

GUIDELINES

NEW AND REMODELED FOODSERVICE ESTABLISHMENTS

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The following comments are minimum basic considerations for new and remodeled, foodservice facilities. Other standards may apply. Any construction involving the use of a well or private sewage disposal system must be approved separately by the soil/water specialists of this office.

WATER SUPPLY (.0465)

When a private water supply is used, the well must meet current Well Construction Standards, Public Water Supply Standards, and Division of Environmental Health Standards. Water samples must be taken and results deemed acceptable before a permit to operate can be issued.

SEWAGE DISPOSAL

All wastes defined as sewage must be disposed of in a municipal sewerage system or in an on site sewage collection, treatment and disposal system meeting the rules governing such systems, 15A NCAC 18A .1900.

KITCHEN LAYOUT

- A. The kitchen design should be such that delivery of goods to the kitchen and the return of soiled utensils from the dining room do not interfere with food preparation operations. The location of storage areas near delivery entrances and the location of dishwashing facilities near the doorways returning to the kitchen from dining areas should be considered. Where possible, dishwashing areas should be located separate from food preparation areas.
- B. Work aisles should be a minimum width of 36 inches. High traffic aisles should be a minimum of 48 inches.

EQUIPMENT (GENERAL)

Every item of foodservice equipment must meet or equal the applicable National Sanitation Foundation (NSF) standards concerning the construction of the equipment. Used equipment is acceptable provided it is in good condition and has not been modified in some way. In order to evaluate the current condition of any used equipment, it is expected that the responsible party will provide an accurate description of each item, including the make and model number, manufacturer, and overall condition. Any used equipment that cannot be confirmed as meeting sanitation standards will not be accepted and the responsible party will be notified of this decision. It will then be up to the responsible party to provide an acceptable replacement. Food contact surfaces such as salad bar tops, work tables, cutting boards or similar equipment must be constructed so as to be smooth, easily cleanable and corrosion resistant. Only non-toxic materials are acceptable such as stainless steel, phenolic resin or marble. Only wood, such as "rock" maples, meeting the NSF standard, are acceptable for chopping boards or bakers tables.

EQUIPMENT INSTALLATION (GENERAL)

All food service equipment shall be installed in accordance with the standards and procedures as set forth by NSF. These procedures are illustrated in the INSTALLATION MANUAL FOR FOOD SERVICE EQUIPMENT developed and published by NSF. Food service equipment located in areas that are not easily accessible for cleaning should be mounted on casters to make the equipment removable to promote proper cleaning, or at least 6" off of the floor on legs to allow cleaning under the equipment. It is recommended that all utensil washing sinks and food preparation sinks be mounted a minimum of 3" away from adjacent walls to avoid any dark enclosed areas which might encourage the harborage of vermin. If sinks are mounted directly to the wall and food service equipment is mounted directly on the floor or on a pedestal, without legs or casters, such sinks and equipment upon installation must be properly sealed. The sealant material must be applied to the entire perimeter of the equipment so as to provide a water-tight and vermin tight seal. The sealing compounds used must also be approved for use in a food service facility. Compounds should be sufficiently pliable for ease of application yet be adequately firm, after installation, so as to not be gummy or sticky. Sealing compounds should be non-shrinking and should retain reasonable elasticity after installation to minimize the damage caused by movement of equipment.

REFRIGERATION

Adequate refrigeration (refrigerators and freezers) is required to support the proposed menu and operations. Sizing is based on the proposed menu, seating, number of meals served, and on other considerations such as catering needs. A rule of thumb guide toward proper sizing is to provide a minimum of 1 1/2 cubic feet of refrigerated storage space and 3/4 cubic feet of freezer space per seat per meal (such as breakfast, lunch or dinner) served. Walk-in coolers used primarily for the storage of iced poultry, hanging meat carcasses or iced seafood must drain to an exterior floor drain just outside the cooler door. Special drainage tables are often required in such a situation. Condenser drainage must be through indirect waste connections. Refrigerator shelving must be an approved metal type, such as stainless steel or coated wire shelving.

PLUMBING

The North Carolina State Building code requires, "Establishments engaged in the storage, preparation, selling, serving, processing, or other handling of food shall have the waste piping from all refrigerators, ice boxes, rinse sinks, cooling or refrigerating coils, laundry washers, extractors, steam tables, egg boilers, coffee urns or similar equipment discharge indirectly into a water supplied sink or receptor. The waste outlet shall terminate at least 2" above the flood rim of such sink or receptor. Indirect waste piping shall be so installed as to permit ready access for flushing and cleaning. Every indirect waste receptor shall be equipped with a basket or other device which shall prevent passage into the drainage system of solids 1/2" or larger in size. The basket or device shall be removable for cleaning purposes. All plumbing receptors receiving the discharge of indirect waste pipes shall be of such shape and capacity as to prevent splashing or flooding. It is recommended that all floor sink receptor drains should be located to the front or sides of the equipment so as to permit the drains to be inspected and cleaned as necessary.

