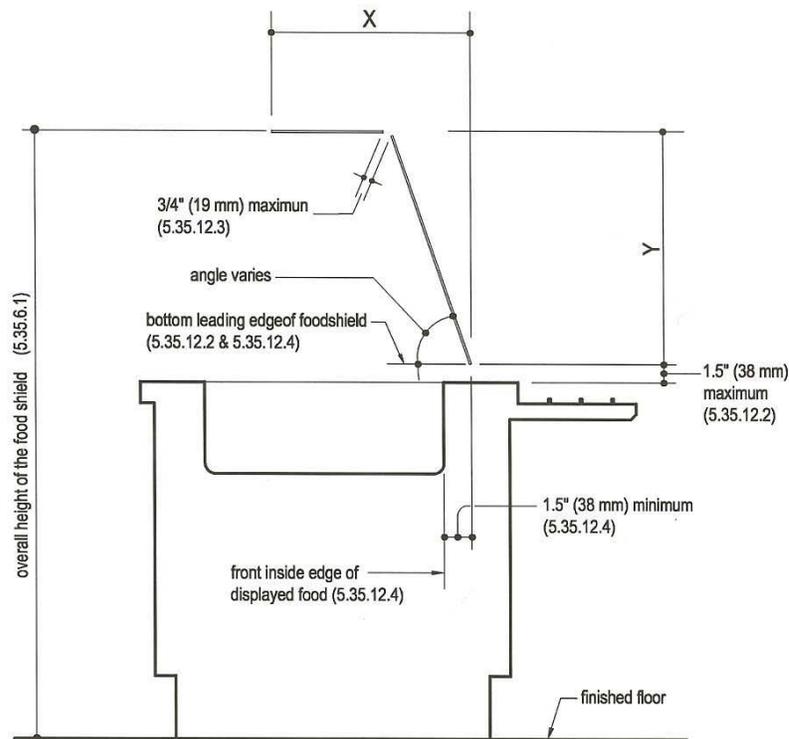
1. Food shields for use on cooking and/or carving stations shall include a vertical barrier to a minimum height of 60 in (1524 mm) above the finished floor.
2. The maximum vertical distance from the bottom edge of the food shield and counter top shall be 6 in (152 mm).
3. The minimum horizontal distance between the front inside edge of displayed food and the front (customer side) face of the food shield shall be three-quarters of the vertical distance (0.75 x vertical distance) of item 2.



Type 3. Food shields for use on cafeteria counters

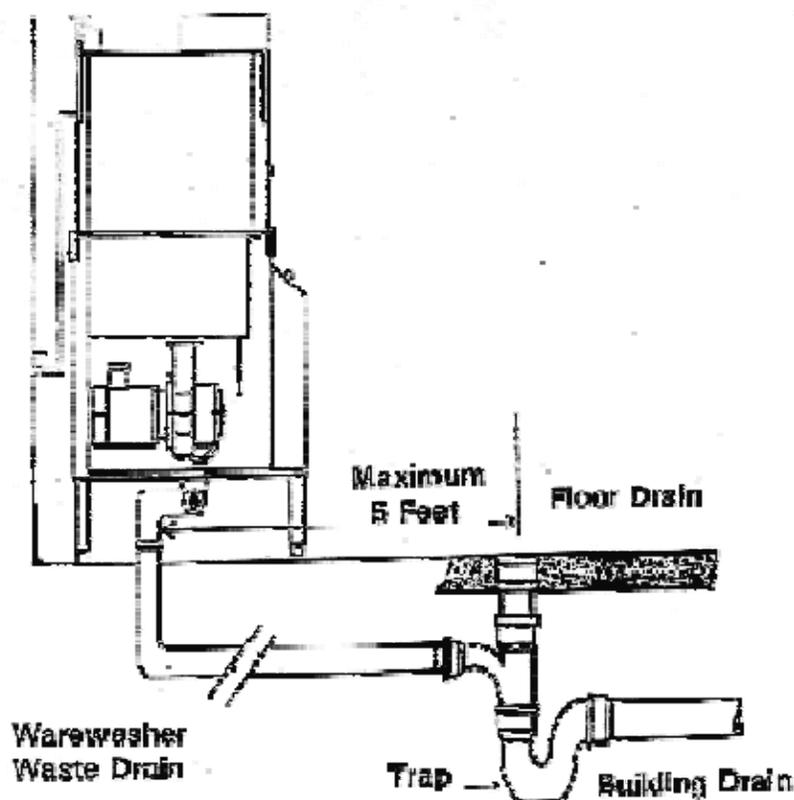
1. The sum of a food shield's protected horizontal plane (X) and its protected vertical plane (Y) shall be greater than or equal to 32 in (813 mm). When (X) equals 0 in (0 mm), (Y) shall be a minimum of 60 in (1524 mm).
2. The maximum distance from the bottom edge of the front (vertical) glass and counter top shall be 1.5 in (38 mm).
3. The maximum distance between the vertical glass and horizontal glass is 0.75 in (19 mm)
4. The minimum horizontal distance between the front inside edge of displayed food and the bottom leading edge of a food shield is 1.5 in (38 mm).

Compliance Criteria: $X + Y \geq 32''$ (813mm) when $X = 0''$;
the overall height of the food shield shall be at least
60'' (1524mm)



Appendix B— Conditional Direct Connection Warewashing Equipment Plan

The following diagram demonstrates the acceptable plumbing schematic for warewashing equipment drainage connections if a local jurisdiction prevents the installation of an indirect waste line. This schematic applies to both dish machines and warewashing (three compartment) sinks.



Warewashing Machine With a Direct Waste Connection