2025

Food Establishment Plan Review Guidance Document

Conference for Food Protection

3/8/25

Prepared by the Plan Review Committee
2023-2025 Conference for Food Protection

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Monique Crawford, Harris Co Health Dept	Vasanthi Hofer, Maricopa Co Environmental Services
Kristen deBraga, Northern Nevada Public Health	Kamilah Hutchinson, City of Plano Dept of Environmental Health
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Justin Asberry, FDA	Rodney Blanchard, MI Dept of Agriculture
Beth Wittry, CDC	
Jessica Pharo, CDC (Subcommittee Lead)	

Table of Contents

Preface

The FOOD ESTABLISHMENT Plan Review Guidance Document was developed to assist REGULATORY AUTHORITIES, owners, operators, architects, food consultants and other interested professionals in the plan review process when proposing to build or remodel a FOOD ESTABLISHMENT. However, it does not establish regulatory requirements, and the recommendations contained herein are not intended to replace or otherwise serve as the rules and regulations applicable to FOOD ESTABLISHMENTs within a given federal, state, local, or tribal jurisdiction. The FDA Food Code, henceforth referred to as "Food Code", contains recommendations for safeguarding public health and ensuring FOOD is UNADULTERATED and honestly presented when offered to the public. Definitions found within the Food Code have been identified in SMALL CAPS within this document. Use of the word "shall" throughout this document is based on the language and meaning within the Food Code.

A link to the Food Code is included for your reference.
https://www.fda.gov/food/fda-food-code/food-code-2022

This manual was developed to be:

- A training resource for individuals responsible for conducting plan reviews and during the Food and Drug Administration (FDA) – sponsored Plan Review training courses;
- Used as a resource for those who design, build, and operate FOOD ESTABLISHMENTS;
- A resource that creates consistency with the recommendations in the FDA 2022 Food Code; and
- A revision of the 2016 Plan Review for FOOD ESTABLISHMENT document.

Disclaimer

The guidance in this document does not create or confer any rights for, or on, any person and does not operate to bind public health officials or the public. This guide does not have the force and effect of LAW and thus is not subject to enforcement. This guide encourages FOOD ESTABLISHMENTS to use the guidance herein to tailor FOOD safety practices appropriate to their operations.

Preamble

At the 2023 Conference for Food Protection (CFP) Biennial Meeting, Council I voted and approved the re-creation of the Plan Review Committee. This was in response to Issue #2023 I-015 (combined with 2023 I-013 and 2023 I-014), as presented at the CFP Biennial Meeting.

The following charges were given to the committee:

1. Review and revise the following documents as needed to address changes in the latest version of the FDA Food Code, as well as the latest and popular industry trends.

a) Plan Review for Food Establishments 2016
b) Recommended Guidance for Permanent Outdoor Cooking at Permanent Food Establishments 2014
c) Recommended Guidance for Mobile Food Establishments 2014
d) Temporary Food Establishments 2011

2. Identify newer technologies which may benefit from additional guidance documents.
3. Report back to the next biennial meeting of the Conference for Food Protection

Introduction

According to the FDA Report on the Occurrence of Foodborne Illness Risk Factors in Fast-Food and Full-Service Restaurants 2017-2018, the five major risk factors related to FOOD safety practices within the retail FOOD industry contribute to foodborne illness include:

- Poor personal hygiene;
- Improper FOOD holding/time and temperature;
- Contaminated equipment/protection from contamination; and
- Inadequate cooking;
- FOOD obtained from unsafe sources.

The plan review process presents a unique opportunity to discuss and establish a foundation that will enable FOOD ESTABLISHMENTS to be successful, remain in compliance, and protect public health. Quality plan review, process improvement and dedication to providing excellent customer service are high priorities in developing this Manual. Plan review assists in providing greater uniformity, technical assistance, and is essential for customer success and avoiding future establishment problems. Poor design, repair, and maintenance will compromise the functionality of the PHYSICAL FACILITIES and the establishment's operations.

Plan review is intended to:

- Ensure that PHYSICAL FACILITIES and proposed operational processes are properly designed; and
- Enable sanitary practices to be easily implemented to serve their intended purposes prior to PERMIT issuance or at the request of the REGULATORY AUTHORITY.

The plan review process provides the REGULATORY AUTHORITY with the opportunity to complete an effective evaluation of a FOOD ESTABLISHMENT'S ability to ensure the following:

- Maintain minimum environmental health and public safety standards.
- Prevent environmental health related illnesses and promote public health.

- Meet minimum sanitary design, facility layout, operational and product flow, menus, construction, operational and maintenance standards for regulated establishments, PREMISES, and surroundings.
- Eliminate Food Code violations prior to construction or implementation.
- Proactively address conditions that may adversely affect the public and meet expectations for the safe operation of a permitted FOOD ESTABLISHMENT.
- Provide technical assistance to industry that will help to ensure organized and efficient operations.

No establishment is to be constructed, and no major alteration or addition is to be made until detailed plans and specifications for such construction, alteration or addition have been submitted to and APPROVED by the REGULATORY AUTHORITY. (2022 Food Code, § 8-201.11)

The REGULATORY AUTHORITY may impose specific requirements and provisions in addition to the requirements contained in codes that are authorized by LAW and necessary to protect against public health hazards or nuisances. The REGULATORY AUTHORITY shall document the conditions that necessitate the imposition of additional requirements and the underlying public health rationale. The documentation shall be provided to the PERMIT applicant or PERMIT HOLDER, and a copy shall be maintained in the REGULATORY AUTHORITY'S file for the FOOD ESTABLISHMENT. (2022 Food Code, ¶ *8-102.10 (B)*)

The function of plan review, construction inspections, pre-operational inspections, and the PERMIT approval process is to provide a comprehensive overview of proposed operations with an emphasis on contents of plans, EQUIPMENT specifications, architectural design, and operational procedures. The end goal of the plan review process is to prevent foodborne illness by accessing floor plans and facility design while considering menu, FOOD preparation, and FOOD product flow.

Plan Review Requirements

Section 8-201.11 of the Food Code outlines when plans are required.

A plan review is required before beginning:

- Construction of a FOOD ESTABLISHMENT
- Conversion of an existing structure for use as FOOD ESTABLISHMENT.
- Extensive remodeling of a FOOD ESTABLISHMENT or a change of type of FOOD ESTABLISHMENT or FOOD operation.

Many REGULATORY AGENCIES will additionally view the need for a building permit (electrical, plumbing, or mechanical) to also require a plan review be submitted.

Understanding what constitutes an extensive remodel or change in FOOD operation is important. Examples of when a plan review is, and is not, required are provided below.

Examples of When Plan Review is Required

- Changing the layout of the FOOD preparation or service area. This includes moving EQUIPMENT or cabinetry.
- Changing the menu when it results in new EQUIPMENT being installed.
- Changing or installing EQUIPMENT connected to gas, electricity or plumbing.

Examples of When Plan Review is Not Required

- Replacing like-for-like EQUIPMENT except for gas, plumbing or ventilation connected EQUIPMENT such as replacing an old refrigeration unit with a new refrigeration unit in the same footprint.
- Moving or replacing non-FOOD related EQUIPMENT such as changing signs or doing exterior work.
- Replacing the room finishes, such as removing old fiberglass reinforced plastic (FRP) and replacing it with new FRP, tile or stainless steel.

Change of Ownership

Situations that require a formal plan review during a change of ownership include when:

- purchasing a facility that is currently operating but changing the menu, EQUIPMENT, or facility layout.
- purchasing a facility that was previously licensed but has been closed for a period of time.

Contents and Format of Plans and Specifications

Proper plan review submittal with EQUIPMENT listed and located on floor plans as well as specifications for finish and plumbing schedules will highlight potential problems on paper while allowing for modifications to be made before costly purchases, installations, and construction are performed.

All facilities, systems, processes, and menus, when applicable, will be evaluated to determine minimum operational requirements. Refer to Appendix A for a copy of the Model Plan Review Application.

The following is a summary of what should be included in the plan submittal:

- Legible plans, electronic or at minimum of 11 x 14 inches in size drawn to scale (scale – i.e. ¼ inch = 1 foot)
- Proposed menu, seating capacity, and projected daily meal volume for the FOOD ESTABLISHMENT.
- Provisions for adequate rapid cooling, which can include ice baths and adequate refrigeration, and for hot and cold holding of TIME/TEMPERATURE CONTROL FOR SAFETY FOOD (TCS).
- Location of all FOOD EQUIPMENT. Each piece of EQUIPMENT must be clearly labeled, marked, or identified. Provide EQUIPMENT schedule that identifies the make and model numbers and listing. FOOD EQUIPMENT that is certified or classified for SANITATION in conformance to a recognized American National

Standard by an American National Standards Institute (ANSI)-accredited certification program is deemed to comply with Parts 4-1 and 4-2 of the Food Code.

- Elevation drawings may be requested by the REGULATORY AUTHORITY.
- Location of all required sinks: HANDWASHING SINKS, WAREWASHING sinks, utility sink, FOOD preparation sinks (if required).
- Auxiliary areas such as storage rooms, garbage rooms, toilets, basements and/or cellars used for storage or FOOD preparation.
- Entrances, exits, loading/unloading areas and delivery docks.
- Complete finish schedules for each room including floors, walls, ceilings and coved juncture bases.
- Plumbing schedule, including location of floor drains, floor sinks, water supply lines, overhead waste-water lines, hot water generating EQUIPMENT with capacity and recovery rate, backflow prevention, and wastewater line connections.
- Location of lighting fixtures.
- Source of water and method of SEWAGE disposal.
- A color-coded flow chart may be requested by the REGULATORY AUTHORITY demonstrating flow patterns for:
    - FOOD (receiving, storage, preparation, service),
    - UTENSILS (clean, soiled, cleaning, storage), and
    - REFUSE (service area, holding, storage, and disposal).
- Storage of EMPLOYEE Personal Items.
- Ventilation.

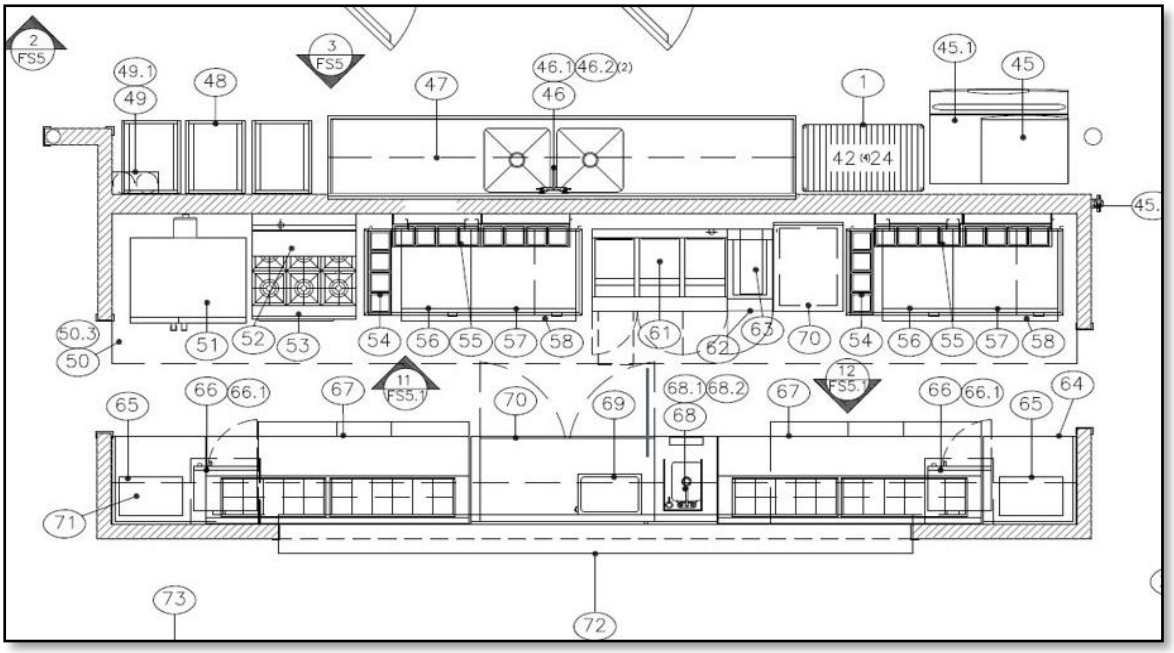


Fig 1 - The drawing above is an example of a fixture plan submitted for plan review. It is a handy tool when following the FOOD process as described by the FOOD operator or their representative.

Menu Review and Food Flow

The menu review and the flow of FOOD through the FOOD ESTABLISHMENT are integral parts of the plan review process. The menu or a listing of all the FOOD and BEVERAGE items to be offered at the FOOD ESTABLISHMENT must be submitted as part of the plan review application to the REGULATORY AUTHORITY.

As with the inspection process, the plan review process should focus on the FOOD and its flow through receipt, storage, preparation and service. The source and quantity of FOOD to be served should be reviewed along with the preparation and post-preparation operations. It is imperative to have knowledge of this information so that a proper assessment of the PHYSICAL FACILITIES can be made.

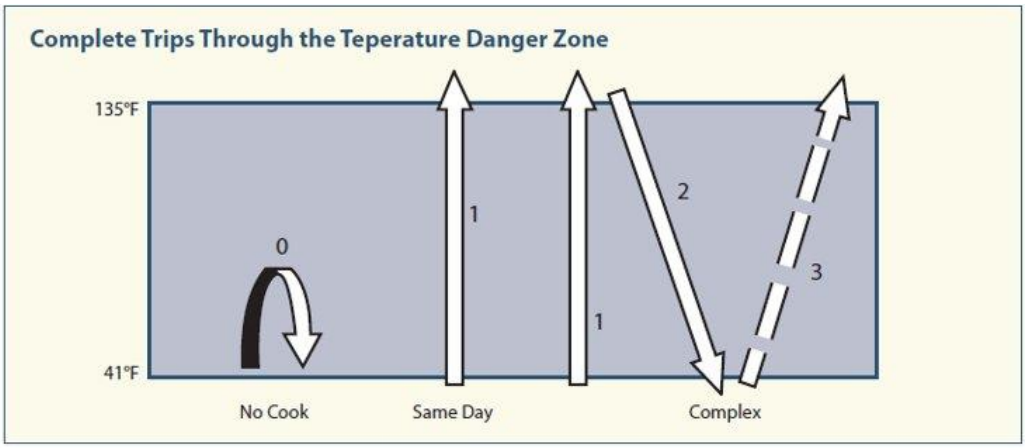
The FOOD that flows through retail FOOD ESTABLISHMENT operations can be placed into the 3 following processes (Fig 2).

FOOD Processes with No Cook Step (Process 1)
- Receive – Store - Prepare – Hold – Serve
  (Other processes may occur, but there is NO cooking step)
- Examples: Salads, deli MEAT, cheeses, sashimi, raw oysters

FOOD Preparation for Same Day Service (Process 2)
- Receive – Store - Prepare - Cook – Hold – Serve
  (Other processes may occur, including thawing)
- Examples: Hamburgers, fried chicken, hot dogs

Complex Processes (Process 3)
- Receive – Store - Prepare – Cook – Cool – Reheat – Hot Hold – Serve
  (Other processes may occur, but the key is repeated trips through the temperature danger zone)
- Examples: Refried beans, leftovers

Fig 2 - Process Approach to Categorizing Food on a Menu



Knowledge of how the FOOD is intended to flow through the FOOD ESTABLISHMENT is useful since the CRITICAL CONTROL POINTS for each process remain the same regardless of the individual menu ingredients.

Special attention should be given to the review of complex FOOD processes which involve:

- Multiple ingredients being assembled or mixed
- TIME/TEMPERATURE CONTROL FOR SAFETY FOODS (TCS)
- FOODS which will be prepared or held for several hours prior to service
- FOODS requiring cooling and reheating
- Multiple step processing (passing through the Temperature Danger Zone (TDZ), 135˚F (57°C) - 41˚F (5°C) more than once)

The process approach can be described as dividing the many flows in a FOOD ESTABLISHMENT into broad categories, analyzing the risks, and placing manager controls on each grouping of FOOD processes. These groupings will also impact the facility design, FOOD flow, and the numbers, types, function and placement of EQUIPMENT.

The layout, flow and menu, including FOOD preparation processes, should be major considerations to help facilitate an operator's Active Managerial Control (AMC) of the risk factors for foodborne illness. Strategic layout and placing of facilities and EQUIPMENT will separate different FOOD preparation processes, a major step towards preventing contamination of FOOD that may result from poor personal hygiene, contaminated EQUIPMENT, and improper holding temperatures. Adequate and convenient storage will also enhance operations.

The menu for FOOD ESTABLISHMENTS dictates the space and EQUIPMENT requirements for the safe preparation and service of various FOOD items. The menu will determine if the proposed receiving and delivery areas, storage areas, preparation and handling areas, and thawing, cooking and reheating areas are available and adequate to handle the types and volumes of FOOD being prepared and served.