Hub drains are approved for use to receive the discharge of liquid waste only. If there is a slight possibility that food or liquid containing food particles will be discharged from any equipment, that equipment must be serviced by a floor sink receptor.

ELECTRICAL

Installation shall be within a wall, below floors, or above the ceiling, and in accordance with appropriate codes, to each service connection, so as not to interfere with cleaning; all openings must be sealed smoothly and be easily cleanable. All work must comply with current North Carolina Building Code Standards.

VENTILATION

Kitchen ventilation must comply with the North Carolina Building Code Requirements. Duct work must not be exposed below finished ceilings or beyond finished walls to allow for easily cleanable kitchens. Hoods must be sealed to kitchen ceilings and walls to eliminate uncleanable spaces between hoods and ceilings and walls. The local Building Inspector and/or Fire Marshal must inspect and approve the ventilation/fire protection system. Adequate ventilation should also be provided in all toilets, showers, storage rooms, laundry rooms, janitors closets, dry food storage rooms and any rooms where proper ventilation will help deter the growth of mold and other bacteria that could have an adverse effect on the sanitation or cleanability of a room.

LIGHT (.0472).

Adequate lighting is needed over all work areas so that employees will not have to work in their own shadow (areas such as work tables, sinks, grills). Bulbs must be shielded in food preparation, storage and display area. At least 50 foot candles of illumination must be provided in work areas, and 10 foot candles of illumination in storage areas, or walk in refrigeration units.

TOILETS

Toilet facilities that are adequate for each sex, conveniently located, readily accessible, and under the control of the management are required for restaurants. Toilets must be located so that patrons do not pass through kitchen or storage areas to reach them. Of course, these facilities must also comply with building code requirements. Foodstands require an employee restroom only.

ROOM FINISHES

General - Floors, walls, and ceilings in all areas where food is prepared, handled, or stored must be finished in a smooth, easily cleanable, non-absorbent and durable fashion. Areas subject to moisture or water discharge onto floors must be provided with floor drains. Acceptable finishes include, but are not limited to:

Floors: Terrazzo, masonry tile, commercial grade vinyl composition tile, epoxy flooring, or commercial grade sheet goods, constructed so as to be easily cleanable, and shall be free of obstacles to cleaning.

Walls: Fiberglass reinforced polyester (FRP) panels; painted drywall, ceramic tile, epoxy, gloss latex, or enamel paint may be used to provide a smooth, easily cleanable, durable and nonabsorbent surface. Please note, when paint is applied to concrete masonry block, walls must be properly prepared to an adequate level of smoothness with block filler or plaster before painting. Contractors are encouraged to check with and get approval from the health department prior to the application of any epoxy paint. Extra coats of block filler may be required to achieve a smooth, easily cleanable and nonabsorbent finish in areas where sanitization is of the utmost importance. Coved baseboards are required for the wall/floor joints.

Ceilings: Painted drywall, vinyl coated drop ceiling panels, etc. are acceptable in the foodservice areas, if nonabsorbent.

A detailed finish schedule for floors, walls, and ceilings is required for the plan review.

COUNTER AND BAR CONSTRUCTION

Custom fabrication of waitress stations, bars, service counters and similar facilities may be stainless steel or tight plywood construction with plastic laminate meeting the NSF standards for food contact surfaces on the tops, sides and front, or must otherwise be smooth, easily cleanable, sealed and painted with an approved paint. In the case of bars, the back or "equipment side" of the bar must be finished equal to kitchen wall finishes. Cabinets must be tightly constructed and completely finished inside and outside.

CAN WASH

Adequate facilities shall be provided for the washing and storage of all garbage cans and mops. These facilities can be incorporated into a janitor's closet. The cleaning facilities shall include a combination faucet, hot and cold water, threaded nozzle, and a curbed impervious pad, a minimum size of 36" x 36" x 4", with walls finished to be easily cleanable and nonabsorbent to a height of 48". Provisions should also be made to store mops by the handles to drain into the can wash. A shelf may also be provided to store cleaning supplies and/or chemicals therein.

When a dumpster is planned, provisions must be provided for the washing of the dumpster. A concrete dumpster pad of adequate size and facilities for cleaning the dumpster should be provided or an approved construction service that has the facilities for cleaning the dumpster may be accepted. A concrete pad is also required for grease receptor/recycling containers.

HANDWASHING FACILITIES

A wall hung handwashing lavatory must be conveniently located to each foodhandling, dishwashing or bar area in addition to any lavatories provided in toilets. Employee handwash lavatory faucets should have wrist blade levers or a wand type lever. Stainless steel or ceramic units are acceptable. Soap and towel dispensers must be provided. In addition, approved hand sanitizing dips, soaps, or lotions are required for persons directly handling food products. A "self-service" handsink is required in food stands which allow patrons to prepare their own food, such as at hot dog bars in convenience stores. For handwash lavatories located within 18 inches of food preparation or ware washing surfaces, a separating splash panel is needed between the lavatory and food preparation areas to prevent contamination of clean work surfaces.

UTENSIL WASHING

An approved cove cornered, three compartment sink with drainboards on both ends is required for the needed wash, rinse and sanitize steps. Standard sink vats are 18" x 21" and 14" deep. Drainboards must be an integral part of the sink, and should be 24" long or longer when necessary for large pot and pan wash operations. Larger vats may be necessary, depending upon size of utensils and type of operation. A recommended alternative to long drainboards in many cases is hot water sanitizing rather than cold water chemical sanitizing. Square cornered sinks and sinks with detachable drainboards will not be approved.

MANUAL DISHWASHING

Manual dishwashing requires a three compartment sink as described under utensil washing with the same specifications. Separate facilities may be required as necessary, based on each operation. Each compartment must be sized large enough to totally submerge the largest utensil used, with adequate drainboard space for both soiled and clean utensils.

MECHANICAL DISHWASHING

Dishmachines are usually needed for high volume dish washing needs. Adequate pre-wash facilities are required including space for landing soiled dishes that is provided with a scraping sink. Clean drainboard spaces must be provided for air drying of clean dishes. Approximately 48" of space for at least 3 racks of dishes is required for small, low production dishmachines. Dishmachines equipped with booster heaters will require 140 degree Fahrenheit hot water to the booster for proper operation. A hot water recirculation system may be required when the water heater is located over 15' from the dishmachine. Dishmachines require indirect drainage as noted earlier.

BAR SINKS

At bars where glasses are washed, at least a three compartment bar sink (vat sizes are 12" x 12" and 8" deep with 18" drainboards on each end) is required. In addition, a dump sink should be provided for emptying glasses prior to washing. These requirements are in addition to the bar hand washing lavatory.

FOOD PREPARATION SINKS

Food preparation sinks are required when fresh produce, chicken, fish, meat or other foods are rinsed and prepared on site. The construction standards for these sinks must meet National Sanitation Foundation standards. The minimum requirement for this type sink is one compartment with at least one 18" drainboard. A food preparation sink must drain to sewer through an indirect drain with an adequate airgap. Floordrains/floorsinks must be located conveniently to all equipment requiring indirect drains.

STORAGE

Adequate space for dry storage must be provided. A suggested area can be estimated by multiplying 1 1/2 cubic feet x number of seats times number of meals will equal the minimum cubic footage of bulk storage space. NSF listed or equal wire construction shelving is needed for kitchen storage. All shelving must be mounted at least 15" off the floor. Separate storage spaces for chemicals and personnel items must be provided. Dunnage racks may be required for the storage of heavy or bulky items. Wood shelving is acceptable in dry stock storage areas if the shelves are properly constructed, sealed, and painted to make a smooth, easily cleanable, nonabsorbent, durable surface. NSF approved wire shelving is required in all other areas such as food preparation, dishwashing areas, refrigerators, and freezers.

HOT WATER

Water heater volume and recovery capacities will be sized based on equipment demands. Specifications for the water heater proposed and for any dishwashers proposed must be submitted with the plans for review and sizing.

SNEEZE GUARD

Sneeze guards are required at all cafeteria style or self serve counters. The units must be installed in accordance with NSF standards for counter guards so as to intercept the line between the customer's mouth and the displayed food.

AIR CURTAINS (FLY FANS)

Air curtains are recommended for all doors used during delivery periods. These curtains should be mounted outside and above the door as needed.