When reviewing the menu, it is important to evaluate the flow patterns for the preparation of the FOOD to be sure that the layout of the facility provides an adequate separation of raw ingredients from ready-to-eat (RTE) FOOD, and that the traffic patterns are not crossing paths with waste items and other sources of contamination. Cross-contamination can be minimized when the flow of FOOD is considered during plan review.

With a proper understanding of the menu and flow, the plans for establishment can be reviewed to help assure that the FOOD items being considered can be protected during all aspects of the FOOD operation (Table 1). Considerations may also include:

- Special processes such as pickling, curing, REDUCED OXYGEN PACKAGING (ROP)
- EQUIPMENT needed for special or unique processing
- EQUIPMENT or space needed to comply with required HACCP plans and VARIANCE - §3-502.11
- Potential menu items from the same operator such as virtual branding (ghost kitchens), seasonal menus, special events and catering menus.
- How equipment and space will be handled in incubator or shared kitchens - See AFDO Guidelines for Incubator Kitchens, https://www.afdo.org/product/guidelines-for-incubator-kitchens/

AFDO - Guidelines for Incubator Kitchens

The Association of Food and Drug Officials (AFDO) created the following guidance for incubators or shared kitchens. https://www.afdo.org/product/guidelines-for-incubator-kitchens/

Below are a few excerpts from the guidance document.

"2. Purpose - This document provides the best current practices and guidance for government food protection regulatory officials with the responsibility of regulating incubator kitchens and their operations.

This guide is not a binding set of requirements. The information provided herein is based on experience and practical considerations as assembled by selected experts

from within the AFDO membership. Compliance and enforcement will remain within the interpretations and decision of the pertinent state and local regulatory authorities."

"4. Definitions - The following definitions shall apply for the purposes of these guidelines."

"4.1 "Incubator Kitchen, or Commercial/Shared Kitchen" a fully equipped commercial food processing facility designed to allow multiple entrepreneurs or food processing operators to grow their businesses by providing a kitchen space with food and packaging EQUIPMENT. For example, some new entrepreneurs might not be able to afford to build or buy their own kitchens, so they rent or reserve a shared kitchen on an hourly basis. This allows them to complete small-scale food processing in a shared kitchen used by multiple operators. They may be commercial kitchens, food hubs, or kitchens permitted by a regulatory agency, social club, church, firehouse, or other."

"4.5 "Food Safety Operations" the procedures and practices needed to comply with food safety regulatory requirements, including those pertaining to EMPLOYEE hygiene and practices, handwashing, use of gloves, safe food sources, safe food temperatures, cross contamination, and EQUIPMENT cleaning and sanitizing."

"5.1 Complying with all applicable state and local codes and ordinances. They should collaborate with regulatory agencies to ensure the kitchen, and all operators are properly licensed and/or permitted with the appropriate agency."

Operator responsibilities as noted in the AFDO Guideline include:

- Obtaining the appropriate regulatory agency license/PERMIT.
- Not commencing FOOD processing prior to being inspected and/or prior to the submission of the appropriate license application.
- Ensuring that all EQUIPMENT is properly cleaned and sanitized prior to and after processing.
- Addressing cross-contact concerns for allergens and bacterial cross-contamination, prior to and after processing.
- Proper temperature controls of ingredients and finished product, including transportation.
- Ensuring that all processing occurs at the incubator kitchen facility from start to finish. Product may not be moved to an unlicensed or uninspected facility for further processing. Products manufactured in unlicensed/unapproved facilities are subject to seizure and destruction. All ingredients must be from an APPROVED source.
- Verifying that all finished products and stored ingredients are appropriately packaged and labeled.
- Ensuring that specialized processing operations, such as vacuum packaging, are not conducted if required approvals or documentation is not on file with the appropriate regulatory agency.

Table 1- Anticipated Equipment Needs vs Process

	Receive	Store	Prepare	Cook	Cool	Reheat	Hold
No Cook (Process 1)	X	X	X				X
Same Day (Process 2)	X	X	X	X			X
Complex (Process 3)	X	X	X	X	X	X	X
	Receive	**Store**	**Prepare**	**Cook**	**Cool**	**Reheat**	**Hold**
Anticipated Equipment Needs	Thermometer	Dry Storage	Preparation Tables	EQUIPMENT	Preparation Sink	Fryers	Refrigerators
		Refrigerated Storage	Cutting Boards	Fryer	Ice Bath	Oven	Ice
		Frozen Storage	UTENSILs	Oven	Blast Chiller	Grills	Cold Holding
		Thermometer	HAND WASH SINKS	Broiler	Shallow Plans	Burners	Hot Holding
			Preparation Sinks	Grill	Refrigerators	Griddle	FOOD Warmers
			Refrigerators	Cook Top	Chill Sticks	Other similar EQUIPMENT	Thermometer
				Griddle	Thermometer	HANDWASHING SINK	HANDWASHING SINKS
				Other	HANDWASHING SINK	Thermometer	
				Thermometer	Preparation Table		
				HANDWASHING SINK	Other similar EQUIPMENT		

Preventive Tools for the Food Establishment

Active Managerial Control (AMC)

To effectively reduce the occurrence of foodborne illness risk factors, operators must focus their efforts on achieving active managerial control (AMC). The term "active managerial control" is used to describe industry's responsibility for developing and implementing FOOD safety management systems to prevent, eliminate, or reduce the occurrence of foodborne illness risk factors.

Elements of an effective FOOD safety management system may include the following:

- Certified FOOD protection managers who have shown proficiency in required information by passing a test that is part of an accredited program
- Standard operating procedures (SOPs) for performing critical operational steps in a FOOD preparation process, such as cooling
- Recipe cards that contain the specific steps for preparing a FOOD item and the FOOD safety critical limits, such as final cooking temperatures, that need to be monitored and verified
- Purchase specifications

FDA EMPLOYEE Health and Personal Hygiene Handbook

https://www.fda.gov/food/retail-food-industryregulatory-assistance-training/retail-food-protection-employee-health-and-personal-hygiene-handbook

HACCP

Although not formally required in many cases, a HACCP-based FOOD safety management system will allow operators to manage their businesses in a way to proactively prevent, eliminate or reduce Hazard Analysis and Critical Control Points (HACCP) programs play a vital role in proper establishment design. However, the risk management tool is not considered a “stand- alone” FOOD safety system. Design and construction are essential prerequisites and must be put in place prior to the implementation and operation of effective FOOD production practices. The purpose of a quality plan review is to ensure that FOOD ESTABLISHMENTS are safe, sanitary, and efficient prior to opening. Proper design, construction, and HACCP-based principles work to achieve these purposes and minimize the hazards.

Effective HACCP-based principles are essential to a successful FOOD ESTABLISHMENT and begin with the design and layout of the facility, monitoring the FOOD flow throughout the establishment, from delivery, storage, preparation, cooking, through sale, service or consumption. A well-designed progressive FOOD flow system will minimize cross-contamination and maximize efficiency in an establishment.

Good retail policies and prerequisite programs, standard operating procedures (SOPs), and documentation are essential to an establishment’s HACCP-based FOOD safety system and control over potential hazards. Policies must specifically address the requirements set forth in the Food Code.

Prerequisite programs are a foundation for FOOD safety and are detailed in the Food Code. Examples include EMPLOYEE hygiene, EMPLOYEE RESTRICTION or EXCLUSION, general SANITATION, design, etc.

The REGULATORY AUTHORITY is responsible for the review of HACCP procedures and VARIANCE applications for establishments to conduct specialized processes. The Food Code requires an APPROVED HACCP PLAN to be in place for identified specialized processes or when an establishment would like to function outside the parameters of the Food Code. A formal HACCP PLAN review is required and needs to be APPROVED prior to conducting these operations.

For information on creating a HACCP PLAN, contact your REGULATORY AUTHORITY or visit one of these resources: FDA HACCP Principles and Application Guidelines or USDA HACCP Guidance for MEAT and POULTRY operations.

Facilities to Maintain Product Temperature

Commercial refrigeration EQUIPMENT is designed to hold cold FOOD temperatures, not cool large masses of FOOD. Rapid chilling EQUIPMENT is designed to cool the FOOD to acceptable temperatures quickly by using very low temperatures and high rates of air circulation.

Refrigerators and freezers are required to maintain TCS FOOD at or below 41°F (5°C) and keep frozen FOODs frozen solid. All refrigeration units must have numerically scaled TEMPERATURE MEASURING DEVISES accurate to ±3°F (scaled only in Fahrenheit) or ±1.5°C (if scaled in Celsius or dually scaled in Celsius and Fahrenheit). Sufficient refrigeration and freezers should be provided to support the intended menu. Consideration must be taken with the placement and installation of refrigeration units to allow for adequate ventilation. Units near high heat cooking appliances are to be designed to withstand elevated temperatures. Air circulation within refrigeration and freezer units should not be obstructed and should allow for an even and consistent flow of cold air throughout the units. Cooling EQUIPMENT must meet Part 4-1 and 4-2 of the Food Code or be deemed acceptable by the REGULATORY AUTHORITY.

Refrigeration and freezer storage involves five major areas:

1. Storage for short-term holding of perishable and TCS FOOD.
2. Long-term storage.
3. Storage space for quick chilling of FOODS.
4. Space for assembling and processing TCS FOOD.
5. Display storage for customer service.

If TCS FOODS are prepared a day or more in advance of service, EQUIPMENT must be capable in number and capacity for cooling as specified in Food Code §3-501.14. The location of the rapid cooling facilities (e.g., sinks for ice baths, freezer storage for ice wands, blast chillers) must be identified. Refrigerators and freezers at workstations for operations requiring preparation and handling of TCS FOODS should be considered. For example, it may be necessary to locate a freezer near the fryer where frozen products will be deep-fried. Refrigeration units, unless designed for such use, should not be

located directly adjacent to cooking EQUIPMENT or other high heat producing EQUIPMENT which may adversely impact the cooling system's operation.

Refrigeration Storage Calculations

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.

To plan refrigeration storage, the following items should be considered:

- menu
- type of FOOD operation
- number of meals per day
- number of deliveries per week
- adequate ventilation in the areas where the refrigeration systems will be located

When assessing the refrigeration needs, shelving space within the refrigeration and freezer units should be designed to prevent the cross-contamination of FOODS (i.e. separating raw MEATS and POULTRY from READY-TO-EAT FOODS such as produce and prepared FOOD items.) and prevention of cross-contact of allergens. Cross-contact refers to when an allergen is transferred from one FOOD to another, or from a FOOD to a surface that then comes into contact with another FOOD.

Thermometers must be conspicuously located in all units. TEMPERATURE MEASURING DEVICES should be located in the warmest part of a mechanically refrigerated unit and in the coolest part of a hot FOOD storage unit.

Formulas can be used to estimate refrigerated storage space. To calculate, you will need information on the number of meals estimated to be served per day, days between deliveries and storage area availability.

Links to example calculators can be found in Appendix C

Walk-in Cooler/Freezer Units

Walk-in units must meet Part 4-1 and 4-2 of the Food Code or be deemed acceptable by the REGULATORY AUTHORITY. APPROVED flooring and integral cove bases need to be provided. Acceptable flooring material and finishes for walk-in cooler and finishes can be found in Table 11. All gaps, cracks, penetrations, seams, and plug holes should be SEALED, SMOOTH, and flush with the surface material.

Walk-in units should be installed when there is a need for long-term storage of perishable and TCS FOOD or when cooling space is needed for prepared and cooked FOODS. These coolers should be located near delivery or receiving areas.

Exterior walk-in cooler locations shall be properly designed for exterior installation and consideration given varied environmental concerns. Walk-in units should be designed with a roof, APPROVED overhead waterproof protection, and walkways should be provided for the transportation of FOOD items. Walk-in units shall be APPROVED by the local building official and are evaluated and APPROVED on a case-by-case basis by the REGULATORY AUTHORITY.

If the walk-in floors are water-flushed for cleaning or receive the discharge of liquid waste or excessive melted water, the floors should be sloped to drain. If the structure of the walk-in is integral with the building, plumbing codes may require floor drains be installed inside the unit.

Each walk-in unit shall be equipped with lighting that provides 10-foot candles of light throughout the unit when it is full of product. Lights must be properly shielded or shatter resistant.

Condensate lines from walk-in units shall drain to APPROVED floor drains or alternative method APPROVED by the REGULATORY AUTHORITY. The exterior of the walk-in coolers must be SEALED to the floors and walls. Walk-in coolers are not to be confused with refrigerated FOOD processing rooms. Refer below to "Refrigerated Processing Rooms".

Reach-in Refrigerators

Reach-in refrigerators are for short-term or long-term storage of FOODS. These units should be considered to meet the daily storage demands of the kitchen operation. They can be conveniently located at points of FOOD preparation and FOOD assembly. As these units are frequently opened and may not have adequate air flow for cooling, they are not to be considered for the quick chilling of cooked and prepared FOOD. Cooling FOODS can be done in a walk- in cooler, blast chiller, or using other effective methods such as ice.

Reach-in Freezers

Reach-in freezers are not designed to be used as quick-chill units. These units should be located where appropriate for the establishment's FOODS flow and operation.

Blast Chillers/Rapid Chill Units

Blast chillers/rapid-chill units are recommended for use when handling large volumes of FOOD that require quick chilling. These units should be located where appropriate for operation and where refrigeration cooling space is limited due to the absence of, or inadequate space within, walk-in units.

Refrigerated Worktables

Refrigerated worktables are suggested when the menu includes assembling TCS FOODS. These units provide easy access to FOOD from the top of the unit. It is not recommended that these units be used for cooling.

Refrigerated Processing Rooms

Refrigerated processing rooms (e.g. MEAT-cutting rooms) should be considered when there is extensive handling of cold TCS FOODS. APPROVED and conveniently located HANDWASHING SINKS should be located in these areas.

Display Storage Refrigerators /Customer Service Display Units/ Cold Buffet Units

Display storage refrigerators /customer service display units/ cold buffet units are designed to display and hold TCS FOOD under refrigeration. Examples of these units are deli display, fresh FISH, MEAT and POULTRY cases. These units are not designed for cooling.

Manufacturers may limit the use of display coolers to PACKAGED and/or non-TCS FOODS. Refer to manufacturers' specifications.

Cold buffets and salad bars are designed for short-term display. They should be maintained at 41°F (5°C) or below and have APPROVED FOOD shields with side panel protection.

Food Protection and Display

During display, FOOD can easily be contaminated. Therefore, the Food Code requires that FOOD on display shall be protected from contamination by the use of PACKAGING; counter, service line, or salad bar FOOD guards; display cases; or other effective means. The exception to this is for nuts in the shell and whole, raw fruits and vegetables that are intended for hulling, peeling, or washing by the CONSUMER before consumption. Specifications for FOOD shields over FOOD displays should be included in your plan review.

For information of food shields: Food Shield Certification Requirements Explained | NSF

https://www.nsf.org/knowledge-library/understanding-food-shield-certification-requirements

Table 2 - Equipment Used for Cold Food Storage or Display

Equipment Used For Cold Food Storage or Display	
General Comments	**Requirements**

Adequate cold holding EQUIPMENT must be provided.
 	
Include the location and specifications of all cold holding EQUIPMENT on the plan.
	• All EQUIPMENT must be able to meet the cold holding temperatures contained in Part 3-5 of the Food Code.
	• Cold FOOD storage or display EQUIPMENT must:
	  ○ Be capable of maintaining cold FOOD at an internal temperature of 41°F (5°C) or below; and
	  ○ Be provided with a thermometer accurate to +/-3°F.
	• EQUIPMENT with plumbing connections that have a CIP process or require drainage must be installed per manufacturer's recommendations or local regulatory requirements.
	• EQUIPMENT must be installed to ensure that proper ventilation and cleaning can occur.

Relevant standards	• NSF/ANSI 6 - Dispensing Freezers • NSF/ANSI 7 - Commercial Refrigerators and Freezers • NSF/ANSI 20 - Commercial Bulk Milk Dispensing Equipment
Examples	• NSF/ANSI 6 - dispensing freezers that process and freeze previously pasteurized products (e.g., soft ice cream, ice milk, yogurt, malts, custards) or dispensing premanufactured frozen products (e.g., ice cream) directly into the CONSUMER'S container, and batch dispensing freezers. • NSF/ANSI 7 - storage refrigerators and freezers (e.g., reach-in, under counter, walk-in); rapid pull-down refrigerators and freezers; refrigerated FOOD transport cabinets; refrigerated buffet units; refrigerated FOOD preparation units; display refrigerators; BEVERAGE coolers; and ice cream cabinets.