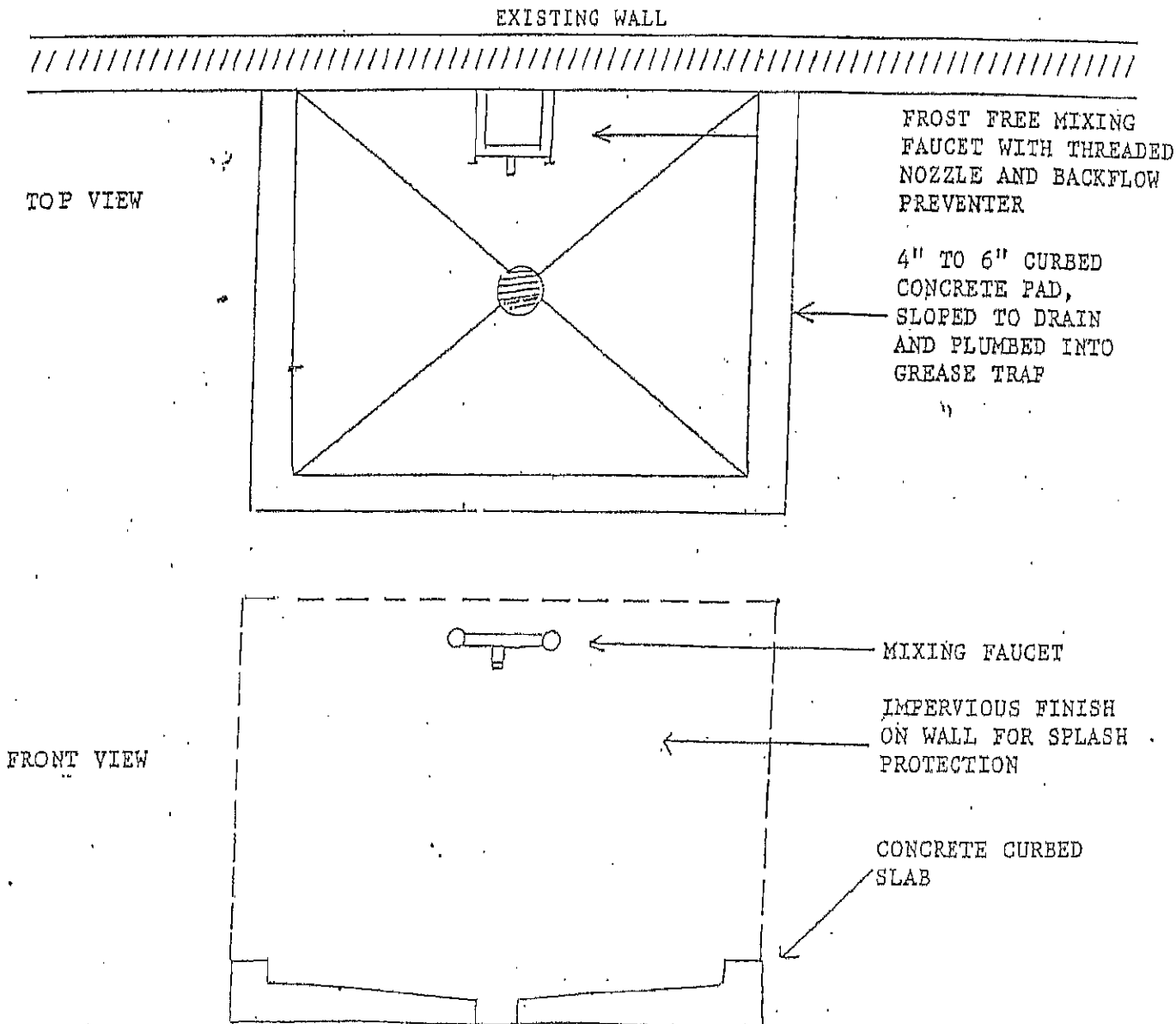
PROCEDURES MANUAL

It may be necessary for you to provide a procedure manual that explains the preparation procedures for the foods sold in your establishment, depending upon menu items proposed.

CAN WASH FACILITY

Below is an acceptable facility for a Can Wash. This is a minimum design; larger facilities may be necessary, depending upon the size of containers and type of operation. Hot and cold water are required, supplied through a mixing faucet, with an adequate backflow prevention device. The curbing should be adequate to contain the wash water during use. The drain should be plumbed into the grease trap. It is suggested that outside facilities be covered overhead to prevent rain water out of the sewer system. Indoor facilities must provide a rack for hanging mops or brooms to allow them to drain into the can wash.

The wall behind the facility shall be constructed of impervious material and adequately protected from splash.



HOT WATER SIZING CHART

Adequate quantities of hot water must be supplied to kitchen appliances; 140 degrees Fahrenheit if hot water is used for the sanitizing process, and 130 degrees Fahrenheit if chemical sanitizers are used. Facilities for heating of water shall be based upon number and size of sinks, capacity of dishwashing machines, and other food service and cleaning needs.

APPLIANCE	GALLONS OF 140 DEGREE FAHRENHEIT WATER/HOUR
1 COMPARTMENT SINK	17
2 COMPARTMENT SINK	34
3 COMPARTMENT SINK	52
LAVATORY	4
JANITOR CLOSET	10
CAN WASH	10
WASHING MACHINE	18
BATH	20
DISHWASHING MACHINE	# GALS. FOR RINSE CYCLE/HR.
PREWASH	45

Average groundwater temperature is 50 degrees Fahrenheit. Size hot water heater for a 90 degree rise.

Add total requirements of water/hour based upon number of fixtures (see above chart). Add 10% for cleaning. Multiply this by 70%, which is the normal working capacity of the heater. This is the recovery rate needed for the hot water heater based on demand.

1 Kw in 90 degrees Fahrenheit rise in temperature = 4.6 gal. water/hour. Divide recovery rate by 4.6 to get total Kw required for heater.

NOTE: The above guidelines are a minimum standard; manufacturer's specifications may require greater requirements, based upon type of equipment and/or use.

EXAMPLE

Food stand with single service utensils and employee restroom:

2 compartment sink	34 gals./hr.
1 can wash	10 gals./hr.
1 lavatory	<u>8 gals./hr.</u>
Total hot water demand	52 gals./hr.
	+ 5.2
	57.2 gals./hr. needed

$57.2 \times 70\%$ (working capacity of heater) + 40.04 (recovery rate of heater)

1 Kw in a 90 degrees Fahrenheit rise = 4.6 gals./water/hr.

Divide 57.2 by 4.6 = 12.44 Kw required.

CAULKING/SEALING

Purpose:

Proper sealing of equipment, fixtures, crevices, and areas between closely adjoining items is necessary to eliminate vermin harborage areas, to prevent corrosion of equipment due to the entrance of moisture, and to facilitate cleaning throughout the facility.

Methods:

Equipment designed to be attached to a floor, wall and/or ceiling (such as water supplied equipment backsplashes, hood enclosure systems, floor mounted equipment, etc.) must be installed in such a manner that crevices or gaps in excess of 1/32" are not created where the equipment and structural materials meet. Any small crevices which result must be sealed effectively with an approved caulking compound to provide a smooth, sanitary installation.

Caulking is also required to seal areas around utility connections, counters, floor to wall cove junctures and must be used to close holes or cracks in wall areas.

Water supplied equipment backsplashes that do not effectively adjoin the wall (by 1/32") shall be installed a minimum of 3 inches from the rear wall.

Floor mounted equipment that does not effectively adjoin the floor area shall be mounted on sanitary legs that provide a minimum vertical clearance of 6" between the bottom of the equipment and the floor.

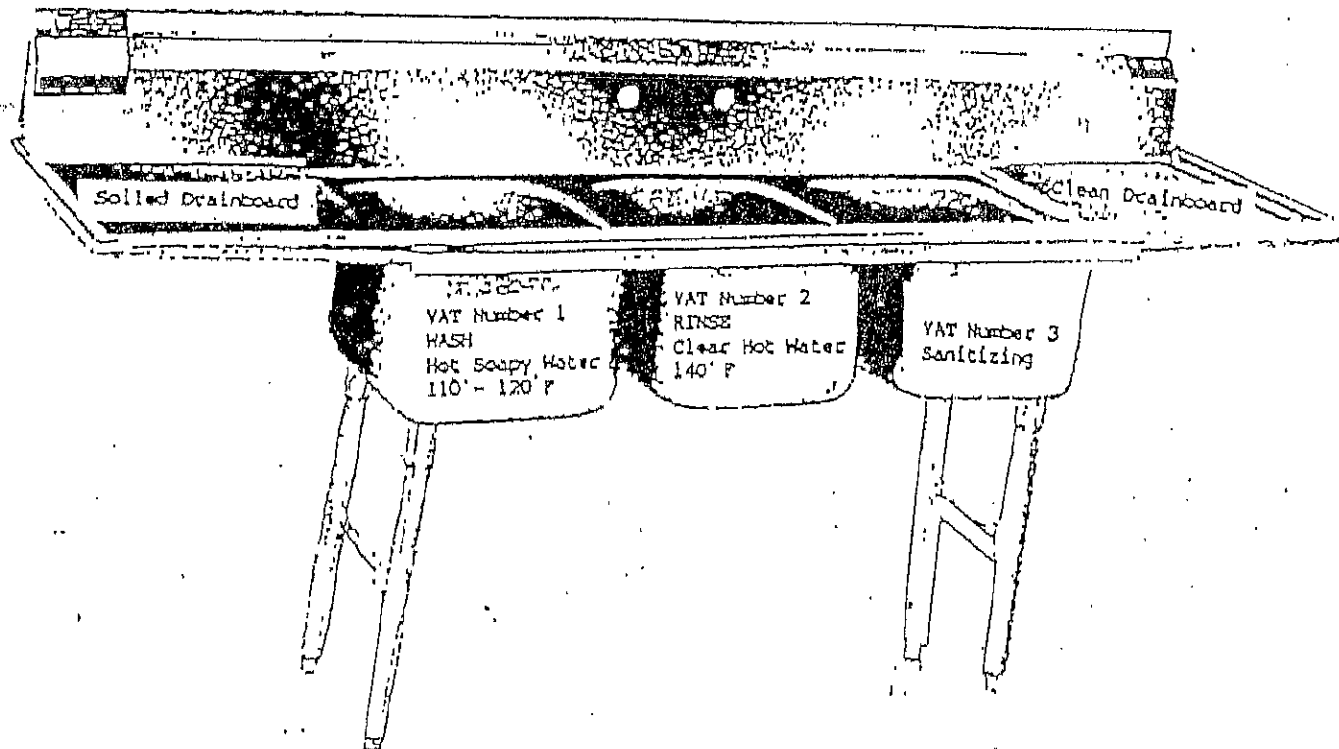
Where required to prevent the shifting of equipment and breaking of the caulked seal, equipment shall be securely and effectively attached to adjoining surfaces with low profile fasteners.