Ice Machines

Ice machines should be adequately provided, designed and sized to meet all operational needs. Consideration should be taken as to where ice machines are located within the establishment to avoid excess heat, airborne dust and other sources of contamination. See Table 3

Table 3 – Automatic Ice Making Equipment

Ice Making Equipment	
General Comments	**Requirements**
Automatic ice making EQUIPMENT should be adequately provided, designed and sized to meet all operational needs. Include the location and specifications of all automatic ice making EQUIPMENT on the plan.	• EQUIPMENT with plumbing connections that have a CIP process or require drainage must be installed per manufacturer's recommendations or local regulatory requirements. • Proper backflow protection shall be installed. • EQUIPMENT must be installed to ensure that proper ventilation and cleaning can occur. • Liquid waste drain lines may not pass through an ice machine or ice storage bin.
Relevant standards	• NSF/ANSI 12 - Automatic Ice Making EQUIPMENT • The standard includes requirements for automatic ice making EQUIPMENT and devices used in the manufacturing, processing, storing, dispensing, packaging, and transportation of ice intended for human consumption.

Cooking and Hot Holding

Cooking units are designed to cook FOODS to the required temperature within the required amount of time for FOOD safety purposes. Hot holding units on the other hand are designed to maintain TCS FOODS at 135°F (57°C) or above. For example, most customer service display units/hot buffet units are only designed to maintain the FOOD temperature above 135°F (57°C). They are not designed to cook or reheat TCS FOODS. *Always check the manufacturers specification sheets to see if the EQUIPMENT was designed to cook (or re-thermalize) and hold FOOD, or just keep hot FOOD hot.*

Table 4 – Cooking and Hot Holding EQUIPMENT

Equipment Used for Cooking and Hot Food Storage or Display	
General Comment	**Requirements**
Adequate cooking and hot holding EQUIPMENT must be provided. Include the location and specifications of all cooking and hot holding EQUIPMENT on the plan.	• All cooking and hot holding EQUIPMENT must meet Parts 4-1 and 4-2 of the Food Code. For best use over time, it is recommended that the EQUIPMENT be commercial grade and be certified or classified for sanitation by an ANSI accredited certification program. • All EQUIPMENT must be able to meet the cooking and/or hot holding temperatures contained in Parts 3-4 and 3-5 of the Food Code. • Reheating EQUIPMENT must be able to rapidly reheat TCS FOODS to 165°F (74°C) within 2 hours. • Hot FOOD storage or display EQUIPMENT must be capable of maintaining hot FOOD at an internal temperature of 135°F (57°C) or above and be provided with a thermometer accurate to ± 3°F. • EQUIPMENT with plumbing connections, have a CIP process or require drainage: must be installed per manufacturer recommendations or REGULATORY AUTHORITY requirements. • Consideration must be taken with the placement and installation of cooking, reheating, or hot holding EQUIPMENT to ensure adequate ventilation and proper SANITATION can take place. • Construction of these units should be durable and EASILY CLEANABLE. • The design should protect FOOD from contamination that could occur from the environment or customers by using FOOD shields or covers.
Relevant standards	• NSF/ANSI 4 - Commercial Cooking, Re-thermalization, and Powered Hot FOOD Holding and Transportation EQUIPMENT • Part 4-1 and 4-2 of the Food Code
Examples	• Stovetop; grill • Oven; microwave oven; combi oven; fryer, griddle, broiler; steam/pressure cooker; kettle; rotisserie; toaster • Coffee maker/another hot BEVERAGE maker. • Proofing cabinet • Re-thermalization EQUIPMENT • Hot FOOD holding EQUIPMENT • Hot FOOD transport cabinets

Equipment and Installation

All EQUIPMENT in a FOOD ESTABLISHMENT must comply with:

- Materials standards contained in Part 4-1 the Food Code;
- Design and construction standards contained in Part 4-2 of the Food Code; and
- Performance standards, applicable, contained in the Food Code including:
    - CIP EQUIPMENT;
    - Cold holding EQUIPMENT;
    - Hot holding EQUIPMENT;
    - WAREWASHING EQUIPMENT.

FOOD EQUIPMENT certified or classified for SANITATION in conformance to a recognized American National Standard by an American National Standards Institute (ANSI) accredited certification program is deemed to comply with Parts 4-1 and 4-2 of the Food Code.

Ideally, FOOD EQUIPMENT not certified or classified as noted above by ANSI, should:

- Be designed and intended for commercial use
- Have documentation demonstrating compliance with Food Code standards, design, and construction and performance standards
- If custom fabricated, have drawings that include the name and address of the manufacturer along with construction detail demonstrating compliance with Part 4-1 and 4-2 of the Food Code.

Always refer to your REGULATORY AUTHORITY for their specific EQUIPMENT requirements.

Refer to the FDA document *List of American National Standards for Food Equipment - Fact Sheet* (fda.gov) for a listing of the American National Standards that address the sanitary materials, design and construction of commercial food equipment commonly used in retail and foodservice establishments.

Floor Mounted Equipment

EASILY MOVABLE (non-fixed) floor-mounted EQUIPMENT shall be:

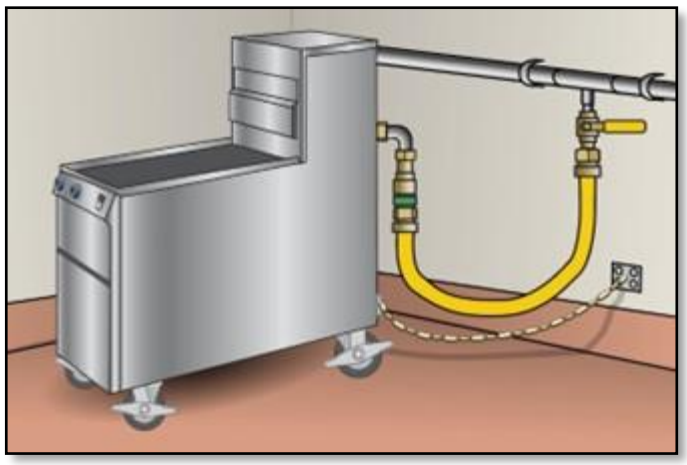
- Mounted on casters, rollers or gliders to facilitate easy moving, cleaning, and flexibility of operation or provided with a mechanical means to safety tilt a unit of EQUIPMENT for cleaning.
- Have utility services such as gas or electrical connections with easily accessible quick-disconnects or utility service lines that are flexible and of sufficient length to permit moving the EQUIPMENT for cleaning.

The use of casters is preferred wherever feasible.

ANSI 170 provides the following definitions:

- Caster: A wheel mounted on a support that may or may not swivel and is used to support mobile EQUIPMENT.
- Glider or glide: A glider or glide is a floor contact member of a leg that enables the leg to slide across a floor surface.
- https://www.neha.org/Images/resources/NSF%20170-2021%20-%20watermarked.pdf

Fig 3. Flexible Gas Connection with Safety Chain



If a flexible gas utility line is used, a safety chain that is shorter than the utility line must be installed. Verify that local fire safety and building codes allow for such installations*. See Fig 3

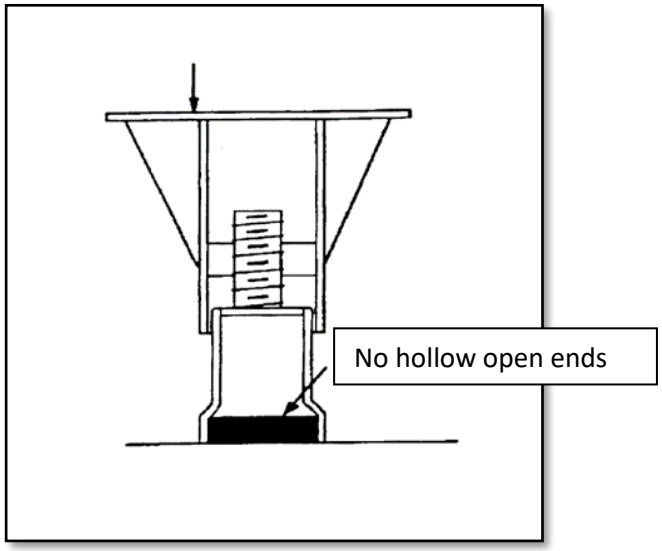
*Refer to your local regulatory gas authority for gas installation codes.

Fixed floor-mounted EQUIPMENT that is not EASILY MOVABLE should be installed using one of the following methods:

- Elevated on legs to provide at least a 6-inch clearance between the floor and EQUIPMENT.
    - This clearance should be measured from the lowest obstruction under the piece of EQUIPMENT.
    - If no part of the floor under the floor-mounted EQUIPMENT is more than 15 centimeters (6 inches) from the point of cleaning access, the clearance space may be only 10 centimeters (4 inches).
    - The legs shall contain no hollow open ends. (See Fig 4)
- Permanently SEALED to the floor around the entire perimeter of the EQUIPMENT.
    - The sealing compound should be pliable and non-shrinking and should retain its elasticity and provide water and vermin-tight joints.
- Installed on a solid, SMOOTH, non-absorbent masonry base.
    - Masonry bases and curbs should have a minimum height of 2 inches and be coved at the junction of the platform and the floor with at least a ¼ inches radius.
    - The EQUIPMENT should overhang the base by at least 1 inch but not more than 4 inches.
    - Spaces between the masonry base and the EQUIPMENT must be SEALED as above.

If a business card can be slid between the EQUIPMENT and a wall or adjacent EQUIPMENT, it must be SEALED.

Fig 4 - Elevated EQUIPMENT for effective cleaning: Sanitary Leg Example, EQUIPMENT SEALED to Floor



To allow for access for cleaning, fixed floor-mounted EQUIPMENT should be spaced along the sides, behind and above:

- At least 6 inches of clear, unobstructed space under each piece of EQUIPMENT must be provided or the EQUIPMENT must be SEALED to the floor.
- If EQUIPMENT is against a wall, the EQUIPMENT must be joined to and/or SEALED to the wall in a manner to prevent liquid waste, dust and debris from collecting between the wall and the EQUIPMENT.
- When EQUIPMENT is joined together, or spreader plates are used between EQUIPMENT, the resultant joint must be SEALED to prevent liquid waste, dust and debris from collecting between the EQUIPMENT.

Counter-Mounted Equipment

COUNTER-MOUNTED EQUIPMENT that is not EASILY MOVABLE must be:

- SEALED to the table or counter; or
- Elevated on legs to provide a clearance between the counter and the EQUIPMENT of:
    - 4-inch clearance between the table and the EQUIPMENT or
    - 3 inches if the horizontal distance of the counter under the EQUIPMENT is no more than 20 inches from the point of access for cleaning; or
    - 2 inches if the horizontal distance of the tabletop under the EQUIPMENT is no more than 3 inches from the point of access for cleaning.

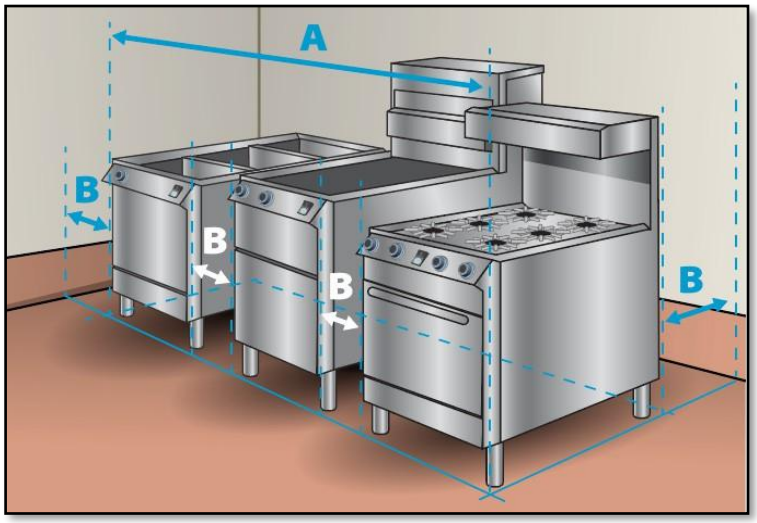
Other Equipment

- EQUIPMENT that is open underneath, such as drain boards, dish tables, and other tables that are not moveable should be spaced to allow for ease of cleaning or should be SEALED to the wall.
- Non-FOOD contact surfaces of EQUIPMENT that are exposed to splash, spillage, or other FOOD soiling or that require frequent cleaning shall be constructed of CORROSION-RESISTANT, non-absorbent, and SMOOTH material.
- The legs of all EQUIPMENT should not have hollow, open ends.
- If running water dipper wells are installed, methods for filling and draining the units must be identified.

Equipment Spacing

- EQUIPMENT used for refrigeration and cooking must be installed per the manufacturer's instructions to allow for proper ventilation and functionality.
- An unobstructed and functional aisle and working spaces must be provided. A minimum width of 36 inches is required by fire and building codes. Always verify with your local codes' enforcement office.
- See Fig 5 for recommended EQUIPMENT spacing between EQUIPMENT

Fig 5 - Recommended Equipment Spacing



Equipment Length (A)	Space from Walls and Equipment (B)
4′ or less	6″
4′ - 8′	12″
8′ or more	18″

Equipment Installation Location

- EQUIPMENT, including ice makers and ice storage EQUIPMENT, shall not be located under exposed or unprotected sewer lines, open stairwells or other potential sources of contamination.

Utility and Service Lines

- All exposed utility lines (plumbing, gas, electricity, refrigeration, etc.) must be kept at least 6 inches off the floor and installed to not interfere with cleaning.
- All utility and service lines and openings through the floor and walls must be adequately SEALED. Penetration through walls and floors must be minimized.
- Exposed vertical and horizontal pipes and lines must be kept to a minimum.
- Any insulation materials used on utility pipes or lines in the FOOD preparation or dishwashing areas must be SMOOTH, non-absorbent, and EASILY CLEANABLE. Electrical units which are installed in areas subject to splash from necessary cleaning operations or FOOD preparation should be water-tight and washable.

Warewashing Facilities

There are several means of cleaning and sanitizing EQUIPMENT within a facility. All WAREWASHING methods should be include in the plan review.

- **Manual WAREWASHING** – Typically done with the use of a 3-compartment sink. 2-

compartments may be APPROVED by the REGULATORY AUTHORITY on a case-by-case basis. Most commonly chemicals are used for SANITIZING, however, there is an option to use heat to SANITIZE as well.

- **Mechanical WAREWASHING** – Use of a mechanical, commercial grade, dish machine that either uses chemicals or heat to SANITIZE.
- **In-place cleaning** - Applies to situations where high-pressure and temperature systems with wand-type, hand-held, spraying devises are used to clean EQUIPMENT in-place, such as cleaning and SANITIZING of MEAT saws, grinders, or large kettles. In-place cleaning is not the same at CIP.
- **CIP**
    - "CIP" means **cleaned in place** by the circulation or flowing by mechanical means through a piping system of a detergent solution, water rinse, and SANITIZING solution onto or over EQUIPMENT surfaces that require cleaning, such as the method used, in part, to clean and SANITIZE a frozen dessert machine.
    - ″CIP″ does not include the cleaning of EQUIPMENT such as band saws, slicers, or mixers that are subjected to in-place manual cleaning without the use of a CIP system.

Example of a unit that would have in-place cleaning

CIP Unit – Mid Size

Example of CIP unit that might be used at a retail microbrewery.