Materials:

Sealing compounds should be sufficiently pliable for ease of application, yet be adequately firm, after installation, so as not to be gummy or sticky. Clear, 100% silicone caulking is recommended. Excess sealant must be removed from the joint so that a smooth field radius results, while maintaining an effective seal to the adjoining area. Caulking food contact surfaces must be done with materials specifically approved by the FDA for this purpose. This will be stated on the caulking tube information.

COVE CORNERED SINKS

1. Do not wash your hands, vegetables or other foods in the sink.
2. Wash and dry the three compartment sink after each use.
3. Fill sink as indicated below.
4. Scrape dirty dishes and stack on drainboard Number 1.
5. Wash dishes in VAT Number 1 and place them in a dish basket which is setting on VAT Number two.
6. Dip basket full of dishes up and down in VAT Number 2 three or four times to rinse off soap or rinse under flowing water.
7. Place the basket of dishes in VAT Number 3.
8. a. When hot water is used to sanitize dishes (etc.) the basket of dishes must be immersed in at least 170 degrees Fahrenheit water for at least 1 minute.
b. Do not guess a the temperature of the water... use a thermometer. The booster dial does not necessarily indicate the true temperature of the water.
9. When chemicals are used to sanitize dishes, (etc.):
 - a. the water temperature shall be 70 - 120 degrees Fahrenheit.
 - b. the chemical strength shall be 50 -100 PPM for chlorine, 200 PPM QAC, or 12.5-25 for iodine; and the Immersion time shall be at least 2 minutes.



HAND WASHING LAVATORIES

Lavatory Facilities

- (a) Adequate and convenient lavatory facilities, including hot and cold running water and a combination supply faucet (or tempered water) and sanitary towels (or approved hand drying devices) and soap, shall be provided for employees and customers.
- (b) For employees, at least one lavatory shall be provided in the kitchen area in addition to any lavatories which may be provided in employees' toilet rooms.
- (c) Dishwashing vats, vegetable sinks, and pot sinks shall not be acceptable as handwashing facilities.
- (d) The lavatories and adjacent areas shall be well lighted and kept clean and in good repair.

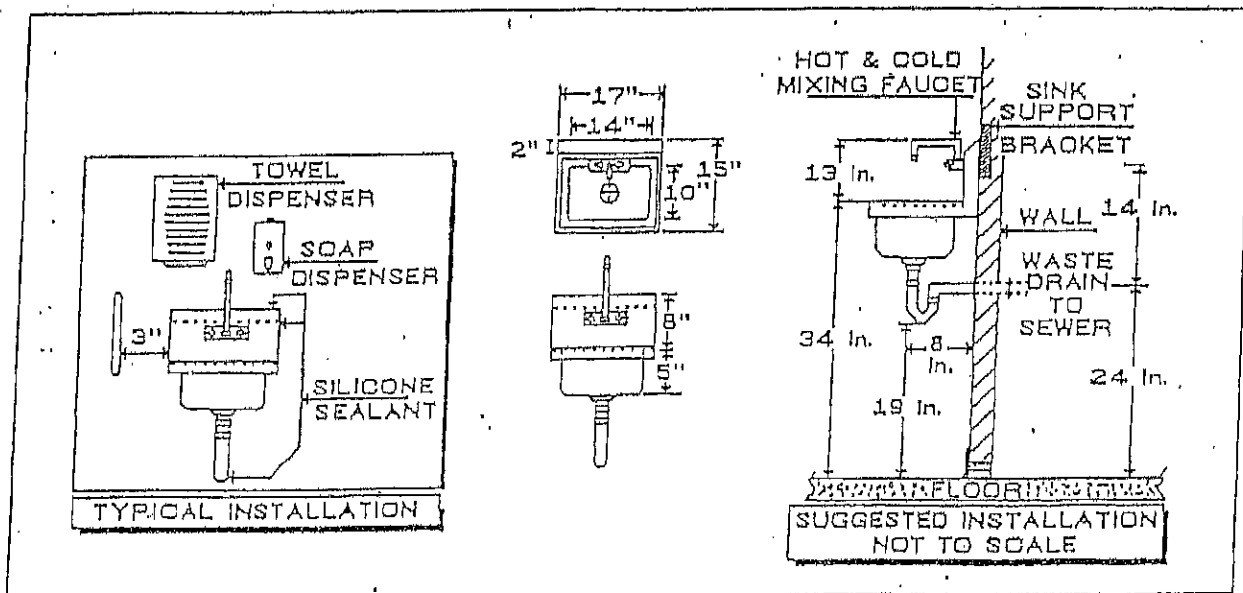
Hand sink: is required in each food handling, dishwashing or drink preparation area. Must be wall hung. Stainless steel or ceramic sinks are acceptable. Soap and towel dispenser required.