Manual Warewashing

Table 5 - Manual Warewashing Equipment

Manual WAREWASHING EQUIPMENT	
General Comments	**Requirements**
The proper dishwashing procedure is to pre-scrape/flush, wash, rinse, sanitize and air dry. Describe and include the location and specifications of all WAREWASHING EQUIPMENT on the plan. CIP systems, if used, must provide details of the system in the plan review.	• Should provide adequate facilities for pre-flushing or pre-scrapping EQUIPMENT and UTENSILS. • Sink compartments shall be large enough to accommodate immersion of the largest EQUIPMENT and UTENSILS. If EQUIPMENT or UTENSILS are too large for the WAREWASHING sink, a WAREWASHING machine or alternative WAREWASHING method shall be used. • Must supply adequate hot and cold running water to each sink compartment. The temperature of the wash solution must be at least 110°F (43°C). • If hot water is used to sanitize EQUIPMENT and UTENSILS, the means for heating the water to 171°F in the third compartment must be identified. The racks for the immersion EQUIPMENT and UTENSILS must be specified. • Ideally, self-rimmed, drop-in type sinks should not be used. **Drainboards** • Drainboards, UTENSIL racks, or tables large enough to accommodate all soiled and cleaned items that may accumulate during hours of operation shall be provided for necessary UTENSIL holding before cleaning and after SANITIZING. • Sinks and drainboards of WAREWASHING sinks and machines shall be self-draining. • Drain boards/racks must be of sufficient capacity to separately store all clean and dirty dishes at peak times. Air drying of all items is required after dishwashing. **Additional requirements** • Must be indirectly drained. • Drain stoppers must be provided to enable the sink bowls to be filled.
Applicable Code Sections	• 4-204.116 Manual WAREWASHING EQUIPMENT, Heaters and Baskets • 4-204.119 WAREWASHING Sinks and Drainboards, Self-Draining • 4-301.12 Manual WAREWASHING, Sink Compartment Requirements • 4-301.13 Drainboards • 4-302.13 TEMPERATURE MEASURING DEVICES, Manual and Mechanical WAREWASHING • 4-302.14 SANITIZING Solutions, Testing Devices • 4-303.11 Cleaning Agents and Sanitizers, Availability • 4-501.16 WAREWASHING Sinks, Use Limitation • 4-501.17 WAREWASHING EQUIPMENT, Cleaning Agents • 4-501.18 WAREWASHING EQUIPMENT, Clean Solutions • 4-501.19 Manual WAREWASHING EQUIPMENT, Wash Solution
Applicable ANSI standards	NSF/ANSI 2 FOOD EQUIPMENT

Mechanical Warewashing

Table 6 - Mechanical Warewashing Equipment

Mechanical WAREWASHING EQUIPMENT	
General Comments	**Requirements**
Mechanical WAREWASHING EQUIPMENT may be installed in addition to a three-compartment sink but is not required and it is considered supplemental to manual WAREWASHING facilities. Include the location and specifications of all WAREWASHING EQUIPMENT on the plan.	• Must have a data information plate that contains the manufacturer's operating instructions. • Must be installed in accordance with the manufacturer's recommendations and applicable code requirements. • If used, the hot water booster for WAREWASHING machines must be identified during plan review. • Must automatically dispense detergents and sanitizers and incorporate a visual means to verify that detergents and sanitizers are delivered or a visual or audible alarm to signal if the detergents and sanitizers are not delivered to the respective washing and SANITIZING cycles. • Adequate storage facilities shall be provided to air-dry washed UTENSILS and EQUIPMENT at least 6 inches above the floor on fixed shelves or in enclosed cabinets protected from splash, dust, overhead plumbing or other contamination. **Chemical SANITIZATION:** • Machines that use a chemical sanitizer must be equipped with a device that audibly or visually indicates when more sanitizer needs to be added. • Test strips, appropriate for the sanitizer used, must be available and used to adequately measure chemical sanitizer concentrations. **High temperature SANITIZATION:** • Machines that use a hot water SANITIZING step must have a booster heater or be connected to an APPROVED hot water recirculating system that can maintain the rinse water at 165°F for stationary rack systems, and 180°F for all other machines. • Final dish surface temperature must reach 160°F as indicated by an irreversible registering temperature indicator (for example, waterproof min/max thermometer, thermolabels etc.). • High temperature dish machines must have an accurate pressure gauge and thermometer to indicate proper water flow pressures and temperatures. 5 – 30 psi. • Unless required by another agency, high temperature dish machines should not flow into the grease interceptor. **Additional requirements** • The waste line for mechanical WAREWASHING EQUIPMENT must not be directly connected to the sewer line. • Automatic detergent, sanitizer, or other chemical faucet dispensers (premix wall mount stations) shall be protected from backflow or back siphon.

Applicable Code Sections	• 4-203.13 Pressure Measuring Devices, Mechanical WAREWASHING EQUIPMENT • 4-204.113 WAREWASHING Machine, Data Plate Operation Specifications • 4-204.114 WAREWASHING Machines, Internal Baffles • 4-204.115 WAREWASHING Machines, TEMPERATURE MEASURING DEVICES • 4-204.116 Manual WAREWASHING EQUIPMENT, Heaters and Baskets • 4-204.117 WAREWASHING Machines, Automatic Dispensing of Detergents and Sanitizers • 4-204.118 WAREWASHING Machines, Flow Pressure Device • 4-301.13 Drainboards • 4-302.13 TEMPERATURE MEASURING DEVICES, Manual and Mechanical WAREWASHING • 4-302.14 SANITIZING Solutions, Testing Devices • 4-303.11 Cleaning Agents and Sanitizers, Availability • 4-501.15 WAREWASHING Machines, Manufacturers' Operating Instructions
Applicable ANSI standards	NSF/ANSI 3 – Commercial WAREWASHING EQUIPMENT

Determining Warewashing Machine Capacity

The capacity of the WAREWASHING machines should be based on the peak number and type of dishes, UTENSILS, etc., that must be washed per hour. Refer to the manufacturer's specification sheet to find the capacity in racks per hour for each make and model of machine.

To determine the *capacity*, use the following guide:

1. Each 20-inch by 20-inch WAREWASHING rack will accommodate:
    - 16 – 9-inch dinner plates;
    - 25 – water glasses;
    - 16 – coffee cups;
    - 100 – pieces of flatware.
2. To determine the number of WAREWASHING racks per hour for a FOOD service establishment serving divide the number of meals by the number of dishes, water glasses, coffee cups and pieces of silverware by the number of each item per rack as given in "1" above.

Only 70% (.70) of the listed capacity (in racks per hour) should be considered as an average capacity. Consult the manufacturers' specification sheets ("cut sheets") for optimum capacity.

For example: A FOOD service establishment plans to serve 200 meals at lunch. The number of WAREWASHING racks that the WAREWASHING machine must wash per hour would be as follows:

Wares	What rack will accommodate	Number of Racks
200 plates	÷ *16 plates per rack*	= 12.5 ~ 13 racks
200 water glasses	÷ *25 glasses per rack*	*= 8 racks*
200 coffee cups	÷ *16 coffee cups per rack*	*= 12.5 ~ 13 racks*
200 pieces of flatware	÷ *100 pieces of flatware per rack*	*= 2 racks*
Required total working capacity of warewashing machine		36 racks per hour
Since this example is not 70% of the listed capacity, a warewashing machine with a minimum listed capacity of **36/0.70 = 51 racks per hour will be required.**		

3. Alternative Using Dining Room Seats - As a rule-of-thumb, four (4) seats in the dining area will equal one WAREWASHING rack in a WAREWASHING machine. If the establishment has only 200 seats in its dining area and each seat will only be occupied once during the lunch period, then the projected 200 meals during lunch will equal 200 seats. Therefore, 200 seats divided by 4 seats per rack will equal 50 racks. As a result, one can estimate a WAREWASHING machine's required capacity per hour by either the number of projected meals or by the number of dining room seats.

The minimum requirement for WAREWASHING in an establishment is a three-compartment sink. A mechanical WAREWASHING machine may be installed in addition to the three-compartment sink.

Plumbing, Cross-Connection Control and Backflow Prevention

Under all circumstances, the public and potable water supply must be protected. Plumbing and cross-connection/backflow controls shall be sized and installed according to applicable codes and/or in conformance with local jurisdictions. Refer to the local municipality/jurisdiction for specific installation requirements.

Water Supply

Table 7 – Water Supply Requirements

Water Supply	
General Comments	**Requirements**
Include the water source and hot water tank size* and location on the plans. Label all locations of non-DRINKING WATER (such as fire protection or air conditioning systems) on the plans. *For guidance on calculating Hot Water Requirements see Appendix C – Model Calculations	**Safe source** • Potable water may be provided from a Public Water System or Non-Public Water System. Regardless of its source, it must meet DRINKING WATER standards established by EPA and applicable state DRINKING WATER quality standards. • If a non-public system is used as DRINKING WATER, the water is sampled/tested at least yearly, and records retained on file at the FOOD ESTABLISHMENT or per local regulations. • Non-DRINKING WATER may only be used as APPROVED by the health department and may only be used for non-FOOD purposes, such as air conditioning, EQUIPMENT cooling, fire protection, and irrigation. All piping used for non-DRINKING WATER must be clearly and durably identified. • A DRINKING WATER system must be flushed and disinfected before being placed into service after construction, repair, contamination, or modification. **Sufficient supply** • An adequate supply of water under pressure must be provided to all PLUMBING FIXTURES. • All water, including hot water, must be sufficient to meet the peak water demands throughout FOOD ESTABLISHMENT. The number of sinks, type and frequency of dishwashing, menu, and other factors determine hot water needs. **Hot water supply*** • Water at least 85°F (29.4°C) shall be provided at HANDWASHING SINKS. • Hot water for mechanical WAREWASHING may need to be boosted up to 150°F - 165°F (74°C) for washing and 165°F - 180°F (74°C – 82°C) for SANITIZING or according to the manufacturer's data plate on the machine. • The temperature of the wash solution for spray-type ware washers that use chemicals to sanitize may not be less than 120°F (49°C). • The temperature of the wash solution for manual WAREWASHING must be maintained to not be less than 110°F (43°C). • The water temperature for manual hot water sanitization must be at least 171°F (77°C). • Tankless water heaters should be installed and used in accordance with the manufacturer's recommendations.
Applicable Code Sections	• 5-101.11 APPROVED System-Source • 5-102.11 Standards-Quality • 5-102.12 Non-DRINKING WATER • 5-102.13 Sampling • 5-102.14 Sample Report • 5-103.11 Capacity-Quantity and Availability • 5-103.12 Pressure • 5-104.11 System-Distribution, Delivery, and Retention • 5-104.12 Alternative Water Supply
Applicable ANSI standards	• NSF/ANSI 5 Water Heaters, Hot Water Supply Boilers, and Heat Recovery EQUIPMENT

Sewage Disposal, Grease Interceptors/Traps

Table 8 – SEWAGE

Sewage	
General Comments	**Requirements**
Indicate wastewater disposal method (SEWAGE or onsite septic system) on the plans. There are two types of systems: a public SEWAGE treatment plant and an individual SEWAGE disposal system.	**SEWAGE Systems** • All SEWAGE and wastewater must be disposed into a public SEWAGE system or an individual onsite SEWAGE disposal system that is designed and operated in compliance with state LAWS and regulations. • Onsite SEWAGE systems will need approval from local zoning and/or plumbing departments before use for a FOOD ESTABLISHMENT. **Grease trap/interceptor** • A grease trap/interceptor is a chamber designed for wastewater to pass through and allow any grease to float to the top for retention as the remainder of the wastewater passes through. • Wastewater from fixtures or drains which allow fats, oils, and grease must be discharged and directed to a grease trap/interceptor as required by LAWS. • If used, a grease trap shall be located to be easily accessible for cleaning; FOOD solids entering the grease trap/interceptor should be minimized. • Local municipalities/jurisdictions will determine the number and size of grease traps, grease interceptors or catch basins. If installed, grease traps shall be properly spaced so they are easily accessible for servicing and cleaning. Refer to the local municipality/jurisdiction for the installation requirements.
Applicable Code Sections	• 5-401.11 Capacity and Drainage • 5-402.11 Backflow Prevention • 5-402.12 Grease Trap • 5-402.13 Conveying SEWAGE • 5-402.14 Removing Mobile FOOD ESTABLISHMENT Waste • 5-402.15 Flushing a Waste Retention Tank • 5-403.11 APPROVED SEWAGE Disposal System • 5-403.12 Other Liquid Wastes and Rainwater

It is recommended that wastewater from fixtures or drains which would allow fats, oils, and grease to be discharged be directed to a grease trap/interceptor. Local municipalities/jurisdictions will determine the number and size of grease traps, grease interceptors or catch basins. If installed, grease traps shall be properly spaced so they are easily accessible for servicing and cleaning. Refer to the local municipality/jurisdiction for the installation requirements.

Cross-Connection Control/Backflow Protection

There shall be no cross-connection between the potable water supply distribution system and any non-potable system or system of unknown quality. Where non-potable water systems are permitted for purposes such as air conditioning and fire protection, the non-potable water must not directly or indirectly contact FOOD, potable water or EQUIPMENT that contacts FOOD or UTENSILS. The piping of any non-potable water system shall be clearly and permanently identified so that it is readily distinguishable from piping that carries potable water.

A connection to a sewer line may be direct or indirect. A direct connection may not exist between the SEWAGE system and any drains originating from EQUIPMENT in which FOOD, portable EQUIPMENT, or UTENSILS are placed, except if otherwise required by LAW. When a WAREWASHING machine is located within 5 feet of a trapped floor drain, the dishwasher waste outlet may be connected directly to the inlet side of a properly vented floor drain trap.

An indirect connection may be one of two types: air gap or air-break. (Fig 6, Fig 7, Fig 8AB)

- For a potable water supply, an air gap means the unobstructed, vertical air space that separates a potable system from a non-potable system.
- An air break is a waste line from a fixture that discharges used water or liquid waste to a drain where the waste line terminates below flood level rim.

Fig 6 Air Gap

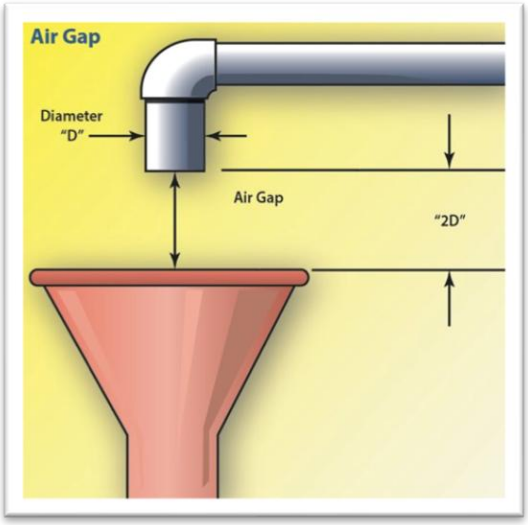


Fig 7 Air-Break

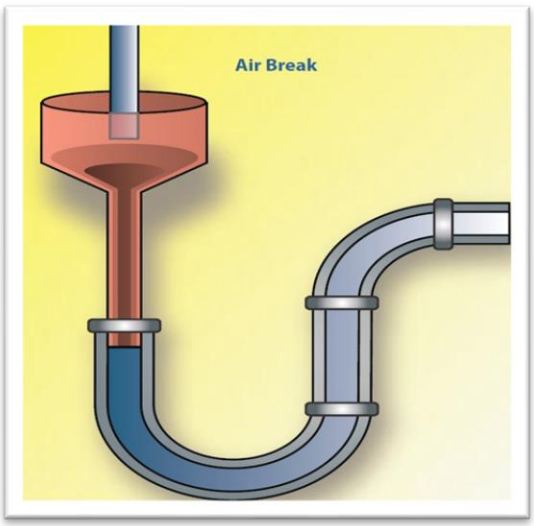
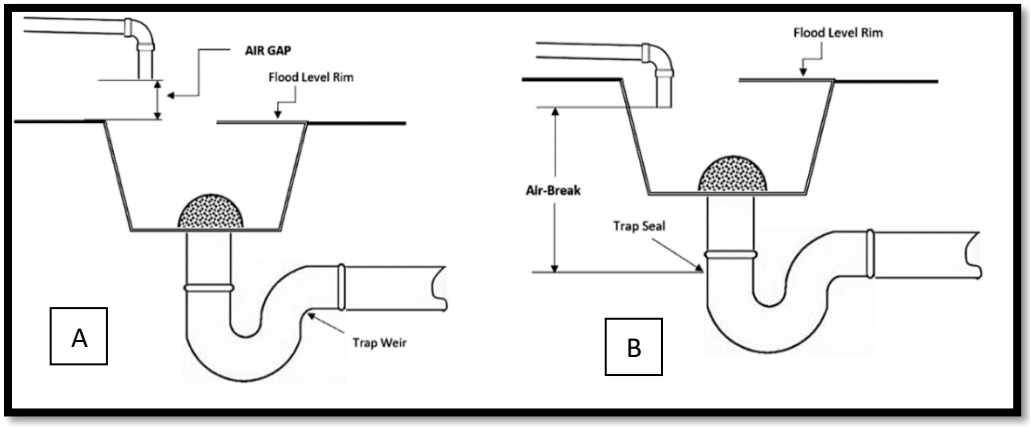


Fig 8 A - Use of Air Gap for Indirect Waste with Floor Sink
Fig 8 B - Use of Air-Break for Indirect Waste with Floor Sink



It is recommended that, when possible, an air-break on a drainage system should be eliminated. An air gap is the most reliable and effective means of backflow protection. Properly installed air gaps also facilitate accessibility for cleaning and maintenance of PLUMBING FIXTURES. Refer to the local municipality/jurisdiction for specific requirements.

Various backflow prevention devises

Handwashing Facilities, Toilet Rooms and Service Sinks

Table 9 – Handwashing, Toilets, Service Sinks

Handwashing sinks	
General Comments	**Requirements**
Conveniently located, properly supplied HANDWASHING SINKS are required in FOOD and BEVERAGE preparation or dispensing areas, WAREWASHING areas, and restrooms so FOOD EMPLOYEES will wash their hands as needed. The number of required hand sinks is based on the layout and size of the facility, number of FOOD EMPLOYEES, and menu. Label locations of all HANDWASHING SINK on the plan.	**Design and construction** • Must be EASILY CLEANABLE and ideally have a minimum sink bowl size of 8.0 in (203 mm) × 8.0 in (203 mm) x 5.0 in (127 mm).[1] **Location and placement** • HANDWASHING SINKS shall be conveniently located to allow convenient use by EMPLOYEES in FOOD preparation, FOOD dispensing and WAREWASHING AREAS and in, or immediately adjacent to, toilet rooms. • HANDWASHING SINKS are not considered conveniently located when located in another room (e.g. requires a worker to walk through a doorway) or are not visible. **Operation and water temperature** • Soap, single-use disposable towels or a hand drying device, and a trash container must be provided. • Must provide water under pressure and at a temperature of at least 85°F (29.4°C) through a mixing valve or combination faucet. • Metered faucets must provide water for at least 15 seconds without the need to reactivate the faucet. • Must only be used for handwashing. Sinks used for FOOD preparation and washing EQUIPMENT or UTENSILS may not be used for handwashing. **Prevention of contamination of FOOD contact surfaces** • Must be located to avoid contamination and always be accessible. If unpackaged FOOD or clean EQUIPMENT and UTENSILS are within approximately 18 inches of the hand sink, the FOOD or EQUIPMENT must be protected from splash by use of splash guards attached to the hand sink that extends at least as high as the faucet outlet and is made of durable, cleanable, non-absorbent material, such as stainless steel or plastic. Label the locations of all HANDWASHING SINKS on the plan.
Applicable Code Sections	• 5-202.11 APPROVED System and Cleanable Fixtures • 5-202.12 HANDWASHING SINKS, Installation • 5-203.11 HANDWASHING SINKS-Numbers and Capacities • 5-204.11 HANDWASHING SINKS-Location and Placement • 5-205.11 Using a HANDWASHING SINK-Operation and Maintenance • 6-301.11 Handwashing Cleanser, Availability • 6-301.12 Hand Drying Provision
Applicable ANSI standard	[1] NSF/ANSI 2 FOOD EQUIPMENT, 5.39.8

Handwashing

Handwashing is a critical factor to prevent contamination of FOODS. Proper handwashing reduces the amount of pathogens that can be transmitted via cross contamination from raw FOODS to READY-TO-EAT FOODS. It is imperative to have adequate numbers and conveniently placed HANDWASHING SINKS to ensure EMPLOYEES are washing their hands. It is important that handwashing be done only at properly equipped HANDWASHING SINKS to help ensure that EMPLOYEES effectively clean their hands and minimize contamination of FOOD and FOOD-CONTACT SURFACES.

FOOD workers were more likely to wash their hands in restaurants with more than one hand sink and with a hand sink where the worker can see it.

https://www.cdc.gov/restaurant-food-safety/php/practices/handwashing.html

- A HANDWASHING SINK, hand drying device or disposable towels, hand cleanser and waste receptacle shall be located for convenient use by EMPLOYEES who work in FOOD preparation, FOOD dispensing, and WAREWASHING areas.
- Nothing should block the direct path to a HANDWASHING SINK.
- HANDWASHING SINKS shall be located in or immediately adjacent to toilet rooms.
- HANDWASHING SINKS shall be of sufficient number and conveniently located for use by all EMPLOYEES in FOOD preparation, FOOD dispensing, and WAREWASHING areas.
- HANDWASHING SINKS shall be easily accessible and may not be used for purposes other than handwashing. Sinks used for FOOD preparation, washing EQUIPMENT or UTENSILS, or service (mop) sinks shall not be used for handwashing.
- Each HANDWASHING SINK shall be provided with hot and cold water tempered by means of a mixing valve or a combination faucet to provide water at a temperature of at least 85°F (29°C). If used, self-closing, slow-closing or metering faucets shall be designed to provide a flow of water for at least 15 seconds without the need to reactivate the faucet.

Splash from the use of a HANDWASHING SINK may not contaminate FOOD, FOOD-CONTACT SURFACES, clean EQUIPMENT or UTENSILS. A washable baffle or barrier may be needed if the HANDWASHING SINK is located next to a FOOD preparation area, UTENSIL or EQUIPMENT storage, or FOOD-CONTACT SURFACE and if the space between the HANDWASHING SINK and FOOD, FOOD preparation, FOOD-CONTACT SURFACES, and clean UTENSILS and EQUIPMENT does not provide adequate protection.

Similarly, the location of soap and paper towel dispensers at HANDWASHING SINKS must be reviewed during plan review so that their use does not contaminate FOOD, FOOD-CONTACT SURFACES, UTENSILS and EQUIPMENT. In addition, the distance that EMPLOYEES would have to reach the faucet handles, soap, and paper towels must be reviewed to ensure that they will have convenient access to the HANDWASHING SINKS.

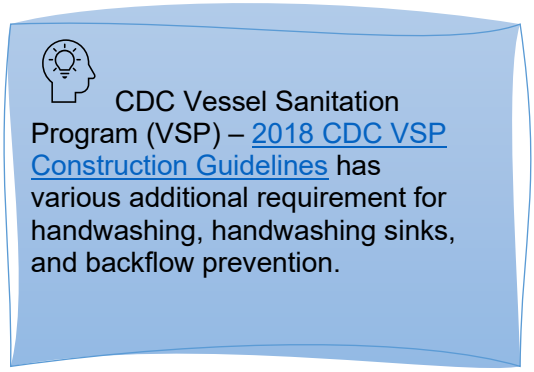
Toilet Rooms

Properly functioning toilet facilities must always be accessible to EMPLOYEES. If required by federal, state, local or tribal LAWS and regulations, toilet facilities must be made available to the customers. If the public toilet facilities are used by EMPLOYEES, separate toilet facilities may not have to be installed for the EMPLOYEES. Check your local building codes on installation.

The floors, walls, and ceiling in toilet rooms shall be SMOOTH and EASILY CLEANABLE. See Table 11. The walls around toilets, urinals, toilet paper dispensers, soap dispensers, and paper towel dispensers should be water resistant and durable for frequent cleaning.

The minimum requirements for toilet facilities shall include:

- Toilet: At least one toilet and not fewer than the number of toilets required by LAW shall be provided. If authorized by LAW, urinals may be substituted for additional toilets in men's toilet rooms.
- HANDWASHING SINK: Each HANDWASHING SINK shall be provided with hot and cold water tempered by means of a mixing valve or a combination faucet to provide water at a temperature of at least 85˚F (29°C). If used, self-closing, slow-closing or metering faucets shall be designed to provide a flow of water for at least 15 seconds without the need to reactivate the faucet.
- Handwashing cleanser: Each HANDWASHING SINK or group of two adjacent HANDWASHING SINKS shall be provided with hand cleaning liquid, powder, foam or bar soap. A manual, automatic, or countertop dispenser shall be provided for handwashing cleanser provided in liquid or powder form.
- Hand drying facility: Each HANDWASHING SINK or group of adjacent HANDWASHING SINKS shall be provided with individual, disposable towels; a continuous towel system that supplies the user with a clean towel; heated-air hand drying device; or hand drying device with air-knife, high velocity air at ambient temperatures.
- Clean barriers: To prevent recontamination after handwashing, paper towels or similar clean barriers shall be made available for EMPLOYEES to utilize when turning off manually operated faucet handles or opening toilet room doors.
- Toilet paper: A supply of toilet paper shall be provided in a dispenser at each toilet.
- Waste receptacle: If disposable towels are used, a waste receptacle shall be located at each sink or group of sinks. At least one covered waste receptacle shall be provided in toilet rooms used by females, including unisex restrooms.
- Ventilation: Toilet rooms should be vented outside. Mechanical ventilation shall be installed in the toilet rooms according to LAW. If allowed by LAW, operable screened windows may be used in lieu of mechanical ventilation devices.
- Toilet room doors: Toilet room doors shall be tight-fitting and self-closing.



Mop/Service Sinks

At least one mop sink or curbed cleaning facility with a floor drain must be provided and conveniently located for cleaning mops or the disposal of similar liquid wastes.

Storage

Dry storage area

The DRY STORAGE AREA needed depends on the menu, number of meals served between deliveries, frequency of deliveries, and the amount and type of SINGLE-SERVICE AND SINGLE-USE ARTICLES to be stored. The location of dry storage rooms or areas should be adjacent to the FOOD preparation area and convenient to the receiving area. FOOD should not be stored on shelves or in cabinets located under exposed or unprotected SEWER lines, open stairwells or other sources of contamination.

DRY STORAGE AREAS or rooms may be designated for the storage of PACKAGED or containerized bulk FOOD that is non-TCS FOOD such as bagged flour, sugar or dry beans, and dry goods, such as SINGLE-SERVICE and SINGLE-USE ARTICLES. Opened packages of dry FOOD and/or SINGLE-SERVICE and SINGLE-USE ARTICLES shall be stored within the protective environment of a finished, enclosed facility.

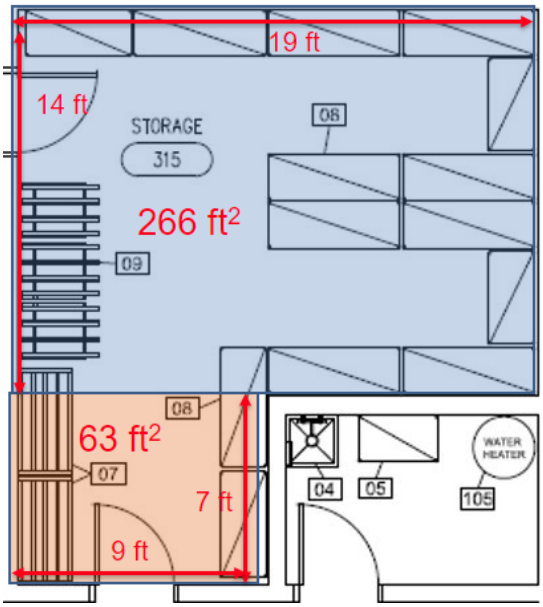
Shelving, dollies, racks, pallets and skids shall be corrosion-resistant, non-absorbent and SMOOTH. The highest shelf for practical storage use should be no higher than 7 feet for EMPLOYEE safety and for the ease of routine FOOD storage monitoring reasons. The lowest shelf for storage use shall be at least 6 inches from the floor.

Clearance between shelves should be at least 15 inches. Sufficient moveable racks, skids and dollies should be provided to store all bulk containers. Shelving, dollies, racks, pallets and skids should be spaced away from walls to allow for cleaning and pest monitoring/inspection. An exception to the above 6 inches (15 cm) from the floor minimum storage requirement would be for warehousing and/or bulk FOOD purchase.

FOOD in packages and working containers may be stored less than 6 inches (15 cm) above the floor on case lot handling EQUIPMENT if the EQUIPMENt can be moved by hand or by conveniently available apparatuses such as hand trucks and forklifts. In addition, pressurized BEVERAGE containers, cased FOOD in waterproof containers such as bottles or cans, and milk containers in plastic crates may be stored on a floor that is clean and not exposed to floor moisture.

APPROVED FOOD containers with tight-fitting covers should be used for storing bulk FOODS such as flour, cornmeal, sugar, dried beans, rice and similar.

Formulas can be used to estimate the amount of dry FOOD storage space that may be needed. To determine, you will need information on the number of meals estimated to be served per day, days between deliveries and storage area availability. *Example calculation tools can be found in Appendix C.*



Poisonous or toxic materials storage

Designate an area for POISONOUS OR 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.

All toxic materials including cleaning compounds, pesticides, sanitizers, etc. must be stored in an area away from FOOD preparation and in an area such as a janitor's closet or room. If they are stored within the FOOD processing, FOOD storage, UTENSIL washing or UTENSIL storage areas, an operator could opt to store them within a cabinet used for no other purpose. Cleaning and sanitizer compounds may be stored within a FOOD dry storage room, if sufficient shelving is provided so FOOD and these compounds can be physically separated, making sure that clean UTENSILS and FOODS cannot be contaminated by them. POISONOUS OR TOXIC MATERIALS may not be located above FOOD, EQUIPMENT, UTENSILS, LINENS, OR SINGLE-SERVICE AND SINGLE-USE ARTICLES.

Clean EQUIPMENT, UTENSIL and LINEN storage

Designate areas for clean cooking UTENSILS, cutting boards, glassware and dishware. Store them at least 6 inches (15 cm) off the floor in a clean, dry location where they will protected from dust and splashes.

be

If a FOOD ESTABLISHMENT engages in catering, then adequate storage space for catering supplies and EQUIPMENT should be considered.

Often, caterers utilize EQUIPMENT (portable buffet bars, portable sneeze guards, Cambro's and Cambro dollies, chafing dishes/chafer stands, coffee urns, FOOD warmers, griddles, portable hand sinks, etc.) for catering operations and operators should consider having areas and enough space to store those items at the FOOD ESTABLISHMENT.

An adequately sized area in the FOOD ESTABLISHMENT shall be provided for air-drying clean UTENSILS and EQUIPMENT. Storage facilities shall be provided to store cleaned and sanitized UTENSILS and EQUIPMENT at least 5-inches (15 cm) above the floor, protected from splashes, dust, overhead plumbing or other contamination; on fixed shelves; or in enclosed cabinets. The plan must specify the location and facilities used for storing all UTENSILS and EQUIPMENT.

Laundry facilities and laundry storage

If work clothes or LINENS are laundered on the PREMISES, a mechanical clothes washer and a dryer that is properly vented to the outside air shall be provided and used.

If a mechanical clothes washer or dryer is proposed, they shall be located only where there is no exposed FOOD; clean EQUIPMENT, UTENSILS, and LINENS; and unwrapped SINGLE-SERVICE and SINGLE-USE ARTICLES.

Cabinets or shelving used for storage of laundered LINEN shall not be installed or located under any source of contamination. Examples of unacceptable areas for LINEN storage include locker rooms, toilet rooms, bleachers, garbage storage rooms, mechanical rooms, beneath unshielded SEWER lines, leaking water lines or open stairwells.

Storage of EMPLOYEE items

Dressing rooms shall be provided if EMPLOYEES are routinely changing their clothes or putting on uniforms within the establishment. Dressing rooms must be located separate from FOOD preparation, storage or service areas, UTENSIL washing and storage areas, and they must be designated on the FOOD service plans. If dressing rooms are not required, facilities should be provided for coats, sweaters, purses/bags, and other personal belongings to be stored where they will not contaminate FOOD, UTENSILS, EQUIPMENT, LINENS, SINGLE-SERVICE and SINGLE-USE ARTICLES.

Lockers could be considered for EMPLOYEES to use to store belongings and clothing. If lockers are not used, another type of area can be designated and identified on the plan for the storage of EMPLOYEE'S belongings.

The layout of FOOD ESTABLISHMENT plans will be designed so that traffic of non-EMPLOYEES or non-essential personnel through the FOOD preparation and UTENSIL washing areas is prohibited. Further, the FOOD ESTABLISHMENT operations shall be

physically and functionally separated from facilities or areas used for household purposes.

PERSONAL CARE ITEMS are required to be stored in dressing rooms, lockers or other areas designated for EMPLOYEE item storage. An exception to this is medicines, including refrigerated medicines. Medicines are to be stored in a package or container in a covered, leakproof container identified as "EMPLOYEE medicines" and stored to be inaccessible to children. FOOD storage and preparation areas, UTENSIL cleaning and sanitizing and storage areas, and SINGLE-USE/SINGLE-SERVICE ARTICLE areas are not to be used as EMPLOYEE PERSONAL CARE ITEM storage.

Garbage and REFUSE

Garbage or REFUSE storage rooms shall be constructed of EASILY CLEANABLE, nonabsorbent, washable materials and shall be insect-proof and rodent-proof. Garbage and REFUSE storage containers must have tight-fitting lids or covers and be constructed and maintained to prevent leakage of liquid waste.

Those located inside the FOOD ESTABLISHMENT:

- Receptacles must be EASILY CLEANABLE, non-absorbent and vermin proof. If they contain FOOD residue, receptacles must have tight-fitting lids, and they must be kept closed when they are not in continuous use or have been filled.
- A receptacle shall be provided in each area of the FOOD ESTABLISHMENT or PREMISES where REFUSE is generated or commonly discarded, or where recyclables or returnable are placed. Plastic bags or wet-strength paper bags shall be used to line these containers.
- If disposable towels are used at HANDWASHING SINKS, a waste receptacle shall be located at each lavatory or group of adjacent lavatories.

Outside garbage and REFUSE storage containers:

- Garbage cans must have tight-fitting lids, doors or covers and if they contain any FOOD residue or any liquid waste from garbage must be closed.
- REFUSE, recyclable and returnable storage containers must all have drain plugs.
  installed for drains on the containers or receptacles.
- Outside receptacles and waste handling units for REFUSE, recyclables, and returnables used with materials containing FOOD residue shall be designed and constructed to have tight-fitting lids, doors, or covers.
- REFUSE storage areas and receptacles shall be sufficient capacity to hold refuse, recyclables, and returnables that accumulate.
- REFUSE receptacles that are not rodent-resistant, unprotected plastic bags and paper bags, or baled units that contain materials with FOOD residue shall not be stored outside.

Cardboard or other packaging material that does not contain FOOD residues and that is awaiting regularly scheduled delivery to a recycling or disposal site may be stored outside without being in a covered receptacle if it is stored so that it does not create a rodent harborage problem. This may be accomplished by storing such materials on a concrete slab sufficient in size to store the material.