Self service hand sink: Is required in food stands, where the patrons are allowed to serve their own food.

Hand sinks are considered adequately and conveniently located when they are placed so food service employees do not have to travel more than 20 feet and/or pass through a door to wash their hands.

Hand sinks must be installed a minimum of 3 inches from any adjoining side wall and/or 18 inches from any adjoining equipment to facilitate cleaning and minimize cross splash.

Hand sinks must be supplied with antibacterial soap and individual use towels or other approved hand drying equipment.



FOOD SHIELDS

Counter Guards

Displays of unpackaged foods shall be effectively shielded to intercept the direct line between the average customer's mouth and displayed food.

Guards shall be mounted to intercept a direct line between the customer's mouth and food display areas at the customer "use" position. The vertical distance from the average customer's mouth to the floor shall be considered 4 feet 6 inches (1371.6 mm) to 5 feet (1524.0 mm). Special consideration must be given to the average customer's height in education institutions and other special installation.

Guards shall be fabricated of easy to clean, sanitary materials.

Edges of glass or other hazardous materials shall be trimmed with a smooth protective member and have a safety edge of parent material.

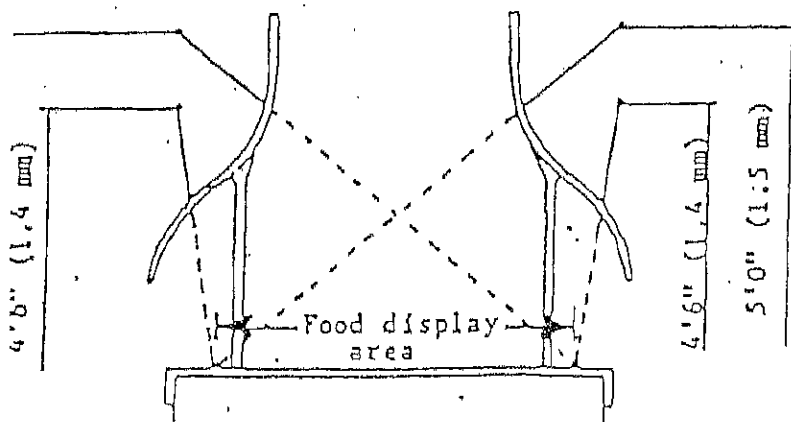
General

Materials shall withstand normal wear, penetration of vermin, corrosive action of food, beverages, cleaning compounds, and other elements in use environment. Materials shall not impart an odor, color, taste, or toxic material to the food.

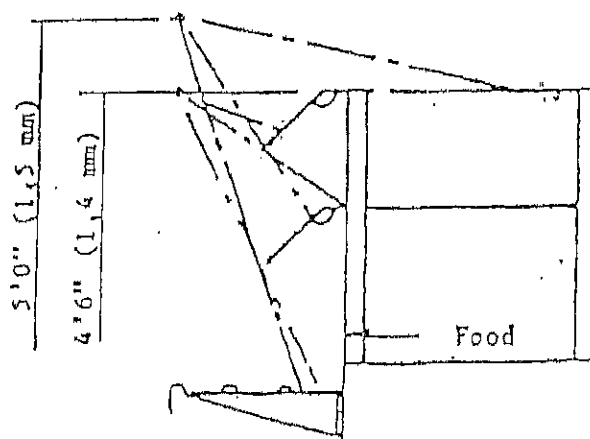
Splash Contact Surfaces

Splash contact surfaces shall be smooth, easily cleanable, and corrosion resistant, or rendered corrosion resistant with a material which is non cracking and non chipping. Paint shall not be used.