Garbage or REFUSE storage rooms shall be constructed of EASILY CLEANABLE, nonabsorbent, washable materials and shall be insect proof and rodent proof.

Lighting

Intensity

The light intensity (whether by artificial or natural means) shall be at least 108 lux (10 foot candles) at a distance of 75 cm (30 inches) above the floor, in walk-in refrigeration units and dry FOOD storage areas and rooms during periods of cleaning.

The light intensity (whether by artificial or natural means) shall be at least 215 lux (20 foot candles) at a surface FOOD is provided for CONSUMER self-service such as buffets and salad bars or where fresh product or PACKAGED FOODS are sold or offered for consumption; inside EQUIPMENT such as reach-in and under-counter refrigerators; at a distance of 75 cm (30 inches) above the floor in areas used for handwashing, WAREWASHING, and UTENSIL storage, and in toilet rooms.

The light intensity (whether by artificial or natural means) shall be at least 540 lux (50 foot candles) at a surface where a FOOD EMPLOYEE is working with FOOD or working with UTENSILS or EQUIPMENT such as knives, slicers, grinders, saws or where EMPLOYEE safety is a factor.

Protective Light Shielding

Shielding such as plastic shields, plastic sleeves with end caps, shatterproof bulbs and/or other APPROVED devices shall be provided for all artificial lighting fixtures located in areas where there is exposed FOOD; clean EQUIPMENT, UTENSILS, and LINENS; or unwrapped SINGLE-SERVICE and SINGLE-USE ARTICLES.

Heat lamps shall be protected against breakage by a shield surrounding and extending beyond the bulb, leaving only the face of the bulb exposed.

Finishes

Materials for indoor floors, walls and ceiling surfaces under conditions of normal use shall meet certain requirements as per the Food Code. The materials shall be SMOOTH, durable, and EASILY CLEANABLE for certain areas. Areas of concern are where FOOD service operations are conducted that require the surfaces to be nonabsorbent such as areas subject to moisture. Operational areas that must meet these requirements are those such as FOOD preparation areas, walk-in refrigerators, WAREWASHING areas, toilet rooms, mobile FOOD unit SERVICING AREAS, and areas subject to flushing or spray cleaning methods. Poured flooring such as epoxy or acrylic coverings should be uniform thickness of at least 3/16 inch to be equivalent to that of standard floor tile.

Walls and Ceilings

Wall and ceiling covering materials shall be nonabsorbent and attached so that they are EASILY CLEANABLE. Except in CONSUMER areas, wall and ceiling surfaces do not need to meet the same requirements if they are kept clean.

- Though not required in the Food Code, the walls and ceiling color ideally should be lighter colors to allow for better recognition of when they have become dirty and in need of cleaning.
- In areas used only for dry storage, concrete, porous blocks, or bricks used for indoor wall construction shall be finished and SEALED to provide a SMOOTH, nonabsorbent, EASILY CLEANABLE surface.
- Studs, joists and rafters may not be exposed in areas subject to moisture.
- Wall and ceiling attachments such as light fixtures, mechanical room ventilation system components, vent covers, wall mounted fans, decorative items and other items shall be EASILY CLEANABLE. In CONSUMER service areas, wall and ceiling attachments that are provided for ambiance need not meet this requirement if they are kept clean.

Coving and Floors

Floor and wall junctures shall be coved and closed to no larger than 1/32 of an inch in FOOD ESTABLISHMENTS which use cleaning methods other than flushing water. If flushing water is used as a cleaning method, the floors shall be provided with a drain graded to drain, and the floor and wall junctures shall be covered and SEALED.

A floor covering such as carpeting or similar material may not be installed as a floor covering in FOOD preparation areas, walk-in refrigerators, WAREWASHING areas or toilet areas where the floor is subject to moisture, flushing, or spray cleaning methods.

Exposed horizontal utility service lines and pipes may not be installed on the floor.

Example floor materials are as follows:

- Quarry tile, ceramic tile
- SEALED curbed concrete
- Seamless poured epoxy minimum 3/16-inch thick
- Commercial-grade sheet vinyl (no felt backing)
- Commercial-grade vinyl composition tile (VCT)

Pre-approval from the REGULATORY AUTHORITY should be obtained prior to use of carpet and/or wood.

Coving is the floor material found at the base of walls (wall/floor junctures) and is required in most areas of the FOOD ESTABLISHMENT, such as:

- FOOD preparation, storage, handling, and packaging areas
- UTENSIL washing and storage areas
- Interior waste disposal areas (garbage, REFUSE, grease)
- Restrooms
- Handwashing areas
- Janitorial facilities
- Walk-in refrigerator and freezer units (inside and outside)
- Bars (EMPLOYEE side)
- Customer self-serve areas where non-individually prepackaged FOODS or BEVERAGES are sold or dispensed (e.g., salad bars, buffets, bulk FOOD sales, BEVERAGE stations)
- EMPLOYEE change and storage areas
- Wait stations

Coved flooring material should extend integrally up the walls. Integral coving may not be required in areas used exclusively for dining, point-of-sale, or the storage of UTENSILS or FOODS contained in the original un-opened container.

Floor Installation Diagrams

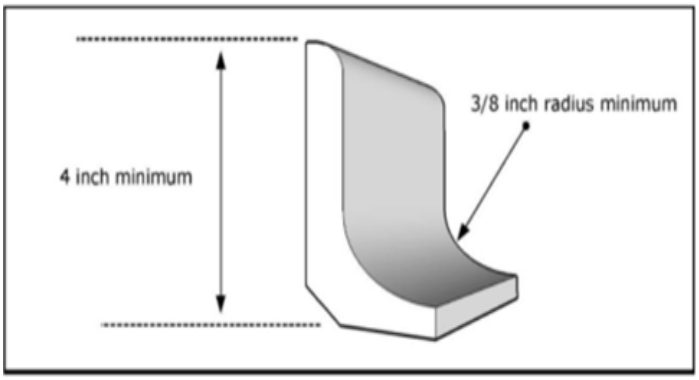


Fig. 9 - Quary tile cove base

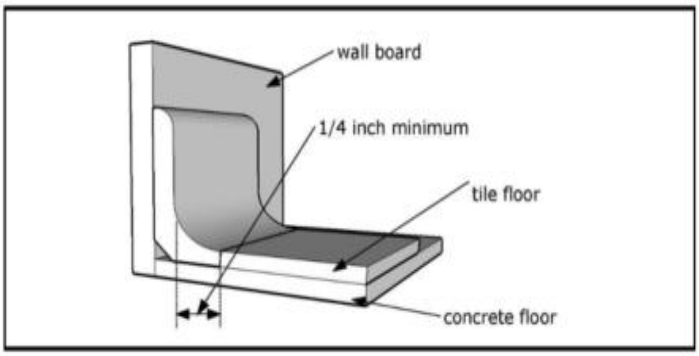


Fig. 10 - Quary tile cove base flush with floor

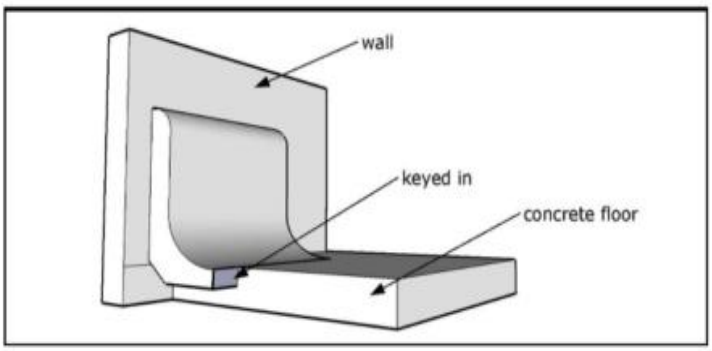


Fig. 11 - Quary tile cove base integral to concrete floor

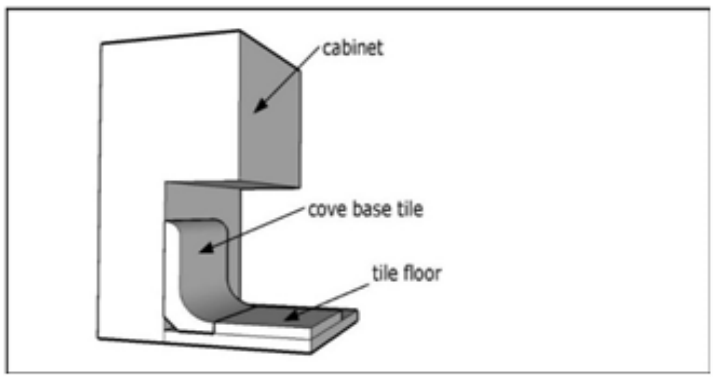


Fig 12 - Quary tile cove base; cabinet toe-kick

Experimental Finishes: Evaluation and Field Testing

Tables 10, 11, and 12 list acceptable finishes for FOOD ESTABLISHMENT. Any proposed covering material not listed in Tables 10, 11, and 12 should be evaluated by the REGULATORY AUTHORITY. The manufacturer's documentation must show that such material coverings are APPROVED for FOOD ESTABLISHMENTS or FOOD PROCESSING PLANTS. In addition, the proposed covering material documentation must show these materials to have comparable characteristics of durability, ease-of-cleaning and non-absorbency as that of traditional covering material listed within these tables.

If a proposed covering material is considered by the REGULATORY AUTHORITY, it may be ideal to conduct a field evaluation of the material during inspections conducted of the FOOD ESTABLISHMENT. For a set period, as determined by the REGULATORY AUTHORITY, the REGULATORY AUTHORITY will evaluate the material's performance under normal operational conditions within the establishment. If the REGULATORY AUTHORITY through its evaluation finds the proposed material covering to not be in compliance with the requirements of the Food Code for traditional material listed within Tables 10, 11, and 12 would need to be replaced with compliant materials.

Before any field evaluation of proposed experimental material covering is considered by the REGULATORY AUTHORITY, it is highly recommended that a legally binding agreement between the REGULATORY AUTHORITY and the PERMIT HOLDER/owner of the FOOD ESTABLISHMENT be drafted. This agreement would notify the PERMIT HOLDER/applicant that the establishment has an obligation to replace the experimental material covering it with that which meets the requirements of the Food Code should the material fail.

All coverings, including experimental material coverings, must be installed in accordance with its manufacturer's recommendations. A sample of these materials may be requested by the REGULATORY AUTHORITY prior to their review and approval for installation.

Tables 10, 11, and 12 identify the types of traditional floor, wall, and ceiling finishes that would be considered acceptable in noted areas within a FOOD ESTABLISHMENT.

Table 10 - Finishes Preparation Rooms

Finishes – Preparation Rooms			
Room/Area	**Floors**	**Walls**	**Ceilings**
Cooking areas **(exposed to high heat)**	• Quarry Tile • Poured Epoxy • Commercial Grade Vinyl • Composition Tile (VCT) • Commercial Grade Sheet Linoleum with Chemically Welded Seams	• Stainless Steel • Ceramic Tile • Aluminum	• Stainless Steel • SMOOTH, Non-Acoustical Plastic Coated or Metal-Clad • Fiberboard • Drywall SEALED with an Epoxy Finish • Plastic laminate • Glazed Surfaces
FOOD Preparation **(no or low heat exposure)**	• Quarry tile • Poured Epoxy • Commercial Grade Vinyl • Composition Tile (VCT) • Commercial Grade Sheet Linoleum with Chemically Welded Seems	• Stainless Steel • Ceramic Tile • Fiberglass Reinforced Polyester Panels (FRP) • Concrete Block filled with Epoxy Paint or Glaze	• SMOOTH, Plastic Coated or Metal-Clad Fiberboard • Drywall SEALED with an Epoxy Finish • Plastic Laminate • Glazed Surfaces
Walk-In Refrigerators and Freezers	• Insulated Metal Flooring provided by the Manufacturer of the Walk-In • Quarry Tile • Poured Epoxy	• Insulated Wall Panels provided by the Manufacturer of the Walk-In • Stainless Steel • Aluminum • Fiberglass Reinforced Polyester Panels (FRP)	• Insulated ceiling panels provided by the Manufacturer of the Walk-In • Stainless Steel • Aluminum • Fiberglass Reinforced Polyester Panels (FRP)
WAREWASHING Areas	• Quarry Tile • Poured Epoxy • Commercial Grade Vinyl • Composition Tile (VCT) • Commercial grade sheet linoleum with chemically welded seams	• Stainless Steel • Ceramic Tile • Fiberglass Reinforced Polyester Panels (FRP) • Concrete Block filled with Epoxy Paint or Glaze surface	• SMOOTH, Non-Acoustical Plastic Coated or Metal-Clad Fiberboard • Drywall SEALED with an Epoxy Finish • Plastic Laminate • Glazed Surfaces

Table 11 – Finishes Storage areas

Finishes – Storage Areas			
Room/Area	**Floors**	**Walls**	**Ceilings**
FOOD Storage	• Quarry tile • Poured Epoxy • Commercial Grade Vinyl Composition Tile (VCT) • Commercial Grade Sheet Linoleum with Chemically Welded Seams • SEALED Concrete (Case lot storage)	• Stainless Steel • Ceramic Tile • Fiberglass Reinforced Polyester Panels (FRP) • Concrete Block Filled with Epoxy Paint or a Glazed Surface • Epoxy SEALED Dry-Wall	• Plastic Coated or Metal-Clad Fiberboard • Drywall SEALED with an Epoxy Finish • Plastic Laminate • Glazed Surfaces
Other Storage	• Quarry tile • Poured Epoxy • Commercial Grade Vinyl Composition Tile (VCT) • Commercial Grade Sheet Linoleum with Chemically Welded Seams	• Ceramic Tile • Fiberglass Reinforced Polyester Panels (FRP) • Concrete Block Filled with Epoxy Paint or a Glazed Surface • Drywall SEALED with an Epoxy Finish	• Plastic Coated or Metal-Clad Fiberboard • Drywall SEALED with an Epoxy Finish • Plastic Laminate • Glazed Surfaces
Bar **(FOOD EMPLOYEE side of bar)**	• Quarry tile • Poured Epoxy • Commercial Grade Vinyl Composition Tile (VCT) • Commercial Grade Sheet Linoleum with Chemically Welded Seams	• Stainless Steel • Ceramic Tile • Fiberglass Reinforced Polyester Panels (FRP) • Plastic Laminate • Concrete Block Filled with Epoxy Paint or a Glazed Surface	• Plastic Coated or Metal-Clad Fiberboard • Drywall SEALED with an Epoxy Finish • Plastic Laminate • Glazed Surfaces

Table 12 – Finishes Other Rooms

Finishes - Other			
Room/Area	**Floors**	**Walls**	**Ceilings**
Dressing Rooms	• Quarry tile • Poured Epoxy • Commercial Grade Vinyl Composition Tile (VCT) • Commercial Grade Sheet Linoleum with Chemically Welded Seams • SMOOTH, SEALED Concrete	• Stainless Steel • Ceramic Tile • Fiberglass Reinforced Polyester Panels (FRP) • Concrete Block Filled with Epoxy Paint or a Glazed Surface • Painted or epoxy SEALED Drywall	• Plastic Coated or Metal-Clad Fiberboard • Drywall SEALED with an Epoxy Finish • Plastic Laminate • Glazed Surfaces
Garbage and REFUSE (inside of FOOD ESTABLISHMENT)	• Quarry tile • Poured Epoxy • Commercial Grade Vinyl Composition Tile (VCT) • Commercial Grade Sheet Linoleum with Chemically Welded Seams	• Stainless Steel • Ceramic Tile • Fiberglass Reinforced • Polyester Panels (FRP) • Concrete Block Filled with Epoxy Paint or a Glazed Surface	• Stainless Steel • Plastic Coated or Metal-Clad Fiberboard • Drywall SEALED with an Epoxy Finish • Plastic Laminate • Glazed Surfaces
Toilet Rooms	• Quarry tile • Poured Epoxy • Commercial Grade Vinyl Composition Tile (VCT) • Commercial Grade Sheet Linoleum with Chemically Welded Seams	• Stainless Steel • Ceramic Tile • Fiberglass Reinforced Polyester Panels (FRP) • Concrete Block Filled with Epoxy Paint or a Glazed Surface	• Plastic Coated or Metal-Clad Fiberboard • Drywall SEALED with an Epoxy Finish • Plastic Laminate • Glazed Surfaces

Pest Control

All openings to the outside shall be effectively protected against the entrance of insects and rodents. All roller doors, sliding or bi-fold doors, or similar movable wall systems that are not self-closing and create a continuous opening to the exterior must have an effective means of pest control.

Some examples of effective barriers include:

- Solid, tight fitting, self-closing doors
- Fixed or self-closing screens of 16 mesh to 1 inch or finer
- Air curtains that are properly installed and maintained

This may 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.