END PANELS ARE REQUIRED AT THE OPEN
ENDS OF FOOD SHIELDS OVER SALAD
BARS AND BUFFET TABLES WHERE OPEN
FOOD IS EXPOSED TO POSSIBLE CONTAMINATION



Typical Buffet Table



Typical Cafeteria Counter

INDRECT DRAINS

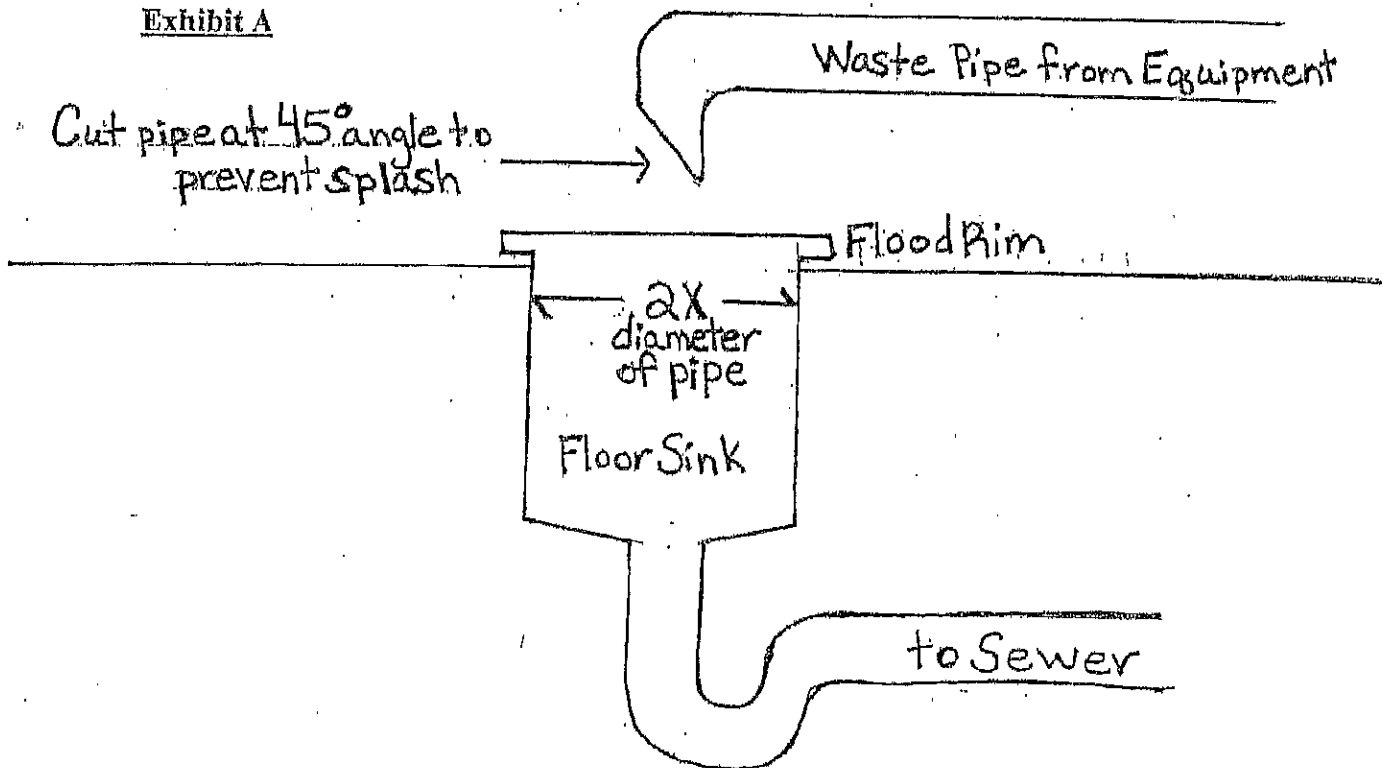
DIRECT CONNECTION means a waste line or pipe from a fixture, receptacle or device that discharges used water, waste materials or sewage directly into a drainage system.

INDIRECT CONNECTION means a waste line or pipe from a fixture, receptacle or device that discharges used water, waste materials or sewage into a drainage system through an "air gap". Thus there is no direct connection between the waste line from the equipment and the sewer line.

AIR GAP is an unobstructed, vertical air space that separates the end of a waste line and the flood level rim of the receptacle (i.e. floor sink or floor drain). Air gaps should be twice the diameter of the waste line. See exhibit A.

BACKFLOW PREVENTOR is an attachment or a separate piece of equipment that is required on all hose bib connections. This will prevent back-siphonage of wastewater into the potable water supply.

Exhibit A



Examples of Food Service Equipment requiring an "Air Gap":

Food preparation sinks, three-compartment or two-compartment dish washing sinks, dish washing machines, and ice making equipment.