Building

All masonry or cement foundations must be rodent proof. All openings should be SEALED into the foundation and exterior walls, including openings & penetrations around wall and ceiling penetrations. Effectively seal all air ducts, skylight, transoms, and other openings to the outside.

Doors and Windows

Exterior doors used as exits need not be self-closing if they are:

- Solid and tight-fitting;
- Designated for use only when an emergency exists, by the fire protection authority that has jurisdiction over the FOOD ESTABLISHMENT; and
- Limited use so they are not used for entrance or exit from the building for purposes other than the designated emergency exit use.

Windows or doors of a FOOD ESTABLISHMENT, or of a larger structure within which a FOOD ESTABLISHMENT is located, are kept open for ventilation or other purposes; the openings shall be protected by:

- 16 mesh to 25.4 mm (16 mesh to 1 inch) screens.
- Properly designed and installed air curtains to control flying insects; or
- Other effective means.

Note, this may not apply if flying insects and other pests are absent due to the location of the establishment, the weather, or other limiting conditions.

Windows that open to the outside must be properly protected as noted above. Other effective means may include self-closing devices for service windows (spring-loaded,

bump pad, electronic opener, or gravity operated). Check with the REGULATORY AUTHORITY about requirements/allowances open air concepts /dining.

Air curtains, whether installed over drive-through windows or doorways, should be:

- Sized for the opening to be protected against flying insects.
- Auto activated whenever the door or window is opened.
- Air currents must blow downward and slightly outward. The units must be wired to the switch box directly so the unit cannot be deactivated at the door.
- NSF/ANSI 37.

Delivery, Customer, and Toilet Room Doors

There are other entrances in a building that should be considered when constructing a FOOD ESTABLISHMENT for control of pests.

Exterior doors: All outside doors shall be self-closing and tight fitting. Install door sweeps and weather stripping to prevent the entrance of insects and rodents. Note: Daylight shall not be visible around the perimeter of the door when standing on this inside of the establishment.

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. If the location of one of these doors is exposed to the kitchen or other FOOD service, minimum 16 mesh to 1-inch screens, air curtains, or other effective APPROVED means will be required.

Toilet Room (Restroom) Doors: All toilet rooms located in or adjacent to a FOOD ESTABLISHMENT shall be provided with tight-fitting, self-closing doors. 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.

Insect Control Devices, Design and Installation

Insect control devices used to electrocute or stun flying insects are supplemental to good SANITATION practices. If used, these devices must be:

- Wall mounted. Ceiling mounted devices are not acceptable.
- Designed to retain the insect within the device.
- Installed such that:
    - the devices are not located above FOOD preparation areas;
    - not installed closer than 5 feet from exposed FOOD, clean EQUIPMENT, UTENSILS, LININS AND SINGLE USE/SINGLE-SERVICE ITEMS;
    - located to prevent the contamination of exposed FOOD, clean EQUIPMENT, UTENSILS, and LINENS, from dead insects or insect fragments; and
    - the center of the device is not more than 3 feet above the floor.

Open-air Dining

An establishment is considered to have open air dining if it leaves doors, windows, or other openings to the outside open with no active pest control (screens, air curtains, etc.).

If APPROVED by the REGULATORY AUTHORITY, FOOD ESTABLISHMENTS may provide open-air dining via unprotected outer openings under the following conditions:

- The PERMIT HOLDER has an APPROVED pest control plan that includes specific procedures of how to monitor and respond to any animal/insect activity.
- Insects and rodents are not present in the facility.
- When pests are found in the facility, the PERMIT HOLDER must have the ability to close all openings to the outside and to take action to eliminate the pests and any contaminated FOOD.

Pet Dogs in Outdoor Seating Areas

If APPROVED by the REGULATORY AUTHORITY, establishments may allow pet dogs in outdoor dining areas. When developing a plan for approval there are key areas of consideration to address hazards associated with allowing pet dogs in outdoor dining areas. These are addressed in Annex 3 of the Food Code and include:

- The vaccination status of the pet dog.
- Ensuring CONSUMERS properly restrain or contain the pet dog and prevent the pet dog from serving as a source of contamination by preventing access to waitstaff, CONSUMER FOOD, UTENSILS, LINENS, AND SINGLE-SERVICE ITEMS, as well as FOOD CONTACT SURFACES such as tables and chairs, including during entrance and egress.
- Signage alerting patrons to increased risk and designated areas for pet dogs.
- Ensuring compliance with local ordinances (for example: related to sidewalks, public nuisance, SANITATION, size and breed restrictions, etc.)
- Preparing or serving FOOD and water to dogs, if done, how those items will be contained, designated, and handled to prevent cross-contamination with FOOD, EQUIPMENT, UTENSILS, LINENS, AND SINGLE SERVICE ITEMS for humans. Note: All FOOD prepared and served to dogs must not be adulterated or misbranded and is subject to applicable LAW.
- Maintaining the outdoor dining area, including the exterior walls and floors clean and ensure that surfaces that have been contaminated with dog excrement or other bodily fluids (urine, saliva, and vomit, etc.) are cleaned and sanitized
- Providing a covered REFUSE container exclusively to store all pet waste generated,
- Developing a protocol for requesting that a pet dog owner remove from the establishment any dog that menaces, threatens or bites any PERSON or other dog, and reporting said incident to the appropriate authority.

Mechanical Ventilation

Mechanical Ventilation Requirements

EQUIPMENT which produces smoke, steam, grease, mist, particulate matter, condensation, vapor, fumes, odors, or create SANITATION or indoor air quality problems, will require a hood.

Hoods should be designed and installed to prevent grease and condensation from collecting on walls, ceilings, and dripping into FOOD or onto FOOD CONTACT SURFACES. All hoods should comply with the current local building and fire safety codes.

Selecting the right hood system for FOOD ESTABLISHMENT requires careful consideration of various factors, including the types of appliances used, kitchen layout, and ventilation needs. Choosing the wrong type of hood system can lead to inefficiencies, safety hazards, and increased maintenance costs. Therefore, companies must thoroughly assess their kitchen requirements, including the menu and needed EQUIPMENT, to determine whether a Type I or Type II hood system is the optimal choice.

After installation, the balance of the exhaust and make-up air must be ensured so that the system will operate efficiently.

Mechanical Ventilation Hood Systems

Hood styles

Hoods can come in many different shapes and styles. Some common types are:

- Canopy hoods
- Island hoods
- Backshelf hoods
- Eyebrow hoods
- Waterwash hoods
- Pant-leg style
- Dish machine condensate hoods

When submitting a plan, the style and type of hood, size, location and placement over EQUIPMENT or in rooms should be clearly identified. Specification for any ventilation hood should be included with the plans.

Type I Hoods

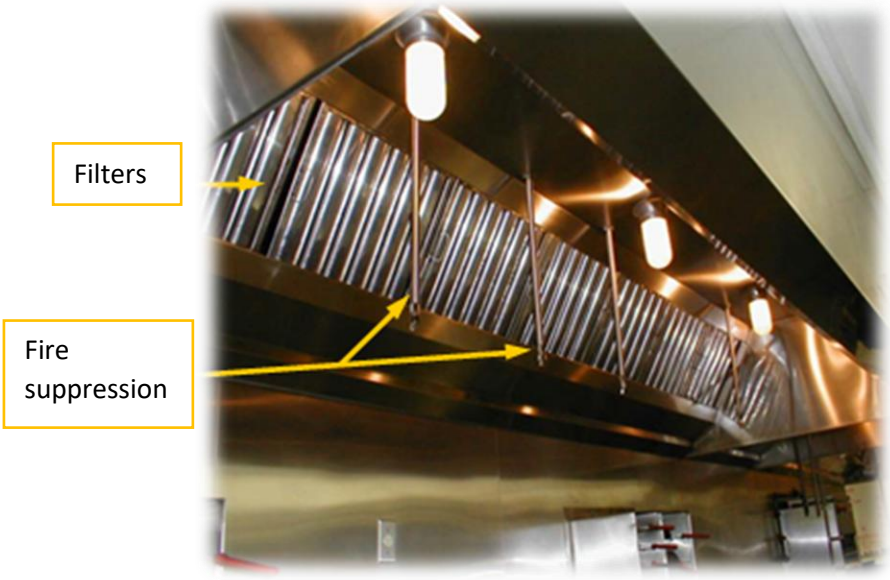
Type I hood systems, also known as grease hoods or canopy hoods, are the frontline defenders against the production of grease and smoke emitted by high heat cooking appliances. They are designed to capture grease-laden vapors and smoke at the source. These hoods are commonly found above deep fryers, cooktops, charbroilers, ovens, griddles, and other EQUIPMENT producing grease-laden vapors. The meticulous engineering of Type I hoods ensures efficient extraction, mitigating fire risks and maintaining air quality. However, the accumulation of grease necessitates regular

cleaning and maintenance to prevent potential hazards and ensure optimal performance. Type I hoods (Fig 13) often include grease filters and fire suppression systems for safety.

Type II Hoods

Type II hoods, often referred to as condensate hoods and shall be installed over EQUIPMENT that produces steam, heat, mist, condensation, fumes, vapor, and non-grease producing appliances. Areas that might have Type II hoods (Fig 14) include WAREWASHING machines, rice cookers, steam tables, warming ovens, bread ovens, self-enclosed pizza ovens and similar. Type II hoods are easier to install than Type I hoods because they can be used without vents or ductwork, so they are sometimes less expensive. However, local codes may limit their useability.

Fig 13 - Type I Hood Over Cook Line Example



Fire suppression system - The National Fire Protection Association provides a resource for FOOD ESTABLISHMENTS to reduce the potential fire hazard of commercial cooking operations. Refer to NFPA and/or local fire protection regulations.

Fig 14 - Type II Hood Over a WAREWASHING Machine

Ventless Hoods

Vent less Hood Systems (Fig 15) or ventilation systems integral to the cooking EQUIPMENT need to be reviewed and APPROVED by the local mechanical code, and other applicable fire safety codes.

Fig 15 - Ventless Hood Examples

APPENDICES

Appendix A - Model Plan Review Application for Food Establishments

TYPE OF APPLICATION □ New □ Remodel □ Conversion	**Projected Start Date:** _____ **Projected Completion Date:** _____
TYPE OF FOOD OPERATION: □ Restaurant □ Institution □ Daycare □ Retail food store □ Other:_____	

FOOD ESTABLISHMENT INFORMATION

Name of Establishment:			
Establishment Address:	**City:**	**State:**	**ZIP:**

OWNERSHIP INFORMATION

Name of Owner:			
Address:	**City:**	**State:**	**ZIP:**
Email:	**Phone Number:**		

APPLICANT INFORMATION (e.g., ARCHITECT/ENGINEER)

Applicant Name:	**Contact Person:**		
Applicant Mailing Address:	**City:**	**State:**	**ZIP:**
Email:	**Phone Number:**		

FOOD OPERATION INFORMATION

Hours/Days of Operation **Sun: _____** **Mon: _____** **Tues: _____** **Wed: _____** **Thurs: _____** **Fri:_____** **Sat:_____**	**Restaurant Seating Capacity** # of Indoor Seats: _____ # of Outdoor Seats: _____ Square Feet of Facility: _____	**Type of Service (check all that apply)** □ On-site consumption □ Off-site consumption □ Catering □ Single-use utensils □ Multi-use utensils □ Other: _____	**Employees** Max per shift: _____ **Maximum meals to be served** Breakfast _____ Lunch _____ Dinner _____

The following documents must be submitted along with this application:

- □ Proposed menu or complete list of food and beverages to be offered (including seasonal, catering and banquet menus) – ***Standard Operating Procedures or HACCP plans may be required.***
- □ Plans must be clearly drawn to scale (minimum 11 x 14 inches in size) and include these items below:
- □ The floor plan must identify: food preparation, serving and seating areas, restrooms, office, employee change room, storage, warewashing, janitorial and trash area. Include location of any outside equipment or facilities (dumpsters, well, septic system- if applicable).
- □ Provide equipment layout and specifications, clearly numbered and cross-keyed with the equipment list.
  - *Elevation drawings may be requested by the Regulatory Authority.*
- □ Identify handwashing, warewashing and food preparation sinks.
- o Provide plumbing layout showing the sewer lines, cleanouts, floor drains, floor sinks, vents, grease trap or grease interceptor, hot and cold water lines, and direction of flow to sanitary sewer.
- □ Provide exhaust ventilation layout including location of hood and make-up air returns and ducts, if applicable.
- □ Lighting plan, indicating the exact foot candles for each area as required by the Food Code (§6-303.11).
- □ Finish schedule showing floor, coved base, wall and ceilings for each area shown on the plans.

Note: A color-coded flow chart may be requested by the Regulatory Authority demonstrating flow patterns for: food (receiving, storage, preparation, service); dishes (clean, soiled, cleaning, storage); trash (service area, holding, storage, disposal).

Signature:	**Date:**
Print Name:	**Title:**

Appendix B - Regulatory Compliance Review List & Food Preparation Procedures

FOOD DELIVERY

1. How often will frozen foods be delivered? □ Daily □ Weekly □ Other: _____
2. How often will refrigerated foods be delivered? □ Daily □ Weekly □ Other: _____
3. How often will dry foods or supplies be delivered? □ Daily □ Weekly □ Other: _____

FOOD STORAGE* - Identify amount of space (in cubic feet) allocated for:
Dry Storage _____; Refrigerated Storage (41°F) _____; Frozen Storage _____;
Utensil Storage _____
* Identify on plans where storage will be located.

INSTRUCTIONS: Describe the following with as much detail as possible. Indicate Not Applicable (NA) as appropriate.

PROCESS	IDENTIFY FOOD ITEMS	INDICATE LOCATION AND EQUIPMENT	MEETS CRITERIA (RA to circle and Initial)
Washing Food Code §3-302.15			YES/NO
Thawing Food Code §3-501.13			YES/NO

Cooking Food Code §3-401			YES/NO
Hot Holding Hot food maintained at 135°F			YES/NO
Cooling Time/Temperature Control for Safety food will be cooled to 41°F within 6 hours; 135°F to 70° in 2 hours			YES/NO
Reheating Food must be reheated to a temperature of 165° for 15 seconds within 2 hours			YES/NO

FINISH SCHEDULE

INSTRUCTIONS: Indicate which materials (quarry tile, stainless steel, fiberglass reinforced panels (RFP), ceramic tile, 4" plastic coved molding, etc.). Indicate Not Applicable (NA) as appropriate.

ROOM/AREA	FLOOR	FLOOR/WALL JUNCTURE	WALLS	CEILING	MEETS CRITERIA (RA to circle and Initial)
Food Preparation					YES/NO
Dry Food Storage					YES/NO
Warewashing Area					YES/NO
Walk-in Refrigerators and Freezers					YES/NO
Service Sink					YES/NO
Refuse Area					YES/NO
Toilet Rooms and Dressing Rooms					YES/NO
Other: Indicate					YES/NO
Identify the finishes of cabinets, countertops, and shelving:					

PHYSICAL FACILITIES

INSTRUCTIONS: Explain the following with as much detail as possible. Indicate Not Applicable (NA) as appropriate.

TOPIC	MINIMUM CRITERIA	MEETS CRITERIA (RA to circle and Initial)
Handwashing facilities	Identify number of the HANDWASHING SINKS in food preparation and warewashing areas: _____FOOD Preparation _____ Warewashing Area Type of hand drying device? Disposable towels □ Hand-drying device □	YES/NO
Warewashing Facilities	**MANUAL DISHWASHING** Identify the length, width, and depth of the compartments of the 3-compartment sink: _____ Will the largest pot/ pan fit into each compartment of the 3-compartment sink? □ Yes □ No If No, what will be the procedure for manual cleaning and sanitizing of items that will not fit into sink compartments? _____ Describe size, location and type (drainboards, wall-mounted or overhead shelves, stationary or portable racks) of air-drying space: _____ What type of sanitizer will be used? □ Chemical Type: _____ □ Hot Water	YES/NO

	MECHANICAL DISHWASHING Identify the make and model of the mechanical dishwasher: _____ What type of sanitizer will be used? □ Chemical Type: _____ □ Hot Water Will ventilation be provided? Yes □ No □	
Water Supply	Is the water supply public or non-public/private? Public □ Non-public/private □ If private, has the source been approved? Yes □* No □ Attach copy of written approval and/or PERMIT. Is ice made on PREMISES or purchased commercially? Made on-site □ Purchased □	YES/NO
Sewage Disposal	Is the SEWAGE system public or non-public/private? Public □ Non- public/private □ If private, has the sewage system been approved? Yes □* No □□ Attach copy of written approval and/or PERMIT. Will grease traps/interceptors be provided? Yes □* No □ *Identify location on plan.	YES/NO
Backflow Prevention	Will all potable water sources be protected from backflow? Yes □ No □ Are all floor drains identified on the submit floor plan? Yes □ No □	YES/NO

Toilet Facilities	Identify locations and number of toilet facilities: _____ Hot and cold water provided? Yes □ No □	YES/NO
Dressing Rooms	Will dressing rooms be provided? Yes □ No □ Describe storage facilities for employee personal belongings _____	YES/NO
Linens	Will LINENS be laundered on site? Yes □ No □ If yes, what will be laundered and where? _____ If not, how and where will LINENS be cleaned? _____ Identify location of clean and dirty LINEN storage: _____ How often will LINENS be delivered and picked up? _____	YES/NO
Poisonous/ Cleaning Storage	Identify the location and storage of POISONOUS OR TOXIC MATERIALS _____ Where will cleaning and sanitizing solutions be stored at workstations? _____ How will these items be separated from food and food-contact surfaces? _____ Identify the location of the facilities for cleaning mops and other cleaning EQUIPMENT? _____	YES/NO

Pest Control	Will all outside doors be self-closing and rodent proof? □ Yes □ No □ NA Will screens be provided at all entrances left open to the outside? □ Yes □ No □ NA Will all openable windows have a minimum #16 mesh screening? □ Yes □ No □ NA Will insect control devices be used? □ Yes □ No □ NA Will air curtains be used? If yes, where? _____ Note: All pipes and electrical conduit chases must be sealed to prevent rodent access.	YES/NO
REFUSE, Recyclables, and Returnables	Will REFUSE/garbage be stored inside? □ Yes □ No If yes, where _____ Identify how and where garbage cans and floor mats will be cleaned. _____ Will a dumpster or a compacter be used? □ Dumpster □ Compactor Identify locations of grease storage containers: _____ Will there be an area to store recyclables? □ Yes □ No If yes, where _____ Will there be an area to store returnable damaged goods? □ Yes □ No If yes, where _____	YES/NO

Appendix C - Plan Review Formulas

Model Plan Review formulas/calculators link available in Appendix E, Michigan Department of Agriculture and Rural Development. Model Plan Review formulas used in the application process must be APPROVED by the REGULATORY AUTHORITY. *The use of these formulas is a tool, not a rule.* These formulas allow for estimations of what may be needed in a proposed FOOD ESTABLISHMENT versus what is being suggested in the plans. A plan review calculator can be found at: https://www.michigan.gov/mdard/food-dairy/regulators/planreview

Walk-In Refrigerated Storage

Formulas:

Step 1:

$$\text{Estimated Space Needed (Cu. ft.)} = \frac{\text{Volume per Meal (Cu. ft.)} \times \#\text{ of Meals Between Deliveries}}{0.40}$$

Note: Only 40% of any walk-in unit provides usable space.

Step 2:

$$\text{Size of Cooler Needed (Sq. ft.)} = \frac{\text{Estimated Space (Cu. ft.)}}{\text{Height of Cooler (ft.)}}$$

Examples:

Step 1 - The number of meals between deliveries = 1000 (100 meals per day × 10 days between deliveries). Volume per meal = 0.1 cubic feet.

$$.1\ \text{ft}^3\ \text{vol.} \times 1000\ \text{meals} = 100\ \text{ft}^3$$

$$\frac{100\ ft^3}{0.40} = \mathbf{250\ ft^3}\ \textit{Usable Space Needed}$$

Step 2 - The usable space needed for the walk-in is **250 ft³**. The cooler has a 6ft high ceiling.

$$\frac{250\ \text{ft}^3\ \text{usable space needed}}{6\ \text{ft ceiling height}} = \mathbf{41\ ft^2\ Sized\ Cooler\ Needed}$$

Reach-In Refrigerated Storage

Formula:

$$\text{Estimated Space Needed (Cu. Ft.)} = \frac{\text{Volume per meal (Cu. ft.)} \times \text{Number of Meals Served Between Deliveries}}{0.75}$$

Note: Only 75% of any reach-in unit provides usable space.

Example:

1. The number of meals between deliveries = 1000 (100 meals per day × 10 days between deliveries). Volume per meal = 0.1 cubic feet.

$$0.1 \text{ ft}^3 \text{ vol.} \times 1000 \text{ meals} = 100 \text{ft}^3$$

$$\frac{100 \text{ ft}^3}{0.75} = 133.3 \text{ ft}^3 \text{ Estimated Space Needed}$$

Linear Feet of Shelving

Formula:

$$\text{Linear Feet of Shelving Required (ft.)} = \frac{\text{Volume per Meal (0.1 cu. ft.)} \times \text{Number of Meals Between Deliveries}}{\text{D} \times \text{H} \times \text{C}}$$

D = Depth of Shelves (ft.)
H = Clearance Between Shelves (ft.)
C = 80% Effective Capacity of Shelf Height

Examples:

1. Assume 400 meals per day and a 10-day storage between deliveries = 4,000 meals. Volume of 0.1 cu. ft. per meal, shelf depth of 18 inches, clearance of 12 inches between shelves and 80% effective capacity of shelf height.

$$\frac{0.1 \text{ cu. ft.} \times 4000 \text{ meals}}{1.5 \text{ ft.} \times 1 \text{ ft.} \times 0.80} = \mathbf{333 \text{ ft. Shelving Needed}}$$

2. Assume 400 meals per day and a 10-day storage between deliveries = 4,000 meals. Volume of 0.1 cu. ft. per meal, shelf depth of 18 inches, clearance of 18 inches between shelves and 80% effective capacity of shelf height.

$$\frac{0.1 \text{ cu. ft.} \times 4000 \text{ meals}}{1.5 \text{ ft.} \times 1.5 \text{ ft.} \times 0.80} = \mathbf{222 \text{ ft. Shelving Needed}}$$

Hot Water Demand

Formulas:

$$\text{Gallons per Hour (GPH)} = \frac{\text{Sink Size in}^3 \times 7.5\ {}^{\text{gal}}/_{\text{ft}^3} \times (\text{Number of Compartments} \times .75\ \text{capacity})}{1728\ {}^{\text{in}^3}/_{\text{ft}^3}}$$

OR

$$\text{Gallons per Hour (GPH)} = \text{Sink Size in}^3 \times \text{Number of Compartments} \times 0.003255\text{in}^3$$

$\text{British Thermal Units (BTU)} = \frac{\text{GPH} \times \text{°Rise} \times 8.33\ {}^{\text{lb}}/_{\text{gal}}\ \text{of water}}{\text{Thermal Efficiency}}$	$\text{Kilo} - \text{Watt (KW) Input} = \frac{\text{GPH} \times \text{°Rise} \times 8.33\ {}^{\text{lb}}/_{\text{gal}}\ \text{of water}}{3412\ {}^{\text{BTU}}/_{\text{KW}}}$

Example:

1. How many BTUs or KWs will the booster heater need to raise the incoming hot water (140°F) to 180°F for the final rise temperature if the dishwasher requires 64 GPH?

$\frac{64\ \text{GPH} \times 40°\text{F Rise} \times 8.33}{0.70\ \text{(operating efficiency)}} = 30{,}464\ \text{BTU}$	$\frac{64\ \text{GPH} \times 40°\text{F Rise} \times 8.33}{3412\ {}^{\text{BTU}}/_{\text{KW}}} = 6.2\ \text{KW}$

Appendix E - Plan Review Web Resources

AFDO Guidelines for Incubator Kitchens
https://www.afdo.org/product/guidelines-for-incubator-kitchens/

Association of Food and Drug Officials State resources
https://www.afdo.org/resources/plan-review/

CDC- Vessel Sanitation Program
https://www.cdc.gov/vessel-sanitation/about/index.html

FDA - FD207 Plan Review for Retail Food Establishments for Regulators
State Training Coordination Services | FDA

FDA Foodborne Illness Report
FDA Report on the Occurrence of Foodborne Illness Risk Factors in Fast-Food and Full-Service Restaurants 2017-2018

FDA Employee Health and Personal Hygiene Handbook
https://www.fda.gov/food/retail-food-industryregulatory-assistance-training/retail-food-protection-employee-health-and-personal-hygiene-handbook

FDA HACCP Guidelines
https://www.fda.gov/food/hazard-analysis-critical-control-point-haccp/haccp-principles-application-guidelines

FDA – Listing of Retail Food Protection Information and Resources
https://www.fda.gov/food/retail-food-protection/listing-retail-food-protection-information-and-resources

Michigan Department of Agriculture and Rural Development – Plan Review Calculators
https://www.michigan.gov/mdard/food-dairy/regulators/planreview

NSF - Food Shield Certification Requirements Explained
https://www.nsf.org/knowledge-library/understanding-food-shield-certification-requirements

Appendix F - Guidance for Outdoor Cooking Operations at Permanent Food Establishments

Support Services Provided by the Permanent FOOD ESTABLISHMENT
An outdoor cooking operation (OCO) shall be operated in conjunction with a permitted/licensed permanent FOOD ESTABLISHMENT that will provide "support services" for the outdoor cooking operation. Support services may include, but are not limited to, a variety of services such as: the supply of potable water; the availability of adequate plumbing and waste disposal; storage and preparation facilities for FOOD products (including refrigeration and cooking facilities); storage and cleaning facilities for EQUIPMENT and UTENSILS; storage and maintenance of other supplies; and personnel resources. The permanent FOOD ESTABLISHMENT must be of such size and scope as to accommodate its own operation, as well as support the needs of the OCO.

The scope of support services should be determined at the time of plan review and be based on the menu, the number of anticipated customers, the frequency of the outdoor cooking operation, and the limitations of the OCO. The Outdoor Cooking Operation must be located in an area that allows convenient and easy access to the support services provided by the permanent FOOD ESTABLISHMENT. Safe and protected transportation of FOOD, EQUIPMENT, UTENSILS, and other items from the permanent FOOD ESTABLISHMENT used for support services to the OCO must be evaluated.

EQUIPMENT
Only EQUIPMENT designed for outdoor use should be installed in outdoor locations and must be used in accordance with the manufacturer's instructions.

Finishes
Walls and Ceiling: In permanent establishments that choose to engage in outdoor cooking, additional factors will be taken into consideration. Sufficient protection of FOOD, FOOD processing areas, and FOOD CONTACT SURFACES must be demonstrated and will be considered on a case-by-case basis.

Possible examples of protection include (but are not limited to): Individual covers for each piece of cold and hot holding EQUIPMENT (such as lids, cooker tops, etc.) or roofs and other permanent structures, canopies, awnings, or table type umbrellas meeting all state and local fire codes that dictate what material is suitable above cooking EQUIPMENT.

If overhead protection is achieved by individually covering cooking and/or hot and cold holding units, walls may not be required unless an environmental concern or condition exists to require additional protection. If processing such as cutting, slicing, washing, portioning, or otherwise preparing FOOD items, then a roof or other permanent overhead protection would be required.

In certain locations walls could be required to protect against the elements, windblown dust and debris, insects, or other sources that may contaminate FOOD, FOOD CONTACT SURFACES, EQUIPMENT, UTENSILS, or EMPLOYEES. Screening, canvas, or other similar material may be APPROVED by the REGULATORY AUTHORITY if it provides adequate protection. (§§ 6-201.11, 3-305.14) If tables or other FOOD CONTACT SURFACES are used when cutting, slicing, washing, portioning, or otherwise preparing FOOD items, then walls would be required to provide additional FOOD protection.

Floors and coving: In establishments that choose to engage in outdoor cooking, additional factors will be taken into consideration. Sufficient flooring must be demonstrated and will be considered on a case-by-case basis. The floor surfaces of an OCO shall be SMOOTH, EASILY CLEANABLE and durable construction. Portable outdoor cooking EQUIPMENT, such as a barbeque, must be located on floors constructed of concrete, asphalt, non-absorbent matting, plywood (or other hard wood surface), or other material APPROVED by the local REGULATORY AUTHORITY. (§§ 6-101.11, 6-102.11)

Outdoor Cooking Finishes Summary

Room/Area	Floors	Walls	Ceilings
Outdoor Cooking Area	• Concrete • Asphalt • Non-absorbent matting • Plywood (or other hard wood surface) • Or other material APPROVED by REGULATORY AUTHORITY	• Will depend on how overhead protection is achieved • Screening and/or canvas • Other similar material may be APPROVED by REGULATORY AUTHORITY • When FOOD preparation occurs, additional requirements may be required	• Individually cover cooking and/or hot and cold holding units (lids, cooker top, etc.) • Canopies • Awnings • Table type umbrella • Roof or permanent structure • When FOOD preparation occurs, additional requirements may be required

Hygiene

Where FOOD handling is limited to transporting FOODS directly to outdoor cooking EQUIPMENT for cooking and then immediately transporting the finished product to the kitchen for further preparation, the REGULATORY AUTHORITY should take the following characteristics into account when assessing if the placement of an existing or new HANDWASHING SINK is required at the outdoor cooking operation:

1. Nature of the FOOD that will be cooked;
2. Characteristics of the cooking process and EQUIPMENT;
3. The FOOD EMPLOYEE'S choice of UTENSILS or gloves during the cooking process;
4. Duration of the cooking process;
5. Additional tasks or functions that the FOOD EMPLOYEE may be reasonably expected to engage in during the cooking process;
6. The location of the portable outdoor cooking EQUIPMENT in relation to the nearest accessible HANDWASHING SINK; and
7. Any other unique characteristics of the outdoor cooking operation, or the establishment's compliance history with handwashing, that the REGULATORY AUTHORITY determines to be relevant when assessing if the placement of an existing or new HANDWASHING SINK is accessible to the outdoor cooking operation

Toilet Facilities

Toilet facilities for outdoor cooking operations shall be conveniently located and accessible within reasonable proximity of the permanent FOOD ESTABLISHMENT or a location otherwise APPROVED by the local REGULATORY AUTHORITY.

Food Defense

The OCO must be secured to prevent unauthorized access to FOOD, EQUIPMENT, UTENSILS, and related items when FOOD EMPLOYEES are not present. (§2-103.11)

Appendix G – Outdoor Cooking Operations Plan Review Checklist

This checklist is in reference to the CFP - Recommended Guidance for Outdoor Cooking Operations at Permanent Food Establishments in Appendix F.

GENERAL INFORMATION
Food Establishment Name:
Address:
City/State/Zip Code:
Contact Name: Contact Phone Number:
Food establishment capable of supporting Outdoor Cooking Operation: ☐ Yes ☐ No If No why: _____
Select Type of Outdoor Cooking Operation: ☐ Permanently Installed Outdoor Cooking Operation (POCO) ☐ Portable Outdoor Cooking Equipment (POCE)
Permanently Installed Outdoor Cooking Operation
Plans received, to include a sketch of the layout: ☐ Yes ☐ No Equipment list received: ☐ Yes ☐ No Menu received: ☐ Yes (attach) ☐ No
Outdoor Portable Cooking Operation
Design/type of cooking equipment – meets minimum equipment requirements: ☐ Yes ☐ No Receipt of drawing of the location specific to the permanent food establishment, to include distances to entrances into the kitchen and access to restroom facilities. ☐ Yes ☐ No
Structural Requirements
Overhead Protection required: ☐ Yes ☐ No If yes, identify type: _____ **Floor surface** of proper construction: ☐ Yes ☐ No If yes, identify type: POCE: _____ ☐ Asphalt ☐ Concrete ☐ Wood ☐ Other: _____ **Walls required**: ☐ Yes ☐ No If yes, identify type: _____ POCE: ☐ Screens ☐ Concrete ☐ Wood ☐ Other: _____ **Equipment** (Identify type of equipment to be used. Equipment specification to be provided.): Cooking: _____ Cold holding: _____ Hot holding: _____ Other: _____ **Handwashing facilities required at the POCO**: ☐ Yes ☐ No If yes, identify type: POCO type : _____ POCE type : _____ Location : _____ Distance: _____

Structural Requirements (Cont.)
Warewashing facility required at the POCO: ☐ Yes ☐ No Location: _____ If not, all equipment and utensils must be washed/rinsed/sanitized within the permanent food establishment. **Lighting:** Sufficient ☐ Yes ☐ No Shielded (if applicable) ☐ Yes ☐ No **Garbage disposal**: ☐ Yes ☐ No If yes, identify type: Type: _____ **Toilet Facilities:** Location: _____ Distance: _____

Food Preparation and Food Storage
TCS foods pre-cooked and pre-cooled for service at permanent FOOD ESTABLISHMENT Yes ☐ No Cooking and serving areas protected from contamination: ☐ Yes ☐ No Equipment separated from public by minimum of 4 feet: ☐ Yes ☐ No Method for preventing access by patrons or public to food preparation areas Type: _____ **Food protection:** Displayed food properly protected ☐ Yes ☐ No **Methods used for protection of food:** Type: _____ **Adequate food storage areas:** ☐ Yes ☐ No **Adequate utensil storage areas**: ☐ Yes ☐ No **Adequate wiping cloth storage**: ☐ Yes ☐ No

Application Approved

☐ Yes ☐ Yes, with conditions* ☐ No* See reason below

***Conditions/Reason(s) for Disapproval:**

_____

_____

_____

_____

Reviewers Name: _____ Date: _____